

Agriculture

AGRICULTURE | GLOBAL EMERGING MARKETS

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ANCHOR REPORT



A revolution of sorts..

See the important disclosures and analyst certifications on pages 311-314. gl

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Our view

We are witnessing the third great subcontracting wave of the modern era: twenty years ago, manufacturing headed to China. A decade back, IT services shifted to India. Now we are witnessing the shift of agriculture from high-cost, inefficient producers to low-cost producers such as Brazil, Argentina, Russia, Ukraine and Kazakhstan. The latest great industrialisation process is underway.

Anchor themes

- ⚓ The structure of the industry will change dramatically: farms will get much bigger and more industrial, the major trading houses will face considerable challenges from new companies, some of which don't even exist yet. Economic distortions and political interference will remain at the root of the industry's problems. A free market with transparent pricing, enforceable property rights and liberalised trade would solve just about every agricultural problem under the sun. Politicians will fight it but it will likely prevail.
- ⚓ A major agricultural land bubble has emerged. It may burst in dramatic fashion. There is a surplus of farmland in the world, not a deficit. A richer China does not necessarily imply a need for more food; it might even consume less in the future. "Food security" is a misappropriated phrase which borders on the meaningless.

A revolution of sorts

① Prepare for the unexpected

Bad economics and foolish (but well meaning) politicians are a curse on agriculture. So, too, are the useless tools we use to value the companies in the sector. We are entering a great liberalising period, despite what you see and read in the media. Doha is not dead and has a future. Ukraine will eventually join the EU and Russia will likely create a couple of agricultural companies of note. Expect a currency crisis to engulf Ukraine but to have a positive long-term effect on its agriculture sector. The short-term consequences will be severe.

② Winners and losers

The winners will be the countries which embrace the free market ideal to the greatest degree. Some will struggle. The companies which know that a major land bust is on the way and adopt a strategy to work through it, or have sufficient capital to take advantage of it, will emerge triumphant. Diversified enterprises with existing profitable businesses will provide a high degree of flexibility. The trading houses which currently dominate the market face significant strategic challenges. They may restructure but, given their histories and backgrounds, they will likely prevail. Farms are going to be big – very big – but small farms will remain the norm.

③ Scotching some myths

A number of dangerous myths have begun to appear and are now accepted as conventional wisdom. First, there is not a shortage of land as some vested interests would have us believe; there is, in fact, quite enough farmland in the world. Second, the rising Chinese consumption theme may be a fairy tale of staggering proportions. Third, land acquisition programmes by groups from the Middle East and China have less to do with food security and more to do with the sensible recycling of current account surpluses.

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A revolution of sorts

We must not leave the vital issue of feeding people to the mercy of market laws and international speculation – Michel Barnier, French Minister of Agriculture, 14 April 2008

If you put the federal government in charge of the Sahara Desert, within five years there would be a shortage of sand – Milton Friedman

Thankfully the laws of economics are immutable, in contrast to politicians – or, at least, in contrast to those in countries where free elections are permitted. In the face of the many uncertainties in the agriculture sector, we at least feel confident that if M. Barnier took charge of our interests the world would be placed on a crash diet of some severity and magnitude. Unfortunately, he is not alone and, as a consequence of some seriously slack thinking and bad economics, the world is currently making policies for the agriculture and food sectors on the basis of some poorly observed data and some appallingly bad economic rationales.

As investment scribblers, we are prone to fits of hyperbole which would put the most shameless of politicians to shame. In the case of the agriculture sector, however, we take the view that it is just like any other industrial or commercial sector. The one thing that distinguishes agriculture from many of its peers is that the former experiences a higher degree of volatility and a greater unpredictability of outcomes. In the next few years, however, we may bear witness to embellishment and exaggeration on a scale not seen since, well, the last frenzy.

In our view, some of the structural changes taking place across the agriculture sector mirror the internet frenzy of the late-1990s. Both centre on industries which have been around for generations but which are being transformed into something quite different to what preceded them. Both attract (or did attract, in the case of the internet) considerable investment sums for mostly unproven start up enterprises; trading companies dominate agriculture markets in the same way that incumbents dominated the telecoms market; new technologies and processes are generating many new market participants and, just as the internet frenzy had many people wishing they had studied computer science at university, the agriculture sector is making some people wish they had headed off to agricultural college instead of doing a finance degree.

Extending this analogy still further is the notion that the valuation tools for both the internet sector and the agriculture sector are rudimentary, to say the least. We also believe that the agriculture sector will go through a bust similar to that of the internet sector and that at the end of this process of creative destruction the agricultural equivalents of Google, eBay, Yahoo! and Amazon will emerge.

We would emphasise several points at the outset. The first is to dispel as many myths about the sector as you possibly can at the earliest opportunity. The most obvious myth, and the one we look at in much greater detail in subsequent sections, is the myth that rising incomes, growing population and urbanisation are having an enormous impact on demand. It quite simply isn't true. A second myth is that, somehow, there is a shortage of farmland. Again, this is a myth of considerable proportions. Although there are supply bottlenecks, illiberal markets and suffocating regulation that stifle market mechanisms, but there is fundamentally no shortage of farmland. A third myth is how we interpret "food security". In some ways it doesn't exist. If you believe that owning an equity stake in a Russian oil company somehow implies energy security, then you can believe in imported food security. In reality, state investment in overseas land is simply that: an investment.

If dispelling myths takes some of the froth out of the sector, it is also important to recognise some other truths which may appear to strip the excitement levels back still further. The first truth is that commodity food prices will not rise in perpetuity. Wheat at US\$13/bushel was a short-term phenomenon and we are just as likely to see the price back at US\$5/bushel over the long term. However, within that framework there remains the scope for making huge profits. To see how that works to the benefit of emerging

It's just like any other sector

Questionable valuation tools

Dispelling myths

Seeing truths

markets consider the profitability of toy manufacturers in China or IT companies in India. The same is true of farming, where technology transfer coupled with economies of scale means that there is still money to be made when your output is highly commoditised, your inputs are cheaper than other countries and you can scale the business on a previously unimaginable manner. Even the most everyday product, where prices are flat or in decline, can still be enormously profitable.

A second truth is that volatility will remain the norm for at least the next decade. When investors seek guidance on earnings estimates, in many cases, it will likely have the accuracy of weather forecasting because those earnings are driven by the weather. Therefore, when you see fair values cut or lifted by 40-50% in the course of a single quarter, bear in mind that controlling the weather isn't quite as straightforward as controlling inventories, creditors or capital expenditure. This is something with which the investment community has to contend – and somewhat unwillingly it has to be said. Small illiquid companies dependent on the vagaries of the weather and with highly volatile revenue streams are inconsistent with a decent night's sleep. In summary, farming might be a basic industry but listed investment is not a place for widows, orphans or those of a nervous disposition.

Volatility to continue

The future of farming

How might the industry emerge over time? The volatility of the investment vehicles, coupled with the obvious attractions of the sector, suggest that the market will adapt and seek to reduce, or eliminate, the risks. Consequently, we expect to see much more vertical and horizontal integration aimed at reducing risk levels and making listed companies more attractive to investors.

Obviously, a changing industry structure poses significant challenges to the grain traders and their asymmetric information flows. In a highly fragmented market, traders reign supreme. In a market where new entrants can deal in scale, a threat exists. For sure, the challenges faced by the major grain traders will be considerable, but so too will the opportunities. Their cultures, histories and adaptability indicate an almost evolutionary skill in survival. We cannot say for certain but private businesses like Cargill, Glencore and Louis Dreyfus could potentially vertically integrate and become landowners as well as traders and processors. More importantly, although new challengers might have access to more raw inputs, such as fertile land and farming skills, it is the logistics expertise all along the supply chain that gives the grain traders their competitive edge.

The grain traders and their expertise

What also supports the case of the grain traders is the fact that the industrial-sized farm of 1m ha is likely to sit alongside hundreds of small-scale farmers. In other words, although some large-scale operatives may become more symmetric in their market knowledge, asymmetric information will still exist. Another way to look at this is that we need to rid ourselves of the notion that somehow the emergence of industrial farming groups implies the death of small-scale farming. The two will likely co-exist.

But what future is there for market mechanisms within the sector? Will political interference continue to be a hallmark of the agriculture sector? In an era when the Washington Consensus seems to be under attack from all sides and the financial sector has plumbed new depths of unpopularity, it may seem unusual to argue in favour of free-market solutions for an industry unused to it historically. However, we believe that a new era of lower government interference will prevail in the years ahead. Our reasoning is that the beneficiaries of agricultural free trade and liberalism are to be found not in the world's developed countries but among some of the more powerful emerging markets. It isn't coincidental that the one country keeping the WTO's Doha Development Agenda alive is Brazil, because it knows how much it will benefit from a successful conclusion to these discussions. If anything, the Doha Development Agenda demonstrates to the rich countries that a new multi-polar world is upon us. In short, the age of the conventional wisdom might well be over.

Will liberal economics prevail?

Likewise, in an age when a deflationary bust is seemingly more apparent than the inflationary environment that was the norm over the past 18 months, it may seem illogical to argue in favour of a free market that would have a lowering impact on food prices when it seems more likely that food prices will decline without any need for intervention. Consider the table below. It highlights the inflationary impact of rising food prices in a group of countries ranging from rich to poor. What it tells you is that if you subsidise food prices, the misallocation of scarce resources is such that long-term structural problems are exacerbated and long-term outcomes can be rather unpleasant. The market mechanism didn't make Egyptians riot earlier in the year; market distortions did.

Exhibit 1. Inflation Matrix

		% change in CPI				
		G7	OECD	EU	BRIC	LIC
% change in food prices	10%	1.3	1.8	1.9	3.4	5.3
	20%	2.7	3.6	3.9	6.7	10.6
	30%	4.0	5.3	5.8	10.1	15.9
	40%	5.4	7.1	7.7	13.5	21.2
	50%	6.7	8.9	9.6	16.9	26.4
	60%	8.1	10.7	11.6	20.2	31.7
	70%	9.4	12.5	13.5	23.6	37.0
	80%	10.8	14.3	15.4	27.0	42.3
	90%	12.1	16.0	17.4	30.4	47.6
	100%	13.5	17.8	19.3	33.7	52.9

Source: Nomura estimates

The risks of government intervention are obviously considerable. The Russian and Brazilian governments' recent comments that they would seize land left uncultivated by speculators (Russia) and ban foreign ownership of farmland (Brazil) are exasperatingly populist, immensely damaging and hardly investment enhancing. When we first saw the Russian government's remarks on this topic we were amused by the thought of officials arguing over how to define whether land was uncultivated speculative land or just land lying fallow as part of a four-stage crop rotation.

Simultaneously, the Argentinean government's policies designed to control spiralling wheat prices only resulted in a loss of output which, if it had been replicated elsewhere, would have sent wheat prices up still further. The export bans that characterised the grain market in 2H 2007 and 1H 2008 were uncomfortably common in many of the countries where our universe of stocks is based. These measures do not promote the market and, as record Northern Hemisphere grain harvests demonstrated, the market mechanism proved to be the solution to a short-term problem while the political response was a dangerous one which only served to compound the problem in some countries.

We noted that Doha is not dead and this is an issue we return to later in this report. We also note that when the food crisis reached its zenith in the first quarter of 2008 and a range of controls were being slapped on exports, some countries were simultaneously, and quietly, dropping their own import controls as a means of lowering prices. In other words, some market distortions were being removed just as others were being imposed. The former might not have had the visibility of the latter, but they set a precedent nonetheless.

The companies in the frame

There is a degree of frustration attached to our analysis in that there is no single, clear and consistent formula that we can apply to our stock picks. What may be a necessary condition for one company may not be sufficient. If you want operational leverage to grain prices, then the dedicated land companies make sense. If you want to reduce volatility, then an emphasis on vertically integrated operators makes sense. However within each company there is always an additional factor that adds to the individual risk levels. Razzgulay is a diversified company. But the Russian government's newly founded grain trading agency poses a significant strategic threat and the company's

Export bans and other follies

No simple formula

indebtedness points to overtrading. BEF is well managed, a pioneer in many ways and it is well capitalised. But is it Russian or is it foreign? In Ukraine, any argument in favour of a company is obscured by the country's deteriorating financial and economic position. The Latin American backdrop is probably more favourable and its low cost production facilities point towards a bright long-term future (especially if you do believe that the Doha Development Agenda reaches agreement).

We would conclude with the observation that you can talk about restructuring, political developments, signing up to the WTO, relative valuations, accounting policies, capex plans and everything else. Ultimately, just as it has always been, it is the excesses of the market place which dictate share prices. When you add rainfall (or the lack of it) to these excesses you begin to understand the volatility that will likely characterise the sector in the years ahead.

The first part of this report focuses on some of the strategic themes within the sector. Recent experience has told us that trying to estimate global supply and demand patterns for grains is a futile exercise. We don't know if the Australian wheat harvest will succeed or fail in early 2008. If it succeeds, wheat prices may decline 25%; if it fails, they could rise by 50%. Welcome to a world of infinite outcomes.

Rain, rain, rain

Anchor 1: Russia will create an agricultural Gazprom. Perhaps two?

I can see every monster as they come in – Truman Capote

The process may already have begun. Much has been made of the state's decision to "re-create" a state grain trading monopoly. This is hyperbole in our view. The following sub-section looks at this issue in greater detail but, what we would say, is that the emergence of the Agency for the Regulation of Food Markets (AFM) as a joint-stock company is a pragmatic response to some of the challenges facing the Russian agricultural sector and suggests that a serious effort is being made to maximise financial and operational efficiencies.

Given our over-riding view that the agriculture sector is cursed by bad economics, we would contrast that with the emergence of the AFM which may actually be dictated by good economics ie, a need to provide accessible capital, efficiently, to a market that lacks it. This is efficient, it provides competition to other market participants and it will lower prices for consumers while still permitting market participants to make a return on their capital.

Where the issue gets more interesting is when considering how the government approaches the issue of land ownership. Let's do some simple arithmetic. There are over 120m ha of agricultural land in Russia and the government still owns somewhere between 30% and 40% of it. Let's assume that this ownership is at the lower end of the range ie, that the government owns 36m ha of agricultural land. This is "worth" some US\$500 ha. In other words, the government owns an asset outright which could be worth at least US\$18bn. Herein lie the seeds of another Gazprom-style vehicle.

Any efforts to aggregate Russian agricultural land by the government would be driven by dreams and ambitions of size and would more likely result in diseconomies of scale, monumental inefficiencies and massive welfare losses. In our view, such a development would demonstrate that the curse of bad economics was still well and truly alive in the Russian agriculture sector. Keep an eye out for it.

The Agency for the Regulation of Food Markets

Russia often gets a rough deal from the Western press. On some occasions less charitable views can be justified. When it comes to recent developments at the Ministry of Agriculture's (MoA) unit the AFM, Russia's motives may have been grossly misinterpreted in the Western media. Contrary to what has been reported internationally, we see the transformation of the AFM into a corporate entity as a logical and entirely sensible development for the Russian state.

Consider the background to this plan. At the beginning of 2008, the MoA changed the status of the AFM from a federal enterprise to a joint-stock company. In short, the AFM is now a commercial company operating at arms length from the government and not an extension of it.

Simultaneously, the MoA is looking to transfer government shareholdings in as many as 28 grain terminals to the AFM. Reports suggest these are worth in the region of US\$300-400m, a figure which seems correct, in our view. Overall, we would expect a standalone grain terminal holding 70,000 tons of grain to be worth US\$10-12m excluding the supporting infrastructure. According to the USDA's Foreign Agricultural Service (FAS) division, the assets contained within this transaction include some of the country's best grain facilities.

From the perspective of the FAS, this development has been viewed as a throwback to the Soviet era; government sponsorship in response to the difficulties being faced by Russian grain traders. The thrust of the FAS's criticism is to see this move in a negative light. This would be wrong in our view. Perhaps it would be worth paralleling the difficulties being experienced by Russian grain agencies with the US banking

The creation of a new state grain trading agency is a sensible move

Good economics

The US\$18bn asset that no one discusses – yet

Bad economics

The AFM

28 grain terminals to be transferred

Privatise the gains, socialise the losses

system. For sure, we have heard the criticism made that the US government and the Federal Reserve are implementing Marxism through the back door when they bail out banks using the latter's discount window facility. In other words, US accusations of Soviet-style development models being implemented are perhaps over-emotional responses to perfectly rational events.

The fact that trading companies have been pressing for this service appears to confirm Adam Smith's dictum that whenever businessmen meet together, it is usually to act against the public interest and contrive to raise prices. However, cynical as this ancient scribbler has become over the last two decades, a coterie of conniving businessmen is not the principal force behind the AFM move; instead, it is driven by the companies' lack of access to capital.

Lack of access to capital

Let's try to put this into some kind of perspective. A recent report by the Moscow State University of Technologies and Management suggested that Russia needs to produce 140m tons of grain to ensure food security. The arithmetic is pretty simple: the country needs to produce one ton of grain for each citizen. However, this is easier said than done. This year it is likely that the Russian harvest will produce some 95-100m tons. Therefore, let us assume that to achieve a target of 140m tons, the country will have to produce a further 40m tons of output per annum. Let us also assume that the government wants to ensure that it can store 25% of that output ie, 10m tons.

To achieve that would require an investment of US\$5-6bn in acquiring land. Another US\$5bn would be required to repair the land to bring it back up to the levels where it could double or perhaps triple output. Added to that is a further US\$5bn worth of capital equipment which would be required to work the land. To store 10m tons would, in our view, result in a need for US\$1.5-2bn of investment in elevator capacity. So, the bland concept of ensuring food security in Russia becomes slightly more animated when one considers that it would require some US\$16.5-18.5bn of investment. This gives an indication of the challenges involved. Therefore, it seems increasingly unlikely that these types of plans can be realised by companies with market capitalisations of US\$100-500m. Hence the reason why the government has opted to create something that should have the potential to raise considerable sums of capital at a price significantly below the cost that would be charged to smaller companies.

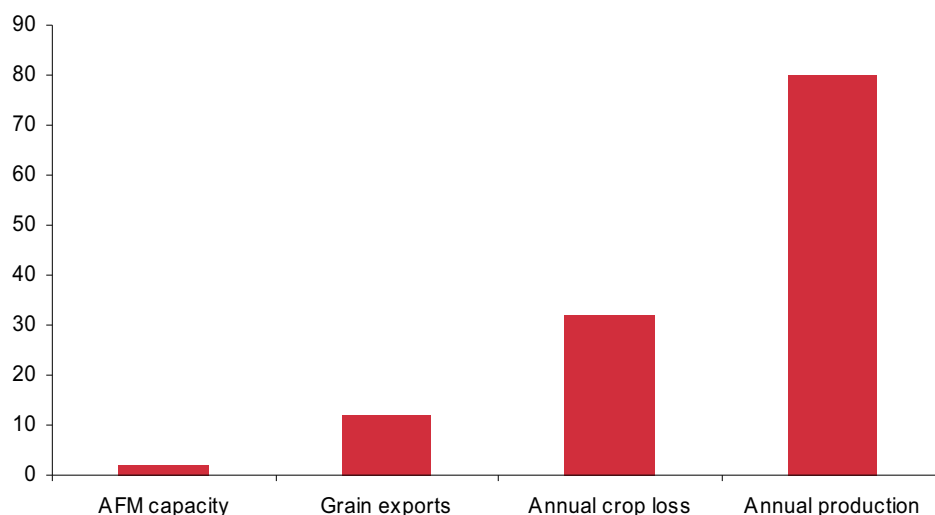
There is a huge temptation among scribblers and hacks to make this sound like another example of state interference. There is, however, one issue which makes it different from what we have seen in the oil and gas sector. The reliance on Russian oil and gas by external customers does not, and will not, extend to the agriculture sector. There is no agriculture cartel and land is plentiful, despite what you might read in the press. In other words, should the Russian government seek to intervene in the agriculture sector through the manipulation of prices to promote domestic ends, investment will decline and look for another home. The law of unintended consequences is a painful lesson currently being learned in Argentina where an export ban, designed to lower wheat prices, resulted in a decline in wheat output.

We have sought to put the AFM move into some kind of perspective with regards to the scale of investment required to modernise the Russian agriculture sector. How does the AFM business currently stand? The 28 terminals that may be transferred to the newly formed joint-stock company will likely have a capacity of 2m tons, in our view. This amounts to 17% of Russia's annual grain exports, some 6% of the country's entire annual crop loss or a mere 3% of the country's annual grain output. The FAS has made accusations that this is some kind of monopoly in the making. It would appear to have its work cut out for it on the basis of the numbers highlighted above.

140m tons of grain required, according to a recent academic report

US\$15-20bn of investment would likely be required

The AFM's influence at this stage will be limited

Exhibit 2. AFM capacity in context (m tons)

Source: Rosstat

Of course, the crucial factor, which the FAS has chosen not to emphasise, is that it was the companies themselves which were the original proponents of this move. We noted earlier Adam Smith's observations of businessmen gathering in Glasgow's docks and acting in concert against the public interest.

Some see the incorporation of the AFM as a grain trading agency as a harbinger of things to come, as we have seen. In our view it is a lot less clear cut that a first glance would suggest. In short, we do not know if the intentions are benign, malignant or perhaps, as often seems the case in Russia, benign but with a few opportunists helping matters along.

The one thing we cannot say with any degree of certainty is what this vehicle is worth. Much will depend on unquantifiable issues such as market share, value of the assets incorporated, leverage and access to infrastructure and capital. However, in the background there is another asset which, although even less transparent than the AFM, whose worth is relatively straightforward to calculate, may actually be the bigger prize: the Russian state's agricultural land bank.

The state's land bank

According to statistics from Rosstat, the state owned some 42% of Russia's agricultural land in 2003. Given that the land laws were changed just prior to that date, it is likely that this percentage ownership has declined. However, we can safely assume that it remains between 30 and 40%. Let us assume it is at the low end of this estimate. In other words, in a country with 120m ha of agricultural land, it could be the case that the state owns some 36m ha of cultivable land. A quick calculation suggests that this land is "worth" something like US\$500 per ha, so the overall holding is worth something like US\$18bn. And that is a conservative figure too – after all, we do not know the state of this land. If it is uncultivated and has been so since the Gaidar reforms in the early 1990s, then it is possibly worth US\$500 per ha and will require some US\$1,000 per ha of investment to bring it up to scratch. If it is working farmland, then it could be worth something like US\$1,000 to 1,500 per ha, depending on its location. This would imply a total valuation of something like US\$36-54bn. However much it is worth, one thing is certain – the government has a significant economic incentive to interfere.

The asset on the ground

Exhibit 3. Land bank value under certain scenarios

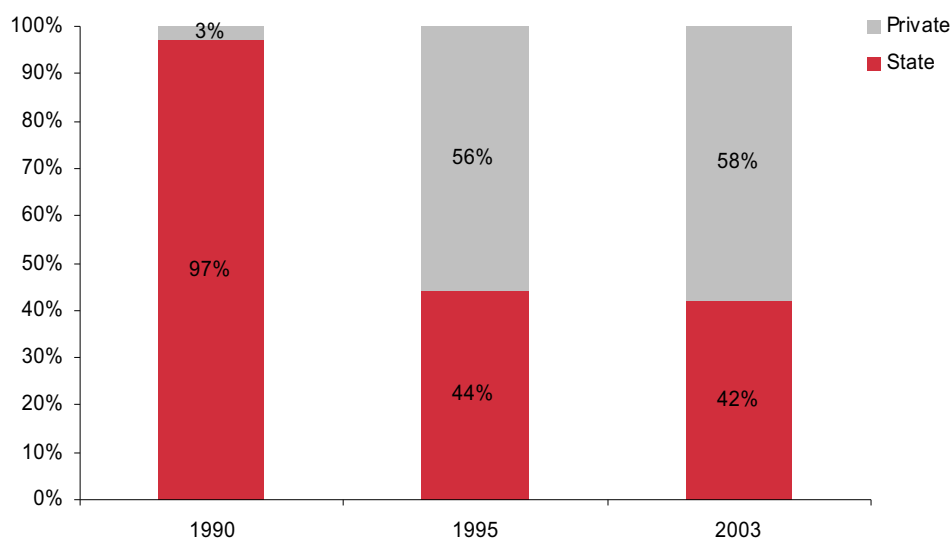
Total land (m ha)	120		
State owned (m ha)	36		
Price per hectare (US\$)	500	1,000	1,500
Total value (US\$bn)	18	36	54

Source: Nomura estimates

Consider the power of the government's position. Not only does it have access to capital, it can also make the acquisition process faster than the current 12-24 months that it takes to transfer ownership from local landholders to private enterprises. Given the resources and power in the hands of the government, what we have seen in other resources sectors in recent years and the "strategic resource" that farmland has now become we should consider government intervention a distinct possibility.

As an indication of interference, consider the pronouncement that the government was looking at ways to force owners of uncultivated land to grow crops or sell their plots. There are many ways to view this – none of them positive. Russia does not have a shortage of farmland, so any claim that ownership somehow hinders development of the sector is untrue. Second, seeking scapegoats with a populist rifle is always a useful diversionary tactic and this should be seen as such. Third, the administration of such regulation will be complex and ultimately the financial costs will easily outweigh any perceived social benefits. Fourth, what happens in the year that you leave ground fallow? Will accusations be made of uncultivated land? Will an expensive system be put in place to monitor land use? Fifth, it ignores any acknowledgement that the parties most likely to go bust are precisely those which have invested in land and left it uncultivated ie, those who lack access to capital. If, as we suspect, a land bust is on the way, why not let it happen and speculative elements will be driven out. Our final point would be to mistrust the motives of those who wish to drive speculators out. Why attempt to resolve something which will be resolved by normal market mechanisms?

The government has a significant economic incentive to interfere

Exhibit 4. Agricultural land ownership (1990-2003)

Source: Rosstat

We would conclude with this view: the emergence of the AFM as a state-sponsored grain trading agency may be a good thing. However, any attempt by the government to create a large land bank from unused land or its own land bank strikes us as output driven and bad economics. The fact that the market in Russian farmland is already functioning is a sign that the market mechanism is working. To continue attracting investment into the sector, the government would do well to stay out of the market and simply ensure that the 12-24 month process it takes to acquire land is simplified and speeded up.

Anchor 2: Ukraine, the EU and the Hryvnia

The day is coming when a single carrot, freshly observed, will set off a revolution – Paul Cézanne

At first glance, the Paris summit between the EU and Ukraine in early-September indicated that EU membership for the latter was little more than a distant hope. The collapse of the ruling coalition in Ukraine and the ongoing saga in nearby Georgia certainly suggest that the EU is right to be wary of admitting a state which is disturbed as much by internal political and cultural divisions as it is by external conflict.

But that's at first glance. In our view, the accord due to be signed in 2009 between the EU and Ukraine is likely to be a lot more meaningful than conventional wisdom might have it. We do not know if we should expect accelerated membership for the Ukraine but we do believe membership is likely to happen sooner rather than later.

The implications of this are significant not just in geo-political terms but also in economic terms ie, the impact it would have on the European agriculture sector as it found itself grappling with the reality of having a low-cost, scale producer *inside* its borders and, on the other side of the equation, the scope for convergence and company valuation themes to play out across the Ukrainian agriculture sector.

Understanding Serbia

Diplomatic power may have its limitations but it also cannot be underestimated. Our belief that Ukraine will join the EU sooner rather than later is based on our interpretation of recent events in Serbia which seem to prove that no matter how cack-handed and short-sighted the EU can appear to be, no matter how unfathomable its diplomatic timing, the carrot of EU membership is still sufficiently attractive to make some people and places make some extraordinary steps towards it.

Let's start off with the recognition of Kosovo. To say that the recognition of this state by the EU - in an election year - was ill-timed is a major understatement. In early 2008, the uneasy coalition between the nationalists and the pro-European parties broke down. Thus, the Serbian presidential election became a fight between Boris Tadic's pro-European Democratic Party, which had just seen the EU break the country in two, and the nationalist Serbian Radical Party, the biggest political grouping, under Tomislav Nikolic.

Just to compound matters, the EU, under the Dutch government, said that there would be no more EU accession talks until Belgrade handed over the two most wanted figures from the Yugoslavian civil war in the 1990s - Radovan Karadzic and General Ratko Mladic – thus furthering the case of the nationalists.

Meanwhile, within the old ruling coalition Vojislav Kostunica, the president, was shifting his allegiance towards Moscow and away from Brussels. It was only when the Socialist Party agreed to join the Democratic Party in a coalition that the latter prevailed. Incredibly Serbia now looks more EU-bound than it would have been possible to imagine in March 2008.

These events are hugely relevant to Ukraine. On the surface, the EU looked careless, inept and utterly lacking in foresight while underneath a huge diplomatic effort was underway to the extent that even the Greek opposition leader and president of Socialist International persuaded Serbia's socialists to join the Democratic Party in a coalition government.

The EU has – sensibly – made no promises to Ukraine. Like Serbia, the country is split between those that would wish to re-establish closer links with Russia and those that see their future as the EU. Internal coalitions have also broken down in the Ukraine just as they did in Serbia. Recent headlines suggest that Ukraine has somehow been

EU membership seems a distant hope

See Ukraine through the prism of Serbia

The Serbian eagle looks in two directions

abandoned by the EU. However, we take the view that its diplomatic skills have been sharpened somewhat after the appalling timing of its actions in the Balkans. The fact that a new diplomatic approach might be underway coupled with the fact that even under the most adverse of circumstances, a deeply divided and indeed brutalised country can still aspire to an EU future, suggests that in 2009, the EU and the Ukraine could well be mapping out a common future.

Economics trumps politics

However, longer-term political considerations do not matter alongside more pressing economic issues. Unlike Russia, Ukraine cannot rely on commodity markets as a source of revenue. Not only is inflation running at unsustainably high levels in Ukraine, the country also has to contend with both fiscal and current account deficits. In short, the currency, already depreciating rapidly, is under intense pressure.

A precarious economic situation

Exhibit 5. Ukraine economic indicators

	2003	2004	2005	2006	2007
Nominal GDP (UAHbn)	267.3	345.1	441.5	544.1	712.9
Current account balance (% of GDP)	5.8	10.6	2.9	-1.5	-4.2
Fiscal balance (% of GDP)	-0.9	-4.4	-2.3	-1.3	-1.5
External debt (% of GDP)	47.5	47.1	45.3	50.4	59.9
Public and guaranteed debt, (% of GDP)	29	24.7	17.7	14.8	12.4
Exchange Rate HRN:US\$ (average)	5.32	5.33	5.10	5.03	5.03

Source: World Bank, Economist

Try to view Ukraine in the way that one might have viewed Argentina in late-2001 ie, on the edge of the economic precipice. Argentina's recovery in subsequent years did not turn it into a favoured inward investment destination but a collapsed currency worked wonders for the country's export-led agriculture sector, which recovered sharply. A similar situation occurred in Brazil in 1999 when currency depreciation made the country's agricultural exports more competitive.

Ukraine and Argentina may have a lot in common

However, there is an added complexity to this scenario: one of the reasons for the collapse of the Argentinean Convertibility System in late 2001 was the devaluation of the Brazilian Real in 1999. Ultimately, Argentina could not compete with what could, in retrospect, be seen as a competitive devaluation three years previously. Brazil's low cost advantage became more accentuated during that period.

What might happen in the event of a Ukrainian currency realignment? Not only would it turn Ukraine into one of the most cost effective agricultural producers, it would also place significant pressures on Russia's agricultural sector. In the event of a Ukrainian currency realignment, it is not just the locals who would reap the consequences, the neighbours could be made painfully aware of them as well. Therefore, the risks are not just macroeconomic and microeconomic but also geopolitical.

A devaluation of the Hryvnia could have consequences for Russian agriculture

Nevertheless, we believe that in the event of a continued depreciation of the Hryvnia, some of Ukraine's agricultural enterprises could offer excellent investment opportunities. The key features to note are (1) the debt profile of the company, (2) whether the company has any export earnings and (3) to what extent any capital is held in foreign currencies or how much of the debt exposure is in local currency.

Anchor 3: There is no shortage of farmland

We are stripped bare by the curse of plenty – Winston Churchill

The Malthusian arguments that pepper most current discussions on food supply are as wrong as those made in the 18th century by the original demographer of doom. One of the reasons for this, in our view, is that the public has confused the current bout of food inflation with permanent shortages. Starving Africans and rioting Egyptians always make good TV and since journalists, in the words of GB Shaw, find it difficult to distinguish between the collapse of civilisation and a bicycle accident, they have been more than content to propagate these myths with some seriously inaccurate output.

Here are a few facts worth pursuing: in 1991, Russia planted on 120m ha of land and now crops only 80m ha of land. In total, there are 94m ha of chernozem soils in Russia. There are a further 160m ha of land which are capable of supporting agriculture, albeit irrigated if necessary.

However, it is not just uncultivated farmland in Russia that stands out but also the dismal productivity of the land that is being farmed. Note that Russia, in addition to 40m ha growing nothing, has 80m ha that is growing something inefficiently. A back-of-the-envelope calculation suggests that the 40m ha of uncultivated land could grow 240m tons of winter wheat. The underutilised 80m ha could grow an additional 240m tons.

To put that into perspective, what this figure suggests – and we acknowledge that this example is meant for indicative purposes only given that there would never be such a concentration of a single grain – is that output and productivity gains in Russia could add almost 25% to the world's grain output (or up to 33% in an exceptional year). And that is just by using land that has gone out of cultivation in the last 15 years and raising yields on existing farmland.

In Ukraine the scale of uncultivated agricultural land is not quite in the same league as Russia, but there too there is scope for raising yields substantially. Overall, Ukraine has some 33m ha of arable land. In 2007, some 12m ha of land grew grains. Again, the soil structure of the Ukraine is such that it could provide similar yields to Russian "best case" levels. In other words, a good harvest of 6 tons/ha could produce an additional 36m tons of winter wheat from existing, but more efficient, farmland. This is 50% more than the entire wheat output of Australia in a good year, and three times its output in a bad year.

The global scale

On a global scale consider that between 1962 and 1998, the expansion of arable land in developing countries reached 172m ha, a 25% increase overall. Meanwhile, estimates by the FAO, which take into account rising populations, increasing wealth and greater urbanisation, suggest that over the course of the next 30 years, we will require only 120m ha of additional arable land. In the 1962-1998 period arable land increased by 4.8m ha per annum. Under the FAO's estimates growth of only 4m ha per annum will be required over the next 30 years, a less daunting task than was faced in previous years.

This is an issue we explore in greater detail in the report on Brazil where we estimate that the amount of spare land available for farming is approximately 190m ha. To put that into perspective, that is the same as the total amount of farmland in the EU-27 countries. As the chart below demonstrates, the ability to increase agricultural production is obvious across all regions. However, it is in Latin America and sub-Saharan Africa where land is truly scaleable. In areas such as the CIS and Eastern Europe, the emphasis is more on the ability to squeeze more out of badly managed land.

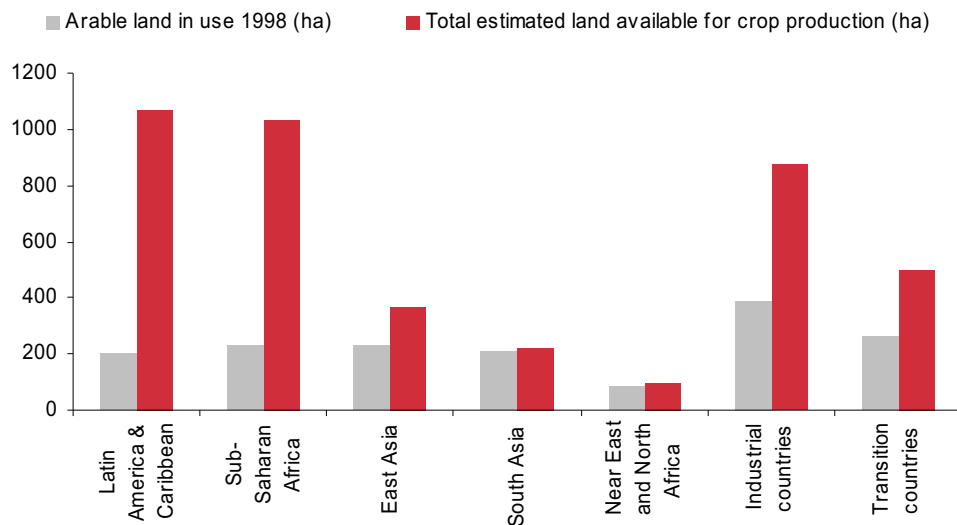
Malthusian mutterings

Russia has 40m ha of the most fertile land doing nothing

The Ukraine could stretch its wheat output to three times of that Australia

Brazil and its 190m ha of unused farmland

Exhibit 6. Global Farmland



Source: USDA, FAO

If you want to see the flaws in the Malthusians' arguments consider Hong Kong. The city state has a population of 7m people. Over 6,300 people are packed into every square km of this special administrative region of China. At US\$29,650, its 2007 GDP per capita was among the world's highest. Despite this, the region managed to produce 3% of its fresh vegetable needs, 46% of its poultry needs and 18% of its pork needs. It managed to do this on 10% of its land, employing less than 1.5% of its workforce, in the absence of subsidies and in a place where the theory of comparative advantage should have dictated that no food was produced at all. Granted, the above figures are a decline on the figures for 1990 when Hong Kong managed to produce 45% of its vegetable needs, 68% of its poultry needs and 15% of its pork needs. Yet, this was done when it had 2m people fewer than in did 17 years later. A shortage of farmland? Even in the most densely populated cities of the world, there still seems to be enough to satisfy a reasonable percentage of local people's needs.

Heavily urbanised Hong Kong still manages to produce an impressive percentage of its overall food needs

Anchor 4. Land prices will fall – there will be blood

As soon as the land was worth something and there was money in the bank, all of a sudden everybody got interested in non-discrimination, in who's really going to administer this stuff – Neil Abercrombie

Conventional wisdom has it that the value of agricultural land will increase over time. In some cases it will, but in our view there is likely to be a considerable bust before this happens.

We have, in recent years, witnessed a land grab of considerable consequence, after a 50-year period when, in many cases, you could not give the stuff away. If you want evidence of that phenomenon, look no further than Russia in the early-1990s when the reforms under the Ministry of Economy (and, briefly, Prime Minister), Yegor Gaidar, saw Russian peasants in agricultural collectives given shares in their collectives. As we said, you couldn't give it away. Those with access to capital in the cities bought up assets at distressed prices and promptly became a new breed called the oligarchy. However, no one did the same in the countryside because land simply wasn't worth anything in 1992.

Frenzies usually have to be accompanied by a notion of something lasting forever. The internet boom was expected to last forever and on this basis vast amounts of capital were poured into an industry which had managers long on vision but short on meaningful experience. A variation of this theme is happening in the farming sector today, where money has flooded into the acquisition of land.

So how do we see this playing out? Simple: the sector will divide into two distinct categories: those who know how to manage farms and those who have sought an arbitrage opportunity. At the end of the Internet boom, while thousands of half-baked ideas were consigned to the dustbin of commercial history, there was still an eBay, an Amazon.com, a Yahoo! and a Google. You don't hear much these days about Webvan, Kibu.com and that irritating sock puppet from Pets.com.

We note two of our anchor themes: that there is no shortage of land and that there are sensible ways to value an agricultural company. As we explain in a later section, we believe that the only way to value an agricultural enterprise is on the basis of its long-term cashflows. Anything else either ignores the significant capital outlays required to make the business strategy work or is inherently misleading.

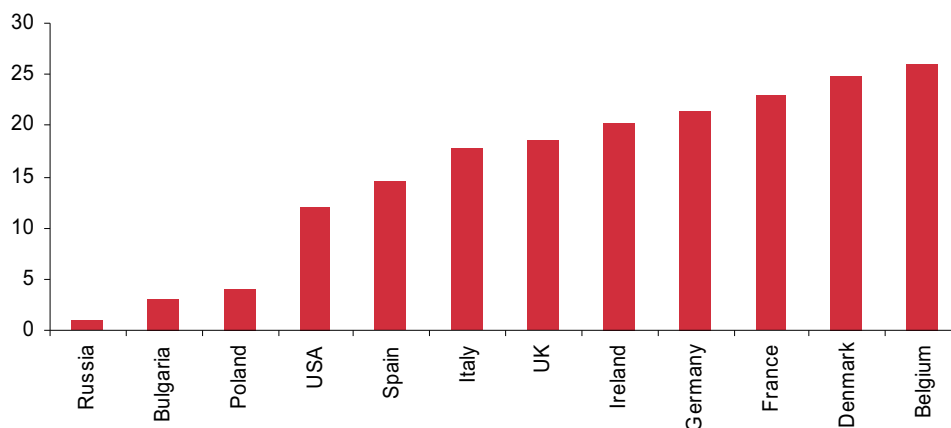
It strikes us that those operators which have access to capital to acquire land *and* develop it will emerge as winners in the years ahead. They might have a "burn rate" on their capital but they will most likely have revenues and a cashflow stream as well. However, we believe there will be many companies which have acquired land with the intention of making a short-term return which do not have the financial wherewithal or farming expertise to attain such cashflows.

The response to that might be that the land can be sold – and most likely at a considerable profit. We have our doubts. Mark Twain might have made the observation "Buy land – they don't make it anymore" and, for sure, they don't; but they still made quite a lot of it to begin with. More importantly, land prices are driven not just by cashflows but also the availability of credit and there is not so much of that around these days.

We would also point out that we have come across many companies in Russia and Ukraine who have acquired land in these countries in recent years and much of this has been done via debt financing with the view that additional equity would be provided in later years. It is estimated that some 196 enterprises in Russia own some 11.5m ha of land. Although this is a considerable level of investment it is still only 10% of the country's total agricultural land. As we said, there is no shortage of the stuff and paying a premium, especially at the current time, seems like a pointless exercise.

A parallel with the dotcom era

Markets can remain irrational longer than you can remain solvent

Exhibit 7. Average price paid for arable land (US\$ '000/ha)

Source: Jones Lang LaSalle, Land Registries, EC, Rosstat.

According to the Russian Grain Union, farmers in Russia may have to find some US\$10bn to fund debt repayments by the end of 2008. Additional support for the sector was announced on 7 October when the government put an additional US\$38bn into the country's banking system. Of this total, US\$1bn was pledged to the Russian Agricultural Bank. Overall, government support for the agricultural sector in Russia now stands at US\$28bn. It will be needed by the looks of things.

As we explain in greater detail later, we believe that land can only be valued fairly on the basis of the cashflows that it can generate. Therefore, higher yields equal greater output equals higher cashflows. So, logically, for land prices to converge, yields would have to converge. To see the variability of yields glance at the chart on page 22 and you will begin to understand one of the (many) reasons why there is no uniform price for farmland.

In short, a great opportunity exists for those companies which do have capital to take advantage of low land prices in the next few years. There are only so many food processing companies that can integrate vertically and backwards. We would go as far as to say that a crash in land values might be the event that forces a change in the rules of some countries' land laws, allowing foreigners to acquire land assets in places like Russia so as to reintroduce some liquidity into the market.

At the beginning of this report, we made much of the fact that the actions of politicians can play havoc with the workings of the market. Recent comments by the Brazilian and Russian governments demonstrate the dangers of ill-conceived policies on land ownership. In the case of the Brazilian government, there is the possibility that foreign ownership of land is banned. Meanwhile, in Russia, the government looks like it will try to force land "speculators" to cultivate land. If ever there were two plans which will surely reduce the price of land it is these two. And, given the levels of gearing that many enterprises have taken on in recent years to acquire that land, it is a dangerous tactic as well.

A crash in land prices might result in greater liberalisation

Anchor 5: Doha is not dead but WTO membership is not a panacea

Succeeding is the coming together of all that is beautiful. Furtherance is the agreement of all that is just. Perseverance is the foundation of all actions – Lao Tzu

We have become accustomed to WTO agreements as lengthy processes at the best of times. The Tokyo Round, launched in 1973, took six years to complete and the Uruguay Round, otherwise known as the “round to end all rounds” took eight years, finally gasping over the finishing line in 1994. Meanwhile, the Doha Round rumbles on without conclusion seven years after it was initiated.

Ever lengthening processes

Obviously, this is a far cry from the early rounds of the 1940s and 1950s all of which were completed in the year in which they were initiated. This can be explained in part not just by the growing complexity of the trade deals under review but by the number of members involved and the power invested in them. Although most agreements were not originally multilateral in nature, several were eventually amended in the Uruguay Round and turned into multilateral commitments accepted by all WTO members.

Negotiations in the Uruguay Round covered almost all trade items ranging from banking to telecommunications, pleasure boats, genes of wild rice strains and AIDS treatments. The round laid the foundation for the Doha Round which would focus on agricultural goods.

The axes of power have shaped negotiations significantly. During the Uruguay Round, the USA and the EU spearheaded most of the negotiations; while in the Doha Round, the axis of developing countries (India, China and Brazil) tilted the power balance, which has resulted in longer negotiating sessions. Another factor responsible for increasing the duration of the rounds is the sensitivity of the issues at stake. In the earlier rounds, negotiations on tariffs primarily revolved around a limited number of goods. However, during more recent rounds, negotiations have tended to include a wider spectrum of commodities – comprising both agricultural and non-agricultural products – and the issues have also moved from simple tariff issues to other non-tariff measures, preferential treatment and so on. The table below highlights the growing complexity of GATT/WTO trade rounds.

Emerging markets in the cockpit

Exhibit 8. GATT/WTO trade rounds

Year	Round	Focus	Countries involved
1947	Geneva	Tariffs (custom duties and goods)	23
1949	Annecy	Tariffs	13
1951	Torquay	Tariffs	38
1956	Geneva	Tariffs	26
1960-1961	Dillon	Tariffs	26
1964-1967	Kennedy	Tariffs, anti-dumping measures	62
1973-1979	Tokyo	Tariffs, non-tariff measures, framework agreements	102
1986-1994	Uruguay	Tariffs, non-tariff measures, rules, services, intellectual property, dispute settlement, textiles, agriculture, creation of the WTO and others	123
2001-present	Doha	Tariffs on goods, non-agricultural market access (NAMA), services (GATS), special and differential treatment, trade facilitation and others	153 (as on July 2008)

Source: WTO

The Doha Development Agenda was launched during the Fourth WTO Ministerial Conference in Doha, Qatar, in November 2001 on the basis of member countries agreeing to begin a new round of multilateral trade negotiations. The Doha Round emphasised the integration of emerging countries into the world trading system. The focus of the Doha Round is agriculture and manufacturing markets as well as trade in services (GATS) negotiations, and expanded intellectual property regulation (TRIPS).

Launched in 2001

Exhibit 9. Broad objectives of the Doha Round

Agenda	Description
Agriculture	<p>The key focus of the Doha Round is to improve market access for agricultural products. A second major aim is to reduce export subsidies, with a view to eventually eliminating them. A third aim is to reduce trade distorting domestic support. These topics are known as the three pillars of the agricultural negotiations.</p> <p>Additional aspects include a consideration of “special products” (ie, special treatment for specific goods that can be shielded from tariff cuts) and a “special safeguard mechanism” (SSM – a safety net for developing countries facing import surges).</p> <p>The emphasis is on liberalising the protected agricultural markets of the USA, the EU and Japan.</p>
Non-Agricultural Market Access (NAMA)	<p>NAMA is an important element of the Doha Round and covers trade in manufactured and all other goods not included in the agricultural talks (fuels, mining products, fish/fish products, forestry products).</p> <p>It looks at both tariff and non-tariff barriers. The aim is to lower tariffs, address tariff ‘peaks’ (ie, high tariffs on sensitive products), tariff escalation (ie, higher duties on semi-processed and processed products) and increase bound tariff lines.</p> <p>The talks also seek to reduce the incidence of non-tariff barriers, which include import licensing, quotas and other quantitative import restrictions, conformity assessment procedures and technical barriers to trade.</p>
Services	<p>Another objective of the Doha Round is to open up service sectors to foreign competition, including sensitive parts of economies such as education and health services.</p>
Special and differential treatment (S&D) for developing countries and LDCs	<p>The Doha Declaration states that “special and differential treatment for developing countries shall be an integral part of all elements of the negotiations”, emphasising a degree of flexibility and lower reduction commitments for these countries.</p> <p>While LDCs are to be exempt from any commitments, developing countries can designate agricultural products (based on food security, livelihood security and rural development needs) that would be exempt from commitments.</p> <p>The SSM will guard the developing and least developed countries against extremes of currency and market fluctuations.</p>
Others	<p>A number of other issues include a review of dispute settlement procedures, specific issues of interest to developing countries (such as access to patented medicines, implementation of existing WTO agreements and changes in special and differential treatment provisions) and trade facilitation (which refers generally to harmonising and streamlining customs procedures among WTO members)</p>

Source: WTO

The Doha Round was, initially, scheduled to end by January 2005. After the failure to meet this deadline, several new ones were put forward. All of them were missed in the absence of consensus.

The heart of the matter

The key players in the negotiations – known as the G6 – are Brazil and India (representing the G20 group of developing countries), the EU, the USA, Australia (representing the Cairns group of agricultural exporters) and Japan (representing the G10 group of net agricultural importers). Each of these players wants the counterparties to undertake various obligations for the successful closure of the deal.

Six key groupings

- The USA, whose agricultural tariffs are considerably lower than those of the EU and other advanced developing economies, wants a 90% reduction in the “highest farm tariffs” and an average tariff cut of 66% for developed countries. While the EU agreed to raise its initial offer of a 39% average tariff cut closer to the G20 proposal of 54%, it was deemed insufficient by the USA.
- Developing countries are demanding that the EU and the USA cut their overall trade distorting subsidies (OTDS) to the agricultural sector. While the EU has agreed to slash its OTDS by 75% (as requested by G-20), the USA is refusing to reduce its OTDS below US\$15bn (as against the US\$12bn demanded by India and Brazil).
- The EU and the USA, whose ambitions in the Doha Round are to gain access to the large non-agricultural markets of emerging economies, proposed maximum

tariff rates of 10% on manufactured goods for developed countries and 15% for developing countries. In contrast, developing countries wanted a tariff cap of 30% for themselves, which would entail lighter average cuts. While the EU was prepared to permit an intermediate tariff cap of 20% for developing countries, the USA continued to call for a maximum difference of five percentage points between developed and developing country coefficients.

- Developing countries, led by India and China, are insisting on extra safeguards for their farmers and one of the most critical stumbling blocks appears to be focused around the SSM – ie, by how much should developing countries be allowed to impose safeguard duties in excess of current (pre-Doha) tariff ceilings. Pascal Lamy's proposal to allow safeguard remedies to exceed current tariff bindings by up to 15% if import volumes rise by 40% was deemed insufficient by the developing countries as well as by the least-developed African nations.
- There is also a politically sensitive issue (for the USA and African countries) of cuts on cotton subsidies. Four cotton-producing African countries – Benin, Burkina Faso, Chad and Mali – have proposed the complete elimination of trade-distorting domestic support and export subsidies for cotton, and the establishment of a transitional financial compensation mechanism for cotton-exporting developing countries affected by the subsidies. The USA, however, has advocated dealing with cotton issues as part of these comprehensive agricultural negotiations rather than as a stand-alone sectoral initiative.

The incredible thing about the current stalemate is that it involves such trifling sums in the grand scheme of things. In fact, it is probably the trifling nature of some of these disagreements that makes one despondent as to whether any progress will ever be made.

How close can you get?

Currently, a stalemate is evident in the Doha Round. The recent negotiations were conducted in July 2008 in Geneva. However, an impasse prevailed as the USA, India and China failed to reach a consensus over the SSM issue.

Since the Geneva session's failure in July 2008, many positive statements indicating a readiness to return to the negotiating table have been issued by, among others, the US Trade Representative, Susan Schwab, the Brazilian Foreign Minister, Celso Amorim, the French President, Nicolas Sarkozy (whose country holds the EU Council presidency) and ministers of various ASEAN countries. A multilateral trading system offers many benefits over bilateral trade deals and this should encourage developing countries to get the Doha Round back on track and on the way to a possible conclusion.

Getting back on track

Since the July debacle, the WTO Director General has tried to facilitate a consensus on the SSM issue, including visits to India, China and the USA. He also asked members to resume talks in September 2008 and, after the discussion on SSM, negotiators are expected to move on to other unresolved issues, such as cotton subsidies and NAMA sectoral tariff initiatives. Through these sessions, the WTO hopes to finalise the trade modality by the end of the year and to sign a concluding agreement by early 2009. However, elections looming in key countries such as the USA, India and Brazil, among others, indicate that any conclusion to negotiations might be pushed into late-2009 or 2010.

The problems are now twofold: first, the worsening financial crisis is sure to lead to a greater protectionist voice emerging as people start to lose their jobs. Second, a free trade deal will likely fall down the priority lists of most political agendas as the effects of the financial crisis deepen. While none of the major agricultural countries, including India, China and the least-developed African countries, are against the Doha Round of negotiations in principle, none of them are willing to accept it in its current form either. India and China's dispute with the USA over the SSM issue in July leaves Brazil as the

Free trade and financial crises sit uneasily with one another

only key agricultural country and WTO member which seems prepared to push for a deal.

We do, however, take the view that the Doha Round will be successful – eventually – and when it does succeed, massive benefits will flow to low-cost producer nations like Ukraine, Brazil and Argentina. In an industry plagued with bad economics the Doha Round brings many advantages. In our view, it is too simplistic to assume that just because the Doha Round stalled in July that somehow a successful outcome is nullified.

That said, we should of course note a couple of factors. The first is that the attractions and benefits of WTO are widely known and even quantifiable. However, they are long-term and thinly spread across a dispersed population. The same cannot be said for the drawbacks which can be immediate and felt among concentrated populations. As a result, the benefits of free trade are surprisingly disputed despite the overpowering evidence that they exist.

The second factor is that membership itself may be questionable. Russia's WTO ambitions have been put on hold. Shaped by its experiences, Russia probably takes the view that people will still buy its agricultural produce with or without it being part of WTO. Crucially, what is to prevent Russia engaging in bilateral trade deals with consuming countries? Faced with this kind of logic it isn't just the success of the Doha Round which becomes an issue but the existence of the WTO itself.

Anchor 6. The current valuation toolkit needs to be refined

“Chains of habit are too light to be felt until they are too heavy to be broken” – Warren Buffett

In the late-1990s, when the Internet frenzy was reaching its apotheosis, a range of unconventional valuation measures came to the fore. Investors didn't have much of a choice if they wanted to join in the frenzy and had to accept valuations of theoretical businesses based on “eyeballs”, “double-clicks” and “page views” among others. Cash flow - the life blood of any business – was replaced as a conventional valuation tool by the slightly less conventional and somewhat more ominous “burn rate”.

Of course, hindsight is a wonderful thing. Sceptical as this scribbler was at the time, he didn't look particularly clever when his stocks with sell recommendations were doubling in price over weeks and months. The phrase “This is ridiculous” became a common refrain as he watched a stock going up in price and his own sell recommendation going up in a puff of smoke.

Sometimes, one gets the feeling that we might be about to endure something similar in the agriculture sector. Just as we know that someone out there will pen the report with the title “Field of dreams” so too do we know that some dubious valuation tools will be employed across the board.

There is a certain irony in the fact that the valuation tools available for those businesses which go through start up phases – most notably discounted cash flow analysis – are viewed with a high degree of scepticism among investors. Fair enough, data can be manipulated and a DCF is hardly useful as a snapshot valuation tool. However, it isn't quite as suspect as some of the tools currently in use for valuing stocks in the sector.

The horror of EV/hectare

The most common tool that has been employed is EV/cultivated land. Let us pin our colours to the wall on this one. We do not hold EV/cultivated land as a valuation tool in high regard.

We do understand its attractions. Psychologically, humans need to distil complex events into easily digestible snapshots – something that business school professors and management consultants would do well to remember. EV/cultivated land gives a useful snapshot in much the same way that a PER or a PEG ratio does. Conventional wisdom has it that if you have three farms of 100,000 ha each and the first is valued at US\$1.2bn, the second at US\$1bn and the last at US\$800m, the cheapest one offers you the best value. Unfortunately, this is not necessarily so.

The first thing to remember is this: cultivated land is different from harvested land. You can cultivate 100,000 ha of land and still harvest zero hectares of land at the end of the agricultural season. An entire crop can be wiped out by a winter frost, lack of rainfall, early rainfall, rain at the wrong time and flooding or disease. In our view, it seems intellectually flawed to accord a value to something where the output is variable and weather dependent. The counterargument to that is perhaps to consider EV/harvested land. However, the problem here is that the measure is backward looking. Who is interested in using a backward looking number to establish the value of an agricultural business?

The fundamental difference between conventional measures such as EV/EBITDA or PER and EV/cultivated land is that the first two use financial parameters to estimate relative value while the last uses an operational parameter. This can lead to problems. For example, US\$10m of EBITDA generated by a Russian company is identical to US\$10m of EBITDA generated by a British company. However, 100,000 ha of land in the UK is not the same as 100,000 ha of land in Russia.

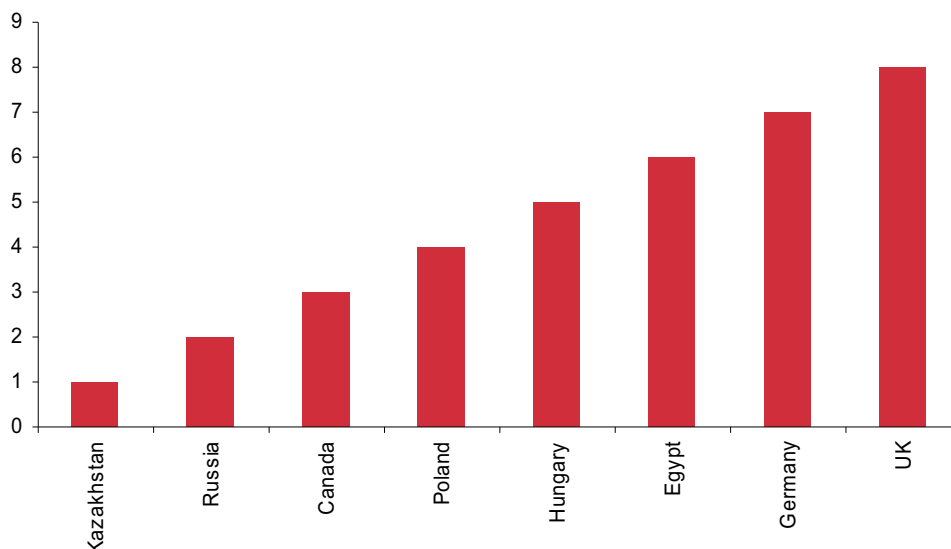
Unconventional days in the 1990s

Cultivated land is not harvested land

The second thing to remember is that "cultivated land" does not take account of different yields. For example, assume you have eight farms: one in each of Kazakhstan, Russia, Canada, Poland, Hungary, Egypt, Germany and the UK and all eight cultivate 100,000 ha of wheat (assuming, somewhat unrealistically, that you could buy a farm the size of London in all of these countries). Each of these farms will deliver different yields, as illustrated in the chart below.

Yield differentials are varied

Exhibit 10. Wheat yields in selected countries (ton/ha)



Source: USDA

Adding to the complexity of looking for a uniform valuation measure is the fact that in Russia, with the right crop sequencing, those derisory 2 tons /ha yields could rise to as much as 8 tons/ha in a good year. An Argentinean farm will give you a similar yield to a Canadian farm (ie, 3 tons/ha) but the difference is that you can double crop in Argentina ie, do a short-term soybean harvest in the same year that you do a winter wheat harvest.

So the EV/cultivated land measure doesn't capture yield differentials. It also doesn't capture the different prices that can be obtained from different crops. Whereas sunflowers might give you a financial yield of US\$300/ton and a gross yield of 3 tons/ha, winter wheat only gives you US\$250/ton but 8 tons/ha. On top of this is the fact that the price paid for crops will differ from country to country. Direct supply relationships between farmers and buyers, subsidies, export taxes and so on, all distort prices.

And we haven't even begun to consider the different levels of input costs. Although in the above analysis we made the assumption of the same input prices, in reality the cost of each of the components – labour, fuel, fertiliser and so on - is different according to different geographies. For example, wheat costs US\$500/ha to produce in Russia compared to over US\$900/ha in the UK.

Furthermore, the EV/cultivated land measure takes no account of the need for crop sequencing. There are times when you need to leave 10-20% of the land fallow in order to repair it. Assume there are two listed farming companies: both have 100,000 ha of land and both have an EV of US\$1bn. Farm A plants wheat on 100,000 ha of land while Farm B plants wheat on 80,000 ha of land. The EV/cultivated land of Farm A is US\$10,000 while that of B is US\$12,500, thus making B look relatively expensive. However, if Farm A continues to pursue its strategy, and all other things remain equal, Farm A's output will decline in subsequent years because it hasn't rotated efficiently.

EV/cultivated land ignores the logic of crop rotation

In the same way that PER can be manipulated by changing accounting rules eg, by lengthening depreciation rates to boost short-term earnings at the expense of the long-term health of the business, so can farming companies manipulate EV/cultivated land

by pushing land into production at the expense of a proper rotation. Therefore, the valuation tool does not – and cannot - capture the long-term intrinsic value of a farming business.

DCF captures long-term value

For sure, DCF has its flaws but it is one of the few valuation tools capable of establishing the long-term intrinsic value of a business which, while not a start-up, is undergoing significant structural change.

1. It captures the long-term value creation that arises when a business is expanding. EV/cultivated land only captures valuation at a given point ie, it provides a snapshot and, as we can see from the above, a flawed one. Consider the cost of building out an industrial-scale farming business: DCF takes into account the considerable investment required in the early years of operation and the eventual payback that inevitably arises in the future. For example, to maximise output several years down the line, it is necessary to purchase land, prepare and repair it and then go through a full crop sequencing and rotation to ensure that output and yields are maximised.
2. DCF captures the necessary efficiencies and scale economies that arise from crop splits, sequencing and rotations in a way that other valuations cannot. After all, there are years when you need to accept lower priced crops to ensure that the following year your output is maximised with a different crop.
3. DCF captures the dynamic changes that are taking place in emerging markets such as Russia, Ukraine, Brazil, Argentina and Kazakhstan ie, that large-scale industrial farms are being created in a way here that is not the case elsewhere. A farm of 10,000 hectares in year 1 may be 100,000 ha the following year. A valuation measure based on cultivated hectares will change rapidly, thus rendering comparisons meaningless.

The necessity of using DCF mirrors the experience of another arm of the telecoms and media sector, namely, the wireless sector. When Orange was licensed in 1993 as one of the two new entrants into the UK wireless sector, sentiment towards it was consistently negative in the early years of the company's existence. This was not solely due to the fact that it was a new entrant to a market dominated by two incumbents, but the fact that it would not make operating profits for over six years. It meant that investors had to rely on DCF as a valuation tool. It would be unfair to gloss over the fact that the DCF models were indeed flawed. After all, these models had only assumed a wireless penetration rate of 5-10% in the early years.

A reminder from the 1980s

In our view, this is the way we will have to view the development of the agriculture sector over the next few years. Orange's long-term profitability was originally scheduled to begin six years after winning a wireless licence. Although not quite as lengthy, the profitability of some farming companies can take 3-4 years. This is most pronounced in Russia where acquiring land, repairing land and going through a crop rotation can take several years. On that basis, the only sensible valuation tool to use is DCF as it captures the long-term returns of the venture.

Anchor 7. Vertical and horizontal integration and investor fears

Who owns the New York Post? 20th Century Fox. Talk about vertical integration – Joe Pantolano

In the 1960s, John Kenneth Galbraith's book *The New Industrial State* had a profound influence on industrial organisation. Stripping it of its academic cloak, the book proffers the view that the complexity of the modern corporation, the increasing need for planning and bureaucracy and the growing sophistication of the processes involved in delivering goods and services, require a large degree of horizontal and vertical integration. Not only was it seen as a more efficient form of industrial structure, it also reduced risk in areas such as research and development. Befitting the man who coined the phrase, this commercial formation became "the conventional wisdom" for the next 25 years.

The fact that these models were propagated at the same time as the diversified industrial enterprise was coming to the fore, meant that the three models were increasingly identified with an era. Vertical integration, horizontal integration and conglomeration offer three different forms of industrial organisation but they all emphasise scale and control.

Fast forward to the 1980s and the conglomerate model was discredited – although the other two less so. New political and economic thinking emphasised the benefits of smaller companies and focused "pure-play" models – core competency was key. The logic behind these models was the fact that expertise was more focused, bureaucratic wastage was eradicated and any diversification could be done by portfolio managers rather than business managers.

For sure, defining whether a business is, or is not, a conglomerate has become like some ancient theological debate over the number of angels who can dance on a pinhead. Financial conglomerates still exist but remain divided on product lines; private equity groups are holding companies and conglomerates in all but name. And some of the world's most prominent companies remain conglomerates. What cannot be denied is the change that took place in industrial organisation over these two decades.

The farming model

Fast forward still further. Consider the way in which some investors' views on listed agriculture equities have shifted, not over the course of a generation, as seen in other industries between the 1960s and the 1980s, but in the space of 12 months. Under a year ago, when Black Earth Farming was listed, the intrinsic simplicity of the model made it easy to understand and value – albeit we would raise some question marks over the valuation measures employed.

By the summer of 2008 it appeared that we had gone full circle. The attraction of vertically integrated enterprises in the agriculture sector had asserted itself. The immediate success of the Razgulay fundraising exercise and the failure of other "pure play" agriculture enterprises to list indicated that investment sentiment had shifted towards vertically integrated enterprises.

So what is pushing this drive towards vertical integration? What has become apparent to us is that investors are bewildered with the inherent volatility of the sector. When the revenue lines of agricultural financial models are dependent upon the level of rainfall, you begin to understand why volatility is the norm. In the extreme, if there is insufficient rainfall there will be no output and therefore *no* revenues. Even if this is not the case, the revenue line can easily change by 35% in the space of weeks (as happened earlier this year when cereal prices declined). Try to think of an industrial sector where your single product is made obsolete every three or four years, you cannot patent any of it

An old conventional wisdom

The discrediting of ill focused organisations

Square pegs in round holes

and you have no advance warning. That sums up the agriculture sector and the riskiness of focusing on short-term earnings.

This goes some way to explaining why investors are increasingly sceptical of the “pure play” model in the agriculture sector. And, in the absence of product diversity, they will likely seek scale or geographical diversification as a means of reducing perceived risks. In other words, the likes of Black Earth Farming, Trigon Agri, Landkom and MCB Agricole are pioneering listed entities but they might also be the last of these types of company to be listed.

The next listed entities will be different from previous ones

The next wave of enterprises

Having said that, the existence of volatility does not detract from the fact that there is a long-term investment theme in evidence and it will not disappear quickly. If the risky nature of the individual enterprises cannot be eliminated it will lead to some radical rethinking about how the sector is organised. On that basis, we believe that the following models will likely gain prominence over the next 12-18 months:

- **Vertically integrated groups.** The most obvious structure which will likely emerge is the vertically integrated processing group. Several examples are already well known eg, Razgulay, Cosan, Astarta and Cherkizovo all come to mind. A significant “backwards” vertical integration process has taken place in the last 2-3 years in Russia and, to a lesser extent, Ukraine. What makes these groups increasingly attractive to investors is the fact that the volatility of cereal or oilseed prices is offset to the extent that they are not just revenue items but also input prices. An added attraction of these enterprises is the fact that they already have existing profitable business units while the land companies are, in essence, start-ups with poorer earnings visibility.
- **Horizontally integrated groups.** Unlike the vertically integrated groups, there are few horizontally integrated farming groups. That can mostly be attributed to the relative newness of the sector. Historically, agriculture has been a local affair and a fragmented one at that, so the emergence of cross border farming businesses is somewhat limited. This will likely change in time. A major investor concern is based on the fact that revenues can be hit by adverse weather conditions in concentrated areas. Consequently, we reckon that the diversified cluster model that you see in places like Russia will eventually extend to larger enterprises which will have diversified operations across several countries in both the Northern and Southern Hemispheres. Cresud’s presence in Argentina, Brazil and Paraguay signals this trend.

The last point is possibly worth expanding on. In a following section of this report, we note that changing industry dynamics pose a significant challenge to the, mostly unlisted, grain traders. We cannot say for certain how they will evolve over the next few years but we expect to see more processing groups and trading groups seeking to horizontally and vertically integrate. However, we feel that much of this process will be dominated by private equity rather than listed entities at this stage.

Anchor 8. The myth of food security

When we're in a peak, we make a ton of money, and as soon as we make a ton of money, we're desperately looking for a way to spend it — Bill Ford

Type the words “food security” into Google and you will get over 31m references to the subject in one-fifth of a second. To say that the issue has entered the mainstream is an understatement. Every government and their agents are after food security and everyone has different ways of trying to secure it.

**Food security –
a fashionable worry**

Notions of food security probably feed into some rather deep-seated human fears. In a world where fashionable worries over climate change, rising food costs and low inventories have pushed food security to the top of the political and economic agenda, it is an easy phrase to deploy when justifying an investment strategy. However, it isn't quite what it seems.

After all, before we explore some of the strategies of those seeking to improve food security, consider what it means in practice. Among the many examples of food security themes, issues, headlines, strategies and so on, the one which has become the most prominent is the export bans placed by grain-exporting nations in late-2007 and early 1H 2008. These bans have mostly been lifted on the strength of recent Northern Hemisphere harvests. The other less prominent connected theme, but with longer-term ramifications, is the initiation of land acquisition programmes by various governments, most notably in the Middle East and China.

Consider the seemingly irrefutable logic of what these state-owned or parastatal bodies are engaged in: China is perceived to require farmland to feed its growing population and burgeoning middle class and, with 20% of the world's population and only 10% of its water and arable land, its needs to secure an external food supply. This is a myth we shall debunk later but it is the current conventional wisdom and it does go some way to explain the country's need for food security. Likewise with the Gulf States, where water is in much shorter supply and the need for it is increasing, as a quick glance at any skyline can attest.

So we have these nations and their agents beginning to acquire land in order to reinforce their food security strategies. The question is: how does the acquisition of land overseas improve “food security”? Ultimately the land is outside the country's borders and therefore the enforcement of property rights is not entirely within its control. Why not just buy the output from overseas instead and save yourself the hassle of acting as principal?

**Land is outside your borders. So,
it isn't “secure”.**

The counterargument is that if you can't trust a supply from overseas in the event of, say, an export ban, then you had better have an alternative strategy. This logic is flawed. Export bans are universal. Just because you own the land doesn't mean that somehow you can escape the export ban. So, purchasing farmland in a country where there is a risk of an export ban could end up being the equivalent of putting money in a foreign bank account just before foreign exchange controls are introduced.

A further counterargument is to say that land investments can be made in those environments where there is less risk of export bans and there is strong enforceability of property rights.

If that is the case, then surely there is no need to have a food security policy? If the stuff can be exported without any likelihood of supply restrictions, then why do you need to buy land? More to the point, why invest solely in land? Why not opt for investment in elevator capacity instead? After all, elevators are a better source of security than fields of grain. Grains can be kept for up to five years in elevators and are not subject to the vagaries of the weather there.

**Buying elevators would look more
convincing**

The last line of defence by the food security enthusiasts is to say that this is the way an oil supply agreement works, so why should food be different? We would concur with this view, to an extent. However, in our view, an energy supply contract does not

guarantee energy security. If you want evidence of that ask policymakers in the EU and Ukraine of how secure they see their energy supplies right now. More to the point, does a British company's shareholding in TNK-BP somehow guarantee a reliable source of energy to Britain? Of course it doesn't. The same is true for food.

So, why indulge in a land grab and not an elevator grab? Simple, it has less to do with food security issues and a lot more to do with the recycling of vast trade surpluses and sensible investment diversification. Oil-rich Gulf States and factory-rich China have enormous sums of money to invest and there are only so many US treasuries and British football clubs available. Food security sounds a lot better than saying that you are seeking a return through financial diversification.

However, where this policy does fit into a wider theme is in the notion that food production is shifting towards low-cost producers in much the same manner as manufacturing and IT services did.

The Middle East and Africa

Some investments seem to point towards a more efficient allocation of resources. Specifically, the Arab Authority for Agricultural Investment and Development (AAAID), a pan-Arab NGO based in Khartoum, is perhaps the type of body with which we will become more familiar in the years ahead.

The AAAID is owned by 15 pan-Arab governments with the government of Saudi Arabia owning some 22.5% of the organisation. The governments of Kuwait, UAE, Iraq and Sudan, own a further 60% of the body. In terms of direct equity the AAAID had invested roughly US\$500m by the end of 2007 while another US\$2bn had been raised by partners in debt and equity for various agricultural projects.

The AAAID has promoted joint ventures among its various partner governments and their agents. One transaction recently completed involved both the AAAID and one of its shareholder/partner governments (Abu Dhabi) investing in a 70,000 ha farm in the country.

The government of Sudan has not been slow to take advantage of this trend. According to a recent report in the *Financial Times*, the government's investment ministry is seeking to raise US\$1bn for as many as 17 projects involving 880,000ha. Likewise the government of Ethiopia is seeking partners for its activities. Although Ethiopia sits outside the Arab-bloc, its proximity to Saudi Arabia and its development potential are significant. According to government studies, the country has some 3.5m ha of irrigable land of which only 160,000 ha are currently farmed. It already has the biggest cattle population in Africa.

This positive trend is now beginning to be extended. In early September the Saudi Arabian Minister for Agriculture announced that the Kingdom would set up a US\$566m holding company to invest in overseas land and to enhance food security. In common with its Chinese peers, the agreement is a public-private joint venture. The focus of the venture will be on grains and staples which cannot be grown in Saudi Arabia, such as rice and sugar, or which require significant supplies of water, for example, wheat, corn and barley.

Since the early 1970s the Saudi Arabian government has engaged in a programme to develop its agriculture system. According to the World Bank, however, Saudi Arabia plans to terminate its domestic wheat production by 2016. Although we believe that food security is an overplayed and misinterpreted theme, at least we can say that a number of Middle Eastern governments are doing something right ie, they are promoting a free market in food. Growing food in Saudi Arabia does not imply a sensible allocation of resources; by shifting production to Sudan, it tells you that the theory of comparative advantage can work even in some of the most over-governed societies on Earth.

Investment diversification

Sudan is a key investment target

Ethiopia's 3.5 ha of land

Alternative sources of funding

The Chinese approach

In 2007, after a group of senior Chinese officials visited Africa, the Ministry of Agriculture (MoA) was charged with the establishment of an overseas farming plan. In 2008, a preliminary draft was prepared and submitted to the State Council. According to some news reports, policymakers agreed that the focus of any strategic initiatives would be towards edible oil producing crops, such as soybeans. In addition, the MoA would encourage State-Owned Enterprises (SOEs) to acquire farms overseas by providing incentives for international agricultural investments. The proposed incentives include preferential import tax policies for those ventures abroad which ship crops back to China.

China's international farming policy is expected to be structured along the following guidelines:

- Farms acquired will be located in countries which are on good terms with China, rich in resources, have a good labour force and are politically stable.
- Experienced, well-funded and large companies/SOEs with a decent talent pool will be encouraged to invest abroad.
- Companies will combine domestic resources and their experience in China with the foreign investment environment.

According to an official of the MoA's International Co-operation Department, an improved plan is still in draft form and specific policies to encourage overseas farming are yet to be issued. China's agriculture focus in Africa tends to be concentrated in Zambia and Sudan. These are looked at in more depth in the China section of this report.

China's plans to acquire land overseas began in 2007

Anchor 9. A new challenge for the middlemen?

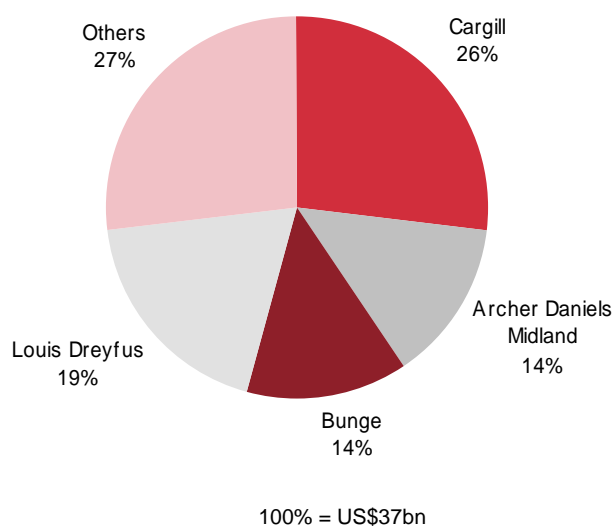
The questions asked during Cargill's first century aren't that much different from those confronting agricultural businesses today – Wayne Broehl

Read the history of Cargill and you get a sense not just of the power of the international grain trading companies but also how the strategic and operational issues they face never seem to change. A seeming constant is the lack of trust of the middleman. It was ever thus, and conventional wisdom would have it that these themes will recur again and again.

However, those long term themes of dominance and trust have been played out against a background wherein the agriculture sector has been highly fragmented while the position of grain traders has been one of power. The industry is dominated by the "ABCD quartet – Archer Daniels Midland (ADM), Bunge, Cargill, and Louis Dreyfus – which controls some 75% of the world's grain. As far back as 2003, before the last great bull run on grains began, the trading industry generated \$37bn in revenues.

As easy as ABCD

Exhibit 11. Estimated market share of key participants in the global grain trade (2003)



Note: 'Others' includes companies such as Glencore

Source: Boston Consulting Group

In recent years, global grain demand has risen sharply. The most obvious factor for this was the transfer of great swathes of the United States over to the production of corn for bio-fuels. On the supply side, inventories declined sharply and, at one point in 2008, were at a 35-year low. In any event, the grain traders made a killing. The traders are intimately involved in the shaping of the rules that govern today's food trade and are employing increasingly sophisticated systems and financial instruments to maintain their competitive edge.

Business strategies

Two of the largest grain traders – Cargill and Bunge – have reasonably vertically integrated businesses and are active in grain origination, storage and handling and the processing of grains into finished products. In contrast, some grain traders focus on exports and imports and operate between the processors. Louis Dreyfus and Glencore fall into this category. The following table gives a brief description of the business models adopted by some of the key companies in the industry.

Exhibit 12. Strategies of major grain trading companies

Company	Trading strategies
Bunge	<ul style="list-style-type: none"> ● Bunge adopts an integrated, but decentralised, approach towards its operations. Decision making is delegated to local operations but, as part of a global company with operations from farming to retail, these subsidiaries benefit economically and operationally from one another. ● The company purchases grains and oilseeds from farmers and intermediaries. It stores, blends and supplies these commodities and processed products to local and international customers. Its principal customers for grains are feed manufacturers, wheat and corn millers and oilseed processors, while the principal buyers of oilseed meal products are animal feed manufacturers and livestock, poultry and aquaculture producers who use these products as animal feedstock. Consequently, Bunge's agribusiness operations are dependent on global demand for meat products, primarily poultry and pork. ● The milling business of the company's food products segment provides processed wheat to food processors and bakeries. Sourcing oilseeds and grains from its agribusiness unit, and leveraging them through a common logistics system, Bunge improves operational efficiency.
Cargill	<ul style="list-style-type: none"> ● Cargill's grain trading division is vertically integrated. The company purchases grain directly from farmers or by bidding at various country elevators. The grain is then transported to its elevators, where it is sampled, graded and stored. From the elevators, the grains are shipped to international destinations or sold to local customers. ● The customers comprise feedlots, grain processing and milling companies. In addition, the company also retains a part of the stock to serve its animal feed and edible oil production facilities.
Glencore	<ul style="list-style-type: none"> ● Glencore's primary focus is on mineral and energy products. However, through its Agricultural Products division, Glencore originates and markets all the major grains and energy crops. These commodities are purchased from mills, regional merchants, silo companies, co-operatives and, in some countries, directly from farmers. This activity is supported by subsidiaries in storage, processing and handling infrastructure.
Louis Dreyfus	<ul style="list-style-type: none"> ● Louis Dreyfus transports grains between elevators. The company's grain trading activities include origination and aggregation for export to primary agricultural production centres and shipment, import and domestic distribution to local consumption markets throughout the world.

Source: Company data, Nomura

Fundamental strategic advantages

The emerging theme of scale in farming must surely be viewed as a threat to the trading houses? Surely an opportunity exists for a farming operator in Russia or Brazil to deal directly with customers and cut out the middleman? We know that small farmers are at a disadvantage when it comes to dealing with the asymmetric information flows of the leading grain trading companies, so surely the reverse is true when it comes to large scale farming groups?

Interesting thoughts, no doubt, but consider the advantages that the grain traders possess and how they might prove enduring:

- **Global footprint:** The leading trading firms have a global network of elevators and terminals located at numerous strategic locations worldwide, which provides them with an advantage over farm collectives and regional traders. Their global footprints enable them to exploit considerable arbitrage opportunities arising from regional pricing differentials. In addition, they have the ability to ensure a consistency of supply throughout the year and to originate crops across hemispheres and continents. In many cases, scale allows them to provide variety and the flexibility to ship grains to their customers using in-house networks, therefore avoiding delays commonly associated with public ports and transport networks. Consequently, the grain traders can reduce the natural volatility and cyclical nature of the agricultural sector which swings between strong and weak harvests and high and low inventories. The major trading companies also have a strong network of marketing and distribution offices in key markets.
- **Logistics:** Logistics and the supply chain play a critical role in the grain trading business. Decisions regarding when and where to buy, store, transport, process or sell the commodities, including changing locations or reducing processing capacity are vital for the success of any agribusiness firm. This is another area where the large grain traders beat regionally integrated farms given the traders' extensive infrastructure (ports, terminals, elevators and so on) along with co-ordinated sales and logistics. A notable example of this was when the Australian wheat crop failed in 2007. The grain traders were able to identify the problem before it happened and re-direct normal trade flows. At the same time, some companies made significant gains from the large uplift in prices. Global intelligence and logistics are irreplaceable.
- **Operations in complementary business activities:** In addition to agricultural commodities, the major grain traders have operations in other related businesses such as shipping and logistics (Cargill, Louis Dreyfus, Glencore), fertilisers (Bunge), processed food and food ingredients (Cargill, Bunge), energy trading (Cargill, Glencore, Louis Dreyfus) and metals and minerals production and distribution (Glencore, Louis Dreyfus). Grain traders draw considerable synergies through the integration of these activities with their grain trading businesses.
- **Association with suppliers and customers:** The leading firms work in close association with farmers and customers. They all acknowledge that the success of the farmers is crucial to their own success, and they offer consultation services to improve farm productivity. On the supply side, numerous grain traders create financial products – including structured trade finance and risk management – to help their commodity customers control expenses and manage risk. By staying close to suppliers as well as customers, the trading firms are involved in the entire supply chain and possess significant bargaining power.

While there is no doubt that the larger farm holding company will become more prominent in the years ahead, smallholders are still going to play a prominent role in the supply chain. The grain trading companies possess a range of advantages that would be difficult to replicate. For sure, competition is likely to increase but we make a fundamental strategic error if we think that the provision of a commodity product

Is there a threat from cutting out the middlemen?

Global network of elevators

Extensive infrastructure

Synergies

means there is no association with added value. Truth to say, the collective corporate memories of the grain trading houses stretch, in many cases, back to the 19th century and have survived wars, depressions and various other calamities. Expect them to continue to be dominant forces in the 21st century.

Anchor 10. Farms are going to get bigger – a lot bigger

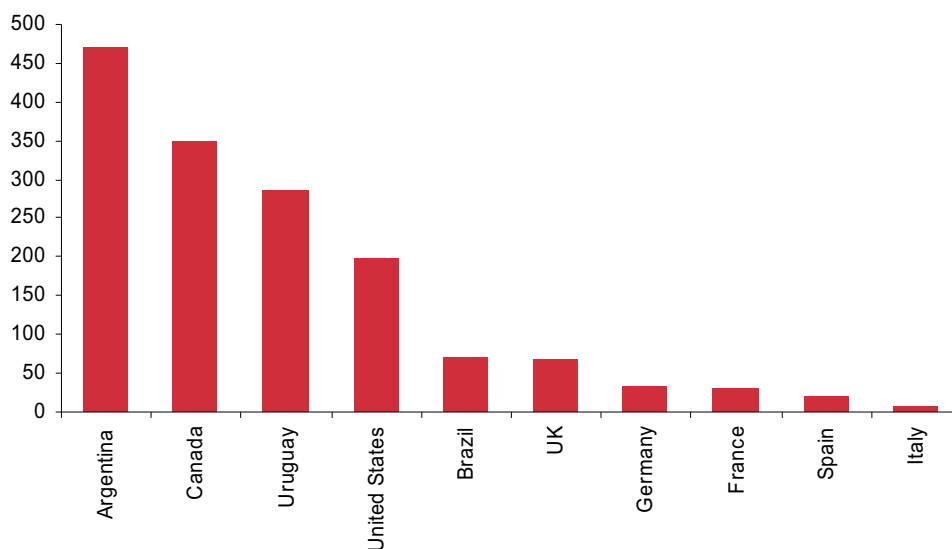
When the work was finished, the Craftsman kept wishing that there were someone to ponder the plan of so great a work, to love its beauty, and to wonder at its vastness – Giovanni Pico della Mirandola

The agriculture sector is dominated by smallholders. It matters not whether you are in Asia (average farm size of under 0.5 ha), Europe, (3.6 ha) or South America (4 ha), farms are small. Even if you focus on individual countries the average size of farms is still within human comprehension. For example, the average French and German farms are approximately 32 ha each. The biggest farms in Europe are to be found in the UK, where they average 70 ha each. Even the popular image of a dozen combine harvesters in formation rolling across North American prairies does not reflect the fact that these pieces of equipment are, more often than not, pooled resources and not individually owned by the farmers. In the US, the average farm is still under 200 ha while in Canada it averages almost 350 ha.

Of course, these figures are averages for their respective countries and there is a wide distribution curve. Take Argentina and Brazil, for example, where the average farm is 350 ha and 73 ha respectively. In Argentina, in the Pampas region alone there are almost 15,000 farms over 1,000 ha and some 84 of them are over 20,000 ha. In Brazil, among the country's 5.2m recognisable agricultural enterprises, there are almost 50,000 enterprises of over 1,000 ha.

Dominated by smallholders

Exhibit 13. Average farm size of selected countries (ha)



Source: USDA FAO, University of Sussex, RICS

If we look back over the course of the 19th and 20th centuries, we see that large farms were concentrated principally in Latin America and in the former USSR. The only part of the world outside the scope of this report where large farms have also existed is in the southern part of Africa. Where the industry was most advanced, small farms have been the norm eg, North America and Northwest Europe.

So what determines farm size? A leading influence in increasing the size of farms is what academics term concerted human intervention ie, political interference. This can range from the benign and semi-inept, such as the role of the EU in shaping policy, to the somewhat more malignant and wholly inept, such as the collectivisation schemes that plagued the communist world in the 20th century. Other notable examples include land grabs such as the British and French colonisation of Africa and the Caribbean, where indentured labour or some form of discrimination was the norm. Farms can also

The determinants of farm size

get smaller through concerted human intervention eg, land distribution programmes in Asia and Latin America.

One of the most common academic observations is the extent to which the original system established under colonialism persisted even after the passing of the *ancien régime*. This would explain some of the uneven land distribution and the enduring nature of Argentina's *haciendas* and Brazil's *latifúndios*. The same logic can probably be applied to the manner in which the former Soviet system has ended up being replicated in the modern era, at least in scale terms, in Kazakhstan, Russia and Ukraine. The increasing scale of farms is, to an extent, still a function of human intervention.

Various academic studies have highlighted that population pressure is a key determinant of farm size. Although this might sound like an overstatement of the obvious, it is worth noting that population growth implies greater intensity of land use. This, in turn, adds to pressure for security of land tenure. Look at that in a wider context. Much of our thesis is based on the view that the industry is undergoing a process of globalisation and this is caused, in part at least, by urbanisation and population pressures. Therefore, in a sense, the increasing scope and scale of farms is a supply response to these demand pressures.

Farms in Russia are getting larger. According to a recent report by the Institute for Agricultural Market Studies (IKAR) estimates of arable land controlled by 196 private agricultural holding companies is 11.5m ha, once all structures affiliated with state-owned companies are factored out. In other words, the average farm size of the top 196 agriculture companies in Russia is over 58,000 ha. Overall, it is estimated that as many as 32 companies control more than 100,000 ha each. Our own experience suggests that the biggest farms are over 600,000 ha each.

There are no direct data comparisons for the size of farms in Brazil and Argentina, but they are becoming more concentrated. Brazil's 2006 census results have not yet been published but indications are that the country has approximately 5.2m farms of different sizes and this is 600,000 fewer than was the case 20 years previously. Likewise in Argentina, the number of farms in the Pampas region under 1,000 ha declined from 174,000 in 1988 to 119,000 by 2002. Simultaneously, the number of farms over 1,000 ha rose from 14,000 to 15,000. The number of super farms ie, those over 20,000 ha rose from 72 to 84.

How do you define a "farm"?

Of course the definition of a farm needs to be addressed. Is Black Earth Farming a single farm of 325,000 ha ie, the size of Oxfordshire. Or are the farms defined by its 10 "clusters" which are anywhere between 5,000 and 50,000 ha. Does the ground need to be contiguous to qualify as a farming unit? And, if so, then the biggest farm within Black Earth Farming might be smaller than 5,000 ha. Or should it be defined according to the area served by units of equipment? In addition, the difference between arable and pasture farms should be considered. A 5,000 ha arable farm is big; a 5,000 ha moor land estate in the highlands of Scotland is a weekend retreat.

In the UK's annual agricultural censuses a farm is defined as such when it is cultivated as a single unit and is supplied by the same machinery, labour and supplies. Therefore, the number of farming enterprises is smaller than the actual number of recognised holdings.

There are several observations that we can draw from the increasing scale of farms. The first is that the larger farms become, the more they can invest in logistics, communications and information systems. Economies of scale increase, costs are driven down and a virtuous circle is created.

What is becoming increasingly apparent is that a two-tier system is developing. Farming will still likely be dominated by smallholders in the next decade but over that

Population pressures

As many as 32 groups farming over 100,000 ha in Russia

period many large-scale farming units will emerge and some of them will have formidable operational and financial firepower. As we noted earlier, it is perhaps a longer-term possibility that the grain traders begin their own process of vertical integration.

Anchor 11: The myth of Chinese consumption

It is a myth, not a mandate, a fable not a logic, and a symbol rather than a reason by which men are moved. – Irwin Edman

This scribbler spent almost a decade living and working in Asia. Nothing used to brighten his day quite like a Chinese superlative. Put China analysts and Chinese superlatives together and you got some woeful analysis. Nothing was better than the morning meeting where this scribbler and his colleagues would trot out the usual details of a stock and inevitably would tag it with the size and scale of China. It didn't matter whether it was vitamin C, hot rolled steel, mobile phones or plastic toys, China was big and that was enough to justify the positive rating. Never in the field of human dignity had so few been so obsessed by so many, or so it seemed.

The Chinese superlative

But it was stunningly lacking in originality. Manchester cotton merchants dreamt of the days when the Chinese would add an inch to their socks. That was in the 1820s when most Chinese probably didn't bother with cotton socks anyway. Only a few months ago, when this scribbler was avoiding a couple of days work and attending an agriculture conference, he heard the moderator start a session off with the phrase "If every Chinese just ate an extra egg each day, the entire Australian wheat output would be required to feed the extra chickens needed." Times may change, but clichés are constant, it would seem.

Clichés are constant

Just as the agriculture sector is beginning to catch up with its industrial and service peers, it would appear that the "China is really, really big" theme is being played out in the agriculture sector as it has been in so many others. Much is made of the fact that China is apparently doing three things that will have a dramatic impact on our agricultural industries in the years ahead. The first is that they are consuming more protein as they get richer. The second is that their agricultural land is disappearing under a concrete jungle - unrelenting suburbs, factories and motorways. The third is that the rest of the landscape is being wrecked by over-fertilisation, the poisoning of aquifers and so on.

It is the first of these notions that has captured the public imagination and, once you start to dissect it, you begin to see just how much imagination there is in the analysis. For sure, China is consuming more protein, but what we seem to ignore is the corresponding decline in grain use as a primary source of nutrition. Consider the table below.

Exhibit 14. Changing consumption patterns in China (kg/pa)

	1986	2006	Net change	Grain to protein conversion ratio	Net increase in grain requirements
Urban per capita consumption of pork, beef and mutton	21.6	23.8	2.2	6	13.2
Urban per capita consumption of poultry	3.7	8.3	4.6	3	13.8
Increase in grain requirements to satisfy additional urban protein needs					27
Urban per capita grain consumption	137.9	75.9	-62		
Net change in urban per capita demand for grain					-35
Rural per capita consumption of pork, beef and mutton	11.8	17	5.2	6	31.2
Rural per capita consumption of poultry	1.1	3.5	2.4	3	7.2
Increase in grain requirements to satisfy additional rural protein needs					38.4
Rural per capita grain consumption	259.3	205.6	-53.7		
Net change in rural per capita demand for grain					-15.3

Source: FAO, Nomura estimates

What the basic arithmetic above tells you is that while protein needs changed dramatically between 1986 and 2006, grain demand fell equally dramatically over the same period. On a net basis, the average urban resident required 35kg less grain in

Declining grain consumption

2006 than he or she did in 1986. The average rural resident's consumption declined over the same period by 15kg pa.

The optimist/pessimist (depending on your point-of-view) could argue that this doesn't tell the full story: that it doesn't take into account the rising population, the continuing rise of protein needs, higher calorific intake and, finally, the continuous migration of rural residents towards the cities.

However, for a start, population growth in China in the next two decades will be pedestrian at best, not just because of the one-child policy introduced in the late-1970s but also because of those rising incomes which are supposed to generate additional demand for food. An annual 1% increase in the population between now and 2050 is hardly going to place a strain on global food needs. Also, caloric intake among Chinese urban residents is already on a parallel with that of richer Asian peers, so it is not as if we should see an increase in per capita terms. Note also that overall pork consumption in the last four years has actually declined in China. Part of this may be attributable to the outbreak of PRSS in 2005. However, the long-term effects of that should have lifted by now. In other words, we may be reaching natural per capita limits.

A model of rural-urban migration

On the subject of rural-urban migration, we can easily dispel the notion that China's grain requirements will increase substantially in the years ahead. To prove the point let us build a model based on ludicrously extreme assumptions. Let us assume that (1) China's entire rural population of 745m was urbanised overnight (2) that they began to consume protein products in the same quantity as their existing urban peers and (3) crucially – and most contentiously – that they did not reduce their average primary grain consumption at all (when all the evidence suggests that it would decline by almost 130kg per person pa).

An extreme model with ordinary outcomes

Exhibit 15. Implied grain needs if China was fully urbanised

Total population (m)	1,322		
Urban population (m)	577		
Rural population (m)	745		
Urban pork, beef, mutton consumption per capita (kg/pa)	23.8	Urban poultry consumption per capita (kg/pa)	8.3
Rural pork, beef, mutton consumption per capita (kg/pa)	17.0	Rural poultry consumption per capita (kg/pa)	3.5
Implied net increase per capita in pork, beef, mutton consumption (kg/pa)	6.8	Implied net increase per capita in poultry consumption (kg/pa)	4.8
Conversion ratio	6	Conversion ratio	3
Grains required for additional pork, beef and mutton needs per capita (kg/pa)	40.8	Grains required for additional poultry needs per capita (kg/pa)	14.4
Implied net increase in grains (m tons) by sector	30.4		10.7
Implied total net grains required (m tons)			41.1
Less: implied decline in grains as primary source of nutrition per capita (kg/pa)			129.7
Implied total net grains no longer consumed (m tons)			96.8

Source: Nomura estimates

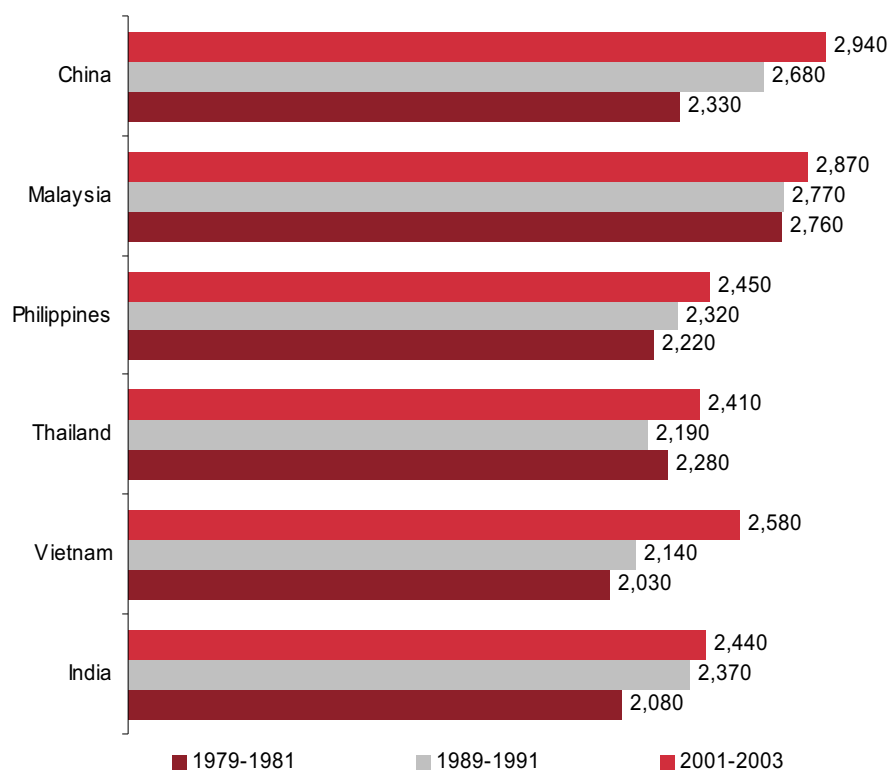
What then? Demand for grains in China would rise by about 40m tons. In other words, the extra demand could be met by the output of 8m ha of land. 8m ha of land is 20% of the farmland that went out of production in Russia in the early 1990s after the Gaidar reforms were implemented. It is 4% of the spare land that Brazil could bring into production. It is 4% of the EU's farmland. It is under 7% of China's cultivated arable

land. It is responsible for 2% of global cereal output. It is a number of such insignificance that it can hardly belong to China.

If we now take into account the other side of the equation ie, that for every Chinese moving to the city the per capita consumption of grains would decline from approximately 205kg pa to 75kg pa, then the additional 40m tons of grains required to produce all the extra protein consumed would be overshadowed by the 90m tons of grains that would no longer be consumed,

Crucially, in terms of per-capita calorie intake, China is similar to other developed Asian countries such as Malaysia (2,870 Kcal) and not far behind one of the most developed Chinese societies of all, Singapore (approximately 3,200 Kcal). It is also now ahead of Japan (2,770 Kcal). At the beginning of the economic reform period in 1978, calorie consumption patterns in China were similar to those observed in other developing countries across the region including the Philippines, Thailand and, to a lesser extent, India and Vietnam. In other words, the growing consumption theme in China happened in the 1980s and 1990s. It will not accelerate.

Exhibit 16. Average daily calorie intake per capita



Source: WHO, FAO

Likewise with the other two great myths regarding China: the scale of erosion and land loss. These issues are looked at in greater detail in the China section of this report. Suffice to say, at this stage, China's problems in these areas are more to do with bad economics than bad farming. Bring in effective water pricing and you would see this valuable resource being used much more efficiently. A degree of environmental protection to protect hillsides from erosion and – heaven forbid – the introduction of enforceable property rights would probably rid China of most of its agricultural problems. The fact is that it is agricultural distortions and a lack of transparency in property rights which wrecks an agricultural landscape. Deal with these issues in a non-ideological manner and it, perhaps, would allow us to dispel a few more Chinese superlatives.

More bad economics

Anchor 12. Leasing versus ownership and the case for both

If you take money out of your left pocket and put it in your right pocket, you're no richer – Merton Miller

As agricultural investment increases, the leasing versus ownership decision will become more prominent in the years ahead. The decision to lease or to own assets is a complex one and is based on many factors. The benefits of leasing are straightforward enough: smaller down payments, more cash available for working capital purposes, tax savings on the rental payments and freedom from obsolescence of assets.

Obsolescence of assets

This last issue could become increasingly important in the years ahead. One of our observations is that, as the capital disbursed across the sector increases, so too does the level of innovation. Consequently, systems, capital inputs and equipment are probably more prone to change now than was the case in recent decades. However, we should distinguish here between certain types of assets. Much of the innovation we are seeing is in software and management systems. So, in other words, the productivity gains and subsequent “obsolescence” are made by systems which are, relatively speaking, inexpensive to replace or upgrade.

An example of this would be the information systems which are increasingly being implemented on large-scale farms. Three years ago you would have been hard pressed to find a farmer who thought it possible to manage an arable farm of 100,000 ha. Now many will talk of 1m ha as being a manageable proposition. Meanwhile, innovation in plant and equipment is towards the cheaper end of the scale. For example, the advent of polypropylene tents to house farm output is something that is (1) a cheaper alternative to elevators and (2) unlikely to make much difference to the overall cost structure whether leased or owned.

Simultaneously, the risk of obsolescence in high-cost large vehicles, such as combine harvesters, although increasing, is unlikely to be dramatic. That is, obsolescence is likely to take place among assets that are relatively speaking cheap to upgrade or replace, while obsolescence is unlikely to be a feature of assets that are already expensive. What we can say with a greater degree of certainty is that the rate of change is accelerating.

Working capital availability

One of the issues facing agriculture companies – especially those of an industrial scale – is the additional costs that the ownership decision implies. For example, consider a typical farm in southwest Russia. On a per ha basis, land will cost US\$500, repair costs will typically amount to US\$500 and a further US\$500 will get you the equipment required to work the land. The land alone therefore accounts for 33% of the start up costs.

Let us then assume a planting decision which led to free cash flow of US\$250/ha in a couple of years (and assume US\$25 pa rental costs). The notional 22.5% return on investment is significantly higher than the 17% return that would be earned if the land was owned. Therefore, in an industry where the availability of working capital has been a consistent constraint on the development of the sector, the leasing decision would have its uses.

Land appreciation

Obviously the capacity to secure debt against the value of the land is a significant attraction of the ownership decision. Given the lack of investment in the sector over the years, the ability to access capital markets is crucial to its future development. There is

Innovation is accelerating

You cannot gear farms too much

also a commonly held view that “land always appreciates in value.” Over the long term this might be the case, however, as we argued in an earlier section, there will be times when land is likely to contract in value. Of equal importance is the fact that agricultural enterprises cannot be excessively geared – their revenues and cash flows are simply too irregular and volatile. Food may be a staple but it is not like the utilities sector.

In common with the industrial and services sectors, the agriculture sector faces challenges over the decision whether to own or to lease assets. The fact that this theme is increasingly likely to come to the fore in the years ahead is perhaps an indication of how the sector is becoming ever more concentrated and industrialised – more normalised in many ways.

Our view

One might think that the internationalisation of the agriculture sector and the shift of production to key emerging markets would benefit Argentina. This is not a given, in our view. Populism runs deep in Argentina and the agriculture sector is viewed not so much as a strategic industry to be nurtured but as a business to be ruthlessly plundered by an opportunistic government. This government has, early in its term, become a lame duck administration and that might be the best thing that happens to the local agriculture sector. Left to its own devices it might thrive.

Anchor themes

- ⚓ Argentina, in common with Venezuela, has become a “no-go” area for investors in recent years. A thriving agriculture sector might be the way to win back international investors. Unfortunately, the government has done everything in its powers to scare them off. Squandering such a rich inheritance is unforgivable. Whether the sector can recover depends on the extent to which the current administration remains holed up in the Casa Rosada and abandons its tax-pillaging plans for the sector.
- ⚓ Argentina’s farmers face the same litany of challenges as other countries – lack of access to capital, inadequate infrastructure and a volatile macroeconomic framework. However, the country’s topography and geography offer vast potential. Moreover, the country does have a culture in large-scale farming which, although no where near Brazil’s status, still offers a solid foundation for the future. And for all the faults and previous sins of its government, property rights in Argentina are reasonably enforceable.

The best of times, the worst of times

① The government lost its recent battle with farmers over tax hikes

When Julio Cobos, the Vice-President, voted against his own government in the Senate on the adoption of punitive taxes for the agriculture sector, it ensured the measures failed to pass into law. As a result, profitability is likely to be restored across the agriculture sector.

② However, economic problems are worsening

The current administration needs to service debt equal to 55% of GDP. A budget deficit of US\$2.5bn needs to be funded and, given what happened in 2002 to bondholders, there is no rush by international banks to finance it. So, the government has to rely on the sale of bonds to none other than ex-paratrooper and Sunday morning TV broadcaster, Hugo Chávez, who also doubles as President of Venezuela.

③ Another collapse in the exchange rate might not work

The collapse of the Convertibility System in late-2001, like the Brazilian currency devaluation in 1998, provided the platform for an export-led boom in agricultural commodities. Unfortunately, yet another devaluation would only accentuate the country’s lack of access to capital rather than alleviating it.

④ The natural advantages are evident

Argentina farms some 126m of land, 34m of which is cultivated for crops. It exported some US\$30bn of agricultural and food output in 2007. Its pooling system is cost effective and reduces the capex burden. If only the government could be kept at bay, Argentina’s agriculture sector would surely thrive.

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The best of times, the worst of times

If you live long enough, you will see that every victory turns into a defeat – Simone de Beauvoir

If God was a farmer He would surely have created Argentina. To avoid accusations of crafting some kind of agricultural heaven on earth at least He had the good sense to create Argentinean governments. A century ago, Argentina was one of the most global of economies. Had the G-8 existed in 1908, Argentina would have been a leading member. Much of this success was built upon an agriculture boom and driven by the great wave of globalisation that swept through the latter half of the 19th century. Although never a colony, Argentina was a major agriculture supplier to the British Empire.

The original agricultural superpower

Argentina's rapid decline as an agricultural superpower was assured by a series of external and internal forces. The external forces included the lengthy bear market in agricultural commodities that dominated the post-Second World War era as well as the emergence of protectionist measures and trading blocs such as the EU. Internal forces were equally malignant: the agriculture sector in Argentina in the 1960-70s seemed to be viewed as little more than a source of government revenue to subsidise an import substitution programme for other nascent industrial sectors as well as finance various pet projects, white elephants and the occasional war.

Rapid decline in country's status

Consequently, the agriculture sector became a shadow of its former self. In the 1990s the ushering in of civilian government brought about two ages which, if not quite golden, at least represented a major improvement over the situation which had existed in previous decades. The Menem administration, which was in office between 1989 and 1999, implemented a significant programme of liberalisation which had a hugely positive impact on the sector. Unfortunately, an ill-conceived currency arrangement, economic mismanagement and some dreadful bad luck had a devastating effect over the period 1998-2002.

However, the currency devaluation that came with this financial calamity, coupled with a boom in demand for agricultural products, provided an enormous opportunity for Argentina. Exports boomed, the currency strengthened and Argentina seemed to be back on track long before conventional wisdom would have thought possible.

However, as if to prove the point that Argentina is capable of snatching defeat from the jaws of victory, the current administration under President Cristina Fernández de Kirchner imposed a punitive taxation system on the agriculture sector by diktat in 1Q 2008. Thankfully, the administration's political strategy was appallingly mapped out and the measures were rejected by the Senate despite the President's party having a majority in both houses of parliament. Her vice-president voted down the measures winning a majority by a single vote.

A lame duck administration might be the best thing that can happen to the Argentinean economy at this point. Given the favourable international environment and the fact that the government and its ridiculous agenda have been pushed into the background, it could be the case that the country's farmers restore their position in world markets. History might repeat itself and that is not always negative.

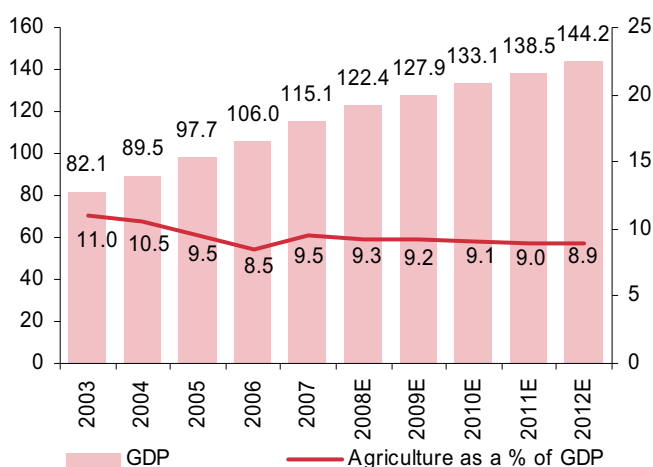
Overview

Agriculture has been critically important throughout Argentina's history. Deep soils, a temperate climate, adequate rainfall and decent access to international sea routes provide Argentina with an exceptional set of endowments to engage in both the export and processing of basic foodstuffs. The collapse of the flawed Convertibility System at the tail end of 2001 had one broad benefit in that it made Argentina's export sector competitive again. In 2004, agriculture and associated industries accounted for approximately 58% (US\$13bn) of the country's entire export base, of which some 39% was from primary products, while 61% came from processed products. Simultaneously, agriculture remains a big employer in Argentina, with 9-13% of the population employed in the sector over the past three decades.

Agriculture in Argentina has undergone unprecedented change in the past 15 years as the country has begun to embrace a greater degree of technological improvement and greater capital intensity. This, coupled with a shift towards consolidation of land holdings and a favourable international backdrop, has broadly been a positive experience for the economy as a whole. The sector generated 9.5% of Argentina's GDP in 2007 with crops accounting for 63% of this, livestock 31% and others 6%. In terms of economic value added in the goods sectors, agriculture accounted for some 22% of the total in 2007. However, impressive as these statistics may appear, it masks the fact that agriculture's contribution to GDP declined from 11% in 2003, due to rapid growth in the services sector. According to the IMF, the World Bank and the EIU, agriculture as a percentage of GDP will remain around the 9% mark over the next five years.

Structural change

**Exhibit 17. LHS – real GDP (US\$bn) (2003-2012E)/
RHS – agriculture GDP as a % of total GDP (%)**

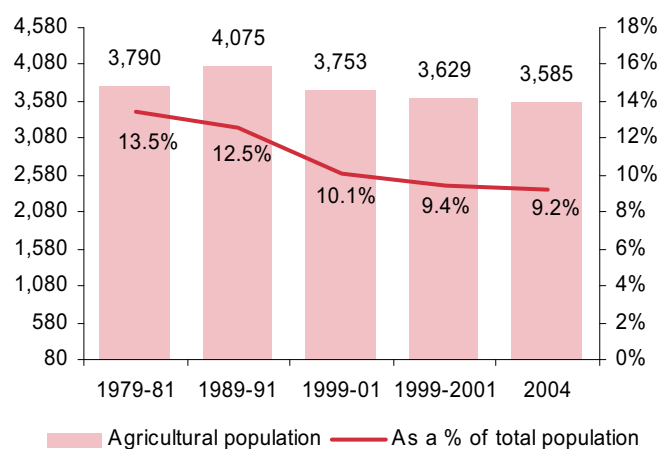


Source: IMF, World Bank, EIU

Argentina may be one of the world's leading agriculture producers and exporters. However, it took a catastrophic collapse in the country's exchange rate mechanism and wider financial system to ensure that the technological and organisational progress made in the 1990s fed into higher exports. Ugly the collapse may have been but it did ensure that the boom in agricultural exports benefited not just the traditional bulk commodity exporters of the Pampas but also high-value exporters of fruits, vegetables and wine from the regional economies. Today, Argentina is the world's leading exporter of soy oil and meal and ranks as a top five exporter for wheat and beef. The total agricultural land area of Argentina is approximately 125m ha of which 27% (34m) is accounted for by permanent crops and arable land.

Overall, the arable focus in Argentina remains reasonably broad with cereals, oil grains and seeds, sugar, fruit, wine, tea, tobacco and cotton providing the main crop groups. Key products include soybean and soybean products, wheat, livestock, maize, grapes

**Exhibit 18. LHS – agricultural population ('000)/
RHS – as % of total population (%) (1979-2004)**



Source: FAO

The best of results from the worst of times

and sunflower seeds. However, in a country sensitive to price signals, soybeans alone account for close to half of total cropped land in Argentina.

Traditionally, livestock has played a major role in the agriculture sector to the extent that Argentinean livestock has become almost a cliché. However, somewhat surprisingly, the market – in terms of output and exports – is characterised by long-term stagnation. Between 1961 and 2002, livestock land productivity grew only 50% in Argentina compared to 150% in Chile and 300% in Brazil.

There are three broad reasons for this relative underperformance: the first is the protectionist measures imposed by northern hemisphere trading blocs such as the EU, which has steadily eroded Argentina's position within global agriculture markets. Second, Argentinean soil is capable of supporting competing businesses. Therefore, Argentinean farmers' are both willing and able to follow price signals. So, if grains and soybeans provide higher yields than livestock, then the former will be planted and the latter will be pushed out. Third, governance problems in the beef chain have hardly promoted the livestock industry. This is an issue which has come to the fore during the recent political turmoil where inept government licensing has ensured that the regularity of livestock shipments has been compromised. Consequently many buyers, to ensure improved quality shipments and avoid the worst malpractices of the Fernandez administration, have opted to seek out alternative suppliers from neighbouring Uruguay and Brazil.

Nevertheless, despite competing claims on the land and the sheer ineptitude of a government straight out of populist central casting, Argentina remains the world's fifth largest producer and exporter of livestock. It is also the world's fifth largest consumer of livestock which, given a population of only 40m, is quite a considerable achievement.

Ultimately, the country's agriculture sector is at a crossroads. Efficiencies have been made, a modernised and cheaper marketing system is in place and yet, major worries remain. The most obvious problem is that political populism is never far from the surface in Argentina. The ban on wheat exports in late 2007 was a classic of its genre. Intended as a way of combating domestic inflationary pressures, the law of unintended consequences ensured that it reduced the supply of wheat as farmers immediately switched to soybeans. The government then decided to plug fiscal gaps with higher soybean taxes – at which stage strikes erupted across the country. Even with the strike at an end the government is still seeking to raise additional revenues by backdating agriculture taxes.

The other major worry is that Argentina's position as a major source of supply is based as much on periodic exchange rate devaluations as it is on supply side improvements and value-added enhancements. In an ideal world, Argentina would offer tax breaks to processing companies to set up operation in Argentina thus ensuring that the country captured a greater proportion of value added. Unfortunately, Argentina is still dependent on the export of basic foodstuffs when it should be taking advantage of a unique environment to push its way up the value chain more rapidly.

And yet, despite these setbacks – and these are just a few lowlights – the country is well positioned to take advantage of a global boom for low-cost agriculture. Between 1900 and 1940 Argentina was consistently one of the world's richest nations. Whether or not it has the appetite to restore some of that lost glory is a more difficult question to answer than it should be.

The long-term decline of livestock

Protectionism, price signals, politics

Livestock remains a major business

At a crossroads

An agricultural "Dutch disease" in the making?

Does Argentina have the appetite for success?

Land use

The total land area of Argentina is 274m ha, of which approximately 46% (126m) is accounted for by agricultural lands (ie, croplands, and permanent pastures and grasslands). About 27% (34m ha) of this agricultural land is covered by arable and permanent crop land, with the remaining 73% (92m ha) covered by permanent meadows and pasture. Such large agricultural lands, ideal climatic conditions and soil resources in Argentina have been the pillars for the development of the agricultural sector. Agricultural land in Argentina is divided into five categories: the Pampas, Northeast, Northwest, Cuyo and Patagonia.

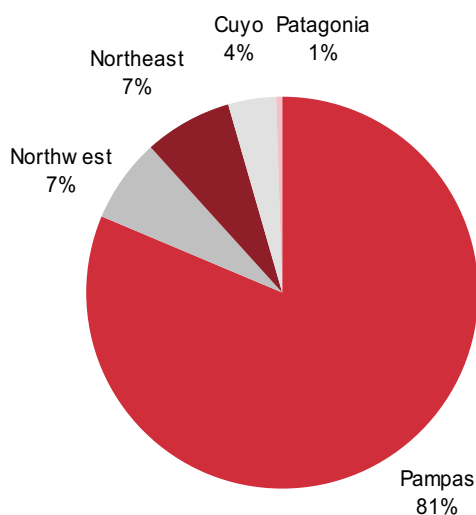
The Pampas, the principal agricultural region of Argentina, consists of the humid pampas, one of the world's greatest reaches of arable land. Located in southern Mesopotamia, and central and north of the province of Buenos Aires, it accounts for approximately 81% of the total planted surface area in Argentina and a similar percentage of the country's agriculture based exports. This region includes the three most important provinces of the country, Buenos Aires, Cordoba and Santa Fe, and witnesses an annual rainfall varying from 800mm in the west to 1,000mm in the east. The main crops produced in the region are soybeans, wheat and corn.

While the Pampas has dominated Argentinean agricultural growth, other regions beyond the Pampas have started to take a lead in agriculture-based manufacturing. Citrus fruit, tobacco, cotton and sugarcane are cultivated outside the Pampas.

126m ha of agricultural land, 34m ha of cropland

The Pampas

Exhibit 19. Crop area by region (2002)



Source: World Bank, USDA

The primary crops of the Northwest region include sugarcane, soybeans and citrus. Sugarcane is cultivated primarily in Tucuman, Jujuy and Salta. The total area under sugarcane cultivation in the region stood at 0.27m ha (11% of total cropped land in the region) with most production consumed internally.

Sugarcane in Northwest

Major traditional agricultural activities in the Northeast region include production of yerba mate, cotton and tea, primarily in the provinces of Corrientes and Misiones. Soybean has made important advances, especially into the province of Chaco, and has become the major crop, currently representing some 35% of total cropland in the region.

Soybean inroads in Northeast

The Cuyo region comprises three provinces, Mendoza, San Juan and San Luis. Mendoza and San Juan depend almost entirely on irrigation (91.7% and 91.5% irrigated respectively) for agriculture, while in San Luis, irrigation is minimal (0.2% of cropland). Mendoza and San Juan are known for their vineyards, and constitute more than 70% of Argentina's grape cultivation. San Luis, on the other hand, is a major producer of grains and oilseeds.

Vineyards in Cuyo

Exhibit 20. Agricultural regions of Argentina (2002)

	Northeast	Northwest	Cuyo	Patagonia	Pampas
Provinces	Corrientes, Chaco, Formosa, Misiones	Catamarca, Jujuy, Salta, Santiago del Estero, Tucumán, La Rioja	Mendoza, San Juan, San Luis	Santa Cruz, Chubut, Neuquen, Rio Negro, Tierra del Fuego	Buenos Aires, La Pampa, Cordoba, Santa Fe, Entre Rios
Major crops (non-irrigated)	Soy, yerba mate, cotton, sunflower, wheat	Soy, corn, sugarcane, beans	Perennial forage, annual forage, corn, sorghum, soy	Planted forest, perennial forage, annual crops	Soy, wheat, corn, sunflower
Major crops (irrigated)	Rice, horticulture (garlic, onion, lettuce, tomato), citrus	Industrial crops (sugarcane, tobacco), fruits (citrus), fodder	Fruits (grapes, olives, plums, apricot), horticulture, fodder	Fruits (apples, pears), fodder, horticulture	Grains, fodder, horticulture (garlic, onion, lettuce, tomato), fruits (citrus)
Major exports	Rice, cotton, soy, citrus	Citrus, fruits, olive and olive oil, onion, garlic	Grapes and wine, plums, olives and olive oil, onions, garlic	Apples, pears, berries, livestock (ovine), grapes	Wheat, soy, sunflowers, corn livestock
Total agricultural land (m ha)	11.9	41.2	5.6	7.0	59.8
Total cropland (m ha)	2.3	2.4	1.3	0.2	27.3
Crops as a % of agricultural land	19%	6%	23%	3%	46%
Crop split	Crop 55% Forage 14% Other 31%	Crop 74% Forage 23% Other 3%	Crop 39% Forage 56% Other 5%	Crop 21% Forage 48% Other 31%	Crop 61% Forage 37% Other 2%
Cropland irrigated (%)	6	18	25	40	3

Source: The World Bank, Ministry of Agriculture

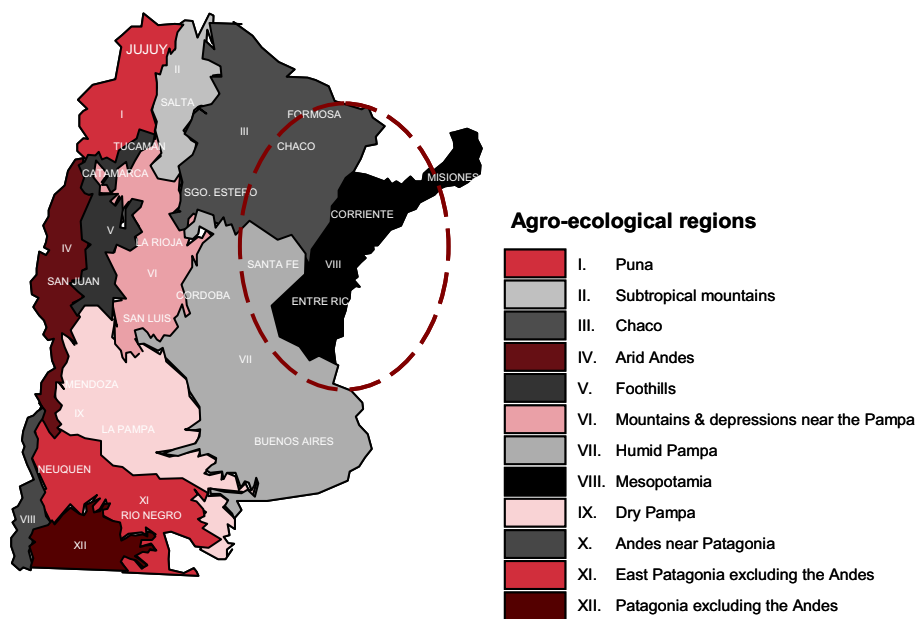
The Patagonia region concentrates the largest valleys with pears and apples. About 40% of total cropland in Patagonia is irrigated. Rio Negro province has the largest irrigated area (55%), followed by Neuquen and Santa Cruz, with 26% and 27% of total farm land irrigated respectively. Fruits are the main irrigated crop in Neuquen and Rio Negro, with 67% of total irrigated farm land in each province.

Exhibit 21. Land use by province (2002)

	Total agricultural land (m ha)	Cropland (m ha)	Crops as % of total farm land	Crops as % of total cropland	Forage as % of total cropland	Other as % of total cropland
Buenos Aires	21.5	11.1	52	60	38	2
Córdoba	9.5	7.4	78	63	36	1
Santa Fe	9.1	4.4	49	74	25	1
La Pampa	5.9	2.6	44	34	66	0
Entre Ríos	4.4	1.8	40	70	23	7
Chaco	3.1	0.9	31	84	15	1
San Luis	2.4	0.9	39	24	75	1
Santiago del Estero	1.7	0.9	56	67	31	2
Misiones	0.9	0.7	75	36	11	53
Salta	1.2	0.6	54	78	19	3
Tucumán	0.6	0.5	81	91	6	3
Corrientes	5.9	0.5	8	26	11	63
Mendoza	3.8	0.3	7	77	7	16
Catamarca	0.5	0.2	31	46	50	4
Jujuy	0.6	0.1	21	78	5	17
Formosa	2.5	0.1	5	29	62	9
Río Negro	13.6	0.1	1	45	41	15
San Juan	0.3	0.1	27	79	5	15
La Rioja	0.2	0.1	37	60	37	4
Neuquén	1.5	0.5	3	19	11	70
Chubut	17.6	0.1	na	4	44	51
Santa Cruz	18.0	0.0	na	4	94	1
Tierra del Fuego	0.7	0.0	na	-	97	-

Source: Ministry of Agriculture

Exhibit 22. Agricultural and ecological regions



Source: UN

Evolution of the agriculture sector

From Perón to Menem

Before 1930, Argentina enjoyed a long period of agricultural expansion that benefited from heavy investment in farming and in supporting infrastructure, such as railways, slaughter houses and ports. The period was characterised by the development of private markets for land and commodities. However, this long agricultural boom ended with the collapse of world agricultural prices during the Great Depression and the onset of the Second World War.

In the post-war era, Argentina began to implement a policy of import substitution. Promotion of the industrial sector came at the expense of the agriculture sector which began to feel the effects of excessive taxation and over regulation. Overvalued exchange rates, the introduction of public marketing boards and export duties on grains and beef all combined to reduce the competitiveness of the agriculture sector. The decline in production in 1950-52 was over 20% pa. To put this into perspective, this peacetime decline was similar to the rate of decline experienced in 1940-42 when large tracts of the world were wholly engaged in war. The effects of these early market interventions set a standard from which Argentina was unable to recover in the following decades. Before 1930, Argentina had higher yields than the US. Between 1975 and 1984 Argentina struggled to double yields while the US tripled its yields.

If truth be told, in the decades that followed the Second World War, when Argentina was subject to the economic ineptitude that frequently characterises military government, the agriculture sector was pillaged by the state. Unfortunately, by the early-1980s government policies transferred over 60% of agricultural GDP to other sectors, including consumers and the government. This staggering distortion not only hindered the development of the agriculture sector, it also curtailed economic growth dramatically. As a harbinger of things to come, and offering proof that political interference comes with a heavy price attached, farm gate prices of cereals and oilseeds nearly halved over the 1980-1985 period with these policies, while output fell from a possible 60m tons pa to 34m tons.

The government agenda

In common with most governments, various administrations in Argentina have played a significant role in shaping the country's agriculture sector. In the 1960s, in common with the Keynesian consensus of the times, policy enforcement tended to focus on promoting exports, substituting imports, stimulating production and so on. The results, to say the least, were mixed. The institutional arrangements, however, designed to facilitate the development of the sector and which produced these results, remained largely in place. As one might expect, the export of agricultural commodities, which dominates the government's tax take from the sector, has been a primary area of focus for the government.

The government's repeated attempts to adopt import substitution strategies were designed to promote economic growth and limit foreign debt and the use of foreign exchange. As a direct consequence, these programmes penalised the agricultural sector by forcing producers to rely on inefficient and overpriced domestic input industries. Meanwhile, Argentina's access to international agricultural markets became increasingly limited. Three principal policy instruments were used to support the import substitution strategy.

- Tariffs and quantitative restrictions were applied on imported agricultural inputs to encourage the sale of domestically produced inputs. Before 1977, import tariffs on fertilisers and agricultural chemicals were 60% and 65%, respectively.

The long summer

The long winter

Farmers and soldiers – rarely a positive combination

A history of interference and lost opportunities

Import substitution

- Export taxes on grains and oilseeds were introduced in 1982 to help pay for the Falklands War. These taxes were expanded to most agricultural and agri-industrial products to ensure abundant, cheap supplies for domestic industries.
- Exchange rate regimes were enforced which failed to curb inflation and resulted in high interest rates, real exchange rate appreciation and an overvalued currency. Argentina's currency overvaluation exceeded 100% throughout most of the 1980s and into the 1990s, burdening the agricultural sector by reducing demand and lowering the value of exported products.

The emphasis on self-sufficiency has a long and shabby history, and not just in Argentina. Prior to the 1990s the government imposed tariffs and import restrictions as well as high taxes on exports, which led, unsurprisingly to lower agricultural output and fewer exports. You might have thought that successive Argentinean governments would have gained some valuable insights early on in this process. But, no, flawed government programme followed flawed government programme to the extent that you wonder whether it was pathological.

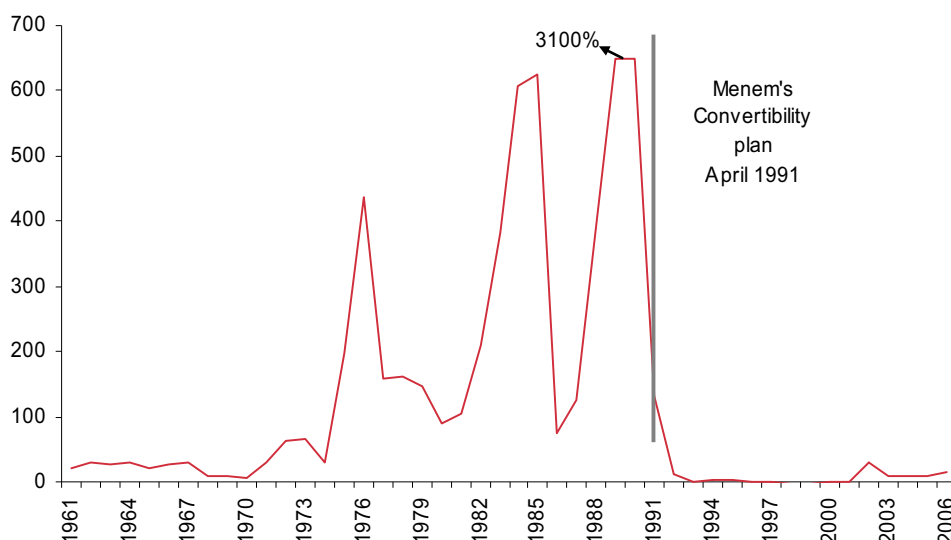
Prior to the reforms of the 1990s, Argentina's agricultural sector was hobbled by an unstable macroeconomic environment characterised by high inflation, volatile exchange rates, low savings and investment and a heavy external debt burden. Seven economic programmes undertaken by various governments between 1960 and 1980 did not alleviate these problems and were broadly ineffective.

By the late 1980s, a growing list of economic problems was compounded by a slump in international commodity prices, global recession, and the explosion of the world debt crisis. Between 1980 and 1985, prices of cereals and oilseeds nearly halved and production declined from a potential 60m tons pa to 34m tons. Export taxes and import tariffs on agricultural products continued to distort production incentives and strangle agricultural productivity growth. Just before the Menem era began in 1989, the inflation rate touched 3,100%.

Populism and all its attendant horrors

The long-term bear market in commodities

Exhibit 23. Argentina inflation, GDP deflator (%) (1961-2007)



Source: FAO

Note : Inflation has been capped at 650%

The age of reform - 1991-2001

Between 1991 and 2001 Argentina underwent a significant period of reform. Liberalisation, privatisation and dollarisation (under the auspices of the ill-fated Convertibility System) became familiar themes and the trading bloc MERCOSUR emerged as a southern cone version of NAFTA.

The Convertibility System

In April 1991, the newly elected Menem government unveiled the Convertibility System which, despite its flaws, heralded a positive era for the agriculture sector. The sector expanded rapidly driven by the elimination of quantitative import restrictions, the lowering of import taxes on fertilisers, herbicides, pesticides, machinery, and irrigation equipment as well as the elimination of export taxes and other distorting taxes on fuels and commercial and financial transactions. The transfer of resources from the agriculture sector to more favoured industrial sectors was reversed. Also, this era saw the removal of inefficiencies and monopoly profits in trade channels. Some of the key changes in the agricultural sector between 1991 and 1997 included.

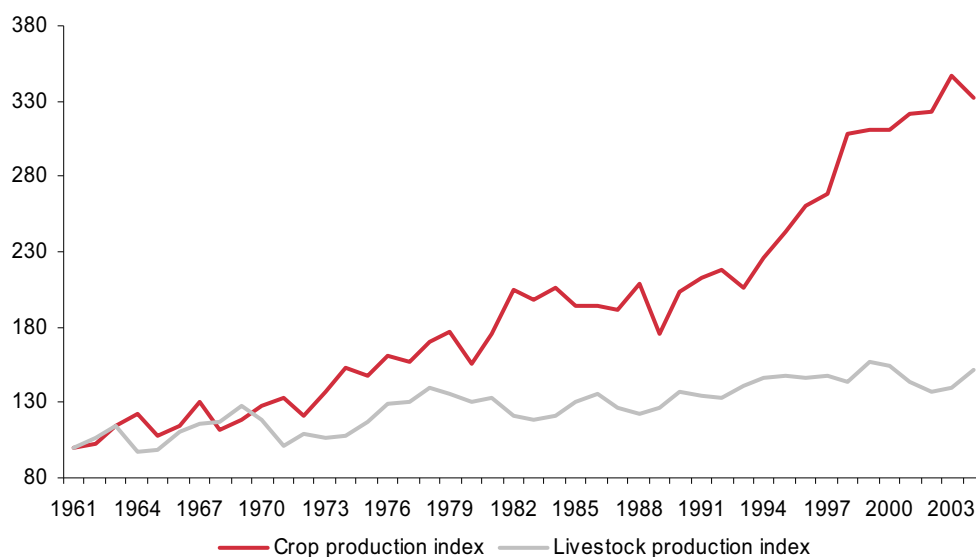
- Elimination of all export taxes on major grain and processed oilseed products in 1991, except for the 3.5% tax on unprocessed oilseed exports.
- Elimination of all quantitative restrictions on imported agricultural inputs.
- Reduction of tariffs on imported agricultural inputs to below 15% of CIF (cost, insurance, and freight) value; although an additional 10% tax was levied on most imported agricultural inputs.
- Exemption from tariffs and taxes of agricultural inputs classified as capital goods, such as certified seed, and trucks.
- Elimination of several government commodity agencies such as the National Grain Board, National Meat Board, and similar agencies for sugar and tobacco, which held export monopolies for their respective commodities.
- Privatisation of marketing and transportation infrastructures, including state-owned grain elevators, port facilities, and railroads.

The result was a fivefold increase in fertiliser usage and a threefold rise in the use of herbicides and pesticides. Between 1989 and 1998 output rose sharply: wheat (+26%, corn (+43%), soybean (+7%) and sunflower (+25%) registered unrivalled gains. Overall, output of the 31 leading crops sown in Argentina expanded 25% during this period. The gains were not confined to the arable sector as evidenced by the sharp production gains made in the milk and poultry sectors during this period. If it hadn't been for subsequent events, one would willingly have believed that the glory days of the early years of the 20th century had returned.

A return to the glory days

Exhibit 24. Crop, livestock production index (1961-2004) (1961=100)

The storm clouds gather



Source: FAO

In 1998 however, it all started to go horribly wrong for Argentina. The devaluation of the Brazilian real towards the end of 1998 had a detrimental impact within MERCOSUR and GDP growth stagnated. From our own experience, every generation

The storm clouds gather

of political leaders becomes unduly obsessed with a single economic variable around which the entire economy is anchored. In Argentina's case it was the Convertibility System, often wrongly described as a currency board when it was nothing of the sort, which became the fixation and little more than an economic false god.

To protect the dollarised peso, a series of restrictive policies were put in place throughout 1999 and 2001. Argentinean exports had become increasingly uncompetitive as a result of the fixed exchange rate coupled with record low international prices for grains meaning that Argentinean producers were doubly hit in the export market. Eventually the Convertibility System collapsed under the weight of its own contradictions.

The collapse

The post-crisis recovery

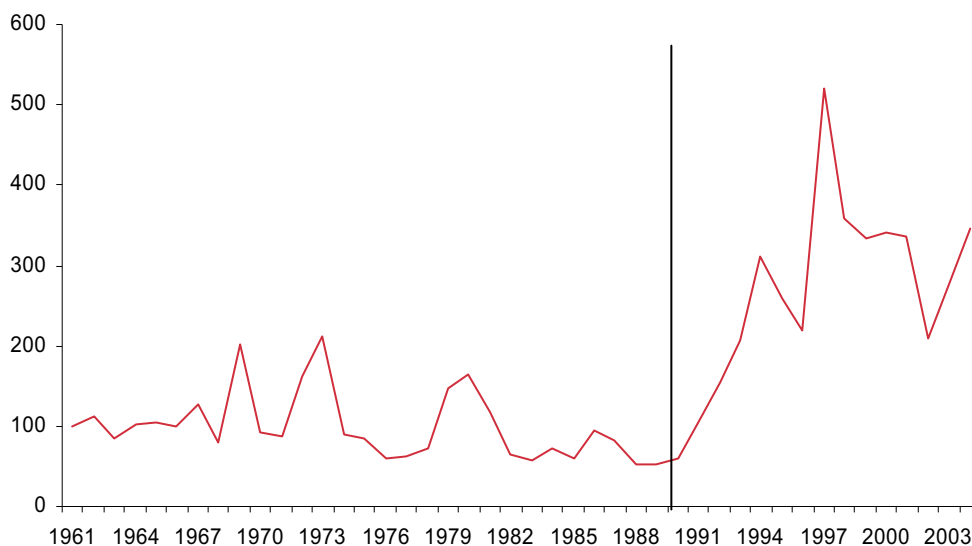
With hindsight the collapse of the Convertibility System was one of the best things that could have happened to the Argentinean agriculture sector. Agricultural exports, which had either fallen or stagnated throughout 1999-2001, grew by 26% in 2002, 27% in 2003 and 13% in 2004. GDP grew by 25% from 1Q 2002 to 4Q 2004, and an additional 28% until 4Q 2007, more than sufficient to recover the GDP losses incurred over the previous three and a half year slide.

Recovery of exports

The recovery was promoted by the fact that Argentina was able to produce most field crops to the highest technical levels. It surpasses the average production of the LAC region in crops such as cereals, maize, rice, sugarcane, citrus, pulses and vegetables. With increasing competition and the adoption of new technologies, many new niche markets have emerged for Argentinean produce both within MERCOSUR and in international markets.

The emergence of mainstream and niche markets

Exhibit 25. Crops and products export quantity index (1961-2004); base year 1961=100



Source: FAO

Major crops

Argentina remains one of the major producers and exporters of agricultural commodities. Its ecological diversity, together with favourable climate conditions, facilitate the production of a wide variety of food crops (except for coffee, cocoa and strictly tropical fruits) that are consumed by its 40m inhabitants and also feed the needs of the fast growing agro-processing industry.

Specifically, Argentina remains one of the leading grain producers in the world. The country benefits from the commercial advantage of harvesting in seasons alternate to the Northern Hemisphere, with relatively few competitors – Australia is the only other serious competitor in the Southern Hemisphere for most mainstream grains. Argentina is also the world's leading exporter of soybean products (soy oil and soy meal) and ranks third behind the US and Brazil as a producer. The country also plays an important role in the global livestock market and is a major exporter of beef to the world.

Argentina remains a significant player in international markets

A leading grain producer

Exhibit 26. Major agricultural commodities (2006)

Rank	Commodity	Area harvested (m ha)	Production (US\$m)
1	Soybeans	15.1	8,345
2	Beef	na	6,255
3	Wheat	5.5	2,495
4	Maize	2.5	2,265
5	Milk	na	2,154
6	Grapes	0.2	1,097
7	Poultry	na	916
8	Sunflower seeds	2.2	863
9	Sugarcane	0.3	401
10	Apples	0.1	363
11	Sorghum	0.5	354
12	Lemons and limes	0.1	340
13	Potatoes	0.1	293
14	Groundnuts	0.2	287
15	Eggs	na	261
16	Rice	0.2	219
17	Tobacco leaves	0.1	215
18	Tomatoes	0.01	160
19	Pork	na	152
20	Pears	0.01	145

Source: FAO

Oilseeds

Argentina has emerged as one of the world's largest producers and exporters of soy products. In 1970, only 36,000 ha of soybeans were harvested in Argentina compared with 1.7m in Brazil and over 17m in the US. Record international soybean prices in the early 1970s (prompted by a sharp decline in world fishmeal production), rapid growth in EU soybean consumption and the US oilseed export embargo of 1973, created strong incentives for Argentina's soybean producers, resulting in a tenfold increase in production between 1970 and 1974. Consequently soybeans overtook wheat and corn as the primary agricultural product in the country.

In 2007, Argentina produced 47m tons of soybeans, a compound annual growth rate of 9% from 2003. This represents some 21% of global production. It ranks third only to the US and Brazil in global exports and crushing with a volume of 11.5m tons and 38.6m tons, respectively in the same period.

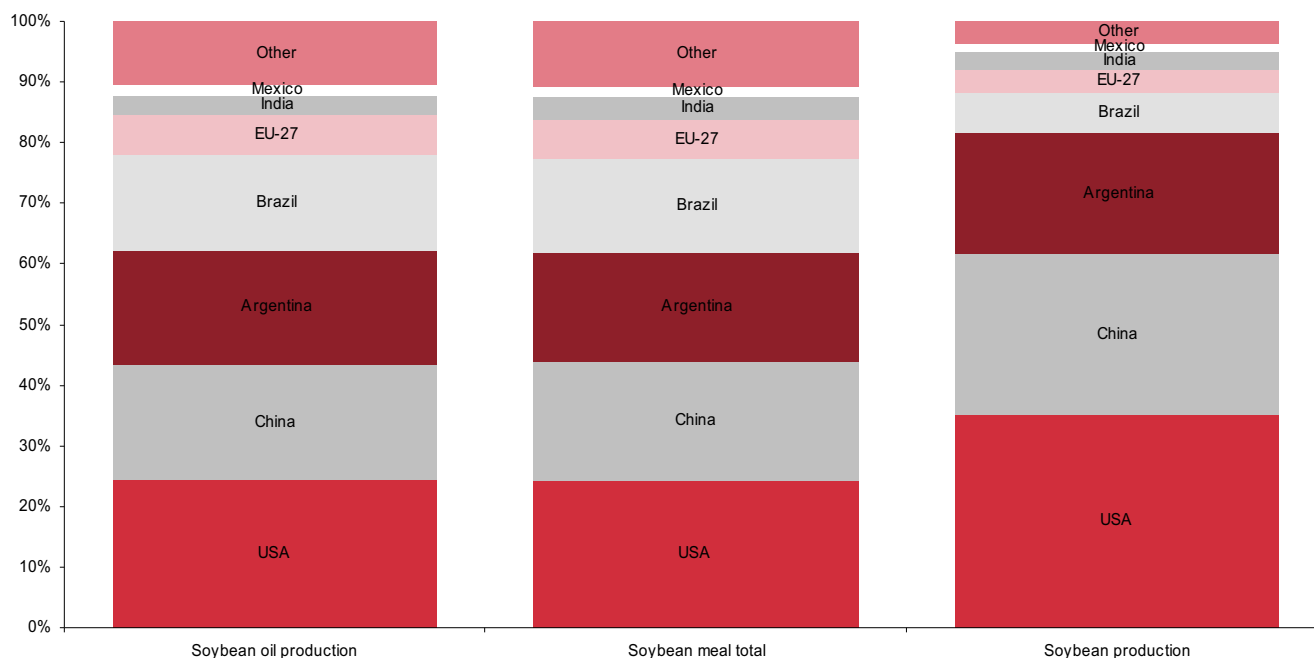
Soybean supply has since been driven by the wheat export ban imposed late last year which caused farmers to switch from wheat to soybeans. Despite this short-term boost, and the ongoing issues surrounding the tax measures imposed on soybean exports,

The rise of soybeans

Soybeans took up the slack after the wheat export ban was imposed

the outlook for soybeans and other oilseeds in Argentina is positive, although growth rates should moderate in the years ahead. The future for Argentina's agricultural exports will be determined primarily by the export tax regime and the long-term viability of the Chinese market, which absorbs 60% of Argentina's soybean exports and 18% of its soy oil exports. China has become Argentina's fourth largest trading partner after MERCOSUR, the EU and the US.

Exhibit 27. Global soy production split (2007)



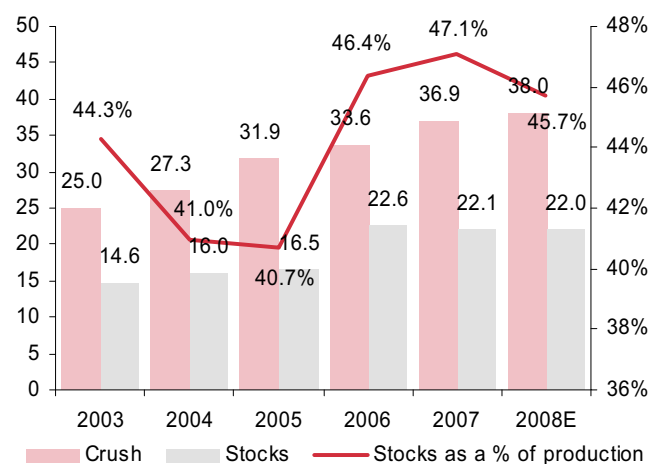
Source: USDA

Exhibit 28. LHS –soybean production, export (m tons)/RHS – exports as a % of production (2003-2008)



Source: USDA

Exhibit 29. LHS – soy crush, stocks (m tons)/RHS - stocks as a % of production (2003-2008)



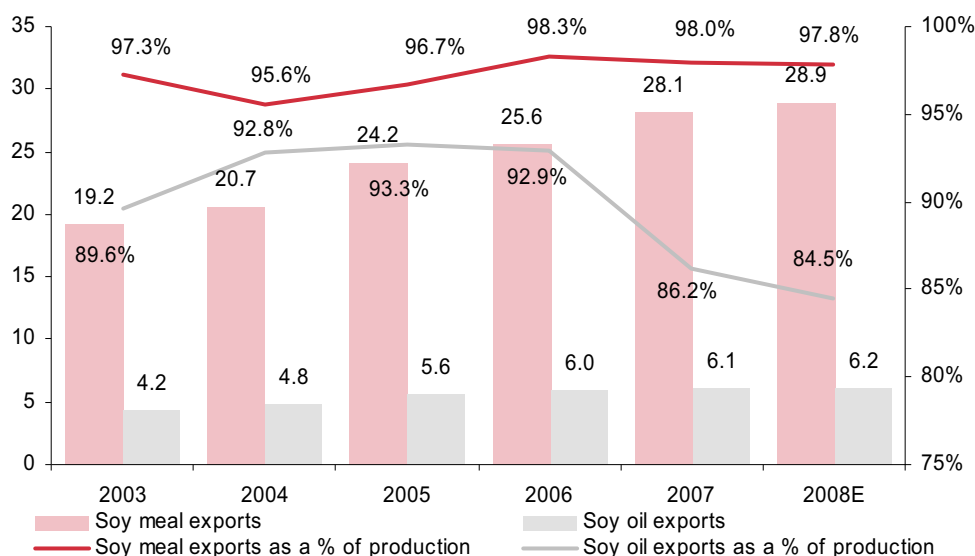
Source: USDA

In global terms, Argentina had a 48% share of the global export market of soy meal and 54% of the global soy oil export market in 2007. These shares have increased from 42% and 48%, respectively, in 2003. In 2007, 98% of soy meal output and 86% of soy oil output was exported. Production and exports of soy meal and soy oil witnessed 10% compound annual growth rates over 2003-2007. However, soy oil exports as a percentage of production dropped in 2007 due to a disproportionate increase in oil production as compared with exports.

Key export

On the basis of this crop, and the country's access to cheap labour and an abundant supply of fertile land, Argentina should be a prime potential market for the production of renewable bio-diesel fuel. Argentina's system of differential export taxes means that there are lower tax rates on bio-fuel exports compared to feedstock (corn or soybean oil) exports. The government has - intelligently it must be said - ensured that export taxes on soy oil are lower than the rates applied to soybean exports. This provides an incentive to make bio-fuels locally and to promote further investment in Argentina's already significant crushing industry. A number of forecasts suggest that the production of bio-diesel in Argentina will more than double in the coming decade.

Exhibit 30. LHS – soy meal and soy oil exports (m tons)/RHS - soy meal and soy oil exports as a % of total production (2003-2008E)



Source: USDA

Livestock

Argentina's long association with the production and export of beef extends to the early years of the twentieth century. In 2007, it was the world's fifth-largest beef producer (after the US, Brazil, EU and China) and also the fifth largest exporter. Somewhat more impressive is the fact that it is also the world's fifth biggest consumer of beef, despite the fact that it has well under 1% of the world's population. Nevertheless, this does not represent progress. The livestock sector has, since the 1970s, stagnated, partly as a result of the macroeconomic backdrop and, even when that has been favourable, the fact that other sectors, such as wheat and soybeans, have displaced livestock from its traditional heartlands.

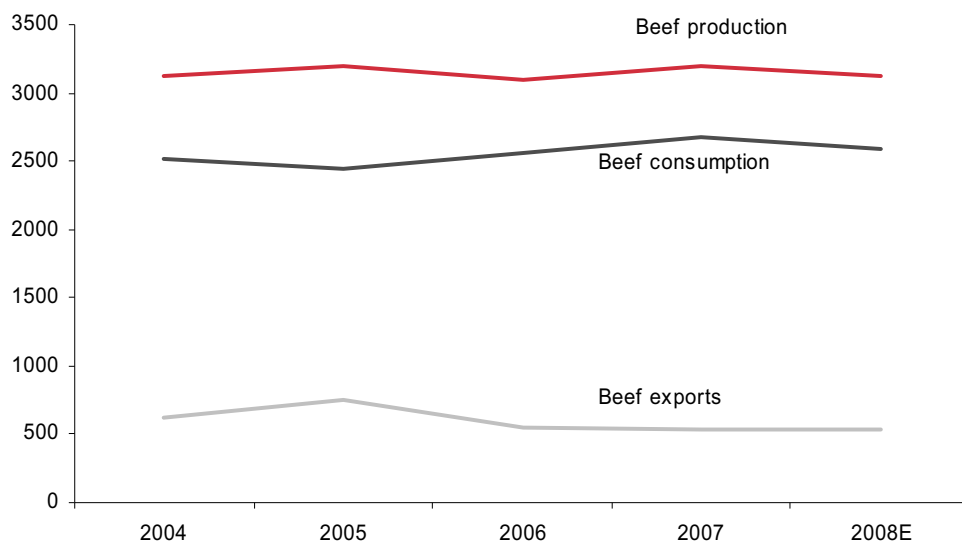
Government-imposed price controls have also played a part. Given its status as a staple in a country plagued by inflation means it has attracted government attention. Government-imposed "beefless days" were not designed to promote health issues and were instead designed as ways of reducing inflation in urban areas. Productivity, particularly in the cow-calf sector, is surprisingly low, as a result of government interference and the existence of reproductive diseases, such as brucellosis and, until recently, foot-and-mouth disease (FMD).

Despite this negative backdrop, Argentina remains a major player in the global livestock market. In 2007 it produced 3.2m tons of beef, of which 0.5m tons were exported. The country also plays a major role in the production of cattle, ranking sixth in both calving and cattle stocks. More than 99% of cattle production is used for domestic purposes. While output growth has remained stagnant over the past five years, Argentina's import requirements have been almost non-existent in the livestock segment.

A long-established industry

Government intervention

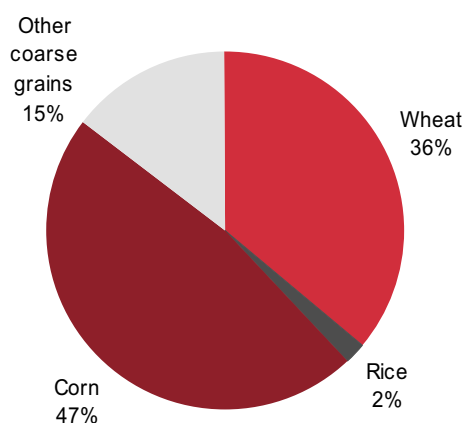
Still a major player

Exhibit 31. Beef production consumption and exports ('000 tons) (2004-2008)

Source: USDA

Grains

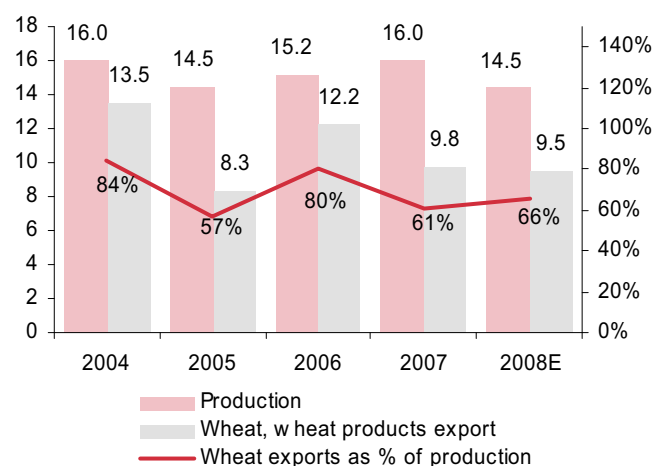
Total grain production in 2007 was almost 44m tons, representing a 2% global share. Wheat is the leading grain in Argentina, and constitutes 36% of all grain production in the country. Argentina accounts for about 80% of total wheat production in South America, making it the world's fifth-largest wheat exporter and eleventh largest producer. In 2007, 5.3m ha were harvested for wheat, yielding 16m tons, much of it used for export purposes.

Exhibit 32. Grain production (2007)

Source: USDA

Coarse grains, including maize, barley, oats, rye and so on, accounted for a 62% share (27m tons) of total grain production in 2007. Maize accounted for a majority (80%) of all coarse grains, making Argentina the world's fifth-largest producer of the crop. Overall, 21.5m tons were produced on 3.1m ha. Argentina is the world's second-largest corn exporter after the US, accounting for 15% of total maize exports globally; however, its yields are lower.

The issue of lower yields is one that could be resolved over time: first, farmers are increasing their use of inputs (fertilisers, machinery, seeds) and second, they are expanding their use of hybrid seeds, which can be planted in higher densities, have

Exhibit 33. LHS – wheat production and exports (m tons)/RHS - wheat exports as a % of total production (2004-2008)

Source: USDA

Coarse grains

shorter growing seasons, can be sown in lower soil temperatures and respond better to fertilisers. With these improvements, Argentinean maize production and productivity should grow in the future.

Exhibit 34. LHS - maize production and exports (m tons)/RHS - exports as a % of total production (2004-2008)



Source: USDA

Rice is a relatively small and declining crop in Argentina. Only 0.9m tons were produced in 2007 and this represented a decline on the 1.6m tons cropped in 1999. Argentina exports about two-thirds of its rice to global markets. Since the formation of MERCOSUR in 1991, the bulk of Argentina's rice exports have been to Brazil.

Despite that, there is scope for expansion of the sector should Brazil continue to provide a readily available market. The fact that significant strides are being made in yield management and practices could have a major impact over the long term.

The use of genetically modified seeds has expanded rapidly in Argentina. Biotechnology began to play a significant role in Argentinean agriculture in the second part of the 1990s with the use of the transgenic Roundup Ready (RR) variety resistant to the herbicide Glyphosate employed in soybean production. The fast dissemination of the genetically modified variety is a relative success story in contemporary Argentinean agriculture. In 2003 Argentina had almost 14m ha planted with GM soybeans, second in the world to the US, which had 43m and ahead of Canada (4.4m), Brazil (3m), China (2.8m) and Australia (2.1m). By 2004, 90% of the area planted with soybeans, 50% of that with maize, and 30% of that with cotton used GM varieties.

Genetic modification

Land ownership

Two key themes become apparent when you look at the structure of land ownership in Argentina: the first is that the industry remains highly fragmented and the second is that it is rapidly consolidating. The 2002 agricultural census registered approximately 134,000 agricultural enterprises (EAPs) in the dominant Pampas region. Almost 90% of these enterprises farmed areas of under 1,000 ha. Consolidation, driven by the need to cut costs, has become evident. A common theme has been the emergence of new contractual instruments, generically labelled “pools”, which allow farms to combine land and machinery. This corporate structure might appear to demonstrate the efficiencies of the capitalist system; however, it differs little from the collectives that once dominated the Soviet Union. Both provide two critical advantages ie, economies of scale and access to capital allowing those economies of scale to be exploited effectively. The 2002 agricultural census registered approximately 119,000 EAPs of land holdings under 1,000 ha for the Pampas region, a drop of over 30% over the 1988 census. However, EAPs with holdings of more than 1,000 ha witnessed an increase of 7% over the period.

The market remains highly fragmented but the pace of consolidation is rapid

Exhibit 35. Consolidation: the changing structure of farms on the Pampas

Scale (ha)	1988	2002	% difference
Up to 5	8,720	4,484	-49%
5 – 10	7,159	3,692	-48%
10 – 25	15,925	8,858	-44%
25 – 50	21,740	13,397	-38%
50 – 100	31,528	20,099	-36%
100 – 200	35,846	24,294	-32%
200 – 500	37,666	29,352	-22%
500 - 1,000	15,544	14,978	-4%
Sub-total to 1,000	174,128	119,154	-32%
1,000 - 2,500	9,735	10,294	6%
2,500 - 5,000	2,900	3,107	7%
2,500 - 5,000	1,081	1,155	7%
10,000 - 20,000	255	318	25%
over 20,000	72	84	17%
Subtotal, over 1,000	14,043	14,958	7%
Total	188,190	134,112	-29%

Source: UN, World Bank

The structure of agricultural enterprises differs across agricultural regions. The Northeast region constitutes primarily smallholders and family-owned farms. While almost 72% of all farms are smaller than 100ha, they account for only 8% of all farm land in the region. The Northwest region is also characterised primarily by smallholders who own fewer than 100ha. Overall, smallholders in the Northwest account for 76% of all farms and less than 4% of all farm land. In the Pampas a large majority of the farms produce for export and so tend to fit into the medium-sized category (100-1,000ha) and the large farm category (+1,000ha) which account for 51% and 11% of total farms on the Pampas, respectively.

The Pampas is more concentrated than the regions

Exhibit 36. Farm structure by region (%)

	Northeast	Northwest	Cuyo	Patagonia	Pampas
Farms < 100 ha	72	76	86	47	37.7
Farms between 100 and 1,000 ha	22	18	9	13	51.2
Farms > 1,000 ha	6	6x	5	40	11.1
Land in farms < 100 ha	8	4	4	0.2	3.3
Land in farms between 100 and 1,000 ha	24	20	10	1	35
Land in farms > 1,000 ha	68	76	86	98	62

Source: World Bank

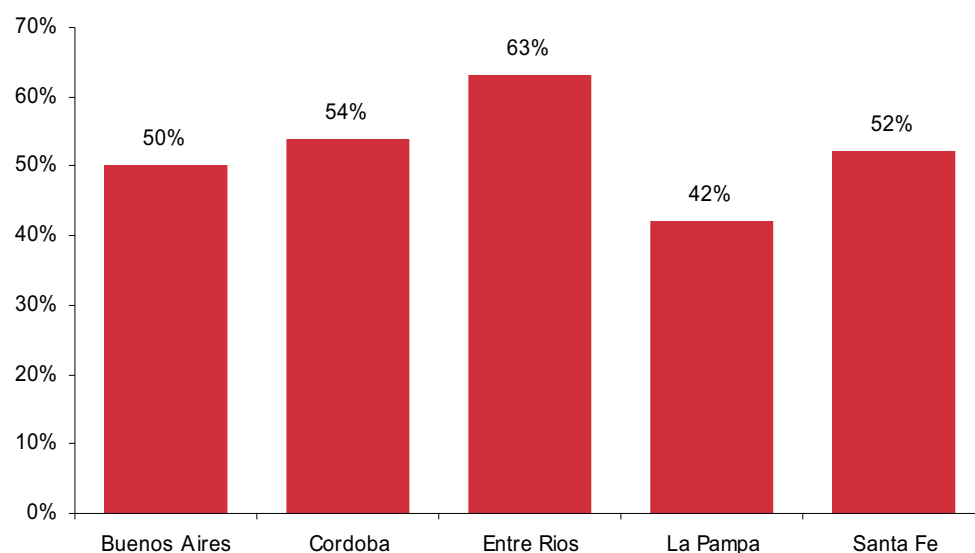
Although the changing international environment for grains in recent years, and the Argentinean financial crisis in 2002, had an impact on the structure of Argentinean farms, it was the reform programme in the 1990s which kicked off change. Improved credit availability from the central bank facilitated greater financing of investment in the agriculture sector. New ways of financing emerged including various barter arrangements, exchanging goods and marketing for crop products. Meanwhile warrant systems, leasing, trust funds, and reciprocal guarantee societies developed as alternatives to traditional financing as a means of bringing parties together to combine resources such as land, technical and managerial know-how, machinery and inputs.

The biggest impact was, however, in the rise of contract “planting pools” among producers through the provision of production factors (ie, in kind, labour or money). Under the “planting pools” agreement, farm management remains in the producer’s hands. The agreements provide financing, a greater degree of risk diversification and bring together land and machinery. These pools contract land to third parties with a mix of crops and regions in order to have geographical diversification and reduce the weather and product risks. The importance of pools can be seen in the Pampas region.

Consolidation is not a new theme

Planting pools

Exhibit 37. Percentage of EAPs with land under contract in Pampas (2004)



Source: World Bank

According to the agricultural census of 2002, rented farm land is also on the rise with approximately 44% of producers cultivating rented land. Given the lack of access to capital, which characterises not just Argentina but the global agriculture industry as a whole, and the inability to leverage a highly volatile sector, renting is likely to play a prominent part in the sector’s growth in the years ahead.

The rise of renting

Exhibit 38. Owned versus rented land in the Pampas

	Owned	Rented
Farms	175,000	136,000
%	56%	44%

Source: World Bank

The role of government

The ministry in charge of oversight of the agriculture sector is the Secretariat of Agriculture, Cattle Farming, Fishing and Food (*Secretaría de Agricultura, Ganadería, Pesca y Alimentos*, SAGPyA). It is responsible for developing and implementing plans, policies and programmes of production, marketing, technology, quality and health in the fields of agriculture, fisheries, forestry and agribusiness. It coordinates and reconciles the interests of the national and provincial governments and other various sub-sectors.

The central government delegates administrative and legal powers to several institutions for the development of various agriculture segments.

The role of the government

Exhibit 39. Government agencies in the agriculture sector

Institution	Name	Role
INTA	National Institute of Agricultural Technology	Established in 1956, it fosters agricultural research, accelerates the benefits of modernisation and improves agricultural enterprises and rural life
SENASA	National Service of Agricultural Health and Quality	Controls and certifies products and sub-products of animal and vegetable waste and its inputs and agrochemicals. Acts in the prevention, eradication and control of animal diseases including those transmissible to humans, plants and pests
INASE	National Seed Institute	Aims to promote efficient production and marketing of seeds for agricultural development. Deals with agricultural producers to ensure quality and identity of seeds.
ONCCA	National Bureau of Agricultural Trade Control	Ensures compliance with existing rules governing trade in different markets, to ensure transparency of commercial channels.
INIDEP	National Institute for Fisheries Research and Development	Responsible for designing, implementing and monitoring research projects, evaluation and development of fisheries, aquaculture technology, fishing gear and technological processes.
INV	National Institute of Vitivinicultura	It controls, co-ordinates and oversees the wine industry in Argentina.

Source: Government of Argentina, USDA, FAO

INTA and SENASA are the largest government institutions providing key services to the sector. They are both decentralised public institutions which operate under the banner of SAGPyA and jointly they accounted in 2003 for 46% of national government spending on agriculture and 73% of that estimated for public goods.

INTA plays a role in agriculture technology research and extension. The institution has claimed various successes over the past two decades such as the introduction of zero-tillage and biotechnology, development of various specialised grain and fodder varieties and the improvement of management practices by small and medium-sized farmers.

SENASA is in charge of phyto-sanitary protection and food quality and safety services. It operates under eight departments, namely animal health; plant protection; food inspection; laboratory and technical control; agrochemical; pharmacological and veterinary products; technical, legal, and administrative coordination; operational vigilance, and international coordination.

INTA

SENASA

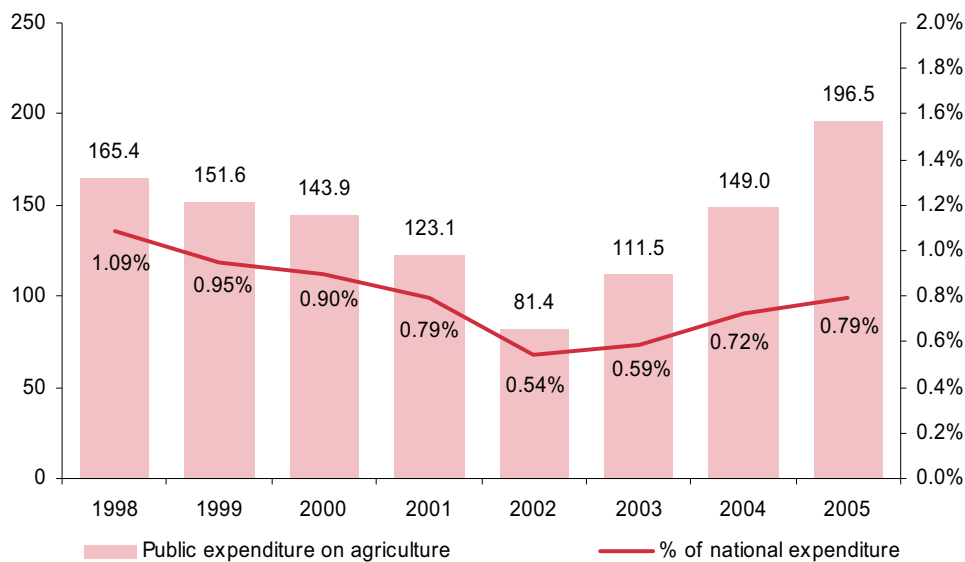
Public expenditure

National public expenditure on agriculture is low by international standards. In 2005, the primary national entities outlined in the previous table received only 0.8% (US\$209m) of all government expenditure, equivalent to 1.4% of agricultural GDP. In real terms, and as a share of agricultural GDP, government expenditure on agriculture fell drastically with the 2001 crisis. The percentage of national expenditure spent on agriculture peaked in 1998 (1.09%), after which it declined sharply until the end of the crisis in 2002.

Low by international standards

A 34% y-y decline was experienced in the aftermath of the financial crisis in 2002 due to a more favourable environment for the agriculture sector, especially in relation to exports. In short, the agriculture sector outperformed and was thus awarded less funding. Although there is some way to go before it rises above 1% again, agriculture expenditure as a proportion of national expenditure has risen in each year since the crisis.

Exhibit 40. LHS – public expenditure (US\$m)/RHS – as a % of national expenditure (1998-2005)



Source: UN

Agricultural taxation

The fiscal assault on the agriculture sector did not disappear in the aftermath of the financial crisis. In 2003, the sector shouldered some 26% of the total tax burden. In a country where provincial governments are strong and act as a counterbalance to a relatively weak parliament, agricultural taxes are popular because they are considerably more centralised than others. For example, 97% of the agricultural taxes paid in Argentina are national (ie, export and income taxes), while provincial taxes (ie, social security contributions and others) account for a mere 3%. In short, the sector is an easy target.

Export taxes account for the majority of total taxes paid in the Argentinean agricultural sector. After the financial crisis in 2001, the government re-imposed significant export taxes on agricultural commodities as a swift means of generating revenues and increasing domestic supplies to constrain domestic price increases. In March 2002, the government placed a 10% tax on primary agricultural exports (ie, wheat, corn, soybeans and so on) and a 5% tax on processed agricultural products and industrial products.

By 2003, export taxes accounted for 43% of all taxes paid by the sector. In November 2007, the government gradually increased taxes on soybeans to 35%; on soy oil and soy meal to 32%; on corn to 25%; on wheat to 28%; on sunflower seeds to 32%; and on sunflower meal and sunflower oil to 30%.

Soybeans in Argentina are produced cheaply and sold in international markets at high rates, making Argentina a highly attractive region for soybean exports. It is hardly a surprise, then, that Argentina is the world's largest exporter of soybeans and their products. With the export market placing pressures on the domestic market, and with the Argentinean government's inflation problem getting worse, the government imposed taxes to curb exports and increase domestic supplies.

Accentuating the problem is that with high international prices in the grains and oilseeds markets, many producers have switched from beef production to grains. It is estimated that some 3m ha of beef pasture has been switched to grain and oilseed production since 2005. What this means is that (1) beef exports are obviously insufficiently attractive to exporters compared to grains and oilseeds, (2) they will be less attractive to the government and (3) grains and oilseeds become an ever bigger target for a grasping government.

The problem with punitive taxation, at the best of times, is that it hits the small-scale producer the hardest. When wheat export taxes were raised in 2007, many small and medium-sized farmers switched to soybean production. Lower fertiliser requirements compared to wheat, the absence of such punitive taxation measures, and high export prices provided sufficient incentives to switch production. Of course, the Fernández administration, demonstrating its old Perónist tendencies, couldn't let go and implemented additional tax hikes on oilseeds in 2008 (ie, on soybeans and sunflower seeds).

The previous administration of Nestor Kirchner (Fernández' husband) demonstrated form when it established this punitive tax template for the beef sector as a means of lowering domestic prices. It suspended beef exports for 180 days beginning in March 2006, except for exports to the European Union under the Hilton quota programme and exports guaranteed under bilateral agreements. Export taxes originally imposed in 2002 on boned cuts and heat-processed beef were also increased, from 5% to 15%, during that period. From June 2006 to December 2007, the government eased the ban, establishing a cap for monthly beef exports of half of the monthly average of total export volumes during 2005. The limit was extended until 31 March 2008 thereby allowing exports of at least 40,000 tons per month.

The government has also imposed a differential export tax (DET) between raw and processed products by taxing exports of a raw material (such as whole soybeans) at a

The centralised nature of agricultural taxes

An easy target..

..and not missed by the Fernández administration

Soybeans were an obvious and attractive target

An additional 3m ha of plantings has made the target bigger

Farmers followed the price signals out of wheat and into soybeans

A family with form

higher rate than exports of the processed products (such as soybean meal and oil). Argentinean soybean processors use the subsidy benefit to sell their soybean oil and soybean meal in the world market at prices below those possible for soybean processors in other countries. As of May 2008, DET in Argentina was 4%, with export tax rates on soybean and soy products taxed at 44.1% and 40.1%, respectively.

In some ways the above could be seen as a template towards a more sensible fiscal strategy for the agriculture sector. Given the fact that Argentina is a scale producer of basic products but is still a relatively weak player in the food processing industries, tax breaks for processors would go a long way towards attracting inward investment into Argentina, thus allowing the country to capture more of the value added in the food manufacturing process. Instead, the country is stuck at the bulk end of the industry and, occasionally, you could be forgiven for thinking that the Argentinean government is almost content to allow that position to continue.

Julio Cobos gets in the way

In March 2008, when the government unveiled its new sliding-scale tax scheme for grain and oilseed exports, it proposed raised export duties on soybeans at current prices and a slight lowering of the taxes levied on corn and wheat. Under the new scheme, taxes on soy exports rose to 44.1% from 35%, and on sunflower seeds to 39.1%, up from 32% previously. Corn levies would fall by 0.8pps from 25% and wheat taxes would decline by 0.9pps from 28%. For the first time in history the four major unions representing various groupings within the agriculture sector were united in their opposition to the government. And so a strike and a campaign of road blockades began.

The 30-day strike lasted until April when the government reviewed the application of the tax increase. It differentiated between the small-to-medium-sized agricultural producers and the large producers and eventually applied taxes to the larger producers. However, farmers immediately rejected the government's review as inadequate. Subsequently, after temporarily ceasing the strike for talks with the government, the farmers resumed their blockade.

In June, truckers began blocking rural highways to press for a solution to the stand-off between the government and the agricultural sector, stoking fears of food shortages. The conflict hit Argentinean bond prices, sparked a demand for US\$, hurt the trucking industry and paralysed local grain markets.

There is a view that investment funds and pool owners were the primary drivers of the strike. In reality, the government itself seems to have provided enough ammunition of its own accord. In truth, the Fernández Administration made a series of errors which has perhaps turned the administration into a lame-duck for the next few years.

The first mistake was to impose the taxes by presidential decree rather than seek congressional approval. When the Supreme Court stated that it would rule on whether the taxes were imposed unconstitutionally, the government, in seeking to avoid a rebuttal from the judiciary, turned the matter over to Congress, which had been overlooked at first. Second, even when it managed to pass a watered down version of the tax hikes (ie, one which gave heavy subsidies to small-scale producers), a 36-36 split in the Senate meant that the casting vote went to the president's No-2, Julio Cobos who, conveniently, was not a Perónist. The tax measure was kicked into touch and we await further developments with interest.

Give the processors a tax break and capture the margin

March 2008 proposals

30-day strike

Paralysis by June

Pool owners to blame?

"The Argentine president will understand me because I think a law which doesn't provide a solution to the conflict won't achieve anything...I ask forgiveness if I am wrong."

Our view

Brazil is an agricultural superpower in the making. The country imports some US\$6bn of agricultural produce annually. Meanwhile it exports some US\$38bn worth of the stuff. And this is not as good as it gets. The country has some 190m ha of underutilised farm land which can be brought into production. The country's emerging status in the sector is underpinned by three key factors. First, its land and labour costs make it an unrivalled low-cost producer. Second, its geography and topography combine to make the country highly diversified and less reliant on individual product lines compared to its peers and third, the country has the experience of running large-scale farming operations with a high degree of vertical integration.

Anchor themes

- ⚓ We believe that, contrary to conventional wisdom, the agriculture sector is undergoing a long-term trend towards liberalisation and that many protectionist measures currently in place will be diluted in the years ahead. Everyone will benefit from this process but the biggest beneficiaries will be low-cost agricultural producers such as Brazil.
- ⚓ The experience of Brazil – outside the major trading blocs of the modern era – means that the country has learnt to compete in the same manner as New Zealand farmers did in the 1980s. It also has considerable knowledge not just of private sector farming on an industrial scale but also of operating within a legal framework where property rights are enforceable and more certain than in other environments.

Power meets purpose

① There is no shortage of land

Brazil has the fourth largest agricultural land resource in the world after China, Australia and the US. The country's farm land is approximately 365m ha, of which 264m is productive. In the Cerrado part of the Central West it is estimated that 90m ha of land is available for farming. Over the entire country there is a further 90m ha of land available for farming. Some 10m ha of degraded land in the Amazonian region could also be used for farming. 190m ha of underutilised land is equal to the entire amount of farm land in the EU.

② A dominant and diversified product base

If you include the processing and distribution businesses attached to it, 25% of GDP derives from the agriculture sector ie, US\$330bn of GDP. Almost US\$38bn of produce was exported in 2007 and the agricultural trade surplus was some US\$32bn. The country is the world's leading producer and exporter of sugar, coffee, orange juice and tobacco. It is the world's leading exporter of beef and poultry.

③ Consolidation and industrial farming is increasing

A country which has 5.2m agriculture enterprises is obviously fragmented. However, this is 600,000 fewer than was the case a decade back. More importantly, there are over 50,000 enterprises farming more than 1,000 ha. In the Central West region, over 48% of the farms are over 2,000 ha. Vertical integration is common.

④ Government intervention is low

The government plays a role in the sector but, since the late-1990s, it has liberalised to a far greater degree than its international peers. In our view, government intervention hinders development. In a long-term liberalising environment, Brazil benefits.

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Power meets purpose

You cannot fight against the future. Time is on our side – William Ewart Gladstone

To reinforce a perception that a country holds superpower status, it usually helps to bewitch the observer with some big numbers. Brazil's 5.2m farms have some 264m ha of land under cultivation, the sector accounts for some US\$330bn of GDP (ie, 25% of the country's total) and it employs some 26m people in one form or another (ie, 14% of the population). In 2007 the country exported US\$58bn of agriculture produce and enjoyed a US\$50bn trade surplus in agriculture products. The country is the No.1 producer and exporter of sugar, ethanol, coffee, orange juice, tobacco. It also holds the No.1 slot for exports of beef and poultry. It is a pioneer in the production of bio-fuels and a world leader in using fuel ethanol in the transport sector. In short, Brazil looks and feels like an agricultural superpower. Who needs analysis when the world of big numbers does your work for you?

Brazil explodes the myth that somehow there is a shortage of arable farm land on the planet. The country ranks fourth behind China, Australia and the US in terms of agricultural land. In the Cerrado part of the Central West region it is estimated that there is close to 90m ha of land capable of being cultivated – all without any environmental consequences. Another 90m ha of underutilised pasture land could be converted to crops and a further 10m ha of degraded land in the Amazonian states could be brought into proper cultivation. To put that into perspective, the amount of underutilised farm land in Brazil is 10m ha more than the entire cultivated area of the EU.

Another myth is detonated when you consider that the role of government in Brazil's agriculture sector is limited. In fact, for Brazil to reach its status as one of the world's largest producers and exporters of grains, oilseeds and livestock it was necessary for the government to reduce its involvement in the sector. In the 1990s the country liberated the sector from the dead hand of state control. Government expenditure on the farming sector declined from almost 6% of GDP in 1990 to 1.5% today. A convenient – for an export-driven sector at least – devaluation of the currency in the late-1990s also prompted an export boom and a fourfold increase in exports between 1990 and 2006. Who needs politicians?

In common with most countries, the Brazilian farming sector remains fragmented. However, few countries have the same depth of experience of large-scale farming. There may be 5.2m enterprises but there are still over 50,000 enterprises which farm more than 1,000 ha. In the Central West region some 48% of the farms are over 2,000 ha. These farms are well capitalised, sophisticated and are even developing their own infrastructure instead of depending on a distant government to help them. Many are vertically integrated.

This might sound like an advert for Brazil. While we believe that the country will enhance its status as a leading agricultural producer in the years ahead, we do see a range of problems which need to be addressed so that it does not lose the advantages that also once characterised neighbouring Argentina. Farm indebtedness remains high, over US\$7bn of agriculture bad debts are in the system, the industry is still highly fragmented and many participants lack access to capital, whether plant and equipment, machinery or skilled workers. Production, logistics and marketing bottlenecks are ubiquitous and adding an expected 1.8m ha of cultivated land each year places more strains on a limited infrastructure. A coherent policy response to these issues will ensure a bright future for the Brazilian agriculture sector; anything less than that and the long-term benefits that will accrue to market participants will head elsewhere.

The emerging superpower

190m ha of uncultivated land available

Still fragmented but consolidating

Overview

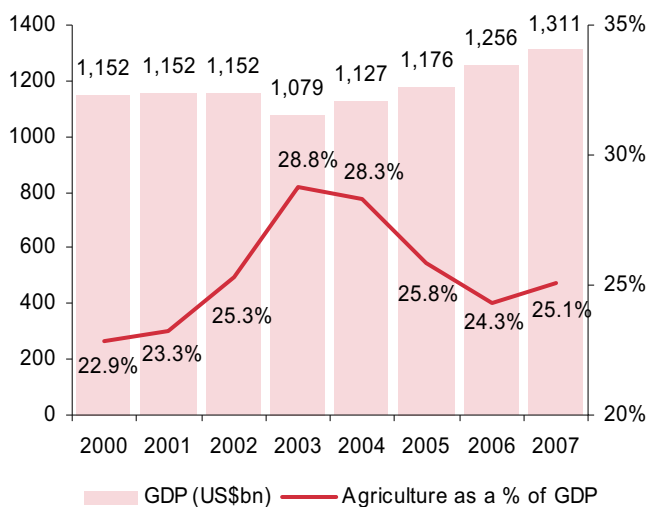
Brazil's categorisation as an emerging market power is mirrored more specifically by its emerging status as a prominent agricultural superpower. Trade stability, economic progress and regulatory reforms have brought significant investment into the agriculture sector. Its vast agricultural area of 264m ha, which includes crop land and pasture, is surpassed only by China, Australia and the US. Rising global incomes and Brazil's ready availability of land, water and labour have driven both production and exports. In 2007, agriculture and associated industries accounted for approximately 36% (US\$161bn) of the country's total exported goods and 37% of total employment. Direct employment in the sector, however, is only 14% of the population compared to 36% of total population in 1980, an indication of Brazil's changing economic and social landscape as well as the increasing capital intensity of the sector.

Over the past decade, Brazil's agricultural sector has benefited from a range of factors: currency devaluations, low production costs, technological advancements and domestic and foreign investment. The sector has played an increasingly important role in the overall economy and in easing the country's balance of payments problems. In 2007, the agribusiness in Brazil accounted for 25% of the country's total GDP (71% of which was from agriculture while 29% was from livestock). Of the total GDP derived from the agriculture sector, the primary sector accounts for almost 29%, while inputs account for slightly more than 6%. The remaining 65% is equally divided between processing and distribution.

An agricultural superpower in the making

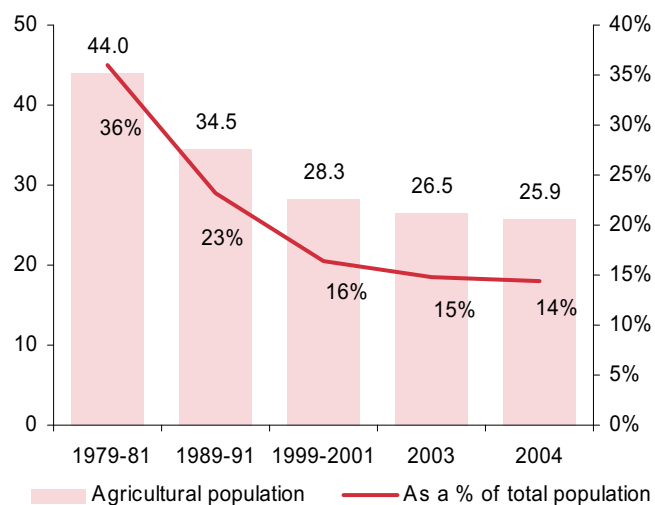
A range of factors have promoted growth of the sector

**Exhibit 41. LHS - real GDP (US\$bn)/
RHS – agriculture as % of GDP (%) (2000-2007)**



Source: IBGE, Cepea

**Exhibit 42. LHS - agricultural population (m)/
RHS – as a % of total population (1979-2004)**



Source: FAO

Brazil enjoys several natural and market advantages which allow it to be a low-cost agriculture producer, including abundant, cheap land and suitable climatic conditions. The country has some 264m ha of agricultural land, of which 67m ha is utilised as crop land (arable land and permanent crops). The majority of the Brazilian agricultural sector is located in the South and Central-West region. Although Brazil is already a major player in the global agriculture sector, it is the potential to expand its production capabilities – especially in the Cerrado region in the Central-West – which fires the imagination. It is estimated that this region alone has at least 90m ha of unused new land which can be employed for agricultural purposes.

The dominant theme of the Brazilian agricultural sector is not just size but also diversity. It is one of the world's largest producers and exporters of grains, oilseeds and livestock. In 2007, Brazil was the world's biggest exporter of sugar, ethanol, coffee, orange juice, tobacco, beef and poultry. It also was the world's leading producer of

Natural advantages

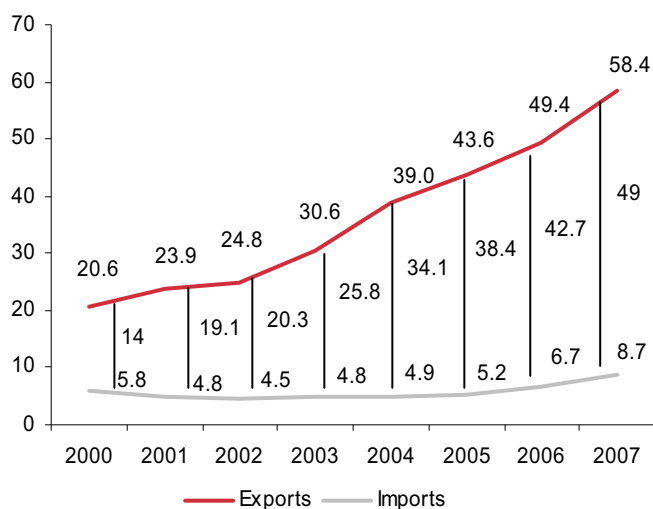
Diverse and dominant

sugar, coffee, orange juice and tobacco. It is also a pioneer in the production of bio-fuels, and a world leader in using fuel ethanol in the transport sector.

Therefore, it is hardly surprising that Brazil is not just a net exporter of agricultural products it also has the largest agricultural trade surplus in the world, which amounted to almost US\$32bn in 2007. This is no short-term success story but a long-term upward trend. In 1990 Brazilian agricultural exports amounted to some US\$9bn and rose to almost US\$38bn in 2007, driven primarily by volume expansion between 2000 and 2003 and driven, in part, by the currency devaluation in 1998-1999. The EU, the US and Asia account for approximately 65% of Brazil's agricultural exports. The EU accounts for almost 35% of all agricultural exports, although this represents a decline from 40% in 2003, indicating the growing prominence of Asian markets.

US\$32bn agricultural trade surplus in 2007

Exhibit 43. Brazil's agricultural trade surplus (US\$bn); 2000-2007

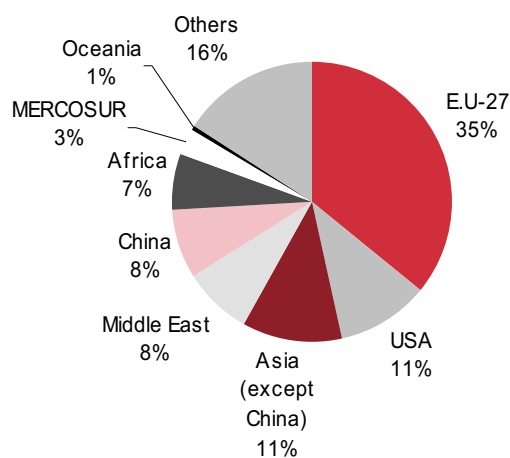


Source: Ministry of Agriculture, Livestock and Supply (MAPA)

The government has played an important role in shaping Brazil's agricultural sector. Government incentives for agricultural producers are wide ranging and have contributed significantly to growth in the sector. These include preferential credit, tax exemptions, financing for agricultural research, marketing and infrastructure improvements as well as an array of Federal, State, and local subsidies. Despite that, public expenditure on the agricultural sector is low compared with recent years. Agricultural expenditure accounted for only 1.5% of total government expenditure in the period between 2003 and 2005 compared to 5.9% in the period between 1985 and 1989.

Overall, Brazil is well positioned to benefit from long-term changes in demand. It enjoys a low-cost resource base and has easily raised output by expanding the area under cultivation and increasing productivity. Factors such as land availability, potential for increasing crop yields, favourable natural conditions for raising a variety of crops, and the existence of a large domestic market set against a favourable macroeconomic backdrop should help Brazil consolidate its position as a leading agricultural producer in the future. However, it won't be plain sailing – hindrances do exist. These include supply constraints, such as transport and marketing bottlenecks, as well as a lack of access to capital. On the demand side, rising consumer demand for higher value foods coupled with the growth of Brazil's bio-fuels industry could reduce the potential of Brazil's export sector.

Exhibit 44. Split by export destination (2007)



Source: Ministry of Agriculture, Livestock and Supply (MAPA)

Government intervention

Low-cost base

Evolution of the agriculture sector

Brazil's strong performance in the agricultural sector can be attributed to a range of factors many of which date back decades. Whether in agriculture or in other policymaking frameworks, decisions and policies implemented in the distant past often have benefits that are realised years later and Brazil's agriculture sector is no stranger to this truism. Moreover, we cannot isolate the successes and say that they were due to a free market model or an interventionist model: it all depends. Some of the successes were even rooted in an initial failure eg, the devaluation of the currency in 1998-1999 was a policy failure with hugely positive implications for the agriculture sector. The modern evolution of the Brazilian agricultural sector can be divided into three distinct phases.

- The horizontal expansion phase (1945 - early 1970s)
- The intervention/modernisation phase (early 1970s - late 1980s)
- The free market period (early 1990s – present)

The horizontal expansion phase (1945 - early 1970s)

Brazilian agriculture remained extremely primitive during this phase. Yields were consistently low and there were few policy initiatives to modernise the sector. It was characterised by an export sector that relied primarily on coffee, cotton, sugar and a few minor commodities and a semi-subsistence sector that produced for the domestic market. In common with neighbouring Argentina the government ensured that it was the urban-industrial constituency which was favoured at the expense of the rural sector and the agriculture sector. In tandem with the Perónist government next door, the Brazilian government implemented an import-substitution strategy to promote domestic economic growth while limiting foreign debt and foreign exchange. Brazil's agricultural exports were heavily taxed using both direct and indirect policies in an effort to supply the urban sector with cheap agricultural products. Export quotas and licences, as well as prohibitions on trade, were applied sporadically and were often combined with direct export taxes on Brazil's major agricultural commodities.

Incredibly, the overall performance of the agriculture sector during the period was reasonable due to horizontal (ie, geographical) expansion. The disincentives of import-substitution and industrialisation policies were circumvented by maintaining adequate access to land on concessionary terms for landowners and farmers. Geographical expansion, through the incorporation of new land and aggressive road construction policies, resulted in an annual crop output growth of 4.3% over the period between 1949 and 1963. Yields remained ghastly, however. While the region witnessed a mere 17% yield increase from 1949 until 1969, the total cultivated area increased by almost 83%, to over 39m ha, in the same period.

The intervention/modernisation phase (early 1970s - late 1980s)

As horizontal growth reached its natural limits by the end of the 1960s, the agriculture sector underwent a phase of modernisation driven by capital inputs and strong government intervention. The increased emphasis on capital intensity was aimed at the bigger agri-businesses and ensured that access equipment and chemicals were more readily available. The government introduced a far-reaching reformulation of agricultural strategy which included some key initiatives outlined below.

- The establishment of a rural credit system in 1965 providing financing on easy terms to commercial agriculture
- The implementation of a broad-based research body focusing on agriculture in 1972 – the EMBRAPA (*Empresa Brasileira de Pesquisa Agropecuária*) system
- An improvement in the instruments used in, and the administration of, minimum price policies
- Inducements for the formation and expansion of agribusiness complexes

Many factors contributed to the recent success of the sector in Brazil

In the post-War era, the Brazilian agriculture sector resembled neighbouring Argentina with its urban bias

Output growth was not matched by productivity gains

Government intervention becomes more of a feature

The availability of subsidised credit expanded markedly and, up until the mid-1980s, it had a remarkable impact on both production and productivity. However, in the 1980s, the effectiveness of agricultural credit in expanding output began to weaken (debt crisis), and the rural credit system became increasingly regarded as wasteful and distorted. In the second half of the 1980s the incentives and subsidies of the credit policy were replaced with those provided by the minimum price policy. The minimum price policy, together with the currency devaluations of the 1980s, brought about a considerable expansion and diversification of agricultural exports.

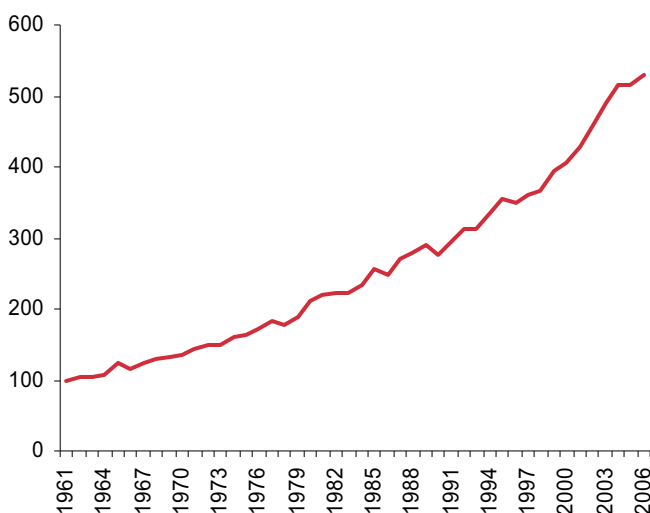
The output of grains and oilseeds increased from 22m tons in 1965, to 58m tons in 1985 and to 72m tons in 1989. Exports increased from US\$1.3bn in 1965, to US\$5bn in 1975. In a span of about twenty years, Brazilian agro-industrial exports became increasingly diversified, going beyond a small group of tropical commodities (mainly coffee, sugar and cocoa) and incorporating new products such as soybeans, meat, ethanol and fruits. However, agricultural exports increased at a much slower pace than the country's total exports. While in 1965 agricultural exports represented 83% of the country's total exports, their share declined to 39% in 1985 and to 30% in 1990.

The free market period (early 1990s - present)

The agriculture sector expanded rapidly in the mid-1980s when the policies which had diverted resources from agriculture towards the industrial and services sectors were dropped. Economic reforms in 1985 eliminated domestic and export taxes on agricultural products, and export restrictions on soybeans, cotton, and meat were removed, as was the requirement for corn import licences. During the early 1990s, government intervention and support measures were reduced; some state-owned enterprises were sold, minimum support prices were abolished, government purchases of wheat and milk were removed and the marketing boards for coffee, sugar and wheat were abolished.

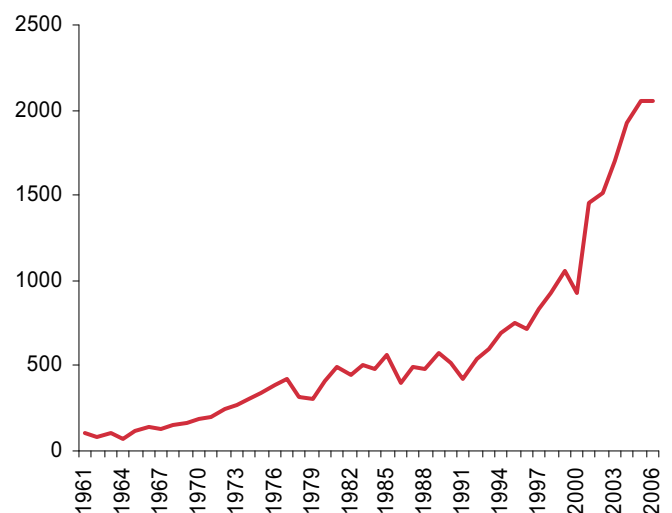
However, possibly the most significant economic factor affecting agricultural output in Brazil since the mid-1990s was macro-economic: the introduction of the Real Economic Stabilization Plan. With inflation levels in excess of 1,000% before 1994, the government introduced the Real, which stabilised the economy, reduced inflation to approximately 5% per year and ignited a consumption boom which lasted five years. However, in early-1999, Brazil adopted a floating exchange rate, which led to a significant devaluation of the currency. Being a low-cost industry with a propensity to export, this devaluation had a positive effect on the country's agriculture sector, especially in soybean and meat production. As a result, production of major crops (soybeans, corn, rice, edible beans, and wheat) rose to 54m tons in 1990, double the 1970 level.

Exhibit 45. Agricultural production index (1961-2006); base year 100 = 1961



Source: FAO

Exhibit 46. Agricultural product units export index (1961-2006); base year 100 = 1961



Source: FAO

Positive gains in production and productivity

Traditional products and new product lines

Radical measures in the mid-1980s

Paradoxically, the introduction and subsequent devaluation of the Real were both positive

It might seem unusual for a sector to perform well under two seemingly contrasting economic environments. In retrospect, the reason is probably quite simple. The introduction of the Real (in conjunction with the microeconomic reforms of that time) helped to promote a more benign investment and domestic consumption environment so that when currency devaluation came, export growth gained prominence.

The reforms of the 1990s have proved enduring. Crop production in Brazil reached an all-time high of 108m tons in 2005, a fourfold increase from 1970 and double that of 1990. Exports have witnessed a sharp increase in the period 1990-2006, with total export value increasing fourfold in the period.

Enduring reforms

The role of government

As outlined in the previous section, agricultural policy goals and programmes in Brazil have changed significantly over time. During the mid-1960s, the sector was uncompetitive – except for a few tropical products such as coffee and sugar – and was characterised by an uneven distribution of farm income which almost institutionalised large and unproductive landholdings. The period between the mid-1960s and the early-1980s was a period in which government intervention was the norm: in agricultural commodity markets, by means of subsidised rural credit, with price support mechanisms, through government purchases and storage of excess supply and so on. During this period, agricultural policy centred on the objective of promoting food security for an urbanising population while compensating the agricultural sector for its anti-export bias.

However, calamity inevitably leads to reform and the debt crisis of the 1980s forced the Brazilian government to reduce support to farmers and review its sector policy goals. Structural reforms introduced in the early-1990s witnessed the elimination of export taxes and price controls, deregulation and liberalisation of commodity markets, the unilateral reduction of trade barriers and the introduction of private instruments for agricultural financing.

Significant policy changes were introduced by 1995, shifting the priority towards land reform and family farming. The government created a new ministry, the Ministry of Agrarian Development (MDA), to run programmes targeted at family-run farms and land reform. It also adopted policies targeted at family agriculture (known as PRONAF), including subsidised credit lines, capacity building, research, and extension services. Federal government expenditure on land reform increased from 6% of total farm programme spending during the Sarney administration (1985-1989) to 45% during the first Lula administration (2003-2005). The number of agriculture-related programmes increased from 30 before 2000 to 100 in 2003. Overall, however, government expenditure on agriculture decreased both in relative and absolute terms and traditional agriculture expenditure was sacrificed to support land reform programmes. It fell from 5.6% of total government expenditure during the Sarney administration (1985-1989) to about 1.8% by 2005.

With significant institutional and policy changes, the Brazilian agriculture system made the transition from a traditional local business to an increasingly global and industrial model. Rising incomes, urbanisation, economic liberalisation and access to competitive raw materials led to an investment boom by multinational food processors and retailers during the 1990s. Increased foreign direct investment (FDI) by large private agribusinesses displaced domestic competitors, increased industry concentration and eliminated many medium and small companies. Farmers in Brazil are increasingly exposed to markets that are much more demanding in terms of food quality and safety, more concentrated and vertically integrated and more open to international competition.

An interventionist mindset in the 1960s mirrored the post-war Keynesian consensus

Financial calamity brought a new focus and a shift in thinking

Land reform and development

From the local to the global

Exhibit 47. Average annual expenditure on agricultural policies (US\$m)

Period	Traditional agriculture	Agrarian organisation (land reforms)	Total	Agriculture/ total	Agrarian organisation/ total	Agricultural expenditure/ total government expenditure
1985-1989	10,017	681	10,698	94%	6%	5.6%
1990-1994	8,972	630	9,602	93%	7%	2.8%
1995-1998	7,826	1,712	9,538	82%	18%	3.4%
1999-2002	4,464	1,686	6,150	73%	27%	2.0%
2003-2005	3,024	2,464	5,488	55%	45%	1.8%

Source: EMBRAPA

Exhibit 48. A brief history of the Brazilian agriculture sector

	1965-1985	1985-1995	1995-2005	Proposed agenda
Macroeconomic conditions and policy	<ul style="list-style-type: none"> • High inflation • Controlled exchange rates • High growth rates • Increased government expenditures in farm policy 	<ul style="list-style-type: none"> • Uncontrolled inflation and low growth • Debt crisis • Lower government expenditure on farm policy 	<ul style="list-style-type: none"> • Control of inflation • Volatile exchange rates • High real interest rates • Modest growth rates • Privatisation 	<ul style="list-style-type: none"> • Low inflation • Structural reforms and fiscal balance • Less volatile exchange rate • Lower interest rates • Sustained growth • Investment in infrastructure
Agricultural policy goals	<ul style="list-style-type: none"> • Food security 	<ul style="list-style-type: none"> • Deregulation • Liberalisation 	<ul style="list-style-type: none"> • Land reform programmes • Family farming and social inclusion 	<ul style="list-style-type: none"> • Competitiveness • Sustainability (economic, social, and environmental)
Price support and government storage	<ul style="list-style-type: none"> • Massive intervention- public agencies, government purchases and storage, price controls • Commodity price support 	<ul style="list-style-type: none"> • Lower intervention • Agricultural commodity market deregulation 	<ul style="list-style-type: none"> • Modest and selective intervention 	<ul style="list-style-type: none"> • Modest and selective intervention
Rural credit	<ul style="list-style-type: none"> • Government supply of credit financed by Treasury • Negative real interest rates 	<ul style="list-style-type: none"> • Decreased government supply of credit • Interest rates less subsidised 	<ul style="list-style-type: none"> • Credit lines targeted to family farms (PRONAF) • Specific programmes for investment credit (BNDES) • Agricultural credit crisis and debt rescheduling 	<ul style="list-style-type: none"> • Crop insurance • Private instruments for agricultural finance • Targeted credit lines to family farms • Credit co-operative development
Agricultural trade policy	<ul style="list-style-type: none"> • Closed economy • High tariffs • Import substitution model • Export taxes on primary commodities 	<ul style="list-style-type: none"> • Unilateral openness to trade • International integration (MERCOSUR) • Elimination of export taxes 	<ul style="list-style-type: none"> • Aggressive policy against agricultural trade barriers • WTO dispute panels • Leadership in G-20 • Negotiation of regional agreements (FTAA, EU-MERCOSUR) 	<ul style="list-style-type: none"> • Aggressive trade policies – negotiations etc • Increased emphasis on non-tariff barriers - technical, sanitary, and social barriers • Conclusion of regional and bilateral trade agreements
Agricultural research and extension	<ul style="list-style-type: none"> • High investment in public research (EMBRAPA) • Development of public extension service network 	<ul style="list-style-type: none"> • Levelling-off of public investment 	<ul style="list-style-type: none"> • Crisis of public research and extension services 	<ul style="list-style-type: none"> • Renewed public commitment to agricultural R&D including GMOs • Increased role of public/private partnerships • Intellectual property rights
Social policies (family farms and land reform)	<ul style="list-style-type: none"> • Minimal 	<ul style="list-style-type: none"> • Initial stage (Extraordinary Ministry of Land Reform) 	<ul style="list-style-type: none"> • Ministry of Agrarian Development (MDA) • Distributive programmes - land reform, "Bolsa Família", rural retirement, PRONAF 	<ul style="list-style-type: none"> • Policy evaluation and monitoring • Retarget programmes to different types of family farms • Farm co-operative development and modernisation

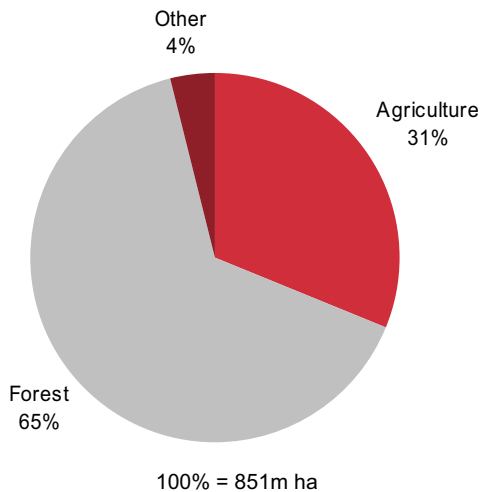
Source: American Agricultural Economics Association

Land use

Brazil enjoys several natural and market advantages including cheap and abundant land, suitable climatic conditions and a large internal market to create economies of scale. Of the total land area (851m ha) approximately 31% (264m ha) is accounted for by agricultural lands (crop lands and permanent pastures and grasslands). About 25% (67m ha) of the agricultural land is covered by arable and permanent crop land while the remaining 75% is covered by permanent meadows and pastures.

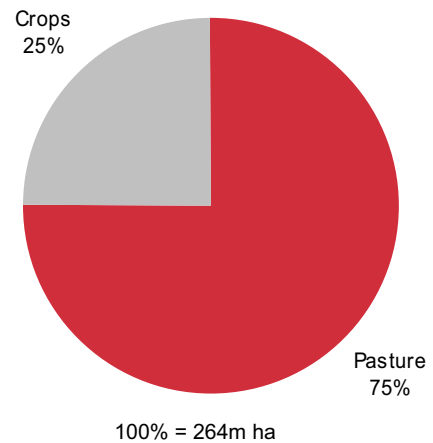
31% of the country is covered in agricultural land

Exhibit 49. Split of total Brazilian land (2005)



Source: FAO

Exhibit 50. Split of agricultural land



Source: FAO

Production in Brazil is focused primarily on two regions, the South and the Central West. The North is the largely undeveloped Amazon rainforest where infrastructure is poor and agriculture is primarily subsistence. The North East is part tropical and part semi-arid with limited potential. Within the Central West region, the Cerrado lands provide the greatest potential for growth.

Focus on the South and the Central West

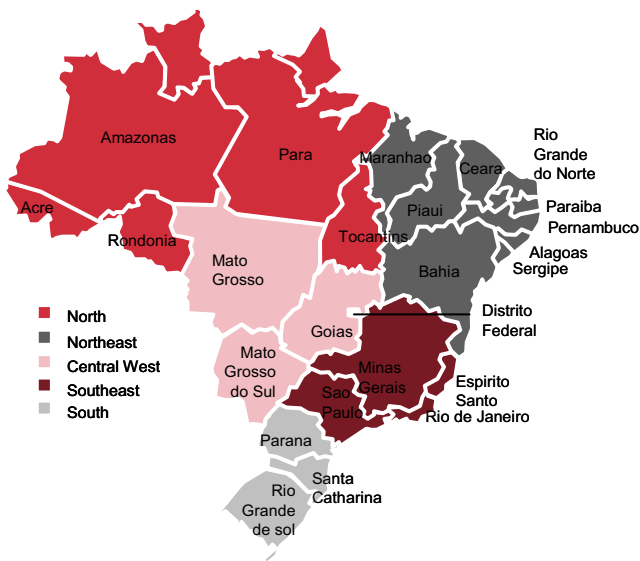
The southern part of the country, which accounts for between half and two-thirds of the country's total agricultural area, has a semi-temperate climate, good soils, modern inputs and technology, reasonable infrastructure and generally efficient farms. The densely populated coastal states of Parana, Santa Catarina, and Rio Grande do Sul are the primary crop producing states in the region. Proximity to major urban centres and access to three major ports (Santos, Paranagua, and Rio Grande) give producers in this region easy access to markets. The South and South East regions, which are the most densely populated areas of Brazil, have traditionally been the dominant centres of agricultural activity. This region is the primary grower of soybeans, maize and wheat and accounts for about half of Brazil's soybean crushing capacity.

The South has good infrastructure, access to ports and reasonably efficient farms

The Central West rivals the South as the principal region of agricultural production. When various government incentives were implemented during the 1960s, the industry expanded remorselessly in the Cerrado lands of Brazil's interior states. It is estimated that in this humid, tropical zone, there is at least another 90m ha of potential new agricultural land. The Central West region comprises Rondonia, western Minas Gerais, and parts of the north eastern states of Bahia, Tocantins, Piaui, and Maranhao. All of these states share a common feature of the Central West's agriculture, namely the development of the Cerrado land principally for soybean production.

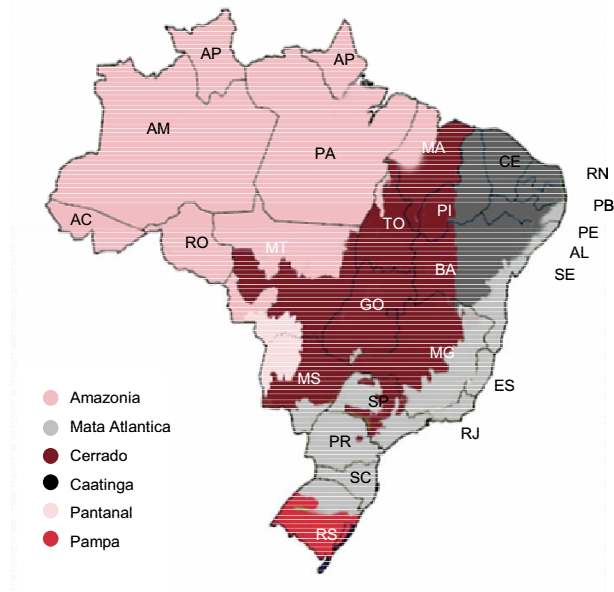
90m ha of spare land

Exhibit 51. Brazil by region



Source: World Bank

Exhibit 52. Brazilian biomes and states



Source: FAO

The potential of Brazil's Cerrado lands

The single feature which differentiates the South and the Central West regions of Brazil is the latter's potential to add to its cultivated land area. In the past, poor natural fertility in the soil limited both the extent and range of agricultural development across the region. However, an integrated strategy developed by the Cerrados Agriculture Research Centre (founded in 1975) and the EMBRAPA, focusing on natural resource evaluation, soil and water management systems, raised the productivity of the Cerrado soils to world-class levels, resulting in significant increases in agricultural and cattle production. Currently, the Cerrado region contributes over 70% of the country's beef cattle production. The introduction of irrigation and soil correcting techniques contributed to its status as a key production centre for grains and oilseeds including soybeans, maize and rice. The Cerrado's soils are deep, permeable and possess excellent water filtration and drainage. Cerrado soils are at a moderate elevation of 300-900 metres with only a slight gradient, thus making them suitable for mechanised access.

The total area of the Cerrado region is 207m ha, which accounts for approximately 25% of Brazil's total surface area. EMBRAPA has estimated that 136m ha of interior Cerrado savannah are suitable for large-scale mechanized agriculture based on a rotation system of improved pasture, grains, and oilseeds. Currently only 47m ha are already involved in agriculture, leaving 89m ha of land available for development.

Concerted efforts in the 1970s and 1980s redefined farming in the Cerrado region

25% of Brazil's total surface area

Exhibit 53. Land potential in Brazil's Cerrado region

Agricultural activity	Estimated use	Potential use	Undeveloped
M ha			
Crop land	12	76	64
<i>Irrigated</i>	0.3	10	10
<i>Dry land</i>	10	60	50
<i>Perennials</i>	2	6	4
Pasture	35	60	25
Total	47	136	89

Source: EMBRAPA (1999)

Of the 47m ha, 10m ha are grain crops under rain-fed conditions, 0.3m ha are grain crops under irrigation, 35m ha are pastures and 2m ha are perennial crops (including coffee, fruits and re-forestation). This produces almost 23m tons of food, accounting for one-third of total Brazilian production. The present index of crop productivity in the

Cerrado region is a little above the Brazilian average, but is still below what could be achieved with the right mix of capital inputs. Those that do have higher productivity, ie, the Cerrado farmers who utilise the technologies already available, demonstrate that it is theoretically possible to produce 350m tons of food production which could support a population of 250m.

Exhibit 54. The Cerrado region: production in practice and potential

Activity	Production of grain crops and beef cattle in the Cerrado region			Food production using available technology and potential land in the Cerrado region		
	Area, m ha	Productivity, t/ha/year	Production, m tons	Area, m ha	Productivity, t/ha/year	Production, m tons
Grain crops			Grain crops			Grain crops
Rain fed	10	2	Rain fed	10	2	Rain fed
Irrigated	0.3	3	Irrigated	0.3	3	Irrigated
Beef cattle	35	0.05	Beef cattle	35	0.05	Beef cattle
Perennials	2	na	Perennials	2	na	Perennials

Source: EMBRAPA (1999)

It is worth highlighting that the development of the Cerrado region as a key food producing area need not imply environmental degradation. If 136m ha of the region can be incorporated into a sustainable production system over the medium term, it could be possible to produce around 350m tons of food in the area. However, in an area of 204m ha, that suggests that while 89m ha is added to production, 68m ha of land can still be given environmental protection.

The economic feasibility of these solutions, proposed by EMBRAPA in the late-1990s, depends not just on the availability of land but the availability and cost of fertilisers and a transport infrastructure that can move both inputs and output to and from these internal producing areas. Most agricultural land in these hinterlands is situated far from markets and the infrastructure is underdeveloped. In short, for the Centre-West region to fulfil its potential infrastructure spending will remain critical. The USDA believes that infrastructure development will lead to 5-12m ha of additional land coming into production in the medium term. In the long-term of course, this tally could be nearer to 90m.

Developing other hinterlands

In addition to the Cerrado region, several other regions have been identified as potential agricultural centres. The majority of Brazil's existing pasture lands could readily support rain-fed crop production. The USDA estimates that about 70-90m ha of Brazil's existing pasture acreage could be converted to cropping in the future. This represents about 40-50% of the nation's total pasture. These lands could be converted owing to their proximity to existing crop production, their levelled topography and favourable soil properties. It is also worth emphasising that none of these figures include the Amazon Basin. There are also up to 10m ha of degraded pasture or deforested land that is available in the Amazonian states of Rondonia, Amazonas, Acre, Amapa, and Roraima. These lands are already being targeted by agricultural researchers for restoration with the goal of developing viable grain and oilseed-based farming systems tailored to their unique conditions.

68m ha could be set aside for environmental programmes

Infrastructure limitations are a bottleneck

Land is in plentiful supply and you do not even have to cut down a single tree in the Amazon Basin

Farm structure

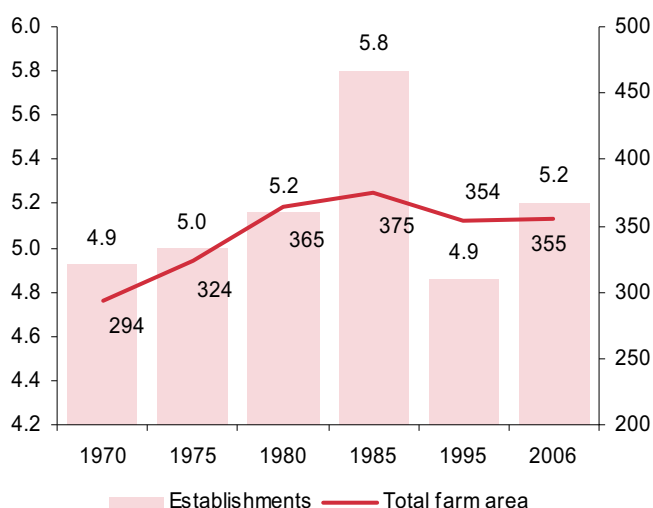
The Brazilian agriculture sector is highly fragmented. Every conceivable form of organisation is represented in size: individual farmers, corporations, co-operatives, and government-owned farms. The 2006 agricultural census preliminary results registered about 5.2m agricultural establishments covering a farm area of 360m ha compared to 4.9m in 1996. Although the 2006 figures are yet to be released and confirmed, consolidation has been a continuous theme since 1985, driven by the desire to reduce costs and substitute capital for labour. 5.2m farms may seem like a lot but it is 0.6m fewer than the 5.8m registered in 1985. Despite what might be portrayed throughout the media, the total area farmed has remained constant (355-375m ha) over the same period.

The agriculture sector comprises small farms mostly in the range of 2-50 ha. According to the 1996 Agricultural Census, establishments of less than 100 ha accounted for about 88% of the total number of farms in Brazil but account for only 20% of total farm area. At the other extreme, farms of over 1,000 ha comprise only 1% of the total number of farms but account for 45% of total farm land in Brazil.

A fragmented industry but consolidating

Smallholders still dominate

Exhibit 55. LHS – total establishments (m)/ RHS – farm area (m ha) (1970-2006)

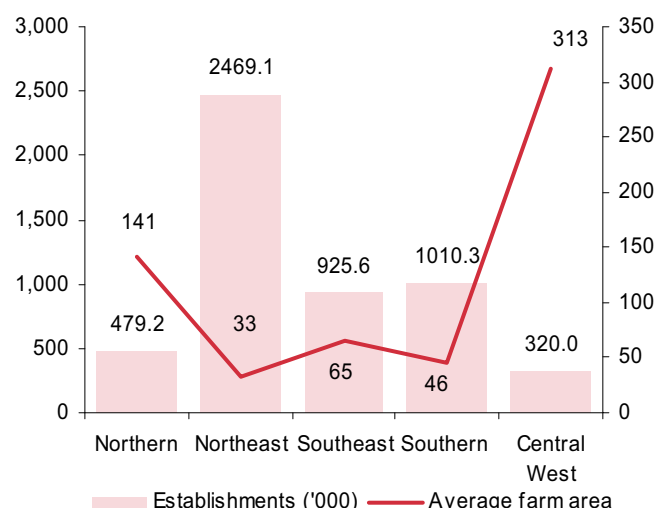


Source: IBGE (2006 Census)

Of total farm land, the South and Central West regions account for 41% of the total. The Central West region alone accounts for 28% of total agricultural land, despite accounting for only 6% of the total number of farms, indicating the degree of concentration in this region. It is characterised by farms which average some 313 ha compared with the Brazilian average of 68 ha. The Southern region, on the other hand, accounts for 20% of total farm land and is made up of relatively small farms which average 46 ha. The Northeast region dominates in terms of the total number of establishments and accounts for 48% of the nationwide tally. However, it is dominated by small subsistence farms and an average size of 33 ha.

The characteristics of agricultural enterprises also differ across the agricultural regions. In the traditional agricultural areas of the Southern region (South and Southeast) small farms averaging 30 ha dominate. Only about 7% of farmers in the region run establishments with land area greater than 2,000 ha compared to 48% in the Central West region. The dense population and high cost of land in the Southeast hinder volume growth and the use of capital equipment. Moreover, with continued agriculture expansion across the Cerrado, these small farms continue to decline as a share of Brazil's total output. Small farms in the Southeast are more likely to depend on government-subsidised credit to finance their operations.

Exhibit 56. Breakdown by region/LHS – number of establishments/RHS – average farm size (ha) (2006)



Source: IBGE (2006 Census)

Scale is a common feature of the Central West region

Small farms are slowly but surely being eradicated

Exhibit 57. Number and area of holdings by size (1996 Census*)

	Number of holdings ('000)	% of total holding	Area (m ha)	% of total area
Under 1	512	10.5%	0.28	0.1%
1 and under 2	471.3	9.7%	0.64	0.2%
2 and under 5	796.7	16.4%	2.54	0.7%
5 and under 10	622.3	12.8%	4.42	1.3%
10 and under 20	701.4	14.4%	9.80	2.8%
20 and under 50	814.7	16.8%	25.44	7.2%
50 and under 100	400.4	8.2%	27.46	7.8%
100 and under 200	246.3	5.1%	32.91	9.3%
200 and under 500	165.2	3.4%	50.44	14.3%
500 and under 1,000	58.4	1.2%	40.19	11.4%
1,000 and over	49.4	1.0%	159.50	45.1%
Not classified by size	21.7	0.4%	-	-
Total	4,859.8	100%	353.61	100%

Source: IBGE (1996 Census)

*Data on land holding by farm size has not yet been released for the 2006 agricultural census. The 1996 census data is the latest available for land holding by size

The Central West region differs significantly in its farm structure from the traditional farming areas in the South. Farms in the Central West are much larger with more than 65% of farms cultivating in excess of 1,000 ha and 48% of farms cultivating more than 2,000 ha. Unusually, many of the large farms in the Central West are organised in family-owned holdings. Unlike the South, these farms are well capitalised, utilising advanced mechanisation and state-of-the-art technologies such as global positioning systems (GPS) to exploit precision farming practices. Farm managers and owners are highly educated and are at the cutting edge of agriculture. These farms are market-driven, self-funded operations and are not dependent on government subsidies. Equally unusual is the fact that land values in the Cerrado are significantly lower than the southern states. This provides the primary cost advantage for Brazilian soybean producers relative to the US.

In several instances, the large commercial farms in the Cerrado have built their own research, management structures and transport infrastructure to compensate for the lack of funding from the central government. These projects are undertaken by single farmers or in collaboration with others. It is this combination of modern technology, market-oriented management, and financial viability, as well as independence from government that places Brazil at the forefront of the farming revolution, in our view.

The Central West attracts capital, farms are bigger and a virtuous circle emerges

The larger farms often build their own support functions and infrastructure

Exhibit 58. Region by scale of landholding (%) (1996 Census)

	< 10 ha	10-100 ha	101-200 ha	201-500 ha	501-2,000 ha	> 2,000 ha	Without statement
Northern	5.6	11.3	21.1	14.4	14.2	18.2	12
Northeast	65.4	31.5	27.4	26.8	22.4	15.4	79.9
Southeast	11.9	22.4	25.5	25.3	19.7	11.4	3.6
Southern	15.7	29	13.2	14.5	13.7	6.8	3.5
Central West	1.4	5.8	12.8	19	30	48.2	1
Total	100	100	100	100	100	100	100

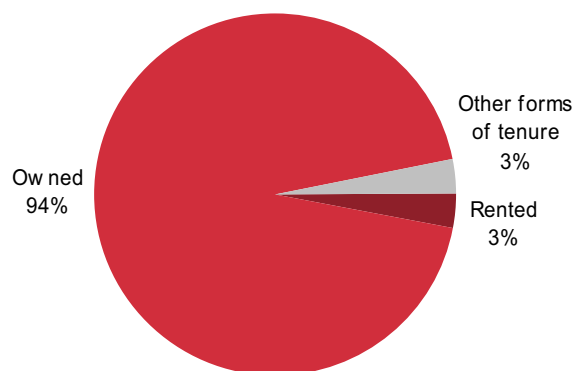
Source: IBGE (1996 Census)

Land tenure

As previously noted, land in Brazil is owned by individuals, corporations, co-operatives and government-owned bodies. Individuals still dominate the sector and account for 97% of total farms owned and almost 84% of total farm land. Corporations, cooperatives, and the government play a smaller role in farming, together accounting for the remaining 3% of total farms owned and 16% of total farm land, respectively. In terms of land tenure, 74% of total farms are self-owned establishments and account for approximately 94% of total farm area. Rented land is mainly rented by subsistence farmers. It accounts for 11% of total farms and only 3% of total farm land.

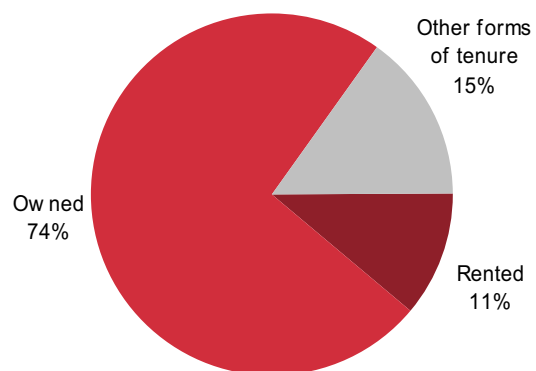
Individuals still dominate

Exhibit 59. Land tenure – split by farm area (1996 Census)



Source: IBGE (1996 Census)

Exhibit 60. Land tenure – split by number of establishments



Source: IBGE (1996 Census)

Major agricultural products

Over the past decade, Brazil has consolidated its position as a key producer and major supplier to international markets. The reasons for this have been outlined broadly in previous sections. Overall production has exceeded the rate of increase in consumer demand, driving export growth. In common with Argentina, the country benefits from the commercial advantage of harvesting in seasons alternate to the Northern Hemisphere and so has few competitors. Harvesting in Brazil takes place in March to May as opposed to October to December in the US.

Brazil is the world's second largest producer and exporter of soybean and the leading producer of sugarcane. The country is the hub for both sugar and ethanol production and is the leader in their exports globally. The country also plays an important role in the global livestock market and is a major global producer and exporter of beef and poultry. In 2007, Brazil ranked number one in the export of sugar, ethanol, coffee, orange juice, tobacco, beef and poultry. It was also the global leading producer of sugar, coffee, orange juice and tobacco.

Export surpluses

A global export leader in several products

Exhibit 61. Major agricultural commodities (2006)

Rank	Commodity	Production (US\$m)
1	Beef	16,088
2	Soybeans	10,936
3	Poultry	10,111
4	Sugarcane	8,726
5	Milk	6,202
6	Maize	4,051
7	Pork	3,150
8	Oranges	3,128
9	Rice	2,800
10	Cassava	1,920
11	Coffee	1,782
12	Tobacco	1,601
13	Eggs	1,355
14	Beans (dry)	1,340
15	Bananas	955
16	Wheat	811
17	Tomatoes	783
18	Grapes	561
19	Potatoes	428
20	Fresh vegetables	422

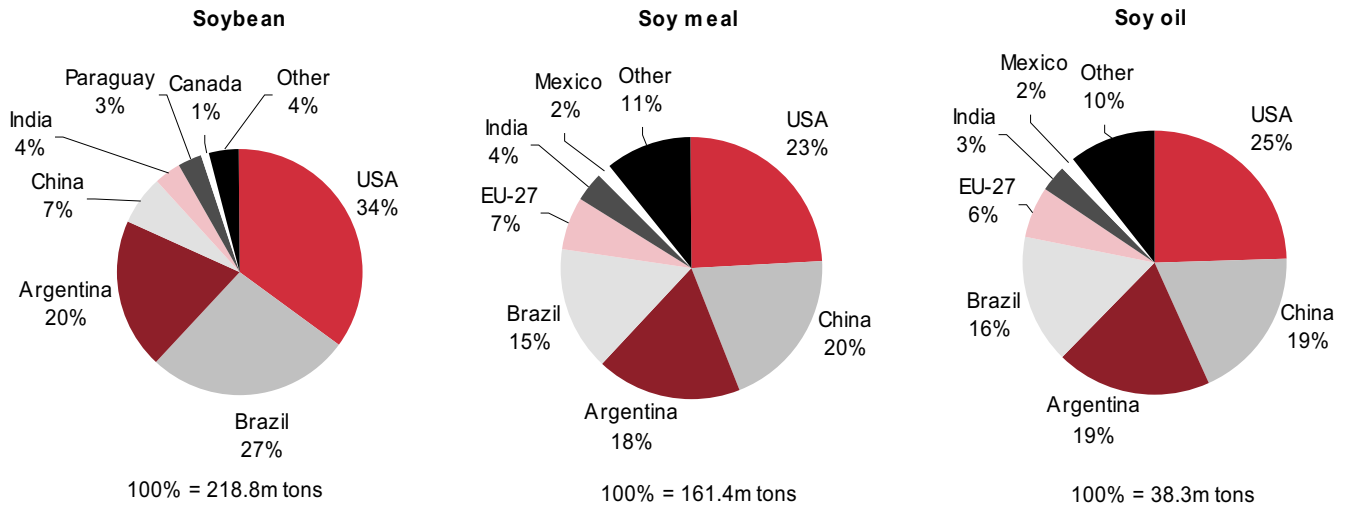
Source: FAO 2006

Soybeans

Brazil is the second largest soybean producer and exporter in the world after the US. In 2007, the country produced 61m tons of soybeans, 40% of which were exported. The total area harvested was 22m ha in 2007 almost double the 12m ha harvested in 1995. This was primarily due to the introduction of genetically modified, herbicide resistant, soybean cultivation in Brazil which cut production costs by a fifth and made it more profitable than other crops. By 2006, almost 50% of all soybean crops in Brazil were estimated to be genetically modified. Over 33% of total soybean production was in Mato Grosso of the Central West region, followed by Parana in the Southern region, which accounts for a 19% share. It is expected that the area harvested will grow by a further 10m ha over the next decade.

Second largest producer and exporter

Exhibit 62. Global soy product production split (2007)



Source: USDA

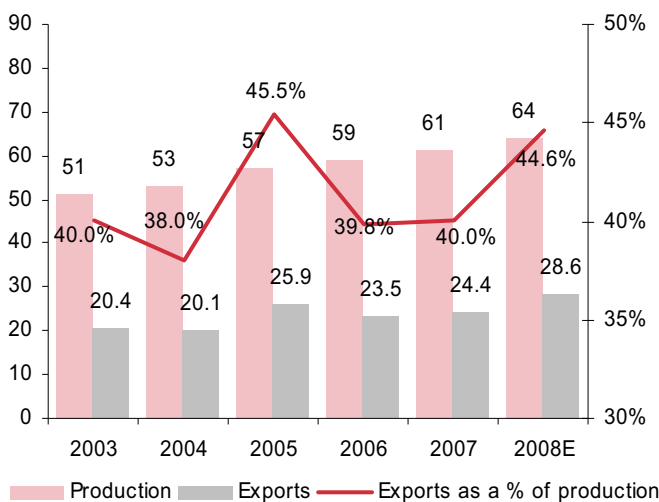
Brazil is also a major player in the soybean products (soy meal and soy oil). In 2007 it was the world's fourth largest producer of soy oil and soy meal, accounting for 16% and 15% of total global production respectively. It is also the second largest exporter of soy meal and soy oil after Argentina, accounting for 23% and 21% of the global export market respectively. Increased domestic demand for soy meal and soy oil and bio-diesel production makes it more profitable than other crops in most areas of Brazil.

The EU and China are the primary markets for Brazilian soybeans and associated products and together they account for approximately 60% of total exports. Brazil accounts for 33% of global soybean world trade, roughly the same as the US, and the USDA forecasts that this will grow to 45% by 2015. However, declining profitability, reduced competitiveness and increasing producer indebtedness may reduce the more optimistic growth forecasts. Soybean crushing has also declined from 90% of output in 1995 to about 50% in 2006. This is primarily due to the expansion of production in the Central West region located far from most crushing plants and the transfer of crushing to Argentina, where differential export taxes on soybean exports have been introduced.

A dominant position in soy meal and soy oil

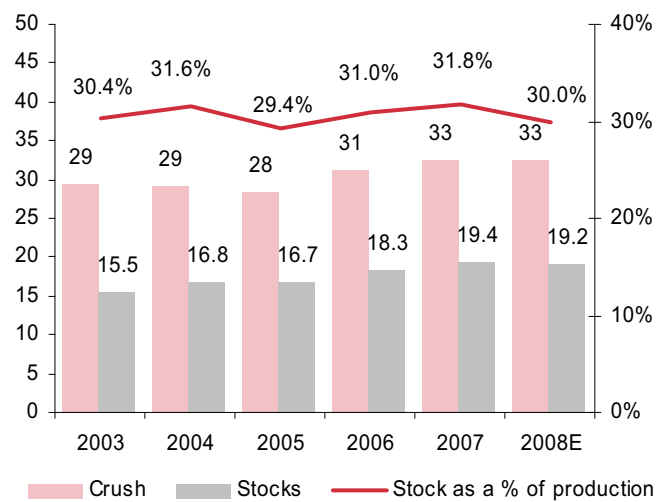
The EU and China are the primary buyers of the country's soybean exports

Exhibit 63. LHS – soybean production, export (m tons) / RHS – exports as a % of production (2003-2008)



Source: USDA

Exhibit 64. LHS – soybean crush, stocks (m tons) RHS – stocks as a % of production (2003-2008)



Source: USDA

A large share of soy meal produced in Brazil is exported. More than half of soy meal production in Brazil was exported in 2007, primarily to the EU. Domestic demand for soy meal is driven by the expanding livestock sector, in particular, poultry, which accounts for two-thirds of its domestic consumption. Soy oil production and exports have been fairly static in recent years. Total exports grew at a CAGR of 4.5% over the period 2003-2007 and reached just over 24m tons. About 40% of soy oil production in Brazil was exported in 2007 with Iran, India and Holland being primary export destinations. In the future, industrial demand is expected to grow as bio-diesel blending with fuel becomes obligatory in Brazil from 2008. In addition, the EU's bio-fuel target of 5.75% in gasoline by 2010 is expected to stimulate export demand.

Soy meal is used in the expanding livestock sector

Brazil's rapidly increasing soybean area has allowed it to gain a larger share of world soybean and soy meal exports, despite increasing domestic feed use. Brazil is expected to shift from oilseed to corn production over the next five years in response to higher corn prices and more limited competition from US corn exports. However, with expanded soybean plantings in the Cerrado regions, the growth rate for Brazil's soybean planted area is projected to average nearly 3.5% pa, reaching about 31m ha by 2017. Soybean exports are projected to almost double in this period although, as we noted earlier, this is dependent on profitability, competitiveness and producer indebtedness, which may have an impact.

Gaining market share

Exhibit 65. LHS – soy meal and soy oil exports (m tons)/RHS - soy meal and soy oil exports as a % of total production (2003-2008)



Source: USDA

Sugarcane

Brazil is the world's leading producer of sugarcane, accounting for almost a third of global production. Sugarcane is currently the fastest growing sector of the country's agriculture sector with sugarcane production growing at a CAGR of almost 9% between 1999 and 2006. Output reached a volume of 426m tons in 2006. More than two thirds of the cane grown in Brazil is sold domestically, in the form of either sugar or alcohol. Brazil is also the world's largest exporter of both ethanol and sugar.

The dominant producer of sugarcane

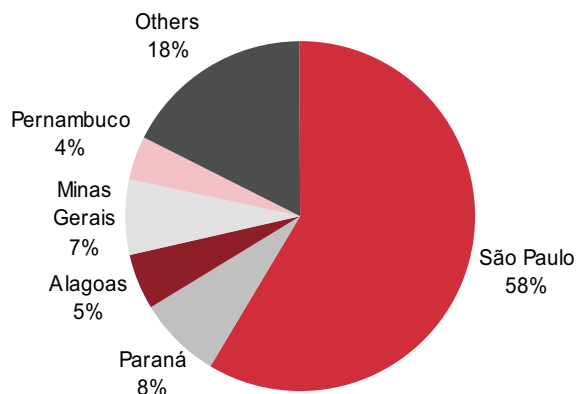
Sugarcane production is almost entirely located in the central south region, accounting for about 88% of total production. Brazil uses about 6.1m ha of land to grow sugarcane of which about 3.3m ha lies in the south eastern lands of São Paulo which accounts for approximately 60% of total production.

Cane output is roughly split 50/50 between sugar and ethanol. Due to the high prices for both products, sugarcane cultivation is still expanding and accumulating land diverted from soybean and citrus cultivation. Studies have suggested that up to 20m ha of idle land in the Central West region could be used for sugarcane cultivation. The

500m tons of cane output expected

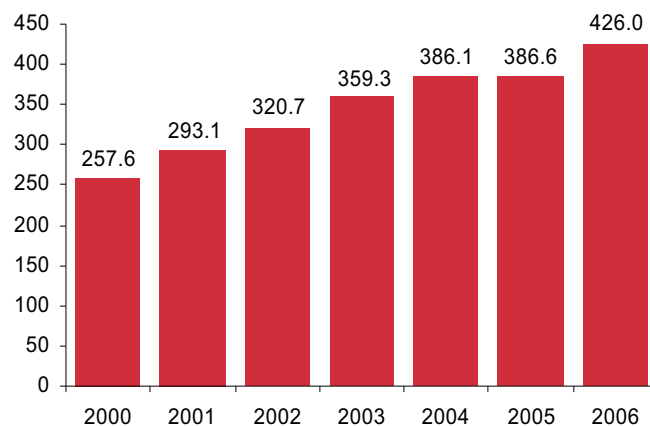
consensus suggests that sugarcane production should be expected to cross 500m tons in production over the next five years, primarily due to the increasing demand for bio-fuels. The entry of genetically modified sugarcane into the market beyond 2010 is also expected to increase productivity sharply.

Exhibit 66. Production split by state (2005)



Source: MAPA

Exhibit 67. Sugarcane production (m tons); 1990-2006



Source: Brazil's sugar cane industry association (UNICA)

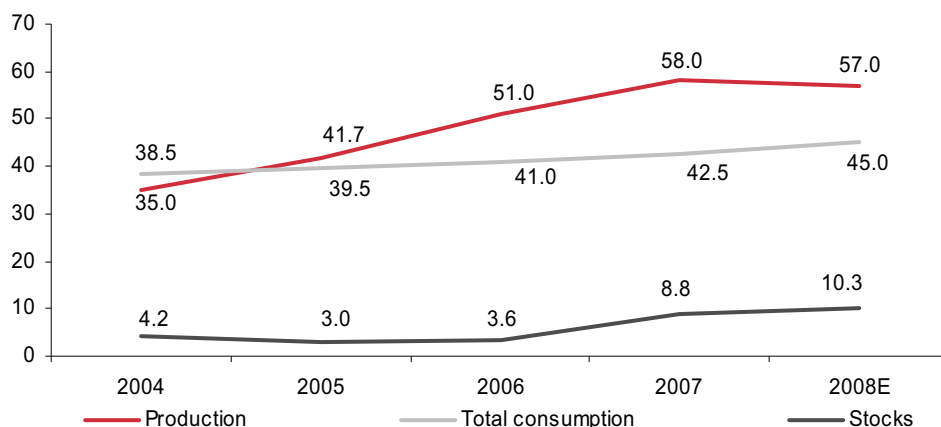
Maize

Brazil is the third largest maize producer in the world after the US and China. Maize is one of the primary grains grown in Brazil, accounting for about 12m ha of land under cultivation. Production in 2007 reached 58m tons. Dramatic increases in yield were seen in the late 1990s, due mostly to the introduction of double cropping (ie, the growth of two crops in a single season). Brazil is a net exporter of maize and the crop is grown primarily as domestic animal feed. Of the total corn produced in Brazil in 2005, only 8% was exported. Maize output in Brazil, therefore, is driven primarily by growth of the poultry and pigs sectors. The state of Parana in the South region accounts for 25% of Brazilian corn production, followed by Minas Gerais (18%) and São Paulo (12%) in the Southeast region.

If price signals are anything to go by, Brazil's corn exports should rise sharply in the years ahead in response to higher corn prices relative to soybean prices. In 2006, the government provided subsidies in order to increase the price of corn to a minimum guaranteed price and to assist in the flow of grain from areas where it was produced to areas where it was consumed. Given the rate of growth in the meat sector, Brazil is unlikely to become a major maize exporter in the future.

Third largest producer of maize after the US and China

Exhibit 68. Maize production, consumption and stocks (m tons) (2004-2008)



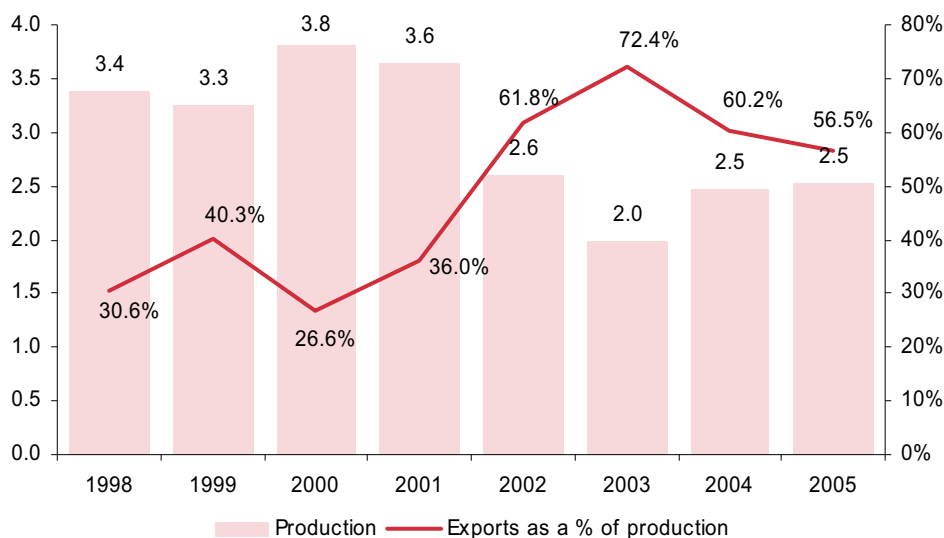
Source: USDA

Coffee

Brazil is the largest coffee producer in the world and produced some 2.5m tons of the stuff in 2005. Its major competitors are Vietnam, Indonesia and Columbia. It is also the world's leading exporter with 1.4m tons sent overseas in 2005, accounting for approximately 30% of the global trade. As the largest coffee producer, and a major exporter, swings in Brazilian supplies have a significant influence on market prices. The total area harvested for coffee cultivation is 2.3m ha, of which Minas Gerais in the Southeast region accounts for 46%. The EU is Brazil's biggest customer accounting for half its exports, followed by the US.

The largest coffee producer in the world

Exhibit 69. Coffee production (m tons) (1998-2005)



Source: MAPA

Livestock

Brazil boasts of one of the largest livestock populations (200m+) globally. Brazil is a major producer and exporter of poultry and slaughters more cattle annually than the US. The region's most extensive grazing lands are concentrated in the South and Southeast, with a smaller but increasing share in northern states and frontier zones, such as Amazonia.

Beef

Brazil has the second largest cattle herd in the world after India, and is the second biggest beef producer after the US, producing 9.5m tons in 2007. 75% of production is done on specialised farms of which approximately half are farms with over 500 cattle. Cattle production is fairly evenly spread across the country, though over 33% is concentrated in the Central West due to the availability of cheap pasture.

Beef output has grown steadily since the early 1990s; however, the sharp increase in production is a relatively recent phenomenon (since 2002) and is probably due to a more favourable exchange rate environment which delivered a sharp rise in exports. The share of production exported jumped from 10% to 20% between 2002 and 2004, due to a competitive exchange rate, rising global demand and the elimination of Foot and Mouth Disease in most parts of Brazil. In 2007, Brazil was the world's largest beef exporter, with about 25% (2.2m tons) of its production being exported. The remaining 75% was used for domestic consumption

Russia and the EU accounted for almost half of the beef export market by value in 2007. The EU is the only developed market open to Brazilian fresh meat exports. The US does not allow imports of fresh beef despite being the leading destination for processed beef. With the EU severely tightening restrictions on beef imports from Brazil in early 2008, exports are likely to decline. To ensure continued growth in this sector through access to new export markets such as the US and Asia, Brazil needs to address the key challenge of disease control.

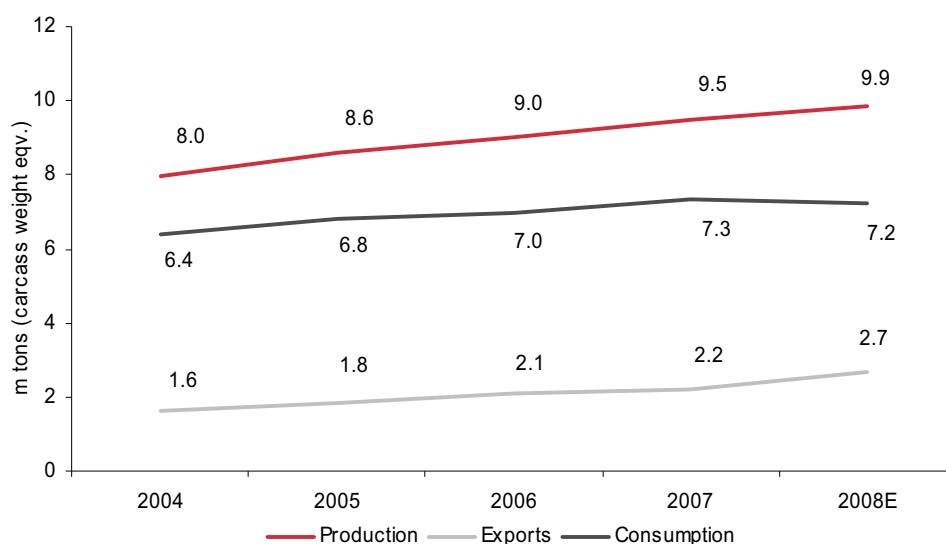
200m+ livestock population

Second largest cattle herd after India

Export-driven boom

Russia and the EU account for almost 50% of Brazilian beef exports

Exhibit 70. Beef production, consumption and exports (m tons) (2004-2008E)



Source: USDA

Poultry

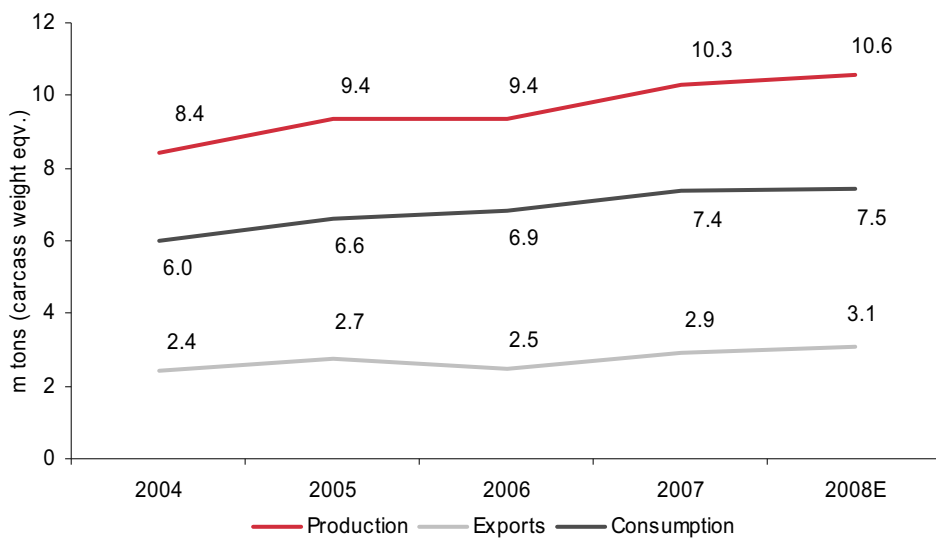
The poultry industry is another success story. Brazil is the third largest producer of poultry products (broiler meat and turkey) after the US and China. The poultry industry in Brazil has been expanding rapidly with an annual growth rate of 13% throughout the 1990s. The rate of growth has slowed in recent years but, at 7% from 2004-2007, it is still rapid and has the potential to expand still further in the years ahead. The sector is modern and competitive and displays a high degree of vertical integration. It is also highly concentrated with a few large companies dominating the export market.

Third largest producer of poultry

Production of broiler meat stood at 10.5m tons in 2007, of which about 28% (2.9m tons) was exported with the remaining 72% used domestically. Brazil currently accounts for about 15% of total global production. Some commentators suggest that production will increase by about 50% over the next decade, driven by strong foreign and domestic demand. Brazil recently became the world's leading exporter of poultry meat accounting for approximately 40% of global poultry exports in 2007. Exports more than tripled from 0.9m tons in 2000 to 2.9m tons in 2007. Over 30% of exports were accounted for by the Middle East, in the form of whole poultry. The market for poultry cuts is growing and currently accounts for 60% of Brazilian poultry exports.

28% of production exported

Exhibit 71. Broiler meat production consumption and exports (m tons) (2004-2008)



Source: USDA

Sugar versus ethanol

Brazil's status as the largest producer of sugarcane gives the country a strategic advantage that is possibly neither fully recognised nor wholly appreciated by most observers. It remains the world's largest producer and exporter of sugar (raw and refined). It is also the world leader in ethanol exports and ranks as second in terms of global production (the US overtook Brazil as the largest producer in 2006). Unlike the US and Europe, Brazil can switch sugarcane utilisation between ethanol and sugar production depending on demand and profitability as most of the ethanol producers are sugar mills. Some 85% of ethanol plants are vertically integrated. This flexibility of feedstock utilisation insulates Brazilian producers to an extent from fluctuations in market demand, making operations less volatile than its peers in the US.

Developments in Brazil have a significant impact on world sugar prices. In 2006, Brazil exported 18.3m tons of sugar, accounting for 41% of world sugar exports. Brazilian ethanol exports in 2006 of 1bn gallons represented 52% of world ethanol exports. Currently, about 50% of Brazil's annual sugarcane output is used to produce ethanol. The other 50% goes to produce sugar for both domestic consumption and export. Since 2002, Brazil's sugar-ethanol market has benefited from domestic and foreign demand, more favourable expected returns to sugarcane producers, expansion in available land and technological advancement in new varieties of sugarcane. As demand for Brazilian ethanol continues to rise, the production of ethanol is expected to continue to exceed that of sugar in the sugarcane utilisation mix.

Exhibit 72. Split by use of sugarcane in Brazil (2002-2008)



Source: UNICA

Brazil is the largest raw and refined sugar producer, accounting for 20% of the world's sugar production. Sugar represents an important component of Brazil's economy with the sugar/ethanol industry contributing 2% of national GDP. The value of sugar production in 2006 reached US\$8bn, which represents 17% of the country's agricultural output. The sugar sector generates 21% of total exports and employs 2% of the nation's total labour force. In 2006, sugar production in Brazil reached almost 29m tons.

Economic liberalisation, deregulation and ethanol policies have been key factors in the evolution of the sugar-ethanol industry. As with so many success factors, it was a policy hatched three decades back that paid handsome dividends in the long term. The original expansion of the Brazilian sugar industry was undertaken by the Proálcool programme (*Programa Nacional do Alcool*), Brazil's national alcohol programme launched in 1975. The policy provided incentives to ensure greater use of fuel alcohol in the aftermath of the Oil Crisis of the early-1970s. The policy also ensured that the ethanol content in the gasoline blend when ethanol supplies were low was reduced, hence raising exports.

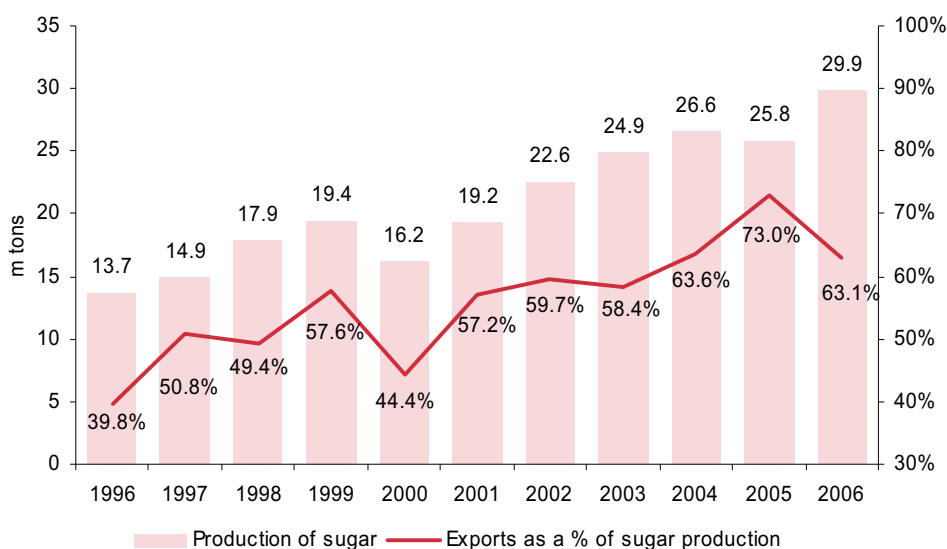
Vertical integration makes the Brazilian industry less volatile than its international peers

Sugar remains at the heart of the Brazilian agriculture industry

In 1975 the seeds of a revolution were sown

Brazil has the highest mandatory blending requirements globally. These vary between 20-25% of ethanol, depending on the state of the global sugar market.

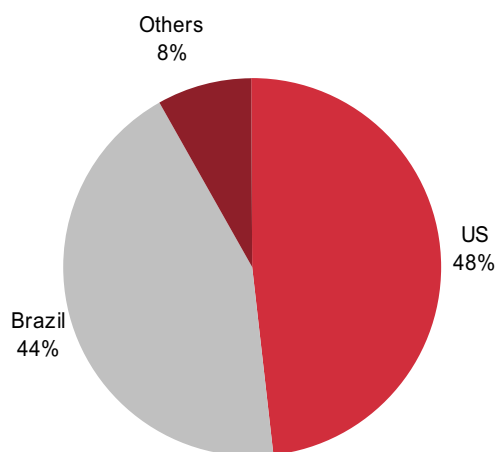
Exhibit 73. LHS – sugar production (m tons)/RHS – exports as a % of production (1996-2006)



Source: UNICA

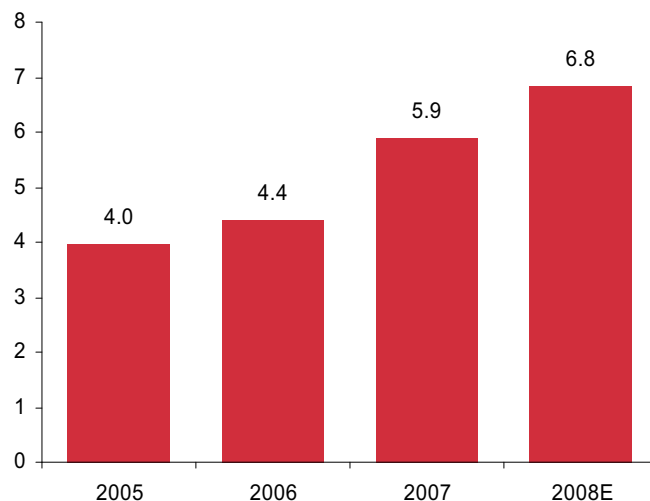
With a production volume of 5.9bn gallons in 2007, Brazil is the second-largest fuel ethanol manufacturer in the world. It currently uses 54% of its total sugarcane production to produce ethanol. Ethanol production is expected to grow 16% to reach 6.8bn gallons in the next year, utilising 57% of the total sugarcane production.

Exhibit 74. Split by ethanol production (2007)



Source: USDA

Exhibit 75. Brazil fuel ethanol production (bn gallons) (2005-2008)



Source: USDA

The effective incorporation of ethanol in the transport system and rising oil prices are the obvious key demand drivers of the Brazilian ethanol market. Flex fuel vehicles (FFVs), which can run on any combination of gasoline and ethanol, were introduced in Brazil in 2003 and now account for 75% of all new car sales. Brazil is working towards the adoption of greater amounts of renewable fuels in its vehicle fleet. Most car manufacturers are now switching to the production of FFVs instead of gasoline vehicles. The percentage of new FFV sales in total new automobile sales is expected to rise to about 90% by 2015. In February 2007, the consumption of ethanol, including that blended with gasoline, overtook gasoline consumption for the first time in 20 years.

Flex fuel vehicles

Supply-side obstacles

Hitherto this section may have give the impression that the future success of the Brazilian agriculture sector is almost a given. This is not the case. It does not follow that possession of a range of natural advantages and God-given inputs magically translates into an overwhelming range of outputs. One only has to look at the incredible array of inputs the Soviet Union enjoyed in land, labour and capital and contrast that with the dire outputs the country achieved in the decades following 1917. Likewise, Argentina has seemingly spent the best part of 60 years learning how to mismanage its incredible array of resources to confirm the point that success is dependent on more than just the basic factors of production.

In short, Brazil does face several challenges in the years ahead if it wishes to ensure that its position as a leading agricultural producer is elevated to a status more akin to that of an agricultural superpower. The availability of land, high oil prices, high cereal prices, and a positive consumer environment are all necessary conditions to promote growth of the industry, but they are insufficient. Brazil has to address the following issues if it is to come close to achieving its longer-term goals and ambitions.

Lack of access to capital

Brazilian producers are heavily indebted and access to credit is patchy. Although the problem is a worldwide one, the lack of access to financial instruments and the inability to scale production means that the advantages flow to those with access to capital. Even in the current benign market conditions, the current level of nonperforming loans in the sector is estimated at US\$7bn, around 10% of the value of annual agricultural production. The inherent riskiness of the sector, coupled with its fragmented status, means that funding costs are high. Any downturn, perhaps driven by a re-emergence of protectionism, could have a lasting and damaging effect on the sector.

Slower land expansion

The forecast rate of expansion in land used for crop and livestock production is expected to be one of the world's highest at 4.5% pa over the next 10 years (ie, 1.8m ha pa). While the current agricultural crop land area is 67m ha, the potential for expansion is three times this amount and includes 90m ha in the Cerrado's tropical savannah region. However, the amount of credit required to bring additional land into cultivation and to expand agricultural production is more than double the credit likely to be available in the current climate. Environmental concerns will also play a part as well. Therefore, although the rate of expansion is likely to be high, enormous investment sums will be required to make it work.

Infrastructure, transport and marketing bottlenecks

Infrastructure bottlenecks undermine the competitive position of Brazil in world markets. The development of storage depots, port facilities, roads and railways has not kept pace with the breakneck pace of growth in production and exports. In recent years, higher soybean volumes for export markets have weighed down loading docks at Brazilian ports resulting in long delays and additional costs. Some farm commodities travel 1,000 miles or more over poor and highly congested roads to reach seaports. Less than one-quarter of national roads are deemed to be in good condition in Brazil. To put these additional costs into perspective, the cost of logistics for exporting Brazilian soybeans is estimated to be 83% higher than for the US and 94% higher than for Argentina.

Less stable macroeconomic environment

An ongoing continuous appreciation of the exchange rate does not help exports and is likely to put a brake on expansion plans in the years ahead. The restrictive monetary policy to keep inflation under control has resulted in rising interest rates, which in turn attract dollar-denominated capital inflows. The inflows have increased demand for the

Success is not a given

Necessary conditions are there but they are insufficient

Even in a benign environment capital is still inaccessible

Land development requires capex

Real, which has been steadily appreciating since September 2004. The appreciation has already affected Brazil's competitive pricing and the profitability of its food and agricultural exports. From September 2004 to July 2006, the Real had appreciated 32% against the dollar, potentially making Brazilian export products about one-third more expensive in other countries. With the Real expected to continue to appreciate, Brazilian exporters are expected to face a deteriorating competitive position in global food and agricultural markets.

Our view

We dispute the conventional view that China is driving a global consumption boom in soft commodities. We also dispute the notion that the country will need to rely on food imports to supply its needs in the years ahead. The problems across the country's agriculture sector are driven not by demand but by bad economics and distortions. Keep the distortions in place and China will surely have a long-term agricultural problem. Get rid of them and the problems will disappear too.

Anchor themes

- Chinese diets have changed – slowly. However, shifting from a grain and vegetable based diet towards a protein-based one does not have the Malthusian ramifications that some would have us believe. Calorie consumption growth and population growth border on the pedestrian. The Chinese are not consuming more, contrary to received wisdom.
- The Chinese Ministry of Agriculture's draft proposal to support overseas land acquisition by domestic agricultural companies is a central government policy. This policy is driven more by the need to recycle current account surpluses than the need to guarantee food security.

Making a crisis out of a drama

① Chinese food consumption patterns are overstated

Rising populations, incomes, and rural to urban migration all suggest that food consumption should rise in China over time. This is unlikely. China's average calorie intake levels of 2,800 per capita per day are already at Asian developed nation levels. For sure, more money will be spent on processed foods over time but, in terms of volumes, there will not be a sharp rise in demand. Additional protein needs will be offset by declining grain and vegetable requirements.

② China needs to embrace the free market in agriculture

The country's agriculture system, whilst undergoing a transformation since the late 1970s, still lags the enormous leaps made in the industrial and commercial sectors. Not only does it lag, it is grossly inefficient. It is a significant achievement to feed 20% of the world's population with only 10% of the world's arable land. However, the lack of enforceable property rights, the absence of a pricing mechanism to allocate scarce resources like water and the inefficient use of fertilisers has distorted the agriculture sector. Address these issues and China's agricultural challenges will disappear.

③ Don't misread the state-sponsored overseas land acquisition programme

Although the issue is low key currently, we would expect China's overseas land acquisition strategy to step up a gear in the near future. This is being misread, in our view, as a means to establish food security. We view it differently: as we see it, the Chinese government is simply looking to diversify its overseas investments and recycle US\$ holdings. There are only so many US treasury bills to choke on. Agricultural land has a value now that was not the case three decades back. It makes sense to invest in it.

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Making a crisis out of a drama

Faced with the choice between changing one's mind and proving that there is no need to do so, almost everyone gets busy on the proof – John Kenneth Galbraith

Supply and demand imbalances in the agriculture sector are usually easy to explain: too much or too little rain, frost, snow or sunshine, and at different points each year. In short, the imbalance is usually caused by the weather and, if not, it will be driven by another supply issue. Demand is paced, consistent and gradual. Therefore, volatility is caused by supply. Yet we seem to have succumbed in recent years to the notion that volatility is being driven by the unrelenting nature of demand in China and other emerging markets. In accepting this as conventional wisdom we may be making one of the most serious economic misinterpretations of recent times.

As we see it, demand is not being driven by China. For sure, people are eating more protein and the conversion ratio for poultry through pork to beef implies that additional grains are required to produce that protein. However, the evidence seems to suggest that as Chinese protein intake increases, grain intake declines rapidly. In the simplest terms, there is a net loss in terms of consumption. In tandem with grain consumption, vegetable consumption is declining too.

That is not to say that there hasn't been a change in consumption patterns over time. However, consistent with the demand side of the equation, these changes have been gradual. In China's case they took place in the 1980s through the 1990s and into the millennium. Then this consumption trend ground to a halt. In short, consumption patterns on the Eastern seaboard of China and in other urban areas reached those levels consistent with other richer Asian countries. As population growth is now falling consumption growth has supposedly, therefore, become dependent on rural-urban migration. Except that this shift simply implies an even steeper decline in the consumption of primary grains and vegetables. We seem to have laboured under a myth in the last few years.

So why is China acquiring land overseas then? Surely this is a sign that the country recognises the stresses being placed on its own domestic agriculture sector? We disagree. In our view, the policy is driven not by agricultural need but as a means of recycling the country's vast export earnings and also acquiring assets that provide a reasonable inflationary hedge. You can only buy so many US treasury bonds.

None of this is to deny the deep seated structural problems within China's agriculture system. However, rising demand is the least of its problems. If China wishes to secure a better equilibrium, and to allocate resources more efficiently in its agriculture sector, it needs to seek market-driven solutions to the sector's challenges. Put bluntly, if you get something for nothing, then demand is infinite: think free health care in Europe and think free water in China. In a continent like Europe an ageing population and free health care is a bad combination. In China, 10% of the world's water and farm land feeds 20% of its population – a manageable combination provided a price is placed on that water and it is treated as a scarce resource.

Land laws are also archaic. No one is quite sure where power lies between village leaders and the *xiaozu* (ie, the 30-40 households which work the old collectives). China created a productivity revolution in 1978. If China was to enhance property rights and demarcate power, another agriculture revolution would no doubt follow. And all those question marks that hang over the viability of the sector would disappear.

It really is that simple.

China's demand for food is a myth of staggering proportions

Chinese consumption patterns match rich world standards already

Reorganise land laws, enforce property rights and put a price on water and you will find most of China's agricultural problems will disappear

Overview

Agriculture remains a key sector of the Chinese economy. Although the sector accounted for only 10.4% of GDP in 2007, the sector employed around 300m people, some 40% of total nationwide employment. Of China's landmass of 960m ha, some 13% is cultivated land and 27% is pasture. The scale, varied climatic conditions and wide variety of soils make it a highly diversified country in agricultural terms. While cultivated land is evenly distributed across all Chinese agricultural regions, the Central South and East regions, endowed with extremely fertile and good soils, are the primary sources of agricultural production and account for approximately 60% of total crop output.

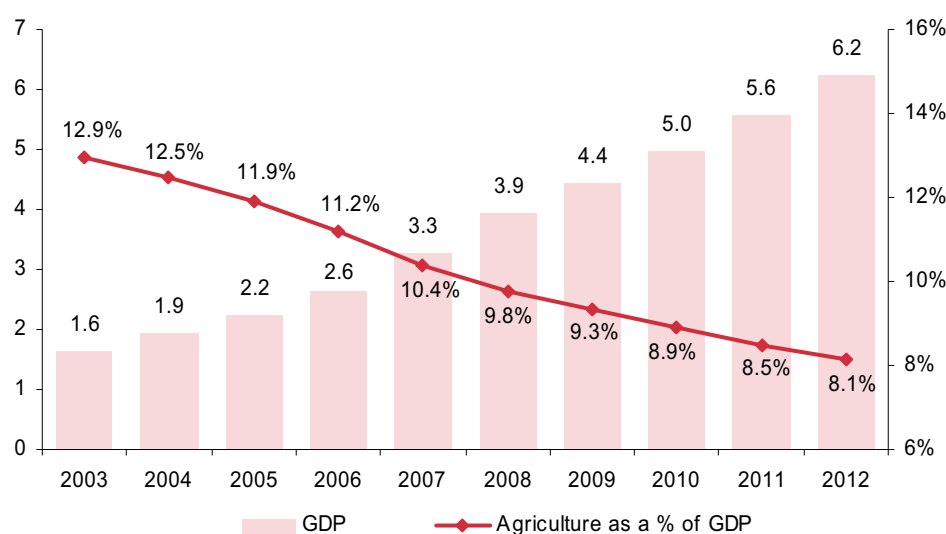
10% of GDP but 40% of employment

With the world's largest population, China is both a large-scale producer and consumer of agricultural products. Rice, wheat, potatoes and corn are the country's chief farm products. In 2007, China accounted for about 19% of the world's grain output (including 30% of rice output and 18% of wheat output), 20% of the global potato production, and was a leading corn producer, accounting for about 19% share of global production volume. Grains, sugar crops and vegetables together account for about 90% of the total cultivated land in China. Livestock is another key segment of the Chinese agricultural market and the country accounted for approximately 31% of the world's meat production in 2007.

With less than 10% of the world's arable land, China supports over 20% of the world's population – a fair achievement. It wasn't always the case. Agricultural reform began in 1978 as part of Deng Xiaoping's Four Modernisations programme after having played second fiddle to the industrial sector for much of the period after the declaration of the People's Republic in 1949. While the ownership of land remains in the hands of collectives, land-use rights and the right to residual income were transferred to individual households. The reforms improved agricultural productivity and rural incomes dramatically. The share of primary sector output in GDP reached a peak of 33% in 1982. However, due to a confluence of various economic and structural developments, agriculture's share in GDP has been falling fairly steadily in recent times, and by 2012 it is estimated to account for only 8.1% of GDP.

10% of land supports 20% of the population

Exhibit 76. LHS – GDP estimates (US\$tn)/RHS – agriculture as a % of GDP (2003-2012)



Source: IMF, EIU

Despite being one of the world's largest producers, China exports relatively little of its agricultural output. Rapid economic development and rising incomes have driven domestic consumption, turning the country into a net importer of several agricultural

commodities. While almost 90% of China's agricultural exports are labour-intensive products such as fruits, meats and aquaculture products, most of the agricultural imports include land-intensive products such as soybean and cotton.

All of the above-mentioned factors are straining the country's limited agricultural resources, most notably its agricultural land base. The situation is further compounded by the decline in the country's agricultural lands, which have been plagued by soil erosion and pollution-induced quality degradation, leading to a decline in cultivated area from 130m ha in 1996 to 122m ha in 2006.

Evolution of the agriculture sector

Since the founding of the People's Republic of China in 1949, the country's agricultural sector has undergone several transformations, not all of them positive. Before 1978 and years before the horrors of the Great Leap Forward were inflicted on China, agricultural policy was centred on the commune, whereby the government tightly controlled production, marketing and trade. There was no proper market mechanism to determine prices and, consequently, development of the agriculture sector and the rural economy was downright retarded.

Almost thirty years after the foundation of the People's Republic, agricultural reforms were introduced as one of Deng Xiaoping's "Four Modernisations". In 1978, the government introduced the household-based contract system across rural areas. The reforms consisted of increasing state procurement prices for grains, allowing farmers to sell above quota surpluses at market prices, lowering grain quotas, increasing grain imports and expanding private inter-provincial trade. The provision of incentives had a marked result on production and productivity.

After several decades of central planning, China now relies increasingly on market mechanisms to allocate resources following a series of policy and institutional reforms. Consumers, processors and farmers make their own decisions on consumption and production based on market forces.

Over the course of time, the country's taxation system has also undergone a major overhaul. Until the mid-1990s, the government taxed the agricultural sector by buying commodities at sub-market prices to subsidise urban consumption and industrial development. However, in recent years, in common with many other industrialising countries, China has increasingly abandoned taxes on agriculture and extended significant subsidies instead to the sector to address growing rural-urban income inequality and maintain food production capacity.

Foreign trade has also been liberalised considerably over the last three decades. Following its accession to the WTO in 2001, the country has reduced import tariffs consistently on agricultural imports. However, for selected commodities, state trading still plays an important role in driving a wedge between domestic and world prices. In particular, export-import decisions on grains are made by the government and driven by the levels of strategic stocks and expected production trends of various grains rather than by prospects of profits based on price differentials.

1949-1978: Control of communes

Following the foundation of the People's Republic in 1949, the Chinese government took control of the farm lands from landlords and redistributed land among the peasants. In 1953, the government launched a movement of agricultural co-operation (ie, organising peasants into mutual aid teams) to enact the socialist goal of collective land ownership. By the end of 1955, 65% of all peasant households had been collectivised and in 1956, the government formally took control of the land. The state monopolised the purchasing and marketing of farm products such as grain, cotton and oilseeds, and established supply, marketing and credit co-operatives across the country.

However, in 1958, lasting damage was done when the collective farms were merged into larger units called "people's communes" and private food production was banned. Under this dreadful system, land was under collective ownership, production activities were carried out collectively by all commune members, farm produce was purchased and sold in the framework of the government monopoly system and profits were distributed among all commune members according to the amount of work done. The communes were concerned not only with agricultural output but also with subsidiary farm activities such as light industry and handicrafts, which were usually produced for local consumption.

The Four Modernisations

The government still dictates import and export levels based on food security

Communes remained the dominant rural unit of economic organisation for the next 20 years. The system severely restrained farmers' initiatives, killed off incentives, introduced free rider problems, removed price signals and destroyed any ability to allocate scarce resources efficiently. Despite this, the industry did make some gains with total grain output increasing from 113m tons in 1949 to 305m tons in 1978, an average annual growth rate of 3.5%. However, strip out the period 1949-58 and this figure looks very ordinary.

Exhibit 77. Agricultural highlights and lowlights between 1949 and 1978

Early reforms	1949-1952	In 1952, total agricultural output value reached CNY46bn (US\$6bn), up 48% over 1949. During the same period, total grain output reached 164m tons, up 45%.
Agricultural co-operation	1953-1957	Agricultural output grew 4.5% annually, with grain output and farmers' income rising by 19% and 5%, respectively.
People's commune	1958-1960 (The Great Leap Forward)	Policy errors plus natural disasters led to a severe setback in production. Compared with 1958, total agricultural output value dropped by 23% and grain production declined by 52m tons in 1960.
	1961-1965 (The Re-adjustment Stage)	The government adopted the principle of "re-adjustment, consolidation, supplementation and improvement". Output of grain, cotton and oilseeds increased by 36%, 98% and 87%, respectively, in 1965, compared with 1960.
	1966-1976 (The Cultural Revolution)	Bureaucracy and "class struggle" resulted in a stagnant agriculture sector and moribund rural economic development. The majority of farms produced little growth in output. Grain and oilseed output increased by only 3.6% and 0.9%, respectively, in the decade to 1976.

Source: Nomura, FAO, National Statistics Bureau, China

Economic reforms from 1978

In 1978, Deng Xiaoping initiated a rural reform programme by abolishing the people's commune system. Possibly the single most important policy adopted at this initial stage was the introduction of the Household Responsibility System (HRS), in which collective land was assigned to households for up to fifteen years and the rights to production and farming were transferred to households. Under the system, households were given crop quotas that they were required to provide to their collective unit in return for tools, draft animals, seeds and other essentials. All production in excess of assigned levels could be sold for profit on the open market by individual production teams. Overnight, 240m households became independent market operators, promoting rapid development of agriculture and the wider economy.

In the early years of this era, Chinese farmers responded to price incentives by increasing production dramatically. The annual rate of agricultural growth averaged 7.4% during the period between 1978 and 1985. This phase witnessed the highest growth rate in the country's grain production, which rose to 407m tons, a compound growth rate of almost 5% pa.

Towards the mid-1980s, the government continued to deepen the reform programme in the agriculture sector. After an excellent harvest in 1984, the government replaced mandatory procurement with voluntary contracts between farmers and the government. Later, in 1993, the authorities further liberalised the grain market and abolished the 40-year-old grain rationing system. More than 90% of all agricultural produce was sold at market-determined prices, an indication of the transformation of Chinese agriculture from a command and control system to a largely free-market sector.

Looked at in isolation, this represents incredible progress. However it paled alongside the progress made in the country's manufacturing and service sectors, which grew much more rapidly. It would be wrong to suggest that this was necessarily a bad thing because, not only did it represent considerable progress in absolute terms, but it also

Finding a better way to catch mice

The end of mandatory procurement in 1984

meant that urbanisation and industrialisation was able to offset massive rural displacement.

However, one factor that did become apparent was that after the initial burst of reform in the late-1970s through to the mid-1980s, the growth rate in agricultural GDP declined to under 6% between 1985 and 1995. While the production of non-staple foods (livestock, fisheries, fruit and vegetables) grew at over 9% pa, grain production stagnated and by 1995 China had to import 20m tons of grain. More worrying was the beginning of a trend which saw productive land, labour and water transferred to industrial and urban uses.

Rising grain prices driven by higher imports prompted a policy change by the government. The government instituted a number of policy changes aimed at limiting grain imports and increasing economic stability. Among these policy changes was the setting of grain prices above market levels, which increased domestic grain production. In 1995, the government introduced the “Governor’s Grain Bag Responsibility System”, which held provincial governors responsible for balancing grain supply and demand and stabilising grain prices in their provinces.

In 1997, China harvested a record grain crop – wheat imports were the smallest since 1961 and rice exports were the largest since 1973. This was followed by another bumper crop in 1998, and stocks remained high. However, while these new policies succeeded in reversing declining food production, they imposed a substantial financial burden on the government and hindered reforms in other sectors, resulting in a net loss in social welfare.

The millennium reforms

Ultimately, it is China’s industrial and urban development which is dictating change in the rural sector. The income differences between town and country and Eastern seaboard and hinterland are essentially one between rich and poor. Consequently, the emphasis in the last eight years has been to try and eliminate some of those wide differences as well as to assure continuity of output and supply in a sector which is short on capital and long on low-cost labour. In 2001 the government introduced direct subsidies to farmers, began to phase out its ancient agricultural tax, subsidised seed and machinery purchases and increased spending on rural infrastructure.

After several years of experimenting, China introduced its first nationwide direct subsidies for farmers in 2004. In total, funding of RMB11.6bn (US\$1.5bn), RMB13.2bn (US\$1.7bn) and RMB14.2bn (US\$1.9bn) were appropriated from the State Grain Risk Fund for this purpose in 2004, 2005 and 2006, respectively.

Recognising the social need to increase productivity and the economic need to increase overall supply, seeds and agricultural machinery were also subsidised under the new policies. Subsidies for high-quality seeds, such as high-oil soybean, special-use corn and wheat and high-quality rice varieties, are paid to seed suppliers, who are expected to pass on the subsidies to farmers. Although politically popular, the role of these subsidies in supporting farm incomes is minor. It is estimated that direct subsidies accounted for only around 5% of the total increase in rural incomes in 2004.

In addition, the government initiated rural tax reform in 2000 (and implemented it from 2004) to address widespread dissatisfaction over the high tax burden placed on farmers. China’s prevailing agricultural tax law dated back to 1958. Before 2004, Chinese farmers were typically assessed an agricultural tax based on the normal productive value of their land and they paid different formal and informal taxes, charges and fees. In 2000, the total taxation shouldered by farmers, known as the “peasant burden”, was estimated at around RMB200bn (US\$26bn).

The government’s initial tax reforms began with the amalgamation of most agricultural taxes, fees and charges into one tax which was then capped at a maximum rate (8.4%) relative to the annual grain-equivalent value of agricultural output for the previous year.

Problems begin to arise

Good output in 1997 and 1998

First nationwide subsidies in 2004

Reform included the removal of the Animal Slaughter Tax and the Special Agricultural Tax on all products except tobacco. The government also declared that the agricultural tax would be phased out over five years, beginning in 2004. However, in March 2005, the government announced that agricultural tax reform would be accelerated further with the aim of phasing out all national farm taxes in 2006. In 2005, 28 provinces exempted farmers from agricultural taxes and, at the beginning of 2006, China completely eliminated national agricultural taxes.

Meanwhile, the government has also been seeking to boost farm investment by making available more small loans to farm households through its 35,000-strong rural credit co-operative system (RCCs). These loans are used for input purchases as well as modest investments, such as well-digging, livestock and fertiliser purchases, planting orchards and greenhouse construction. State-owned banks are also increasing loans to agricultural processing companies which meet criteria for size, management, facilities and technology set by national or provincial governments. In September 2005, China's agricultural loan balance had reached US\$145bn, up 17% on the balance from a year earlier.

In addition to subsidies and taxation, China has also introduced reforms across other aspects of the sector. The country is in the process of abolishing procurement of grain at 'protection prices' (support prices at which government-sponsored marketing bureaux procure a set quota of grain from farmers), a policy introduced during the late 1990s when market prices for grain were falling from previous highs reached in 1996. Since May 2004, qualified non-state firms are allowed to buy and sell grains in the open market. Private firms which meet government criteria are also permitted to engage in grain processing and storing activities. Centrally set state pricing applies only to tobacco, which remains a state monopoly. However, the government regulates the grain market through national grain stocks and by procuring selected grains at minimum purchase prices.

China's accession to the WTO (in December 2001) has also played a key role in shaping the country's agricultural sector. In line with its WTO commitments, China has reduced import tariffs on agricultural products systematically. Most-favoured nation (MFN) tariffs on agricultural products fell, on average, from 23.1% in 2001 to 15.3% in 2005. In particular, tariffs on grains were reduced from almost 52% to just under 34%, while on oilseeds they fell from 32% to almost 11%. Tariffs on dairy products declined from almost 36% in 2001 to around 12% in 2005. WTO membership has also resulted in a reduction or elimination of tariffs on the majority of agricultural exports. By 2004 the value of the country's agricultural exports exceeded US\$17.3bn.

However, since inclusion in the WTO, China's agricultural trade has not liberalised to the same extent as its manufactured goods trade. The government still controls trade of key commodities, such as wheat, maize, rice and sugar, through state trading enterprises (STEs). Under China's WTO accession agreements agricultural products subject to import by STEs are grains such as maize, rice, and wheat, vegetable oils, sugar and cotton. And as noted previously, imports of tobacco remain under state monopoly. Moreover, markets within China continue to remain relatively closed to foreign companies.

Imports of agricultural goods are subject to VAT. The rate for agricultural products is 13%, four percentage points below the rate generally applied to other products. Depending on the market situation, VAT exemptions have been applied, sporadically, to a wide range of agriculture-related imports, such as grains, seeds, breeding animals, fertilisers, pesticides, feed components and cotton. However, if there is a domestic oversupply of a given commodity, the VAT exemption on imports is typically removed.

Rural credit co-operative system

The government still controls much agriculture trade

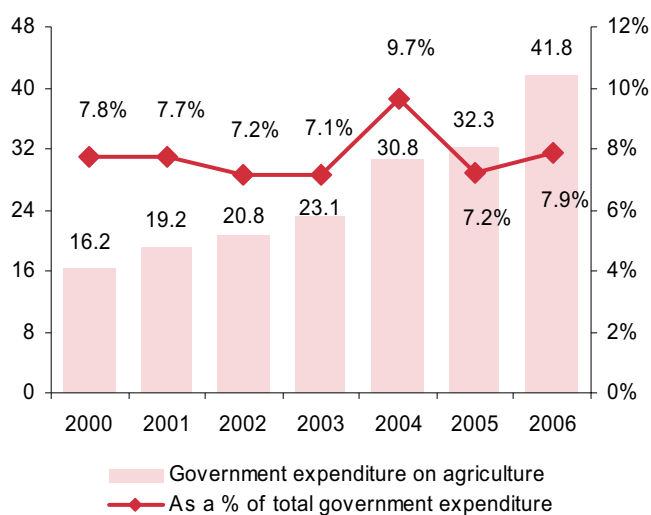
In the last 30 years, as China has modernised, dealing with the growing gap between rich and poor has become a central plank of policy. Given that it is the predominantly agricultural hinterland that has been left behind, policies have made an attempt to reconcile the rich Eastern seaboard with the poorer centre and west. However, upgrading the agriculture sector may bring as many problems as it resolves. After all, an industrialised and efficient farming sector does not sit well with a large peasant population. Consider, for example, the state's efforts to prevent loss of agricultural land to urban uses and the push towards organic farming. Not only do these two policies conflict partially with one another, but they also conflict massively with the changing needs of urban centres in terms of their changing diets, their growing suburbs and different transport and industrial requirements.

Government expenditure on agriculture

The government has increased budgetary resources for rural areas, including agriculture. Under the budgetary accounting system, government expenditure on agriculture consists of four major items - rural production, rural capital construction, agricultural science and technology promotion and rural relief funds. While annual expenditure on agriculture has increased by 17% between 2000 and 2006, its share of total government expenditure has remained more or less constant at around 8%.

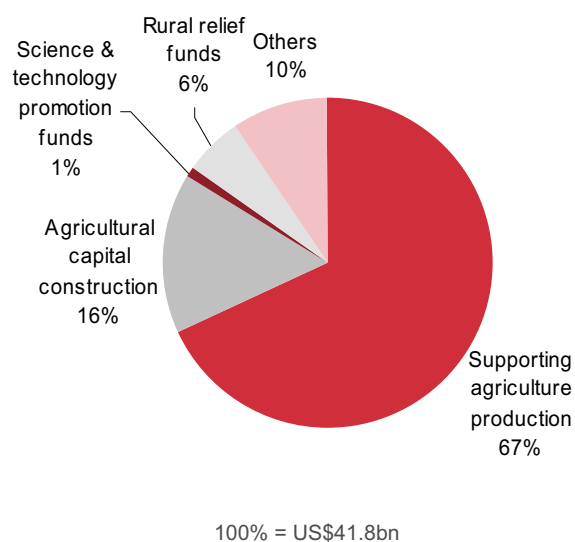
The growth of agricultural expenditure may confirm the government's commitment to allocate more resources to rural areas. However, since it is only a nominal hike, it is difficult to assess the genuine level of support towards the sector. Government expenditure on agriculture also includes payments to support the development of the rural economy in general ie, it includes non-agricultural activities in rural areas.

Exhibit 78. LHS – government expenditure on agriculture (US\$bn)/RHS – agricultural expenditure as a % of total government expenditure (2000-2006)



Source: National Statistics Bureau, China

Exhibit 79. Break-up of government expenditure on agriculture (%) (2006)

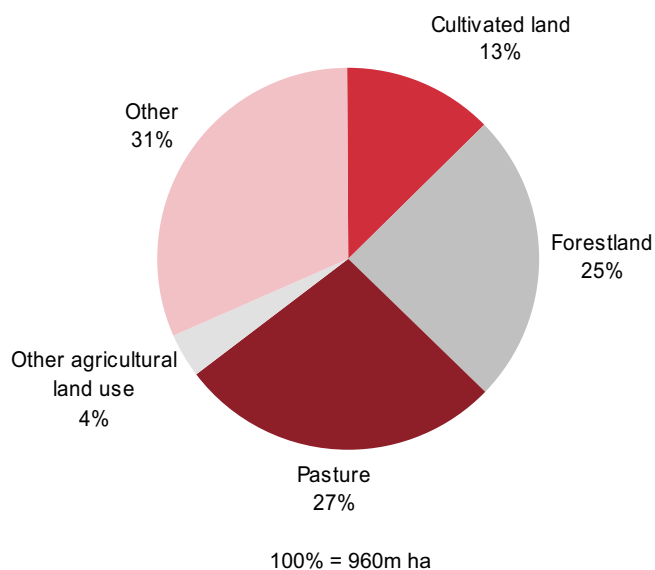


Source: National Statistics Bureau, China

Land use

China's vast lands, diverse climatic conditions and wide variety of soils suitable for crop cultivation, make it a major player in the global agricultural market. Of its total land area of 960m ha, agricultural land (including cultivated land, pastures and other agricultural land) accounted for about 44% of the total in 2006. Cultivated land alone accounted for 13% (122m ha) while pastures accounted for 27% of total land in the period. Forests, currently accounting for 25% of total land area, have witnessed a significant drop in land area over time, with extensive forests in central and southern China having been cleared for farm land. About 75% of China's cultivated area is devoted to food crops. The country is the world's largest producer of rice, which is raised on about 25% of cultivated land.

Exhibit 80. Land use (2006)



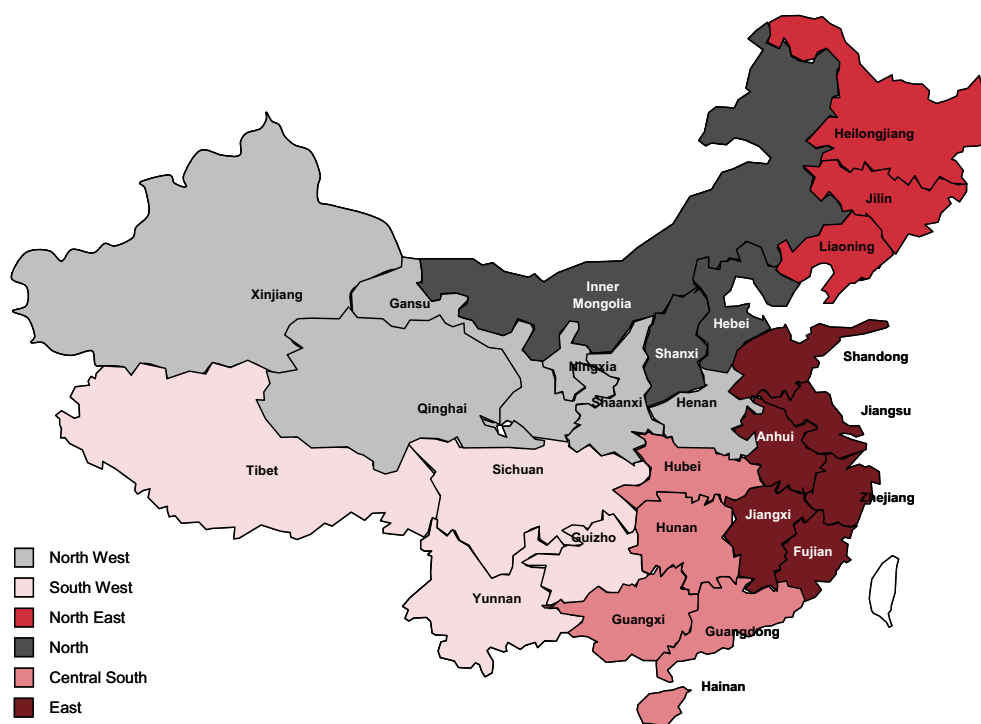
Source: National Statistics Bureau, China

Total agricultural land can be divided into six large natural regions based on varying climatic conditions and soil quality – North East, North, East, North West, South West and Central South. The North East Plain, with fertile black soil, is ideal for growing crops such as wheat, maize, sorghum, soybean, sugar beets and flax. The North China Plain is characterised by level terrain and deep top soils and major crops include wheat, maize, millet, sorghum and cotton, along with apples, pears, grapes, persimmons and other fruits. The Central South and East regions, endowed with the fertile Middle-Lower Yangtze Plains and the Pearl River Delta, are major contributors to agricultural output in China. The flood plains in these regions are characterised by paddy (rice-growing) soils, which are highly fertile.

The regions' primary crops include rice, rapeseed, broad beans, tangerines and freshwater fish.

Six regions

Exhibit 81. China by region and province



Source: Nomura

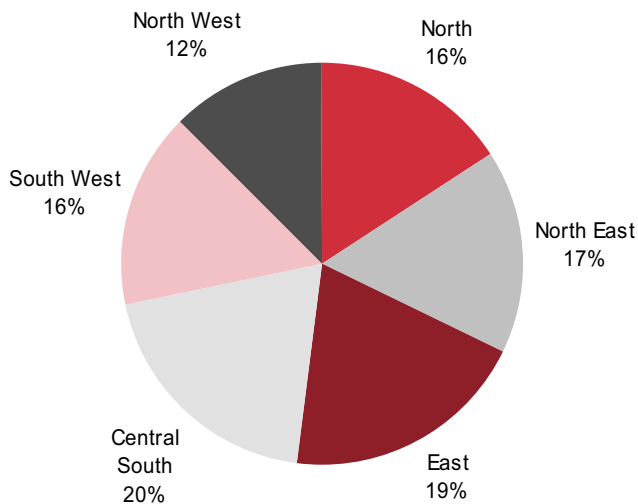
Cultivated land in China is split evenly across the six regions, with each region accounting for 12-20% of total agricultural land. According to the 1997 agricultural census, Central South (with 20%) was the largest region in terms of cultivated land, while the North West (with 12%) accounted for the least share. However, in terms of agricultural output, the Central South and East regions dominate, accounting for about 60% of crop, and about 50% of livestock, output (in 2006).

Rice is grown across the southern half of the country, notably in the East and Central South (70% of total production in 2006), and also in Yunnan, Guizhou, and Sichuan provinces in the South West. Most of China's wheat production is in the central and eastern part of the nation, where three provinces — Henan, Shandong and Hebei — produce more than 50% of the crop. Corn is evenly split across the regions with the focus in the North and Central South regions, which account for 22% and 30% of total output, respectively. Sorghum and millet are important food crops in North and North East China, while oats are important chiefly in Inner Mongolia and in the west, notably in Tibet.

Other food crops grown in China, including sweet potatoes, white potatoes, and various other fruits and vegetables, are evenly distributed across the regions in terms of production. Sweet potatoes predominate in the south and white potatoes in the north. Fruits, which include tropical varieties such as pineapples and bananas, are grown primarily on Hainan Island in the Central South, while apples and pears are grown in the northern provinces of Liaoning and Shandong and citrus fruits, particularly oranges and tangerines, are grown in South China. Tea plantations are found mostly on the hillsides of the middle Yangtze Valley and the eastern provinces of Fujian and Zhejiang.

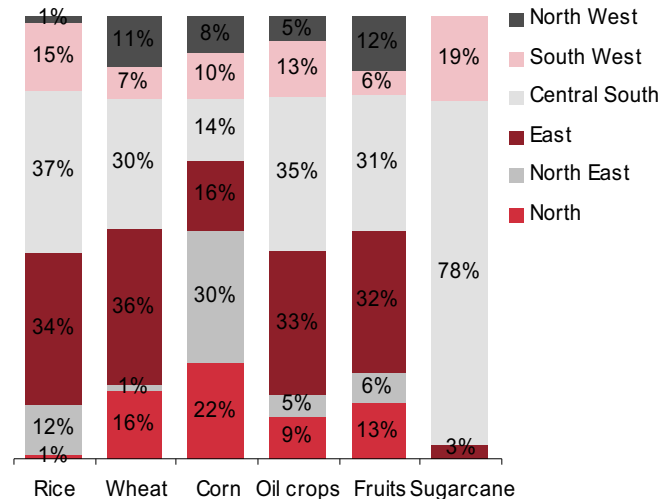
An even split across the regions in terms of land

Exhibit 82. Regional split by cultivated area (1997)



Source: National Statistics Bureau, China

Exhibit 83. Regional split of crop output (2006)

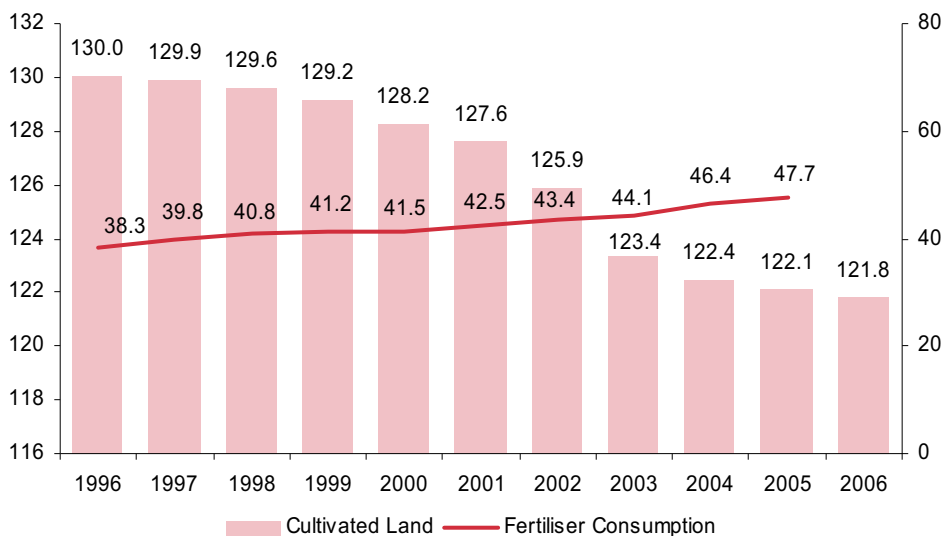


Source: National Statistics Bureau, China

Sowing conditions may be ideal, but China has limited arable land available for cultivation. Cultivated land is only 0.1 ha per person, a mere 43% of the world average. Between 1996 and 2006, China's arable land declined continuously at an annual average rate of 0.7%. Alarmingly this rate accelerated to 0.9% between 2001 and 2006. The primary reasons for the decline include agricultural restructuring, construction activities, deforestation and natural disasters (floods and droughts). Some estimates suggest that cultivated arable land may decline below the 122m ha level if measures are not taken to restrict further conversion of agricultural land to commercial land.

Land pressures

Exhibit 84. LHS – cultivated area (m ha) (1996-2006)/
RHS – fertiliser consumption (m tons) (1996-2005)



Source: National Statistics Bureau, China

Fertiliser use and soil erosion

In general, the quality of cultivated land in China has improved over the past 50 years due to the development of infrastructure including irrigation systems, levelling and the use of fertilisers. However, because of overuse of unsuitable land and over-cultivation in hilly and mountainous areas, degradation through soil erosion and desertification is a constant problem. It goes without saying that these issues threaten grain production and the sustainability of the country's agricultural development. The adverse effects of nature on the soil have been intensified still further by centuries of concentrated

cultivation, which has resulted in an almost universal deficiency of nitrogen and organic matter. Excessive grazing, and other practices that destroy grass cover, have also resulted in soil loss. Moreover, the conversion of forest to farm land has resulted in inevitable soil erosion on the hillsides and deposition in the valleys.

Soil erosion leads to desertification and droughts and affects rural incomes. Hence the alarm created at senior levels of government. In 2007, China's Vice-Minister of Water Resources, E Jingping, stated that soil erosion could take out some 6.16m ha of farm land in China by 2010. Since 2005, the area affected by soil erosion in China has increased by about 1.5m ha annually. Erosion has either made the land less fertile or has turned soil into sand, affecting agricultural production and leading to more frequent natural disasters such as drought.

Loss of arable farm land

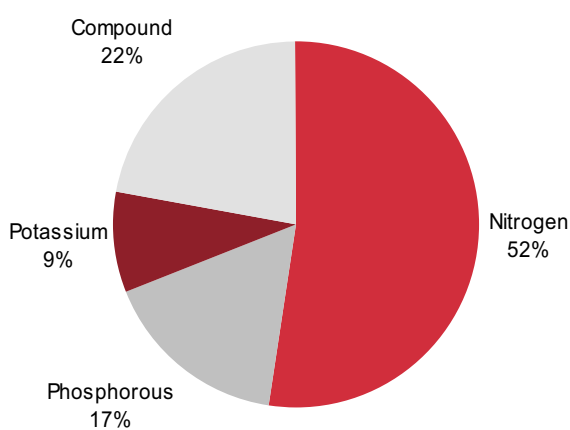
Some government initiatives to combat erosion have been implemented and, by some accounts, the country has prevented soil erosion in an area of 96m ha (ie, 10% of the total land mass). The construction of level terraces supported by walls, which hold back water for rice fields, is a common feature across the landscape and it controls soil loss.

The government has also initiated various measures to improve yields in its existing land resources. Amongst the various measures, the extensive use of fertilisers has been employed. Over a 20-year period, yields of grains, cotton, oil crops, sugar beets and fruits increased by about 70-122%.

Use of fertilisers

Between 2000 and 2005, China's fertiliser consumption increased by 15%, with consumption reaching almost 48m tons in 2005. In this five year period, nitrogen and phosphate fertiliser consumption witnessed CAGRs of 0.6% and 1.5%, respectively, while potash and compound fertiliser consumption increased at CAGRs of 5.4% and 7.3%, respectively. The amount of compound fertiliser used in 2005 was 13m tons, which accounted for 27% of total fertiliser consumption, compared with only 22% of the total consumption in 2000.

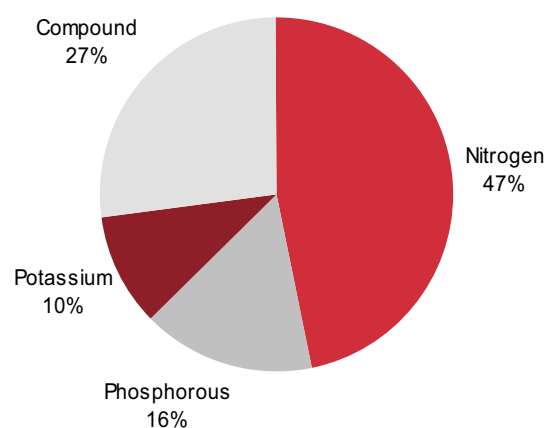
Exhibit 85. Break-up of fertiliser consumption (2000)



100% = 41.5m tons

Source: National Statistics Bureau, China

Exhibit 86. Break-up of fertiliser consumption (2005)



100% = 47.7m tons

Source: National Statistics Bureau, China

The use of fertilisers has improved yields considerably; however, most of the chemical inputs used extensively on China's crop lands are applied inefficiently. In 2006, it was estimated that about half of the nitrogen fertiliser applied in China either evaporates or is washed away before being absorbed by crops. Toxic runoff affects crop land biodiversity and local water quality, over-enriching surface waters with nutrients and

polluting groundwater with nitrates. In China's southern regions, the average volume of nitrate in vegetables is 70% above the national safety limit. When absorbed by human bodies, nitrate can deoxidise into nitrite, a known carcinogen. In short, the key issue may not be China's lack of agricultural land but, instead, how it is managed.

To tackle concerns associated with soil- and crop-quality deterioration, China's State Environmental Protection Agency (SEPA) initiated a US\$125m soil pollution survey in 2006, which is due to be completed next year. The survey is expected to concentrate on key regions near heavily polluting factories, industrial sites, solid waste disposal sites, oilfields, mining areas and major vegetable-growing areas. SEPA is also expected to establish a soil environmental quality monitoring and management system by the end of the survey period.

Ownership of agricultural land

Private land ownership and the single-family farm was the basis of Chinese agriculture for more than two thousand years before the People's Republic of China was established in 1949. However, land tenure practices have undergone several major transformations in the last 50 years. The overwhelming failure of the collective system by the 1970s ultimately gave way to reforms that restored the farm household as the main unit of production.

Exhibit 87. Evolution of China's land tenure system

Stage	Period	Description
Private land market	Pre-1949	Under China's feudal system, land was held by small-scale landowners who farmed their own land and by landlords who rented land to tenant farmers.
Land reform	1950-1953	Landholdings were redistributed to farm households with full rights to rent and sell their land.
Initial collectivisation	1953-1957	The government encouraged farmers to set up agricultural producer co-operatives (small groups of farm households that pooled their land and farmed the larger plots collectively). Income was distributed according to the land contributed by each household for collective production. By 1957, over 90% of farm households were organised into roughly 700,000 agricultural collectives.
Full collectivisation	1958-1978	Agricultural collectives were merged into 24,000 communes encompassing entire townships. Households turned over almost their entire productive assets and teams of workers carried out nearly all production. Income was distributed according to labour contribution and need, through a complex system that could only have been dreamt up by a socialist.
De-collectivisation	1978-1984	As the government encouraged efforts to alleviate poverty and induce economic growth, many rural areas abandoned collective production and contracted with households to deliver fixed amounts of grain in exchange for access to land. Households were allowed to keep the remaining production for their own consumption or to sell it at prevailing market prices.
Household responsibility system	1984-present	Under the system, while the land was still owned by the collective, households received 15-year contracts to their land with the right to rent land and hire labour. Collectives maintained the right to reallocate land among households. Subsequent directives extended the contract length from 15 to 30 years, providing households with written contracts and limiting the collective's right to reallocate land.

Source: USDA

Arguably, one of the reasons for the success of China's economic reforms, unlike those enacted in the early 1990s in the former Soviet Union, has been the implementation of the household responsibility system. Currently, agricultural land in the country is owned collectively by villages, with each household allocated a share of the village's land. Though households cannot sell their land, they are allowed to rent it to other farmers for cultivation. Therefore, as with the existing system, land rights are shared by collectives and households.

Collectives (ie, village authorities) maintain formal ownership of farm land in China and the collective body allocates land use rights to member households. Originally, village authorities allocated land to farm households on a per capita basis in return for the household's commitment to deliver a quota of grain. However, collectives maintain the right to reallocate land among households periodically. Land management practices vary at the local level in China, largely due to ambiguities in national laws and policies. National land laws state that rural land is collectively owned and that village leaders have ultimate authority over it. In some villages, however, the *xiaozu* (ie, the 30-40 households which are remnants of the collective system) are recognised as the *de facto* owners, while in other areas townships wield considerable influence over land use.

Several different bundles of land-use rights, consisting primarily of rights to produce and dispose of crops, are extended to farm households. Household land rights are

The household responsibility system

subject to local taxes and fees, often paid in kind, which are usually based on land allocations. Besides use rights, the most important right allocated to farm households is the right to residual income, which allows farmers to freely sell their output above a certain quota and retain their earnings from this. A 1984 directive explicitly extends to farm households the right to rent their land to other households. As a result, a growing land rental market has developed in China but land rental arrangements tend to be informal and short-term. Household rights vary across villages, sometimes even among groups in the same village. For instance, villages sometimes impose compulsory planting requirements on some of the land allocated to farm households. Also, while some villages allow land to go fallow, others enforce fallow taxes. You can see the output problems that might one day arise in the latter case.

Exhibit 88. Distribution of land rights across different levels

Level	Land rights
National government	The central government establishes national land laws and directives that provide guidelines for local policymakers.
Provinces	Provincial policies, in tandem with national policies, affect local policies. For example, Guizhou province allows less land reallocation, compared with other provinces.
Townships	A township district contains roughly 10-20 villages. In some areas, townships may influence village land policies, including village-wide land reallocations.
Villages	Villages in China comprise about 300-500 households. Village leaders usually have ultimate authority on land allocation, but often delegate some or all of this authority to the <i>xiaozu</i> .
Xiaozu	<i>Xiaozu</i> are groups of 30-40 households (remnants of production teams organised during the collective period). <i>Xiaozu</i> are often the <i>de facto</i> owners of the land, but generally work with village leaders on land allocation. <i>Xiaozu</i> leaders may periodically reallocate land among member households, usually to provide land for new households at marriage.
Households	Households are allocated rights to use land, usually several small plots. While specific rights may vary across plots, they mainly comprise the right to farm the land for a finite period and to keep or sell the produce.
Farmers	Individual farmers do not have rights to the land, but farm the land allocated to their households.

Source: USDA

China's land tenure policies have had both positive and negative effects. On a positive note, it has led to dramatic productivity growth in agricultural and rural incomes, lifting millions of rural residents out of severe poverty. Incentives provided to China's farmers once they had greater access to land and rights to production had a dramatic effect. Relatively unbiased access to land has also ensured that nearly all rural households are self-sufficient and have higher nutrition levels than other countries with similar income levels. Moreover, the existing land tenure system also discourages rural-urban migration to an extent, as land rights are tied to village residence and delivery of grain quotas. Consequently, this ensures that much migration across the country is temporary and by individuals rather than entire families. Obviously, this is the case at the moment, but we would question whether this will still be the case in 20 years time when a subsequent generation has been raised in cities far from the area where their parents come from.

There are, however, negative effects. The collective's right to reallocate land breeds insecurity among households as they risk losing their plots without getting comparable compensation. These insecurities undermine households' incentives to invest in their land. The fragmented nature of household land holdings and small plot sizes discourage investment. There are about 200m farm households with an average land allocation of just 0.6 ha per household. Land tenure practices have an adverse effect on the process of specialisation by making it difficult to take advantage of economies of scale. That is, farm households which develop successful cash crop operations face obstacles in expanding these operations due to the difficulty of acquiring land. Then there is the age-old problem of a society where property rights are not enforced by an independent judiciary ie, land is not owned, so it cannot be used as collateral in credit markets. Therefore, long-term investment plans are minimal.

Productivity growth

Those unenforceable property rights again

Not ready for land privatisation – yet

China's constitution lays down the principle of collective ownership of land as the basis for its "socialist" economic system. It decrees that rural land is owned by 'collectives', but does not make clear who represents these collectives. This vagueness, together with the lack of enforceable property rights, is possibly the biggest generator of discontent among the rural population and has been one of the major causes of protest in the country.

While reallocation rights conferred to village authorities are intended to ensure egalitarian access to land for farm households, the process is corrupt. Rural officials, eager to make money for themselves as well as their localities, often appropriate land from farmers and sell it to manufacturers or property developers without providing much notification to households. While local officials profit enormously from these development projects, compensation received by farmers tends to be a fraction of the market value. Surveys indicate that farmers receive just 5-10% of the final price of land transferred for other uses, with local governments, enterprises and village committees sharing the rest.

To protect farmers' economic interests, many legislative initiatives have been taken by the government in recent years. In 1999, it passed the land management law, which uses much stronger language to ensure that households are extended 30-year leases to promote household tenure security. The law aims to reduce the frequency and ambiguity of land reallocations. However, laws imposed at the centre are frequently poorly implemented at the fringes and conflicts between rural communities and the authorities are common. Petitioners in Beijing more often than not will be there to seek restitution over some property grievance.

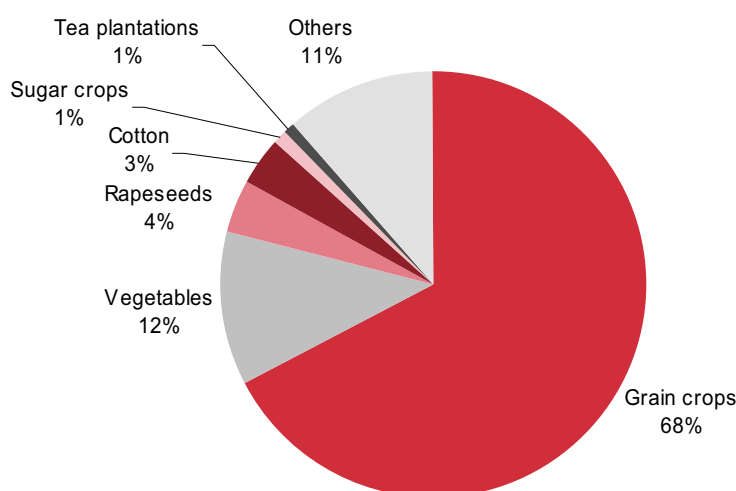
Although the government knows that the system needs to be reformed and has considered the idea of permitting farmers to sell land-use rights to other farmers, it has ruled out privatisation of rural farm lands. Current ownership of land is ill-defined and lack of a coherent land registration system, poor credit markets and a weak legal system make privatisation of land ownership difficult and impractical, at least for the time being. Moreover, many farmers appear to prefer the current system, especially in poorer villages, because it guarantees household access to land.

Corruption, theft and greed – the usual themes

Major agricultural products

China's major cereal crops include rice, wheat, corn and barley, of which rice is the staple food crop for the entire nation. Major industrial crops include cotton, tea, sugar crops (both sugar cane and sugar beet) and oilseeds (rapeseeds and peanuts). In 2007, grains and vegetables, together, accounted for about 80% of the total cultivated land in China. During the same period, China accounted for about 19% of the world's total grain produce (including 30% of rice and 18% of wheat), 20% of global potato production and was one of the leading cotton producers, accounting for about a 30% share of the world production volume.

Exhibit 89. Split of sown area by agricultural crop (2006)



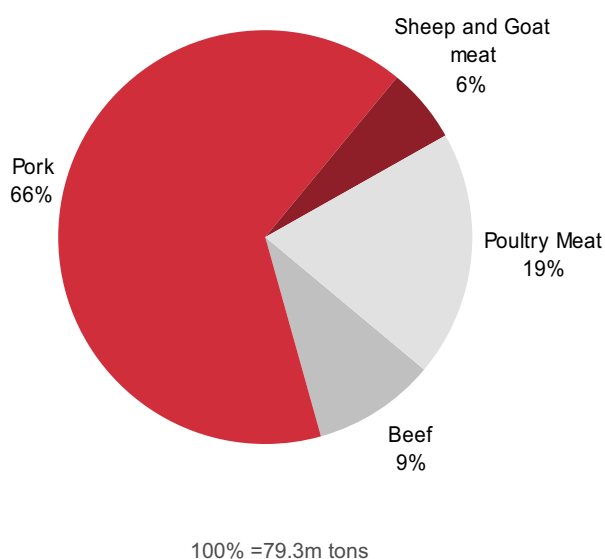
Note: Sown area accounts for multiple cultivation of land in a year
Source: National Statistics Bureau, China

Since 1985, the composition of China's agricultural output has changed significantly. In 2006, crop production declined to around 50% of agricultural output from 70% in 1985. Livestock also declined, from 22% in 1985 to 11% in 2006. Fisheries, on the other hand, increased to 32% in 2006 from only 3% in 1985.

Livestock is a key segment of the Chinese agricultural market. China accounted for about 31% of total global meat production in 2007. Traditionally, pork is a staple source of protein in China and the nation accounted for about half of global pork production in 2007. However, beef production is also increasing in the region, encouraged by the fallout related to Porcine Reproductive and Respiratory Syndrome (PRRS), a disease which required China to slaughter a large proportion of its pig herds in 2006 and 2007. In 2007, China accounted for about 12% of global beef production.

Blue Ear Pig Disease

Exhibit 90. Split of total meat production (2006)



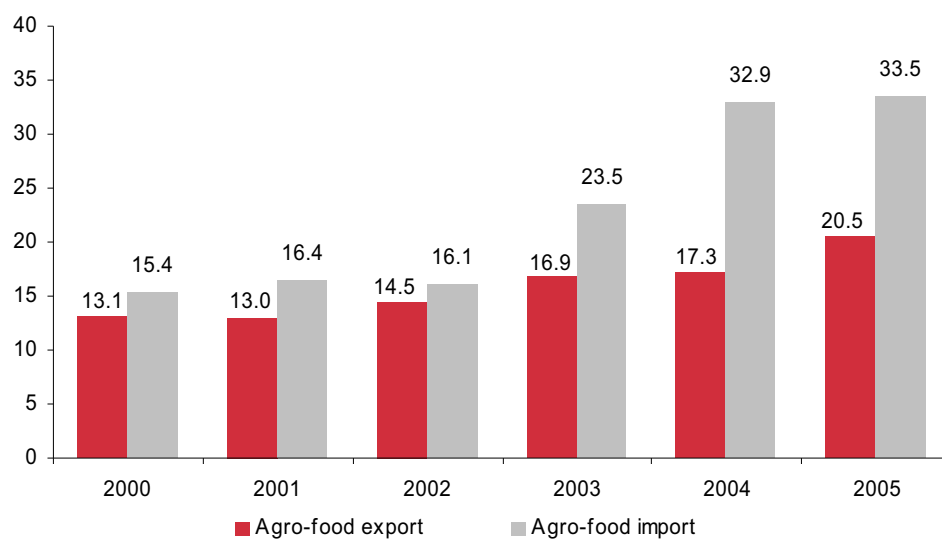
Source: National Statistics Bureau, China

China became a member of the WTO in 2001, after which trade in agricultural products increased significantly. In particular, in 2003 and 2004, the value of imports surged considerably, primarily due to tariff cuts for commodities such as soybeans and cotton. As a member of the WTO, China lowered its barriers to trade and, in 2006, bound tariff rates on agricultural products were only 3.4 percentage points higher than those applied by the US, and substantially lower than those applied by Japan and the EU. China has also made progress in the reduction of non-tariff barriers. On the other hand, while China has made significant progress in the reduction of trade barriers, it is unwilling to reduce the domestic support it provides to several agricultural sectors.

China's economic growth and its accession to WTO have increased trading opportunities for the EU, the US and other nations. China became a net agricultural importer in 1995 with the nation's agricultural trade deficit reaching US\$13bn in 2005. This trend should continue as the country witnesses growth at an above-average rate, as household incomes continue to rise and as the agriculture sector fails to experience productivity growth to fulfil these needs.

Almost 90% of China's agricultural exports are labour-intensive products, such as fruits, meats and aquaculture products. Most of China's agricultural imports are land-intensive products such as soybeans and cotton. The country tends to import commodities and export final products, reflecting the scarcity of natural resources such as land and water and an abundance of relatively cheap labour.

Agriculture can't keep up

Exhibit 91. Agricultural trade in China (US\$bn) (2000-2005)

Source: FAO

Despite being one of the largest producers of several crops globally, China's agriculture sector faces a number of bottlenecks. First, the country has only about 10% of the world's total agriculture land, which is required to provide food for about one-fifth of the world's population. As we have noted, the government is taking several initiatives, such as improving plant stocks, applying fertilisers and using technology to increase land under cultivation and to gain a degree of self-sufficiency in the food sector.

Bottlenecks

Another predicament is that the incomes of Chinese farmers are stagnating, leading to an increasing wealth gap between town and country. The fact that farmers do not own, and cannot buy or sell, the land they work due to government policies has contributed to this situation. Inadequate ports, warehousing and cold storage facilities impede both domestic and international agricultural trade.

Rice

With 130m tons of production in 2007, China accounted for about 33% of global rice output. China produces three rice crops a year: a double crop comprising early and late rice in southern China and a single crop of rice in central, north east and north west China. In 2004, 64% of the rice produced in China was produced as a single crop, while 18% was produced as early double crop and 18% as late double crop.

The Rice Bowl of the world

In 2007, the early double crop was estimated at 32m tons. The impact of a severe drought in north east China was offset due to expanded paddy areas and higher yields were achieved. The single rice crop in the Huai River valley was affected by summer flooding; however, widespread replanting and aggressive counter measures kept production losses to a minimum.

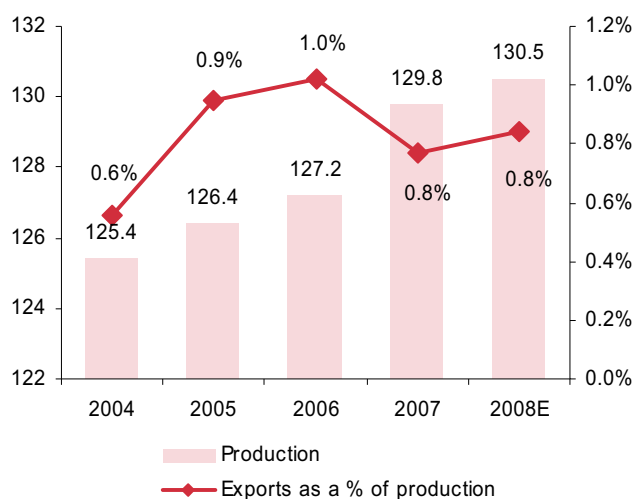
In 2003, the rice area harvested declined to a record low of 26.5m ha; however, it increased by 7.1% in 2004 over 2003, driven by government incentives, including direct subsidies to rice farmers and the abolition of agricultural taxes in several provinces. The effect of these initiatives during 2004-2007 was illustrated when the area harvested increased at a CAGR of 1.4%. The harvested area is expected to increase by 0.5% in 2008 over 2007 to reach 29.8m ha.

China's imports and exports of rice continue to fluctuate across various time periods. However, the country remained a net exporter of rice between 2004 and 2007. Since 2004, the Chinese government has tightened controls on rice exports. From 2000 to 2003, China exported about 2m tons of rice annually. However, most of China's rice

exports were low-grade Indica rice to African countries. As rice stock levels declined, so did these exports. In addition, China exports Japonica varieties to Japan, Russia and South Korea. These exports are low-volume but highly profitable and are forecast to continue.

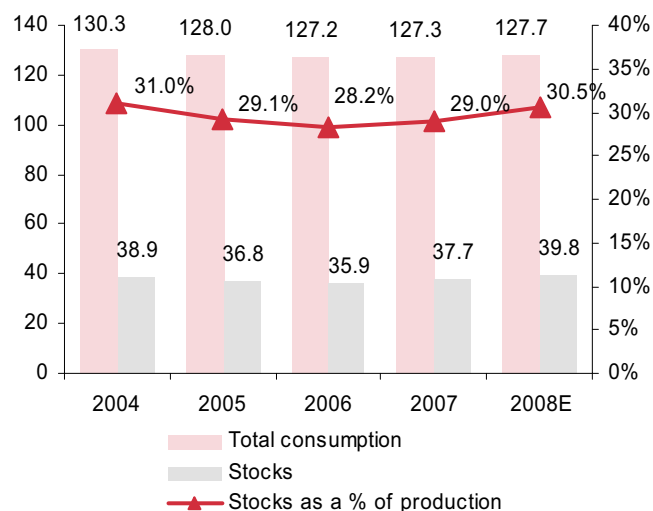
In 2006, China signed import quarantine protocols for rice with Thailand, Uruguay, Vietnam and Pakistan. The most import varieties were Indica, which were mainly exported by Thailand and Vietnam into China. During 2005-2007, consumption of rice in China witnessed a marginal decline while production increased, resulting in a decrease in rice imports from 0.7m tons in 2005 to 0.3m tons in 2007.

Exhibit 92. LHS – rice production (m tons)/RHS – exports as a % of production (2004-2008E)



Source: USDA

Exhibit 93. LHS – rice consumption and stocks (m tons)/RHS – stocks as a % of production (2004-2008E)



Source : USDA

Wheat

Wheat is another key crop grown in China. With a total production of 114m tons in 2007, it accounted for about 18% of the world's total production. In China, wheat is grown in two seasons – winter and spring. Winter wheat comprises about 95% of the country's total wheat production and is usually double-cropped with corn.

China's wheat production increased 1.2% in 2007 over 2006 due to an increase in both planted area and record yields. As noted earlier, the government has enacted several policies including tax reductions, direct subsidies for inputs and high-quality seeds and minimum support prices to encourage farmers to expand wheat production following a poor harvest in 2003-2004 that caused grain prices to surge. In addition, officials are promoting the use of improved wheat varieties, which generally have better milling qualities and higher yields than traditional types. As a result, the area under high-quality wheat cultivation, as a percentage of total area under wheat cultivation, increased from 39% in 2003 to 54% in 2006.

Consumption of wheat in China is low compared to rice; consumption is expected to remain at the current levels or decline in the near future, primarily due to increasing incomes, which has resulted in a change in diets, in favour of protein-rich foods.

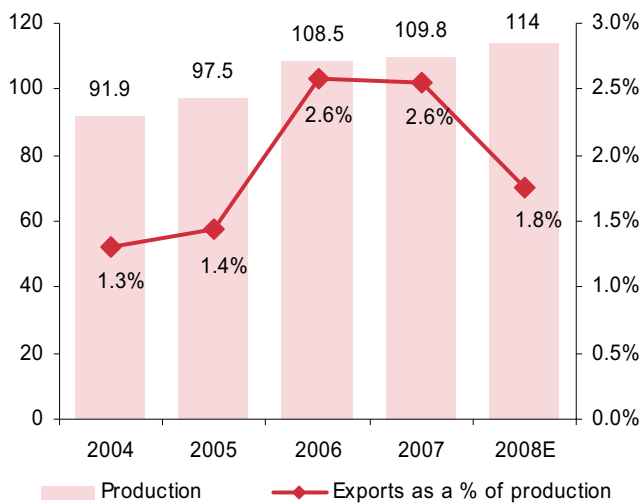
Wheat exports in 2006 registered an increase of 100% over 2005 as a result of production declines in major wheat-supplying countries worldwide. Most of China's wheat and flour exports go to nearby Asian countries.

In addition to flour-grade wheat, China also exports feed-grade wheat. In 2006, feed-grade wheat exports were estimated to account for about half of the country's total

18% of global output grown in China

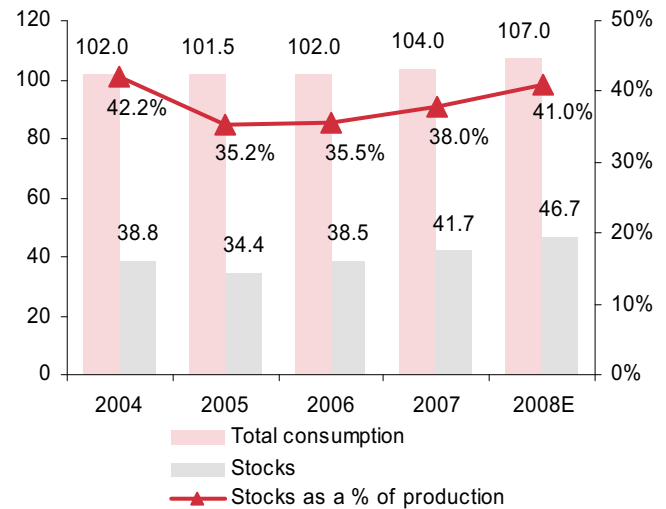
wheat exports. Feed-grade wheat exports are expected to increase in 2008, driven by high international feed grain prices.

Exhibit 94. LHS – wheat production (m tons)/RHS – exports as a % of production (%) (2004-2008E)



Source: USDA

Exhibit 95. LHS – wheat consumption and stocks (m tons)/RHS – stocks as % of production (2004-2008E)



Source : USDA

Corn

Corn is one of the most important crops for China and is used as feed, and for industrial production of sugar, starch and bio-fuel as well as for food. In 2007, the country accounted for about 19% of global corn production, and about 20% of global corn consumption.

China's 2007 corn production was estimated at 152m tons, while the harvest area was estimated at a record 28m ha, an increase of about 1m ha over 2006, driven by rising worldwide demand for corn and high prices. However, corn acreage in north-eastern China is estimated to decline by 1% in 2008 over the previous year due to competition from soybeans. In 2007, the estimated corn yield was about 5.4 tons per ha, almost equivalent to the record yield of 2006. Severe drought in Northeast China caused significant yield reductions, but near normal and higher yields in other regions offset the decline.

Corn imports were estimated at 50,000 tons in 2007, while the 2008 forecast is expected to be approximately 100,000 tons, driven primarily by increased feed consumption from the meat and poultry sectors, which consumed about 69% of the corn produced in 2007. Corn exports in 2007 were estimated at 0.6m tons, while for 2008 they are forecast to be about 0.5m tons, the decline being driven by increasing local consumption.

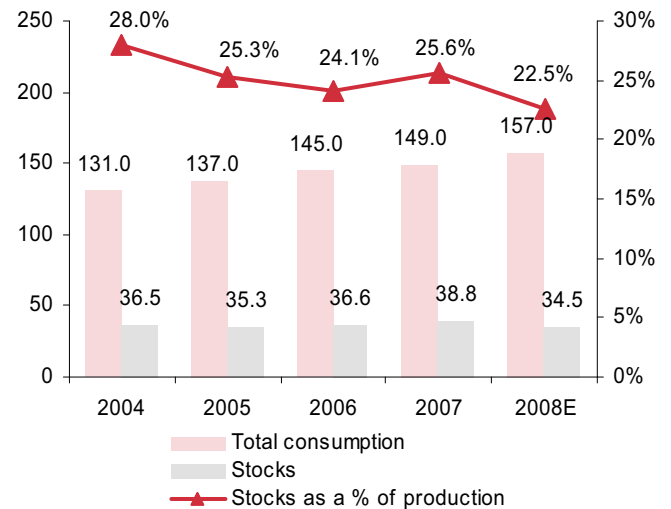
152m tons of corn output in 2007

Exhibit 96. LHS – corn production (m tons)/RHS – exports as a % of production (%) (2004-2008E)



Source: USDA

Exhibit 97. LHS – corn consumption and stocks (m tons)/RHS – stocks as a % of production (2004-2008E)



Source : USDA

Soybeans

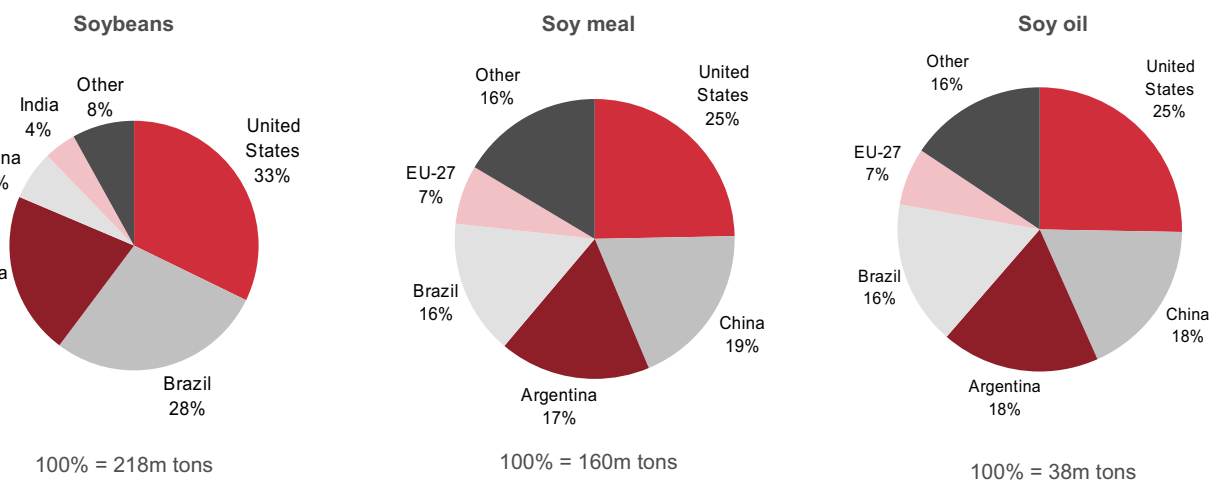
China's main oilseed crop is soybean. It accounted for approximately 6% of world production in 2007. Soy meal and soy oil are also other important products in China and accounted for about 19% and 18%, respectively, of world production in 2007.

Global soybean prices experienced a downturn during 2005/2006, which had an impact on returns. The subsequent reduction in plantings – a phenomenon experienced elsewhere – coupled with rising demand and an appreciation of the RMB, drove prices higher. The relative position of soybeans compared with grains has led to greater plantings and this process is expected to continue.

During 2006-2007, increasing demand for soy oil, soy meal, and soy-based food products, driven by rising incomes, population and urbanisation, resulted in an import surge across all three categories – seeds, oil and meal.

Reduction in plantings in 2005-2006 was reversed the following year

Exhibit 98. Soybean, meal and oil production split; 2007

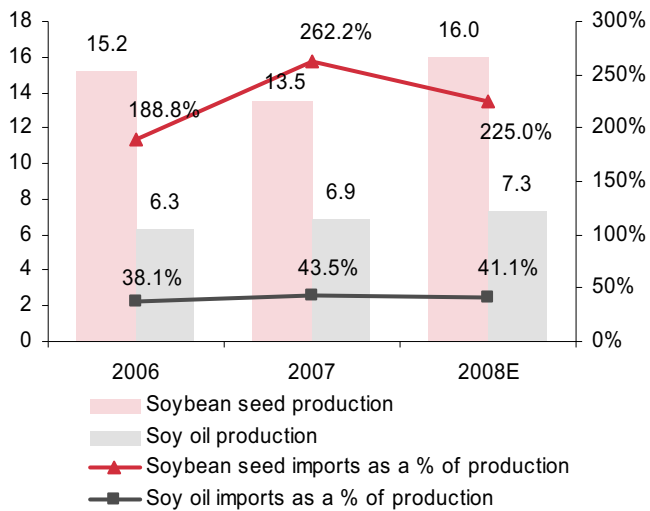


Source: USDA

China is a net importer of soybeans and soy oil, with exports accounting for a mere 3% of seed production and 1% of oil production in 2007; the remainder is used for

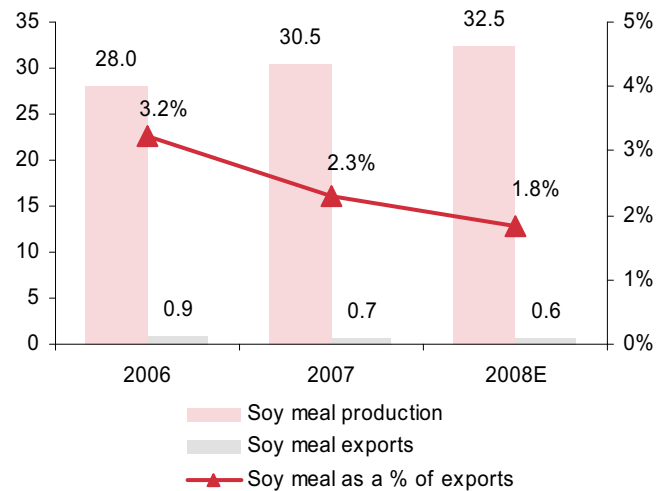
domestic consumption. Soybean imports are high and estimated at more than twice production in 2007, while soy oil imports were estimated at 40% of production in the same year.

Exhibit 99. LHS – soybeans and oil production (m tons)/RHS – imports as a % of production (2006-2008E)



Source: USDA

Exhibit 100. LHS – Soy meal production and exports (m tons)/RHS – exports as a % of soy meal production (%) (2006-2008E)



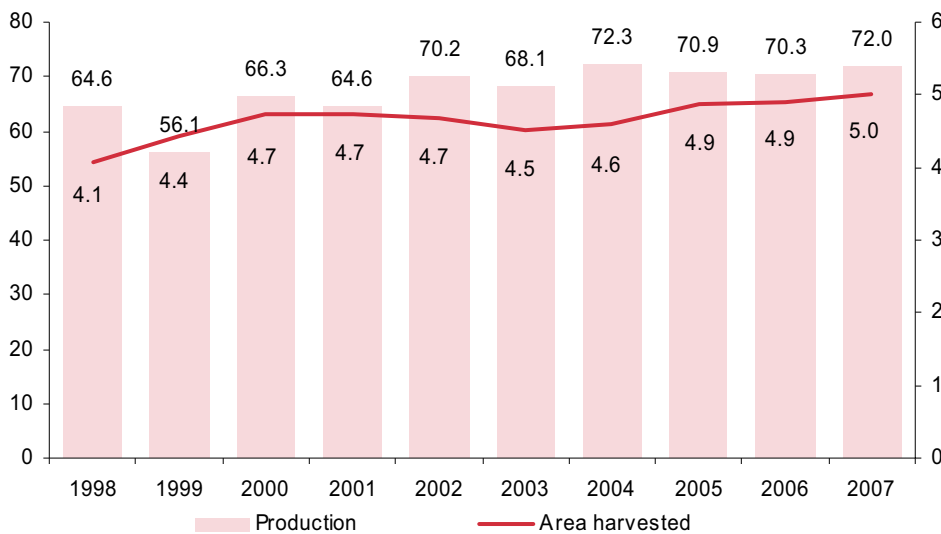
Source : USDA

Potatoes

China is the largest producer of potatoes globally and accounted for about 22% of global production in 2007. It is also an increasingly important global supplier of the tuber, with potato exports of about 440,000 tons in 2005. Tuber production has increased nearly fivefold since 1961. Potatoes are meant for human consumption. China consumes about 40kg potatoes per head, annually. In northern China's Inner Mongolia and Shanxi provinces, potato sales account for about half of rural household earnings. Thus, it isn't just a staple food source but is also an important income source for farmers in mountainous areas with poor soil conditions.

Between 1998 and 2007, potato production grew annually at 1.2% to reach 72m tons. During the same period the harvested area grew at an annual rate of 2.3%. The decline in yields, from about 16 tons per ha in 1998 to 14 tons per ha in 2007, indicates the poorer soil conditions of new areas brought under cultivation.

A bit more than just a staple

Exhibit 101. LHS – potato output (m tons)/RHS – sown area (m ha) (1998-2007)

Source: FAO

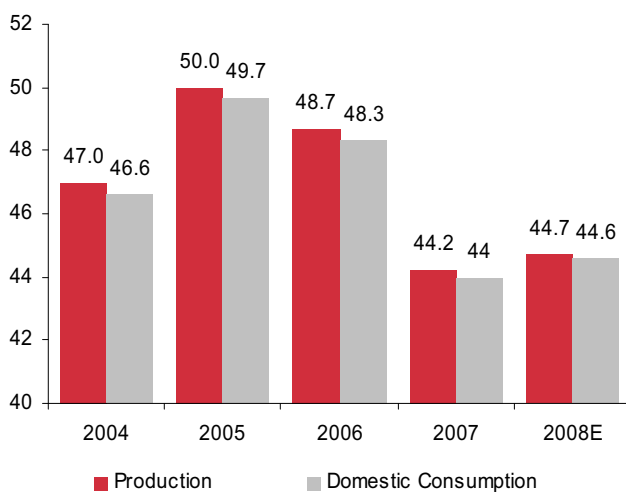
Pork

China is the world's largest pork producer. In 2007 it produced over 44.2m tons, some 50% of global production. Production is expected to increase to 44.7m tons in 2008, driven primarily by increasing consumption of meat.

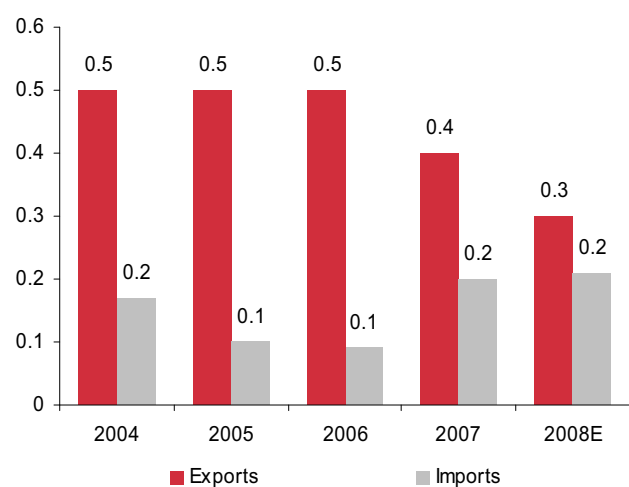
During July and August of 2005, an outbreak of PRSS resulted in 36 fatalities and caused illness among another 198 people in South West China. This resulted in a dramatic decline in pork exports from 502,000 tons in 2005 to 350,000 tons in 2007.

PRSS fatalities in 2005

Chinese pork imports in 2006 were about 90,000 tons, down from 99,000 tons in 2005. Pork imports are expected to increase in 2008 to 210,000 tons. This increase can be attributed to the recovery of domestic consumption in 2008 over 2007, after a decline in 2006.

Exhibit 102. Pork production and domestic consumption (m tons) (2004-2008F)

Source: USDA

Exhibit 103. Pork exports and imports (m tons) (2004-2008F)

Source : USDA

Aquaculture

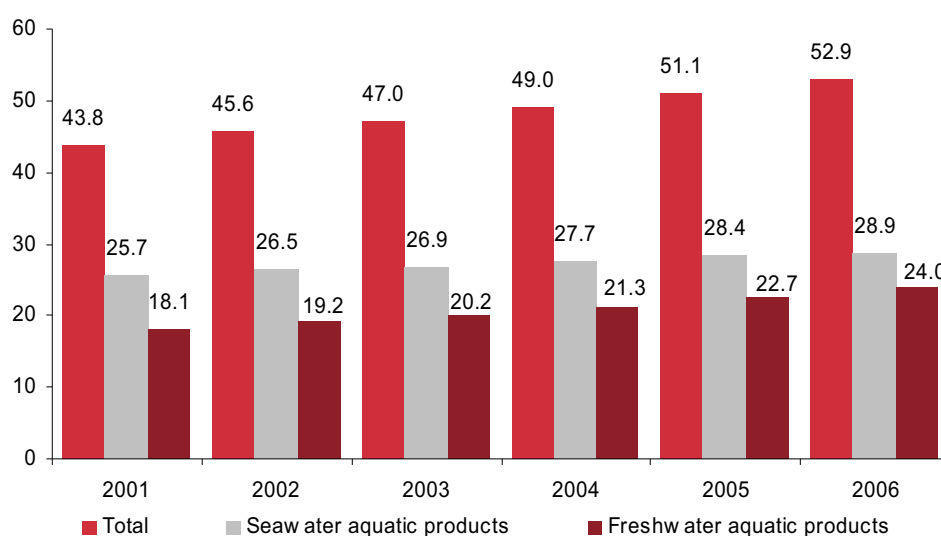
Since 1978, China's artificial aquatic product breeding and deep-sea fishing initiatives have turned the country into one of the major aqua products producers globally, accounting for some 67% of global aquaculture production (2006). As a result, during 2001-2006, China's aquaculture production increased at a CAGR of almost 4%.

Many factors have influenced the different pace of development of the aquaculture sector across different provinces; obviously, the most important factor is availability of water but other factors include the degree of urbanisation and industrial development, high urban per capita fish consumption and China's open-door policy in the 1980s.

China is the largest exporter of aquaculture products globally. The country's exports have increased at a CAGR of 17% between 2004 and 2006, when they reached US\$9bn. Imports also increased from US\$3.1bn in 2004 to US\$4.1bn in 2006, the low value of imports reflecting the region's self sufficiency in meeting domestic demand.

A major player in aquaculture

Exhibit 104. Aquaculture production (m tons) (2001-2006)



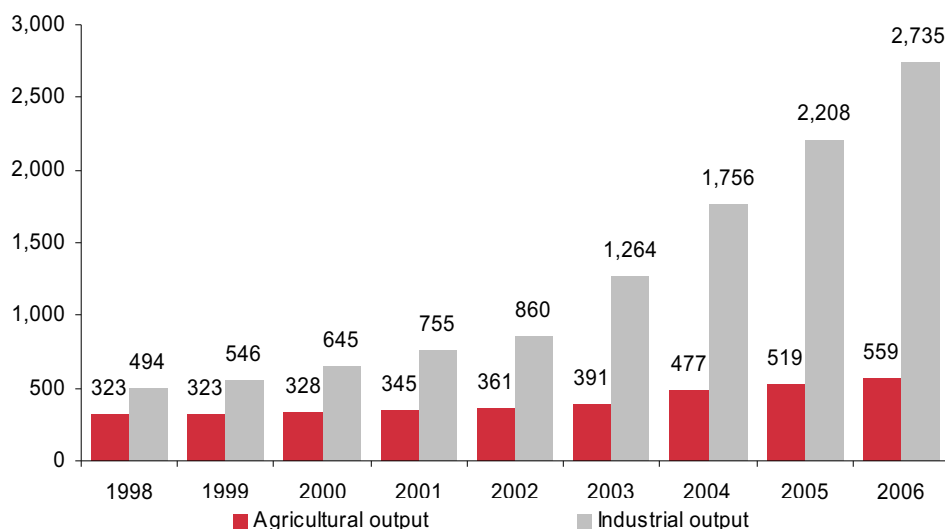
Source: National Statistics Bureau, China

The impact of industrialisation and urbanisation

China's economic development in the past 30 years hardly needs re-telling. A flurry of liberalisation from 1978 onwards opened up the economy to the rest of the world. This brought about fundamental changes in the structure of the economy. The industrial sector grew at a much faster pace than the agricultural sector and the latter's role within the economy declined. Whereas industrial output increased at a CAGR of 24% between 1998 and 2006, agricultural output rose by just 7% pa over the same period.

Agriculture lags industry

Exhibit 105. Agricultural and industrial output (US\$bn) (1998-2006)



Note: Industrial output reflects gross output of large and medium-sized industrial enterprises

Source: National Statistics Bureau, China

Given the unparalleled growth opportunities presented by this rapid industrialisation, millions of rural dwellers have migrated to urban areas, mostly on the Eastern seaboard, to seek employment. As a result, the level of urbanisation in China increased from 33% in 1998 to about 44% in 2006. However, the degree of urbanisation in the country is still low given its level of economic development, largely due to strict controls on population movement. Earlier policies of the government stifled rural-urban migration by preventing rural residents from legally residing in cities. Local regulations, taxes and fees have further discouraged rural-urban migration.

Over 100m people moved to cities between 1998 and 2006

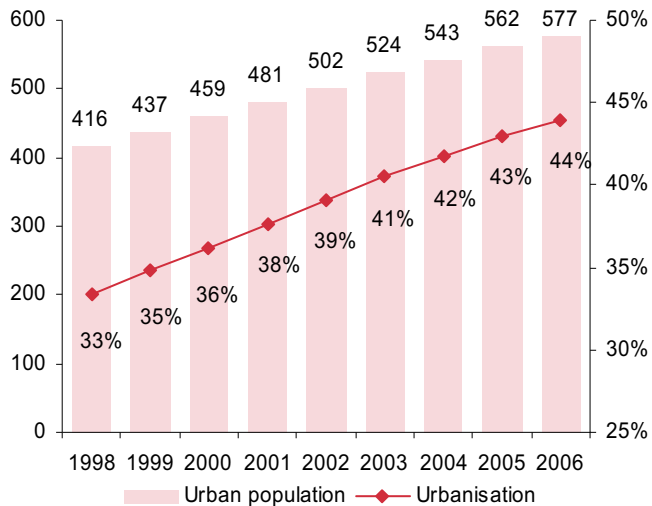
Lately though, policymakers have placed a higher priority on urbanisation. To facilitate the process, cities are gradually relaxing restrictions and the government is looking to channel the migration of rural work streams to smaller towns and 'satellite cities' on the outskirts of large metropolitan areas. The government has promised investment in such towns and cities as well as announced a relaxation of its strict resident permit system (*hukou*) in these areas. Consequently, the migration process looks set to continue for some time yet.

The confluence of economic and demographic forces has created dramatic changes in China's economy with ramifications across the food sector. Consider that rural per capita incomes rose fivefold between 1990 and 2006. Impressive as this may sound, urban incomes grew eightfold. Suddenly fivefold seems like failure. What we can say is that this has led to a larger disparity in urban-rural incomes. According to official statistics, rural incomes in 2006 were about 40% of urban incomes on average. Incomes and living standards have advanced most rapidly in coastal cities, such as Shenzhen, Guangzhou, Shanghai and also the capital, Beijing. Per capita incomes in these cities are about twice the urban average. Some rural areas, such as those in

Fivefold increase in rural incomes in 16 years; urban incomes grew eightfold

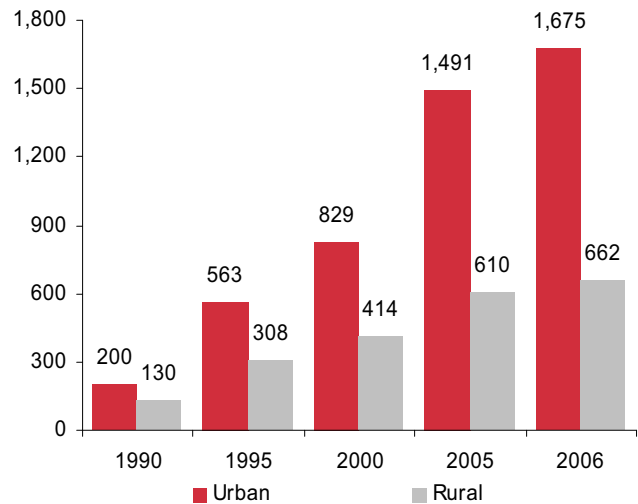
Zhejiang and Guangdong provinces, have shared in growth in income, but most of rural China has lagged its urban peers. Obviously, resident permit systems are going to favour urban residents over rural populations.

**Exhibit 106. LHS – urban population (m)/
RHS – level of urbanisation (1998-2006)**



Source: National Statistics Bureau, China

**Exhibit 107. Per capita annual income (US\$)
(1990-2006)**

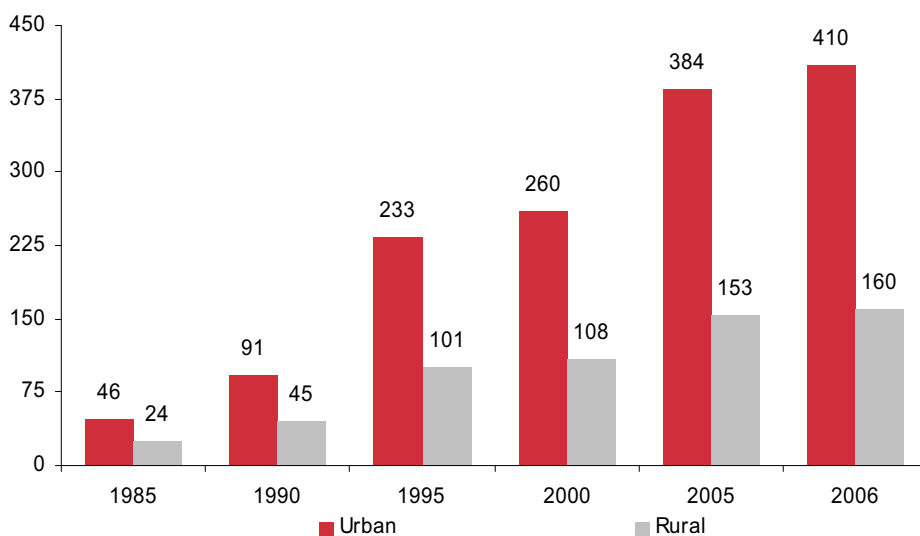


Source : National Statistics Bureau, China

Changing diet patterns

The rapid improvement in living standards, in tandem with increased urbanisation, is having a long-term effect on consumption habits. That we do not deny. Income growth is affecting the quantity, as well as the mix, of food demanded in China. However, as we pointed out earlier, population growth is slowing and the real changes were felt in the past: rising per capita income is leading to higher expenditure on food for sure, but in volume terms calorific intakes have stabilised. Consumption is growing among rural households and lower-income urban families.

**Exhibit 108. Per capita expenditure on food by urban and rural households
(US\$) (1985-2006)**



Source: National Statistics Bureau, China

Meanwhile, among higher earning groups, there have been many changes in food consumption patterns. The rise of supermarkets, restaurants and other retailers are testament to this change. As quantitative demand rises, so too does qualitative demand. These changes have brought about a shift in the mix of the major consumed food groups towards fruits and foods rich in animal protein (eggs, pork, beef and mutton, and poultry, dairy and aquatic products) and away from traditional grain-based staples and vegetables.

More meat, fewer vegetables

Exhibit 109. Changing dietary patterns, 1986 versus 2006

Item	Per capita urban consumption (kg)		Per capita rural consumption (kg)	
	1986	2006	1986	2006
Alcoholic beverages	9.4	9.1	5.0	10.0
Aquatic products	8.2	13.0	1.9	5.0
Eggs	7.1	10.4	2.1	5.0
Fruits	37.0	60.2	4.2	19.1
Grain	137.9	75.9	259.3	205.6
Dairy products	4.7	18.3	0.8	3.2
Pork, beef & mutton	21.6	23.8	11.8	17.0
Poultry	3.7	8.3	1.1	3.5
Vegetables	148.3	118.0	134.0	100.5

Source: USDA

The urbanisation process is another major factor influencing Chinese dietary patterns. When people move to urban areas, they tend to consume more meat, processed foods and restaurant meals, and less grain. In 2006, per capita meat (pork, beef and mutton) consumption in urban areas was 40% higher than in rural areas. Per capita consumption of aquatic products in urban areas was 2.6 times that in rural areas, whereas egg and poultry consumption was more than double of that in rural areas. Urban per capita grain consumption, on the other hand, was about one-third of the rural average. Moreover, urban residents are more likely to shop in modern supermarkets and to frequent restaurants. Imports of fragrant rice, quality wheat for breads and cake mixes, special cuts of meat, and palm oil for instant noodles are in high demand by the urban market segment.

However, there is another fact worth highlighting from the data contained in the previous chart. Note how rapidly poultry consumption has risen among both the urban and rural population. However, note how pork consumption has risen sharply among the rural population but has not shifted dramatically among urban dwellers. If either the urban or the rural population increase their consumption patterns of pork or beef - and the available evidence seems to suggest that this will happen - it would imply a significant uplift in the demand for feedstock grains. Note that the conversion ratio for grain to poultry is only 3/1 whereas for pork and beef the conversion ratio is double that.

If pork and beef consumption patterns change, grain consumption could rise too

Likewise the demand for dairy products also suggests some long-term changes may be afoot. Dairy consumption in China is small by global standards. However, not only is it rising but the consumption ratio between town and country is approximately 6/1. Bearing in mind that the dairy consumption ratio between Western Europe and China's cities is also 4/1, one begins to get an idea of how changes to this sub-sector could have a dramatic impact on consumption patterns within China.

However, that is not the only difference. Grains can be imported and transported over enormous distances. This is not the case with dairy products, which have to be produced within a 100-200km radius of the place where they are consumed. In other words, if dairy consumption in China rises, it will most likely have to be in dry or powdered forms otherwise the pressures on farm land adjacent to cities will be overwhelming.

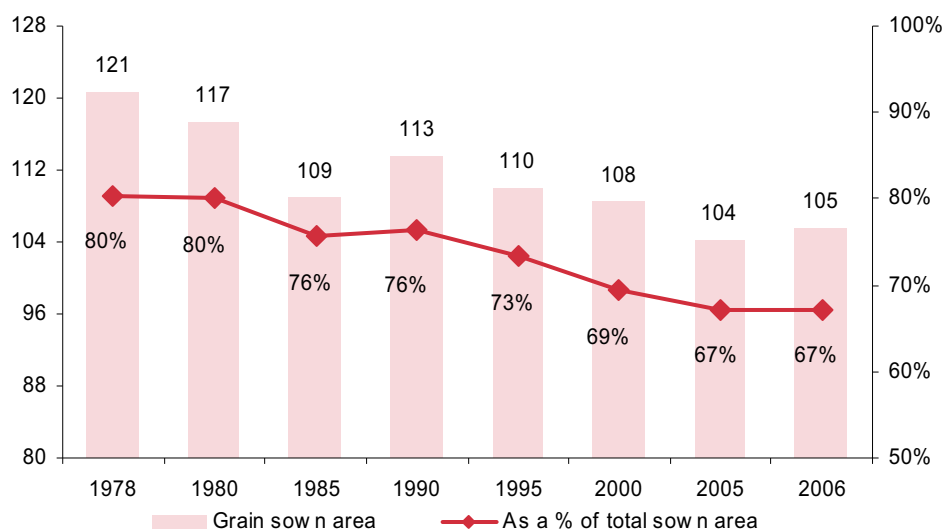
This drive towards more processed foods does seem like a given. Although processed foodstuffs accounted for 25-30% of total food consumption in recent years, it has increased at an annual rate of 10.2% since 1996. Another key trend shaping food consumption is the growing popularity of nutritional, organic and chemical free food. Consumer awareness of environmental protection, food safety, and health issues is also emerging in the country.

Impact on supply

With the increased industrialisation and urbanisation, shortage of agricultural resources is having a major impact on agricultural development. China's non-farm economic boom implies that housing complexes, industrial parks, power stations and other projects are being built on land converted from agriculture. Urban expansion and highway construction are all shrinking the land available for crops.

Growing food-consumption levels are further straining the country's limited land and water resources. Competition for land within agriculture is also intense. Increasing production of meat, vegetables, fruits, and dairy and aquatic products competes with grain cultivation for area. Given the gradual shrinkage of the agricultural crop land, expansion of one agricultural activity is diverting the land from another. Changing consumption patterns are playing an important role in the agricultural sector as some land, historically used to grow food grains, is now being shifted to provide feed support to the growing livestock sector. Consequently, the grain sown area has shrunk from 121m ha in 1978 to 105m ha in 2006.

Exhibit 110. LHS – grain sown area (m ha)/RHS – grain sown area as a % of total sown area (1978-2006)



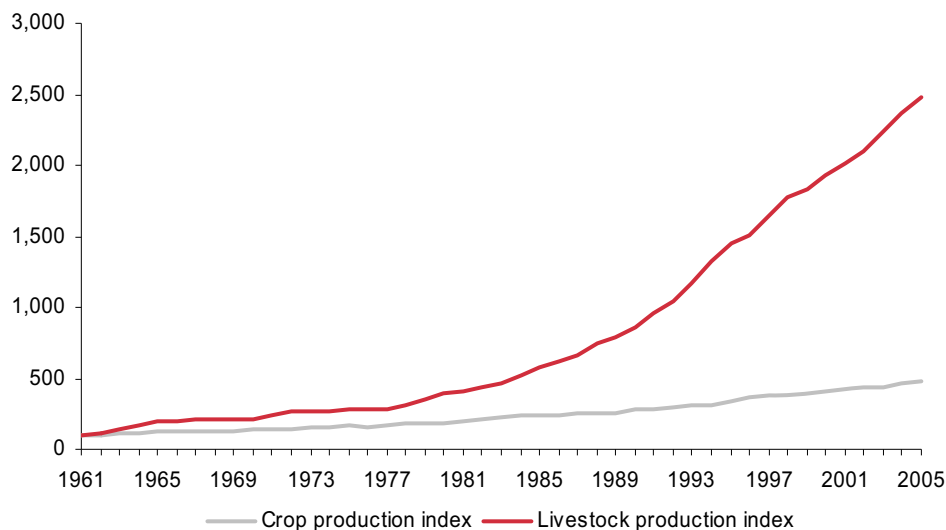
Source: National Statistics Bureau, China

The phenomenal increase in animal protein consumption would not have been possible without a rapid expansion of China's livestock industry. Farmers are responding to changing domestic demand for food products by shifting from food grains and basic vegetables toward meats, fish, fruits and refined vegetable oils. These changes are particularly evident in the case of meat products. Stronger demand has driven a 5% annual increase in meat production during 2001-2006. While pork production has increased by 24% during this period, beef and mutton production have witnessed increases of 37% and 60%, respectively.

This transition towards more livestock production will continue in the coming decade and will have important impacts on the agriculture sector. Higher urban population share in China is expected to slow the growth in food-grain consumption and lead to

higher growth in demand for meat and fish. The bulk of the growing demand for livestock products will be supplied by domestic producers, primarily specialised households, and commercial livestock operations. These farms, in turn, will have to increasingly rely on imported corn and soybeans to feed their growing livestock numbers due to the paucity of arable land.

Exhibit 111. Crop and livestock production index (1961-2005) (1961=100)



Source: FAO, OECD

As domestic demand for livestock products grows in the coming years, the country will also have to increase its imports of meat products. Low per capita incomes and consumer preferences for freshly slaughtered meat, at present, limit the potential market for meat imports to low-value cuts and variety meats. However, rapidly increasing incomes in large cities, and the growing popularity of supermarkets, are likely to generate future opportunities for imports of high-value cuts.

China's fruit and vegetable production will also continue to grow, with a large share of the increases in the production expected to be consumed by its own large, and increasingly wealthy, population.

The acquisition of land in Latin America and Africa

A commonly held view is that arable land in China is declining significantly due to the construction of factories and housing, while desertification and pollution have also had a severe impact on soil quality. There is no doubt a lot of truth in this view. Another commonly held view is that the solution to this problem is the acquisition of overseas farm land to ensure food security. This is, in our view, a fallacy. As pointed out earlier, this is more of a diversification strategy than a food strategy.

Wrongly interpreted it may be, but it is still happening. In 2007, after a group of senior Chinese officials visited Africa, the Ministry of Agriculture (MoA) was charged with the establishment of an overseas farming plan. In 2008, a preliminary draft was prepared and submitted to the State Council. According to some news reports, policymakers agreed that the focus of any strategic initiatives would be towards edible oil-producing crops, such as soybeans. In addition, the MoA would encourage State-Owned Enterprises (SOE) to acquire farms overseas by providing incentives for international agricultural investments. The proposed incentives include preferential import tax policies for those ventures abroad which ship crops back to China.

China's international farming policy is expected to be structured along the following guidelines:

- Farms acquired will be located in countries which are on good terms with China, rich in resources, have a good labour force and are politically stable.
- Experienced, well-funded and large companies/SOEs with a decent talent pool will be encouraged to invest abroad.
- Companies will combine domestic resources and their experience in China with the foreign investment environment.

According to an official of the MoA's International Co-operation Department, an improved plan is still in draft form and specific policies to encourage overseas farming are yet to be issued.

China's strategy to invest in agricultural land overseas is clearly evident from the initiatives outlined below. However, given that there have been a number of protests at various Chinese investments in some overseas countries, the MoA has maintained a silence in this regard and has avoided any disclosure of agreements publicly.

Among several ventures currently underway, some are as follows:

- In 2008, Xinhua announced that, in keeping with its 'Go Out' policy, the government would encourage overseas production destined for Chinese consumption. It cited the example of a 5,000 ha joint-venture farm in Cuba, which is jointly operated by Suntime International Wine and the Cuban government.
- In May 2008, the Financial Times reported that China's MoA was engaged in talks with Brazil to acquire land for soy production.
- In April 2008, the BBC's China analyst, Shirong Chen stated that Chinese enterprises would lease, or acquire, farm land in Latin America, Australia and the former Soviet Union. High international grain prices and the pressure of domestic inflation were cited as the main factors behind the land-acquisition programme.
- In April 2008, France's TF1 television news reported on Chinese efforts to outsource rice production to Africa. The report investigated a 10,000 ha project in Cameroon – one of six countries in Africa which China views as strategically important – which is managed by a Chinese company and, through an agreement with the Cameroonian government, produces rice for export to China.

Misperceptions

- In 2008, Chongqing Seed, a firm based in South West China, began planting rice on a 300 ha demonstration farm in Tanzania, as part of a Sino-African initiative.
- In 2007, China's Agriculture Secretary stated that Chinese companies will invest US\$4.9bn to fund projects that provide access to agricultural commodities in the Philippines. This included a US\$3.8bn investment by the Guangdong-based Fuhua Group over a period of five to seven years, to develop 1m ha of high-yielding strains of corn, rice and sorghum.
- China's interest in Africa is reflected by the investments made in the Zambezi valley, starting in mid-2006, when the Chinese state-owned Exibank granted US\$2bn worth of loans to the government of Mozambique (another of the six "favoured nations") in order to build the Mpanda Nkua Dam on the stretch of the Zambezi in Tete province. In 2007, a memorandum of understanding was reported to have been signed between China and Mozambique, enabling an initial 3,000 (expected to reach 10,000) Chinese settlers to move to the Zambezia and Tete provinces and run farms there.
- China is also investing in African agricultural infrastructure. In 2008, the Chinese government invested US\$800m to modernise Mozambican agriculture with the aim of increasing rice production from 100,000 tons to 500,000 tons a year in the next five years. China is also expected to fund the establishment of an Advanced Crop Research Institute, several small agricultural schools and irrigation networks.
- During Sudan's (also a "favoured nation") Vice-President's Beijing visit in June 2008, an agricultural co-operation agreement was signed between the two governments, according to which China will establish a pilot agriculture centre in Sudan and send experts there to train locals.

The status of most of these overseas ventures remains embryonic for the time being. What is becoming more apparent is how interested parties are beginning to view farm land in much the same way as we used to view the oil, gas and minerals sectors ie, that it is a strategic interest and not to be traded lightly. Consider, for example, the resistance to some of these investments by local interested parties:

- In the Philippines, strong local objections from senators and farming groups have stalled China's investment plans.
- Reports of the Chinese deal with Mozambique led to so much disruption that the government of Mozambique had to dismiss any reports regarding the signing of the agreement.
- Chongqing Seed invested in two small-scale rice production facilities in Nigeria and Laos in 2008. However, inefficient local labour and poor leverage over farmers resulted in the scrapping of the Laos project.

In conclusion, we would see these developments as part of a longer-term trend. This is not simply an issue of food security for China; it is also a hedge against inflation and a useful way of diverting current account surpluses towards some more productive assets. The fact that some of the petrodollar states of the Middle East are engaged in an identical activity suggests that we might be at the beginning of a long-term trend.

Resistance

Our view

The Kazakh agriculture sector is likely to benefit significantly from the improvement in infrastructure and communications links across Central Asia in the next few years. The country's agriculture system faces many challenges but the country could emerge as one of the world's leading swing producers in the future.

Anchor themes

- ⚓ The challenges facing Kazakhstan's agriculture sector are formidable. Large tracts of land are farmed by the former managers of the collectives, land has been systematically over-farmed and the country, in an economy underpinned by oil and gas earnings, has somehow managed to have a credit crisis. And despite the soils, it just doesn't rain enough, hence the poor yields.
- ⚓ Change is coming: farms are of scale, infrastructure is greatly improved and government support is helping to modernise farming practices and management. Some companies are already moving up the value chain through processing activities.

A dark horse on the Silk Road

① The new Silk Road

Almost unnoticed by investors, infrastructure developments in Central Asia are likely to have a significant impact on regional trade patterns in the years ahead. This development will be driven as much by oil and gas exploration programmes as it is by these supranational infrastructure developments. Kazakhstan will benefit from this development and the agriculture sector stands to gain significantly.

② Land ownership is concentrated among old collectives

Agricultural development has been held back by the government's early decisions to create a shareholding class which technically owns the farms. However, dividends and returns to shareholders are cursory and the process for shareholders to withdraw their unmapped land from these farms is drawn out and bureaucratic. Consequently, a market in farm land barely exists and leasing is the norm. The managers of these large farms tend to originate from the old Soviet school of farming and they have a history of wrecking the land through bad practices.

③ The swing state

With a small population relative to productive potential, an emphasis on exports and an unpredictable climate, Kazakhstan most resembles Australia, one of the world's most volatile but important "swing" producers. There is no way to avoid this position and it suggests that large-scale farming will continue to dominate the economy and the commercial landscape.

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A dark horse on the Silk Road

I have come to believe that there are infinite passageways out of the shadows, infinite vehicles to transport us into the light – Martha Beck

The focus of this report has been on those countries which are the obvious beneficiaries of the globalisation and industrialisation of the agriculture sector. Behind them are several less obvious countries which will likely experience some relatively dramatic social and economic changes as a result of these trends – Zambia, Paraguay, Serbia and Sudan are all notable examples. It is Kazakhstan, however, that will not just be affected by these structural changes but may also have a considerable impact on the global supply picture.

Readers may be familiar with our Silk Road theme (see *Rebirth of the Silk Road*, 20 June 2008). This is the almost unnoticed series of infrastructure improvements which will likely revolutionise transport and trading links throughout Central Asia. One of the prime beneficiaries of this change will be Kazakhstan which has the agricultural raw materials to emerge in the years ahead as a major producer. It is already the world's ninth largest producer of wheat and in 2007 its output was higher than leading swing producer, Australia.

Kazakhstan is stuffed with economic, structural and agricultural paradoxes. Whether it emerges as a major agricultural producer probably depends on whether it can eliminate the negative contradictions and develop the positive ones. For example, the country's oil wealth hasn't prevented a credit crunch; its agriculture system contains some relics of the old Soviet system but private ownership has taken root in the last six years; the bad farming practices of the past endure and yet the government has directed its efforts into improving technologies and has had some considerable successes in developing a processing industry.

A major advantage of the Kazakh set-up at present is the scale of existing farms in the country. The ability to generate economies of scale is evident. We are aware of several farms which rival their Russian peers in scale. In one case, we believe there is a single farm of 3m ha. To put that into perspective that is the same number of hectares actively farmed in Romania. It sounds almost Stalinist in its scope.

The downside? Well, it is that same element of Stalinism that led to the creation of such large farms in the first place. When the countryside was privatised most of the old collectives' managements remained in place. In short, the collective mentality transferred into the private sector. Unfortunately, the incentives didn't change either. Another problem lies in archaic land laws. Superficially the creation of a "shareholder" structure has meant that people own shares with few economic benefits attached and no control over the enterprises that have emerged. Meanwhile, anyone wishing to transfer land out of the old system faces a barrage of bureaucracy.

One of the biggest challenges is that the country's soils may be excellent (especially in the north) but rainfall is erratic. It's a bit like having a first-class road where petrol is rationed in perpetuity and the car is a bit of a wreck as well.

Despite these challenges, it seems likely that Kazakhstan could emerge as a serious cereal and meat producer in the future. The government's push for development has led to progress in the processing sector and the systematic wrecking of the land can, and should be, eradicated. Currently, there are few ways of playing the agriculture sector in Central Asia. That will likely change in the next few years.

The outsiders

Many paradoxes

Many challenges

Many benefits

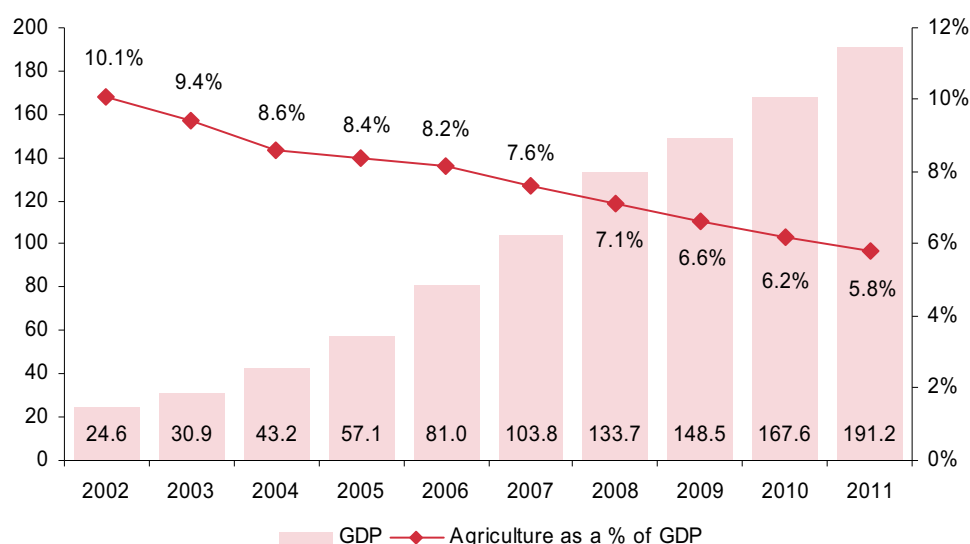
Overview

Agriculture remains an important part of the Kazakh economy. About 40% of the population is represented by rural households and, for the majority of them, livestock farming is a main source of income. Kazakhstan was one of the last countries to secede from the USSR and, in common with its peers in the ex-Soviet Union, Kazakh agriculture declined dramatically in the initial years post-independence as a result of market and trade liberalisation. The government's approach towards land ownership further aggravated the problems faced by the sector. The Kazakh government, believing that privatisation would result in lower yields and shortages (yes, really), sold large tracts of state and collective farms to Soviet-era managers, without actually achieving any improvement in productivity.

In recent times, however, the sector has recovered somewhat due to increased, but limited, government support. However, the country's fast-growing oil exploration and mining sectors have sidelined the agriculture sector. Given the strength of these sectors agriculture's contribution to the country's GDP is expected to decline further and may reach 5.8% by 2011, down from the current 7-8% level.

Another casualty of the Soviet Union

Exhibit 112. LHS – GDP estimates (US\$bn)/RHS – agriculture as a % of GDP (2002-2011)



Source: IMF; EIU

Wheat production, concentrated in the country's northern region, dominates agricultural output. Kazakhstan is one of the world's leading producers of wheat and is a prominent exporter across Central Asia. Cotton, produced primarily in the southern region, is the main industrial crop of Kazakhstan. Livestock also plays an important role in the agricultural sector, and livestock products, such as meat and wool, are major export commodities.

Wheat, cotton, livestock

Although Kazakhstan has abundant agricultural land, its climatic extremes and unpredictable weather patterns have hindered output and yields. In common with many countries, the majority of farmers suffer from a lack of access to capital. Banks do not provide affordable credit to farmers and assign punitive risk premiums to agricultural loans. Collateral offered by small-scale farmers is usually inadequate to cover the banks' credit risk, which weakens their borrowing capability.

A major bottleneck faced by the sector is the absence of freehold land rights, which restricts the emergence of a freely functioning land market. Although Kazakhstan privatised its agricultural land in 2003, the land reforms of 2005 have brought little change to the farm-holding structure, which continues to be dominated by large-scale corporate farms. Agricultural enterprises, often exceeding 30,000 ha in size, enjoy

Dominated by corporate farms

economies of scale and produce nearly two-thirds of the country's total grains. We cannot say for certain, but there is one unit of 3m ha in Kazakhstan which we believe might qualify as the world's biggest farm. Simultaneously, household plots occupy less than 1% of agricultural land and confine themselves to the production of vegetables, livestock and dairy products.

The withdrawal of agricultural land for private ownership in Kazakhstan is a tedious and time-consuming task, perceived to have little value. As a result, individual farmers and agricultural organisations prefer to operate on leased land. Government policies also support the formation of large farms and further discourage the growth of small farm units. The new Land Code adopted in June 2003 resulted in only partial liberalisation of the market.

Evolution of agriculture

The country's agricultural sector underwent significant upheaval after its initial years of independence, following the disintegration of the Soviet Union in 1991. The government neglected agriculture during the 1990s and the sector declined accordingly.

Beginning in 2000, the government started to channel significant support to the farm sector by leveraging the country's surging oil revenues. At present, Kazakh farmers enjoy favourable price distortions in addition to receiving substantial support from the public budget. These pro-farming policies in recent years have led to a revival in agricultural output.

However, the sector still faces major challenges in developing its agricultural capabilities. Development is volatile and a low level of technological development means that crops are especially vulnerable to adverse weather conditions. The emergence of modern supermarkets in the major cities is placing greater demands on the value chains that provide high (and reliable) quality processed foods, raising the question of whether domestic farmers can meet this challenge.

Prior to 1991: Soviet Kazakhstan

Kazakhstan was traditionally a pastoral economy, best suited to the light grazing through which the nomadic Kazaks supported themselves, following herds of sheep, cattle, camels and horses in the open steppe. Although forced collectivisation created a sedentary livestock sector in the 1930s, a major transformation occurred in the 1950s with the introduction of the "Virgin Lands" programme under Premier Khrushchev. This political decision was designed to develop the traditional pasturelands of Kazakhstan, notably in the northern and central part of the republic, into a major grain-producing region for the Soviet Union.

Under that programme, wheat production was introduced on a significant scale and 60% of Kazakh pastureland was cultivated. Cultivated land increased dramatically from 7.8m ha in 1950 to approximately 25m ha in 1960. By the 1980s, Kazakhstan was supplying up to 10m tons of wheat, around 300,000 tons of meat, 25,000 tons of milk and 150m eggs per annum to other Soviet republics.

The "Virgin Lands" programme, along with later modernisation programmes under Soviet leader Leonid Brezhnev, sped up the development of the agricultural sector, which to this day provides a livelihood for a large percentage of Kazakhstan's population.

1991-1998: transition stage

At the time of the country's independence, agriculture was the second largest sector of the economy, it contributed about 36% of GDP and it employed over a quarter of the workforce in 1991. But economic problems arising from the transition from a command economy to a market-based system had an adverse impact on productivity and output. Kazakhstan was among the first of the former Soviet republics to abandon central planning and state ownership. It pushed hard for liberalisation and the privatisation of agriculture and grain processing in the 1990s followed. In common with Russia there was a sharp reduction in the total area planted as marginal land was left fallow. Initial reforms focused on dismantling the system of state intervention that prevailed under the command economy and establishing the legal and institutional framework for private sector-oriented agriculture.

During the 1990s, there was a significant contraction in agricultural production and output of all major farm products fell significantly. By 1998, grain production and livestock herds were only 26% and 44% of 1992 levels, respectively. Livestock heads dropped materially, especially on large farms, between 1991 and 1998 – cattle declined from 6.4m to 0.5m, sheep and goats fell from 27.2m to 1.5m, pigs disappeared almost entirely as their number declined from 2.3m to 0.1m and poultry

In 2000 support from the government increased

The "Virgin Lands" campaign

Sharp declines in productivity and output

fell from 40m to 9m. As a result, food scarcity in Kazakhstan became common and considerable parts of the population did not have access to adequate nutrition.

While the decline in food production was partly attributable to the economy-wide transitional recession, it also reflected a sharp policy reversal. In the Soviet era, agriculture was supported by budget subsidies and favourable relative prices. The sector also benefited from fuel and transport subsidies, which, although not specific to the agricultural sector, helped farmers more than other recipients. The 1992 price liberalisation programme led to an increase in the price of key inputs (such as fertilisers, machinery and equipment) that was much larger than the increase in the price of farm outputs.

OECD producer-support estimates for other former Soviet republics, such as Russia and Ukraine, indicate substantial positive support for farmers up to 1991, then falling to roughly zero in 1992. Kazakhstan would also have had a similar experience as budget support dropped rapidly and relative prices moved adversely. Long-distance trade, such as the export of wheat and other grains and the transport of fodder for the livestock sector, was especially hard hit by the ending of transport and fuel subsidies. And although the government continued to implement a grain procurement system, the amount of grain purchased gradually declined to about 58% of total production in 1993 as a result of economic liberalisation.

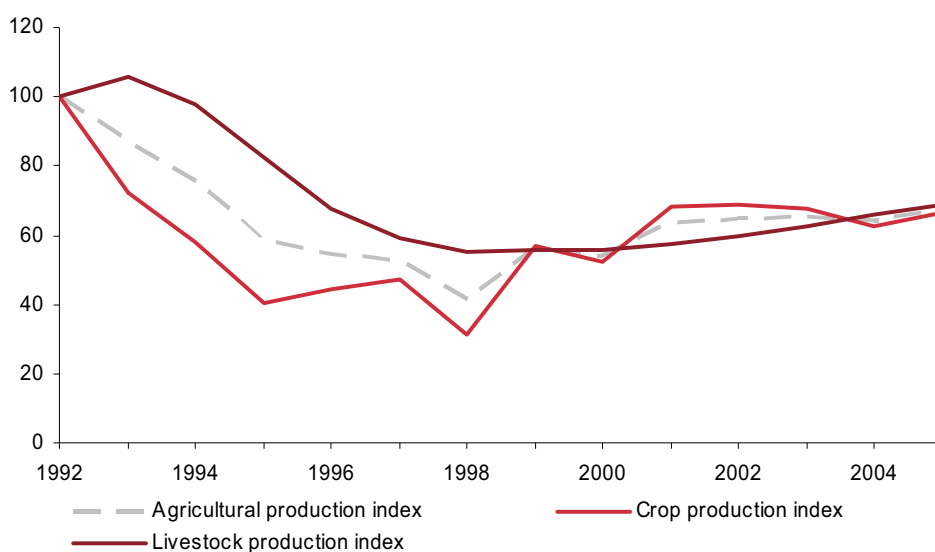
By the turn of the century, Kazakhstan's farm sector was in deep crisis. As a result of adverse price movements and reduced subsidies, farms had fallen into debt and their plight was worsened by drought conditions during 1996-1998. The general policy stance towards agriculture was one of neglect as ministers focused on macroeconomic stabilisation, privatisation and development of the oil and gas sector.

However, on the upside, the dismantling of state-controlled holding companies led to an increasingly competitive agricultural trading regime involving various market intermediaries which included well-established international traders. As a result, agricultural producers became better informed about global agriculture prices, regional variations and general market conditions than they were at the time of independence.

Policy reversal

The crisis of 1996-1998

Exhibit 113. Evolution of agriculture in Kazakhstan: agricultural, crop and livestock production indices (1992-2005) (1992=100)



Source: FAO

1990-present: recovery period

Since 1998, agricultural output in the country has increased due to a recovery from the drought conditions that affected the Northern region, more government support and increased access to bank loans for farming activities. During the period 1999-2005,

total agricultural output increased at an average annual rate of 9% with substantial gains evidenced in both the livestock and grain sectors.

Currently, the agricultural sector operates broadly under a free market system. The government, however, maintains some involvement through the state Food Contract Corporation (FCC), which manages a strategic grain reserve of 550,000 tons, nearly all of which is wheat. Under this programme, the FCC contracts with large grain companies and independent farmers for the full reserve amount and exports previous year's reserves, often in government-to-government agreements to the Middle East, North Africa and Europe. In order to support the maximum number of farmers, the FCC limits purchases to a maximum of 15,000 tons from any one producer.

A reasonably free market system

While the health of the agriculture sector has continued to improve each year since 1999, it no longer plays such a significant role in the economy these days. It continues to face various – and familiar – problems, including lack of decent equipment and inputs, which hinder productivity and grain quality.

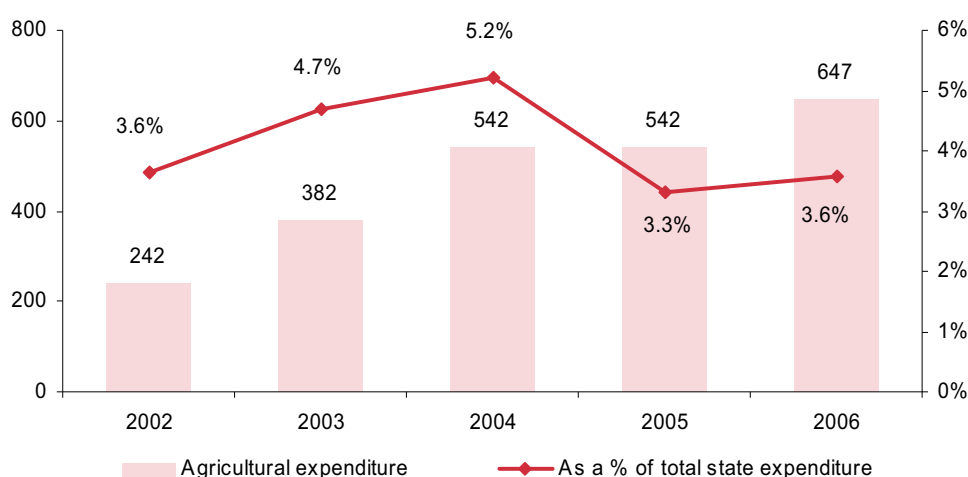
Budgetary support to agriculture

The state plays a limited but active role by subsidising inputs to wheat production and intervening in the market. Budget funds of more than US\$120m pa are used to subsidise fuel and agricultural chemicals for grain production. The government also underwrites a programme among the banks to provide leasing for agricultural equipment at interest rates of 4.5% pa. In addition, the government uses portions of its oil and gas sector revenues to promote diversification in the agriculture sector.

Concerned about the decline of agriculture, and buoyed by burgeoning oil revenues, the government has considerably increased support for agriculture in recent years. This was highlighted in the 2003-2005 Agriculture and Food Programme in which the government allocated more than US\$1bn to the sector. Under the plan, the government allocated KZT40.8bn (US\$343m) in 2003, KZT 49.5bn (US\$416m) in 2004 and KZT 55.2bn (US\$464m) in 2005 to lease equipment and machinery for farmers, create a new grain procurement programme and subsidise seeds and chemicals.

Oil revenues directed into farming

Exhibit 114. LHS – state expenditure on agriculture (US\$m)/RHS – agricultural expenditure as a % of total state budget (2002-2006)



Note: The agricultural spend also includes expenditure on the environment

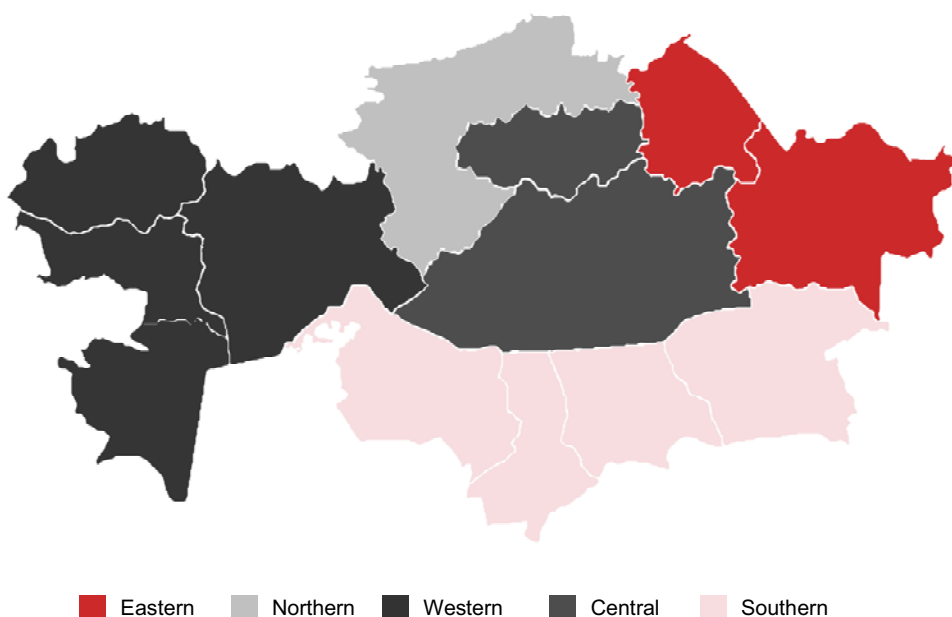
Source: Ministry of Finance, Kazakhstan

While the share of state support to agriculture as a percentage of the total state budget has fluctuated in recent years, state spending on agriculture has increased considerably in absolute terms. During 2002-2006, federal spending on agriculture increased by 28% annually to reach US\$647m in 2006.

Land use

With an area of 300m ha, Kazakhstan is the ninth largest country in the world. It is a republic divided into 14 territorial units. In addition, two of the largest cities in the country – Astana, the administrative capital of the state, and Almaty, the former capital and currently the financial hub of the republic – have been given special status as districts. The country has a population of approximately 15.2m of which some 43% live in rural regions with agriculture as their main source of income.

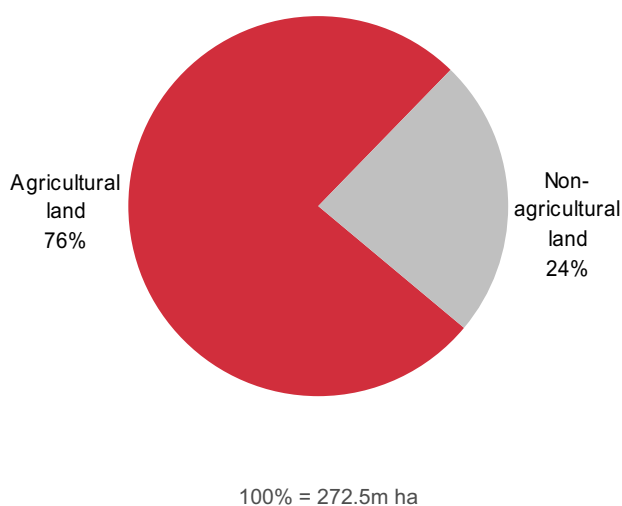
Exhibit 115. Kazakhstan by region



Source: Nomura

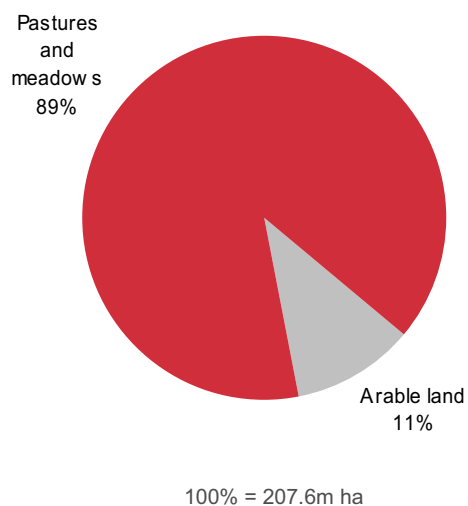
Kazakhstan was long a pastoral economy with agricultural land accounting for 75% of its land mass and pastures and meadows accounting for 89% of its agricultural expanse. The high percentage of pastures and meadows has meant that for most of the inhabitants of the country livestock breeding is a primary occupation.

Exhibit 116. Total land split (2005)



Source: FAO

Exhibit 117. Agricultural land split (2005)



Source: FAO

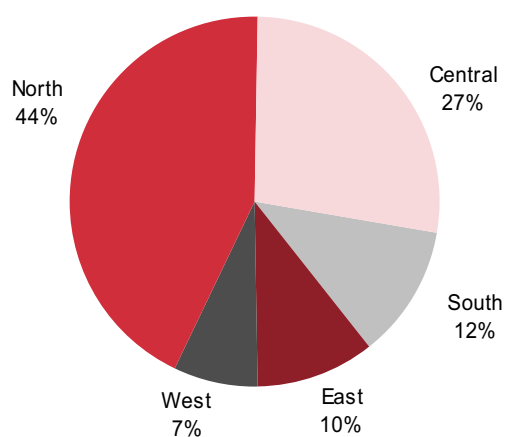
The steppes (grasslands) account for only 10% of the republic's total area as most of the country is characterised by semi-desert and desert zones, which together account for about 60% of its geographic spread. The Central part of the country is primarily a sandy plateau with small hills, bordered by the west Siberian plains in the north and north east, by the Turan plains in the south and by the Caspian lowlands in the west.

The republic's climate is continental and is characterised by long cold winters and short hot summers. The vegetative periods range from 105-165 days and are generally longer in the southern parts. One of the major climatic handicaps faced by the republic is the low level of rainfall. Annual precipitation in the country's arable zones is in the range of 150-320mm pa. Only in the steppe belt of low, moderate and mountainous areas does the average rainfall reach higher levels, lying in the 460-880mm pa range. The climate results in high evaporation levels which, coupled with the low rainfall, make irrigation a necessity in large parts of the country, notably in the south.

The soil cover of Kazakhstan is demarcated by latitudinal zones. The Northern region is under the black earth blanket which stretches through south western Russia and Ukraine. These fertile soils are spread over the steppes and account for 9% of the country's total soil cover. Further southwards, chestnut soils cover the dry steppe and semi-desert regions and represent about 34% of the republic's soils. Besides these chernozems and dark chestnut soil zones that are present in the main cultivatable regions in the country, desert soils (44%) and mountain soils (13%) are also found in the country.

Low rainfall

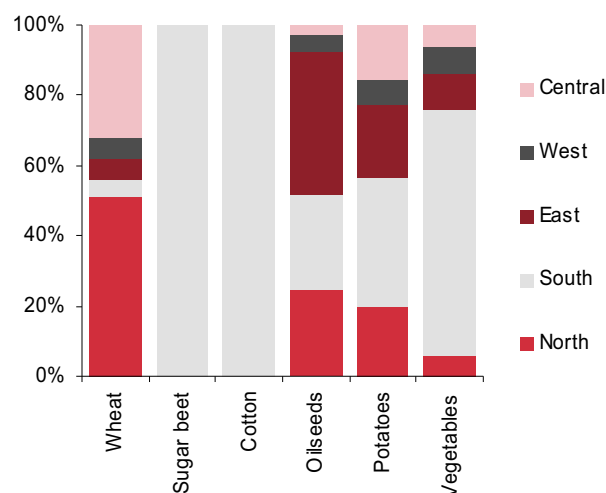
Exhibit 118. Split of sown area by region (2007)



100% = 18.9m ha

Source: Statistics Agency of the Republic of Kazakhstan

Exhibit 119. Split of major crops' sown area by region (2007)



Source : Statistics Agency of the Republic of Kazakhstan

The fertile soils of the North make the region the most productive and, in 2007, the region accounted for 44% of the sown area of the country, with wheat being the dominant crop. The Southern, Eastern and Western areas of Kazakhstan are more or less marked by desert and mountain soils, resulting in poor quality and a relatively smaller sown area. However, the Southern region provides suitable climatic conditions for cash crops such as cotton, sugar beet and vegetables. As a result, most of the sown area for these crops (100% for cotton, 100% for sugar beet and 70% for vegetables in 2007) is located in the republic's Southern parts. Potatoes, a food staple of the country, are grown throughout the republic with the main potato-growing areas lying in the Southern (37% of potato sown area in 2007), Northern (20%) and Eastern (21%) parts of the country. Oilseeds are mostly grown in the Eastern part of the republic and the region accounted for approximately 41% of oilseed sown area in 2007.

Ownership of agricultural land

The government adopted a conservative attitude towards the liberalisation of land ownership, assuming that its immediate effects would prove damaging. For a long time, there was a genuine concern that allowing private ownership of agricultural land could lead to permanent ownership of farm lands by a small number of people. Also, fearing that reform would lead to lower productivity and increased shortages, the government sold the large state and collective farms to their Soviet-era managers at the time of independence. However, several land laws have been enacted since then.

In 1995, the government introduced the “Law on Land”, which divided land of restructured agricultural enterprises into conditional land shares (CLSs) on paper. The members of the former *solkhozes* (state farms) and *kolkhozes* (collective farms), as well as citizens of the rural areas who worked as part of the “social sphere” (such as doctors and teachers) were granted permanent use rights to these CLSs in the form of long-term leases (originally for a term of 99 years). These CLSs were issued as “undefined common shares” which implied that the limits of the land rights were undefined as physical units and, consequently, the holders of the certificates were not aware of the location and shape of the land to which they were issued the rights. By 1997, about 2.3m CLSs for an area of 119m ha of agricultural land had been granted. The law allowed the holders of these CLSs to either purchase the land into private ownership or to transfer the CLSs into share capital in the farm enterprises. Most citizens opted to transfer the CLSs into share capital.

A new land law, introduced in 2001, shortened the maximum term of agricultural land leases from 99 to 49 years. The land law allowed private ownership of land plots for household farming and gardening and provided for temporary land-use rights for up to five years (previously three years). Foreigners were allowed to lease agricultural land for a maximum of ten years.

Following a great deal of deliberation and debate, the country finally allowed private and corporate ownership of agricultural land in June 2003. The 2003 Land Code practically annulled the permanent rights associated with land shares and mandated the share-holders to either acquire a land plot from the state (by outright purchase or by leasing) or to invest the land share in the equity capital of a corporate farm. All agricultural land rights that are granted in private ownership and/or long-term lease rights from the state to legal or private persons are required to be registered.

Privatisation, however, has led to little structural change in the country, except in the cotton sector in the south. The large farms remain largely intact under the same management and are operated as they were at the time of the Soviet system of collective farming.

While the share-based distribution strategy allows the creation of independent family farms and the augmentation of existing household plots, the mechanism favours the preservation of large farm enterprises. Due to the lack of government support for individuals wishing to withdraw their land shares and start small private farms, the demand for the privatisation of agricultural land is virtually non-existent and the leasehold conditions appear more attractive to farmers. Consequently, by April 2005, only 15,000 ha of agricultural land had been privatised into freehold title in Kazakhstan. All other agricultural land was held under long-term leases, generally of 49 years.

A conservative attitude

It looks like a collective but it's not a collective

Exhibit 120. Structure of agricultural farms in Kazakhstan

Farm type	Ownership	Use	Number of farms (2007)	Agricultural land holding (% , 1999)
Agricultural enterprises	Multiple	The production is intended wholly for commercial use. Agricultural enterprises are mostly grain producers and accounted for about 62% of total output in 2000. Their contribution to the livestock sector was limited to less than 10% during the same period.	7,340	70.7
Peasant farms	Individual	Like corporate farms, peasant farms are primarily commercial grain producers. In 2000, they contributed 37% of the country's grain output.	194,550	28.9
Household plots	Individual	The majority of the output is for domestic consumption, while the remainder is sold in the market. Households dominate non-grain output and accounted for 72% of vegetable, 88% of meat and 91% of milk output in 2004.	2,206,870	0.4

Source: Statistics Agency of the Republic of Kazakhstan; Asian Development Bank

Multiple land shareholders contribute their land shares as capital to establish an “agricultural enterprise”. The enterprise is led by a director and several shareholders who have invested funds or who provide inputs such as seeds, fertilisers and equipment. While average yields may be low for these enterprises, they benefit from enormous economies of scale by combining ownership of farm land, grain elevators, flour and feed mills and even export terminals. Some of these enterprises own up to 400,000 ha of grain land and 0.5-1.0m tons of grain elevator capacity.

However, there is a fair amount of ambiguity associated with the distribution of farm profits among the shareholders. As a result, the majority of land shareholders qualify for minimal profit distribution at the end of the season. It is reported that, in most cases, the landowners get only a few bags of grain as payment for their land assets. It is difficult for the landowners to demand more payment or compensation, as most of them do not have formal agreements with the enterprise director. Generally, they do not know how much land they have contributed nor do they know the location of their land share. In fact, they do not have a designated land plot; only an undefined common share of the former collective or state farm is assigned anywhere within the bounds of the farm. In certain instances, the landowners are not even aware that they have contributed a land share to the enterprise and are, therefore, entitled for compensation.

It doesn't work for the shareholders

Land transactions

Landholding law reforms passed in 2003 failed to encourage trading in land and privatisation has been largely uneven and inefficient. There is no market for the purchase of agricultural land and many individuals prefer to hold it in long-term lease rights as there are no perceived incentives to convert use rights to ownership rights. Leasing is considered to be cost-effective under current lease terms and, since the duration of the leases are generally 49 years, most farmers feel secure in investing without fear of losing the rights to the land. Consequently, a number of entrepreneurs have leased large tracts of land (often exceeding 30,000 ha) for agricultural production.

Leasing is preferred

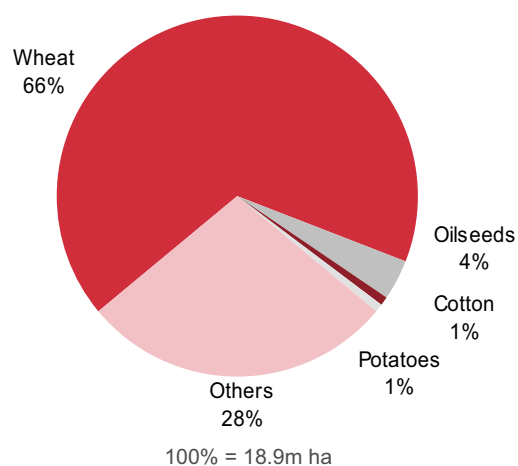
According to the legislation, every citizen is entitled to own and use land in accordance with land use regulations. However, all government efforts and all land policies favour the establishment and the maintenance of large farm enterprises while discouraging the establishment of small individual farm units.

Major agricultural products

With a large grain-producing area and a small population, Kazakhstan is a leading grain producer in Central Asia. The black soil region in the country provides fertile ground to grow wheat, barley, corn, buckwheat and a number of industrial crops. Wheat is the main crop of the country and dominates the country's sown area. In 2007, Kazakhstan accounted for about 2.7% of global wheat production, making it the world's eighth largest producer.

The main industrial crops grown in the republic include cotton and oilseeds. Cotton is the most important cash crop grown on the irrigated soils of southern Kazakhstan. In 2007, the country accounted for 1% of global cotton output and was also one of the key exporting regions, accounting for 2% of global cotton exports. The oil crops grown in Kazakhstan include sunflower, flax, soybean and mustard.

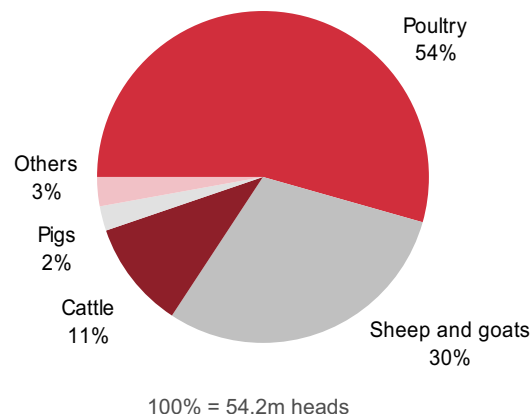
Exhibit 121. Split of sown area by agricultural crops (2007)



Source: Statistics Agency of the Republic of Kazakhstan

Livestock has long been a key part of Kazakhstan's economy and continues to be a major source of income for its rural population. The republic's grasslands provide a perfect setting for a thriving livestock sector. However, secession from the USSR had an adverse effect on the country's livestock sector. Between 1992 and 1998, the livestock population declined at an average annual rate of 17.3% and by 2002, livestock numbers had dwindled to 41.7m heads.

Exhibit 122. Split of livestock population (2007)

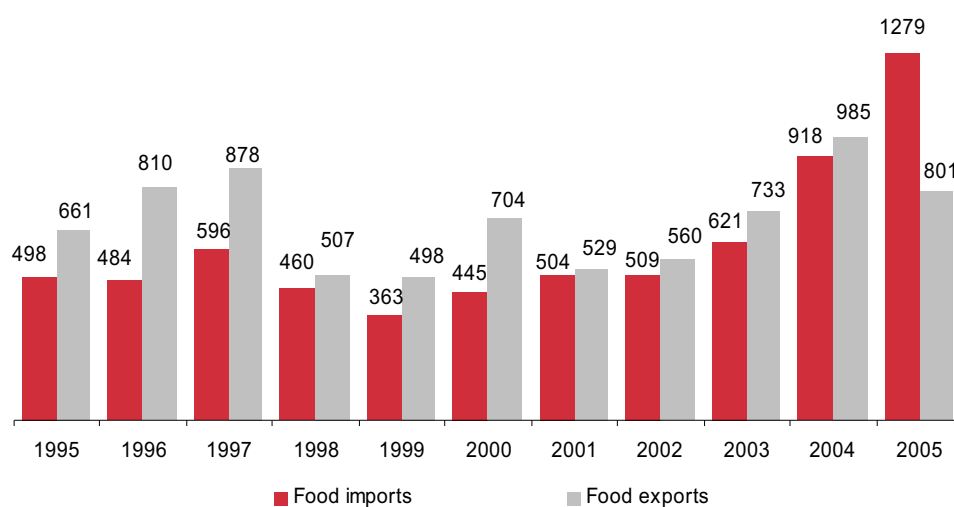


Source: Statistics Agency of the Republic of Kazakhstan

In 1999, the livestock population started to recover and by 2007 numbers (comprising poultry, cattle, sheep and goats, pigs and horses) exceeded 1995 levels. One of the major factors behind this positive turnaround was the development of a national strategy which aimed to improve livestock breeding techniques. In addition, increasing local and global prices for livestock products presented opportunities, especially for small- and medium-sized producers.

During the early nineties, about 90-95% of the livestock population in Kazakhstan was concentrated in households and small farms. The emergence and growth of large specialised farms and agricultural enterprises over the past few years reflects a strong trend towards farm consolidation, although a major share of the livestock industry still remains in the hands of small-scale owners. For example, in 2006, it was estimated that about 75-80% of the total cattle population was under the control of private households.

Exhibit 123. Agricultural trade in Kazakhstan (US\$m) (1995-2005)



Source: FAO

Kazakhstan's main exports include grains, cotton and livestock products, while the main import items include raw sugar, tea, sunflower oil and tobacco leaves. Until 2004, Kazakhstan was a net exporter of agricultural and food products, in terms of value; however, in 2005 the balance tilted in favour of imports. The nation's import-export gap was US\$67m in 2004, but, in 2005, lower domestic production of grains resulted in a decline in exports. Higher demand for other commodities drove imports higher and they exceeded exports by US\$478m in 2005.

Grains are the main export product of the country and its primary export destinations are the CIS states of Russia, Uzbekistan, Tajikistan, Azerbaijan, Belarus, Georgia, Kyrgyzstan, Turkmenistan and Ukraine. However, since 2000, there has been an increasing trend of exports beyond these traditional core markets. New markets include Austria, Afghanistan, the UK, Venezuela, Latvia, Lithuania, Estonia, Poland, Turkey, Switzerland, the Netherlands, Saudi Arabia, Iran, China, Korea and Mongolia. If ever there was evidence of both an emerging "Silk Road" theme and an emerging globalisation theme for the sector, then this must be it.

In 2008, to hedge against volatility in the domestic grain market and surging global grain prices the government imposed export duties on grains and implemented an export ban which was recently lifted. Uzbekistan, Kyrgyzstan and Tajikistan will have suffered the most from this policy.

Old markets and new markets

Wheat

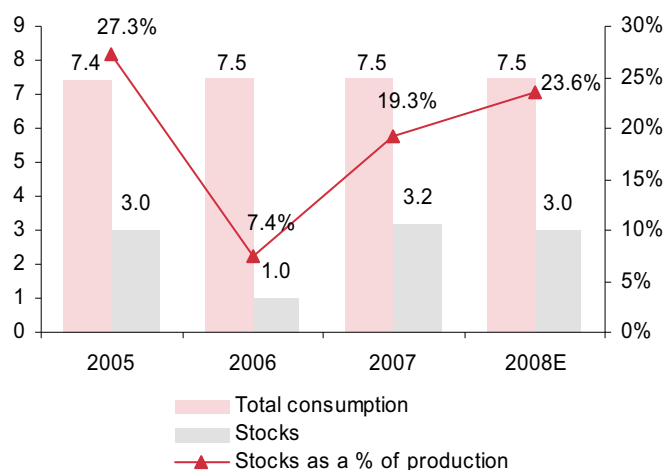
Wheat is Kazakhstan's main agricultural commodity. About 80% of wheat plantations are located in the three north central *oblasts* of Kostanai, North Kazakhstan and Akmola. Spring wheat comprises nearly 90% of the total grain sown area in these oblasts.

In 2007, favourable weather conditions and a higher planted area resulted in an excellent harvest. However, in 2008, unlike in its CIS peers, Kazakh wheat production is expected to decline by 23.5% over 2007 levels, despite an increase in sown area. Dry weather conditions in north central Kazakhstan (mainly the Akmola and North Kazakhstan *oblasts*) are likely to reduce the 2008 yield substantially, compared with 2007.

In 2006 and 2007, wheat exports increased significantly over 2005 levels, primarily due to higher production and increased exports to new destinations such as Egypt, Yemen and India along with traditional destinations such as Ukraine, Azerbaijan and Russia.

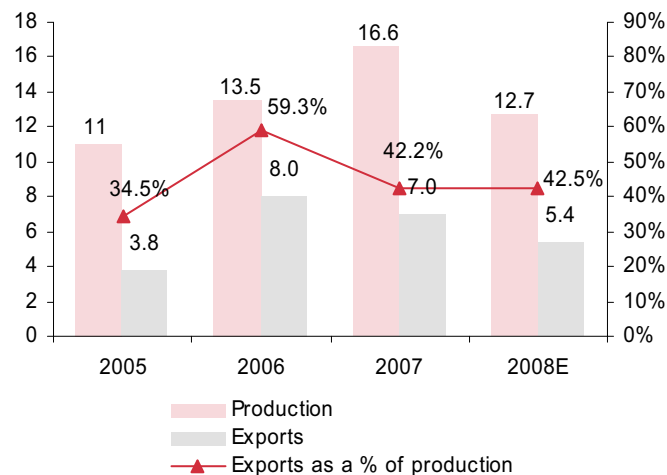
2008 will not be a good year for wheat in Kazakhstan

Exhibit 124. LHS – wheat production (m tons)/ RHS – exports as a % of output (%) (2005-2008E)



Source: USDA

Exhibit 125. LHS – wheat consumption and stocks (m tons)/RHS – stocks as a % of production (%) (2005-2008E)



Source : USDA

Cotton

Cotton is one of the most profitable cash crops for Kazakh farmers and plantations accounted for 204,000 ha of land in 2005. Domestic consumption remains low, at about 8-10% of production, with the bulk of output being exported. The Southern region of Kazakhstan is the main cotton-producing zone and more than 90% of the land planted for cotton is cultivated by small farmers.

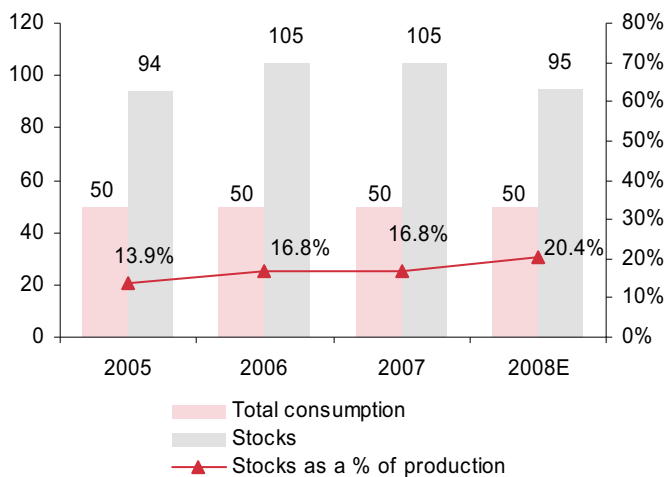
However, the republic's cotton sector has witnessed a decline in recent years due to inefficient farming techniques and unfavourable climatic conditions. Only 160,000 ha area was planted in 2008 instead of the planned 200,000 ha. The farmers' tendency to maximise the number of plantations has led to overworked soils and, coupled with poor irrigation systems, this has resulted in an overall decline in yields over the years. In addition, high temperatures across the region also plague the cotton industry as they reduce the available water resources.

To tackle these issues and revive the industry, the government has undertaken several initiatives. The government has:

- urged farmers to switch to more efficient (and expensive) irrigation systems to avoid unexpected losses,

- prevented farmers who solely grow cotton from wrecking their land further by encouraging them to unite into larger associations. Alongside profit maximisation, these associations are also being encouraged to follow crop management practices (ie, basic crop rotation) to ensure long-term sustainability,
- encouraged the introduction of water-saving irrigation systems by providing an 80% reimbursement of total water expenditure to farmers adopting these modern systems, compared with a 10% reimbursement provided to farmers using traditional irrigation systems.

Exhibit 126. LHS – cotton production ('000 480 lb bales)/RHS – exports as a % of production (%) (2005-2008E)



Source: USDA

Exhibit 127. LHS – Cotton consumption and stocks ('000 480 lb bales)/RHS – stocks as a % of production (%) (2005-2008E)



Source : USDA

Potatoes

The potato is one of Kazakhstan's most important crops with an average annual consumption of about 90 kg per person. Most of the potatoes produced in the country are consumed domestically or used as fodder. However, in the past few years there has been a steady growth in exports of processed potato products, increasing from 1,000 tons in 2000 to approximately 15,000 tons in 2005.

Used for domestic consumption or feedstock

Exhibit 128. LHS – area harvested ('000 ha)/RHS – potato production (m tons) (1997-2007)



Source: FAO

When the Soviet Union was dissolved in 1991, Kazakhstan was producing about 2.5m tons of potatoes annually from a sown area of about 240,000 ha. Output dropped to

1.3m tons by 1998. Production turned around thereafter thanks to the adoption of better technological techniques. This is reflected by improved yields, which increased from about 8 tons/ha in 1998 to about 16 tons/ha in 2007.

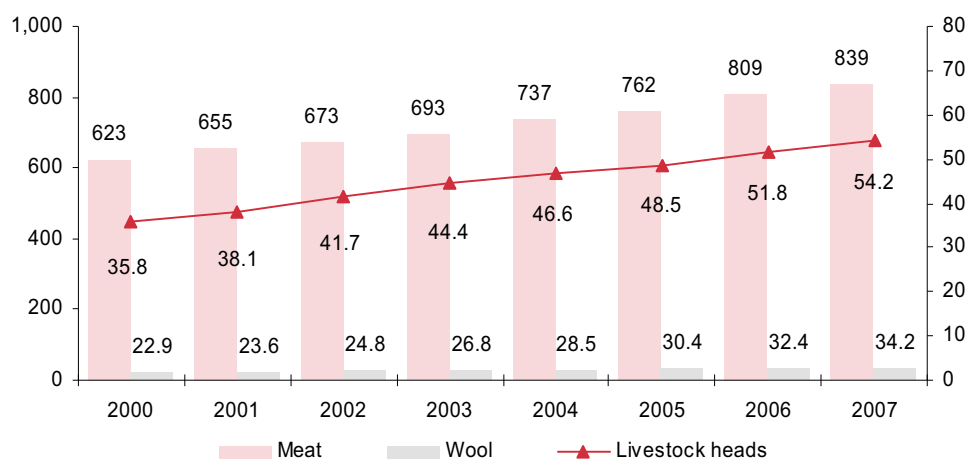
Livestock products

Meat production is an important component of the local agricultural sector. Meat and associated products account for about 50% of a traditional Kazakh meal. The meat industry in the republic is mostly represented by sausage and semi-prepared meat products.

According to 2006 estimates, Kazakhstan produced 4.9m tons of milk, 2.5bn eggs and 32,400 tons of wool that year. Between 2002 and 2007, meat production witnessed a CAGR of 4.5%, which was in tandem with the increase in livestock heads (CAGR of 5.4% during the same period). In 2007, Kazakhstan was the ninth largest producer of wool globally, accounting for about 1.7% of global output.

Over the past few years, Kazakh meat producers have diversified their product range and have improved production quality by modernising production processes. They have begun to manufacture non-traditional, innovative and semi-prepared products, including vacuum-packed products.

Exhibit 129. LHS – Production of meat and wool ('000 tons)/RHS – livestock heads (m) (2000-2007)



Source: Statistics Agency of the Republic of Kazakhstan

In March 2006, the government adopted the “Programme of Top Priority Measures for 2006-2008”. The livestock sector is one of the key areas of focus in this programme and it includes various livestock-specific initiatives such as:

- the introduction of advanced technologies for livestock breeding and the determination of optimal feed,
- the augmentation of the quality of livestock through selective breeding as well as the import of foreign genetic resources and pure breeds,
- the attainment of self-sufficiency in terms of meeting local demand for livestock products and export of the remaining output.

Currently, the government is targeting sustainable growth of cattle and poultry heads as well as improvements in livestock production. In addition, it is also setting goals to increase yields among dairy herds, which remain low at 2.1 tons of milk per cow per annum.

Our view

Russia operates between extremes. Its agricultural system requires significant levels of investment to realise its potential. A free market response underpinned by a strong commitment to transparent property rights would achieve those aims. Unfortunately, government intervention is increasing and may add to the sector's risk profile.

Anchor themes

- ⚓ Russia's land reform laws six years ago laid the foundation for a renaissance in Russian agriculture. Private sector participation has brought much-needed capital into the industry. It is insufficient. We estimate that the Russian agriculture sector needs a US\$50-100bn injection of capital to reach its full potential.
- ⚓ It is easy to get obsessed by outputs in Russia: big farms, 40m ha of unutilised land and vast potential. We worry that the government ignores inputs and seeks to rebuild an agricultural model which is built upon the collectivist failings of the past. If the government embraced free market ideals across the sector, we believe that Russia's agricultural reforms would endure.

Your past is not your potential

① The establishment of a government-controlled grain trading agency is not necessarily a negative feature

It will promote competition, cut margins for traditional middlemen and provide access to capital in an industry desperately short of it. It will also reduce the cost of capital given that Russian sovereign risk is lower than Russian corporate risk. However, we would begin to worry if the Russian government seeks ways to monetise its land holdings as this could squeeze out companies with access to capital.

② The government should allow market mechanisms to flourish

This will bring in more capital and investment and, over the longer term, provide Russia with another vital source of export-generated earnings. The ability to raise yields, bring 40m ha of land up to standard, and invest in elevator capacity and associated infrastructure can be provided by the market provided the government leaves it alone.

③ Enhancing market mechanisms would be more effective than trying to control them

We return to the notion of enforceable property rights. The biggest contribution the Russian government could make to the country's agricultural sector is to speed up the land registration process. Taking 24 months to purchase blocks of land is a bottleneck that continues to hinder progress in the sector. An emphasis on supporting market mechanisms and enforcing property rights could have a major impact on investment.

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Your past is not your potential

Your past is not your potential. At any hour you can choose to liberate the future – Marilyn Ferguson

If you view Russia's agricultural inputs and outputs in isolation, the one word that comes to mind is potential. The country's soils are some of the best on the planet, yet 40m ha of land has remained untilled since 1992. Yields remain low by any standards but are getting better. Infrastructure is poor but being upgraded rapidly. The labour force is poor but, again, is improving rapidly. Land is changing hands but the registration process is more akin to the Soviet era.

Stand inside the control rooms of some of the bigger farming companies and you are witness to a modern revolution. Heavy investment by a range of entrepreneurs and companies has placed some of these farms at the cutting edge of the sector. If the agricultural market is liberalising over the long term, as we believe it is, these companies are not just going to make domestic headway but, in time, they could provide a formidable challenge to some of the world's biggest trading houses.

But we worry that sometimes Russia sees its past as its potential. You needn't have been raised in a Communist country during the Cold War to be obsessed with the scale and size of outputs. A glance at the global wireless industry, the wreckage of the west's banking sector and the Japanese economy throughout the 1990s all highlight that output-driven objectives are common obsessions and don't belong to one particular political genre. It is a malaise that afflicts all.

Our major worry is that Russia focuses on the output side of the equation and ignores the inputs. To do so, in our view, would have long-term detrimental effects on the development of the sector. Size and scale have a habit of blinding the most sensible and practical of minds.

Governments consistently think that they can manage processes and allocate resources better than the private sector when all the evidence suggests otherwise. The Russian government's attempts to create a state grain trading company under the control of the MoA and the AFM should not be seen as proof that the Russian government is about to build a state-owned leviathan. Although we have major reservations about how governments allocate resources, this could be interpreted as a sensible approach to resource allocation and it may lower the sector's cost of capital.

However, political interference does appear to be on the rise just at the time when the sector least needs it. Output targets, land as a strategic resource, food security, export bans – all have become prominent themes across the sector in Russia over the last 12 months. We believe that the fixation on the country's farming potential by both the government and private sector leads to greater interference by one and bad investment decisions by the other. In a country where property rights are, at a best, a work in progress, this could be damaging.

Three times in the 20th century Russia implemented dramatic agricultural reform programmes. We are familiar with the most recent which began in 1992 and is still ongoing ie, the disestablishment of the old collectives. The construction of the collectives, cobbled together in the 1920s and framed against a flawed political and economic ideology, represented the second great reform programme of the 20th century. To this day it holds a powerful grip on the imagination.

However, the reforms of Peter Stolypin in the first decade of the 20th century are just as pertinent. These reforms gave peasants the opportunity to acquire land and led to the brief emergence of a rural middle class – *the kulaks*. Although these reforms sparked off an agricultural transformation, they were killed off by the other revolutions and wars that wracked the country in the two decades which followed their implementation. In short, they too were killed off for political gain. They too did not endure.

The contrasts of Russian agriculture

Output obsession

Private investment decisions and public interference

Russia has been here before

Overview

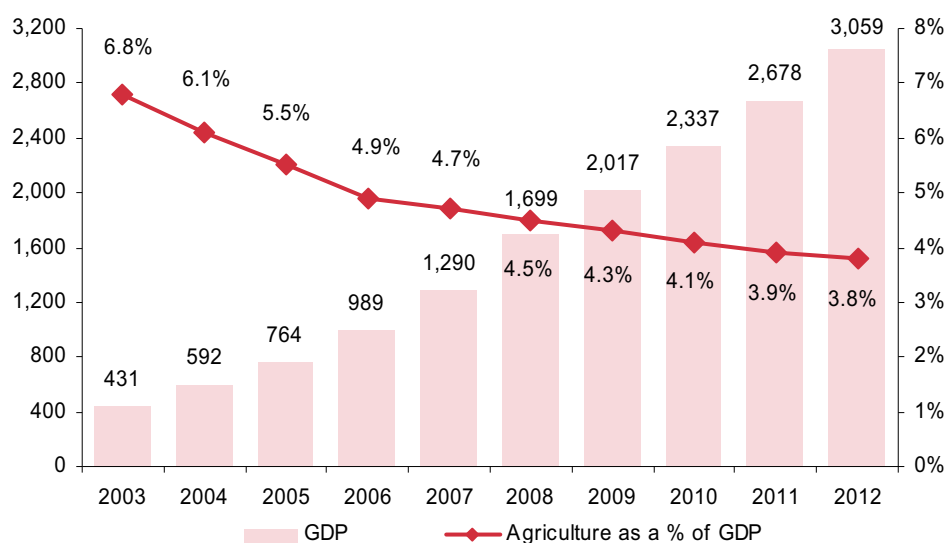
When it comes to Russian agriculture, much has changed in the last 20 years. Some vestiges of the sector from the Soviet era still remain in place – almost quaintly so – and the old and the new rub alongside each other sometimes easily, occasionally less so. Some positions have been reversed: from being a net importer of grains, Russia has become a net exporter. Yet, where once it was self-sufficient in meeting national meat demand, the country has now become a big importer of high-value beef, pork and poultry.

All change

The restructuring process can only be described as a work-in-progress. Like many other current business issues in Russia, restructuring is a long-term theme. Following a lengthy period of decline, the agriculture sector has grown strongly in recent years. However, despite that progress, the sector's contribution to the overall economy fell, an indication of the strength of non-agricultural sectors.

It does, however, remain a sensitive part of the country's economy and its importance far outweighs its contribution to GDP. While agriculture accounted for only 4.7% of GDP in 2007, it absorbed approximately 11% of the country's labour force. There are also important welfare implications to be considered given that 18% of the population lives below the poverty line and food accounts for 36% of household expenditures.

Exhibit 130. LHS – GDP estimates (US\$bn)/RHS – agriculture as a % of GDP (2003-2012)



Source: IMF, EIU

Given the geographical scale and topographical extremes of the country, Russian farmers are hardly a homogeneous group. Harsh climates, winter temperatures, the length of the growing season and the erratic nature of the weather all present some formidable challenges. Combined, they limit agricultural activity to about 10% of the total land area, of which only 75% is arable. The rest is devoted to pastures and meadows. In 2006 and 2007, freezing temperatures and droughts in various parts of the country had a major impact on the principal crops including wheat, potatoes, barley and sunflower seeds, the outputs of all of which declined between 6% and 16% in 2007.

Grains are among the country's most important crops and occupy more than 60% of the crop land. Wheat is the most important and accounts for over half of the country's grain production with an average annual output of about 45m tons. Barley, the second major grain, with an average annual production of approximately 16m tons, is grown mainly for animal feed and beer production. Russia is also one of the world's top

producers of sunflower seeds (the country's chief oilseed crop), which has also become one of the most consistently profitable crops due to demand. Russia is also the world's second largest potato producer after China.

There are three types of farms that are traditionally responsible for production of these agricultural products – agricultural organisations (enterprises), private farms and household plots. While agricultural enterprises and private farms are primarily involved with the production of commodities (grains, sunflower and sugar beet) for commercial sale, household plots are concerned primarily with the production of vegetables and milk for family consumption. These household plots account for about 50% of Russia's agricultural output, even though they control just 6% of the agricultural land. Obviously a major structural development within the agricultural enterprises segment in recent years has been the emergence of large-scale corporate investments in agriculture.

Three types of farm

In 2002 a number of prohibitions on buying and selling land were removed and, as a result, the majority (58%) of agricultural land was privatised. Despite this, the pace of reform has been slow. A major stumbling block is the land registration process, which is both costly and tedious, and reduces the incentive to take land out of the old collectives. As a result, the vast majority of former state and collective farms remain in business as joint stock operations and operate with an unrivalled degree of inefficiency.

Obviously this implies not just an inefficient structure but also a lack of access to capital. A lack of access to capital hampers development given the shortage of physical infrastructure available. In order to make optimal use of its production, the country needs to increase its grain storage capacity and build more silos and elevators, the cost of which is prohibitive. This goes some way to explain the government's plans to set up a grain trading agency, in which it will hold a 25% stake. According to the USDA, the Ministry of Agriculture (MoA) intends that the Agency for the Regulation of Food Markets (AFM), an open joint stock company, will be turned into a major Russian grain trader and will likely take a controlling interest in 28 of the country's major grain elevators and terminals.

Lack of access to capital

Another recent development that has longer term ramifications for the agriculture sector, as well as for the country's financial system, is the development of the futures market, which got underway with the establishment of the grain trading exchange (NAMEX) in April 2008.

Evolution of the agricultural sector

Agricultural reform has proved a challenging task for Russia during its transition from a command economy to a market economy. The forced collectivisation of agriculture during the soviet regime left most farms badly managed, poorly structured and dependent on state support for survival. Following the break-up of the Soviet Union in 1991, large state farms had to contend with the sudden loss of substantial government subsidies. As a result, livestock production, a priority sector during the pre-reform period, declined significantly, pulling down demand for feed grains with it. The use of mineral fertilisers and other expensive inputs plunged, driving yields down. Most farms could no longer afford to purchase new machinery and other capital investments. The dismantling of price and trade controls substantially narrowed the gap between world and domestic input prices for agricultural goods, increasing the plight of producers further.

After a desperate decade of decline, the sector stabilised and began to show signs of improvement. The transition to a more market-oriented system introduced the element of fiscal responsibility, which is gradually resulting in increased efficiency as farmers try to maintain productivity while struggling with resource constraints.

Prior to 1991: the USSR

Agriculture in the Soviet Union was organised into a system of state farms (*sovkhozes*) and collective farms (*kolkhozes*). The former USSR was one of the world's leading producers of cereals with cotton, sugar beets and potatoes being the other major crops.

Collectivisation of farm land was established by Joseph Stalin in 1928 by confiscating land, machinery, livestock and grain stores from the peasantry. This forced collectivisation was aimed at replacing the small-scale, non-mechanised and inefficient farms prevalent at the time with large-scale mechanised and efficient farms. However, despite immense land resources, extensive machinery and an abundance of chemical inputs as well as a large rural workforce, the agriculture sector was fantastically unproductive throughout the history of the Soviet Union.

And no wonder it was fantastically unproductive. Under extremely bureaucratic policies, administrators who were unaware of the needs and capabilities of the individual farms decided both input allocation and output levels. And, meanwhile, farmers were paid the same wages regardless of effort, application and productivity. Subsidies ensured that any attempt to adopt more efficient production methods were killed stone dead.

In 1986, the Soviet Union introduced an agricultural reform programme designed to increase productivity by forming contract brigades consisting of 10 to 30 farm workers who managed a piece of land leased from a state or collective farm. The brigades were responsible for the yield of the land, which in turn determined their remuneration. However, these reforms failed to have a material impact as too many other distortions remained in place. Production suffered accordingly. In the 1980s, the Soviet Union went from being self-sufficient in food production to being a net food importer.

Private plots played a significant role in the Soviet agricultural system as the government allotted small plots to individual farming households to produce food for their own use and for sale as an income supplement. Throughout the Soviet period, the productivity rates of private plots far exceeded their size. With only 3% of total sown area in the 1980s, they produced over a quarter of agricultural output.

Another hallmark of this period was the emphasis set on increasing livestock output. Between 1970 and 1990 livestock herds and output in the USSR grew by 63%. The rise in feed requirements caused by the growing herds, in turn, stimulated the crop sector. In the late 1980s the average annual output of feed grain in the former USSR rose by approximately 50% compared to the late 1960s. The expansion of the livestock sector also led to increasing agricultural subsidies. By 1989, subsidies to agriculture accounted for 11% of GDP, with the bulk going to the livestock sector.

The horrors of the collective cast a long shadow

Joseph Stalin's hare-brained scheme

1991-1999: the transition period

The Russian agricultural sector fared poorly during the transition period of the 1990s. At the beginning of the 1990s agriculture accounted for 16.4% of GDP. By 1998, the share of agriculture in GDP fell below 6%, recovering marginally to reach 6.8% in 1999 in the aftermath of the Russian financial crisis.

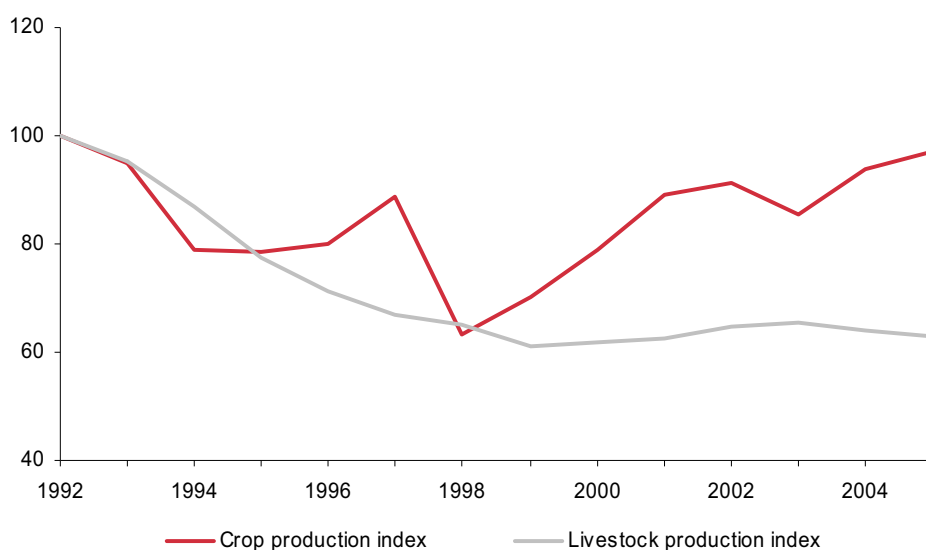
Agricultural production decreased not only relative to the national product, but also in absolute terms. By 1999, agricultural production was only 58% of its average level between 1989 and 1991. Crop production, the dominant sector in terms of its contribution to gross agricultural output, declined less than the sector average but fluctuated wildly due to changes in weather conditions. Livestock production, however, declined more sharply over this period.

Some of the loss in output was a direct result of the implementation of price and trade liberalisation and the corresponding reduction in producer and consumer subsidies. In the pre-reform period, the agricultural sector was highly subsidised with the majority of support delivered via cheap inputs, especially fertilisers and fuels. As these subsidies declined after 1991, the use of these inputs plummeted. For example, gasoline use in agriculture declined from 11.3m tons in 1990 to 2.4m tons in 1998, while diesel use fell from 20m tons to 5.9m tons and mineral fertiliser use decreased from 11.1m tons to 1.6m tons, during the same period.

Price liberalisation resulted in high inflation rates and substantially reduced consumers' real incomes and purchasing power. Declining real incomes hurt the livestock sector particularly badly. And, of course, this hit demand for feedstock grains. Trade liberalisation, too, had a big impact on the sector. Prior to the reform period the government offered support to producers by setting domestic producer prices above world prices. Once trade was liberalised, prices fell.

Although various types of subsidies steadily diminished during the 1990s, state support was not wholly eliminated. Farms received indirect subsidies through the recurring policy of writing off debts. Farms regularly received 'soft loans' from state or quasi-state lenders, which were later written off.

Exhibit 131. Evolution of agriculture in Russia; crop, livestock production index (1992-2005), 1992=100



Source: FAO

Some of the other reasons for the decline in the agriculture sector, apart from the elimination of pricing support and subsidies, were down to the slow pace and inconsistency of reforms across the sector. For example, the failure to restructure large farms meaningfully, continued stalemate over land ownership and use rights, the

The last gasp of a dying ideology

Price and trade liberalisation

failure to improve market infrastructure, the re-imposition of trade barriers and administrative price controls (the last of which was done at a regional level).

Despite these problems and setbacks, by the end of the 1990s, the country had achieved the basic elements of a market-based agricultural sector. As the economy developed – up until the financial crisis in 1998 – pricing policy in the sector became steadily less dependent on the state as compared to other sectors in the economy. The role of the state as a basic buyer of farm products and as an agricultural input supplier had diminished considerably. In 1993 the government bought 63% of all the cereals sold by agricultural enterprises. By 1998 this had declined to 12%. State procurement of vegetables declined from 71% of output in 1993 to 37% in 1998. Even in the heavily protected livestock sector, the state's share declined from 79% to 41% during this period.

2000-present: the recovery period

The sector has steadily recovered since the dark days of 1998, with agricultural output growing at an average rate of 3.2% pa between 1999 and 2005. Growth in agricultural output has primarily been driven by growing crop production, which increased by 5.7% annually during this period.

The most significant development of the recent times has been the passing of *'the law on the turnover of agricultural land'*, which legalised the purchase and sale of agricultural land. This allows farmers to consolidate plots into more efficient units and use them as collateral. It might sound dull but it is possibly one of the most significant events in Russian farming since the Stolypin reforms of 100 years ago.

In 2004, the country initiated administrative reforms, which demarcated the roles of the federal government and regional administrations in providing agricultural support. The reforms provided regional authorities with considerable power and discretion, which allows them to curtail monopolies and ensure that agricultural land is used for farming. There is another side to this: regional administrations have in some cases implemented their own trade policies with respect to other regions, which has led to the introduction of inter-regional as well as international trade barriers.

Administrations deploy various means to influence food markets in their regions. The most common among these include controls over retail and wholesale prices (by fixing price ceilings or trade margins), rationing, the creation of grain and other product reserves, mandatory marketing of agricultural production to regional food corporations, subsidies and compensation from regional budgets and financing of agricultural programmes from regional budgets. In addition, a number of regions have introduced their own testing laboratories and demand that foreign products meet a local standard, which is often more rigorous than the national standard.

The federal government has also introduced various trade restrictions that have implications on different sections of the sector. Since April 2003, poultry imports from outside the CIS have been restricted by a physical quota while imports of red meat have been under a tariff rate quota (TRQ), with all quotas allocated annually to countries based on historical imports. In 2005, Russia extended the meat TRQ regime to 2009, while agreeing to a gradual increase in the quota volumes and a downscaling of over-quota tariff rates.

Sugar is another commodity that comes under a special import regime. White sugar imports originating from areas outside CIS are levied at a specific duty of US\$340 per ton. CIS imports, accounting for the majority of Russia's white sugar imports, are free of duty if white sugar is processed from sugar beet; otherwise a US\$340 per ton duty is applied. Raw sugar imports are subject to a more complex regime. At the end of 2003, a variable import levy was introduced to replace the earlier TRQ system. Raw sugar imports are now subject to a specific tariff, whose rate varies between US\$140 and US\$270 per ton depending on the level of average monthly price at the New York

The modern era

Local trade restrictions

Board of Trade (NYBOT). In 2004 and 2005, the applied variable tariff (according to value) on raw sugar imports was approximately 98% and 61%, respectively.

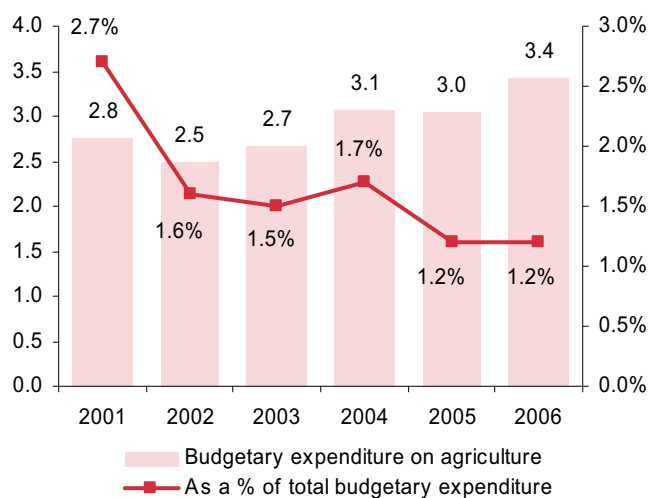
Budgetary support to agriculture

The 1998 financial crisis led to a substantial reduction in budgetary support given to the agricultural sector. While support to the sector has risen since 2002, it still lies below the pre-crisis level. Total agricultural support relative to GDP was 1.4% during 2002-2006, down from an average of 2.8% during 1995-1997. While the overall budgetary expenditure on agriculture, which includes disbursements from both federal and regional budgets, rose in nominal terms between 2001 and 2006, its share of the total state budget has fallen.

Interest rate concessions, input subsidies and output payments for livestock products constitute the core of domestic support to the sector. Input subsidies on working capital loans and payments for variable inputs, such as fertiliser, elite seeds and insemination material, constitute the majority of budgetary support.

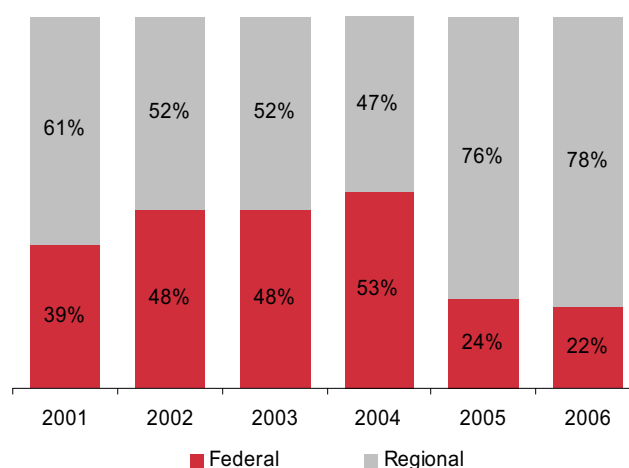
Additionally, farms enjoy access to budget-financed soft loans that are generally not repaid. From the mid-1990s, a series of large-scale debt restructurings for agricultural enterprises was implemented. By the end of 2006, the overall amount of restructured debt was estimated at approximately RUB82bn (US\$3.2bn), of which RUB72bn (US\$2.8bn) were fines and penalties.

Exhibit 132. LHS – Budgetary expenditure on agriculture (US\$bn)/RHS – agricultural expenditure as a % of total state budget (2001-2006)



Source: OECD

Exhibit 133. Break-up of budgetary spending on agriculture at federal and regional level (%) (2001-2006)



Source: OECD

In recent years, agricultural support has been decentralised with regional administrations assuming responsibility for the implementation of support measures previously carried out by the federal government. Until 2004 some 50% of spending was allocated at the federal level. However, the federal share has declined sharply since 2004.

Land use

Russia is a federation, comprising 46 *oblasts* (provinces), 21 republics, 9 *krais* (territories), one autonomous *oblast*, one autonomous *okrug* (district) and two federal cities. It is spread across 12 zones, namely, the Far Eastern region, the East Siberian region, the West Siberian region, the Urals region, the Northern region, the North Western region, the North Caucasus region, the Volga-Vyatka region, the Volga region, the North Caucasus region, the Central region, the Central Black Earth region and the Kaliningrad region.

Exhibit 134. Russia by region

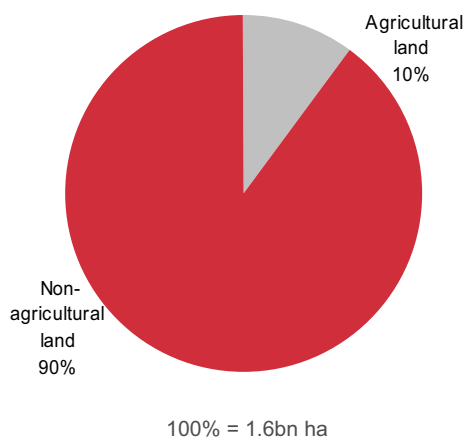


Source: Nomura

Russia is the world's largest country, spread across 11 time zones, with a variety of landscapes, climates, soils and wildlife. Harsh climatic conditions, unfavourable topography and poor soil quality deters agricultural activity in most parts of the country.

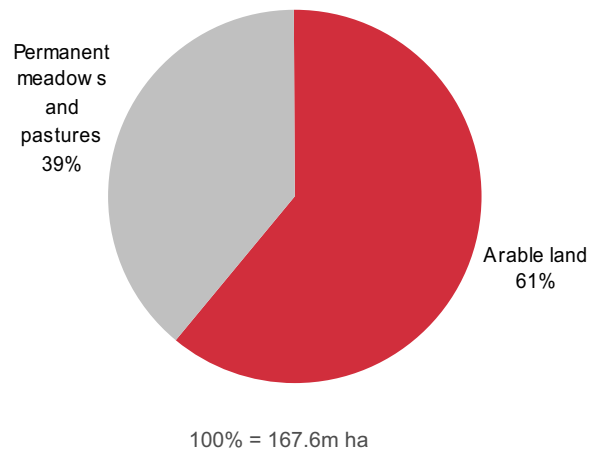
Agriculture is limited to only 10% of the country's land mass

Exhibit 135. Total land split (2006)



Source: FAO, Rosstat

Exhibit 136. Agricultural land split (2006)



Source: Rosstat

Approximately 75% of Russia is characterised by broad plains and low hills lying to the west of the Urals to the taiga forests and tundra of Siberia. Uplands and mountains cover most of the area along the federation's southern border. More than half of the country is covered by forests, some 19% is more or less in the tundra belt and about 4% is covered by water bodies, leaving only 10% for agriculture. Out of this area, only 60% is used for cultivating crops, while the rest is devoted to pastures and forage.

Russian soils are characterised by low levels of fertility and range from poor quality acidic soils in the northern regions to highly fertile soils in the southern regions of European Russia, the Urals and Siberia. The two main soil types are Podzols and Gleysols, which occupy 22% and 16% of the total land area, respectively. However, Chernozems, the most agriculturally productive soils, occupy less than 6% of the land area.

The Russian landscape has been characterised by the typical grasslands of the steppe. This region extends from Hungary to Ukraine, through southern Russia and Kazakhstan, before ending in Manchuria, and comprises Russia's Central Black Earth and Volga regions. The region is characterised by a broad belt of grasslands, devoid of trees and interspersed with mountain ranges. In a country exposed to the most extreme climatic conditions, this transitional zone of moderate temperature and adequate levels of precipitation offer an ideal setting for agriculture. In addition, the region is endowed with the Chernozem, or black earth soil, which has a high humus content and low level of acidity, making it extremely fertile and turning the area into Russia's main source for grains. With about 65% of the land being dedicated to agricultural activity, the region is considered to be the country's most agriculturally productive area. However, over the years, even in this fertile region, natural calamities such as droughts and inadequate precipitation have adversely affected agricultural yields.

The steppe

Grains, including wheat, barley, rye and corn are among the most important crops and cover about 60% of the entire crop land, with wheat being the dominant grain. Winter wheat is cultivated primarily in the North Caucasus region while spring wheat is cultivated in the middle Volga region, the Far East region and in South Western Siberia. In terms of annual output, barley is the country's second most important grain and is primarily cultivated in the colder regions extending from the highlands of southern Siberia to as far as 65° north latitude. Few grain fields in Russia are irrigated, even in drought-prone areas.

In addition to grains, potatoes are grown in the colder regions ranging from 50°-60° north latitude. Sugar beet is grown mainly in the central black earth region Russia. Oilseeds such as flax, sunflowers and soybeans are grown primarily in the North Western region's Vologda *oblast*, the North Caucasus region and the Far East region, respectively.

In the colder northern and north western regions of the forest zone, fodder crops dominate produce and occupy 60-65% of the sown area. However, in the more agro-productive central and eastern regions, forage crops occupy only 35-40% of sown land.

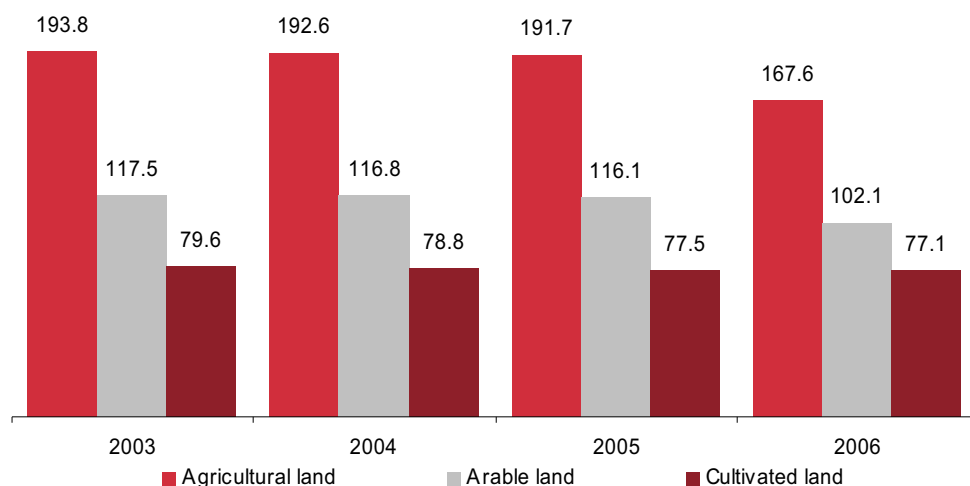
Russian farmers employ several crop rotation schemes, to maintain soil fertility. The number of crops in rotation may vary from two to four or more crops. In the southern forest-steppe and steppe regions, crop rotations are dominated by cereal/fallow and cereal/sown crop/fallow cycles, in contrast to western Russia, where spring crops/forage rotations dominate. In eastern Russia, grain/fallow/grass crop rotations are the most feasible, with perennial pastures occupying 25-33% and soil protection crop rotations occupying up to 70-80% of the arable land.

Crop rotation schemes

As corporate farms begin to make a significant impression on the landscape, fertiliser use in Russia has also picked up in recent times. By mid-March 2008, agricultural producers had applied about 1m ton of mineral fertiliser (including 0.6m ton of nitrogen fertiliser), an increase of 14% over the same period last year. According to the MoA,

some 2m tons of mineral fertiliser on an active ingredient basis will be applied this year, an 11% increase over 2007. Rapidly increasing fertiliser prices may restrict consumption in the future.

Exhibit 137. Agricultural, arable and cultivated land in Russia (m ha); (2003-2006)



Source: Rosstat

Despite having the world's largest land mass, Russia is still some way from returning to the output levels it was able to sustain during the Soviet era. One of the primary reasons for this has been the decline in cultivated area. The country's cultivated area decreased from 79.6m ha in 2003 to 77.1m ha in 2007. This decline is attributable to several factors, including:

- A decrease in the sown area of feed grains and other forage crops, primarily due to dwindling livestock inventories.
- The presence of vast tracts of fallow land, estimated at about 25m ha in 2006 (38.6m ha in 2005). Much of this fallow land remained abandoned post the dissolution of the Soviet Union, primarily as a result of declining farm subsidies and the inability of farmers to buy inputs such as pesticides and fertilisers to protect crops and enhance yields.
- Inadequate or incomplete certification of land distributed to state farm workers in the form of land shares, following the break-up of the former USSR. This led to inaccurate surveys and estimates of cultivable land.
 - According to August 2008 estimates, out of the 12m shareholders, who hold a combined 110m ha of agricultural land, only 3-4% have fully completed the registration process, which includes determining precise field coordinates and receiving a title.
 - In some cases, shareholders have completed the registration process but have no interest in farming or leasing the land, thereby increasing the area of idle land.

The MoA has been taking certain initiatives to combat problems associated with soil fertility and reclamation of unused agricultural land:

- In 2008, the MoA plans to reclaim 700,000 ha of unused agricultural land. In addition, measures to impede water-driven soil erosion will be implemented on 19,500 ha of land, while measures to combat wind-driven soil erosion and desertification will be implemented on 45,000 ha of land.

- To improve soil quality, encourage adoption of modern agricultural technologies and solve issues related to land ownership, the MoA recently established a Department of Land Policy and Property Relations.
- In 2008, the government will begin to partially subsidise the purchase of mineral fertiliser, as outlined in the *“Federal Program for the Development of Agriculture and Regulation of Agricultural and Food Markets for 2008-2012.”*
 - In 2008, RUB2.3bn (US\$90m) will be allocated for fertiliser procurement support with an expected increase in mineral fertiliser acquisitions from 1.8m tons in 2007 to 2.0m tons in 2008.
 - The government will impose export duties on mineral fertiliser in an effort to curb exports and increase supply in the domestic market. However, the success of this measure remains debatable as an adequate supply of fertiliser for grain producers will depend on the farmers’ ability to purchase the same rather than government restrictions on fertiliser exports.

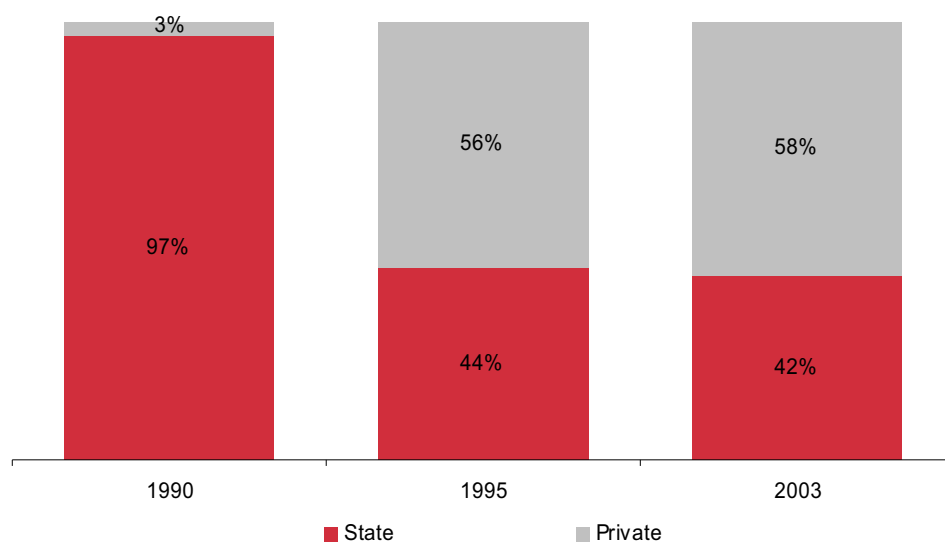
Ownership of agricultural Land

Land in Soviet times, with the exception of the small garden plots (which occupied only 3% of the country's agricultural land), was under the complete control of the government bureaucracy. However, since the passing of the 'Land Reform Law' in 1990, the country has made significant progress in the privatisation of land. This piece of legislation recognised the right of private ownership in agricultural land by dividing large tracts of state and collective land among rural people who lived in and worked on these farms. The distribution was in the form of paper shares as per a mechanism that became known as 'joint shared ownership'. Subsequent reform laws provided shareowners the option of withdrawing land plots from joint shared ownership for the establishment of independent peasant farms. As a result of mass re-organisation of the former state and collective farm land, the share of state-owned agricultural land dropped from 97% in 1990 to around 42% in 2003. However, this has not brought about a significant change in the manner in which operations are run in the sector because even though almost 60% of agricultural land is currently under private control, the majority of this land is still represented by land shares. From our discussions with various parties, it would seem reasonable to assume that as much as 70% of agricultural land in Russia is still owned by the state or held in the form of private-sector land shares.

At present, there are three modes of farming operations in Russia – agricultural organisations, household farms and private family farms.

Changing times

Exhibit 138. Agricultural land ownership (1990-2003)



Source: Rosstat

Agricultural organisations (former state and collective farms) dominate production of most agricultural commodities. For example, nearly 79% of Russia's grains and 70% of the country's sunflower seeds are produced by these enterprises. The smaller private farms complement these enterprises in commodity production. In 2007, they accounted for 20% of the country's grain production and nearly one-third of its sunflower seed production.

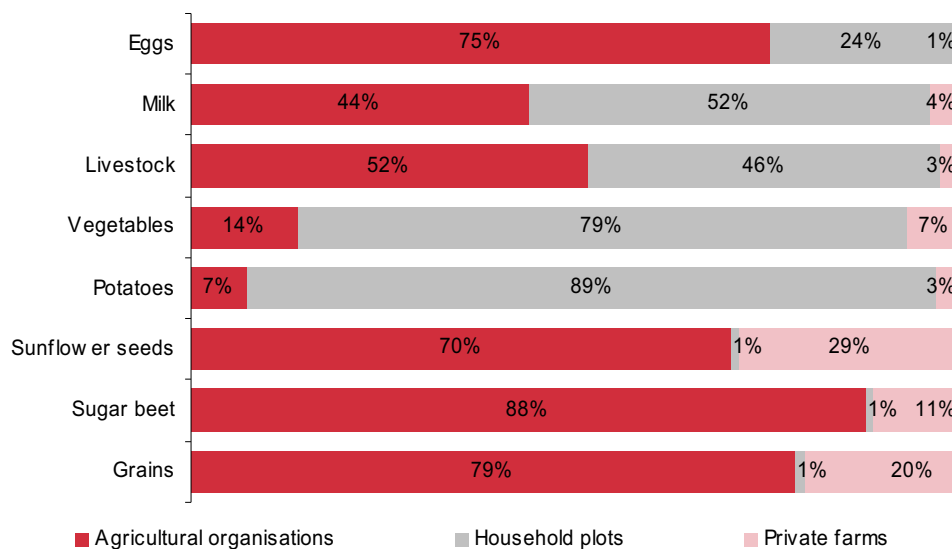
Agricultural organisations dominate output

Exhibit 139. Structure of agricultural farms in Russia (2006)

Farm type	Ownership	Description	Average farm size (ha)	Agricultural land holding (%)
Agricultural organisations (enterprises)	Multiple shareholders	These are the successors of the former collective and state farms, accounting for 43% of total agricultural output. Virtually all individually owned land in corporate farms is in the form of land shares owned by the local rural population. The production is intended wholly for commercial use.	5,000	81
Private (peasant) farms	Individual	Emerging after reforms in the early 1990s, these family farms contribute 7% to the country's total agricultural output. Like agricultural organisations, the production is primarily for commercial purposes.	81	13
Household plots	Individual	These are physically demarcated land parcels owned by individuals in rural areas and account for an astonishing 50% of the country's agricultural output. The majority of the households produce primarily for self-consumption and sell the rest to consumers, usually directly at local farmers' markets. Thus, the importance of this sector in marketed output is much smaller than in the overall production.	0.5	6

Source: Rosstat, USDA

Household plots, on the other hand, produce mainly livestock products, potatoes, vegetables and milk, and virtually no bulk crops such as grain, sugar beet and oilseed. The fact that they still produce half of the country's total agricultural products while operating on a mere 6% of its farm land indicates the high productivity of these plots. It should be noted, however, that household plots, in addition to the land formally given to them, also use some land belonging to agricultural organisations for livestock activities.

Exhibit 140. Output of main agricultural products by types of farms (2007)

Source: Rosstat

With the introduction of various laws and decrees defining the legal forms of land ownership and the procedures for certifying and exercising ownership rights, it was expected that private holdings would be created in rural areas and the large-scale collective farms would be restructured. But, as it has turned out, few peasants established individual farms and the management and operating practices of large agricultural enterprises remained largely unchanged.

Immediately after the demise of the Soviet Union the number of individual private farms increased sharply but their development has stalled since then. Currently, these peasant farms face serious operational difficulties and are also handicapped by a lack of competitive input and output markets. Consequently, the number of private farms declined to 255,400 in 2007, after reaching a high of 280,100 in 1995.

Land transactions

Earlier legislation relating to land focused on providing use rights to the farmers. However, buying and selling of land was restricted and 'alienation' of land was allowed only to the state and not to individuals. While land shares held in the form of paper certificates could be sold to other members of the collective, physical land plots could be sold only under special circumstances (when the landowner retired, when the plot was passed on in inheritance, when the peasant farmer relocated to another region or when the seller undertook to use the proceeds from the sale for the establishment of a non-farm business). It was not until the adoption of the law on agricultural land transactions in January 2003 that ownership rights in agricultural land (including buying and selling) were finally normalised.

Exhibit 141. Key provisions of the law on agricultural land transactions (January 2003)

Key features

Implications

Land ownership by foreigners

The law prohibits sale of agricultural land to foreigners and companies with majority foreign capital. However, the restrictive impact of this provision has been alleviated by allowing long-term leasing for 49 years.

Upper limit on concentration of land by physical persons or legal bodies created by physical persons

An individual (including the close associates) cannot own more than 10% of the total agricultural land in a given administrative region. The restriction is aimed at preventing concentrations of large land by one person.

Sale of farm land

It provides pre-emptive rights to local governments and municipal authorities to purchase land plots and land shares. Negotiations for a piece of agricultural land (or even a land share) between private parties cannot be concluded without offering the authorities the option to buy the land on the same terms. The private deal can go through only if the authorities refuse or let the option lapse (within one month). The law is intended to prevent socially undesirable transactions, but in practice it significantly delays the completion of land transactions. However, the law can be bypassed by resorting to alternative mechanisms such as public auction, gifts and so on.

Source: Rosstat

With the adoption of the 2003 law, previous prohibitions on buying and selling of land have been removed. However, further development of land market activities is severely restricted by the inadequacy of the administrative and technical infrastructure,

as high registration costs and complex procedures prove to be a major obstacle to land transactions.

The bureaucracy has created numerous procedural obstacles that complicate land transactions. The conversion of a land share in a collective farm into a plot of land requires the whole area in joint-shared ownership (often several thousand hectares) to be surveyed. It is an expensive operation (estimated to cost about US\$20 per ha) and it is also time consuming (a minimum of two months). Another major problem is the multiple steps required and the entirely opaque processes of the authorities involved with the registration process, especially regarding the requirements for documents.

These administrative barriers involve additional expenses for the applicants and lead to sharp increases in transaction costs and time. All these problems are further aggravated by a general lack of market information pertinent to land transactions as the agents do not have sufficient knowledge of mechanisms and procedures necessary for the registration of land transactions. According to various experts, withdrawal of a single plot of land from joint-shared ownership requires up to one year of constant occupation.

As a result, landowners often avoid the legislative registration procedures and resort to general power of attorney or give the land away as a gift. With general power of attorney, the seller gets the money and empowers a third person to sell the land share and complete all the necessary arrangements. With a gift of land, there is no need to offer the share to other pre-emptive buyers (the joint owners, the *oblast* government, or the municipality), as required by the law.

Another serious impediment to the growth of the agricultural sector in the country has been the policies surrounding the mortgaging of agricultural land. Mortgaging has been permitted only since January 2004, following a special amendment of the 1998 general mortgage law, and imposes highly restrictive conditions. So, although the 2004 amendment formally allows agricultural land to be mortgaged, the technical barriers to meet the basic requirements are virtually insurmountable. Consequently, at present, land mortgage has a limited role in the country and is unable to fulfil its role as a facilitator of land transactions.

State obstacles

Major agricultural products

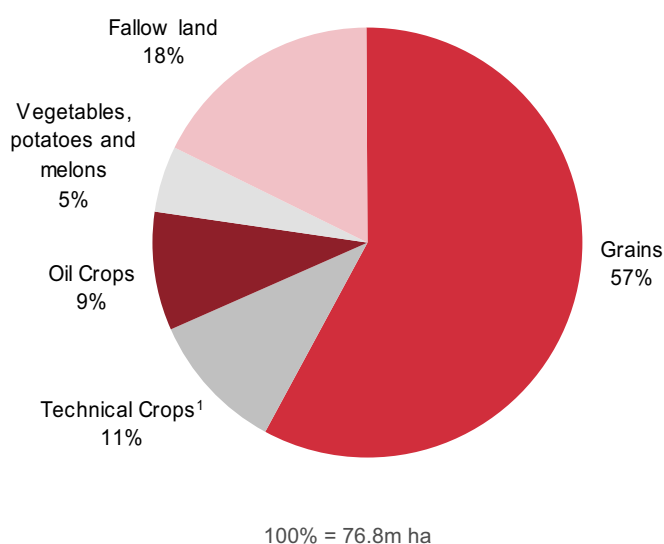
Extreme climates, poor soil quality and the inability of farmers to afford fertilisers and yield improving technological inputs, deter agricultural activity across many areas of the country. As a result, agriculture accounted for less than 5% of the country's GDP in 2007, although it employed about 11% of the labour force.

Russia's main agricultural commodities include grains, sugar beet, sunflower seeds, vegetables, fruits, beef and milk. Major cereal crops include wheat, barley and rye, of which winter wheat is the main crop for both private farms and agricultural enterprises. Major industrial crops include sunflower seeds, sugar beet and flax-fibre. In 2007, wheat and oilseeds (sunflower seeds, rape seeds and soybeans) together accounted for about 40% of total cultivated land.

In 2007, Russia accounted for about 8% of global wheat production, around 12% of global barley production and 27% of global rye volume. In terms of oilseeds, the country was the world's largest sunflower seed producer with a 21% market share. In addition, potato production in Russia accounted for about 12% of the global potato market in 2006.

8% of global wheat market

Exhibit 142. Split of sown area by agricultural crops (2007)

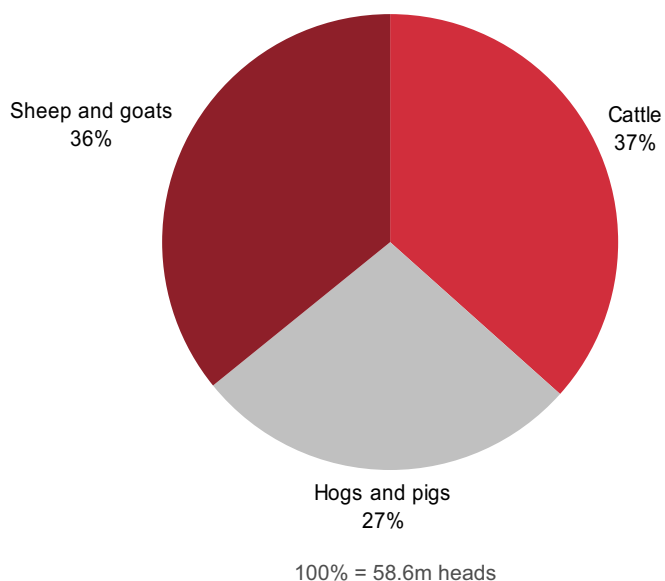


Note: 1) Technical crops comprise sugar beets and flax fibre

Source: Rosstat

While southern and western regions of the federation concentrate primarily on grain production, the northern areas of the country concentrate mainly on livestock production. After the Soviet Union was dissolved in 1991, poor economic conditions resulted in a sharp decline in livestock inventories. As incomes have risen, the livestock industry has regained some prominence in the agricultural sector. Cattle are the most common form of livestock except in the drier areas, where sheep and goats dominate. Pigs also form an important category and are raised in areas of European Russia and the Pacific coast. Poultry is reared in small scattered areas and is negligible compared to cattle and pigs, although the high demand for frozen chicken has made it one of the country's largest import items in the last few years.

Livestock recovery

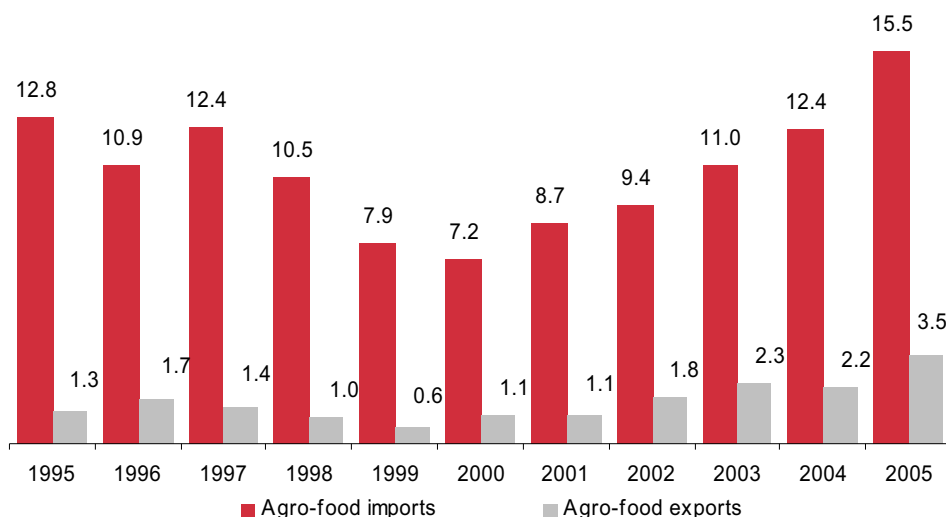
Exhibit 143. Split of livestock population (2007)

Source: Rosstat

In value terms, Russia is a net importer of agricultural and food products. The nation's agricultural import-export gap reached a trough of US\$6.1bn in 2000. However, since then, imports have continued to increase at a faster pace than exports and in 2005 the gap doubled to US\$12bn. Clearly this is an indication of how the country has grown rapidly overall, but with the agriculture sector trailing other sectors.

Imports of foodstuffs consist mainly of meat and other high-value products such as fruits, processed foods, beverages and confectionary products. The EU, Brazil, Ukraine and the US are Russia's largest agricultural food suppliers. About one-third of US frozen cut poultry exports are sent to Russia, while around two-thirds of Brazil's pork exports find their way into the country.

Russia is a net-exporter of grains and oilseeds. The main export destinations include Egypt, India, Jordan, Tunisia, Kazakhstan and Ukraine. The import-export gap is likely to remain for a while yet given the country's numerous bottlenecks. Deal with these and the Russian agriculture sector would enjoy a renaissance.

Still a trade deficit in agriculture**Exhibit 144. Agricultural trade in Russia (US\$bn)**

Source: FAO

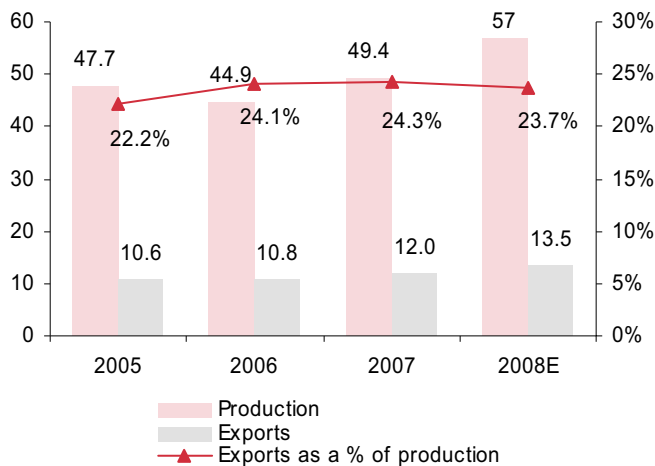
Wheat

In 2007, Russia was the world's fourth largest wheat producer. With an output of 49.4m tons, the country accounted for approximately 8% of total global output. Wheat accounted for about 60% of Russia's grain output in 2007. The grain is typically planted over 23m ha to 26m ha and it is harvested as a winter and a spring crop annually. In 2006, winter wheat accounted for about two-fifths of the total wheat area planted and about 60% of output (due to higher yields compared with the spring crop).

About 70% of the country's wheat is food-grade; the rest is used as feedstock. The combination of reduced feed demand and several decent crops since 2001 is reflected in increased wheat exports and lower imports. In 2007, Russia exported 24% of its wheat output, its main export destinations being Egypt (28% of exports by volume), India (9%) and Turkey (6%). Low grade, Class 4 wheat accounted for about 80% of the exports. In November 2007, the government implemented prohibitive export duties on wheat and barley, which were abolished in July 2008. However, a tight international grain market and surging prices for wheat made export a profitable option for the farmers, which resulted in increased exports in 2007. Wheat exports are expected to rise to 13.5m tons in 2008.

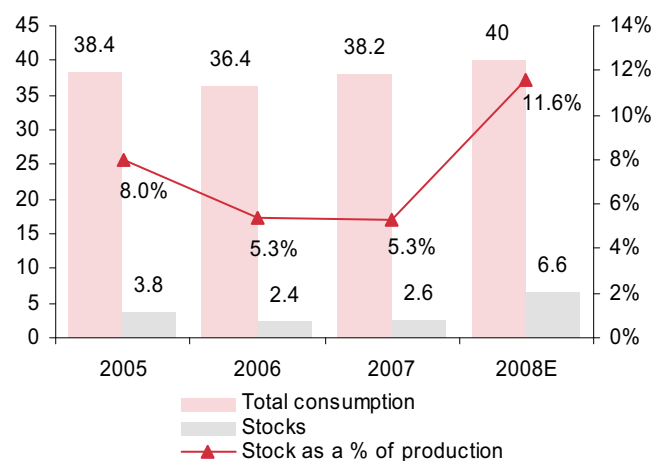
As an indication of what can happen occasionally in Russia, look at 2006. That year, wheat production declined by 10% over 2005, primarily due to the extremely cold weather which damaged output in parts of the Volga, Central, and Southern regions. However, wheat production recovered in 2007 and is expected to achieve an output record of about 57m tons in 2008, an increase of about 15% over 2007. This likely increase was driven by more benign weather conditions during the winter and an increase in the use of chemical fertilisers, improved financing through subsidised credits and yield improvements among the corporate farms.

Exhibit 145. LHS – wheat production (m tons)/ RHS – exports as a % of production (2005-2008E)



Source: USDA

Exhibit 146. LHS – wheat consumption and stocks (m tons)/RHS – stocks as a % of production (2005-2008E)



Source: USDA

Barley

Barley is one of Russia's main feed stocks. In 2007, Russia produced 15.7m tons of the stuff. The country accounted for approximately 12% of global output and 11% of global consumption (as feed). Like wheat and other grains, barley is also grown in spring and winter. Spring barley typically accounts for about 90% of the total sown area for barley.

Feed consumption accounted for about 70% of the total barley consumption in 2007. High domestic consumption doesn't leave much room for exports and about 7% of the produce was exported in 2007. The primary export destinations were Saudi Arabia,

Fourth largest producer in 2007

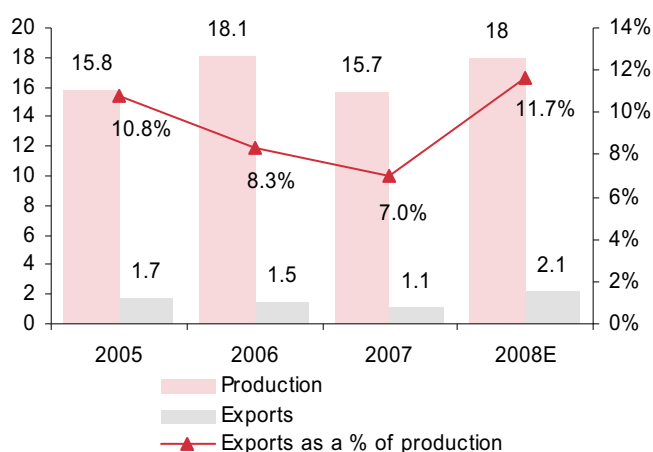
A principal feed stock

Jordan and Tunisia. These three regions together accounted for about 70% of the country's total barley exports.

Barley output declined by 13% y-y in 2007, due to a lower harvested area and lower yields during the year. In 2007, the yield was 1.6 ton/ha compared with 1.8 ton/ha in 2006. Lower yields and a reduced sown area were primarily attributed to extreme weather conditions, which resulted in excessive heat in southern European Russia and the Volga Valley in July and August and rainy cool weather in West Siberia in July.

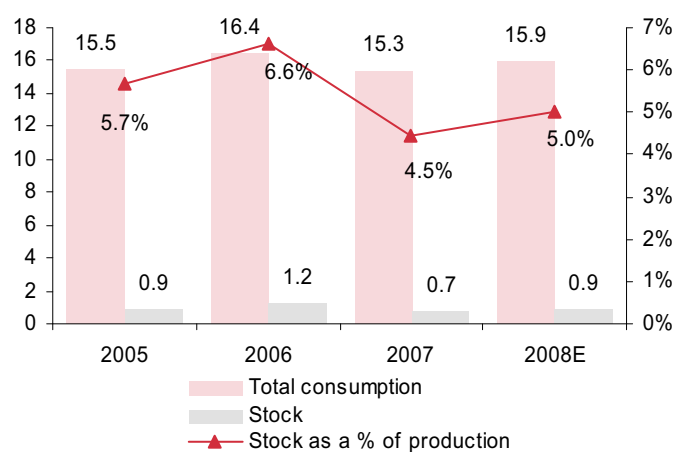
In 2008, barley production in Russia should register an increase of about 15% over 2007 to reach 18m tons, driven by the same factors which are expected to fuel wheat production in the country. In addition, exports are also expected to increase by about 100% in 2008 over 2007, as high international prices attract trade. This improvement will easily offset the impact of the export duty implemented by the government in November 2007.

**Exhibit 147. LHS – barley production (m tons)/
RHS – exports as a % of production (%)
(2005-2008E)**



Source: USDA

**Exhibit 148. LHS – barley consumption and ending stocks (m tons)/RHS – stocks as a % of production
(2005-2008E)**



Source: USDA

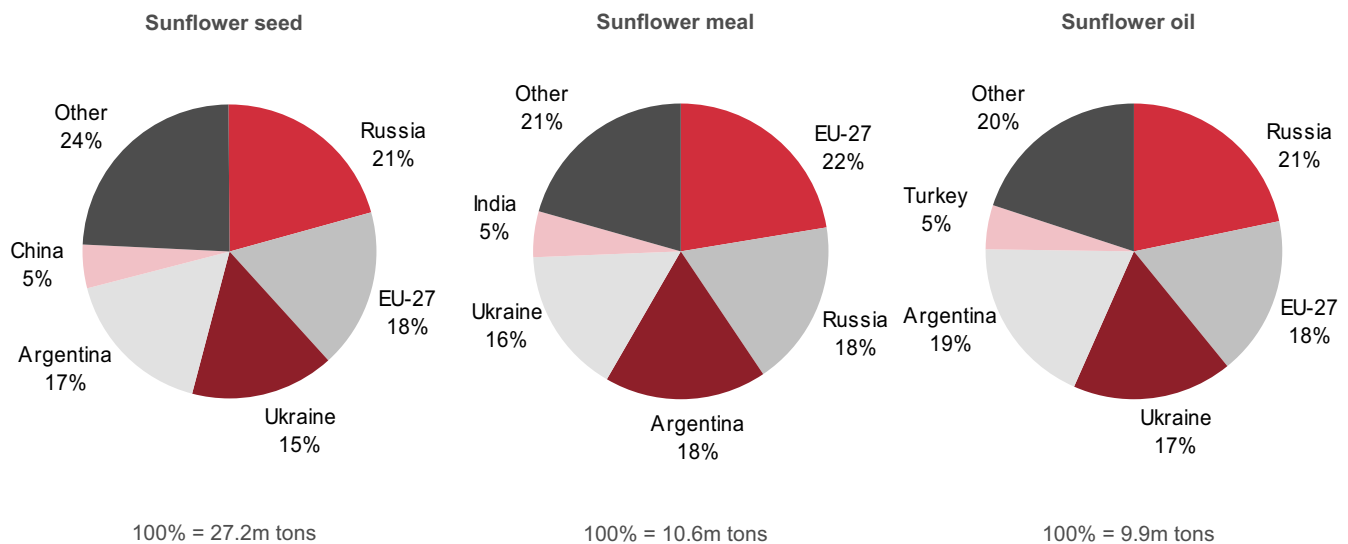
Sunflower seeds

Sunflower has become one of the most consistently profitable crops in Russia, driven by a combination of high prices and low production costs relative to wheat. In recent years, farmers' planting decisions have become largely market-based and the profitability of sunflower seeds has fuelled a significant expansion in cultivated area. As a result, the area harvested for the oilseed increased from 3.4m ha in 2001 to 5m ha in 2007.

In 2007, Russia's sunflower seed production accounted for 21% of global output, making it the world's largest sunflower producer. Sunflower oil is also a primary food product in the country. In terms of sunflower meal, Russia was the second largest producer in 2007, accounting for about 18% of global output.

Despite its high profitability, sunflower output declined 16.2% in 2007 compared to 2006. Excessive heat and dry weather conditions across the major sunflower-producing areas in the southern parts of the federation during July and August resulted in lower yields and sown area. Production in 2008 should be restored – forecasts suggest 17% y-y growth.

A consistently profitable crop

Exhibit 149. Sunflower seed, sunflower meal and sunflower oil production split (2007)

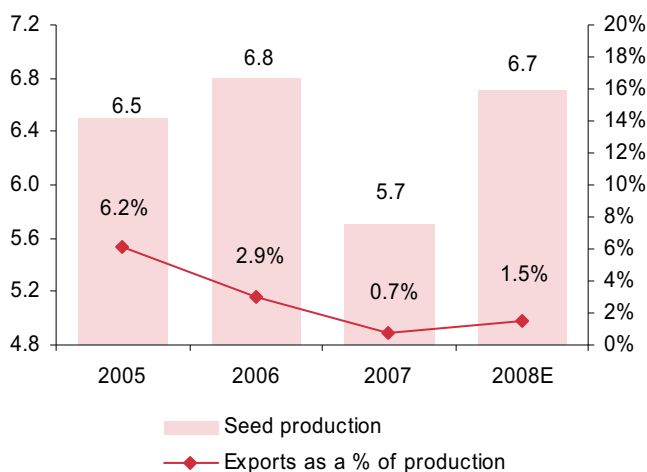
Source: USDA

Although the trade in sunflower seeds is limited, Russia is a net exporter of the commodity. Exports accounted for a mere 0.7% of total production in 2007, with the remainder used for domestic consumption. Sunflower seed imports in the nation are also negligible and are restricted to high-quality seeds only.

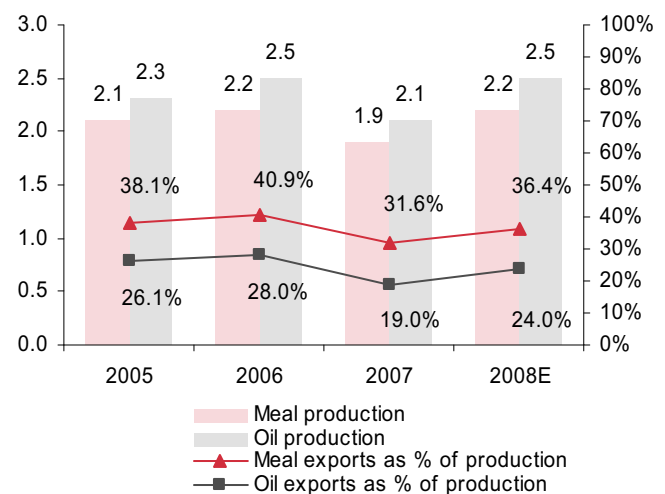
Simultaneously, sunflower meal and sunflower oil are major export products for the federation, accounting for 32% and 19% of total output in 2007, respectively.

Sunflower oil and meal exports as a percentage of production declined considerably in 2007 compared to 2006, primarily due to stable domestic demand from households and industry, coupled with an increase in oil refining capacity and a decline in seed production.

High profitability and the low cost of sunflower seeds compared to other grains should increase the sown area for sunflower. The increasing use of fertilisers should also drive yields.

Exhibit 150. LHS – sunflower seed production (m tons)/RHS – exports as a % of production (2005-2008E)

Source: USDA

Exhibit 151. LHS – sunflower meal and oil production (m tons)/ RHS – exports as a % of production (2005-2008E)

Source: USDA

Potatoes

Potatoes are a staple next only to bread in the region. Output has risen sharply in recent years. The country accounted for 12% of global production in 2006 and is second only to China. In 2007, it was estimated that the average Russian consumes about 264 pounds of potatoes annually and that potatoes account for 18% of an average Russian's diet.

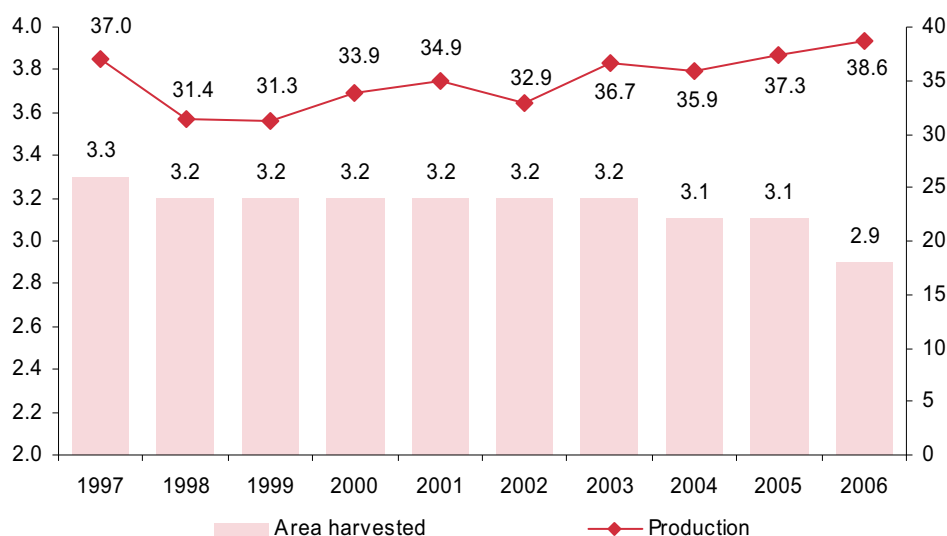
Although Russia is one of the world's largest potato producers, output has declined by 1.3% over the course of the last decade. Annual production over the past 15 years has continued to hover around 35m tons.

Between 1997 and 2006, the average yield in Russia stood at 11 tons/ha, well below the global average of about 16 tons/ha. Low potato yields are primarily attributed to the fact that about 93% of the output is accounted for by privately owned family plots of about 0.06-4.00 ha and these plots lack access to inputs and capital. Pests and diseases are a major problem. In 2007, it was estimated that as much as 4m tons were lost annually to the Colorado beetle, late blight and viruses.

Second biggest producer in the world

Disease and pestilence

**Exhibit 152. LHS – area harvested (m ha)/
RHS – potato production (m tons) (1997-2006)**

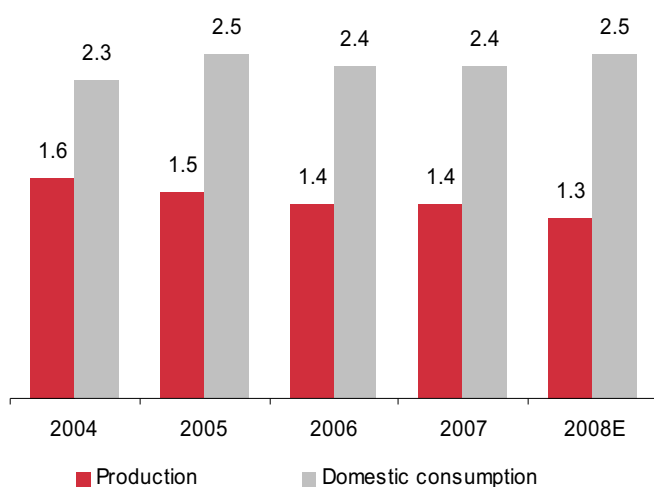


Source: FAO

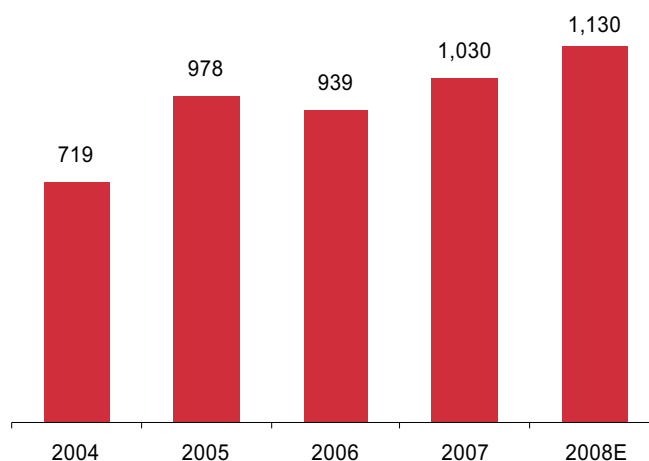
Beef and veal

Beef and veal demand in Russia witnessed significant growth over the past few years, outpacing production. In 2007, Russia accounted for 4% of global beef and veal consumption, while it accounted for only 2.3% of global production. Beef production should decline 7% in 2008 over 2007 because of poor cattle husbandry which will likely result in low productivity and reproductive inefficiencies.

During the first six months of 2007, beef prices increased 3.2% over the same period in 2006. Surging feed costs have pushed meat prices up even further in 2008.

Exhibit 153. Beef and veal production (m tons); consumption (m tons) (2004-2008E)

Source: USDA

Exhibit 154. Beef and veal imports ('000 tons) (2004-2008E)

Source: USDA

The government recently introduced the 'State Programme for the Development of Agriculture and Regulation of Food and Agricultural Markets - 2008-2012' to encourage beef production and address Russia's declining cattle numbers. This programme includes import-substitution policies to encourage local livestock production.

Dairy cattle are the main source of domestic beef in Russia as the commercial beef cattle industry is still in its infancy. Investors are put off by the absence of profitability of this sub-sector. However, as long as the conversion of dairy cattle to beef continues, the recovery of the country's beef industry will be delayed. The Russian government has recognised this bottleneck and has taken initiatives to increase imports of livestock genetics. Accordingly, live cattle, semen and embryos are imported from Europe, Canada and Australia, under the National Priority Project and financed by the government agricultural leasing agency, Rosagroleasing. This should help promote higher dairy yields and beef production through the breeding of specialised breeds.

Investment in Russian farm land

Corporate investment in agricultural land has risen sharply since the government reformed land ownership laws in the early part of the Millennium. The agricultural enterprises which have emerged are complex organisations. Some are formed by the acquisition of insolvent or bankrupt farms by non-agricultural and agribusiness investors. The establishment of these enterprises has been driven by various factors.

- High-quality arable land at rates far lower than other locations, coupled with historically high grain prices makes production and export a highly profitable proposition.
- The Russian agricultural sector's untapped potential has attracted many other companies which do not come from a farming background seeking out new opportunities.
- Vertical integration of processing companies to form integrated agricultural-processing companies is also a key driver. This has resulted in the entry of many firms into primary agriculture, which complements their existing businesses and allows them to control their input costs to a greater degree.
- Integrated enterprises have been encouraged by local administrations as a means of encouraging investment in both capital and labour skills.

Over the past few years, these investments have not been restricted to local enterprises as the country witnesses an inflow of foreign capital and expertise. Technically, foreign investors/companies are prohibited from purchasing agricultural land in Russia, but legal loopholes allow foreign participation in the sector. A foreign company can own agricultural land as long as it is classified as a subsidiary of a Russian company. This connection can be established easily through participation in a project using joint capital. So while the businesses established are all local, non-Russian companies have been able to invest in them. The inflow of capital into the sector began a few years ago. Some notable examples include:

- In 2004, Bunge, a US-based agricultural trader, announced that it was buying the Rostov-na-Donu grain terminal north of the Black Sea.
- In 2004, the Russian agricultural holding company Agros Holding and Louis Dreyfus' Russian subsidiary Sungrain Holdings set up a joint venture to manage their elevator business. In 2002, Agros acquired Roskhleboprodukt, a spin-off of the former state grain-buying agency, which was made up of 82 companies, including grain elevators, mills and eight poultry farms.
- In 2005, Black Earth Farming was established in Russia. Lundin Group, a Swedish group with extensive mining interests in Europe and AB Kinnevik, a Stockholm-based investment firm, are the company's major investors. By the summer of 2008, the company controlled 325,000 ha of land of which about 69,000 ha was under full ownership.
- In 2006, it was reported that in Russia's Black Earth Region of Belgorod there were four large-sized agricultural enterprises, with one of them – Orel Niva – operating on 300,000 ha of arable land. In addition, there were about 37 other agro-firms in the region, accounting for about 600,000 ha of arable land, as well as 173 agricultural, 37 processing and 36 service enterprises.
- In 2006, Denmark's Trigon Capital investment group set up Trigon Agri, which controls about 100,000 ha of farm land in the Penza and Samara regions of the federation.
- In 2008, RAV Agro-Pro said it intended to hold an initial public offering on the Russian stock exchanges. The company's stakeholders include investment group RP Capital, Ron Yitzhaki (owner of the Israeli trader Rodemco) and Cargill Foundation (the corporate social responsibility arm of Cargill, a US-based provider

Investment in the sector has been significant

Foreign entities are still not permitted to own farm land

of food, agricultural and risk management products). In 2007, RAV controlled 82,000 ha of land in Russia. The company's future plans envisage this increasing to 150,000 ha by the end of 2008 and 300,000 ha by the end of 2011.

- In July 2008, Lithuania's Agrowill Group AB engaged in negotiations to purchase a tract of land in the Penza region. The company plans to secure up to 50,000 ha in the Black Earth area before the end of the year.

Overall it is estimated that there are some 32 companies which manage over 100,000 ha of land each in the agricultural belt of Russia. Although these operations are large by most standards, if we assume that they average 150,000 ha each, they would still only account for less than 4.8m ha of land, which equates to 10% of the agricultural land in Russia's Black Earth region or 4% of the country's entire agricultural sector.

Establishment of grain trading agency

Marketing of agricultural crops has been a serious problem ever since the collapse of the former Soviet Union's centralised ordering system. Farms typically lack storage capabilities and are forced to sell their output at artificially depressed prices. This shortage of grain storage capacity came to prominence this year following the country's grain harvest in 2008 which is estimated to be the largest in 15 years. The country runs the risk of running out of storage capacity, threatening the government's plans to increase agricultural output and exports. According to Russia's Grain Union, the country can currently store about 95m tons of grain in its silos, compared to the expected harvest of 97m tons this year.

Obviously the country needs to build more silos and elevators, especially in the southern and central regions, where the majority of the country's grain is produced. The construction of elevators is an expensive business. It is estimated that building 100,000 tons of silo capacity in Russia costs about US\$50m, with the construction alone costing about US\$16.4m (excluding costs for rail, road and power connections).

The non-availability of rail hopper cars and limited access to ports are other significant factors which have a detrimental impact on the performance of the agricultural sector. The country has 12,500 hopper cars for grains, about a third fewer than required, and of these, 5,500 are more than 20 years old. Meanwhile total port capacity to export grain stands at about 15-18m tons a year.

In the wake of all these infrastructure-related bottlenecks the government is planning to establish a state grain trader. According to a recent (July 2008) release by USDA's Foreign Agricultural Service (FAS), the Russian Ministry of Agriculture (MoA) intends to transform its Agency for the Regulation of Food Markets (AFM), an open joint stock company, into a major grain trader. Various media suggest that the push for greater government participation in domestic merchandising and exports was instigated by major agricultural holding companies. These holding companies, despite enjoying record high prices for grain, face serious financial constraints and are looking to the government for a partial buyout of their grain handling assets.

Another major driver behind the move, in addition to promoting the establishment of a strategic grain reserve, may be to provide local farmers a better share of the gains arising from a good harvest. Currently, the market is dominated by a group of mostly unlisted, international grain trading businesses, such as Cargill, Glencore and Louis Dreyfus. The fragmented nature of the agriculture sector means that Russian farmers are price takers in the extreme. Asymmetric information is the norm. Consequently, it means that the biggest gainers are international trading companies and not local farmers. The fact that Russia may seek to enter this asymmetric market to the benefit of its own producers may actually be beneficial for investment in the sector.

The FAS reported that the Russian ministry is waiting for government approval to transfer its controlling interest in 28 of the country's major grain elevators and terminals to the AFM, in which the MoA will hold a 25% stake. The other 75% will be offered to commercial grain-trading companies with preference being given to Russian companies. Offers have already been presented to Yug Rusi, OGO and Siberian Agrarian Holding (SAHO).

Some observers have noted that government control of these grain elevators will form the basis for its control of the country's overall grain trade. This seems unlikely in our view. The 28 terminals, estimated to be worth US\$300-400m and among the most valuable in the country are likely to have a capacity of only 1.6m tons, which amounts to just 13% of annual grain exports, 5% of what is lost through inefficiencies and crop loss annually, and a minuscule 2% of total annual production. Moscow State University of Technologies and Management suggests that a target of 140m tons of grains within the next few years is required to ensure food security. On this forecast, the AFM would control only about 1% of total production.

Lack of storage

Lack of railroad and port infrastructure

More for local farmers

At this stage the move does not look overtly political

Although the extension of the government's role across the economy and the creation of state-controlled businesses (in the oil and gas industries, among others) have been major themes in recent years, there is one over-riding issue which makes this strategic move within the agriculture sector different to what has gone on in the oil and gas sector. The international reliance on Russian oil and gas does not, and should not, extend to the agriculture sector. There is no agriculture cartel and land is plentiful, as we have already pointed out. In other words, should the Russian government seek to intervene in the agriculture sector, through the manipulation of prices to promote domestic ends, investment will decline and look for another home.

The Russian government must surely know that this is what happens with long-term interference in the market. The fact remains that Russia has huge strategic potential in its agriculture sector. Would it wish to hand that advantage to other emerging agricultural superpowers such as Brazil, Argentina and Ukraine?

Development of the futures market

A significant development for both Russia's grain industry and its financial markets has been the establishment of the grain trading exchange. The country's futures market became operational in April 2008 with the launch of the National Mercantile Exchange (NAMEX).

Commenced operations in April 2008

Using exchange-based mechanisms, primarily derivatives, to hedge price risks has been a common practice in the international grain market. Russia's position as a major grain exporter, and the likelihood of enhancing that role in the years ahead, point towards the need for simultaneous development of its futures markets. The development of the on-exchange grain market can go some way to establishing the country as an agricultural exchange hub for the CIS.

- It should help the government obtain better price indicators from the grain market, which can be used to develop price policy (in terms of the market price) for farm products.
- It should enable market participants to insure against the risk of adverse movements in grain prices, and optimise the financial planning of their economic activities such as provision of credit from banks.
- It will help improve the competitiveness of domestic agricultural producers in the international market.

It is also expected to attract participants in the grain market from Kazakhstan and Ukraine and could perhaps create better conditions for the formation of a unified export policy for the CIS countries.

Our view

Reforms in the late-1990s breathed some life into Ukraine's once moribund agriculture sector. These reforms, necessary as they were, are insufficient to ensure the long-term viability of the country's agriculture sector. Long-term success requires Ukraine to deepen its internal policy frameworks and its external institutional relationships. The danger for Ukraine is that, by crossing halfway across the street, it views this as progress. The country cannot afford to be complacent. Standing in the middle of the road, neither here, nor there, risks reversing any gains that have been made in the last decade. The next steps will be much tougher than the first. WTO membership needs to be supported by EU membership and leasing cannot be the final answer for land use.

Anchor themes

- ⚓ Membership of WTO is a halfway house. Ukraine needs also to join the EU to consolidate its external institutional frameworks. Membership of both brings advantages that should allow it to outwit its competitors. Meanwhile, the EU needs to secure its food supplies and it already relies on Russia for too many other key imports. Adding food to that list is not a credible strategic option.
- ⚓ Land leasing is not a long-term model for the development of the agriculture sector. If the Ukraine is serious about the development of the agriculture sector, it needs to permit the sale of agricultural land and implement enforceable property rights. The ability to use land as collateral will lead to an investment boom. Without it, capital will seek a home elsewhere.

The halfway house

① WTO and EU membership

As a member of the WTO, Ukraine cannot engage in bilateral trade deals in the same manner as non-members like Russia. As a member of the EU, Ukraine gets privileged access to one of the biggest trading blocs on the planet. WTO membership is important to Ukraine because it forces the country to make necessary changes to its internal rules and regulations. More crucially, if it had to rely on bilateral trade deals outside the scope of the WTO, Ukraine would most likely be squeezed by its much more powerful next-door neighbour.

② Need to change land ownership laws

The scale of investment required by Ukraine to modernise its agriculture sector depends on clear land ownership laws, enforceable property rights and the ability to use land as collateral for loans. Land ownership in Ukraine is restricted to leasehold arrangements. This is a vast improvement on the situation in the 1990s but it acts as a brake on investment. An adjustment in external institutional arrangements might force some changes but a transformation is required.

③ Will short-term gains breed complacency?

This summer Ukraine is likely to harvest over 60m tons of grains and oilseeds. However, the country only has some 30m tons of elevator capacity, which underlines the years of underinvestment in the agricultural sector. To compete as a low-cost producer, it is necessary for the country to upgrade its infrastructure and its laws. The PM's office has acknowledged that the planning laws which govern the construction of elevators need to be simplified. The impetus is there to engage in supply-side reforms. A lot more effort will be required.

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The halfway house

It has been said that there is no halfway house between Rome and Reason – Benjamin Tucker

Imagine, if you will, someone staggering into the middle of a busy road. Through the haze, he glimpses the other side of the road and its promise of safety. In the middle of the road he comes across what he thinks is a safe place, a comfort zone where he can catch his breath and steady his feet. Instead, faltering, he is mown down by the traffic on both sides of the road. This is where the Ukrainian agriculture sector lies right now: halfway between two places, neither here, nor there and in danger of having made necessary steps but in insufficient quantity. The next 10 yards are just as important as the first 10 yards. Failure to cross them suggests to us that Ukraine's agriculture sector may emerge as a long-term underperformer. In the middle of the road, Ukraine's choices are stark. It can walk forward like Brazil or stand still and become another Argentina.

Don't get killed in the middle of the road

Had Ukraine chosen to remain outside WTO, it would not necessarily have been negative. The country could have engaged in bilateral trade deals with industrialising countries requiring food imports. So why bother engaging with a trade body which requires its members to abide by rules which can be onerous? Russia and Saudi Arabia aren't members and that status is unlikely to change any time soon.

WTO is not enough

The fact is that there are sufficient doubts to ensure that remaining outside WTO was a weak option. For sure, bilateral trade deals might have been possible but Ukraine would have had to compete against Russia for them. That is the same Russia with three times the arable land of Ukraine. Also, Ukraine relies heavily on agriculture while Russia doesn't. Finally, the volatility of the sector is such that what while non-membership might seem clever today, in an environment of low food prices, the outcome could be horrible.

Now that Ukraine has to play by WTO rules, it has lost, to an extent, its ability to do bilateral trade deals. To us this means that the country has to pursue EU membership as the next logical step to consolidate progress made to date. The issue has been under discussion since 2005. In an environment where political dynamics are shifting rapidly, an economic union with the EU is likely to be the country's best hope. Put it this way, it isn't NATO.

The EU isn't NATO

At this point, the EU is doing what China and the Gulf States are doing in Africa and, to a lesser extent, Latin America ie, buying low-cost food security. Ukraine would be purchasing its economic future by joining the EU. If this were to happen we would be looking at the next stage of a convergence theme that was played out in Eastern Europe in the 1990s and, more recently, with Turkey. We would see EU membership as a significant boost to Ukrainian agriculture valuations.

But all this is still not enough. You can't build a successful agriculture sector on a model based solely on leasehold agreements. We keep on returning to this theme: enforceable property rights applied by an independent judiciary will drive investment. Without it, the sector will remain cash-strapped and left behind by other more dynamic nations.

Change those archaic land laws

In this halfway house, there is the danger that an outstanding harvest this summer becomes a short-term panacea. Complacency in a country short on elevator capacity, long on low yields and with limited access to capital is a dangerous animal indeed. Hopefully, a deteriorating political situation in the Caucasus should provide the impetus for change.

Overview

Ukraine might not have oil and gas but it does have over 42m ha of agricultural land, of which almost 80% (33m ha) is arable. Its steppe region in the south is one of the most fertile regions in the world and its black earth soil accounts for one-third of the world total. Its strategic positioning means that it is well placed to serve growing markets in the EU, Russia and the rapidly urbanising Middle East.

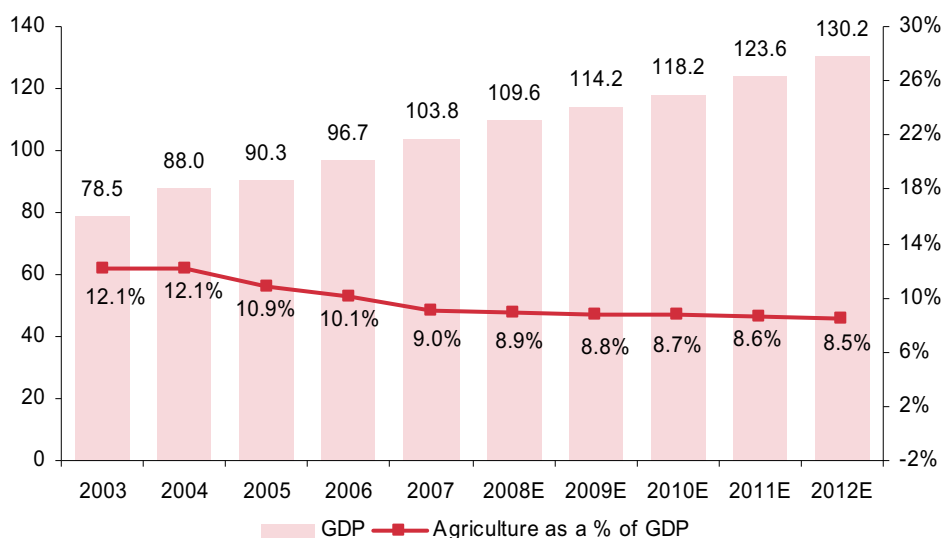
These assets exist but the benefits are still, to an extent, in the future. The country's transition from moribund component of the Soviet Union to a stable, democratic country is still a work-in-progress. Although the country broke away from the USSR in 1991, reform of the strategically vital agriculture sector only began in earnest in the early part of the Millennium.

The most significant of these reforms, however, was the dismantling of collective farms in favour of private ownership. Private ownership (including corporate and individual owners) accounts for approximately 73% of total agricultural land and 70% of the country's agricultural output. Other policies such as the abolition of state commodity credits, the implementation of debt-relief measures, a reduced governmental role in agricultural inputs and increased government spending on agriculture have promoted the sector.

In 2003, the sector accounted for some 12% of GDP and by 2007 this had declined to 9% of GDP. The strength of other sectors of the economy explains this reduction. Forecasts suggest that the agricultural percentage of GDP should be maintained around the 8-9% mark over the next five years (2008-2012). Agriculture accounted for 15% of total employment in 2005 and this increases to 24% if the food processing industry is included.

Stability is still a work-in-progress

Exhibit 155. LHS – GDP (US\$bn)/RHS – agriculture as a % of GDP (2003-2012E)



Source: EIU; IMF

Ukraine is a major producer and exporter of agricultural products. Winter wheat, spring barley and corn are the country's main grains. In addition, sunflowers, sugar beets and potatoes are the main non-grain crops produced in the region. Grains, sunflowers and sugar beets are produced predominantly by large farms while potatoes, vegetables and fruits are grown widely by small-scale farmers. Ukraine's crop yields have been uniformly hopeless in recent years and they remain firmly anchored at the lower end of the European averages.

Poor yields

Agricultural trade accounted for 13% of total exports and almost 8% of total imports in 2005. Since the low point experienced at the end of the 1990s, agricultural exports have increased rapidly to over US\$4.5bn in 2005. The country had an agricultural trade surplus of US\$1.7bn in 2005. Agricultural exports are concentrated within three major commodity groups which account for almost 60% of total agricultural exports. These are cereals, which accounted for 31% of total agricultural exports; fats, animal and vegetable oils, accounting for 13%; and dairy products, accounting for 12%. Imports are more diversified, with tobacco accounting for 13%, miscellaneous edible preparations (including coffee extracts, essences, concentrates and preparations) for 11% and cocoa and cocoa preparations for 8% of total agro-food imports in 2005.

Trade surplus

Ukraine has a complex system of import duties with the vast majority of agricultural imports charged *ad valorem* and specific duties. Ukraine has also applied a number of non-tariff barriers including quotas, licences and import bans, which have often lacked transparency and imposed additional costs on importers. Since 1996 the country has also applied export duties on live cattle and sheep as well as on cattle, sheep and pig hides. This was later extended to the export of sunflower seeds, flax seeds and false flax seeds. Recent accession to the WTO has changed much of this arbitrary policymaking. A degree of harmonisation of Ukraine's legislative framework with WTO rules and standards, together with a lowering of tariffs, has become apparent.

WTO is changing the arbitrary nature of import duties and taxes

Evolution of the agriculture sector

The agriculture sector in Ukraine has gone through a transition since the country achieved independence in 1991, following the break-up of the Soviet Union. State and collective farms were officially dismantled in 2000. Farm property was divided among farm workers in the form of land shares and the majority of the shareholders leased their land back to the newly formed private agricultural associations.

The loss of state agricultural subsidies had an enormous impact on the local agriculture sector. The contraction in livestock inventories – a process that had begun in the late-1980's – intensified. Over the subsequent decade following independence, fertiliser use fell by 85% and grain production declined by 50%. The lack of access to capital became acute. It wasn't all bad however: the emergence from Soviet-style state planning enabled farmers to make market-based decisions regarding crop rotation and land management which has led to increased efficiencies in both livestock and crops in recent years. Problems do remain, however, in that a lack of access to capital still exists thus preventing a significant uplift in yields.

The government of Ukraine has played a key role in shaping the country's agriculture sector. Domestic prices and incomes policies implemented during 1991-1999 lacked transparency and were widely abused. From 2000 onwards policymaking improved. Some measures, including government debt write-offs, restructuring of the collective farm system, high import tariffs for agricultural products and a broadly pro-agriculture taxation system, boosted agricultural output.

Prior to 1991: Soviet Ukraine

Before the horrors of the Russian Revolution were inflicted on the world, a high level of entrepreneurship characterised Ukrainian agriculture. However, Stalin's introduction of the collectivisation system in 1932 soon annihilated that – along with several million Ukrainians in a famine. The aim of the collectivisation system was to boost production by transforming Soviet agriculture from predominantly individual farms into a system of large state collective farms (*kolkhozes*). To say that this plan failed would be an understatement. Suffice to say that, by 1968, output had only reached 1913 levels. Even then the system struggled to make any headway under the daft orthodoxies of a failed economic system.

1991-1999: The end game for the Soviet Union but the collective lives on

In the late 1980s, while the state continued to own the farm land, the productive enterprises (ie, farms, industrial and trade entities) were allowed to manage land independently. Between 1991 and 1999, state ownership of farm land was transferred to collective ownership but without delineation of land plots. Land-share owners were allowed to lease their shares to a farm enterprise or withdraw their share to work as independent entrepreneurs. In spite of these policy reforms, Ukrainian agriculture was still dominated by a few, giant inefficient farms with the employees organised as industrial workers. In short, incentives were few and the system remained largely inefficient.

This period was marked by a sharp decline in Ukraine's agricultural production. A deteriorating macroeconomic environment in the early 1990s, coupled with the disruption and upheavals of secession from the Soviet Union, were major factors in the decline of agricultural output. A period of hyperinflation between 1991 and 1995, which reached a peak of 10,250% pa in 1993 and stood at 250% per annum in 1995, caused rapid deterioration in the terms of trade for agricultural producers. While virtually all transition economies of the former Soviet Union experienced a decline in agricultural output in the initial years of the transition, the recession in the Ukrainian agricultural sector was deepened and lengthened by the sluggish nature of reforms.

Lack of access to capital

There was a time when Ukraine was entrepreneurial – about 100 years ago

The early 1990s were a period of difficult adjustment

Agricultural price controls in the Ukraine ensured the basic features of the command economy remained in place in the immediate aftermath of independence, despite all other prices being deregulated in 1991. The indebtedness of the agricultural enterprises rose dramatically as they were forced to sell fixed amounts of their output to state-procurement agencies. The government continued to be the principle price-setting agent, applying a traditional 'cost-plus' approach. During this period, the government provided direct budgetary support (in the form of fuel and electricity compensation) to producers to relieve their inflation-related losses. Livestock producers benefited from supplementary payments made for products marketed to the state-procurement system.

During 1994 and 1995, the government maintained indicative procurement prices, which were generally set at levels exceeding those offered by non-state buyers. While deliveries to procurement agencies ceased to be obligatory, agricultural producers continued to sell the bulk of their output to state agencies. It wasn't just because of the better price – it was also a reflection of how under-developed the alternative marketing channels were.

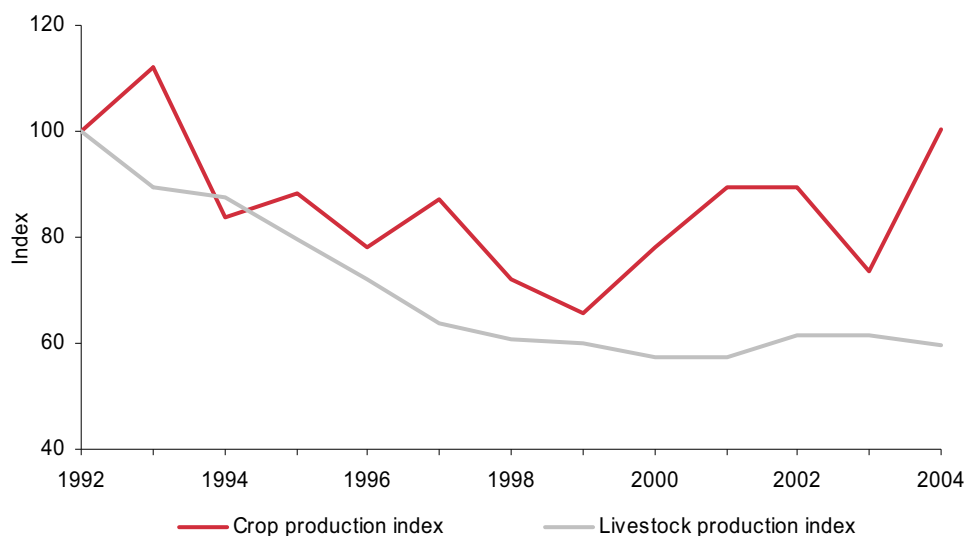
To support the non-profitable agricultural enterprises, the Ukrainian government introduced the 'state commodity credit' programme in 1996. It represented advance input credit in kind to agricultural enterprises in exchange for future grain procurement contracts. The government's involvement in the supply of commodity credits resulted in frequent intervention in the market. The domestic programme relied heavily on the close involvement of regional administrations which acted as guarantors of commodity deliveries against inputs advanced to local producers. In addition, local administrations were also responsible for setting the ranking order of debt settlement. This created a high-risk investment climate in the agriculture sector. Consequently, private sector financing declined by about 80% between 1995 and 1996. It was not until the government ceased direct participation in input supply markets in 1999 that the banking system began to provide credit to the agriculture sector.

The practice of a state commodity credit policy, along with other factors, contributed to higher debt across the sector. The terms of trade declined, with output prices relative to input prices falling by about 80%, between 1990 and 1999. Between 1994 and 1998, the total debt of agricultural enterprises in Ukraine increased from 8% to 13% of GDP. A deteriorating financial situation forced the government to carry out three rounds of debt restructuring across the farming sector between 1997 and 1999.

State buying survived well into the 1990s

Debt restructuring

Exhibit 156. Evolution of agriculture in Ukraine: crop, livestock production indices (1992-2004), 1992=100



Source: FAO

The general ghastliness of the 1990s continued as the country struggled to adapt to a very different world – and bear in mind that the backdrop for grain prices was hardly favourable compared to the situation in recent years. So, low profitability, insecure property rights and restricted credit were all to the fore. Compounding this was the slow pace of land reform as collective farm managers had few incentives to restructure their operations. Producers adopted low input/low output production methods, resulting in lower yields and lower overall output. By 1999, crop production in Ukraine had fallen to two-thirds of the level prevailing at the time of independence, while livestock production declined by over 40% during this period. Total agricultural GDP declined by 51% between 1991 and 1999.

The Millennium: recovery begins

The revival of the agriculture sector in Ukraine began in 2000 and this can be attributed to a number of converging factors. First, the macro-economic landscape stabilised. Ukraine's per capita income increased by 10% in 2000 and 13% in 2001. This translated into a 6-8% pa increase in domestic demand for food. Inflation was reduced to manageable levels and the exchange rate for the Hryvnia versus other major currencies stabilised. Relatively stable exchange rates and increasing domestic farm prices resulted in improved terms of trade as well as increasing demand for export products. The weather also played a favourable role in increasing yields.

The second factor which helped to resuscitate the sector was the implementation of several policy changes brought about by the government. At the apex of these reforms was the presidential decree in December 1999 dismantling the collectivised agricultural enterprises (CAEs). The decree established the unrestricted right of members to leave the collective and take their share of the land and other assets to establish private farms. Alternatively, they could lease out their parcel of land. By mid-2001, almost all of the approximately 11,000 CAEs had been restructured into new forms of enterprises. The break up of collective farms encouraged the emergence of a market for leased agricultural land and generated new businesses and joint ventures.

In 2000, the government ended state commodity credits and implemented a series of debt relief measures for agricultural enterprises including substantial write-offs of overdue state loans. The government also reduced its role in the supply of inputs and grain marketing. The agribusiness privatisation programme, which began in 1994 and was largely completed by 1999, also yielded results in terms of supply chain efficiencies. Agricultural lending was stimulated by these reforms. Between 2000 and 2006, average interest rates charged to agricultural borrowers fell from 54% to 17%.

The only significant setback to the sector's recovery in recent years came in 2003 when a disastrous grain harvest sparked a 10%+ decline in overall agricultural production. Poor weather conditions both during sowing and harvesting led to a 50% reduction in the 2003 grain harvest, despite a moderate expansion in livestock production and an exceptionally good performance from sunflower production. It underlined the sector's dependence on grain production and the extent to which it had driven the recovery in previous years. Subsequent harvests in 2004 – a record – and 2005 indicated that a strong recovery was underway and it was during these years that Ukraine became a major grain exporter again.

The 2006 grain harvest was 10% lower than in 2005. Although this was sufficient to satisfy domestic demand, rising external demand brought fears of excessive exports and led to the implementation of temporary government export licences and quotas. These "temporary" restrictions were maintained for most of the 2006/07 marketing season, resulting in a 33% decline in grain exports. A 14% decline in the grain harvest in 2007, due to a mid-year drought, again saw the imposition of quotas and licensing in 2008, although these did prove temporary. This summer Ukraine enjoyed another record-breaking harvest with most estimates in September suggesting that grain output would breach 42m tons.

Macro-economic stability

Dismantling the collectives

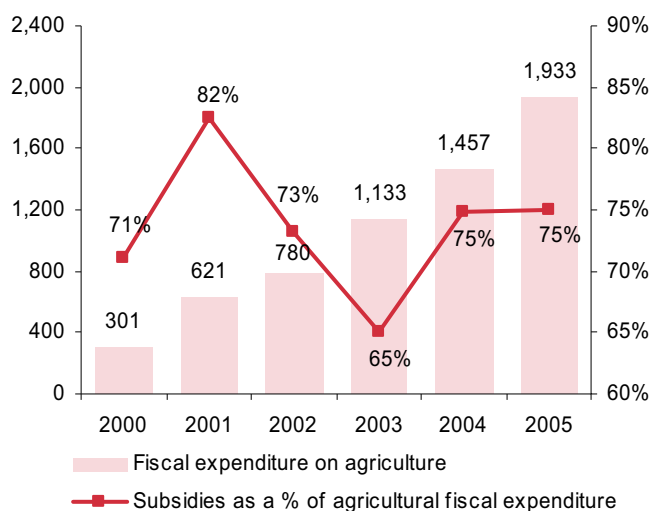
Agricultural fiscal policy

Fiscal spending on agriculture has increased from UAH1.6bn (US\$327m) in 2000 to UAH9.8bn (US\$2bn) in 2005. During 2000-05, average agricultural fiscal spending accounted for about 2% of GDP and about 6% of total budget expenditure. In 2005, fiscal spending on agriculture was around 8.6% of total budget expenditure. Fiscal support to agriculture increased further to about UAH12bn (US\$2.5bn) in 2006.

The focus of fiscal spending on the Ukrainian agricultural sector has largely remained on subsidies rather than on investment designed to promote growth. In 2005 subsidies accounted for 75% of the total fiscal support to the sector. Public spending on agriculture in Ukraine has typically been used to compensate for the losses imposed on farms by the prevailing price and trade policies, which tend to depress agricultural prices and squeeze farm profitability.

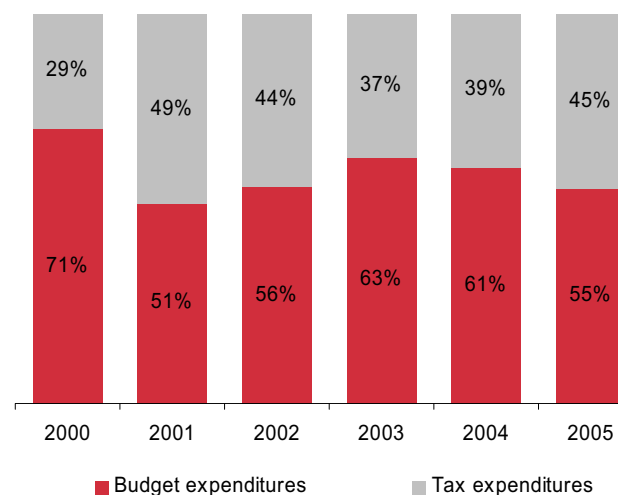
High government expenditure

Exhibit 157. LHS – Fiscal expenditure on agriculture (US\$ m); RHS – Subsidies as a % of agricultural fiscal expenditure; 2000-2005



Source: World Bank

Exhibit 158. Break-up of fiscal spending on agriculture into budget and tax expenditures (%); 2000-2005



Source : World Bank

Agricultural fiscal spending comprises budget expenditure and tax breaks (such as VAT exemptions). Budget expenditure on agriculture includes subsidies and the Fixed Agricultural Tax (FAT), as well as direct state investments. Although the government has substantially reduced direct budget transfers since the early 1990s, it continues to provide both explicit and implicit subsidies to agriculture. However, subsidies stemming from budget expenditure have grown at a slower pace than those stemming from tax expenditure in recent years. As a result, budget expenditure accounted for about 55% of total spending on agriculture in 2005, compared to 70% in 2000.

Fixed agricultural tax

The sector has benefited significantly from savings resulting from the implementation in 1999 of FAT, which replaced 12 other direct taxes and levies including profit tax, personal income tax, land tax, local taxes, pension and social fund fees and so on. According to official statistics, during 2000-05, producers benefited to the tune of UAH1.4bn (US\$286m) annually from FAT. The benefits from FAT have fallen in recent years and will become less important in the years ahead. Under the current law, the FAT regime is scheduled to lapse on 31 December 2009.

The agricultural sector has been the largest beneficiary of VAT exemptions in the Ukrainian economy. In 2005, approximately 60% of total VAT exemptions were granted to agriculture. Agricultural benefits from VAT exemptions increased to UAH4.4bn (US\$900m) in 2005, from UAH0.5bn (US\$102m) in 2000. However, these benefits will cease following the country's accession to the WTO in May 2008.

Land use

Vast natural resources, ideal climatic conditions and suitable soils for large-scale cultivation have made Ukraine one of the largest agricultural producers in Europe. Of the total land area in Ukraine (60m ha), about 70% (42m ha) is utilised for agricultural purposes. Of total agricultural land about 78% comprises arable land. Other agricultural land consists of grazing land (6%), pastures (13%), permanent cropland (2%) and fallow land (1%).

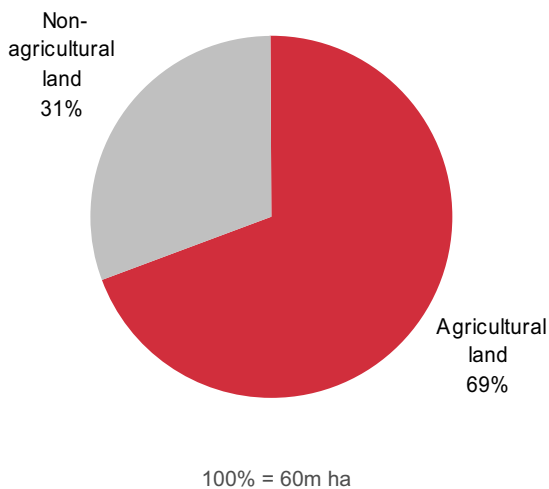
From north west to south east, Ukraine is divided into three major aggregations by soil type: a zone of sandy podzolised soils; a zone of chestnut and salinised soils; and a central belt consisting of highly fertile black soil known as “chernozems”. The podzolised soils occupy about one-fifth of the country’s area, mostly in the north and north west. These soils were formed by the extension of post-glacial forests into grassy steppes. These soils may be farmed, although they require nutrients for good harvests. The smallest proportion of the soil cover consists of the chestnut soils of the southern and eastern regions. They become increasingly salinised to the south as they approach the Black Sea.

The black earth “chernozem” soils occupy about two-thirds of the country’s area. Approximately a third of the world’s black soil is found in Ukraine’s forest-steppe zone. These soils are well suited for the large-scale cultivation of agricultural crops especially grain crops, sugar beet, long-fibred flax, wheat and sunflowers.

42m ha of agricultural land

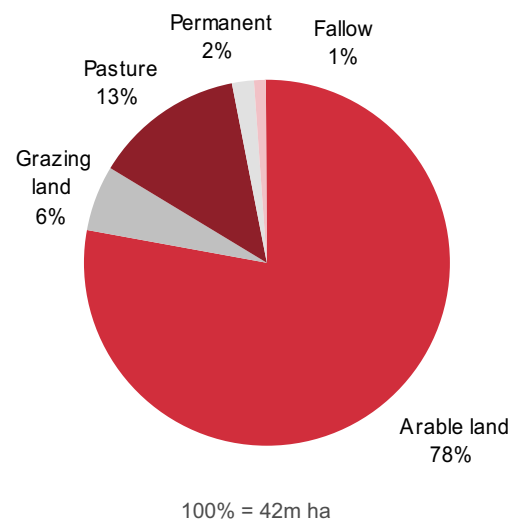
Black earth soil

Exhibit 159. Total land split (2005)



Source: FAO

Exhibit 160. Agricultural land split (2005)



Source: FAO

Ukraine is divided into 24 provinces (*oblasts*) and one autonomous republic across five regions, namely north, central, west, east and south. Because of its vast territory and climate, the geology in Ukraine is varied. Central Ukraine is characterised by mixed forest-steppe where grasslands are interspersed with various deciduous trees such as oak. The steppe zone (grassy plains) covers the lower section of the country, thinning out in the drier, more arid south. Along the southern Crimean coast lies a narrow Mediterranean zone of mixed shrubs, grasses and evergreens. Agricultural land and production is spread almost evenly across Ukraine with regions producing different crops based on varying soils and climatic conditions. Winter wheat, spring barley, and corn are the country’s main grain crops. Sunflowers, sugar beet and potatoes are the main industrial crops grown. In terms of land use, the eastern and southern oblasts are the primary agricultural areas accounting for about half of the total agricultural land.

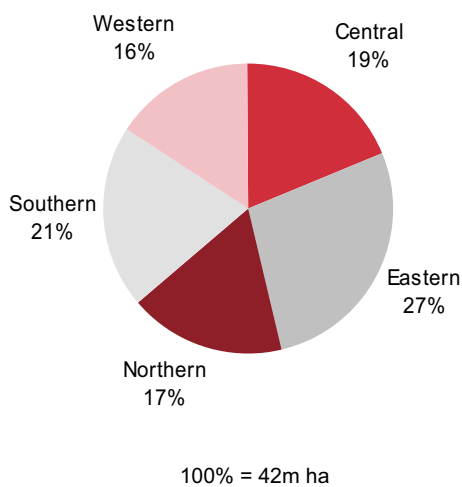
Exhibit 161. Ukraine Regions



Source: Nomura

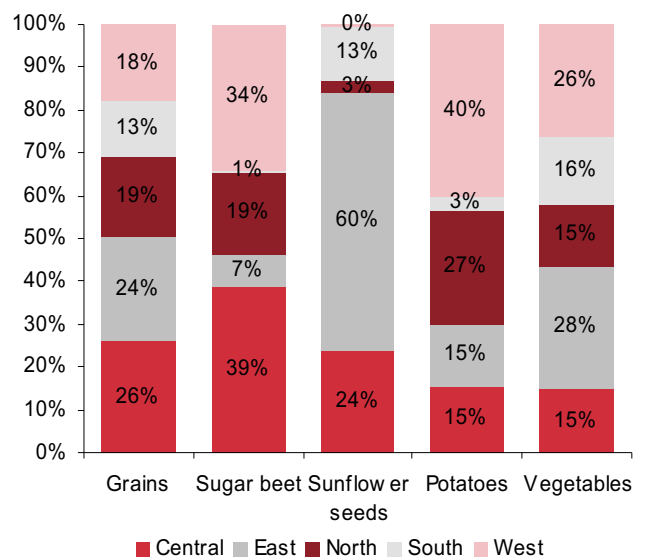
The Central and East regions account for about half of the total grain production in Ukraine. Wheat, Ukraine’s primary agricultural crop, is grown throughout the country, but central and south central Ukraine are the key production zones. Spring barley is principally produced in eastern Ukraine, while winter barley is limited to the extreme south. The main production areas for corn are southern and eastern Ukraine. Production of sunflower seeds, Ukraine’s chief oilseed crop, is concentrated in the central and eastern *oblasts*, with the East region alone accounting for about 60% of total production. Sugar beet is grown primarily in central and western Ukraine, which account for about 75% of the country’s total beet production. Potatoes, on the other hand, are a major crop of the cooler regions in north and west Ukraine.

Exhibit 162. Agricultural land split by region (2005)



Source: FAO

Exhibit 163. Agricultural land split by crop (2007)



Source: UkrStat

Farms in Ukraine employ a number of crop-rotation schemes. A six-year crop rotation in the winter grain region often includes two consecutive years of wheat and one fallow season. Fallow periods are included in rotations to replenish soil-moisture reserves and, therefore, are more common in the drought-prone regions of south east Ukraine. In southern Ukraine, however, a fallow season is often omitted and crop rotations include sugar beets and/or sunflowers, the region's chief industrial crops. The vast majority of field crops, including grains, sunflowers and sugar beets, are not irrigated. Irrigation is used only on fodder crops and vegetables.

Six-year crop rotation

Although cropland is good for large-scale farming, one of its main drawbacks is a high level of erosion. Soil erosion, which also decreases soil fertility, is the most significant environmental issue in Ukrainian agriculture. It is estimated that almost 40% of agricultural land is subject to erosion. Almost 15m ha of land is affected by water and wind erosion and 5m ha is prone to moderate and strong erosion. During the last 10 years, the country's soils have experienced a slight decrease in humus content and some 4m ha of land remains under radioactive contamination.

Productivity

Crop yields in Ukraine lag behind the European Union considerably. Ukrainian yields for major crops are anywhere between 20% and 70% of those for the EU-15 countries. Ukrainian yields are also low compared with the newer EU members such as Poland, the Czech Republic, Slovakia and Hungary.

A lack of modern equipment is the major obstacle faced by the agricultural sector. An estimated 10-20% of the standing crop is typically lost due to outdated and inefficient machinery. The simple solution then would be to modernise the equipment? Unfortunately this is easier said than done. The disaster that befell agriculture during the Soviet era illustrated how an obsession with inputs and outputs with a lack of emphasis on what made them interact wrecked an entire industry. It isn't the lack of modern machinery *per se* which is the obstacle. Instead it is the difficulty in obtaining large, long-term loans for capital investment. In turn, the mortgage law, which came into effect in 2004, and allows only the use of non-agricultural land as collateral, hinders development. Banks do not accept grain as payment, and consequently, farmers struggling with heavy debt burdens are compelled to sell grain shortly after harvest when prices are typically at their lowest. The use of agricultural land as collateral will be possible only when a moratorium, introduced in late 2001, on agricultural land sales is lifted. Although the moratorium was originally to be in effect until the end of 2004, it has been prolonged until 2008.

Lack of access to capital

Exhibit 164. Ukrainian yields compared with EU-15

Crop	Ukrainian yields as a % of EU-15 yields
Barley	49
Cereals	45
Coarse grains	42
Grapes	61
Maize	40
Potatoes	31
Sugar beets	33
Sunflower seed	67
Tomatoes	19
Wheat	46

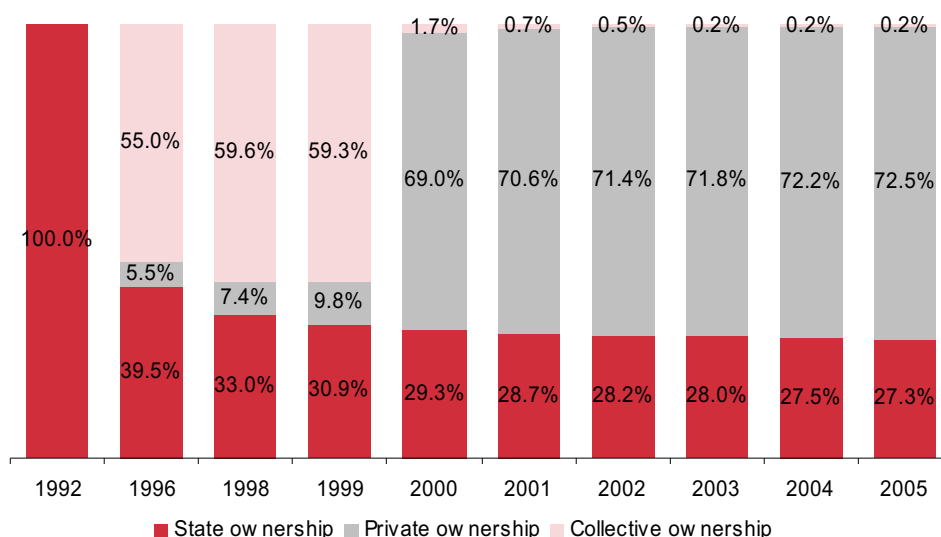
Note: EU-15 yields are averages for 2001-2003
Source: FAOSTAT, 2006

Ownership of agricultural land

Ukraine has witnessed significant land reforms and farm restructuring in the post-Soviet era. Between 1991 and 1999, the country transferred state land to collective ownership along with the transfer of some additional land to household plots. However, a 1999 presidential decree dramatically changed the face of Ukrainian agriculture, dismantling the collective farm system and permitting the leasing of agricultural enterprises' property to private legal entities or individuals. CAEs, which dominated the pre-1999 farm landscape, have almost completely disappeared.

A farewell to collective farms

Exhibit 165. Division of agricultural land by ownership (1992-2005)



Source: Land State Committee of Ukraine; US Agency for International Development

By 2005, agricultural land under state ownership totalled 11.4m ha (27.3%) and was used primarily for scientific and training purposes. Private ownership, on the other hand, accounted for 72.5% (30.3m ha) of total agricultural land in 2005, growing from 9.8% in 1999. This change in land ownership has, however, brought about very little change in land use patterns. More than 50% of the former collective farms that became private legal entities farm the same land as their predecessor.

Exhibit 166. Structure of agricultural farms in Ukraine (2005)

Farm type	Ownership	Use	Average farm size (ha)	Agricultural land holding (%)
Corporate	Multiple shareholders (up to 1,200)	The production is intended wholly for commercial use. Corporate farms primarily produce cereals and oilseeds.	1,000	59
Peasant	Individual	Like corporate farms, production is primarily for commercial sale. Cereals and oilseeds are the main agricultural products grown.	75	8
Household plots	Individual	Majority of output (66%) is for own consumption while the remaining is sold commercially. Households devote the majority of land to vegetable production.	2	33

Source: Land State Committee of Ukraine; US Agency for International Development; FAO

In 2005, there were 22,000 commercially active corporate farms operating in Ukraine, controlling less than 60% of agricultural land (down from about 95% in 1990) and contributing about 30% of gross agricultural output (compared with 70% in 1990). 4,600 of these corporate farms (almost 25% of the total number of corporate farms) were organised as private/leased enterprises that leased land from rural landowners.

22,000 corporate farms

The remaining 17,400 corporate farms were organised as 'business companies' and included joint-stock companies, farming companies, limited liability companies, co-operatives and so on.

Exhibit 167. Structure of corporate farms in Ukraine (2005)

	Number of Enterprises	As a % of Total Enterprises
Private/leased enterprises	4,600	20.9
Enterprises with limited liability	7,300	33.2
Farmer (personal) companies	4,700	21.4
Stock companies	800	3.6
Co-operative farms	1,800	8.2
Others	2,800	12.7
Total number of enterprises	22,000	100.0

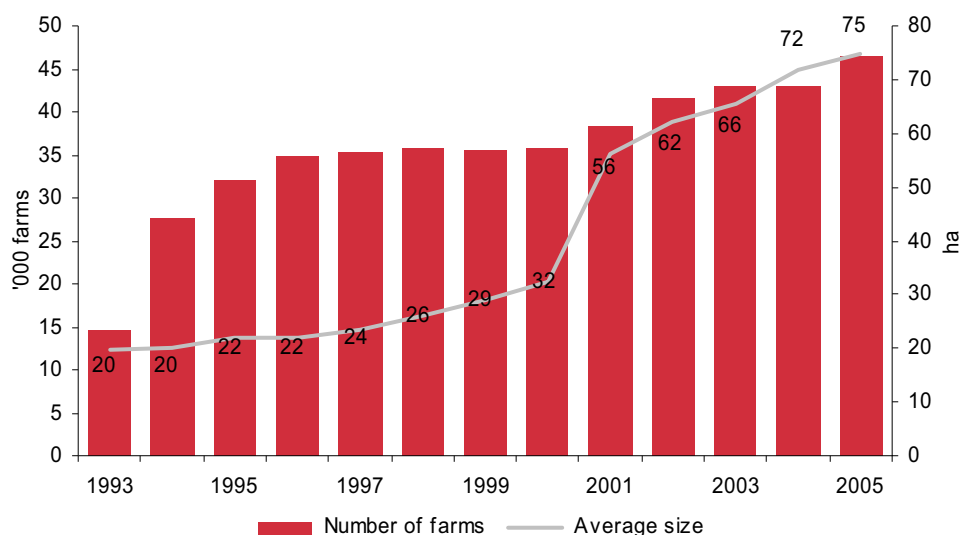
Source: Land State Committee of Ukraine; US Agency for International Development

The individual sector, consisting of the household plots and peasant farms, controls more than 40% of agricultural land and contributes 70% of agricultural output. Household plots are widely spread throughout Ukraine and produce the majority of the agricultural products in the country. Peasant farms have also increased in both number and the area they cover. The number of peasant farms grew from 82 to 46,400 between 1991 and 2005, by which time they occupied 8% of Ukraine's total agricultural land. However, this segment remains small relative to household plots and corporate farms.

The increased share of land by individual farms is reflected in the increased size of their holdings. Between 1991 and 2005, the average peasant farm size increased from 24 ha to 75 ha. As a result of topography and climatic conditions, the range of the size of the average farm varies across regions. Among the western oblasts, the average farm size is 7 ha in Zakarpattia Oblast and 13 ha in Chernivtsi Oblast. In the eastern oblasts, Luhansk farms have an average size of 142 ha and farms in Kharkiv average 137 ha in size.

Increasing concentration

Exhibit 168. LHS – number of peasant farms; RHS – average farm size (ha); 1993-2005



Source: Centre for Ukraine Land Reform; US Agency for International Development

The consolidation of individual farms into larger and more viable enterprises has become a prevailing trend in the Ukrainian agriculture sector. Fiscal responsibility has been introduced, efficiencies have been made and a more market-oriented environment has become the norm. All aspects of farm management, such as decisions on crop selection, fertiliser application, harvest methods and grain storage, are based on profit maximisation. A decline in the size of corporate farms has been

accompanied by a rise in the *number* of corporate farms. This development, alongside the rise of the individual sector, suggests a greater degree of entrepreneurialism across the sector. The average size of a corporate farm in Ukraine has fallen from 3,000 ha in 1990 to 1,000 ha in 2004.

Land leasing

As a result of a moratorium that remains in force until 2008, landowners are prohibited from selling their land and the only means by which they can extend the land area under cultivation is through leasing arrangements with other farms. Land leasing is, thus, widespread among all types of farms in Ukraine. In household plots, approximately 33% of the land is used for farming, while the rest is leased out. Peasant farms, on the contrary, rely on land-leasing markets to augment their owned land. Corporate farms, unlike household plots, have very little land and rely primarily on land leased from members, shareholders and other rural landowners. Only a small minority of the shareholders actually work on the corporate farm; the majority of shareholders are passive landowners who entrust their land to the corporate farm without demanding the security of a paid job on the farm.

Exhibit 169. Breakdown of land in peasant farms and household plots (2005)

	Owned land (%)	Leased land (%)
Peasant farms	18	82
Household plots	98	2

Source: FAO Farm survey

When, or if, the moratorium on the sale of agricultural land is lifted, its initial effects are likely to be seen at urban fringes where the conversion of agricultural land for housing or industrial use will take effect. Once restrictions on enterprise ownership of land are lifted, we will likely witness many of the old farm enterprises being bought out or new ones consolidating land from those currently leasing. There is also concern that social and economic gains from land reform will turn eventually to dislocation as consolidation is undertaken predominantly by outsiders with access to capital.

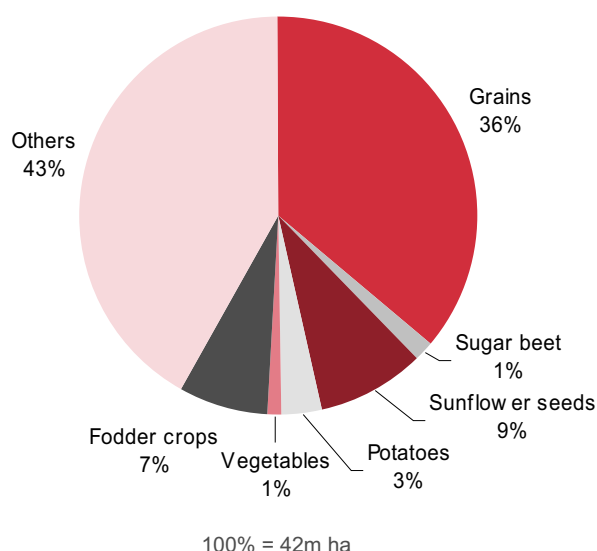
Major agricultural products

Agricultural enterprises in Ukraine specialise in the production of cereal and industrial crops. Major cereal crops include winter wheat, spring barley and fodder maize, of which winter wheat is the main crop for both private farms and agricultural enterprises. Major industrial crops include sunflower seeds and sugar beet. Grains, sugar beet and sunflower seeds account for about 46% of total cultivated land in Ukraine. In 2007, Ukraine contributed up to 2% of world grain output, 6% of global potato production and, with a 15% share of world production volume, was a leader in sunflower seed production. Output and yields in Ukraine are volatile as a result of the region's highly variable weather.

2% of world grain output

Compared to crop growing, livestock plays a minor role in the Ukrainian agricultural market. The country accounted for less than 1% of total global beef, poultry and pork production in 2007. Ukraine's animal husbandry industry is small and industrial production remains inefficient. The Ukrainian livestock sector was severely affected by a ban imposed by Russia in January 2006 on all dairy, red meat and poultry products imported from Ukraine or transported through the country.

Exhibit 170. Crop split (2007)



Source: UkrStat

Ukraine is a consistent net exporter of agricultural and food products. Since the lows experienced at the end of the 1990s, exports increased to over US\$4bn in 2005. Ukrainian agricultural exports are highly concentrated in three major commodity groups which accounted for almost 60% of total agricultural exports in 2005. Grains occupy the leading position, accounting for 31%, followed by fats, animal and vegetable oils at 13% and dairy products at 12% of the total exports of agricultural products. The largest export markets for Ukrainian agriculture are the CIS (44%), followed by the EU (25%) and Asia (21%).

Export surpluses

Ukraine has made significant progress in agricultural trade since the early 1990s, shifting its exports from a largely barter-based bilateral agreement with countries of the newly independent states of the former Soviet Union towards a more global market. Export policies in the early 1990s were characterised by export quotas, tariffs and licences restricting exports. The State Committee for Standardisation of Ukraine imposed numerous – and often unnecessary – technical standards and certification requirements on many imports. By the mid-1990s, most export restrictions on trade had been removed apart from export tariffs on products such as sunflowers and live animals.

Exhibit 171. Agricultural trade in Ukraine (US\$bn)

Source: OECD

Wheat

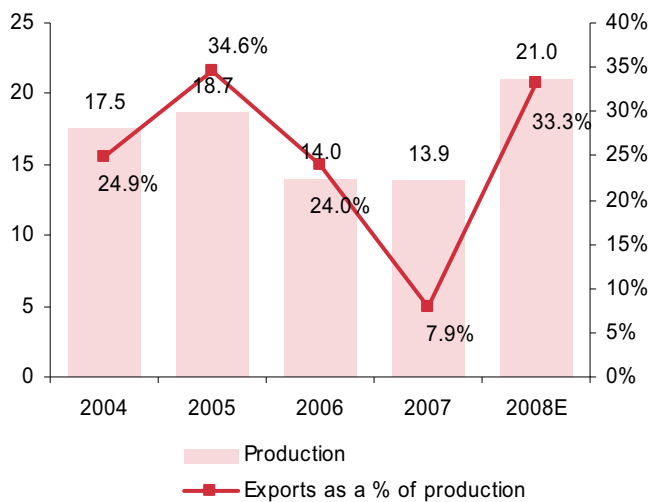
Wheat is the primary crop grown in Ukraine, with a total production of almost 14m tons in 2007. It accounts for 2.3% of the world's total wheat production, and about 1% of total global exports. Wheat is grown throughout the country with the central and south central regions being key growing areas. About 95% of Ukrainian wheat is winter wheat, which is planted in the fall and harvested in July or August of the following year. The majority of wheat production is used for domestic consumption and exports accounted for about 8% of total production in 2007. The primary markets for wheat exports include Africa (33%), EU-25 (24%), Southeast Asia (22%) and the Middle East (17%).

In 2006, wheat output in Ukraine declined by about 25% y-y, as a result of both lower plantings and lower than average yields. The economic picture at the time dictated the lower plantings while dry weather dictated the lower yields. Poor crop conditions, low temperatures and insufficient protective snow cover in the early part of 2006 compounded a bleak output. Exports almost halved in 2006. 2007 represented an improvement on 2006, but only just.

However, 2008 looks like offsetting the poor wheat harvests of previous years. Early indications from this summer's harvest suggest that production should increase by about 50% from 2007, due to ideal weather conditions throughout the growing season, and an estimated yield of 3.1 tons per ha (the highest in the past fifteen years). Recent investments in the sector are beginning to have an impact.

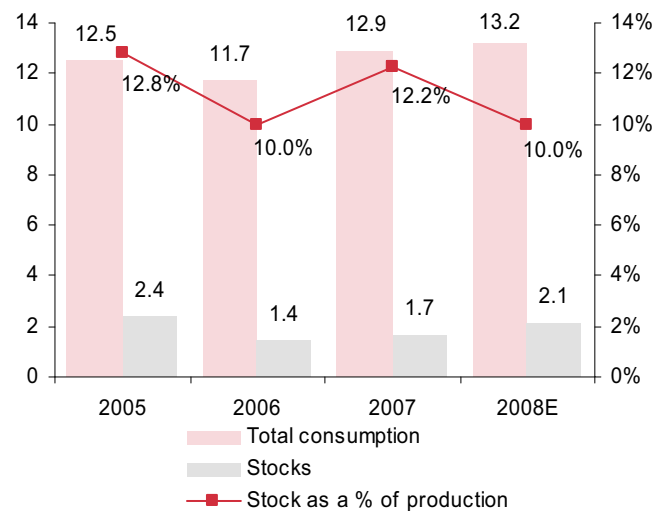
2006 and 2007 were poor years for Ukrainian wheat

**Exhibit 172. LHS – wheat production (m tons)/
RHS – exports as a % of production
(2004-2008)**



Source: USDA

**Exhibit 173. LHS – wheat consumption and stocks
(m tons)/RHS – stocks as a % of production
(2005-2008)**



Source: USDA

Barley

Barley, principally used as the main feed cereal in Ukraine, is the second most important crop after wheat, with a production of 6m tons in 2007. Ukraine accounts for about 4% of global barley production and about 1% of global exports. Spring barley accounts for over 90% of Ukraine's barley crop, and is planted in April and harvested in August. The main growing region for spring barley is eastern Ukraine while winter barley is limited to the extreme south. About 30% of total barley production in Ukraine is exported and Saudi Arabia is takes 42% of that, making it the biggest customer.

Barley production declined 47% in 2007 due to:

- An increase in the winter grain area, resulting in a lower spring barley area.
- Low winterkill. Barley is the chief grain used for spring re-seeding of damaged or destroyed winter-crop fields.
- A high level of barley stocks and farmers' concerns that export restrictions would be continued for the third year running.
- Higher profitability and greater demand for corn and sunflower seeds.

However, in common with wheat, it is expected that barley production in 2008 will rise by some 70% to reach a volume of 10-11m tons.

Barley is mainly used as a feedstock

Exhibit 174. LHS – barley production (m tons)/ RHS – exports as a % of production (%) (2004-2008)



Source: USDA

Exhibit 175. LHS – barley consumption and stocks (m tons)/RHS – end stocks as a % of production (2005-2008)



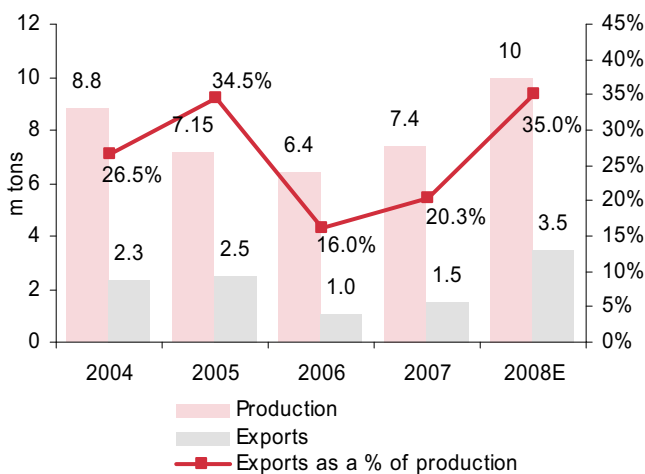
Source: USDA

Maize

Maize is the third most important cereal in Ukraine. In 2007, Ukraine produced 7.4m tons of maize, accounting for about 1% of global production. 20% is exported. Maize is grown principally in eastern and southern Ukraine, although rainfall in some oblasts in the extreme south means that yields are lower there. Maize is typically planted in late April or early May. The harvest begins in late September and is completed by early November. Only 25–50% of the total maize area is harvested for grain and the remainder is used as silage. Despite being a primary agricultural commodity in Ukraine, maize suffers from a number of constraints, such as obsolete and inadequate harvesting equipment, a high cost of production (especially post-harvest drying costs) and, simply, a lot of it is stolen.

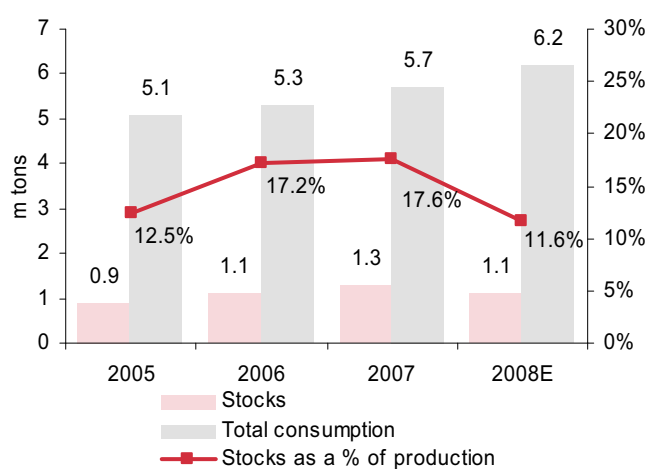
Corn constraints

Exhibit 176. LHS – maize production (m tons)/ RHS – exports as a % of production (%) (2004-2008)



Source: USDA

Exhibit 177. LHS – maize consumption and stocks (m tons)/RHS – stocks as a % of production (2005-2008)



Source : USDA

Sugar beet

Sugar beet is one of the country's principal industrial crops and is grown primarily in central and western Ukraine. Ukraine is the fifth largest producer of sugar beet after

Fifth largest producer of sugar beet

France, Germany, the US and Russia and accounted for about 9% of global production in 2006. In 2007, the country produced about 17m tons of sugar beet over a total area of 610,000 ha. However, both production and harvested area have been in continuous decline since the early 1990s because it hasn't been able to compete against the relative profitability of cereals and sunflower. The planted area declined by 58% to approximately 0.6m ha in 2007, from 1.5m ha in 1994. Production also witnessed a 40% decline in the same period, from a volume of 28m tons in 1994. Beet in Ukraine is planted during April and May and harvested in September and October.

Exhibit 178. Profitability of main agricultural crops (%)

	Grain	Sunflower seed	Sugar beet
2000	64.8	52.2	6.1
2001	43.3	68.7	1.5
2002	19.3	77.9	-8.6
2003	45.8	64.3	6.2
2004	20.1	45.2	-0.8
2005	3.1	24.3	4.8
2006	7.4	20.7	11.1
2007	28.0	75.0	-10.0

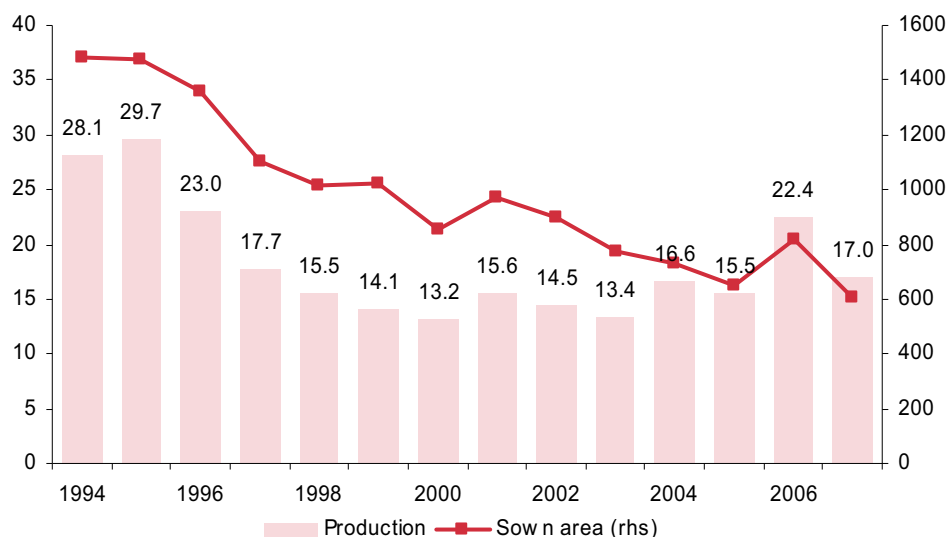
Source: State Statistics Committee of Ukraine; National Sugar Association

Beet is used primarily for domestic consumption and exports are negligible. Sugar beet imports were also limited until May 2005 given the prohibitively high import duties imposed on the product (50% and a floor of US\$170/ton). However, Parliament reduced import duties to 20% in May 2005. Still, total imports of sugar beet have been negligible. However, WTO accession might have a detrimental effect on the country's sugar industry as it will have to open an import quota on raw sugar cane (260,000 tonnes pa, rising to 267,000 tonnes by 2010).

High import duties on sugar beet before 2005

In retrospect, 2006 was the exception to a declining trend in the sector as both beet and sugar production reached a ten-year high. Sugar beet production increased to over 22m tons, a 36% y-y increase. Production, however, dropped again in 2007, due to an excess domestic supply of sugar, limited exports and lower profitability of sugar beet compared to its peers. This situation will not change any time soon. Winter wheat plantings remain high – positive price signals in August and September 2008 should support that. Another factor which will also act against sugar beet plantings is the fact that some oversupply in stocks still exists with the processing companies.

Exhibit 179. LHS – sugar beet production (m tons)/RHS – planted area ('000 ha) (1994-2007)



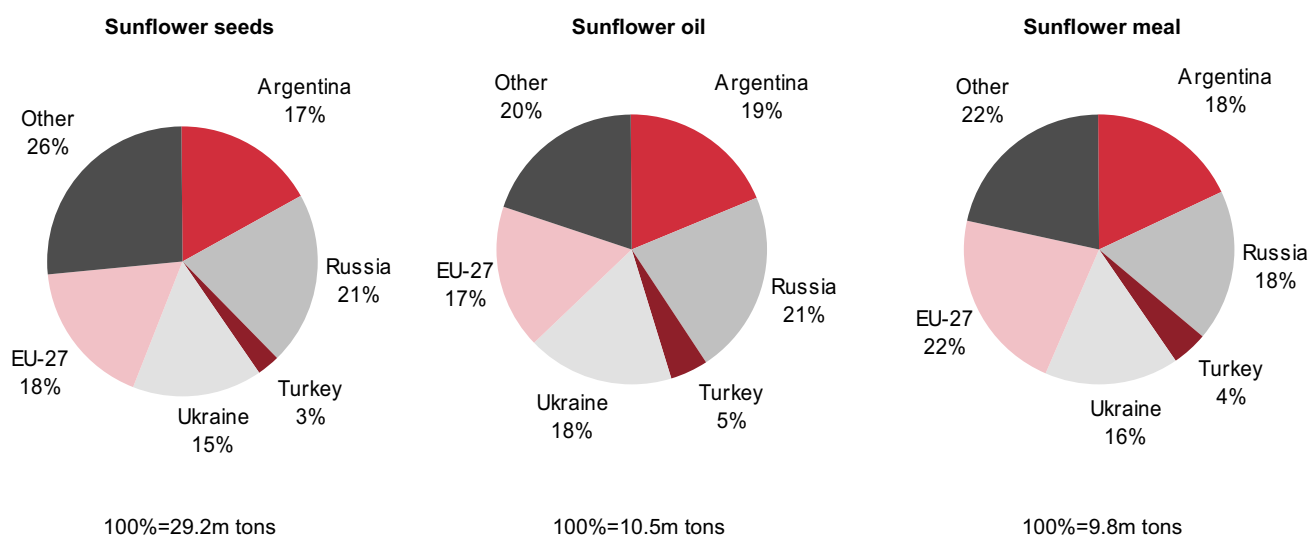
Source: UkrStat

Sunflower seeds

Sunflower seed is Ukraine's main oilseed crop and accounts for 15% of world sunflower seed production. Sunflower meal and sunflower oil are also primary food products in Ukraine, accounting for a respective 16% and 18% of the world's total production in 2007. Production of sunflower seeds in Ukraine is concentrated in southern and eastern oblasts and the crop is typically planted in April and harvested from mid-September to mid-October. The profitability of oil crops remains high and is more attractive than grains. The profitability of sunflower seeds increased from 21% in 2006 to 75% in 2007. The profitability of sunflowers is due to the combination of high prices, relatively low growing costs and high demand. Serendipity aside, sunflower output declined in 2007 due to drought. Forecasts suggest that the 2008 harvest will be up 14% y-y.

Main oilseed crop in Ukraine

Exhibit 180. Sunflower seeds, sunflower meal and sunflower oil production split (2007)

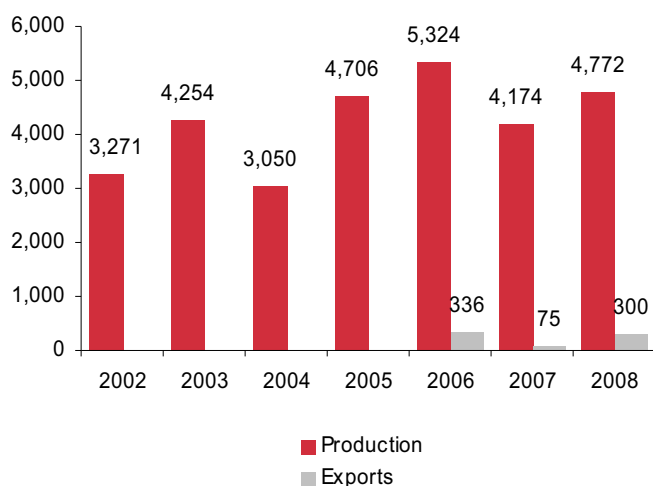


Source: UkrStat

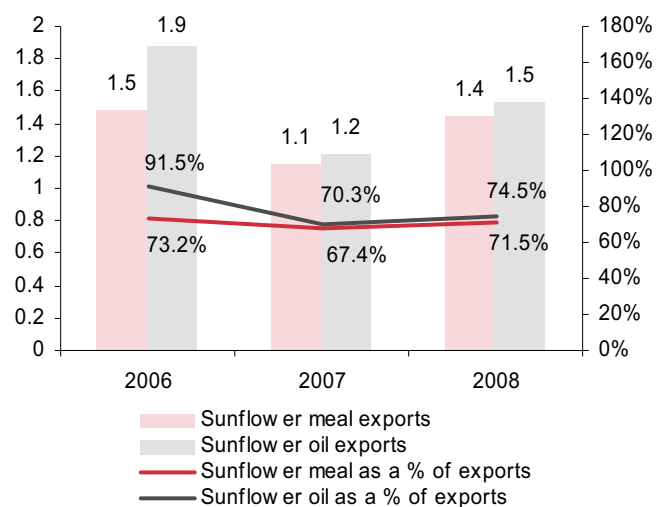
Ukraine is a net exporter of sunflower seeds; however, total trade of the commodity is limited. Exports accounted for less than 2% of total production in 2007; the remainder was used for domestic consumption. Sunflower seed imports are negligible and are restricted to high-quality seeds for planting.

Sunflower meal and sunflower oil, on the other hand, are primarily used for export purposes, accounting for 67% and 70% of total production in 2007, respectively. Sunflower meal exports are expected to increase due to high demand from Belarus and the Baltic States. A few countries in the EU (Poland and Italy) and the Middle East (Israel and Turkey) are also significant export markets. The Ukraine exported 1.2m tons of sunflower oil in 2007 with the Middle East and Africa accounting for a large share of exports. Export destinations are also changing in the sector with the EU (the largest market historically) losing share. Imports of both sunflower meals and oil are negligible.

The relatively high profitability of sunflower seeds compared to grains should lead to an increase in the sown area for sunflowers, in our view. Sunflower production should also increase due to the use and influence of higher quality seeds and hybrids by farmers. Sunflower seed crush volumes should also increase due to higher sunflower seed production and higher crush demand from sunflower seed processors.

Exhibit 181. Sunflower seed production and exports ('000 tons) (2002-2008)

Source: USDA

Exhibit 182. LHS – Meal and oil production (m tons)/ RHS – exports as a % of production (2006-2008)

Source: USDA

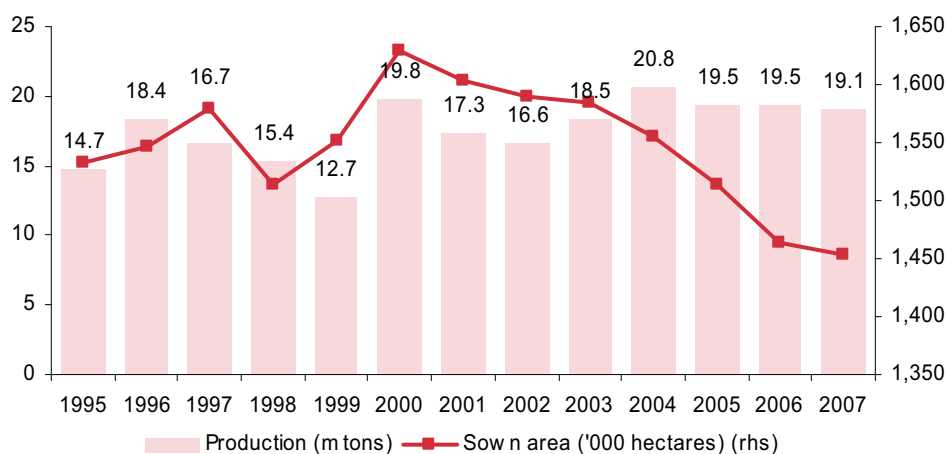
Potatoes

Potatoes are the primary vegetable and have been grown in the Ukraine since the 18th century. The crop was initially used primarily to produce starch and alcohol; however, during the 20th century the crop came to be widely cultivated for food to the extent that it is referred to as the country's "second bread". Perhaps it sounded funnier in the original Ukrainian.

Ukraine is the world's fourth largest producer of potatoes, after China, Russia and India. Consumption per capita is high at 140 kg per year. About half of the country's 1.5m ha of potato farms are located on the black soils of the forest-steppe zone in central Ukraine, although the best yields are obtained in the Polesye wetlands of the north.

Production in 2007 reached 19m tons, with average yields of about 13 tons per ha. Despite its considerable production volumes, Ukraine is not a potato exporter. A large part of the crop is lost each year to pests and inadequate storage. While production grew at a compound rate of 2.2% over the period 1995-2007, the total sown area has declined by an annual rate of 0.4% over the same period, suggesting some yield gains over that time.

Starch, food and alcohol

Exhibit 183. LHS – potato production (m tons)/RHS – planted area ('000 ha) (1995-2007)

Source: UkrStat

WTO membership: implications for Ukrainian agriculture

Ukraine joined the World Trade Organization (WTO) in May 2008 and became its 152nd member, following 14 years of negotiations. Various law packages necessary to fulfil Ukraine's bilateral and multilateral WTO commitments were approved, which finally led to the adoption of the WTO Working Party Report by the WTO General Council in February 2008.

Ukraine has undertaken various commitments to obtain WTO membership:

- Average tariffs on the import of agricultural products will be 10.66% compared to 21% before WTO membership.
- Ukraine can apply a highest tariff rate of 50% on sugar and 30% on sunflower oil.
- The country will not apply any other duties and charges beyond its ordinary customs duties.
- It will not subsidise its agricultural exports and trade-distorting domestic support provided to farmers will be limited to UAH3bn (US\$614m). However, Ukraine will have no spending limits on domestic support programmes that have zero or minimal impact on trade.
- Ukraine will open an import quota on raw cane sugar (260,000 tonnes annually, and increasing to 267,000 tonnes by 2010); this quota will be administered on a first-come first-served basis within 3 years of accession.
- Domestic taxes (VAT and excise tax) will be applied in a non-discriminatory manner to imports from WTO members and to domestically produced goods.
- The country will reduce its export duties on oilseeds, live cattle and animal skins from the date of accession. Ukraine will not apply any obligatory minimum export prices.
- All export restrictions on grains will be removed.

There have been mixed views from industry experts on the impact of WTO membership on Ukraine's agricultural sector. A negative view might be that production will shrink in the first few years as farmers, historically protected by state subsidies and quotas, fail to compete in the new landscape. Over the next six years, following WTO accession, the scale of state support provided to farmers is expected to be reduced by UAH600m (US\$123m). Small Ukrainian farms and agricultural businesses will likely be hard hit from these moves. Not only will foreign competition increase, VAT exemption benefits will be lost. Conventional wisdom has it that WTO membership will affect the sugar, milk and vegetable sectors.

Equally, while there might be short-term costs, there are likely to be significant benefits arising from WTO membership. For a start, a more stable and transparent policy making framework will emerge. We endlessly make the point that if you want investment, a transparent rule of law and enforceable property rights protected by an independent judiciary are all you need. The other major benefit of WTO membership is that the comparative advantage of an agricultural producer comes to the fore. Consider some of our anchor themes – liberalisation over protectionism, the rise of comparative advantage in agriculture, the third great sub-contracting and so on. WTO membership is part of this process. Ukrainian products are already competitive; the removal of tariffs among customers – existing or potential – will make them still more competitive. WTO membership would also give Ukraine a voice in setting policy and making rules in international agriculture trade. Also, as a WTO member, Ukraine would enjoy access to the WTO's dispute settlement mechanism and protection from arbitrary treatment by trading partners.

A negative view of WTO..

..and a positive one

We should probably highlight our belief that Russia's WTO ambitions at the current juncture are limited. That may change – it is easy enough to imagine a set of circumstances and dynamics under which Russia's current ambivalence shifts to a more pro-WTO stance. However, Ukraine's entry into WTO before Russia may provide it with some leverage over any Russian accession hopes. Under WTO rules each existing member can block new members from joining unless they make trade reforms. Membership may give Ukraine leverage in settling disputes with Russia over sugar and dairy products, among others. Trade between the two countries reached US\$30bn in 2007 and some US\$3bn of Ukrainian exports are subject to restrictions. The WTO provides a framework for dealing with these issues.

Ukraine and the EU

The EU and Ukraine are getting closer. In January 2005, the European Parliament passed a motion (467 to 19 in favour) stating the wish of the European Parliament to establish closer ties with Ukraine with a view to eventual EU membership. EU membership has been a central plank of President Viktor Yushchenko's foreign policy, and the Presidential Secretariat has set 2017 as the target year for Ukraine's entry into the EU.

Within the EU, there is some disagreement over membership for Ukraine. Some opponents seek to deepen EU institutions within the existing 27 member countries. These opponents can be further sub-divided into two groups, one of which never wanted to see extension beyond the 15 members that made up the predominantly Western Europe core before 2004. The second group are those who recognised and accepted the need to bring in the former east European Warsaw pact countries and would seek to deepen the role of the EU within that group of 27 countries.

Other opponents do so on slightly different grounds: let us call them the pragmatic resisters. These resist Ukrainian membership on a number of practical grounds. First, any enlargement agenda should focus initially on the Balkan states such as Croatia and Serbia rather than extend deep into the Eurasian land mass. Second, the short experience of Bulgarian and Romanian membership has, in the eyes of the pragmatic resisters, demonstrated the practical difficulties of admitting countries which are unprepared for the experience and whose institutions are weak. In short, expanding for the sake of it is not a sensible strategy. Then there is the other group who would prefer to see the likes of Ukraine and Belarus as "buffer states" between the EU and Russia.

Ukraine and the EU first established contractual relations in 1994 through the signing of the Partnership and Co-operation Agreement (PCA), which went into force in 1998. It is the legal basis for EU-Ukraine relations, providing for co-operation on a wide range of areas including political dialogue and trade and investment as well as a wide range of economic, legislative, cultural and scientific issues. It accords Most Favoured Nation (MFN) treatment to the two parties and limits the possibility of imposing restrictions on imports and exports. Ukraine also benefits from the EU's European Neighbourhood Policy (ENP), due to its geographical proximity to the EU. ENP, launched in 2003, provides the framework for closer co-operation with the neighbouring countries of the EU. In conjunction with the PCA, it forms the basis of the EU-Ukraine Action Plan, which was adopted in February 2005.

Ukraine's membership of the WTO has led to negotiations on its inclusion into the Free Trade Area (FTA) as the key element of the EU's New Enhanced Agreement (NEA) with Ukraine. NEA, the successor agreement to the PCA, was proposed initially in 2006 and is aimed at strengthening mutual trade, investment and economic integration between the two economies.

FTA between the EU and Ukraine, once signed, should play a vital role in enhancing agricultural trade between the two regions. According to an EU Commission report, agricultural exports from the Ukraine to the EU should grow by 54% following the FTA, compared to an 11% rise under the simple WTO accession model. The biggest beneficiary of the FTA would be Ukraine's cereal, oilseed and meat sectors.

Impact of closer EU-Ukraine ties on Russia

This section focuses more on the sector specific economic issues instead of some of the geo-strategic issues that have become depressingly evident in recent months. Ukraine has a special geo-strategic importance in the region and – along with Georgia – it is the place where Russian and EU interests genuinely meet.

Historically, Russia was Ukraine's main trading partner, accounting for nearly one-third of the latter's total trade. However, since enlargement in 2004 and 2007, the EU has

Getting closer

Wait your turn

The EU and the Ukraine have had a contractual relationship since 1994

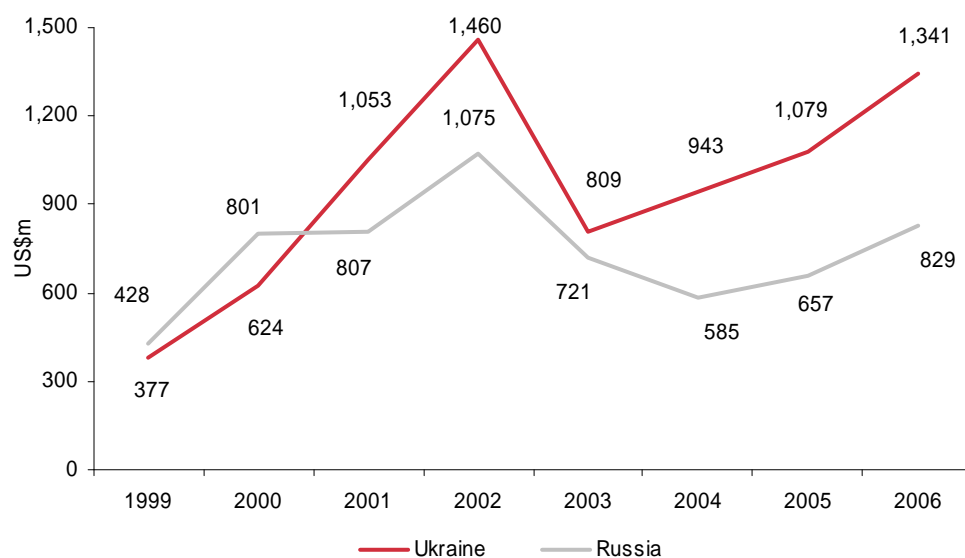
The EU has superseded Russia as the Ukraine's biggest trading partner

overtaken Russia as the country's largest trading partner and its largest export market. In 2006, the EU accounted for 25% (US\$11.9bn) of Ukraine's exports and provided 42% (US\$24.4bn) of its imports.

Although membership of the EU has been refused in the short term, the inclusion of FTA in the NEA may have an adverse effect on Ukrainian-Russian trade. FTA would lead to the elimination of tariffs, quotas and preferences on goods between the EU and Ukraine. In short, Ukraine would have a more favourable position vis-à-vis Russia in terms of trade with the EU than before.

The EU is Russia's main trading partner and accounts for over 50% of the country's total trade. The majority of Russian goods exported to the EU benefit from the EU's General System of Preferences (GSP) and might not be materially affected by the inclusion of FTA in EU-Ukraine trade relations. However, Russian agricultural exports to the EU would most likely be materially affected by this development as agricultural products are not covered by the EU GSP. In 2003, the EU changed the status of wheat by introducing a quota system, which subjects the amount of wheat imported outside of this quota to high duties. Since Russia is not a member of the WTO, it is not eligible for any reserved quota and its exports are subject to a high out-of-quota duty.

Exhibit 184. Import of total agricultural products by EU-25 (US\$m) (1999-2006)



Source: Eurostat

In recent years, the EU has reduced its dependence on Russia for its agricultural requirements. While Ukraine's agricultural exports to the EU have increased at a compound growth rate of about 20% between 1999 and 2006, the corresponding growth in Russian exports has been at a much slower rate of 10% over the same period.

Exhibit 185. EU agricultural imports from Ukraine and Russia (US\$m) (2006)

Agricultural products	Ukraine	Russia
Products of animal origin	13.6	12.1
Edible vegetables, roots & tubers	39.8	61.7
Edible fruits & nuts	105.5	68.5
Cereals	176.8	167.2
Oil seeds & oleaginous fruits	220.7	75.4
Animal or vegetable fats & oils	474.3	148
Sugars & sugar confectionery	10.1	8.8
Cocoa & cocoa preparations	16.4	12.6
Beverages, spirits & vinegar	46.6	52.1

Source: Eurostat

Ukraine's entry to the WTO provides it with a platform to enhance still further its competitive advantage vis-à-vis Russia by establishing better terms of trade with its partners, most notably the EU. The impact of closer EU-Ukraine relations promises to be one of the biggest sector themes in the coming years. Russia and Ukraine compete head on in several products, most notably wheat, barley, sugar beet, sunflower and potatoes.

Our view

We have applied high discount rates to the companies in our universe. We believe that an economic crisis in Ukraine is looking increasingly likely and the fiscal position of Argentina is worsening. It was a Brazilian devaluation in 1999 that, ultimately, drove Argentina to do the same in 2001. History can repeat itself.

Anchor themes

- ⚓ Recommendations on relatively small stocks during a financial crisis have severe limitations. Sensitivities are such that a percentage point change in the applied WACC can make the difference between a buy and a sell call.
- ⚓ With that in mind, we highlight various sensitivities, both to WACC and to crop prices, on the following page (excluding Cosan). Assume a credit market less driven by fear and it is easy to see the potential upside to our stocks. The current environment will not last forever, however the short-term outlook remains poor.

Companies in the frame

① Watching and waiting in the Ukraine

The Ukraine's economic position is worsening daily. We believe it is only a matter of time before the currency is devalued significantly. This will bring enormous short-term pain but for those agricultural companies which are underleveraged it could present a considerable long-term opportunity. Brazil's 1999 devaluation gave it a competitive advantage and was one of the reasons for the Argentinean financial collapse in 2001/2002. Argentina's agricultural export-driven growth in the aftermath of this exchange-rate crisis was significant. Watch and wait with regards to Astarta, Kernel and MCB Agricole.

② The threat to Russia

Argentina's devaluation in 2001/2002 was brought on, in part, by a neighbour's devaluation. A similar threat exists for Russia where a Ukrainian devaluation might make Russian agricultural producers uncompetitive. For well capitalised operators such as BEF, an uncompetitive exchange rate may be offset by domestic market arrangements and the possibility that they can acquire land at distressed prices. For Razgulay, its position as a trader could be threatened by the government's enhanced role in the economy.

③ Doha and Latin America

The Brazilian producers provide a mixed picture. All will benefit from the eventual signing of the Doha Agreement, which we believe will happen. Cosan's vertical integration comes with a high degree of leverage, which in the current climate is a concern. Brasilagro is a trader but a good one. Can it last? SLC Agricultura and Cresud both seem to offer value at their current prices. We might have to wait for a while before becoming positive on Cosan and Brasilagro.

Debt, exchange rates and survival

This report has mapped out many of the strategic themes which we believe will form key issues over the course of the next few years. Nevertheless, the most prominent issue right now relates not to farming and politics but to exchange rates and debt. A currency crisis is brewing in the Ukraine and it will have significant ramifications for the sector and its listed and unlisted participants. The fact is that in an era of cheap credit and easy equity, many of the companies in the sector overtraded. The result is that some companies might find themselves overextended in the event of a currency collapse.

The over-riding short-term issue of debt

Obviously Ukrainian companies would be the most affected by a sharp decline in exchange rates. However, the other countries heavily involved in the sector cannot escape from the reality that the current financial crisis is a global issue and there is no immunity from it. Moreover, other countries with sizeable agriculture sectors will also find themselves badly affected by the emergence of what is, in effect, a new low-cost competitor.

As the table below indicates, Kernel and Astarta are both significantly indebted and a good percentage is short-term and denominated in foreign currency. Although MCB had a 109% net debt/equity ratio in 2007, its fundraising in 2008 will put it in a net cash position. In Russia, BEF is in a strong position; its net cash position is likely to define its strategy in the months ahead. Razgulay, however, is highly geared. After accounting for its recent fundraising, we estimate that its net gearing level is around 43% or thereabouts - still high, in our view and a worrying percentage of that total is short-term. Among the Latin American businesses, Cosan's net gearing level of 45% is high. Even after taking into account the parent company's recent fundraising, Cosan's net gearing still remains somewhat high at approximately 35%.

Funding problems lie ahead

Exhibit 186. Debt profile

	BEF (US\$)	Razgulay (RUB)	Astarta (EUR)	MCB (US\$)	Kernel (US\$)	Brasilagro (BRL)	Cosan (BRL)	SLC (BRL)	Cresud (ARS)
Total debt (m)	77	13,989	52	16	249	2	2,114	185	196
Total cash & equivalents (m)	301	2,696	1	0	89	332	634	167	533
Net debt/ equity (%)	-56%	66%	51%	109%	33%	-56%	45%	4%	-19%
Debt in foreign currency (%)	100%	0%	62%	NA	87%	0%	98%	22%	13%
Short-term debt/total debt (%)	0%	64%	80%	69%	63%	24%	4%	68%	100%
Net debt/ equity (%) estimate*	NA	43%	NA	-23%	NA	NA	35%	NA	NA

Note: Astarta, BEF, MCB, SLC and Razgulay data are for FY 2007; Brasilagro, Cresud and Kernel data are for FY 2008; Cosan data is for 1Q 2009

*Net debt/equity (%) estimate takes into account recent fundraisings which took place after the company's most recent company statement

Source: Company data

Exhibit 187. Sensitivity analysis based on different WACCs and changes in relevant crop prices

BEF (BEFSDB SS)				Price increase / decrease (%)				
			-10%	0%	10%	20%	30%	
Fair value (SEK)	14.00							
Current price (SEK)	15.40							
Up / downside	-8%							
WACC	17%							
Recommendation	Neutral							
		10%	21	38	54	71	88	
		12%	14	27	40	53	66	
		14%	10	20	31	41	52	
		16%	7	16	25	33	42	
		18%	6	13	20	28	35	
		20%	4	11	17	24	30	
		25%	3	8	12	17	22	
		30%	2	6	10	13	17	
Razgulay (GRAZ RU)								
Fair value (US\$)	0.81							
Current price (US\$)	2.00							
Up / downside	-59%							
WACC	18%							
Recommendation	Sell							
		10%	7.20	7.76	8.32	8.88	9.44	
		12%	4.43	4.83	5.24	5.65	6.06	
		14%	2.68	2.99	3.30	3.61	3.93	
		16%	1.48	1.73	1.97	2.22	2.46	
		18%	0.62	0.81	1.01	1.20	1.40	
		20%	-0.04	0.12	0.28	0.44	0.60	
		25%	-1.12	-1.03	-0.93	-0.83	-0.74	
		30%	-1.78	-1.72	-1.66	-1.60	-1.54	
Astarta (AST PW)								
Fair value (PLN)	15.00							
Current price (PLN)	18.00							
Up / downside	-17%							
WACC	20%							
Recommendation	Sell							
		10%	25	59	94	128	162	
		12%	16	42	69	95	121	
		14%	10	31	53	74	95	
		16%	6	24	42	60	78	
		18%	4	19	34	50	65	
		20%	2	15	28	42	55	
		25%	-2	8	18	29	39	
		30%	-4	4	13	21	29	
Kernel Group (KER PW)								
Fair value (PLN)	10.33							
Current price (PLN)	12.85							
Up / downside	-20%							
WACC	18%							
Recommendation	Sell							
		10%	55.1	55.1	55.0	54.9	54.8	
		12%	36.1	36.0	35.9	35.8	35.7	
		14%	24.2	24.1	24.0	23.9	23.8	
		16%	16.2	16.0	15.9	15.8	15.7	
		18%	10.4	10.3	10.2	10.1	10.0	
		20%	6.2	6.1	6.0	5.8	5.7	
		25%	-0.6	-0.8	-0.9	-1.0	-1.2	
		30%	-4.6	-4.7	-4.9	-5.0	-5.1	

MCB (4GW1 GR)			Price increase / decrease (%)				
			-10%	0%	10%	20%	30%
Fair value (EUR)	2.86						
Current price (EUR)	8.90						
Up / downside	-68%						
WACC	18%						
Recommendation	Sell						
		10%	4.82	14.40	23.98	33.57	43.15
		12%	2.12	9.40	16.68	23.97	31.25
		14%	0.50	6.33	12.16	17.98	23.81
WACC		16%	-0.53	4.29	9.11	13.94	18.76
		18%	-1.23	2.86	6.96	11.05	15.14
		20%	-1.72	1.82	5.36	8.90	12.44
		25%	-2.40	0.21	2.81	5.42	8.02
		30%	-2.69	-0.66	1.37	3.40	5.43
Brasilagro (AGRO3 BZ)							
Fair value (BRL)	9.83						
Current price (BRL)	9.90						
Up / downside	-1%						
WACC	18%						
Recommendation	Neutral						
			-10%	0%	10%	20%	30%
		10%	8.0	8.9	9.7	10.5	11.4
		12%	7.7	8.3	8.9	9.5	10.2
		14%	7.4	7.9	8.4	8.9	9.4
WACC		16%	7.3	7.7	8.1	8.5	8.9
		18%	7.2	7.6	7.9	8.2	8.6
		20%	7.2	7.5	7.8	8.0	8.3
		25%	7.1	7.3	7.5	7.7	7.9
		30%	7.1	7.2	7.4	7.6	7.7
Cosan (CSAN3 BZ)							
Fair value (BRL)	9.61						
Current price (BRL)	10.70						
Up / downside	-10%						
WACC	15%						
Recommendation	Neutral						
SLC Agricola (SLCE3 BZ)							
Fair value (BRL)	12.98						
Current price (BRL)	9.17						
Up / downside	+42%						
WACC	15%						
Recommendation	Buy						
			-10%	0%	10%	20%	30%
		10%	17.1	24.5	31.9	39.4	46.8
		12%	12.6	18.3	24.1	29.8	35.5
		14%	9.8	14.4	19.1	23.7	28.4
WACC		16%	7.9	11.8	15.7	19.6	23.5
		18%	6.5	9.8	13.2	16.5	19.9
		20%	5.4	8.3	11.3	14.2	17.2
		25%	3.6	5.9	8.1	10.3	12.6
		30%	2.6	4.4	6.1	7.9	9.7
Cresud (CRESY US)							
Fair value (US\$)	9.70						
Current price (US\$)	7.22						
Up / downside (%)	+35%						
WACC	17%						
Recommendation	Buy						
			-10%	0%	10%	20%	30%
		10%	10.2	11.8	13.4	14.9	16.5
		12%	9.6	10.8	12.1	13.3	14.5
		14%	9.2	10.3	11.3	12.3	13.3
WACC		16%	9.0	9.9	10.7	11.6	12.5
		18%	8.9	9.6	10.4	11.1	11.9
		20%	8.8	9.4	10.1	10.8	11.4
		25%	8.7	9.2	9.7	10.2	10.7
		30%	8.7	9.1	9.5	9.9	10.4

Source: Companies and Nomura estimates

Our view

While the environment is less benign than was the case when Black Earth Farming (BEF) listed last year, and investors seem to prefer the conglomerate or integrated model, BEF has been oversold. The Russian landscape is about to change dramatically and well capitalised BEF might be the company which benefits.

Anchor themes

- ⚓ The best companies are those which can be flexible. BEF has delivered on its objectives. Now that the environment for land companies in Russia is turning negative, it seems logical that the well capitalised are allowed to take out the weak and the speculative. This will drive investment and promote the sector overall.
- ⚓ The biggest threat to BEF and the other Russian operators is the looming exchange rate crisis in neighbouring Ukraine. If Russia emerges as a high-cost producer compared to Ukraine, there will be negative ramifications for BEF.

Closing price on 16 October **SEK15.40**

Fair value estimate **SEK14.00**

Upside/downside **-8%**
EPS difference from consensus **NA**

Source: Nomura

Nomura vs consensus

We believe BEF will remain lossmaking in 2008 while the market is forecasting net profitability.

Russian pure-play

① Pioneering farming company

BEF was among the first companies to recognise the potential of agriculture in Russia. The company now controls 331,000 ha of land and harvested 52,000 ha in 2006/2007, ahead of most of its peers. Its position as a developer means that, unlike many other farming companies, it has not bought land speculatively. We estimate that the company has over US\$267m of cash, an enviable position compared to its peers.

② Emphasis on operations

With its land acquisition almost complete, BEF's focus is now on its operations. The 2009 harvest is an important one and will give an indication of management's execution capabilities. Yields and costs will be key parameters and will set the tone for the stock's performance.

③ Cash in hand

We believe there will be plenty of opportunities to expand in the near future. Surplus land exists and a lack of access to capital is going to have a considerable impact across the sector. Well-capitalised BEF should be relatively well insulated from this and could benefit considerably through the ability to acquire distressed assets at deeply discounted prices.

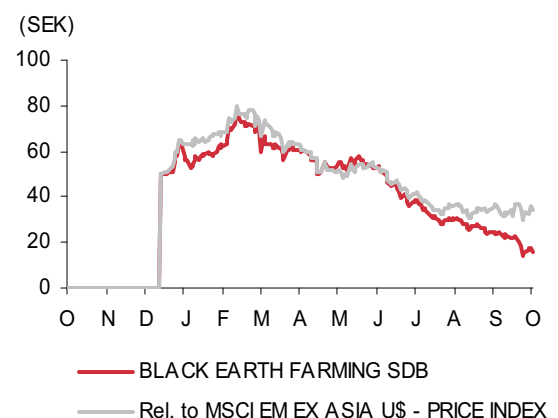
④ New fair value set at SEK14. Downgrading to NEUTRAL

We have applied a WACC of 17% and a terminal growth rate of 3% in valuing BEF. Our DCF-derived fair value is SEK14/share. We are downgrading our recommendation from Buy to NEUTRAL.

Key financials & valuations

31 Dec (US\$m)	FY07	FY08F	FY09F	FY10F
Revenues	21.3	105.2	156.4	184.5
EBITDA	(3.5)	(41.7)	46.4	69.1
Net profit	(21.5)	(44.1)	20.7	39.9
EPS (US\$)	(0.4)	(0.4)	0.2	0.3
EPS growth (%)	-	-	-	50.0%
P/E (x)	-	-	13	6.7
EV/EBITDA (x)	-	-	1	0.7
Price/book (x)	0.7	0.7	0.8	0.7
Dividend yield (%)	-	-	-	-
ROE (%)	(8.3%)	(11.7%)	5.7%	10.1%
Net debt/equity (%)	(56.2%)	6.6%	12.8%	12.8%

Company, Nomura estimates



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Company background

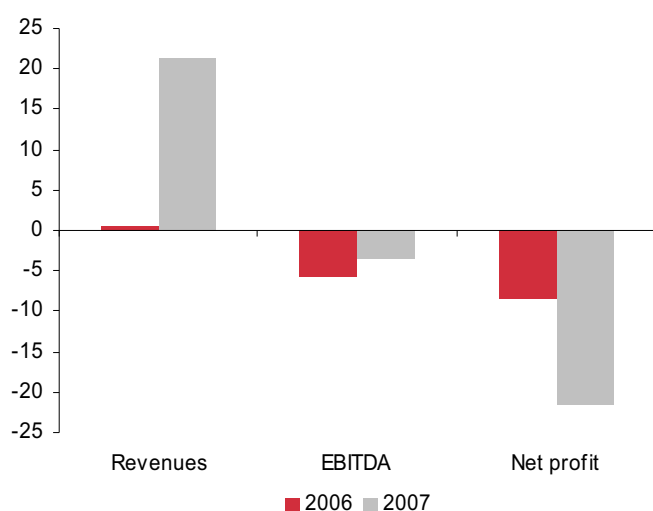
BEF was founded in 2005 and its strategy was to acquire agricultural assets in Russia's Black Earth region and bring the operations up to the standards of producers in North America and Western Europe. The company's operations are concentrated in six *oblasts* of the Central Federal District – Kursk, Tambov, Lipetsk, Voronezh, Kaluga and Ryazan – as well as Samara. At the end of June 2008, BEF controlled some 331,000 ha of land.

Founded in 2005

This initial strategy, which centred on the rapid acquisition of land, has shifted its emphasis of late: new acquisitions are now more likely to be minimal and in close proximity to the company's 10 existing clusters, so that the full benefits of economies of scale are brought to bear. Significant investment in modern machinery and equipment is currently being undertaken, in conjunction with other measures designed to enhance operations such as thorough soil analysis, training of local workers in modern farming techniques and proper crop rotation methods.

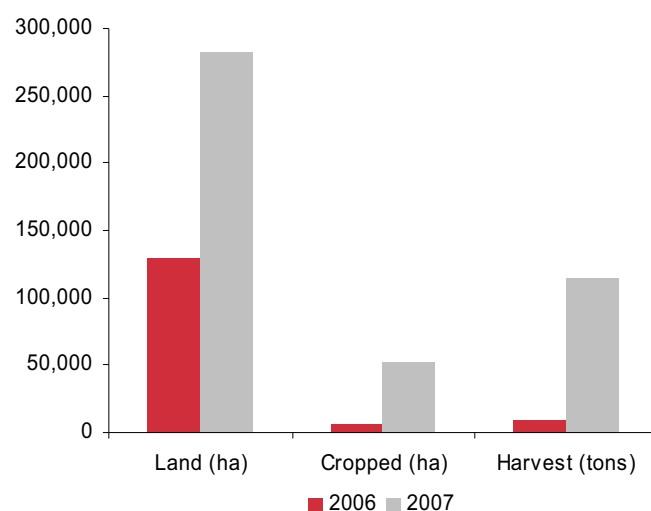
The company conducted its first harvest of approximately 5,900 ha during the agricultural year 2005/06. The harvest was viewed as satisfactory in light of unusually harsh weather conditions. The harvest of 9,000 tons mainly constituted spring barley (4,000 tons), winter wheat (2,500 tons) and spring rape (1,400 tons).

Exhibit 188. Financial snapshot (US\$m)



Source: Company data

Exhibit 189. Operational snapshot



Source: Company data

BEF raised US\$7m of seed capital of from institutional investors in early 2005. The first flagship investor was the Lundin Group, a Swedish group with extensive mining interests in Europe and focused mostly on the extraction of zinc and lead. The investment was made by the Lundin Group's Vostok Nafta Investment Ltd. Vostok Nafta is a holdings company established primarily to invest in Russian businesses. The biggest shareholder in Vostok Nafta is the Lundin family which currently owns some 30.4% of the company. The shares in BEF were issued at US\$1.00.

Founded in 2005

The second phase of fundraising took place in early 2006 when the company raised a further US\$45m, selling new shares at US\$1.50. The second anchor investor, AB Kinnevik, joined at this stage. AB Kinnevik is a Swedish investment company with extensive interests including stakes in Tele2, the Swedish telecoms operator, and Millicom SA, an emerging markets wireless operator with licences in Latin America, Africa and southeast Asia. Together, Vostok Nafta and AB Kinnevik held 52% of BEF after this second fundraising.

BEF's third fundraising took place in November 2006, when it raised an additional US\$70m at US\$2.00 per share. Both AB Kinnevik and Vostok Nafta maintained their stakes in the businesses by fully participating in this fundraising. In early 2007, BEF

IPO in December 2007

tapped the debt markets with a EUR55m four-year bond and later in the year (August 2007) a fourth equity round raised US\$40m. BEF held an IPO in December 2007, raising nearly US\$268m.

Strategy & operations

The first part of BEF's strategy – to acquire land – is almost complete. The company has enjoyed a head-start compared to many others in this regard. The race to acquire land banks in the Black Earth region reached a frenzy after BEF had already gained control of the majority of its land holdings. The market has now turned in dramatic fashion and in recent months land prices have declined by over 20% in this part of Russia. The lack of access to capital that characterises the industry at the best of times has now become acute and it seems likely that many expansion plans will have to be axed.

Land acquisition almost complete

One of BEF's strengths has been its ability to adapt its strategy to changing market conditions. It acquired land before a frenzy developed, it accumulated capital before the capital markets shut down and now it has the opportunity to expand again, this time by acquiring distressed assets. Given that the company had a cash balance of US\$267m as at June 2008 it has considerable scope for making such acquisitions and is certainly not short of offers.

Considerable scope for acquiring distressed assets

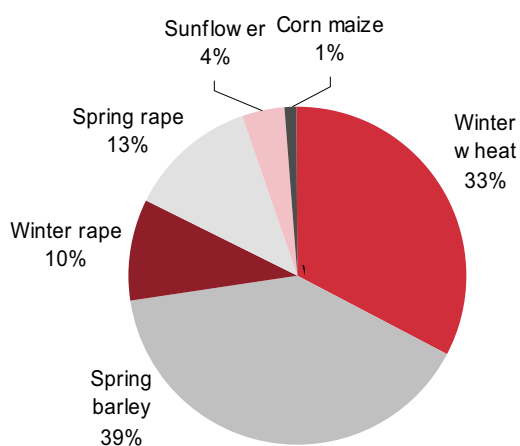
BEF's operations are organised into divisions, each of which has a few clusters. There are 10 clusters in total and these are usually made up of four units of 10,000 ha each. Each cluster is centred on a 100km radius and the size of a cluster can depend on the abilities of the manager. Russian labour is not cheap – contrary to some viewpoints – and it can take between two to four years to train key personnel. In short, the cluster method brings significant efficiencies especially in the deployment of machinery and storage capacity but it takes time for them to take effect.

Cluster model

Crops

One of the many reasons for the volatility in the agriculture sector is that the participants must seek to balance the needs of the land with the profit motive. Growing the most profitable crops does not necessarily conform with efficient crop rotation and proper crop sequencing. More to the point, weather patterns and climate play their part, too, in determining what is grown where and when.

Exhibit 190. Crop area split - 2007

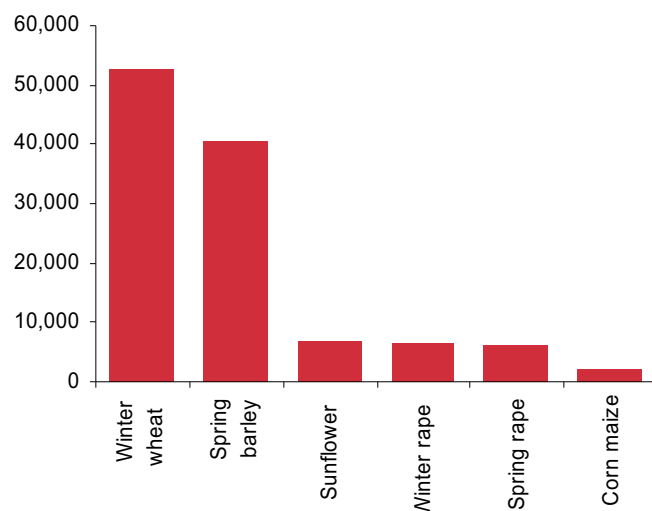


Source: Company data

The company employs a seven-year crop rotation plan. The seventh year is a fallow period. This maximises output and productivity of the fields and also reduces input costs for items such as fertilisers and pesticides. The company focuses on six crops – winter wheat, winter rape, spring barley, spring rape, sunflower and corn maize.

Seven-year rotation with one year fallow

Exhibit 191. Harvest volume – 2007 (tons)



Source: Company data

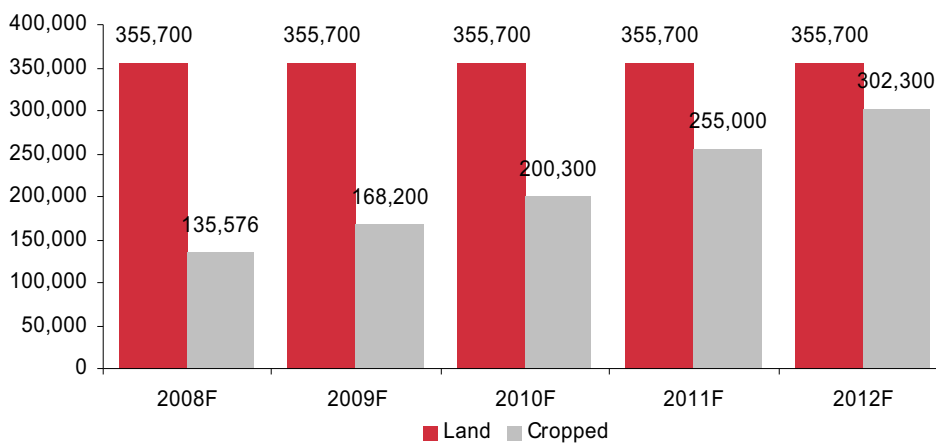
During the agricultural year 2006/07, the company completed its second harvest, which amounted to around 114,300 tons from 52,000 ha. The yield is considered satisfactory when compared with the prevailing weather conditions for that agricultural year. In 2007, 39% of the land was sown with spring barley, followed by winter wheat at 33%. However, in terms of harvest, winter wheat constituted 46% of the output as its yield was higher.

Prospects and outlook

With the original land acquisition project almost complete and an enviable cash balance, BEF is in a decent position to fulfil its objectives. The chief risk, as we see it, comes from neighbouring Ukraine. This country has profound problems with regards to its budget deficit, trade deficit and political outlook. In our view, it is only a matter of time before the Hryvnia is devalued. This could provide Ukraine with a low-cost advantage in much the same way that devaluations in Brazil in 1999, and in Argentina in 2001/2002, provided those countries with a similar advantage. Under this scenario, Russia and BEF would be at a significant disadvantage.

Crisis in Ukraine could be a cause for concern

Exhibit 192. Land under control



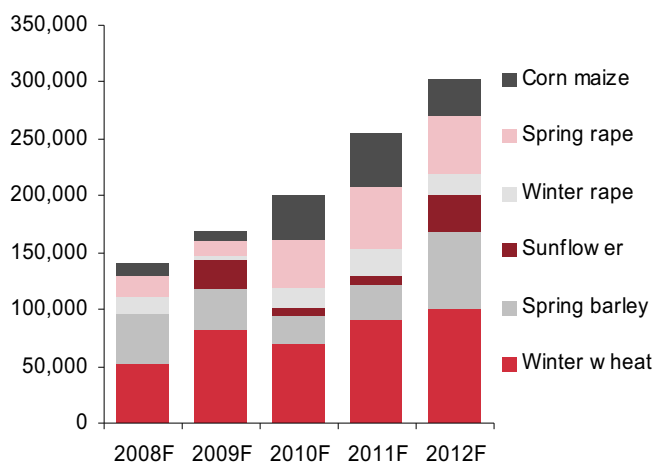
Source: Company data

We expect BEF to crop 302,300 ha in 2012, up from 52,000 ha in 2007.

In terms of cultivated area, winter wheat would be the major crop, followed by spring barley. The area under sunflower and corn maize would also increase. In terms of harvest volume, the distribution would be similar, with winter wheat being the largest contributor. We expect the 2012 harvest to be 1.2m tons.

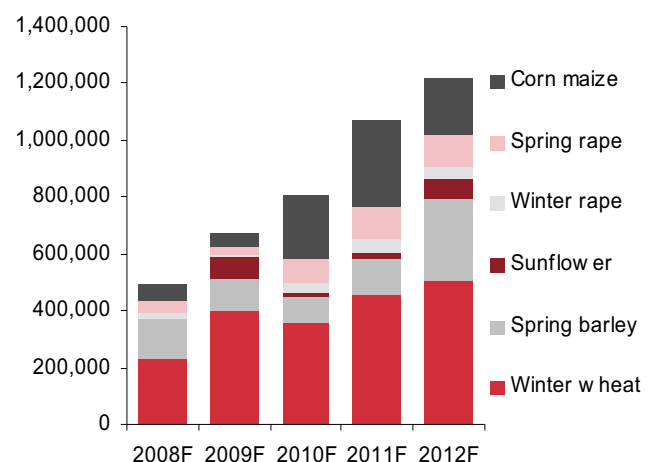
Wheat is the major crop

Exhibit 193. Crop area split (ha)



Source: Company data

Exhibit 194. Harvest volume (tons)



Source: Company data

Our price forecasts are conservative. We have taken prices close to the current spot prices, and have assumed them to be constant throughout the forecast period.

Exhibit 195. Commodity price assumptions (US\$/ton)

Commodity	2008F	2009F	2010F	2011F	2012F
Winter wheat	220	220	220	220	220
Spring barley	190	190	190	190	190
Winter rape	500	500	500	500	500
Spring rape	500	500	500	500	500
Sunflower	500	500	500	500	500
Corn maize	180	180	180	180	180

Source: Nomura estimates

Capex

We have assumed a cost of land of US\$600/ha, a working capital requirement of US\$425/ha, an equipment cost of US\$600/ha and an elevator cost of US\$240/ton. We estimate that the company will have 10 elevators by 2009, each of 60,000 ton capacity. We have assumed depreciation to be 16% of net assets.

Valuation

We have employed the discounted free cash flow method to value the company. The weighted average cost of capital is taken at 17%, to reflect the risks associated with Russia. To take into account BEF's growth potential, the terminal growth rate is assumed to be 3%. The DCF-derived fair value comes to SEK14 per share.

Financial statements

Income statement					
US\$m	FY06	FY07	FY08F	FY09F	FY10F
Revenues	0.5	21.3	105.2	156.4	184.5
Cost of goods sold	(1)	(11.3)	(94)	(75.8)	(91.8)
Other operating expenses	(5.2)	(13.4)	(52.9)	(34.1)	(23.6)
EBITDA	(5.7)	(3.5)	(41.7)	46.4	69.1
Depreciation & amortisation	(0.7)	(8.5)	(13.3)	(20.1)	(21.9)
EBIT	(6.4)	(12)	(55)	26.3	47.2
Interest income	1.1	2.6	18.1	1.1	0.6
Interest expense	(3.2)	(11.2)	(5.4)	(5.4)	(5.4)
Other non-operating expenses	-	-	-	-	-
Pre-tax profit	(8.5)	(20.6)	(42.4)	22	42.4
Tax	0.1	(0.9)	(1.7)	(1.3)	(2.5)
Minority interest	-	-	-	-	-
Net profit	(8.4)	(21.5)	(44.1)	20.7	39.9
Shares year end	27	56.9	124.5	124.5	124.5
EPS	(0.3)	(0.4)	(0.4)	0.2	0.3
DPS	-	-	-	-	-
Dividend payout per share (%)	-	-	-	-	-

Company, Nomura estimates

Balance sheet					
US\$m	FY06	FY07	FY08F	FY09F	FY10F
Property, plant & equipment	31.6	105.2	181.8	202.5	202.6
Intangible assets and goodwill	-	-	-	-	-
Investments	0.1	0.4	0.4	0.4	0.4
Other long-term assets	1.6	11.5	64.8	86.7	98.5
Total fixed assets	33.7	117.4	247.3	290	301.8
Inventories	5.8	34.2	180.4	145.4	176
Trade debtors	5.6	19	43.2	42.8	35.4
Short-term investments	0.9	18.4	18.4	18.4	18.4
Cash and cash equivalents	77.9	300.9	54.1	29.4	24.4
Other current assets	-	0.2	0.2	0.2	0.2
Total current assets	90	373	296	236	254
Total assets	123.9	490.1	543.6	526.2	556.2
Shareholders' equity	122.6	397.8	354	374.7	414.6
Minority interest	-	-	-	-	-
Shareholders' equity	122.6	397.8	354	374.7	414.6
Long-term debt	-	77.4	77.4	77.4	77.4
Other long-term liabilities	0	1.4	1.4	1.4	1.4
Long-term liabilities	0	78.8	78.8	78.8	78.8
Short-term debt	-	-	-	-	-
Trade creditors	1.2	13.6	110.8	72.7	62.9
Other current liabilities	-	-	-	-	-
Current liabilities	1.2	13.6	110.8	72.7	62.9
Total liabilities	1.2	92.3	189.6	151.5	141.6
Total liabilities & shareholders' equity	123.9	490.1	543.6	526.2	556.2

Company, Nomura estimates

Cashflow					
US\$m	FY06	FY07	FY08F	FY09F	FY10F
Net profit	(7.8)	(21.5)	(44.1)	20.7	39.9
Depreciation & amortisation	0.6	8.5	13.3	20.1	21.9
Gain from chg in fair values biological assets	-	(5.7)	-	-	-
Gain on equity investment	-	-	-	-	-
Income from affiliates	-	-	-	-	-
Other non-cash items	-	4.7	-	-	-
Increase/decrease in working capital liabilities	0.8	12.3	97.2	(38.1)	(9.8)
Decrease/increase in working capital assets	(11.4)	(36.1)	(170.4)	35.4	(23.2)
Other operating cashflow	2	7.3	(18.1)	(1.1)	(0.6)
Operating cashflow	(15.8)	(30.4)	(122)	36.9	28.1
Disposal of subsidiary	-	-	-	-	-
Sale of fixed assets	(31.1)	(89.9)	(143.2)	(62.8)	(33.7)
Capital expenditure	-	-	-	-	-
Increase in investments	(0.6)	(17.4)	-	-	-
Cashflow - other investing	1	2.6	18.1	1.1	0.6
Cashflow - investing activities	(30.7)	(104.8)	(125.1)	(61.7)	(33.1)
Proceeds from issuance of common stock	-	291.9	0.3	-	-
Increase in long-term borrowing	115.3	69.4	-	-	-
Decrease in borrowings	-	-	-	-	-
Dividends paid	-	-	-	-	-
Cashflow - other financing	-	-	-	-	-
Cashflow from financing	115.3	361.4	0.3	-	-
Change In cash and equivalents	68.8	226.2	(246.8)	(24.7)	(4.9)
Cash & equivalents b/f	6.8	77.9	300.9	54.1	29.4
Translation adjustments	(2.9)	(3.2)	-	-	-
Cash & equivalents c/f	77.9	300.9	54.1	29.4	24.4

Company, Nomura estimates

Our view

Razgulay falls between two stools. It is vertically integrated, its earnings stream is increasingly diversified and it is well capitalised. However, alongside the Russian government's recently established grain-trading agency, Razgulay may lack the scale to compete effectively.

Anchor themes

- ⚓ A highly accomplished management team faces considerable challenges in the next few years. In farming it is one of many competitors, in sugar the market is highly fragmented and in trading we believe it will find it difficult to compete effectively against a government entity.
- ⚓ Razgulay is heavily geared at 43%. Before its recent fundraising almost 64% of its debt was short term. The company's future is looking increasingly fraught on these bases. The recent fundraising may not be sufficient to prevent it from undertaking a significant restructuring.

Closing price on 16 October \$2.00

Fair value estimate **US\$0.81**

Upside/downside **-59%**
EPS difference from consensus **-56%**

Source: Nomura

Nomura vs consensus

We are significantly below consensus and believe that the market has underestimated the fragility of the company's financial position.

From trading to overtrading

① Getting out of trading

The government's decision to establish a state grain trading agency is bad news for Razgulay. Not only is the government able to aggregate in a fragmented marketplace, it will also have a lower cost of capital and superior infrastructure and facilities to Razgulay. The company's decision to de-emphasise this line of business is the right one.

② Vertical integration

Tactically, Razgulay's decision to integrate its sugar operations with a farming operation was the correct strategic move. Nevertheless, the company is one of over 32 farming groups which own over 100,000 ha executing a similar strategy in south western Russia. Input costs may come down but the level of investment to develop this side of the business will be considerable.

③ Timing of capital raising was fortuitous

Razgulay managed to raise almost US\$300m in fresh equity capital in July 2008 just before Russian capital markets were closed. Even then the company still has a 43% net debt/equity ratio. The future is looking increasingly challenging and it remains to be seen whether this capital raising will prove sufficient.

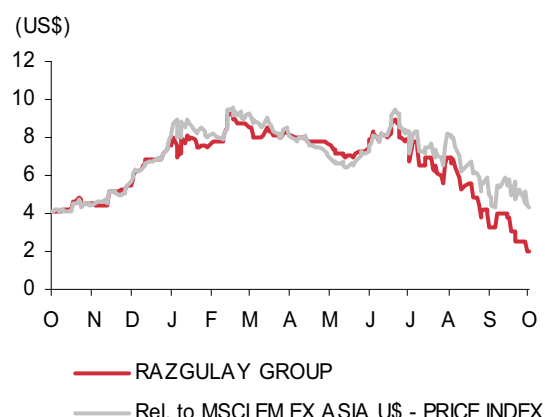
④ At least one valuation argument

We have applied a WACC of 18% to value Razgulay. Our fair value for Razgulay is US\$0.81 per share. We initiate coverage with a SELL call.

Key financials & valuations

31 Dec (RUBm)	FY07	FY08F	FY09F	FY10F
Revenues	3,2610	24,183.7	29,752.4	35,292.2
EBITDA	4,665	2,994.6	3,954.6	4,910.8
Net profit	1,248	594.7	1,222.3	1,878.1
EPS (RUB)	11.5	4.1	7.7	11.9
EPS growth (%)	-	35.7%	87.8%	54.5%
P/E (x)	4.5	12.9	6.8	4.4
EV/EBITDA (x)	4	6.2	4.7	3.8
Price/book (x)	0.5	0.3	0.3	0.3
Dividend yield (%)	-	-	-	-
ROE (%)	8.8%	3.1%	5.1%	7.4%
Net debt/equity (%)	66.3%	43.4%	46.1%	30.4%

Company, Nomura estimates



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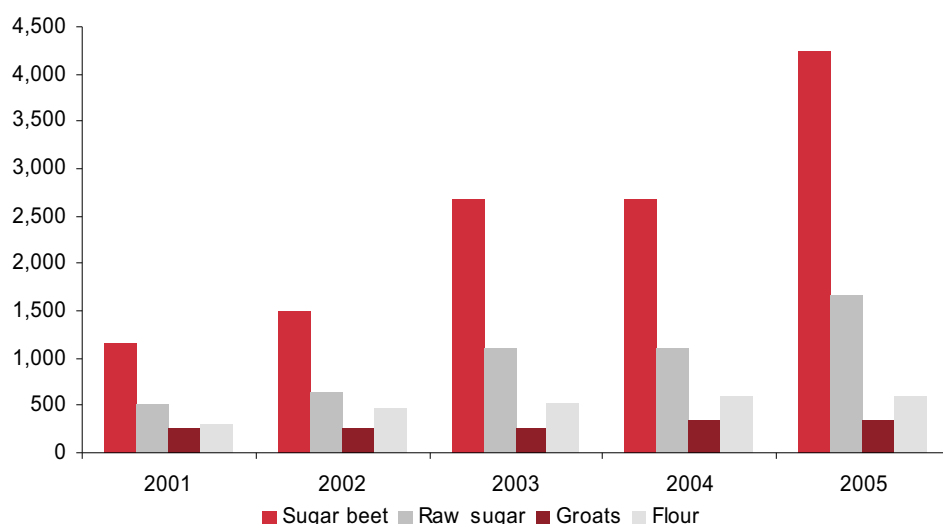
Company background

Razgulay Group is a Russian agricultural holding involved in the cultivation, processing and trading of sugar and select cereals such as wheat, rice and barley. The company controls 11.7% of the sugar market, approximately 10% of the grain market, 16% of the groats market, 6% of the grain export market and 3% of the flour market. Razgulay operates through two divisions – the sugar division and the grain division. The sugar division owns controlling stakes in 13 sugar plants and 1 milk and canning plant, with sugar beet processing capacity of 4.3m tons per year and raw sugar processing capacity of 1.5m tons per year. The grain division operates 25 facilities that store and process grain, including 13 elevators, 1 port elevator, 6 flour-milling plants and 6 groats plants.

Vertically integrated agricultural holding company

Razgulay started off in 1992 as a trader of sugar and petroleum products between Russia and Ukraine. Igor Potapenko, the current chairman and largest shareholder, was a key founder. In 1995, the company diversified its operations with the acquisition of a sugar factory in the Belgorod region. This was followed by a series of acquisitions of sugar mills, elevators and grain processing companies. The following chart shows the progression of Razgulay’s capacities.

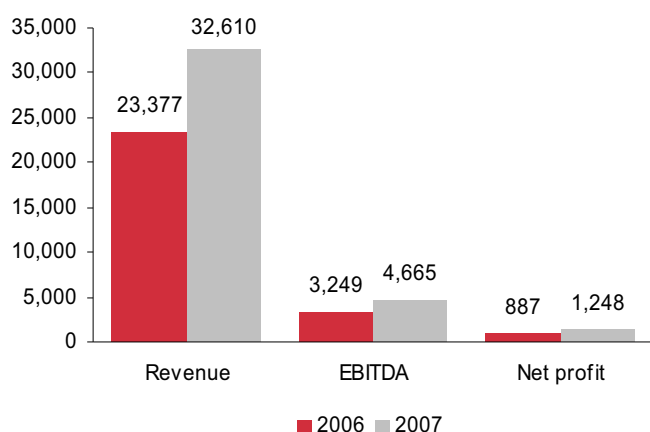
Exhibit 196. Razgulay’s processing capacities ('000 tons)



Source: Company data

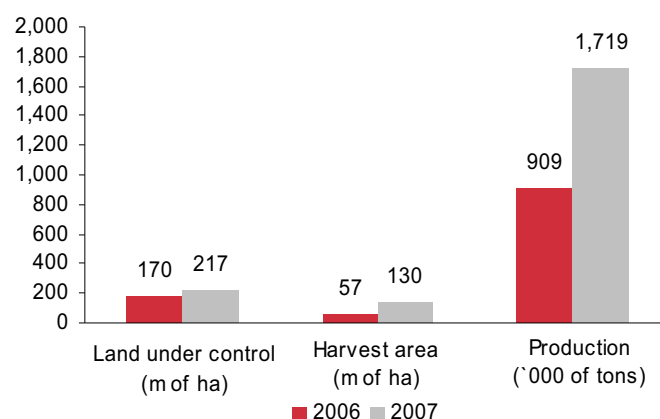
The company has approximately 217,000 ha of land under operational control, of which 130,000ha were cultivated in 2007. Total output in 2007 was 1,719,000 tons, generating revenues of RUB32,610m and EBITDA of RUB4,665m.

Exhibit 197. Financial snapshot (RUBm)



Source: Company data

Exhibit 198. Operational snapshot



Source: Company data

Razgulay listed 28% of its shares in March 2006 on the Russian Trading System Stock Exchange (RTS), raising US\$144m. The company made a follow-up offer in November 2007, raising US\$70m. A third public fundraising took place in July 2008, which raised US\$295m.

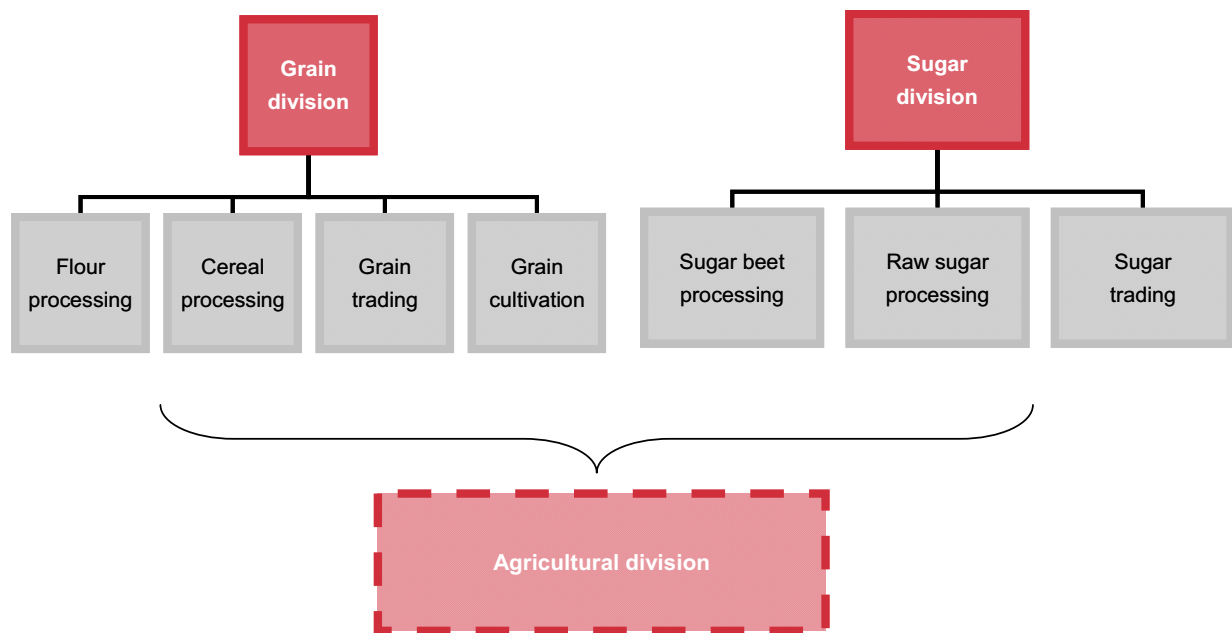
IPO in March 2006

Strategy & operations

Razgulay began life in 1992 as an agricultural trader and eventually integrated vertically into processing and cultivation. The company's strategy over the next few years is to expand its cultivation business and develop its own-branded products. The agricultural division is being formed by transferring the company's land interests and operations from the grain and sugar divisions.

Creation of the agriculture division

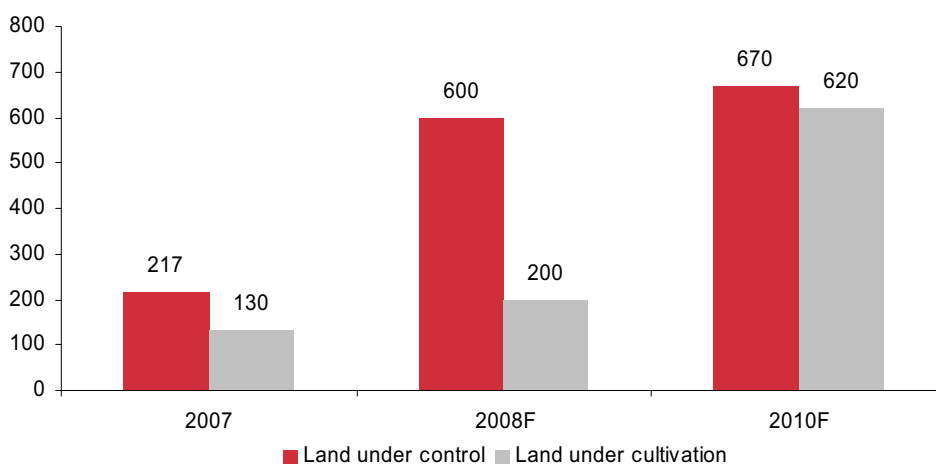
Exhibit 199. Organisation structure



Source: Company data

Razgulay's focus over the next few years will centre on the agricultural division, with the immediate focus to expand the land bank and significant investment into equipment and technologies to improve yields and operational efficiency. The company plans to increase land under control from 217,000 ha at the end of 2007 to 670,000 ha by end of 2010. Of this, Razgulay will likely cultivate nearly 620,000 ha, up from 130,000 ha in 2007.

Exhibit 200. Land under control and cultivation ('000 of ha)

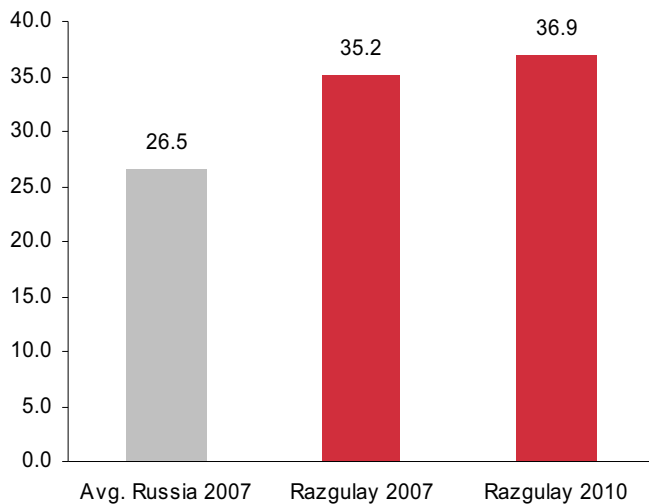


Source: Company data

The company plans to use modern farming processes to increase yields substantially. Razgulay expects its wheat yields to improve from 2.7 tons/ha in 2007 to 3.5 tons/ha in 2010. Razgulay's yield was above the average yield in Russia in 2007, which was only 2.1 tons/ha. However, even the forecast 2010 yield of 3.5 tons/ha is still highly conservative compared to the EU, which averaged 5.1 tons/ha in 2007. There are areas in south western Russia where yields were over 6 tons/ha in the summer of 2008 and, in some cases, yields rose as high as 8 tons/ha.

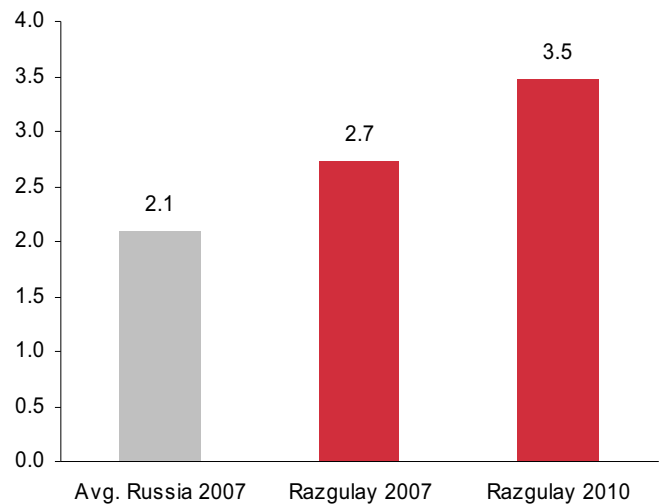
Modern methods to increase yields

Exhibit 201. Sugar beet yield (tons/ha)



Source: Company data

Exhibit 202. Wheat yield (tons/ha)



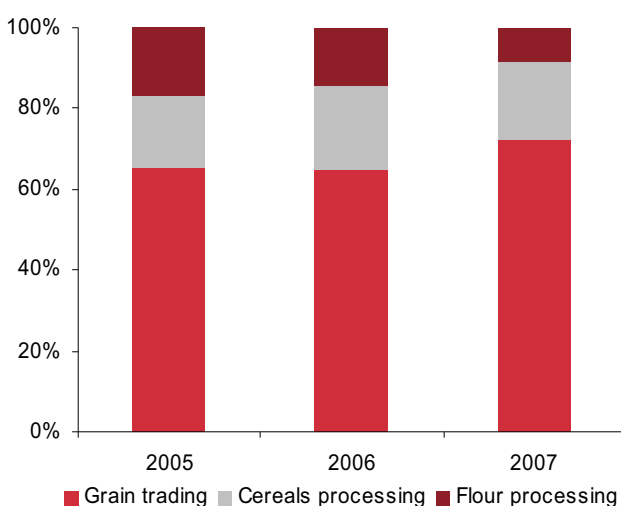
Source: Company data

Grain division

Razgulay's grain division is involved in grain cultivation, trading, flour and cereal processing, with the cultivated grains either traded or processed. Of these activities, trading constitutes the largest part both in terms of volumes and revenues. The revenue contribution in 2007 from trading was 72% while the EBITDA contribution was 58%.

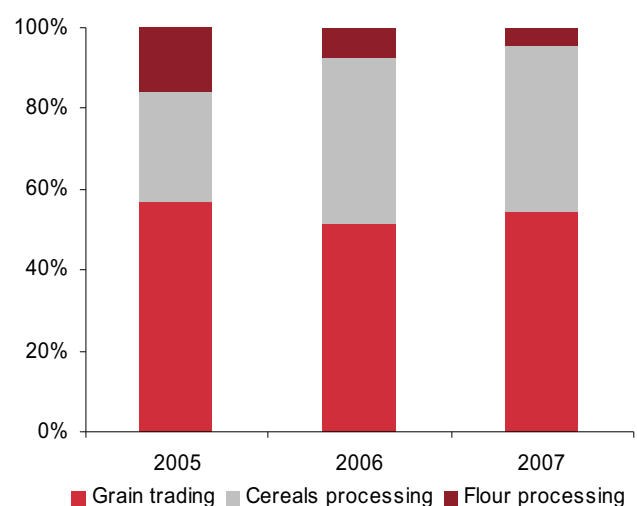
Trading, cereal processing and flour processing

Exhibit 203. Grain division revenue contribution (%)



Source: Company data

Exhibit 204. Grain division EBITDA contribution (%)



Source: Company data

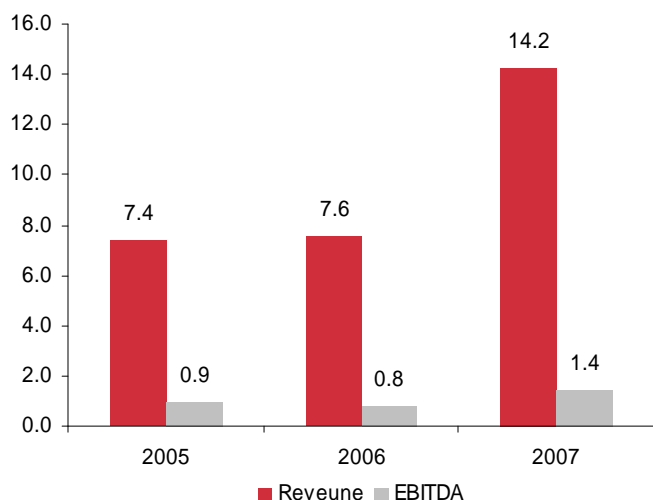
Grain trading

The grain trading business grew impressively in 2007 with revenue growth of 87% y-y. This was mostly due to greater export volumes, which nearly doubled from 450,000 tons in 2006 to 850,000 tons in 2007, and, of course, higher prices, which reached a

High volumes but low margins

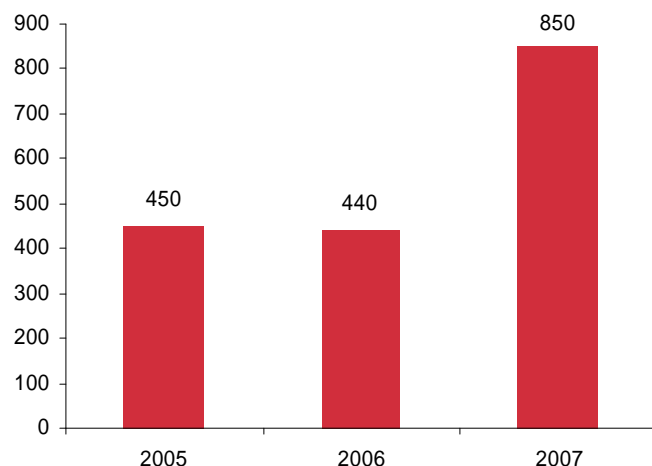
12-year peak of US\$450-500/ton in the case of wheat. This led to the sales contribution from trading increasing from 65% of revenues in 2006 to 72% in 2007. Similarly, the EBITDA contribution from trading increased from 51% in 2006 to 58% in 2007.

Exhibit 205. Grain trading revenue & EBITDA (RUBbn)



Source: Company data

Exhibit 206. Export volumes ('000 of tons)



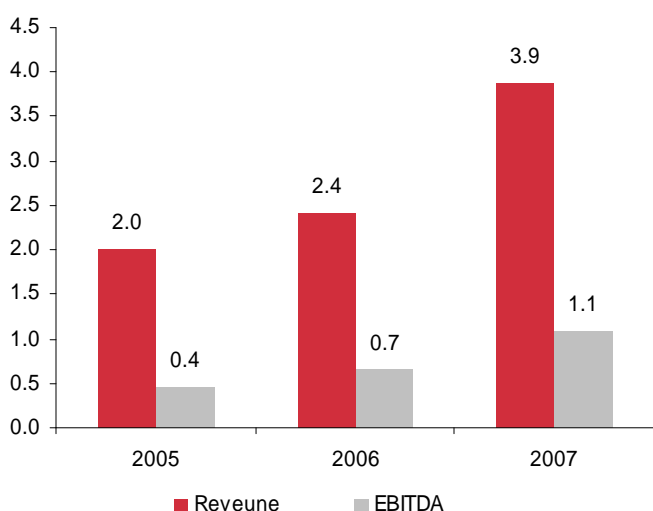
Source: Company data

Cereal processing

Cereal processing accounted for approximately 20% of grain division revenues in 2007 and 35% of EBITDA. Razgulay primarily processes rice and imports most of its requirements. Given the steep import duties Russia imposes on rice, processing its own rice leads to higher margins. Razgulay has increased its rice harvest over the past two years, from a negligible amount in 2005 to 90,000 tons in 2006 and 105,000 tons in 2007. This increase in share of its own-grown rice helped Razgulay widen its cereal processing EBITDA margins from 22.2% in 2005 to 28% in 2007.

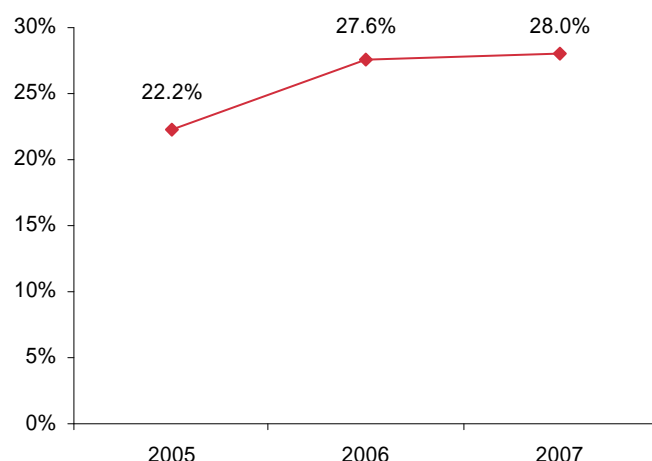
Higher proportion of own-grown rice improved EBITDA margins

Exhibit 207. Cereal processing revenue & EBITDA (RUBbn)



Source: Company data

Exhibit 208. Cereal processing EBITDA margins (%)



Source: Company data

Flour processing

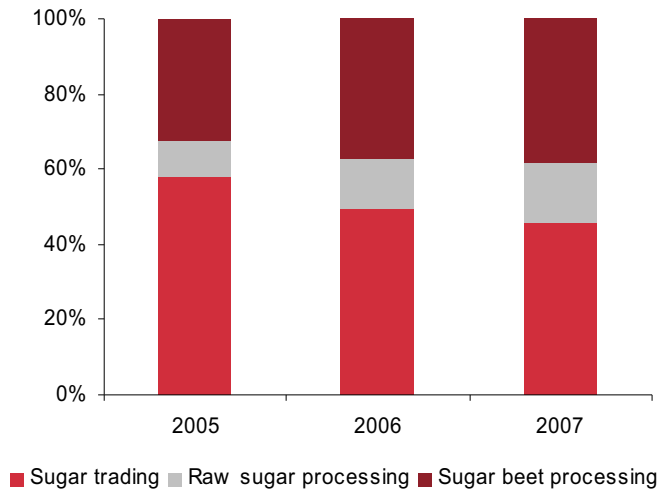
Razgulay's flour processing division is a smaller component of its business and has low EBITDA margins. The revenue and EBITDA contribution from this division has been in decline over the past two years. This trend is likely to continue.

Sugar division

Razgulay's Sugar division is involved in the processing of sugar beet and raw sugar, and the trading of white sugar. Sugar trading contributed 46% to the division's revenues in 2007, followed by sugar beet processing with 38%. However, in terms of EBITDA, sugar beet processing contributed 69%, while trading contributed only 19%, due to the higher margins involved in sales of sugar from sugar beet.

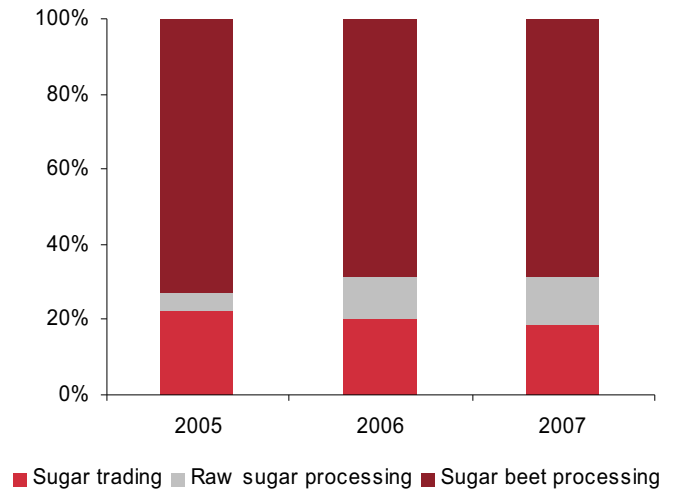
Sugar trading contribution is on the decline

Exhibit 209. Sugar division revenue contribution



Source: Company data

Exhibit 210. Sugar division EBITDA contribution

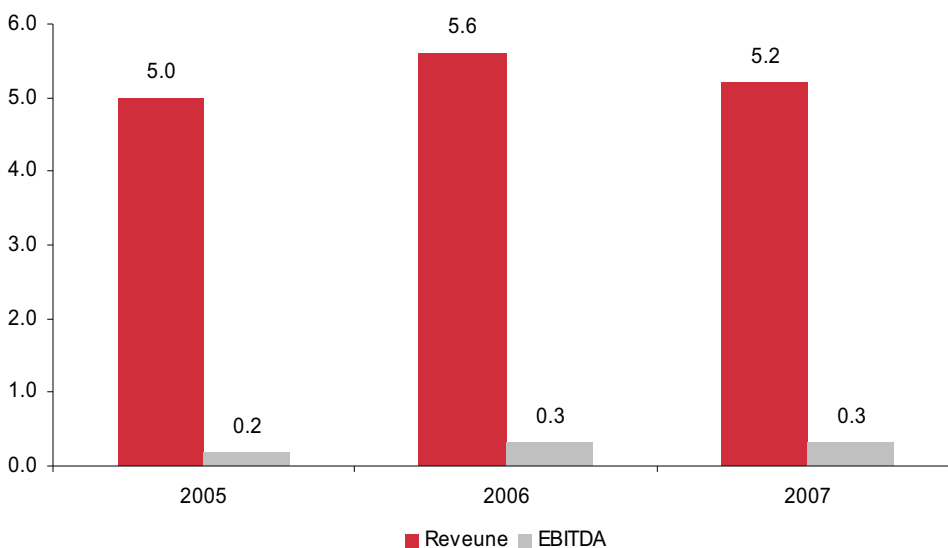


Source: Company data

Sugar trading

Sugar trading is a high volume, low margin business and Razgulay is looking to reduce its contribution from this business. The revenue contribution from trading has fallen from 58% in 2005 to 46% in 2007. An added sense of urgency has been added to this strategic shift on the basis of the Russian government's decision to establish a state-grain trading agency. Given the lower cost of capital that the Russian government enjoys compared to the Russian corporate sector, Razgulay is right to de-emphasise its position in this sector of the market.

Exhibit 211. Sugar trading – revenue and EBITDA (RUBbn)



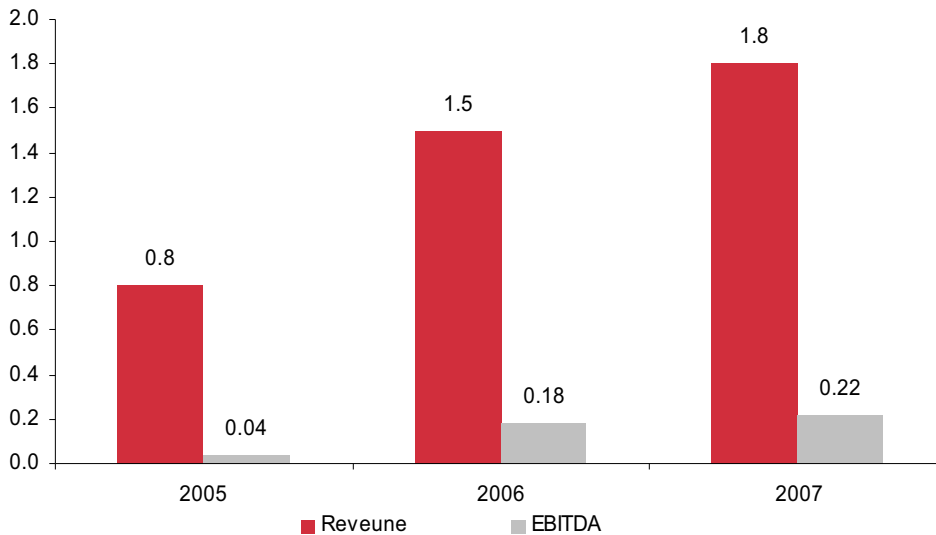
Source: Company data

Raw sugar processing

Raw sugar processing is a low margin business which helps Razgulay utilise its processing facilities after the sugar beet harvesting season is over. Raw sugar, for the purpose of processing, is imported and attracts high duties, as a part of the Russian government's plan to encourage domestic sugar beet production. In common with the company's trading business, Razgulay intends to reduce the contribution of this business and concentrate on the high-margin sugar beet processing business.

Low margin business, but improves utilisation rates

Exhibit 212. Raw sugar processing – revenue and EBITDA (RUBbn)



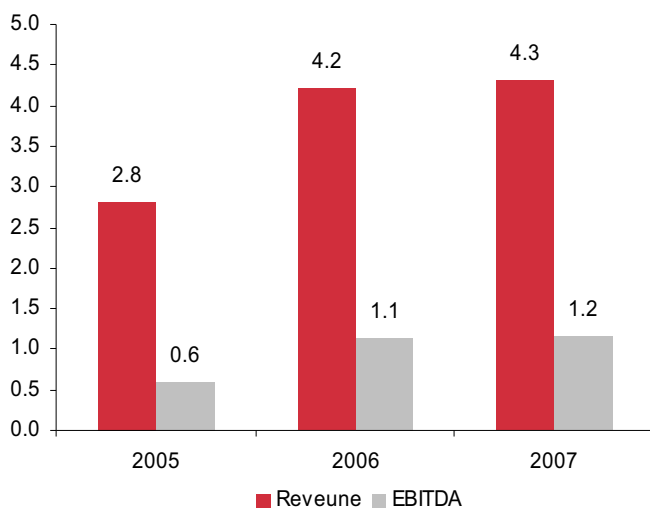
Source: Company data

Sugar beet processing

Sugar beet processing is a key business for Razgulay as the margin on white sugar made from sugar beet is higher than that on raw sugar. The revenue contribution from sugar beet processing has increased from 33% in 2005 to 38% in 2007. To increase margins further, the company is also increasing the share of own-grown sugar beet. In 2007, Razgulay harvested 1,477,000 tons of sugar beet, up from 760,000 tons in 2006.

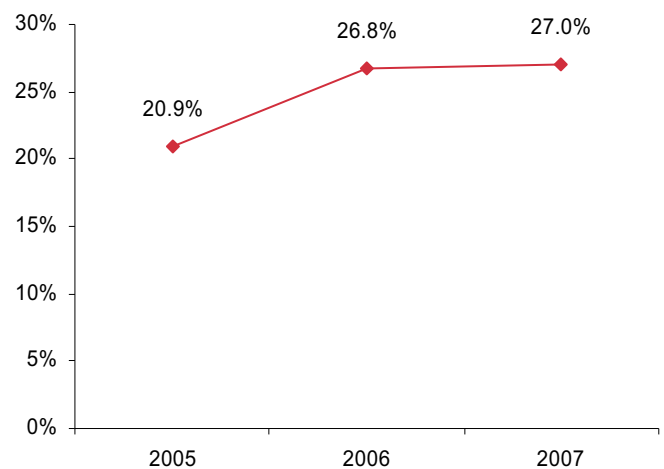
Higher EBITDA margins from greater use of own-grown sugar beet

Exhibit 213. Sugar beet processing revenue & EBITDA (RUBbn)



Source: Company data

Exhibit 214. Sugar beet processing EBITDA margins (%)



Source: Company data

Prospects and outlook

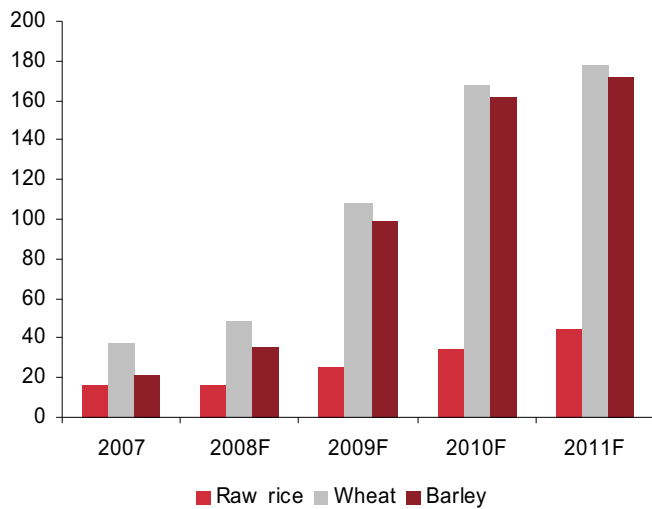
As we noted previously, Razgulay is placing a greater emphasis on the processing of its own-grown grains and sugar beet, which enjoys higher margins (and a lower risk profile) than the company's trading activities. The company plans to increase land under cultivation from 130,000 ha in 2007 to 620,000 ha in 2010. Our forecasts reflect this shift from trading towards processing.

Focus on agricultural operations – more own-grown rice and sugar beet

Grain division

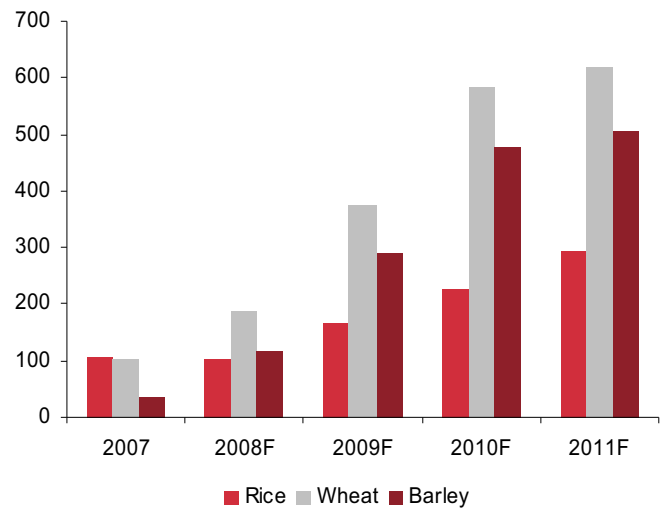
Razgulay's grain division currently harvests approximately 74,000 ha of land for rice, wheat and barley. Our forecast assumes that this will rise to 364,000 ha by 2010, and 394,000 ha by 2011.

Exhibit 215. Cultivated area ('000 ha)



Source: Company data

Exhibit 216. Harvest ('000s of tons)

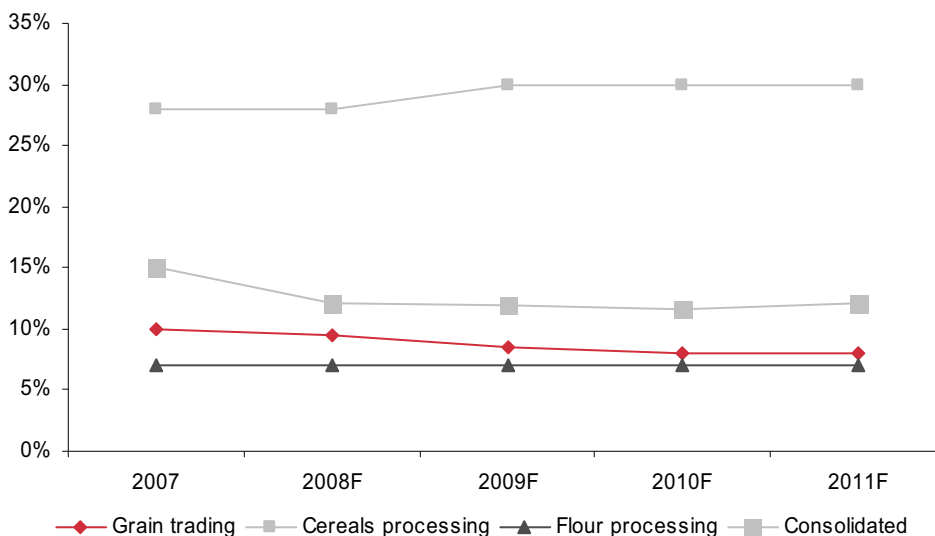


Source: Company data

Given their low EBITDA margins, flour processing and grain trading will become less important to Razgulay and will likely grow only slowly in the years ahead. Trading will face additional pressure from the state trading agency and, hence, will also see lower margins. Cereal processing will likely see the increased use of own-grown rice and, consequently, we expect marginally higher EBITDA margins in this business. However, given the large contribution from trading, overall we expect grain division EBITDA margins to decline to almost 12.1% by 2011 from 15% currently.

Decrease in EBITDA margins to 12.1% by 2011

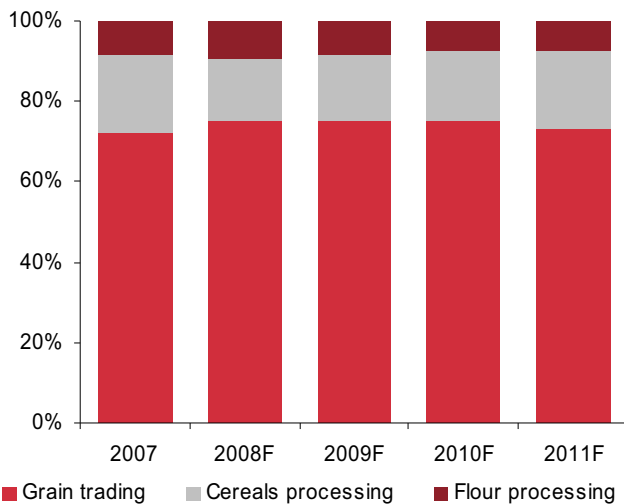
Exhibit 217. Grain division EBITDA margins (%)



Source: Company data

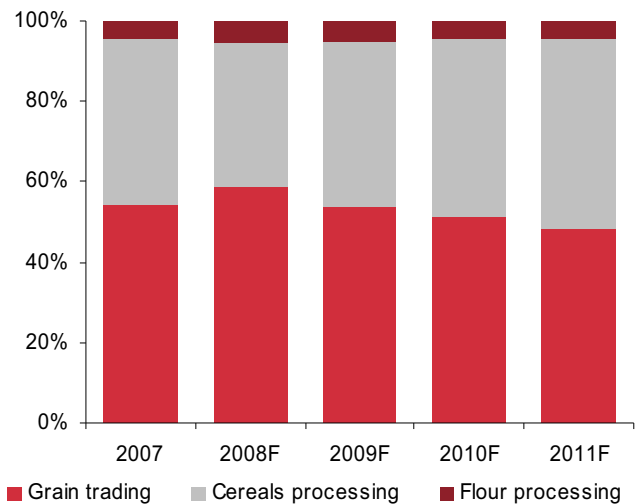
In the period 2007-2011, we forecast that grain division revenues will likely remain stagnant and EBITDA will decrease at a compounded rate of 3%.

Exhibit 218. Grain division revenue contribution (%)



Source: Company data

Exhibit 219. Grain division EBITDA contribution (%)

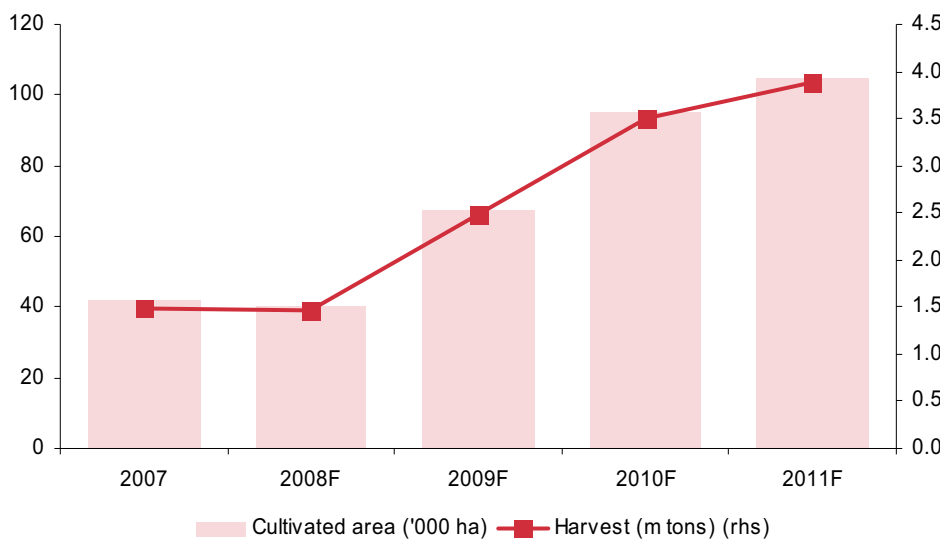


Source: Company data

Sugar division

We reckon that sugar trading will likely decline and raw sugar processing will stagnate as Razgulay focuses on sugar beet processing. We forecast that the company will likely expand its sugar beet cultivation to 105,000 ha in 2011, up from 42,000ha in 2007. We forecast that sugar beet production will increase to 3.9m tons in 2011, up from 1.5m tons in 2007.

Exhibit 220. Sugar beet – cultivated area and harvest

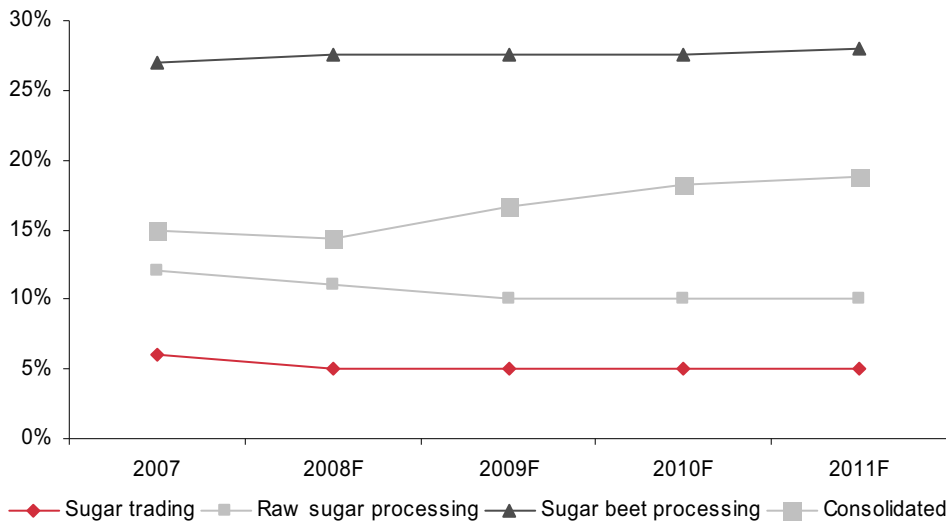


Source: Company data

As Razgulay increasingly uses its own-grown sugar beet, sugar beet processing will see higher EBITDA margins – rising to 28% by 2011 on our estimates, up from 27% in 2007. This would lead the sugar division margin to increase to 18.8% in 2011, from 15% in 2007.

Manifold increase in sugar beet cultivation ...

Exhibit 221. Sugar division EBITDA margins (%)

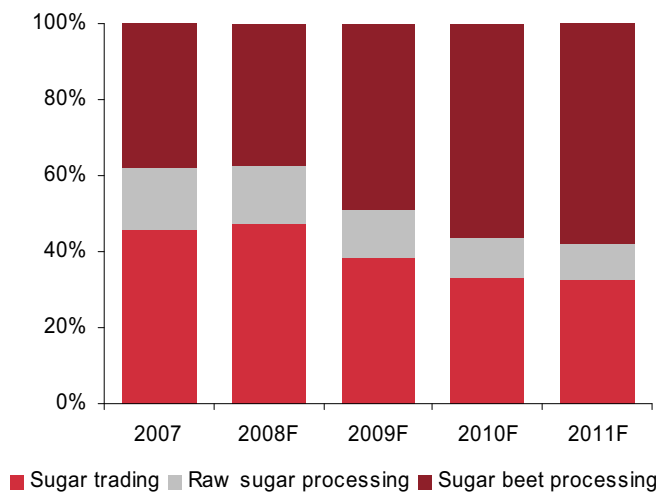


... to expand EBITDA margins

Source: Company data

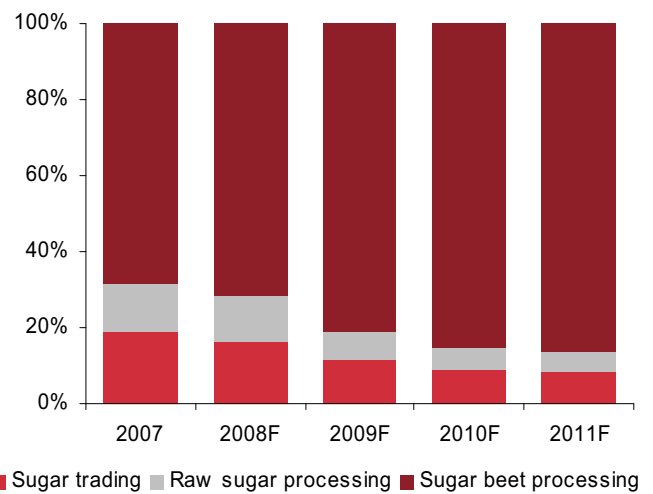
In the period 2007-2011, we forecast that sugar division revenues will likely rise at a compound annual growth rate of 10% while EBITDA grows at a compound rate of 13%. During the same period we expect sugar beet processing revenues to grow at an annual rate of 22% while EBITDA grows at an annual compound rate of 23%.

Exhibit 222. Sugar division revenue contribution (%)



Source: Company data

Exhibit 223. Sugar division EBITDA contribution (%)

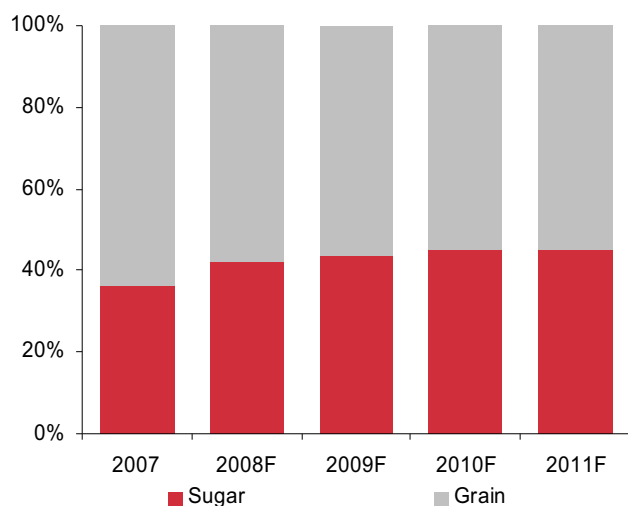


Source: Company data

Group level

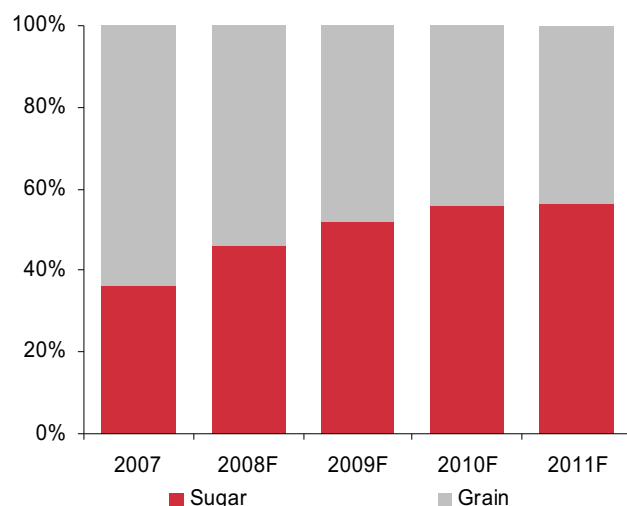
At group level, we expect revenue to grow from RUB33bn in 2007 to RUB36bn in 2011, a compound growth rate of 2.5% per annum. We forecast that EBITDA will likely grow from RUB4.7bn in 2007 to RUB5.4bn in 2011, a compounded growth rate of 4% per annum.

Exhibit 224. Razgulay group revenue (RUBbn)



Source: Company data

Exhibit 225. Razgulay group EBITDA (RUBbn)



Source: Company data

Valuation

We have employed the discounted free cash flow method to value the company. The weighted average cost of capital is taken to be 18%, reflecting the risks associated with Russia. To take into account, Razgulay's long-term growth potential, the terminal growth rate is assumed to be 3%. The DCF-derived fair value is RUB0.81 per share.

Financial statements

Income statement (RUBm)

Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Revenues	23,377	32,610	24,183.7	29,752.4	35,292.2
Cost of goods sold	(17,769)	(25,511)	(18,137.7)	(22,314.3)	(26,469.2)
Other operating expenses	(2,359)	(2,434)	(3,051.3)	(3,483.5)	(3,912.2)
EBITDA	3,249	4,665	2,994.6	3,954.6	4,910.8
Depreciation & amortisation	(893)	(1,143)	(982.8)	(1,113.3)	(1,174.8)
EBIT	2,356	3,522	2,011.8	2,841.3	3,736
Interest income	139	292	322	403.1	299.3
Interest expense	(974)	(1,357)	(1,357)	(1,391)	(1,391)
Other non-operating expenses	(6)	35	-	-	-
Pre-tax profit	1,515	2,492	976.8	1,853.4	2,644.3
Tax	(593)	(1,262)	(390.7)	(648.7)	(793.3)
Minority interest	35	(18)	(8.6)	(17.6)	(27.1)
Net profit	887	1,248	594.7	1,222.3	1,878.1
Shares year end	104.4	108.2	146.3	158.1	158.1
EPS	8.5	11.5	4.1	7.7	11.9
DPS	-	-	-	-	-
Dividend payout per share (%)	-	-	-	-	-

Company, Nomura estimates

Balance sheet (RUBm)

Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Property, plant & equipment	15,486	14,606	24,023.2	27,109.8	26,435
Intangible assets and goodwill	887	783	783	783	783
Investments	250	286	286	286	286
Other long-term assets	601	2,751	2,751	2,751	2,751
Total fixed assets	17,224	18,426	27,843.2	30,929.8	30,255
Inventories	3,477	3,436	2,442.9	2,751.1	2,900.7
Trade debtors	5,503	12,274	9,102.4	8,966.5	8,702.2
Short-term investments	1,506	2,132	2,132	2,132	2,132
Cash and cash equivalents	2,193	2,696	3,374.4	2,505.3	5,976.6
Other current assets	-	-	-	-	-
Total current assets	12,679	20,538	17,052	16,355	19,712
Total assets	29,903	38,964	44,894.9	47,284.7	49,966.5
Shareholders' equity	12,701	15,747	23,160.8	24,383.1	26,261.2
Minority interest	1,468	1,295	1,286.4	1,268.8	1,241.7
Shareholders' equity	14,169	17,042	24,447.2	25,651.9	27,502.9
Long-term debt	3,997	5,002	5,002	5,352	5,352
Other long-term liabilities	1,814	1,380	1,380	1,380	1,380
Long-term liabilities	5,811	6,382	6,382	6,732	6,732
Short-term debt	8,726	8,987	8,987	8,987	8,987
Trade creditors	1,197	5,101	3,626.7	4,461.8	5,292.6
Other current liabilities	-	1,452	1,452	1,452	1,452
Current liabilities	9,923	15,540	14,065.7	14,900.8	15,731.6
Total liabilities	15,734	21,922	20,447.7	21,632.8	22,463.6
Total liabilities & shareholders' equity	29,903	38,964	44,894.9	47,284.7	49,966.5

Company, Nomura estimates

Cashflow (RUBm)					
Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Net profit	922	1,230	586.1	1,204.7	1,851
Depreciation & amortisation	893	1,143	982.8	1,113.3	1,174.8
Gain from chg in fair values of biological assets	(410)	(1,600)	-	-	-
Gain on equity investments	6	(35)	-	-	-
Income from affiliates	-	(1,287)	-	-	-
Other non-cash items	1,544	2,465	1,425.7	1,636.6	1,885
Increase/decrease in working capital liabilities	2,233	4,839	(1,474.3)	835.1	830.8
Decrease/increase in working capital assets	(10,332)	(6,866)	4,164.7	(172.2)	114.7
Other operating cashflow	(1,486)	(1,173)	(1,425.7)	(1,636.6)	(1,885)
Operating cashflow	(6,630)	(1,284)	4,259.3	2,980.9	3,971.3
Disposal of subsidiary	2,864	1,746	-	-	-
Sale of fixed assets		53	-	-	-
Capital expenditure	(1,916)	(3,405)	-	-	-
Increase In investments		(3)	(10,400)	(4,200)	(500)
Cash flow - other investing	(2,672)	(477)	-	-	-
Cash flow - investing activities	(1,724)	(2,086)	(10,400)	(4,200)	(500)
Proceeds from issuance of common stock	722	1,591	6819.1	-	-
Increase In long-term borrowings	19,441	21,696	-	350	-
Decrease in borrowings	(10,145)	(19,444)	-	-	-
Dividends paid	-	-	-	-	-
Cash flow - other financing	(30)	30	-	-	-
Cash flow from financing	9,988	3,873	6,819.1	350	-
Change In cash and equivalents	1,634	503	678.4	(869.1)	3,471.3
Cash & equivalents b/f	559	2,193	2,696	3,374.4	2,505.3
Translation adjustments	-	-	-	-	-
Cash & equivalents c/f	2,193	2,696	3,374.4	2,505.3	5,976.6

Company, Nomura estimates

Our view

Astarta is Ukraine's Razgulay – a vertically integrated sugar producer with roots in trading and burgeoning farming interests. We see the company as a long-term beneficiary of a changing economic landscape in Ukraine. However, the short-term outlook for the company is negative given the parlous state of Ukraine's economy.

Anchor themes

- ⚓ Astarta is another CIS agricultural company which is enhancing yields, adding farmland, finding efficiencies and opening up new lines of business. It currently exports little of its output but we expect this to change in the next few years.
- ⚓ The absence of stable government, twin deficits and a deteriorating global environment suggest that Ukraine might be on the verge of an economic catastrophe. Bad for everyone, no doubt, but for a company with net gearing of 51%, 62% of it in foreign currency and 80% of it short term, especially worrisome.

In the line of fire

① Is Ukraine the new Argentina?

Ukraine's economic problems are profound. The country's governing coalition has fallen apart and its trade and fiscal deficits are a huge cause for concern. A major devaluation of the currency, while generally speaking appalling for everyone, will be a great boost for export-driven, low-cost farmers. Astarta could be a major beneficiary. A pity that the country will have to go through this potential horror first.

② Ambitious but leveraged

The company has plans to increase the size of its land bank from 155,000 ha in 2008 to 250,000 ha by 2012. Its yield forecasts are conservative while existing yields are higher than the Ukrainian average. The company's sugar operations focus on the higher end of the wholesale market and thus command premium prices and margins. Astarta's net debt/equity is 51%; some 62% of the debt is denominated in foreign currency and 80% of it is short term. The company appears dangerously exposed to currency depreciation.

③ Diversification strategy

Astarta has expanded into the cattle farming business and this now accounts for some 8% of sales. Exports only account for some 7% of sales currently. We expect that the focus on new sales to Russia and the EU will be helped along by any further devaluation of the currency – in the long-run.

④ Initiating coverage with a SELL rating.

We have applied a WACC of 20% to Astarta, which gives us a DCF-derived fair value of PLN15 per share. We initiate coverage with a SELL rating.

Closing price on 16 October **PLN18.00**
Fair value estimate **PLN15.00**

Upside/downside **-17%**
EPS difference from consensus **-2%**

Source: Nomura

Nomura vs consensus

Our estimates are in line with consensus. However, our discount rates are considerably higher given that exchange rate risk in Ukraine is rising alarmingly.

Key financials & valuations

31 Dec (EURm)	FY07	FY08F	FY09F	FY10F
Revenues	87.7	151.5	158.6	180.6
EBITDA	30.8	47.7	47.1	52.5
Net profit	21.6	31.3	29.4	26
EPS (EUR)	0.9	1.3	1.2	1
EPS growth (%)	-	44.4%	(7.7%)	(16.7%)
P/E (x)	6.2	4.2	4.5	5.1
EV/EBITDA (x)	-	3.9	4	3.6
Price/book (x)	1.3	1	0.8	0.7
Dividend yield (%)	-	-	-	-
ROE (%)	28.6%	29.1%	21.6%	16%
Net debt/equity (%)	51.3%	40.2%	19.6%	5.9%

Company, Nomura estimates



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Company background

In less than 15 years Astarta has evolved from a local trading company to become the second largest producer of sugar in Ukraine. The company has acquired sugar plants and has expanded into agricultural enterprises in recent years. It now has an 8-9% share of the local sugar market. It is vertically integrated and benefits from scale economies. The company's approach is conservative and any disappointment is likely to come from the slightly less than benign political and macro-economic outlook.

Astarta is a vertically integrated operator and produces more than 70% of the sugar beet required for its sugar production. It plans to increase this proportion to 80% by the end of this year. This will likely result in significant cost savings for the company given that own-grown sugar beet costs 18-20% less than that of externally sourced sugar beet. It also reduces Astarta's dependence on beet suppliers.

The company has a strong presence in the industrial sugar segment due to the high quality sugar it produces. The company is benefiting from the growing demand for soft drinks in Ukraine. A number of leading soft drinks manufacturers such as Coca Cola and Slavutych are customers. This focus on the industrial sector allows Astarta to charge a 30% price premium to the average sugar price in Ukraine.

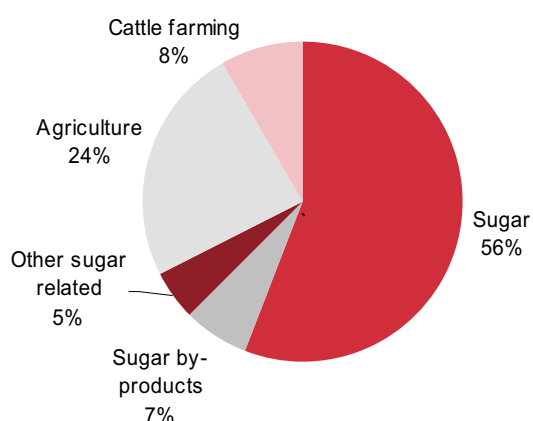
The company's crop yields are higher than average crop yields in Ukraine because it employs better farming techniques and uses higher quality seeds and fertilisers. Wheat and corn yields at Astarta are 3.2 tons/ha and 6.5 tons/ha respectively, considerably higher than the Ukrainian average of 2.3 tons/ha for wheat and 3.9 tons/ha for corn.

Although sugar beet is the company's main crop, it also produces wheat, barley, corn, soybeans and sunflowers and has some cattle farming operations. Astarta plans to expand its farming operations by 60% to 250,000 ha in 2012. The company also aims to increase crop yields by 50% during the same period. Given the company's conservative approach to estimates, this is reasonable, albeit ambitious. Together, these moves would translate into significant growth in output. The company is also planning to modernise its production facilities and agricultural machinery fleet, which would result in better utilisation of its sugar plants and infrastructure.

Origins in sugar trading

Presence in the industrial market implies price premium

Exhibit 226. Revenue breakdown – 2007 (%)



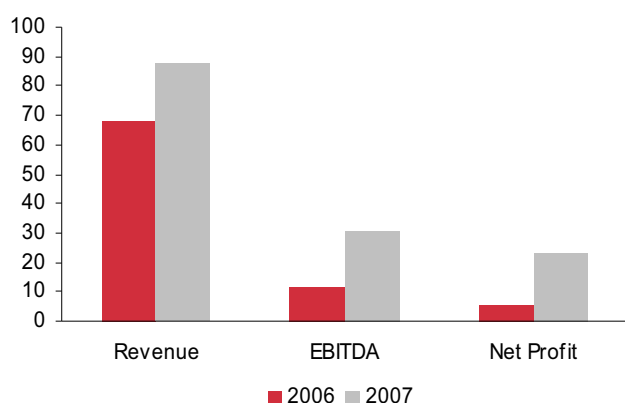
Source: Company data

Astarta was established in 1993 as a trading firm specialising in sugar and petroleum products. In 1996, the company shifted its focus towards building a wider agribusiness, and since then it has acquired a number of sugar plants and agricultural farms. Currently, the company controls six sugar plants, 56 agricultural firms and a mixed fodder plant. In 2007, Astarta produced 155,500 tons of sugar, with approximately 72% going to the wholesale segment ie, large industrial companies producing confectionary,

6 sugar plants, 56 agricultural farms and 1 mixed fodder plant

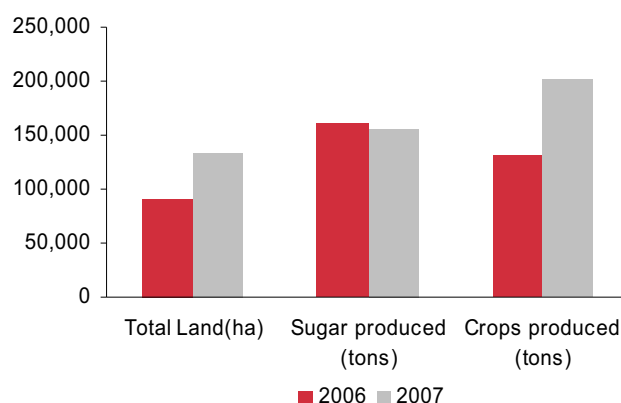
beverages, dairy and tobacco. On the agriculture side, Astarta has leased nearly 134,170ha in 2007, of which 92,000ha was cultivated. Total output was 856,000 tons of sugar beet and 201,000 tons of grains and oilseeds. In 2007, the company's revenues were EUR87.7m, EBITDA was EUR30.8m and net profit was EUR22m.

Exhibit 227. Financial snapshot (EURm)



Source: Company data

Exhibit 228. Operational snapshot



Source: Company data

Astarta offered 20% of its shares in an IPO in August 2006 for EUR24.3m and became the first Ukrainian company to be listed on the Warsaw stock exchange. The remaining 80% is split equally between Victor Ivanchyk, the CEO, and Valery Korotkov, the Chairman of the Board of Directors.

Strategy

Astarta's strategy is to increase its market share in Ukraine through organic growth and acquisition as well as to enter new markets such as Russia, the EU and the CIS. The company's goals for 2012 are (1) to expand the company's operational land bank, (2) to raise yields on primary crops, (3) to reinforce business synergies and vertical integration, (4) to improve logistics and increase the efficiency of production and (5) to diversify sales.

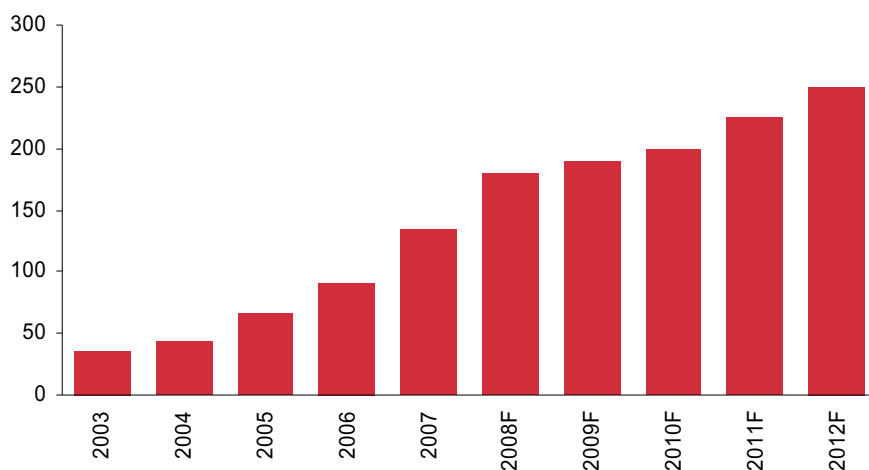
Expansion of the company's operational land bank

By June 2008, Astarta had approximately 155,000 ha under lease and had plans to expand its land bank to 250,000 ha by 2012. Since Ukrainian law prohibits the sale of land, it follows that the leasing route is the only mechanism available to Astarta.

Astarta increases land under cultivation by concluding legal agreements with agricultural land-owners or by acquiring corporate rights in legal enterprises which, in turn, have agreements with land-owners. Leasing land gives Astarta pre-emptive rights to buy out the land under lease, which may be useful when the moratorium on land sale is lifted.

155,000 ha in 2008; 250,000 ha by 2012

Exhibit 229. Agricultural area ('000 ha)



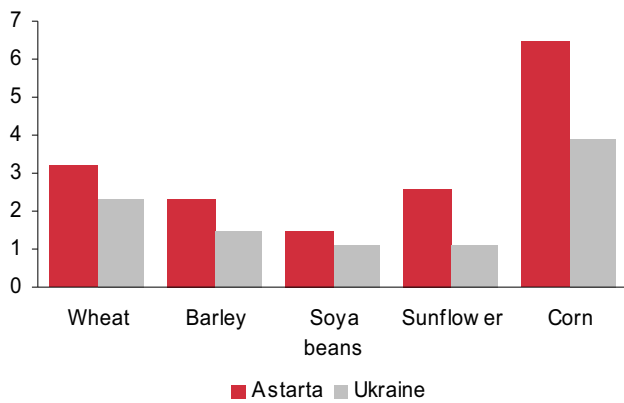
Source: Company data, Nomura estimates

Raising yields of primary crops

In addition to expanding the company's land under cultivation, Astarta aims to increase the yield of its principal crops by around 50% by 2012. The company already has higher yields than the Ukrainian average. For example, Astarta's sugar beet yield of 41 tons/ha is 40% higher than the average Ukrainian yield of 29.2 tons/ha. To enhance yields further will require an improvement in soils and investment in agricultural machinery. With an increase in land and yields, Astarta aims to produce 400,000 tons of sugar and 700,000 tons of grains and oilseeds in 2012. The share of crop sales and cattle farming in revenues is expected to increase to 35% in 2012 from about 32% in 2007.

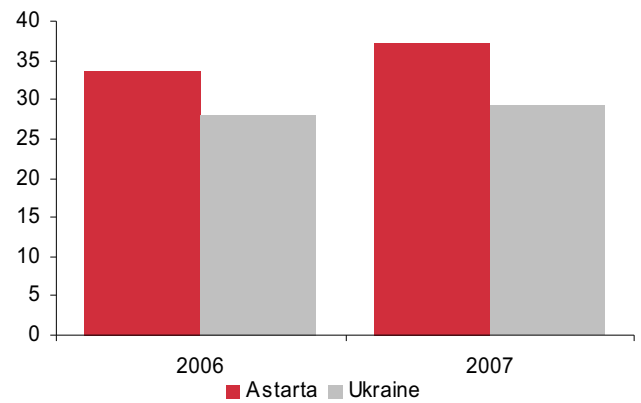
Astarta's crop yields higher than Ukraine's

Exhibit 230. Crop yields (tons/ha)



Source: Company data

Exhibit 231. Sugar beet yields (tons/ha)



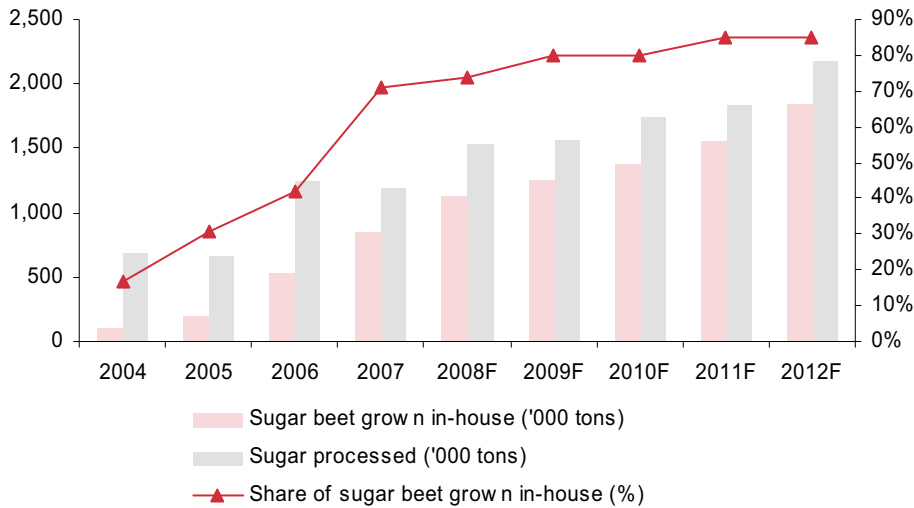
Source: Company data

Reinforcing synergies and vertical integration

In common with its peers, Astarta is looking for synergies across its farming and sugar refining operations by increasing the share of own-grown sugar beet used in sugar production. In 2007, sugar beet produced internally was 71% compared with 42% in 2006. The company plans to increase this to 85% by 2012. As we noted earlier, the cost of own-grown sugar beet is 18-20% lower than that of sugar beet procured from third-parties. We believe that, given its focus on increasing land under cultivation and yields, it will not be difficult for Astarta to increase the overall share of own-grown sugar beet.

Own sugar beet ensures cheap and reliable raw material for producing sugar

Exhibit 232. Own-grown sugar beet



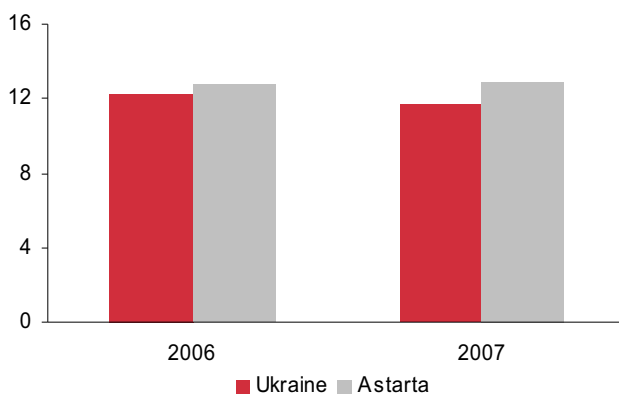
Source: Company data, Nomura estimates

Improving logistics and increasing efficiency of production

Astarta plans to improve and modernise its current production assets and farm facilities. In 2007, the company's sugar plants launched a four-year modernisation programme aimed at decreasing fuel consumption and increasing overall efficiency. Fuel and electricity costs constituted close to 15% of COGS in the past two years. Therefore, a reduction in fuel consumption could mean significant cost savings for the company. In addition to upgrading its plants and acquiring new machinery, Astarta also plans to acquire and operate its own in-house truck fleet. Transport costs comprised 8-10% of COGS in the last two years so any savings would contribute significantly to profits.

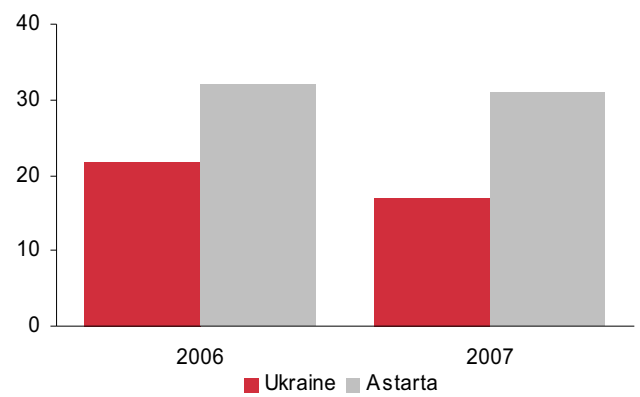
Addition of agricultural machinery, vehicle fleet and warehouses

Exhibit 233. Sugar yield (%)



Source: Company data

Exhibit 234. Sugar production per plant ('000 tons)



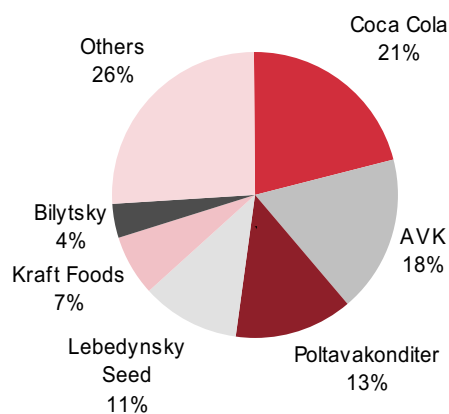
Source: Company data

Diversification of sales

Astarta aims to diversify its revenues, in terms of the product mix as well as market mix. Management plans to increase the share of revenues from agriculture and the high margin cattle farming business. Astarta is also likely to continue to strengthen its position in the wholesale sector given its focus on high quality sugar bought by beverage and confectionary manufacturers. Astarta is looking to increase the share of exports in total revenues from the 7% of 2007 by entering new markets such as Russia, the EU and other CIS states. Most of its export revenues come from molasses and beet pulp because of current limitations on the export of grains and oilseeds from Ukraine. If these restrictions are lifted, and the Ukrainian currency is devalued, exports could increase significantly.

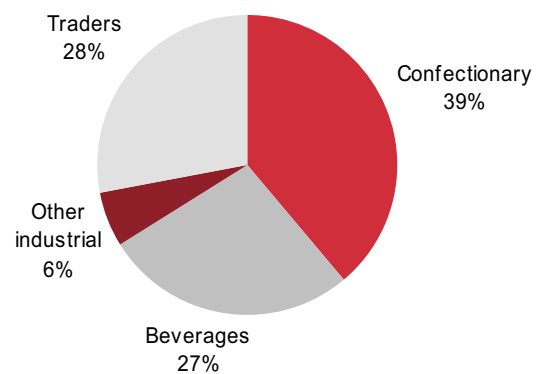
More products, more markets

Exhibit 235. Sugar sales by customer in 2007



Source: Company data

Exhibit 236. Sugar sales by segment in 2007



Source: Company data

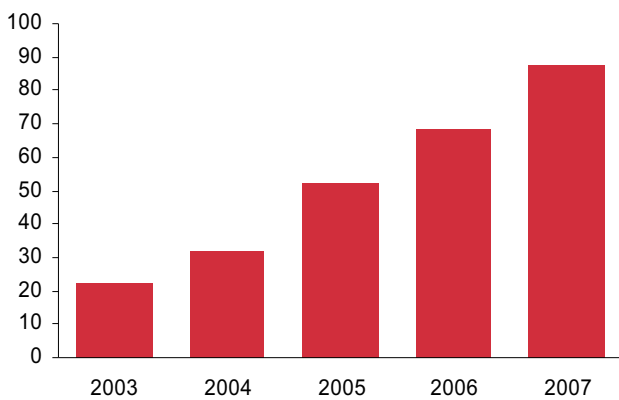
Operations

Astarta is the second largest sugar producer in Ukraine and produced approximately 155,500 tons in 2007. The company grows a majority of its annual sugar beet requirements, along with some other crops. Astarta has begun to acquire leased land to increase its sugar and agricultural output. The major crops cultivated by Astarta are wheat, barley, soybeans, sunflowers and corn. The company also has fast-growing income from milk and meat in its cattle-farming business.

The company's revenues have increased from EUR22.3m in 2003 to EUR87.7m in 2007, a compound growth rate of 41%. EBITDA has grown from EUR7.4m to EUR30.8m over the same period, representing a near 43% compound growth rate. Net profits have increased from EUR3.2m to EUR21.6m during that time ie, a compound growth rate of 63%. However, a large portion of the increase in net profits in 2007 was attributable to higher government subsidies. EBITDA margins also improved in 2007 because of higher prices and yields compared with 2006.

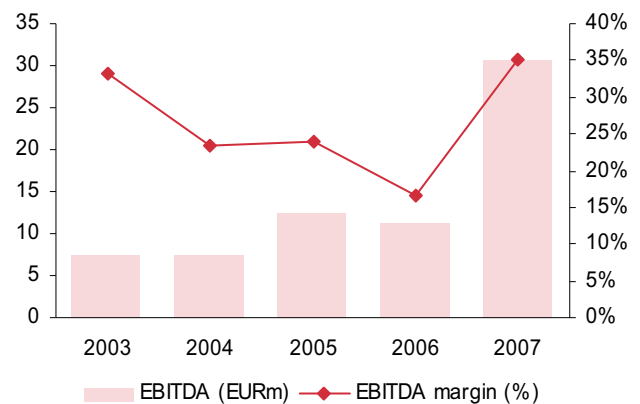
5-year compounded revenue growth rate of 41%

Exhibit 237. Astarta's revenues (EURm)



Source: Company data

Exhibit 238. Astarta's EBITDA and EBITDA margins



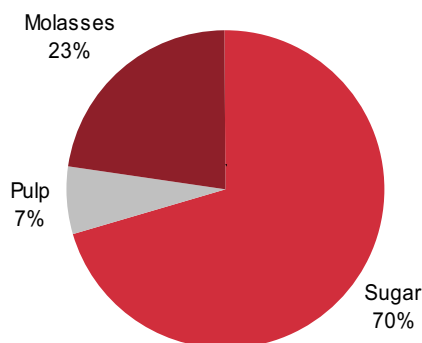
Source: Company data

Sugar

Total sugar produced in 2007 was 155,500 tons, along with 15,400 tons of sugar pulp and 50,100 tons of molasses. Astarta produces premium rated high-quality sugar, which caters to the fast-growing wholesale segment. The company procures almost 71% of the chief raw material, sugar beet, internally from its own farms; this reduces the operating cost for producing sugar. All of the sugar produced is sold in the domestic market while most molasses and sugar pulp are exported.

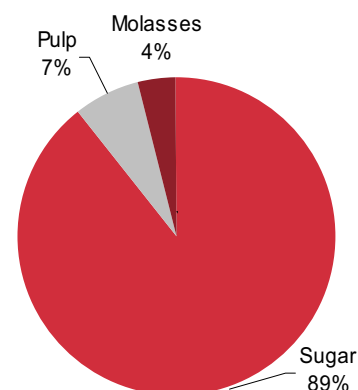
Major source of revenues

Exhibit 239. Sugar and by-products contribution by volumes in 2007



Source: Company data

Exhibit 240. Sugar and by-products contribution by revenues in 2007



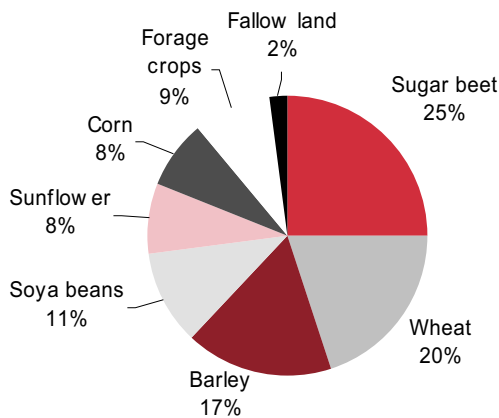
Source: Company data

Agricultural production

Astarta's grain and oilseed output in 2007 was 201,000 tons, which was a 53% y-y increase. The company has significantly increased production by increasing land under cultivation coupled with higher crop yields. Revenues from agricultural production increased to EUR21m (+86% y-y). The major buyers of output are traders and industrial customers such as Kernel Trade, RosAgroStil and UkrAgroAlliance.

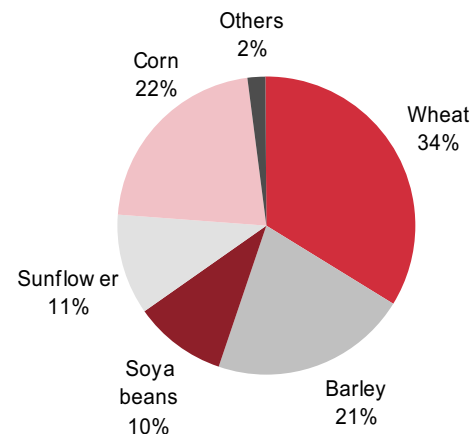
Minor contribution to revenue, but increasing

Exhibit 241. Breakdown of area by grains (2007)



Source: Company data

Exhibit 242. Breakdown of grains and oilseeds (2007)



Source: Company data

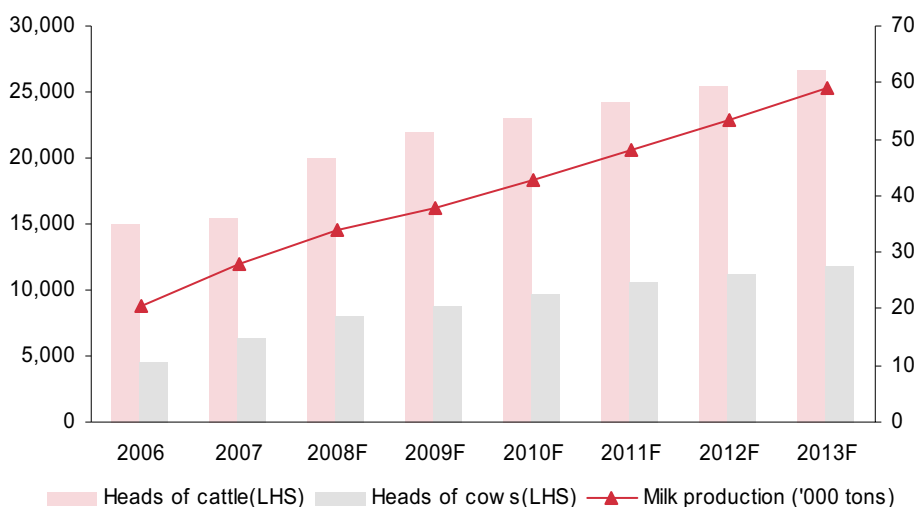
Obviously a key area of development for the company is to increase the share of revenues from its agricultural operations. As noted previously, the company's higher crop yields from the continued improvement of soils, its investments into agricultural machinery and the use of better quality seeds and fertilisers are key areas of development. We expect yields to improve further from current levels given that Ukrainian yields remain low by most standards.

Cattle farming

This business contributed EUR7.3m, or about 8% of turnover in 2007 and this will likely increase. Higher volumes and higher prices led to an 82% y-y increase in revenues. Declining livestock levels and increasing demand led to Ukrainian milk prices increasing by more than 50% in 2007. Astarta plans to increase its milk output to 53,000 tons by 2012 by increasing livestock and production capacities.

8% of the top line; but plans to increase the share

Exhibit 243. Heads of animals and volume of milk produced



Source: Company data, Nomura estimates

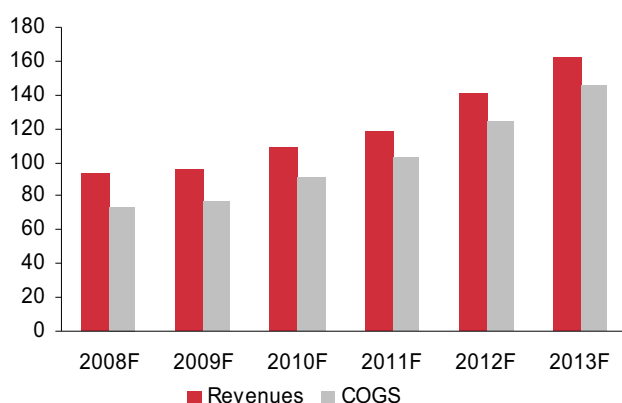
Prospects and outlook

Our forecasts are broadly in line with the guidance given by the company's management. We believe that the company can expand its area under cultivation and increase yields 50% by 2012

Sugar

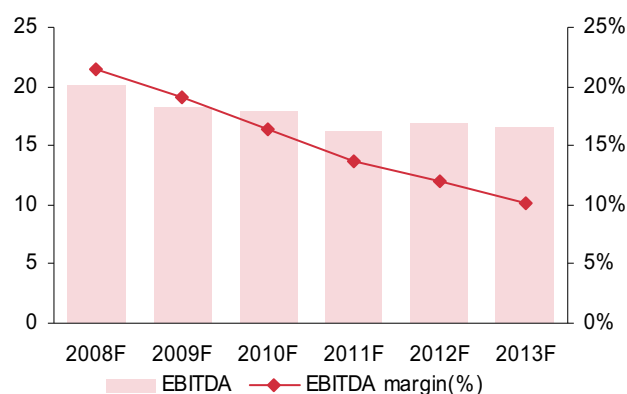
Higher sugar beet cultivation and higher crop yields will likely more than double sugar beet output by 2013, increasing the proportion of own-grown sugar beet to 85% of the total sugar beet requirement. We expect a significant slowdown in the growth of costs because of vertical integration with beet cultivation, energy savings and savings from operation its own truck fleet. The possible launch of bio-ethanol production at existing facilities using its own-grown raw materials could be positive for Astarta, although we have not included this in our valuation model.

Exhibit 244. Sugar revenues and COGS (EURm)



Source: Company data, Nomura estimates

Exhibit 245. EBITDA (EURm) & EBITDA margins

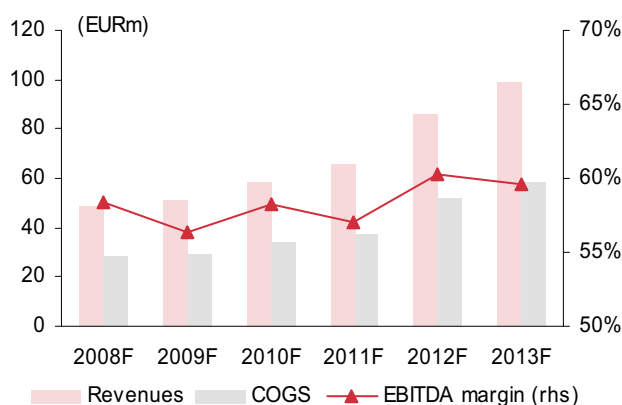


Source: Company data, Nomura estimates

Agriculture

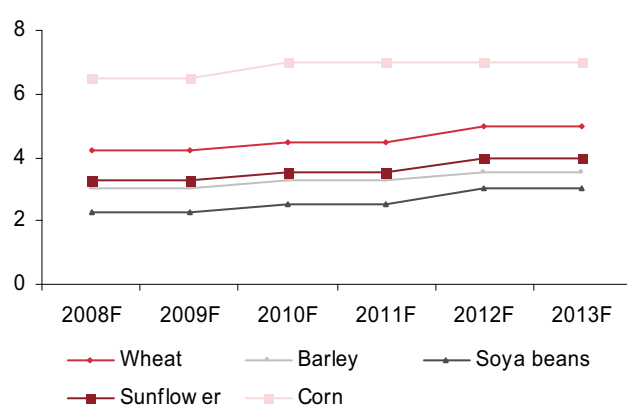
We expect land under cultivation to reach 200,000 ha in 2012, up from the current 92,000 ha. Therefore, 560,000 tons of oilseed and grain output in 2012 is possible. If so, this would take this business' share to 35% of total revenues.

Exhibit 246. Crop sales, COGS and EBITDA margins



Source: Company data, Nomura estimates

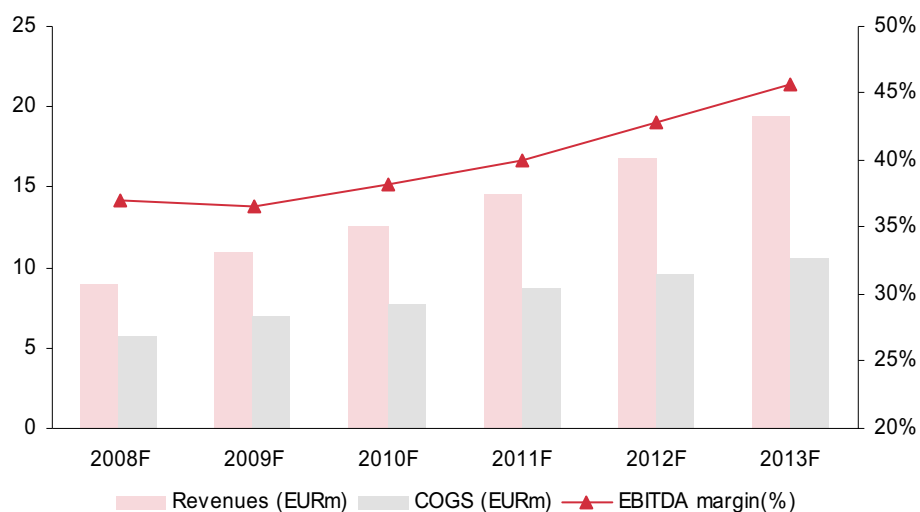
Exhibit 247. Crops yield (tons/ha)



Source: Company data, Nomura estimates

Cattle farming

This will likely become a high-growth business for Astarta and we would expect revenues to increase significantly from EUR7.3m in 2007. The company is likely to continue to increase the number of cattle in addition to improving milk yields in its dairy operation. We expect stable EBITDA margins in the cattle farming business.

Exhibit 248. Revenues, COGS and EBITDA margins - Cattle farming

Source: Company data, Nomura estimates

Valuation

We have used DCF to derive our fair value for the company. Agriculture companies in Ukraine are exempt from corporate income tax but this exemption is scheduled to lapse on 31st December 2009; hence we have assumed a tax rate of 25% in our model from 2010. The weighted average cost of capital is taken as 20% and free cash flow is assumed to grow at a terminal rate of 3% beyond 2013 in line with Astarta's growth potential. Our DCF-derived fair value comes to PLN15/share. We see this as conservative, but warranted in view of the high degree of exchange rate risk which surrounds Ukraine.

Financial statements

Income statement (EURm)

Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Revenues	68.1	87.7	151.5	158.6	180.6
Cost of goods sold	(51.4)	(61.9)	(88.7)	(95)	(109.4)
Other operating expenses	(5.3)	4.9	(15.2)	(16.5)	(18.7)
EBITDA	11.3	30.8	47.7	47.1	52.5
Depreciation & amortisation	(3.8)	(5)	(9.4)	(10.8)	(11.2)
EBIT	7.4	25.8	38.3	36.3	41.3
Interest income	0.2	0.1	0	0	0.9
Interest expense	(5.7)	(7.6)	(5.3)	(5.3)	(5.3)
Other non-operating expenses	3.7	4.6	-	-	-
Pre-tax profit	5.5	23	33	31	36.9
Tax	0.3	0.1	0.3	0.3	(9.2)
Minority interest	(0.6)	1.5	2	1.9	1.7
Net profit	6.4	21.6	31.3	29.4	26
Shares year end	25	25	25	25	25
EPS	0.3	0.9	1.3	1.2	1
DPS	-	-	-	-	-
Dividend payout per share (%)	-	-	-	-	-

Company, Nomura estimates

Balance sheet (EURm)

Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Property, plant & equipment	31.5	77.9	100.6	104.5	108.3
Intangible assets and goodwill	0.1	0.1	0.1	0.1	0.1
Investments	-	-	-	-	-
Other long-term assets	4.8	7.5	8.7	9.3	9.5
Total fixed assets	36.4	85.5	109.5	113.9	117.9
Inventories	45.9	51.9	60.7	65.1	67.5
Trade debtors	26.4	18.3	20.8	21.7	24.7
Short-term investments	-	-	-	-	-
Cash and cash equivalents	3	1.1	0.5	21.5	41.9
Other current assets	7.4	16	18.6	19.8	20.5
Total current assets	83	87	101	128	155
Total assets	119.1	172.7	210.1	242	272.5
Shareholders' equity	61.8	99.1	130.4	159.8	185.8
Minority interest	2.1	3.6	5.6	7.4	9.1
Shareholders' equity	63.9	102.6	136	167.3	194.9
Long-term debt	8.4	6.2	6.3	6.3	6.3
Other long-term liabilities	0.9	6.1	6.1	6.1	6.1
Long-term liabilities	9.3	12.3	12.4	12.4	12.4
Short-term debt	27.7	45.6	46.5	46.5	46.5
Trade creditors	14.6	5.5	8.5	9.1	12
Other current liabilities	3.6	6.6	6.6	6.6	6.6
Current liabilities	45.9	57.7	61.7	62.3	65.2
Total liabilities	55.2	70.1	74.1	74.7	77.6
Total liabilities & shareholders' equity	119.1	172.7	210.1	242	272.5

Company, Nomura estimates

Cashflow (EURm)					
Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Net profit	5.5	23	33	31	36.9
Depreciation & amortisation	2.8	5.6	9.4	10.8	11.2
Gain from chg in fair value of biological assets	-	-	-	-	-
Gain on equity investment	-	-	-	-	-
Income from affiliates	-	-	-	-	-
Other non-cash items	(3.1)	(4)	-	-	-
Increase/decrease in working capital liabilities	7.2	(2.1)	8.7	6.2	(1)
Decrease/increase in working capital assets	(29.2)	(14.4)	(14)	(6.5)	(6.1)
Other operating cashflow	(3.4)	(5.2)	(5.3)	(5.3)	(5.3)
Operating cashflow	(20.2)	2.8	31.8	36.2	35.6
Disposal of subsidiary	-	-	-	-	-
Sale of fixed assets	0.8	1.5	-	-	-
Capital expenditure	(9.8)	(20.8)	(33.4)	(15.1)	(15.3)
Increase In investments	(0.8)	-	-	-	-
Cashflow - other investing	0	(2.5)	-	-	-
Cashflow - investing activities	(9.8)	(21.8)	(33.4)	(15.1)	(15.3)
Proceeds from issuance of common stock	22.4	-	-	-	-
Increase in long-term borrowings	32	61.3	1	-	-
Decrease in borrowings	(15.5)	(44.1)	-	-	-
Dividends paid	-	-	-	-	-
Cashflow - other financing	(2.2)	(0.1)	-	-	-
Cashflow from financing	36.8	17.2	1	-	-
Change In cash and equivalents	6.7	(1.8)	(0.6)	21	20.4
Cash & equivalents b/f	0.5	3	1.1	0.5	21.5
Translation adjustments	(4.2)	(0.1)	-	-	-
Cash & equivalents c/f	3	1.1	0.5	21.5	41.9

Company, Nomura estimates

Our view

Kernel is a vertically integrated processing company. On the plus side, it has a good blend of businesses and has developed some that have premium margins. On the downside the company's expansion plans are ambitious. Given the difficulties facing Ukraine's economy their strategy could prove risky.

Anchor themes

- Kernel's expansion plans are well thought out and ambitious. It has big investment plans for its land bank, its crushing operations and its own brands. In addition, its expansion into the ports business is an indication of a company which is prepared to take vertical integration to the limit.
- All of this is set against a deteriorating political and economic environment in Ukraine. Ambitious strategic plans are going to be obscured by macro events. Paradoxically, if the Hryvnia devalues and Kernel manages to emerge relatively unscathed, its future could be bright. But the immediate future looks bleak.

Closing price on 16 October **PLN12.85**

Fair value estimate **PLN10.33**

Upside/downside **-20%**
EPS difference from consensus **+105%**

Source: Nomura

Nomura vs consensus

Our EPS forecasts are significantly higher than consensus. That said, the company's financial position in the current climate requires a higher than normal discount rate.

Extremely vertical

① Control of the supply chain

Most vertical integration in the agricultural sector has its limits. Kernel, however, has gone a stage further than most with its acquisition of port facilities on the Black Sea. Only the trading companies have travelled this far up the supply chain, a sign not just of the company's background but also its ambitions. Like Cosan in Brazil, Kernel is looking to maximise efficiencies, enhance diversification and minimise risk by this vertical integration process.

② Ambitious expansion plans

Kernel is expanding rapidly on a number of fronts: crushing capacity is to be doubled by 2011 from 730,000 tons to 1.68m tons. The company intends to lift its land under control from 80,000 ha now to 250,000 ha in two years. None of this is going to come cheaply. Overall, the company's capex budget in FY 2009 will reach US\$160m. Meanwhile, the company's net gearing is 33% with 63% of the debt being short term and 87% denominated in foreign currency.

③ Is the company being realistic?

The company's capital expenditure plans were no doubt drawn up in a more benign age ie, when prices for agricultural commodities were firm and the political and economic situation in Ukraine was a lot less critical than is the case now. Longer-term there may be a lot to commend Kernel, but we feel that the short-to-medium term macro picture is likely to eclipse long-term strategic themes dramatically.

④ Initiating coverage with a SELL rating

We have applied a WACC of 18% to Kernel. Our DCF-derived fair value comes to PLN10.33 per share. SELL.

Key financials & valuations

30 Jun (US\$m)	FY08	FY09F	FY10F	FY11F
Revenues	663.1	1036.3	1214.2	1392.3
EBITDA	126	187.7	226.8	254.6
Net profit	81.8	113.1	115.9	127.9
EPS (US\$)	1.2	1.6	1.7	1.9
EPS growth (%)	-	33.3%	6.3%	11.8%
P/E (x)	4.1	3	2.9	2.7
EV/EBITDA (x)	4.8	3.2	2.7	2.4
Price/book (x)	0.9	0.7	0.6	0.5
Dividend yield (%)	-	-	-	-
ROE (%)	36.4%	25.6%	20.9%	18.9%
Net debt/equity (%)	32.8%	53.1%	53.9%	49.4%

Company, Nomura estimates



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Company background

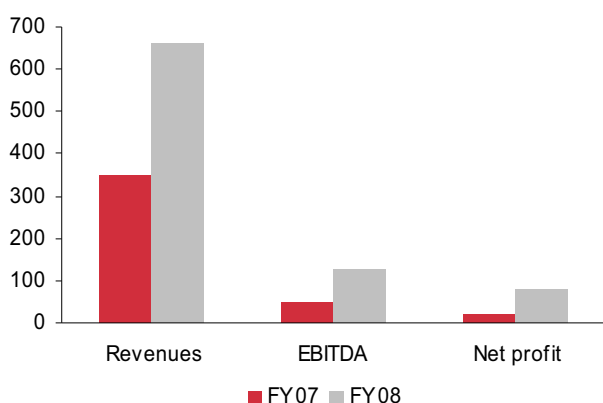
Kernel is a vertically integrated agricultural producer which crushes and refines sunflower oil, cultivates land and operates storage silos and a port. The company is among Ukraine's top three sunflower oil exporters and top ten agricultural exporters. It is also the second largest oilseed crusher in Ukraine with annual crushing capacity of 730,000 tons. The company has two refining and bottling plants with annual refining capacity of 173,000 tons. Kernel has one of the largest silo networks in Ukraine with a total capacity of 1.7m tons. At the end of June 2008, the company controlled around 80,000 ha of land and cultivated wheat, barley, corn, sunflowers, soybeans and other crops. Kernel recently acquired the port of Ilyichevsk, on the Black Sea which has a potential annual capacity of 4.5m tons.

Kernel has ambitious plans across its major product lines. It plans to increase its crushing capacity to 1.68m tons pa by 2011. The backdrop to the sector is still reasonably positive: global edible oil demand is rising due to rising incomes, changing diets and increasing health consciousness. Even the domestic outlook is positive as the Ukrainian bottled oil market is expected to grow at a 5-8% annual rate over the course of the next few years. Edible oil consumption in Ukraine is lower than its near peers and significantly lower than EU levels. Kernel's leading position in the local bottled oil market will likely strengthen with sector consolidation and the expansion of an organised retail industry in Ukraine.

Meanwhile, in farming, the company has similar ambitions. The desire to add to its leased land holdings is driven as much by the need to gain economies of scale as it is to control some of its own input costs. The latter reason is what has driven many processing companies to seek out vertical integration opportunities. In May 2008, the Ukrainian Government removed export restrictions on key commodities which were imposed in autumn 2007.

Ambitious vertical integration plans

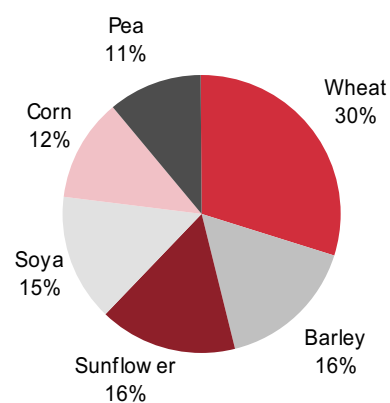
Exhibit 249. Financial snapshot (US\$m)



Source: Company data

In FY 2008, Kernel's revenues reached US\$663m, up from US\$350m in FY07, while EBITDA was US\$126m, up from US\$46m in FY 2007. Kernel processed over 15% of the total oilseed harvest in Ukraine in 2007. At the end of June 2008, Kernel had an approximate 35% share of the local bottled sunflower oil market.

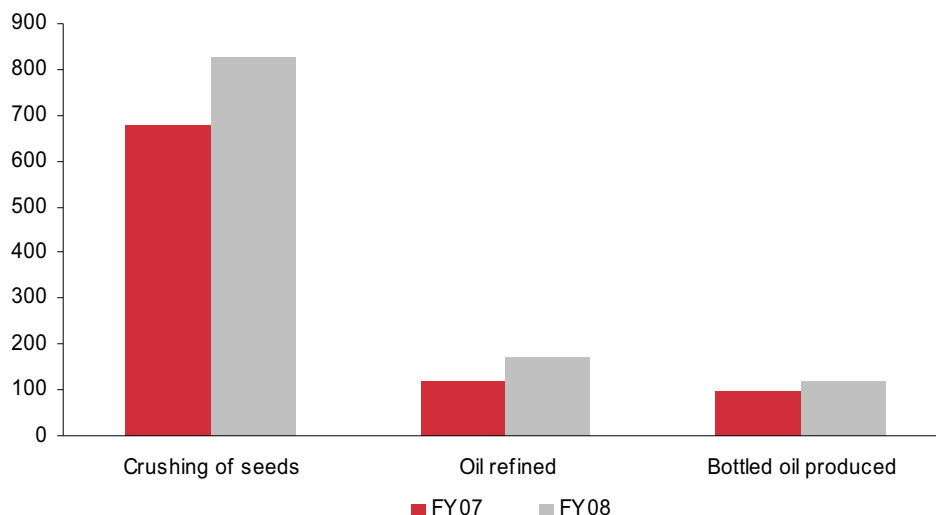
Exhibit 250. Crop mix – FY2008



Source: Company data

90% jump in revenues in FY08

Exhibit 251. Crushing, refining and bottling volume ('000 tons)



Source: Company data

In November 2007, Kernel raised around PLN400m through an initial public offering of 22.76m shares, including 16.67m new shares, and was listed on the Warsaw Stock Exchange. In early 2008, Kernel raised another US\$84m for land expansion through a new offering of 5.4m ordinary shares.

Kernel started as a commodity exporter in Ukraine in the mid-1990s. It acquired storage silos to support grain origination. Kernel moved from being a pure commodity trader to become a processor when it acquired an oil crushing plant in 2002.

Eventually it began leasing land on long-term contracts to ensure a regular supply of oilseeds. The company expanded its business portfolio with the acquisition of the Ukrainian oil brand "Schedry DAR" in 2004, together with its crushing, refining and packaging facilities.

This acquisition spree continued as Kernel acquired several other oil brands in Ukraine and emerged as a leading branded oil producer. In 2008, Kernel acquired Ukraine's second largest port, Ilyichevsk in the Nikolaev region of Ukraine for US\$100m. With this acquisition, Kernel emerged as one of the largest integrated agriculture companies in Ukraine involved in the production of agricultural crops, the purchase of grains, and handling, transport and port operations.

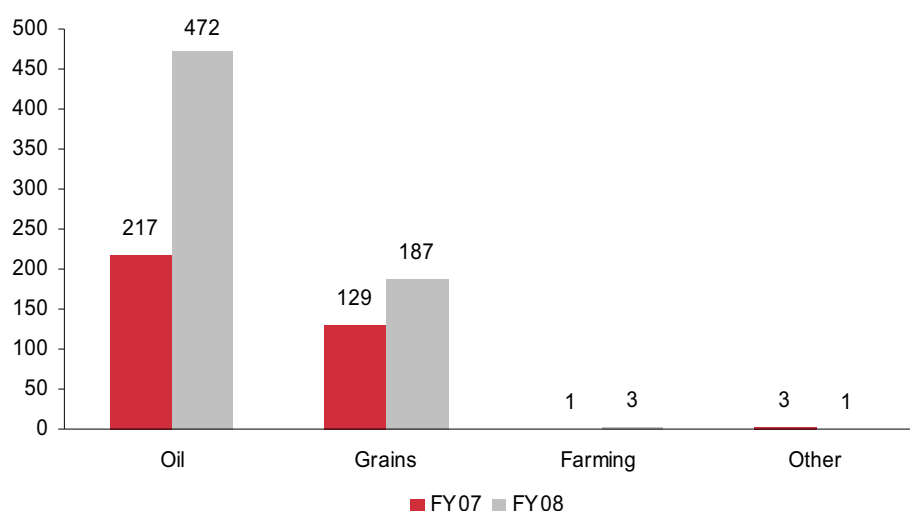
**Transformed from a pure trader
into an integrated player**

Strategy and operations

Kernel's strategy is to lease land, grow crops, process them and export the final output. Kernel has divided its operations into four components – oil, grains, farming and grain handling and transshipment services. Oil is the largest segment, contributing some 71% of net revenues in FY 2008, followed by 28% from the grain business. Since the output from the farming business is used by the grain and oil businesses, the net revenue contribution from farming is insignificant. The recently acquired port is expected to add US\$20m to EBITDA in FY 2009 through services provided to third-parties together with some synergies.

Backward and forward integration

Exhibit 252. Revenue breakdown (US\$m)



Source: Company data

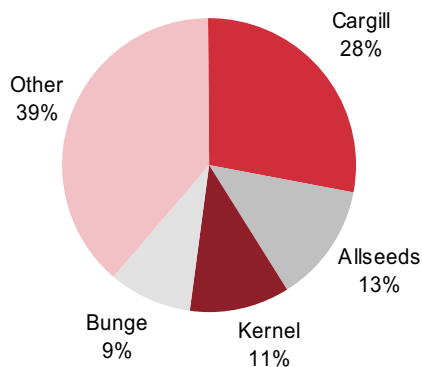
Oil

The oil business includes the production, refining, bottling, marketing and distribution of sunflower oil and meal. Kernel exports crude oil in bulk form and refined oil in both bulk and bottle forms. It accounted for about 11% of total sunflower oil exports from Ukraine in 2007. Domestically, the company sells bottled oil both under its own brand and to retailers for re-selling. The company emerged as a leading bottled oil player in Ukraine through organic and non-organic growth and had a 35% share of the domestic market in FY 2008. Ukrainian bottled oil sales accounted for 81% of total bottled oil volume, while the rest was exported to the CIS, the Middle East and other countries.

35% market share in Ukrainian bottled oil business

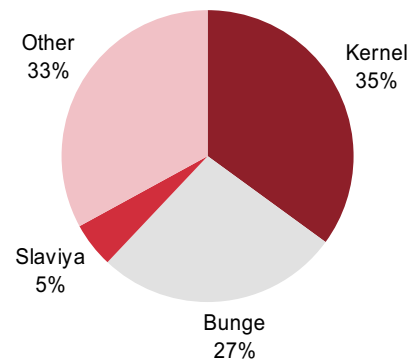
Kernel's major rival in the bottled oil business is Bunge. In the oilseed processing business, the major competitors are Cargill, Bunge and Allseeds, a local company. In the grain origination business, international grain traders such as Glencore, Cargill, Toepfer, Bunge and Louis Dreyfus Negoce are leading competitors. In export markets, particularly to CIS countries, the major competitors in the bottled oil business are Bunge and domestic refiners and bottlers such as Yug Rusi.

Exhibit 253. Share of bulk oil producers in Ukraine (2007)



Source: Company data

Exhibit 254. Share of bottled oil producers in Ukraine (2007)



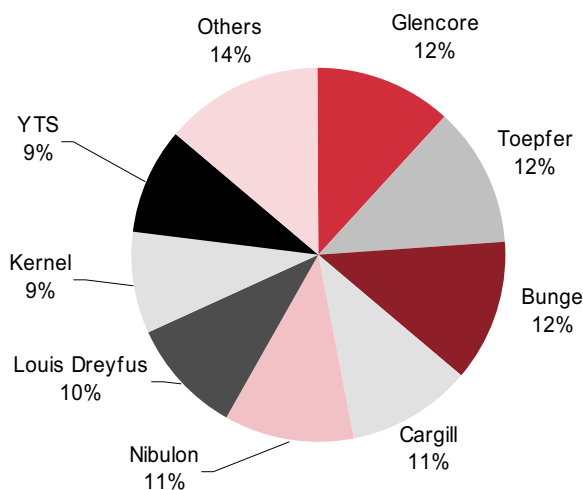
Source: Company data

Grain

The grain business buys and sells different soft commodities obtained from Kernel's farming business and the open market. It also provides cleaning, drying and grain storage services. In FY 2008, the grain business generated net revenues of almost US\$187m, constituting 28% of FY 2008 revenues. During FY 2008, Kernel exported 317,000 tons of grains. Corn, barley and wheat accounted for over 80% Kernel's grain exports in FY 2007. Grain exports declined in FY 2007 and FY2008 as a result of lower harvests and export restrictions imposed by the Ukrainian Government. Kernel increased its FY 2009 grain export target from 900,000 tons to 1.6m tons due to a good harvest and the removal of export restrictions. Kernel accounted for 9% of Ukraine's total grain exports in 2007.

Export target increased to 1.6m tons in FY 2009

Exhibit 255. Grain exporters market share in Ukraine – 2007



Source: Company data

Farming

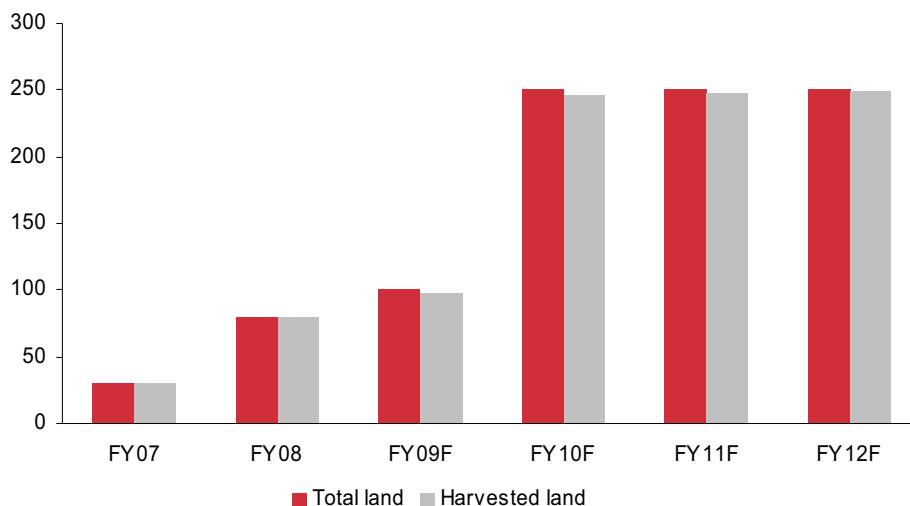
Kernel's farming division leases land on long-term leases and cultivates crops, primarily wheat, barley, sunflowers, soybeans, corn and peas. Leasing land involves entering into leasing agreements with individual land owners. This process is cumbersome, especially when trying to gain control of a large area, as it necessitates agreements with a number of individual land owners. To circumvent this problem, Kernel usually acquires companies which already have land-lease contracts with land

80,000 ha of leased land at June 2008

owners thus gaining large tracts in a single transaction. However, this is an expensive option.

Lease duration varies between five to 25 years but is usually for 7-10 years. At the end of June 2008, Kernel controlled in excess of 80,000 ha of land and has plans to control 250,000 ha by the end of 2010. Kernel, in common with most modern farming companies, intends to develop large farm clusters to maximise efficiency of management resources and equipment.

Exhibit 256. Total land and harvested area (`000ha)



Source: Company data

In FY 2008, Kernel's farming business had gross revenues of US\$20.3m and an EBITDA of US\$19.9m. Most of the output of farming is used by the grain and oil businesses.

Grain handling and transshipment

Kernel's grain handling and transshipment business includes storage silos, transport facilities and the port of Ilyichevsk. The port has a potential annual throughput capacity of 4.5m tons, which can be increased further. It has 38 vertical bins, with 200,000 tons of storage capacity, which are interconnected and located along the berth. This acquisition is expected to contribute around US\$20m to group EBITDA through services provided to third party exporters and synergies with the grain procurement and merchandising activities of the group.

Acquired Ukraine's second largest port

Prospects and outlook

Kernel plans to expand its oil and grain businesses and to become a leading operator in domestic and international markets through organic growth and acquisitions. The company is also building a multi-seed crushing plant with a capacity of 510,000 tons pa in Nikolaev *oblast* to benefit from Ukraine's increasing oilseed cultivation and improving oilseed yields. This plant is expected to begin operations in 2009 and will double Kernel's crushing capacity by 2011.

So where does the growth come from in the oil business? Changing diets and increasing affluence, as well as perceived health benefits, all explain the growth in the business in recent years. We expect that bottled oil – a high margin business – can grow at 5-8% per annum in Ukraine due to low per capita edible oil consumption currently. According to Kernel's estimates, per capita edible oil consumption in Ukraine should grow from the current 14 litres pa to Russian levels of 21 litres pa by 2012. The expansion of the retail market and consolidation will also benefit Kernel.

In FY 2009, Kernel plans to crush 825,000 tons of seed in its existing plants. The company aims to increase bulk oil exports from 171,000 tons in FY08 to 279,000 tons in FY 2009. Kernel expects to export 229,000 tons of bulk crude oil and 50,000 tons of bulk refined oil in FY 2009. The company is looking at producing 131m litres of bottled sunflower oil in FY 2009, +27% y-y. In the farming segment, Kernel plans to increase its total land area to 100,000 ha by 2009 and 250,000 ha by 2010, which is highly ambitious. This may increase Kernel's control of its supply chain and lead to better margins and reduced uncertainty of input supply.

Capex

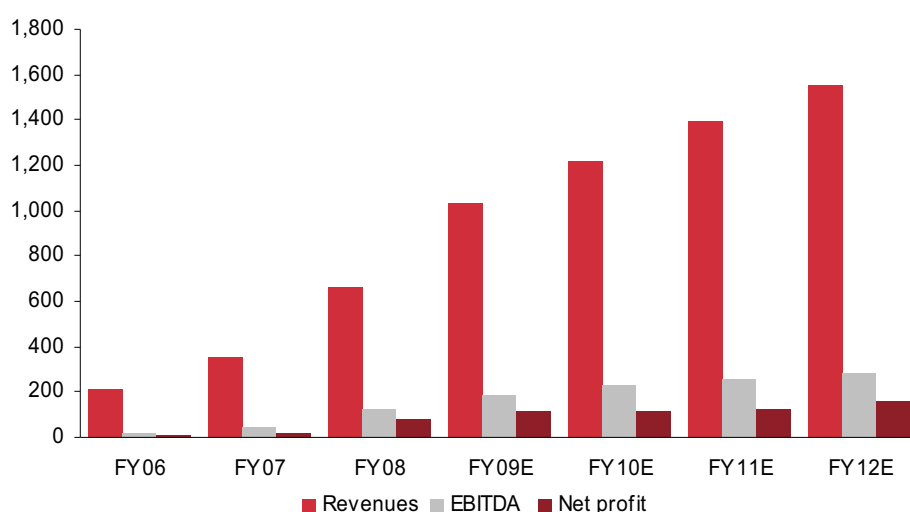
Land acquisition and additional capacity in its crushing and refining units will form the major part of Kernel's capital expenditure budget in the next few years. Kernel plans to spend US\$160m in FY 2009, with US\$85m on farming and the remaining US\$75m on additional crushing capacity. Around one-third of total farming capex will be used for land leasing.

Crushing and refining capacity expansion to be key driver

250,000ha leased land by year-end 2010

US\$160m capex in 2009

Exhibit 257. Revenues, EBITDA and net profit (US\$m)



Source: Company data, Nomura estimates

Valuation

We have used the discounted free cash flow method to value the company. The weighted average cost of capital is assumed to be 18%. Based on the strong growth potential of Ukrainian agriculture, we have assumed Kernel's terminal growth rate to be 3%. Kernel's DCF-derived fair value comes to PLN10.33 per share. We initiate coverage on the stock with a SELL recommendation.

Financial statements

Income statement (US\$m)

Year-end 30 Jun	FY07	FY08	FY09F	FY10F	FY11F
Revenues	350.4	663.1	1,036.3	1,214.2	1,392.3
Cost of goods sold	(311.9)	(561.5)	(848.6)	(987.4)	(1137.7)
Other operating expenses	7.9	24.4	-	-	-
EBITDA	46.4	126	187.7	226.8	254.6
Depreciation & amortisation	(7.7)	(12.5)	(18.7)	(24.7)	(29.6)
EBIT	38.6	113.5	169	202.1	225
Interest income	(0.7)	-	7.1	0.8	0.1
Interest expense	(18.2)	(28.1)	(37.6)	(46.7)	(52.9)
Other non-operating expenses	(3.1)	4.4	-	-	-
Pre-tax profit	16.7	89.7	138.5	156.1	172.2
Tax	1.9	(8.9)	(24.2)	(39)	(43)
Minority interest	(0.9)	1	(1.1)	(1.2)	(1.3)
Net profit	19.5	81.8	113.1	115.9	127.9
Shares year end	-	68.7	68.7	68.7	68.7
EPS	-	1.2	1.6	1.7	1.9
DPS	-	-	-	-	-
Dividend payout per share (%)	-	-	-	-	-

Company, Nomura estimates

Balance sheet (US\$m)

Year-end 30 Jun	FY07	FY08	FY09F	FY10F	FY11F
Property, plant & equipment	127.9	234.3	334.5	427.7	498.4
Intangible assets and goodwill	17	53	62	70	77
Investments	11.5	24.2	39.7	51.9	58.8
Other long-term assets	2.9	92.5	92.5	92.5	92.5
Total fixed assets	159.1	404.1	528.4	641.6	726.8
Inventories	40.2	161.4	244.1	284	327.3
Trade debtors	9.8	48.7	76.1	89.2	102.3
Short-term investments	-	-	-	-	-
Cash and cash equivalents	25.3	89.2	9.5	1.6	4.8
Other current assets	40.7	89.6	138.7	162.2	186.2
Total current assets	116	389	468	537	621
Total assets	275.1	793	996.9	1,178.6	1,347.4
Shareholders' equity	64.6	384.5	497.6	613.6	741.4
Minority interest	13.2	103.9	105.1	106.3	107.5
Shareholders' equity	77.8	488.5	602.7	719.8	849
Long-term debt	99.2	91.1	171.1	231.1	266.1
Other long-term liabilities	31.4	37.6	37.6	37.6	37.6
Long-term liabilities	130.6	128.7	208.7	268.7	303.7
Short-term debt	44.4	158.1	158.1	158.1	158.1
Trade creditors	5.8	5.7	8.7	10.1	11.6
Other current liabilities	8.9	11.9	18.6	21.7	24.9
Current liabilities	59.2	175.8	185.4	190	194.7
Total liabilities	189.8	304.5	394.1	458.7	498.5
Total liabilities & shareholders' equity	275.1	793	996.9	1,178.6	1,347.4

Company, Nomura estimates

Cashflow (US\$m)					
Year-end 30 Jun	FY07	FY08	FY09F	FY10F	FY11F
Net profit	16.7	89.7	138.5	156.1	172.2
Depreciation & amortisation	7.7	12.5	18.7	24.7	29.6
Gain from chg in fair values biological assets	-	-	-	-	-
Gain on equity investments	(0.3)	0	-	-	-
Income from affiliates	-	-	-	-	-
Other non-cash items	21.3	38.9	30.5	46	52.8
Increase/decrease in working capital liabilities	(21.1)	(192)	(159.3)	(76.5)	(80.4)
Decrease/increase in working capital assets	6.4	(91.3)	9.6	4.6	4.7
Other operating cashflow	(19.1)	(31.5)	(54.7)	(85)	(95.8)
Operating cashflow	11.6	(173.7)	(16.7)	69.9	83.1
Disposal of subsidiary	(59.7)	(9.4)	-	-	-
Sale of fixed assets	-	-	-	-	-
Capital expenditure	2.5	(64.8)	(143)	(137.8)	(114.9)
Increase in investments	-	-	-	-	-
Cashflow - other investing	-	-	-	-	-
Cashflow - investing activities	(57.2)	(74.2)	(143)	(137.8)	(114.9)
Proceeds from issuance of common stock	2.8	234.8	-	-	-
Increase in long-term borrowings	61.7	72.4	80	60	35
Decrease in borrowings	-	-	-	-	-
Dividends paid	-	-	-	-	-
Cashflow - other financing	-	-	-	-	-
Cashflow from financing	64.5	307.2	80	60	35
Change in cash and equivalents	18.8	59.3	(79.7)	(7.9)	3.3
Cash & equivalents b/f	6	24.8	89.2	9.5	1.6
Translation adjustments	0	3.4	-	-	-
Cash & equivalents c/f	24.8	89.2	9.5	1.6	4.8

Company, Nomura estimates

Our view

MCB Agricole is one of Ukraine's leading pure farming companies. Like its peers Black Earth Farming in Russia and Brasilagro in Brazil, MCB Agricole is operationally leveraged into the cereals and oilseed sectors and has no exposure to processing activities. A pity, then, that it is in Ukraine.

Anchor themes

- ⚓ We believe that the outlook in Ukraine, both politically and economically, is becoming increasingly dire. In the face of government discord, fiscal and trade deficits and a deteriorating currency, we believe Ukraine's immediate future is fragile, to say the least.
- ⚓ MCB Agricole's ambitious expansion plan to have some 400,000 ha of land operational by 2011 is doubtful. However, the company has a net cash position after a recent fundraising and there is scope to acquire leases cheaply should the opportunity arise.

Closing price on 16 October **EUR8.90**

Fair value estimate **EUR2.86**

Upside/downside EPS difference from consensus **-68%**
NA

Source: Nomura

Nomura vs consensus

There is no clear EPS consensus but we believe that Ukraine's negative political and economic outlook is still not factored into most estimates.

Ukrainian pure play

① Political and macroeconomic adjustment

Politics have become increasingly fractious in Ukraine following the breakdown of the governing coalition. The government runs both fiscal and trade deficits and the currency is coming under intense pressure. Unlike Russia with its natural resources sector and considerable foreign exchange reserves, Ukraine is less well insulated from current international woes. Domestic weaknesses merely accentuate an already bad situation.

② MCB's plans are ambitious

MCB Agricole plans to increase its land bank from 91,088 ha to 400,000 ha by 2011. Under current circumstances, this is looking increasingly doubtful. The company has a net cash position but in the short-term it is likely that expansion plans will have to be put on hold. In the absence of rising cereal prices, the company must re-assess its medium-term goals, in our view.

③ Long-term recovery could mirror Argentina?

Argentina's post-devaluation export-led economic recovery over the past few years, and the similar Brazilian experience, may be repeated in Ukraine. Unlike Argentina, where there were few listed agriculture stocks in which to invest, there are several in Ukraine. Provided the companies themselves are not overleveraged, or have too much foreign currency debt, the long-term gains from a depreciating exchange rate could be considerable.

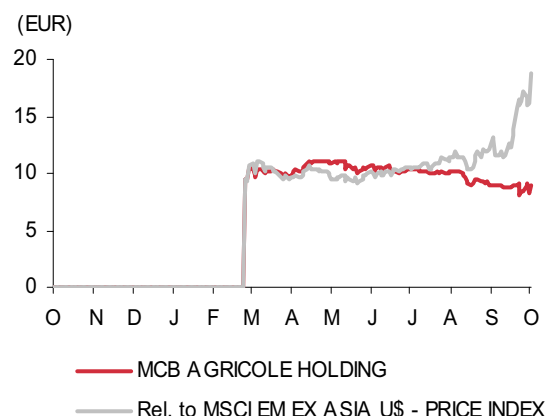
④ Initiating coverage with a SELL rating

We have applied a WACC of 18% to MCB to take account of the overall state of the Ukrainian economy. Our DCF-derived fair value is EUR2.86 per share.

Key financials & valuations

31 Dec (US\$m)	FY07	FY08F	FY09F	FY10F
Revenues	15.7	42.8	110.7	151.1
EBITDA	6	9.4	29.6	37.1
Net profit	4.3	5.5	22.6	17.5
EPS (US\$)	-	0.3	1.3	1
EPS growth (%)	-	-	333.3%	(24.1%)
P/E (x)	-	39.5	9.5	12.3
EV/EBITDA (x)	38.4	24.5	7.8	6.2
Price/book (x)	15	3	2.3	1.9
Dividend yield (%)	-	-	-	-
ROE (%)	35%	12.5%	26.9%	16.8%
Net debt/equity (%)	108.5%	(23%)	22%	33.9%

Company, Nomura estimates



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Company background

MCB Agricole is one of the leading farming companies in Ukraine. Long on experience and focused entirely on cultivation, the company's prospects are driven by yield and output gains and by the prices of cereals and oilseeds. The company's ambitious expansion plans may need to be tempered against a difficult political and macroeconomic backdrop both internationally and domestically. An unexceptional outlook for grain prices, together with significant exchange rate risk, suggests that right now is not the time to be looking at dedicated farming companies in Ukraine. We believe that MCB's fair value is EUR2.86 per share.

Difficult political and macroeconomic backdrop

What is not in doubt is the company's extensive industry experience and expertise. MCB has completed seven harvests and, through the implementation of modern agricultural processes and optimum crop rotation plans, the company generates yields 20-30% higher than average Ukrainian yields.

MCB has operated in Ukraine since 1999 and has built up an extensive network at both local and national level. This local knowledge helps to support land leasing, acquisitions, logistics, security and so on. MCB's local experience gives it an advantage compared to other new entrants.

The company has ambitious expansion plans, to say the least. MCB plans to increase its land bank from the current 91,088 ha to approximately 400,000 ha by 2011. The advantages of this are obvious: economies of scale on equipment, storage, logistics and labour. This land would be spread across 15 regions of Ukraine, giving the company some degree of diversification both in terms of climate and local political risks.

Ambitious plans

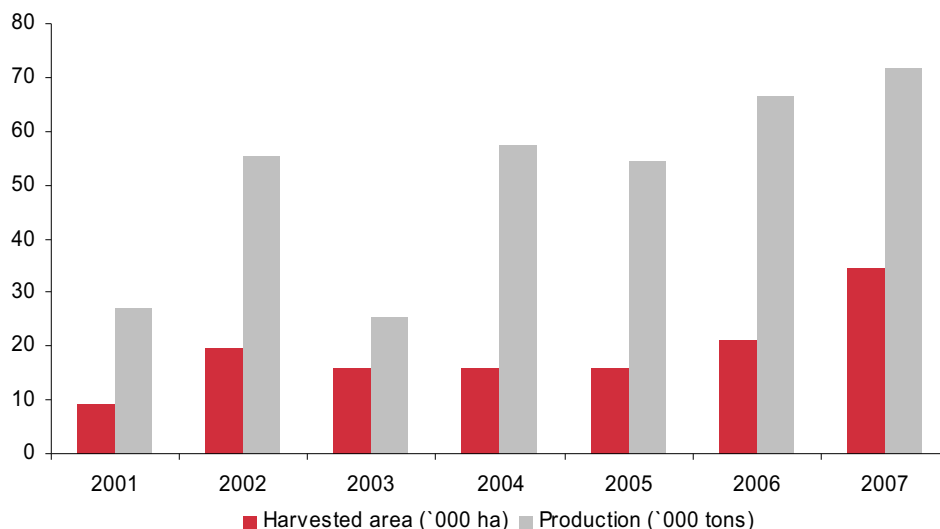
However, what cannot be negated is the fact that these plans, in the current economic climate, will most likely have to be revised. Given the capital intensity of the agriculture business, the increasing tightness of credit will have a significant impact. Moreover, unlike Russia, Ukraine does not have a government with over US\$550bn of reserves and, therefore, exchange rate risk has also to be seen as a considerable threat to the company's operations.

MCB is an Austrian holding company, operating in Ukraine through Ukrzernoprom, and is involved solely in the growing and selling of crops. The company is one of the leading producers of agricultural products in Ukraine and is focused on cereals and rapeseed. MCB's strategy is to gain control of high quality land and apply modern agricultural practices in order to achieve above average yields.

Pure-play agricultural producer

Founded in 1999, MCB established a holding company with stakes in elevators, flour mills and bakeries. In 2001, it diversified into agricultural production with an initial harvest of 27,126 tons, of which over 63% was wheat. The company expanded rapidly the next year, more than doubling both harvested area and production. However, the next four years saw little growth in the land bank. Instead, MCB undertook a thorough soil analysis and the training of its workforce in modern farming practices. These efforts paid off in the form of higher yields which are now on an average 20-30% higher than average Ukrainian yields.

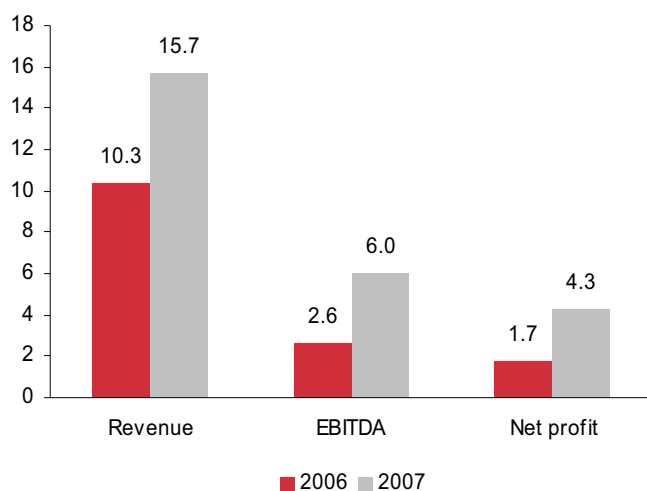
Exhibit 258. Land under control and cultivation (‘000 ha)



Source: Company data, Nomura estimates

As at September 2008, the company controlled 91,088 ha of land spread across 11 regions of Ukraine, with the bulk of it in the fertile Black Earth region. In 2007, MCB harvested almost 35,000 ha of land, mostly of wheat, rapeseed and corn. Net revenues in 2007 were US\$15.7m, EBITDA was US\$6m and net profit was US\$4.3m.

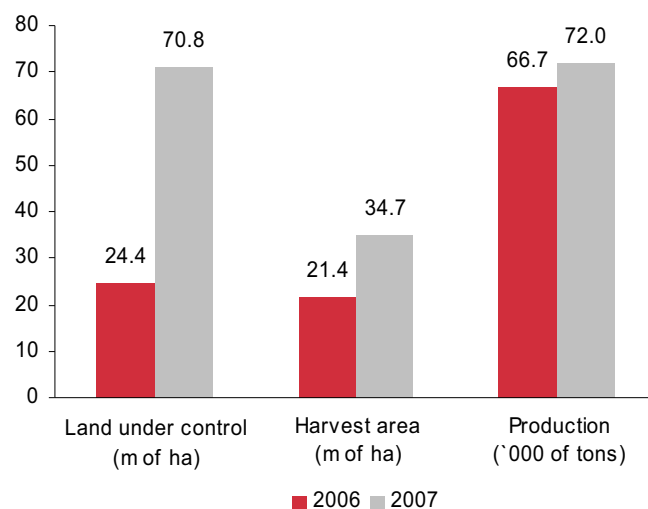
Exhibit 259. Financial snapshot (US\$m)



Source: Company data

The company conducted a private placement of a 24.4% equity stake for US\$56m in March 2008, giving it a valuation of US\$230m. The remaining 75.6% share is held between the founders – Anton Shyshkin, Kirill Sintsov, Eugene Leng and Mikhail Golubitsky. MCB’s shares are listed on the Frankfurt Stock Exchange.

Exhibit 260. Operational snapshot



Source: Company data

Strategy & operations

MCB’s business model is straightforward – lease land, grow crops, sell them. It is a pure-play agricultural producer with no processing capabilities. Although the company leases land it has a stated strategy to acquire land once it is permitted by the state. The leasing agreement is followed by soil repair and land preparation, followed by planting. MCB splits its planted area between winter crops and spring crops to optimise crop rotation. The company follows modern agricultural processes and employs advanced machinery for cultivation and harvesting. After harvesting, the produce is either sold or stored in elevators.

Lease land, grow crops and sell them

Land

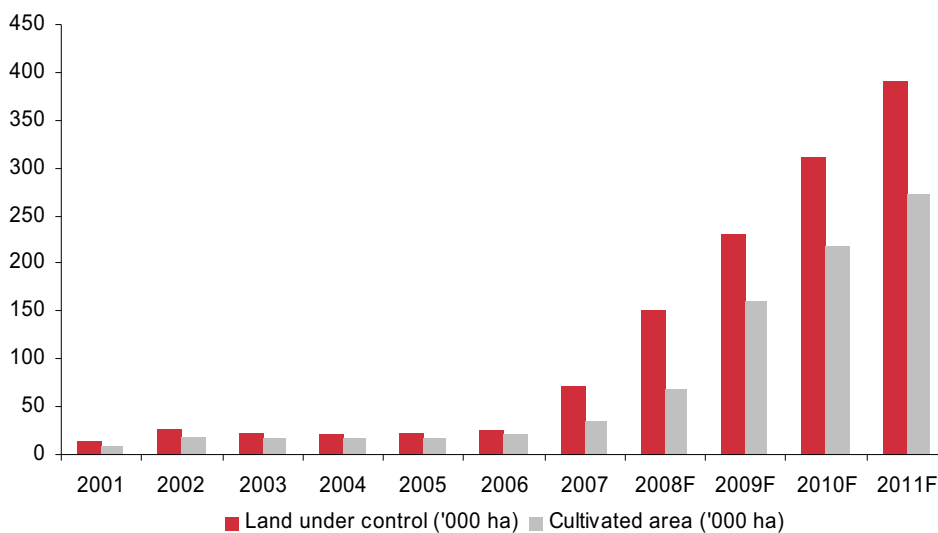
The leasing of land is the first step and this involves entering into leasing agreements with individual land owners. Under Ukrainian law, a lessee has pre-emptive rights to purchase the land it leases but this will only become possible when land sales are permitted. Since negotiation with individual land owners is both time consuming and laborious, MCB often buys companies that already have contracts with a number of land owners. This allows MCB to gain control of large areas of land in a single transaction. The current valuation of such companies is around US\$200 – US\$400/ha, implying that MCB has to pay approximately US\$300/ha as an “entry ticket”. This US\$300/ha does not give MCB ownership of the land; it only gives the pre-emptive right to purchase the land when permitted.

Although it began operations in 2001, MCB’s expansion plans only really took off in 2007. In 2007, the company leased almost 71,000 ha of land of which almost 35,000 ha were cultivated. The company plans to increase the area under control to approximately 400,000 ha by 2011, although we believe this will likely prove arduous especially in light of the global credit crisis.

Two routes to leasing land

Massive expansion plan

Exhibit 261. Land under control and cultivation (‘000 of ha)



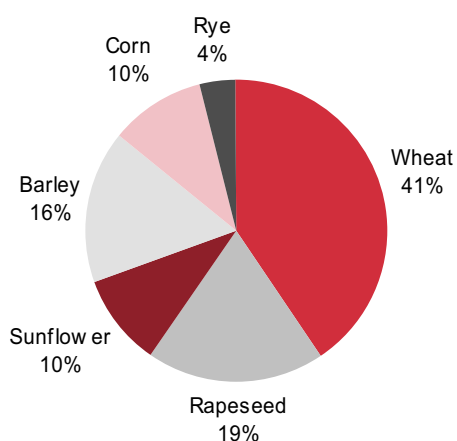
Source: Company data, Nomura estimates

Crops

Of the 34,731ha of land harvested in 2007, approximately 60% was for winter crops ie, winter wheat, rapeseed, rye and winter barley, while, 40% was for spring crops ie, spring wheat, corn, sunflower and spring barley. Wheat (spring and winter) accounted for approximately 41% of the harvested area and 43% of total production.

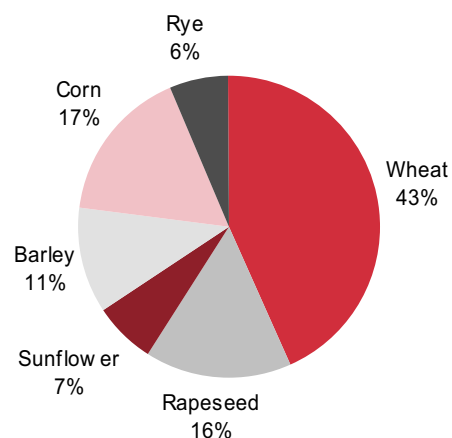
Wheat is the major crop

Exhibit 262. Harvested area breakdown (%) - 2007



Source: Company data

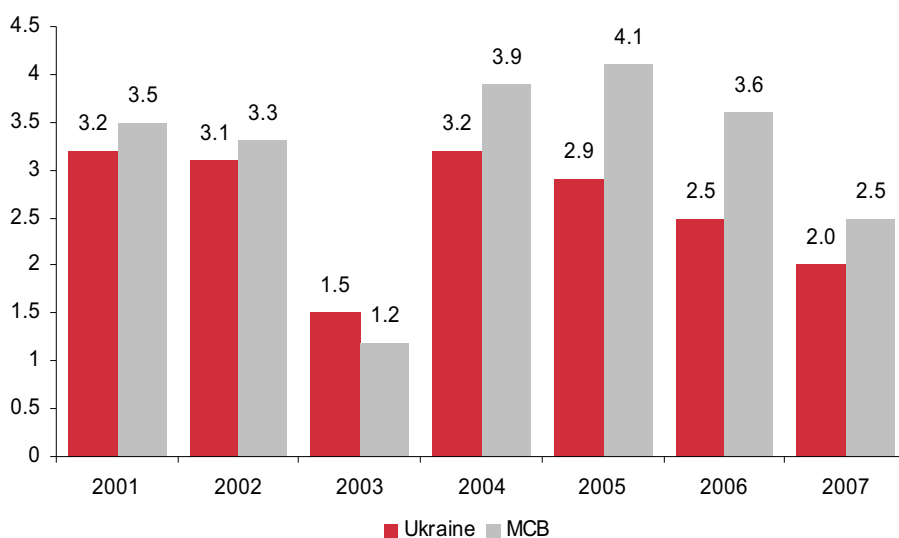
Exhibit 263. Production breakdown (%) - 2007



Source: Company data

Of course, one of the key advantages of the companies employing capital-intensive methods is their ability to increase yields significantly. MCB's use of modern technology ensures that its yields are at a 20-30% premium to overall Ukrainian yields.

Exhibit 264. Wheat yields (tons/ha)



Source: Company data, Nomura estimates

In terms of production costs across crops, fertiliser is the largest item, followed by fuel. Leasing costs, in comparison, are low.

Exhibit 265. Production cost/ha – 2008F (US\$)

	winter wheat	rapeseed	rye	winter barley	spring wheat	corn	sunflo wer	spring barley
Variable costs								
Raw materials								
Fuels	64	52	57	71	67	61	55	63
Seed grain	36	83	20	39	40	70	36	32
Fertilisers	120	157	80	93	90	60	78	94
Plant protection	27	38	20	20	19	8	14	19
Salary / services								
Salary and associated costs	35	35	36	35	26	22	17	28
Tillage	34	59	62	23	59	13	25	27
Harvesting	8	12	11	6	10	7	5	11
Transportation	14	11	42	11	60	10	10	22
Other costs	32	23	9	46	6	21	20	23
Land lease costs	40	35	28	38	14	35	34	36
TOTAL	410	505	365	383	391	307	294	356
Insurance costs	16	20	15	15	16	12	12	14
Administrative and general costs	16	13	15	22	12	15	14	15
TOTAL (net of VAT)	443	538	395	420	418	335	320	384
TOTAL (inc VAT)	511	627	457	484	489	386	370	444

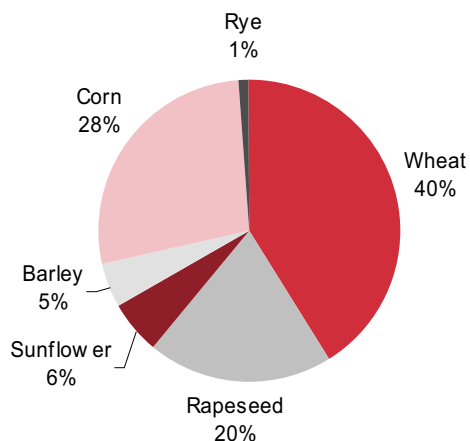
Source: Nomura estimates

Prospects and outlook

MCB has expanded rapidly in recent years and its plans remain ambitious. Overall, the company expects to control approximately 400,000 ha of land by 2011. Wheat is expected to remain the major crop, followed by corn and rapeseed. According to the company, yields will be above the Ukrainian average but will not increase dramatically.

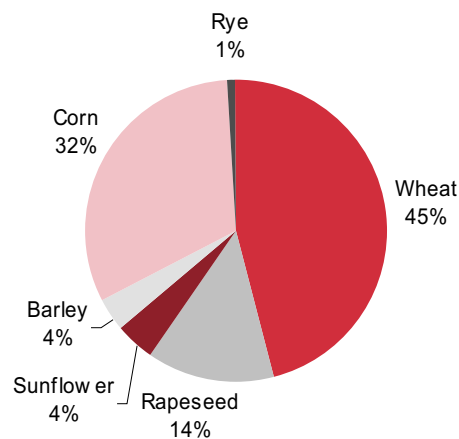
Yields will not increase dramatically

Exhibit 266. Harvested area breakdown (%) (2011F)



Source: Nomura estimates

Exhibit 267. Production breakdown (%) (2011)



Source: Nomura estimates

Our crop price forecasts are as outlined below.

Exhibit 268. Price forecast (US\$/ton)

	2008E	2009E	2010E	2011E	2012E	2013E	2014E	2015E
Winter wheat	220	220	220	220	220	220	220	220
Rapeseed	500	500	500	500	500	500	500	500
Rye	250	250	250	250	250	250	250	250
Winter barley	190	190	190	190	190	190	190	190
Spring wheat	220	220	220	220	220	220	220	220
Corn	180	180	180	180	180	180	180	180
Sunflowers	500	500	500	500	500	500	500	500
Spring barley	190	190	190	190	190	190	190	190

Source: Nomura estimates

Capex

The leasing of land is one of the most significant components of capex, followed by machinery and infrastructure such as elevators. Since MCB intends to acquire a large area of land in a short period of time, it is unlikely to be feasible to enter into contracts with individual landowners. MCB will likely have to buy companies which hold leases and these companies are currently valued at approximately US\$300/ha. In our forecasts, we assume 50% of new land is acquired by this method. We estimate machinery to cost US\$3 per 10,000 ha and support infrastructure to cost US\$2 per 10,000 ha.

Exhibit 269. Capex forecast (US\$m)

	2008F	2009F	2010F	2011F	2012F	2013F	2014F	2015F
Machinery	10	28	17	16	17	9	10	10
Infrastructure	7	18	11	11	11	5	5	5
Land	12	16	19	22	-	-	-	-
Total capex	29	62	47	49	28	14	15	15

Source: Nomura estimates

Taxation

Under current Ukrainian law, the corporate income tax rate is 25%. However, agricultural companies are classified as Fixed Agricultural Tax (FAT) payers, and do not have to pay corporate income tax. The FAT regime is scheduled to lapse on 31st December 2009 and, unless extended, agricultural companies will have to pay tax at 25%. We have assumed that the FAT regime is not extended and hence have taxed MCB's income at 25% from 2010 onwards.

Valuation

We have employed the discounted free cash flow method to value the company. The weighted average cost of capital is taken to be 18%, to reflect the risks associated with an emerging market such as Ukraine. To take into account MCB's growth potential, the terminal growth rate is assumed to be 3%. The DCF-derived fair value comes to EUR2.86 per share.

Financial statements

Income statement (US\$m)					
Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Revenues	10.3	15.7	42.8	110.7	151.1
Cost of goods sold	(6.9)	(8.3)	(29.5)	(72.2)	(102)
Other operating expenses	(0.8)	(1.3)	(3.8)	(8.9)	(12)
EBITDA	2.6	6	9.4	29.6	37.1
Depreciation & amortisation	(0.6)	(0.7)	(2.1)	(5.8)	(9.7)
EBIT	2	5.3	7.4	23.8	27.4
Interest income	-	-	0	1.3	0.2
Interest expense	(0.3)	(1)	(1.9)	(2.5)	(4.3)
Other non-operating expenses	-	-	-	-	-
Pre-tax profit	1.7	4.3	5.5	22.6	23.3
Tax	-	-	-	-	(5.8)
Minority interest	-	-	-	-	-
Net profit	1.7	4.3	5.5	22.6	17.5
Shares year end	-	-	17.2	17.2	17.2
EPS	-	-	0.3	1.3	1
DPS	-	-	-	-	-
Dividend payout per share (%)	-	-	-	-	-

Company, Nomura estimates

Balance sheet (US\$m)					
Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Property, plant & equipment	5.6	8.2	35.1	91.1	128.4
Intangible assets and goodwill	-	-	-	-	-
Investments	-	-	-	-	-
Other long-term assets	0.5	0.5	0.5	0.5	0.5
Total fixed assets	6.1	8.7	35.6	91.6	128.9
Inventories	6.3	15.6	14.6	17.8	19.6
Trade debtors	4.3	3.5	5.9	12.1	12.4
Short-term investments	-	-	-	-	-
Cash and cash equivalents	0.1	0.3	32.7	4.9	7.7
Other current assets	2	3.9	3.9	3.9	3.9
Total current assets	13	23	57	39	44
Total assets	18.8	32.1	92.7	130.4	172.5
Shareholders' equity	10.1	14.4	72.8	95.4	112.9
Minority interest	-	-	-	-	-
Shareholders' equity	10.1	14.4	72.8	95.4	112.9
Long-term debt	1.9	4.9	4.9	14.9	34.9
Other long-term liabilities	-	-	-	-	-
Long-term liabilities	1.9	4.9	4.9	14.9	34.9
Short-term debt	5.8	11	11	11	11
Trade creditors	0.6	0.7	2.8	7.9	12.6
Other current liabilities	0.4	1.1	1.1	1.1	1.1
Current liabilities	6.8	12.8	14.9	20	24.7
Total liabilities	8.7	17.7	19.8	34.9	59.6
Total liabilities & shareholders' equity	18.8	32.1	92.7	130.4	172.5

Company, Nomura estimates

Cashflow (US\$m)					
Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Net profit	-	4.3	5.5	22.6	17.5
Depreciation & amortisation	-	0.7	2.1	5.8	9.7
Gain from chg in fair values biological assets	-	-	-	-	-
Gain on equity investments	-	-	-	-	-
Income from affiliates	-	-	-	-	-
Other non-cash items	-	1	1.9	1.2	9.9
Increase/decrease in working capital liabilities	-	0.1	2.1	5.1	4.7
Decrease/increase in working capital assets	-	(8.5)	(1.3)	(9.5)	(2)
Other operating cashflow	-	(2.3)	(1.9)	(1.2)	(9.9)
Operating cashflow	-	(4.7)	8.4	24	29.8
Disposal of subsidiary	-	-	-	-	-
Sale of fixed assets	-	-	-	-	-
Capital expenditure	-	(3.3)	(29)	(61.7)	(47.1)
Increase in investments	-	-	-	-	-
Cashflow - other investing	-	-	-	-	-
Cashflow - investing activities	-	(3.3)	(29)	(61.7)	(47.1)
Proceeds from issuance of common stock	-	-	53	-	-
Increase in long-term borrowings	-	8.3	-	10	20
Decrease in borrowings	-	-	-	-	-
Dividends paid	-	-	-	-	-
Cashflow - other financing	-	-	-	-	-
Cashflow from financing	-	8.3	53	10	20
Change In cash and equivalents	-	0.3	32.3	(27.7)	2.8
Cash & equivalents b/f	-	0.1	0.3	32.7	4.9
Translation adjustments	-	-	-	-	-
Cash & equivalents c/f	-	0.3	32.7	4.9	7.7

Company, Nomura estimates

Our view

As the agricultural equivalent of a real estate developer, Brasilagro looks intelligent when land prices and commodity prices are rising. But what happens when they go into reverse? There is a possibility that Brasilagro looks even more intelligent as it uses its surplus funds to acquire distressed assets.

Anchor themes

- ⚓ Brasilagro buys, develops and sells farms. This strategy has worked well as land prices have risen. However, asset trading is all about timing and it is crucial for the company to acquire them while they are cheap. We worry that the strategy of trading coupled with agricultural volatility proves a high risk one.
- ⚓ The company's inability to spend its IPO proceeds suggests that it might be taking a sensible approach to its acquisition programme. Given that it has over 125,000 ha of arable land under control and has only cultivated 22,000 ha of that land, there is plenty of scope to consolidate gains, build a business and avoid overtrading.

Closing price on 16 October **BRL9.90**

Fair value estimate **BRL9.83**

Upside/downside **-1%**
EPS difference from consensus **+15%**

Source: Nomura

Nomura vs consensus

We believe we are slightly higher than consensus earnings. Our fair value is below consensus, reflecting the recent financial crisis.

Hedged?

① Plenty of cash – use sparingly

Despite the ease with which Brasilagro can acquire land, it still has some BRL288m (52%) of proceeds available from its IPO in May 2006. This slow burn rate is now looking increasingly wise as asset prices slide globally. Opportunities may arise in the future to acquire distressed assets at deep discounts.

② Limited experience in agriculture

Brasilagro has limited experience of agriculture and, at times, it is difficult not to see it as anything other than an agricultural asset trader. That said, their major shareholder – on whom they are dependent for expertise – has been a listed agricultural entity for almost 50 years in neighbouring Argentina. In addition, the company repairs and cultivates land and has held back from acquiring additional land of late.

③ Is the trading strategy sustainable?

Buying, developing and selling land as a core strategy works in a bull market fuelled by liquidity. In a market where the price of land could quite feasibly decline, this strategy could unravel quickly. Combine that with the normal volatility of the agriculture sector and the risks associated with a trading strategy become apparent. Which is why asset traders rarely command premium ratings.

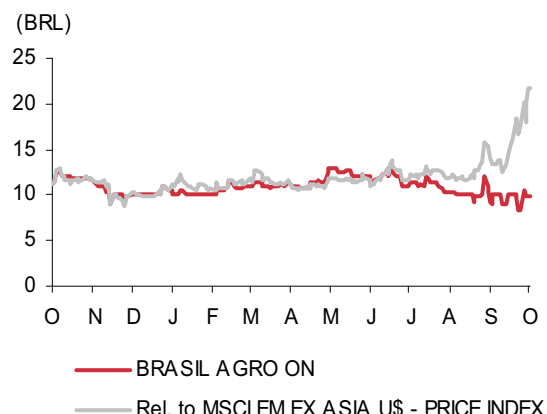
④ Initiating coverage with a NEUTRAL rating

An average of DCF valuation and land valuation at a 100% premium gives a fair value of BRL9.83 per share. We initiate coverage with a NEUTRAL rating.

Key financials & valuations

30 Jun (BRLm)	FY08	FY09F	FY10F	FY11F
Revenues	45.4	44.2	67.2	85.9
EBITDA	(2.1)	(5.7)	6.6	16
Net profit	13.3	12.6	14.5	19.5
EPS (BRL)	0.2	0.2	0.2	0.3
EPS growth (%)	-	-	-	50.0%
P/E (x)	49.6	45.9	39.9	29.7
EV/EBITDA (x)	-	-	36.9	15.2
Price/book (x)	1	1	0.9	0.9
Dividend yield (%)	-	-	-	-
ROE (%)	2.3%	2.1%	2.4%	3.1%
Net debt/equity (%)	(55.9%)	(39.2%)	(36.5%)	(35.8%)

Company, Nomura estimates



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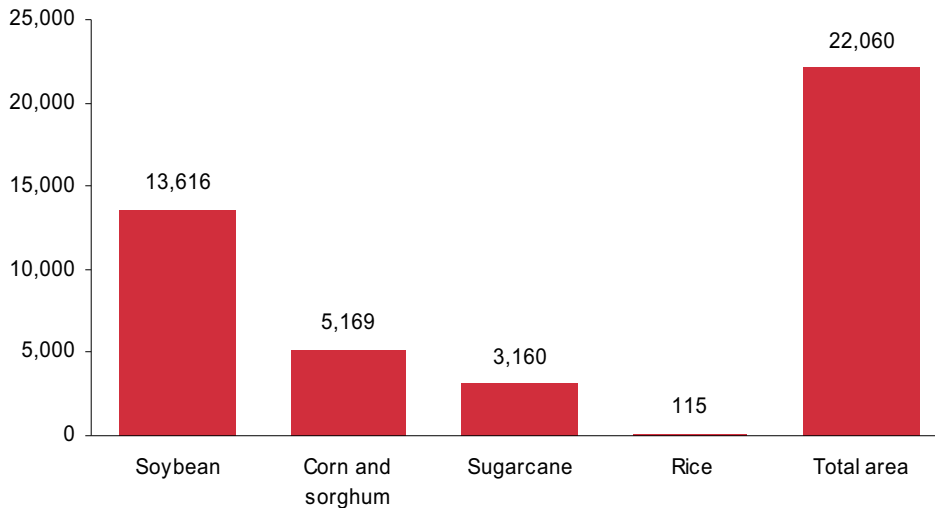
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Company background

Companhia Brasileira de Propiedades Agrícolas (Brasilagro) is a Brazilian agricultural company involved in crop cultivation and the development of agricultural land. Brasilagro's assets comprise 166,043 ha of land, spread across eight farms: São Pedro, Cremaq, Jatobá, Alto Taquari, Araucária, Chaparral, Nova Buriti and the recently acquired Preferência farm. The company grows sugarcane, grains and cotton, raises cattle, and carries out forestry operations. Brasilagro's founders are Cresud – a leading Argentinean agribusiness and Tarpon, a Brazilian investment firm. Essentially, Brasilagro is aiming to replicate Cresud's Argentinean strategy in Brazil.

Where farming meets real estate

Exhibit 270. Planted area FY08 (ha)

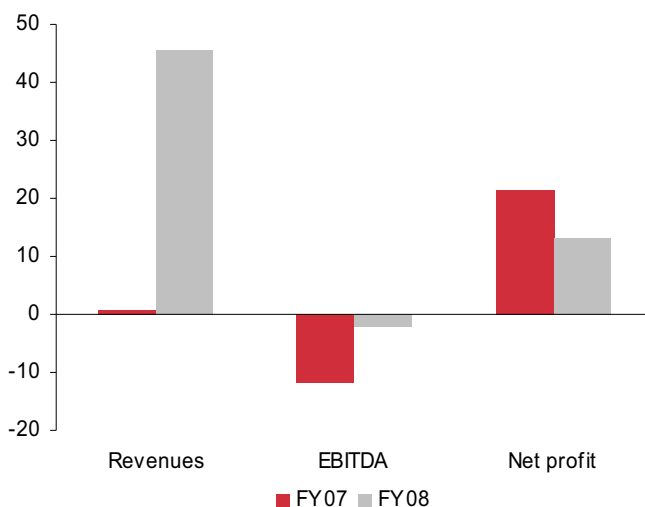


Source: Company data, Nomura estimates

In FY 2008, Brasilagro generated net revenues of BRL45.4m and a negative EBITDA of BRL2.1m. Agriculture activities including leasing contributed approximately BRL24.9m and asset sales generated around BRL21.6m to the top-line. The company reported a positive net profit of BRL13.3m due to strong financial income of BRL42.7m, driven by interest income on its financial investments.

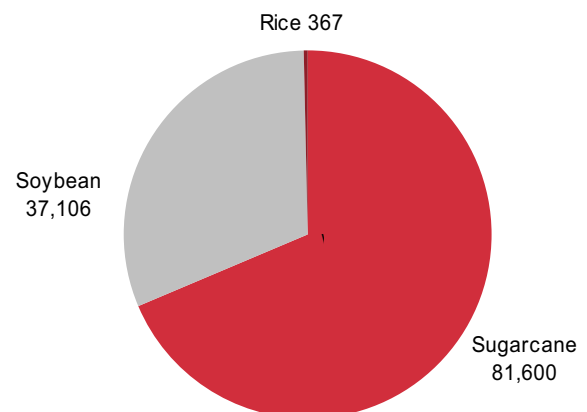
FY08 revenues of BRL45.4m including land sales of BRL21.6m

Exhibit 271. Financial snapshot (BRLm)



Source: Company data

Exhibit 272. FY 2008 harvest (tons)



Source: Company data

Brasilagro raised BRL553m from its initial public offering in May 2006 and was listed on BOVESPA. Cresud and Tarpon are the major shareholders of the company and own 15.98% and 7.76%, respectively, while the free float is 76.26%. Recently the

company's founding members were granted warrants in two series, in proportion to their pre-IPO ownership.

Strategy and operations

What makes Brasilagro different from many of its listed peers is that the eventual sale of its assets ie, "real estate" sales, is a central plank of the company's operations. Russian farmers will look at their upside potential in terms of farming output and see the appreciation of land as secondary – a kicker, if you will. In Brasilagro's case, land value appreciation and its sale are twin-tracked with Brasilagro's farming strategy. The initial focus is to acquire land for grains, sugarcane, forestry and cattle farming.

Brasilagro acquires underdeveloped or distressed land in strategic locations. After the land is acquired, the company improves soil quality using up-to-date technologies and special seeds. The company then develops necessary related infrastructure on these properties to support a viable agricultural business. An exit route is built into the strategy.

In common with some of its peers in various emerging markets, Brasilagro has adopted a diversification strategy to acquire lands across different regions to minimise climate risks and harvesting different crops to hedge against commodity price fluctuations and benefit from crop rotation.

Brasilagro purchases land either on its own, or occasionally in partnership with other agriculture companies such as Maeda Group and Brenco. Maeda Group is a vertically integrated cotton producer in Brazil with a 75-year history. Brenco is a Brazilian renewable energy producer, which in March 2008 signed a sugarcane supply agreement with Kernel to produce two full crop cycles over six years.

Land

At the beginning of September 2008, Brasilagro's portfolio consisted of 166,043 ha of land across eight farms, with a total purchase price of BRL290.6m. Approximately 75% of this total land area is arable, and this will be used primarily for soybeans, sugar, corn and animal farming. Brasilagro owned land is around 158,997 ha, excluding partnership land and land awaiting legal approval. The company bought Jatobá farms and Araucária farms in partnership. Jatobá farm is a joint venture which is 90% owned by Brasilagro and 10% by Maeda Group, while the Araucária farm is a partnership with Brenco where Brasilagro and Brenco own 75% and 25%, respectively.

Exhibit 273. Portfolio (as at September 2008)

Properties	Acquisition date	Location	Area (ha)	Agreed price (BRLm)	Price (BRL'000/ha)	Project
São Pedro Farm	Sep-06	Chapadão do Céu/GO	2,443	9.9	4,052	Sugarcane
Cremaq Farm	Oct-06	Baixa Grande ibeiro/PI	32,375	42.2	1,303	Grains
Jatobá Farm*	Mar-07	Jaborandi/BA	31,602	35.4	1,120	Grains and Cotton
Alto Taquari Farm**	Aug-07/Under analysis**	Alto Taquari/MT	5,266	34.0	6,457	Sugarcane
Araucária Farm***	Apr-07	Mineiros/GO	15,543	90.0	5,790	Sugarcane
Chaparral Farm	Nov-07	Correntina/BA	37,799	47.1	1,246	Cattle/Grains
Nova Buriti Farm	Dec-07	Januária/MG	24,185	21.9	906	Forestry
Preferencia Farm	Sep-08/Under analysis	Barreiras	16,830	10.1	600	Cattle/grains
		Total	166,043	290.6		
		Total owned by BrasilAgro	158,997	264.5		

Note: * Jatoba farm is 90% owned by BrasilAgro and 10% by Maeda group

** 3,673 hectares subject to compliance by the sellers with certain conditions precedent.

*** All the rights and obligations fall to the Company and Brenco in the proportion of 75% and 25% respectively.

Source: Company data

A development and a trading strategy

Brasilagro has leased 1,500 ha land of Cremaq farm for grain cultivation. The company has leased this land for two years until 2010 at the lease price of four and five bags of soybeans per ha, respectively, for the first and second years. The company is doing due diligence on another 30,000 ha land, valued at approximately BRL40m.

In line with its strategy to exploit land price appreciation opportunities, Brasilagro sold the 2,022 ha Engenho farm for BRL21.8m in June 2008, which represented a 116% gain over its December 2006 acquisition price of BRL10.1m. According to the company, the present market value of company-owned land (prior to the Preferência acquisition) was around BRL612.3m, approximately 141% higher than the purchase price of these lands.

Land portfolio value has appreciated by 141%

Exhibit 274. Asset valuation report (7 Aug 2008)

Land bank	Acquisition date	Area (ha)	Accounting value (BRLm)	Deloitte valuation* (BRLm)	Value growth (%)
Sao Pedro Farm	Sep-06	2,443	9.9	31.8	222
Cremaq Farm	Oct-06	32,375	42.2	111.8	165
Jatoba Farm**	Mar-07	28,443	31.8	138.4	335
Alto Taquari Farm	Aug-07	5,266	34.0	128.2	277
Araucaria Farm***	Apr -07	11,657	67.5	66.6	-1
Chaparral Farm	Nov-07	37,799	47.1	115.6	145
Nova Buriti Farm	Dec-07	24,185	21.9	20.0	-8
Total, net		142,168	254.3	612.3	141

Note: *As at 30 June 2008

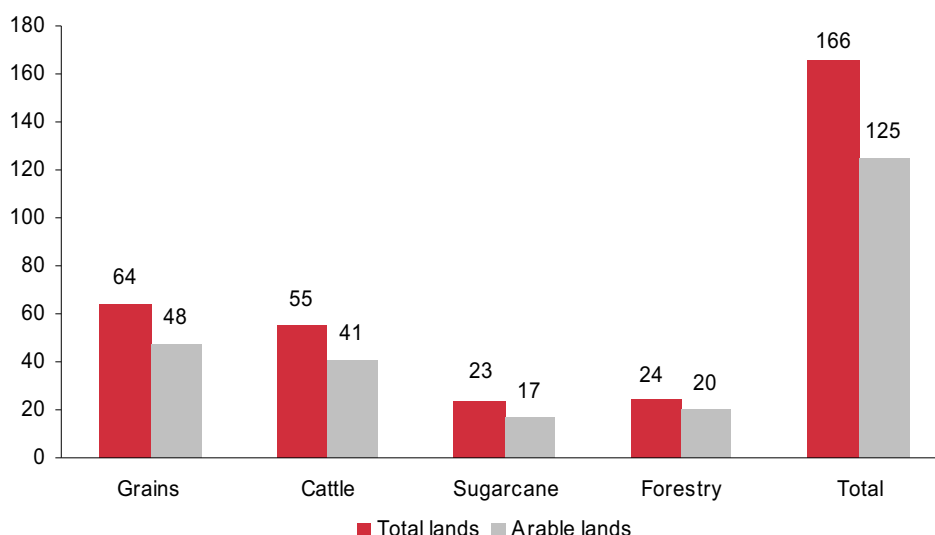
** Valued for 90% stake of Brasilagro

*** Valued for 75% stake of Brasilagro

Source: Nomura estimates, Company release

Out of the 166,043 ha land portfolio, the arable area is 125,214 ha, and the company is planning grains, cattle raising, sugarcane and forestry projects on 63,977 ha, 54,629 ha, 23,252 ha and 24,185 ha respectively.

Exhibit 275. Land usage ('000ha)



Source: Company data, Nomura estimates

Agricultural activities

Brasilagro's major crops are soybeans, sugarcane and corn. The company plans to use over 53% of its total land for grains and sugarcane and the remainder for cattle farming and forestry projects. Brasilagro employs methods such as mechanised land clearing and soil cleaning to improve land productivity.

Planted 22,060 ha land in June 2008

In FY 2008, the company planted around 22,060 ha of land. At end-June 2008, the company harvested soybeans on 13,616 ha, and rice on 115 ha. Corn, sorghum and sugarcane were planted on 7,685 ha and this is still to be harvested. Total soybean production was about 37,100 tons, at an average yield of 2.7 tons/ha and rice production was 367 tons at an average yield of 3.2 tons/ha. In FY 2008, grain revenues contributed BRL19.9m, which came almost entirely from soybean sales, plus a little bit from rice sales. The company also sold around 82,000 tons of sugarcane on 644 ha of land. Sugarcane contributed BRL4.6m to revenues.

Brasilagro enters into derivative contracts on the Chicago Board of Trade to hedge its soybean crop against price and foreign exchange fluctuations. In FY 2008, the company hedged 620,017 soybean bags at the rate of US\$19.12 per bag. For FY 2009, the company has hedged 340,000 bags at a price of US\$27.5 per bag.

Forestry and cattle farming

In addition to farming, Brasilagro plans to use 47% of its total land for forestry and cattle farming projects. Currently Brasilagro plans to use around 24,185 ha for forestry and 54,629 ha for cattle farming projects. The total pasture land will be gradually lowered as the land becomes more suitable for farming activities. As at June 2008, Brasilagro had not started its forestry and cattle raising projects.

Cattle land to be gradually converted for farming

Prospects and outlook

Brasilagro is rapidly increasing its total land under cultivation and acquiring new lands to increase its property portfolio. We estimate that the company will have around 112,255 ha (prior to the Preferência acquisition) under cultivation by FY 2013. Whether Brasilagro will continue to benefit from rising Brazilian land prices is debatable, in our view. As we emphasised in the opening section of this report, we expect land prices to decline in the short term, not rise. However, we should put that in perspective – land acquired by Brasilagro has risen 141% in value compared to the price paid by the company. As we point out in the valuation section, it would take a catastrophic collapse in values for Brasilagro to be facing a book loss on its land portfolio.

Land

Land is the largest component of capital expenditure, followed by land development expenses and vehicle and equipment expenditure. Prior to September 2008, Brasilagro had applied only BRL264.5m, or 48%, of the May 2006 IPO proceeds of BRL552.6m. According to the company's own estimates, average Brazilian land prices rose 17% last year and its land bank (prior to the Preferência acquisition) was valued at BRL612.3m, approximately 141% higher than the price paid. Clearly this is an area of huge significance for Brasilagro given its stated intention of acquiring distressed assets and enhancing their value. Going forward, we expect there to be an enormous increase in the volume of distressed – or, at least, cheap – assets. Will Brasilagro adopt a “wait-and-see” attitude towards its land purchases? If it does, there could be an enormously profitable opportunity for the company in store.

48% of IPO proceeds used for land purchases

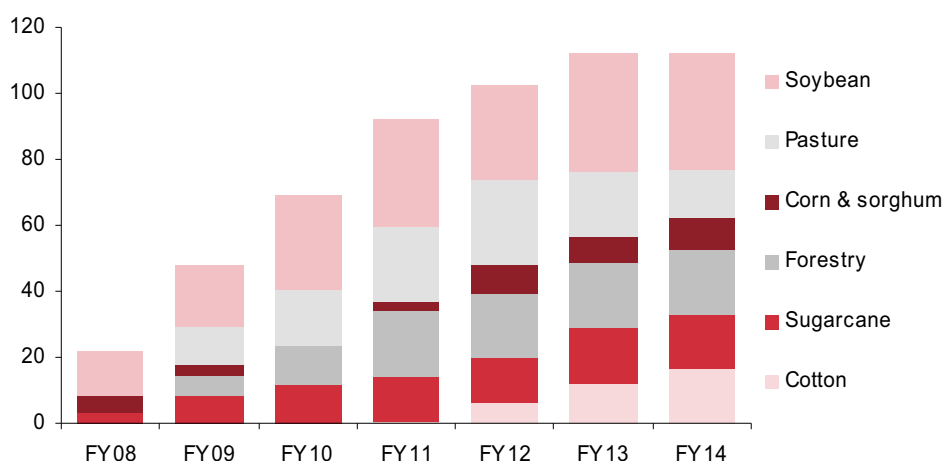
Agriculture activities

Currently, the company's plans to increase its area under cultivation are reasonably aggressive. Out of the total 149,213 ha of land (ie, before the Preferência acquisition), the company estimated that the potential productive area is 112,255ha. We have assumed that Brasilagro will harvest all of its arable land by 2013. We expect 82% of arable land to be used for farming soybeans, corn, sorghum, sugarcane and cotton, while the remainder will be reserved for forestry activities.

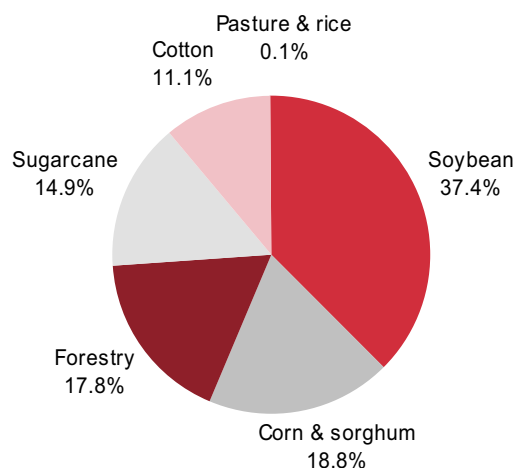
Total harvest area to grow to 112,255 ha by 2014

We have assumed that the company's soybean harvest area will grow from 13% in FY 2008 to around 31% of the total arable area by FY 2014. If the Doha Round of the WTO succeeds, as we expect, this is likely to be a significant catalyst for the Brazilian agriculture sector. Brasilagro will increase area under sugarcane coverage from 3% in FY 2008 to 15% by 2014. We have also assumed that cotton and corn and sorghum harvest areas will grow to 14% and 9%, respectively, of total arable area by 2014.

Exhibit 276. Harvesting estimates (‘000 ha)



Source: Company data, Nomura estimates

Exhibit 277. Estimated harvest area – (excluding Preferência farm) 2017 (%)

Source: Company data, Nomura estimates

Valuation

Brasilagro generates revenues from both agricultural activities and real estate appreciation. In FY 2008, the company generated some BRL24.9m from agricultural activities and another BRL21.6m from land sales. Therefore, we have applied a combination of valuation techniques to determine Brasilagro's fair value.

If the company was solely involved in farming operations, a simple DCF of its agricultural operations would suffice. Alternatively, if the company was solely a land developer, valuing the existing land bank would be sufficient. Since Brasilagro does both, we use an average of DCF valuation and land valuation to arrive at fair value.

We have valued Brasilagro's agricultural business on a standalone basis using DCF and assumed a terminal growth rate of 3% and a WACC of 18%. Using this method, the value of Brasilagro's agricultural operations comes to BRL6.60 per share.

There are multiple ways to value the land. Obviously, market value is preferable to book value, but the price per hectare varies significantly within regions of Brazil. Even if we agreed a number, there is no guarantee that Brasilagro could conclude a transaction at that price. To get around this difficulty, we use book value, and then do a sensitivity analysis based on a range of land price appreciations to arrive at a fair value. On the basis of land premiums varying from 0% to 135%, we estimate Brasilagro's value per share to be in the range of BRL8.60 to BRL14.70.

The most important issue to note is that land price appreciation has been so considerable to date that even a 30% decline from current levels would still leave Brasilagro's land valued at a considerable premium to its cost. An average of DCF valuation and land valuation at a 100% premium gives a fair value of BRL9.83 per share. We initiate coverage on Brasilagro with a NEUTRAL recommendation.

Agricultural operations and land appreciation**Exhibit 278. Land value sensitivity**

Land premium over agreed price	0%	20%	40%	60%	80%	100%	120%	141%
Agreed price of land (BRLm)	264	317	370	423	476	529	582	637
Add: cash & investment (BRLm)	340							
Less: debts & minorities (BRLm)	5							
Land payable (BRLm)	100							
Value per share based on land valuation (BRL)	8.6	9.5	10.4	11.3	12.2	13.1	14.0	14.9
Value per share based on agriculture activities (BRL)	6.6							
Fair value per share (BRL)	7.6	8.0	8.5	8.9	9.4	9.8	10.3	10.8

Source: Nomura estimates

Financial statements

Income statement (BRLm)

Year-end 30 June	FY07	FY08	FY09F	FY10F	FY11F
Revenues	0.7	45.4	44.2	67.2	85.9
Cost of goods sold	(12.4)	(48.3)	(49.8)	(60.6)	(69.9)
Other operating expenses	-	0.8	-	-	-
EBITDA	(11.7)	(2.1)	(5.7)	6.6	16
Depreciation & amortisation	(0.4)	(2.8)	(4.9)	(5.9)	(6.8)
EBIT	(12.1)	(4.9)	(10.6)	0.7	9.2
Interest income	60.2	42.7	29.9	21.4	20.4
Interest expense	(0.5)	(1.1)	(0.2)	(0.2)	(0.2)
Other non-operating expenses	(17.7)	(9)	-	-	-
Pre-tax profit	29.9	27.7	19	21.9	29.4
Tax	(8.2)	(14.5)	(6.5)	(7.5)	(10)
Minority interest	(0.2)	0.1	0.1	0.1	0.1
Net profit	21.5	13.3	12.6	14.5	19.5
Shares year end	58.4	58.4	58.4	58.4	58.4
EPS	0.4	0.2	0.2	0.2	0.3
DPS	-	-	-	-	-
Dividend payout per share (%)	-	-	-	-	-

Company, Nomura estimates

Balance sheet (BRLm)

Year-end 30 June	FY07	FY08	FY09F	FY10F	FY11F
Property, plant & equipment	159.2	279.9	283.7	288.7	292.3
Intangible assets and goodwill	-	-	-	-	-
Investments	4.7	6.9	6.9	6.9	6.9
Other long-term assets	1.6	33.4	40	42.9	45.2
Total fixed assets	165.6	320.2	330.6	338.4	344.4
Inventories	-	30.2	31.4	33.2	34.5
Trade debtors	-	21.5	28.7	37.9	40.1
Short-term investments	-	1.5	1.5	2.3	2.9
Cash and cash equivalents	501.7	331.8	238.2	227	229.9
Other current assets (balance sheet)	7.2	10.5	10.4	14.8	18.3
Total current assets	508.9	395.5	310.2	315.1	325.7
Total assets	674.5	715.7	640.8	653.6	670.1
Shareholders' equity	574.8	586.9	599.5	614.1	633.5
Minority interest	1	3.4	3.3	3.2	3.1
Shareholders' equity	575.8	590.3	602.8	617.3	636.6
Long-term debt	-	1.3	1.3	1.3	1.3
Other long-term liabilities	18.8	19.5	13.3	6.7	6.7
Long-term liabilities	18.8	20.9	14.7	8.1	8.1
Short-term debt	0.1	0.4	0.4	0.4	0.4
Trade creditors	0.2	2.1	2	2.4	2.7
Other current liabilities	79.7	102	20.8	25.4	22.3
Current liabilities	79.9	104.6	23.3	28.3	25.4
Total liabilities	98.7	125.4	37.9	36.3	33.4
Total liabilities & shareholders' equity	674.5	715.7	640.8	653.6	670.1

Company, Nomura estimates

Cashflow (BRLm)					
Year-end 30 June	FY07	FY08	FY09F	FY10F	FY11F
Net profit	21.5	13.3	12.6	14.5	19.5
Depreciation & amortisation	0.4	2.8	4.9	5.9	6.8
Gain from chg in fair value of biological assets	-	-	-	-	-
Gain on equity investments	-	-	-	-	-
Income from affiliates	-	-	-	-	-
Other non-cash items	(5.1)	(11.1)	(4.4)	(0.1)	(0.1)
Increase/decrease in working capital liabilities	9	(47.4)	(8.3)	(16.2)	(7.6)
Decrease/increase in working capital assets	5.9	7.2	(0.1)	4.5	3.7
Other operating cashflow	-	-	-	-	-
Operating cashflow	31.7	(35.2)	4.8	8.7	22.3
Disposal of subsidiary	-	-	-	-	-
Sale of fixed assets	-	-	-	-	-
Capital expenditure	(62.3)	(135.6)	(98.4)	(19.9)	(19.4)
Increase In investments	(5.2)	(3.3)	-	-	-
Cashflow - other investing	-	-	-	-	-
Cashflow - investing activities	(67.5)	(138.9)	(98.4)	(19.9)	(19.4)
Proceeds from issuance of common stock	-	-	-	-	-
Increase in long-term borrowings	0	1.7	-	-	-
Decrease in borrowings	-	-	-	-	-
Dividends paid	-	-	-	-	-
Cashflow - other financing	-	2.4	-	-	-
Cashflow from financing	0	4.1	-	-	-
Change in cash and equivalents	(35.8)	(170)	(93.6)	(11.2)	2.9
Cash & equivalents b/f	537.6	501.7	331.8	238.2	227
Translation adjustments	-	-	-	-	-
Cash & equivalents c/f	501.7	331.8	238.2	227	229.9

Company, Nomura estimates

Our view

Cosan's degree of vertical integration is matched by few. The company is dynamic and ambitious. However, in the current climate, Cosan might do well to consolidate its activities rather than expand them. A recent US\$180m placement may help reduce leverage but will it be sufficient?

Anchor themes

- ⚓ Brazil enjoys a low-cost advantage in both labour and raw materials. Sugarcane is cheaper than beet from the heavily protected markets in Russia and Ukraine. If the WTO's Doha round is ever signed, Brazil –and Cosan – stand to gain significantly.
- ⚓ Cosan's flexibility to switch between sugar and ethanol and its co-generation business indicate a high degree of innovative thinking. However, the company's capital expenditure plans appear to be ambitious in the current economic climate. The estimated 35% net debt/equity post placement is offset by the fact that over 55% of sales are overseas and only 4% of total debt is short term.

Closing price on 16 October **BRL10.70**

Fair value estimate **BRL9.61**

Upside/downside **-10%**
EPS difference from consensus **-194%**

Source: Nomura

Nomura vs consensus

Our fair value estimate is significantly below consensus as we expect higher losses for the full year.

Vertical ascent

① Vertical integration

Few companies have vertically integrated to the extent of Cosan. The company is involved throughout the process, from the growing of sugar cane right through to the distribution of ethanol at the pumps. The company's competitive advantage and ability to maximise its margins are enhanced by its access to low cost raw materials and labour. It is hardly a surprise that Brazil is the one country seeking resolution of the Doha Development Agenda at the WTO.

② Flexible and innovative operations

Of the company's 17 sugar processing plants, 15 of them are capable of producing sugar and ethanol indicating a high degree of flexibility. Co-generation, apart from providing an additional revenue stream, allows the company to qualify for carbon credits which it can sell. In February 2008, ethanol overtook gasoline as the major fuel used in Brazil.

③ High gearing and ambitious plans

A recent US\$180m placing will help lower the company's net debt/equity ratio which stood at over 45% prior to the placement. The company has ambitious capital expenditure plans and intends to spend almost BRL4.7bn over the next four years. In the current climate this seems highly ambitious. We believe it is likely to be scaled down.

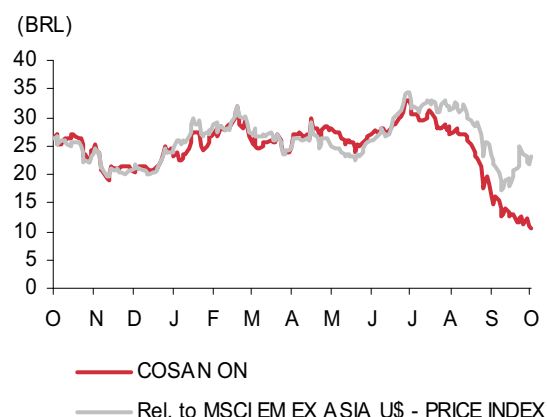
④ Initiating coverage with a NEUTRAL rating

We have applied a WACC of 15% to Cosan, which gives us a fair value of BRL9.61 per share. We initiate coverage with a NEUTRAL rating.

Key financials & valuations

30 Apr (BRLm)	FY08	FY09F	FY10F	FY11F
Revenues	2,736.1	2,940.2	3,451.2	4,013.6
EBITDA	172.8	283.7	618.3	957.9
Net profit	(47.8)	(213.9)	(88)	16.1
EPS (BRL)	(0.2)	(0.8)	(0.3)	0.1
EPS growth (%)	-	-	-	-
P/E (x)	-	-	-	107.0
EV/EBITDA (x)	21.2	12.9	5.9	3.8
Price/book (x)	0.9	0.8	0.9	0.9
Dividend yield (%)	-	-	-	-
ROE (%)	(1.9%)	(6.3%)	(2.6%)	0.5%
Net debt/equity (%)	36.4%	52.7%	78.2%	87.8%

Company, Nomura estimates



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Company background

When it comes to vertical integration and a broad range of revenue streams, few agriculture companies have evolved to the extent of Cosan. The company grows cane, processing it into sugar or ethanol, retails branded sugar and distributes fuel ethanol. Being located in Brazil provides Cosan with two major advantages: first, low production costs and, second, the scale of fuel ethanol consumption. Brazil's inexpensive land and labour make Cosan's sugarcane among the cheapest in the world. Simultaneously, Cosan can rely on a domestic market for ethanol which now accounts for a greater share of the local fuel source for cars than gasoline. These are Cosan's positive attributes.

The problem with the company is that it has overextended itself significantly. Net debt/equity stood at over 45% in 1Q09 and over 98% of the company's debt is denominated in US\$. This adds significantly to the company's risk profile. A recent US\$180m private placement, by the holding company, will likely help to reduce that leverage, although the extent of the company's expansion plans suggests that the reduction may be short lived.

Vertical integration ensures that Cosan is involved in every aspect of the sugar and ethanol supply chain, from growing sugarcane to the distribution of ethanol. This reduces the volatility of Cosan's revenues and helps it to maximise its margins. Cosan has the added flexibility that it can change the production mix from sugar to ethanol in most of its mills, enabling it to respond to demand conditions.

The company's revenue streams are diversified. Currently, Cosan's revenues come principally from sugar and ethanol – both for industrial and fuel use. In future, revenues from power will likely grow, as Cosan increases its co-generation capacity. Since power from bagasse is classified as "clean" ie, greenhouse gas neutral, Cosan qualifies for carbon credits, which it can later sell.

As outlined in our Brazil section, one of the country's key advantages is its low production costs. This is amplified with sugar because efficiencies are derived from the co-production of ethanol and sugar and the use of by-products such as bagasse which, in turn, lowers processing energy costs.

In February 2008, the monthly demand for ethanol exceeded that of gasoline for the first time, primarily driven by the proliferation of flex-fuel cars ie, cars that run on any combination of ethanol and gasoline. Cosan has been one of the beneficiaries of this growth and we expect the trend to continue. Towards that end, the company is constructing a state-of-the-art ethanol production facility with a crushing capacity of 10m tons of sugarcane – equal to nearly 25% of its current crushing capacity. In August this year, Cosan also announced plans to build an ethanol pipeline to reduce logistics costs.

In addition to the new ethanol facility, Cosan is expanding its existing mills with plans to increase their crushing capacity by 25% by 2012. The company also plans to increase mechanisation and improve the productivity of these mills.

Cosan is the world's largest sugarcane processor, the second largest sugar exporter and the largest ethanol exporter. It is also Brazil's largest sugar producer, largest ethanol producer and second largest seller of refined sugar in the Brazilian retail market. Cosan operates 17 mills, two sugar refineries and two port terminals, all in the Centre-South region of Brazil.

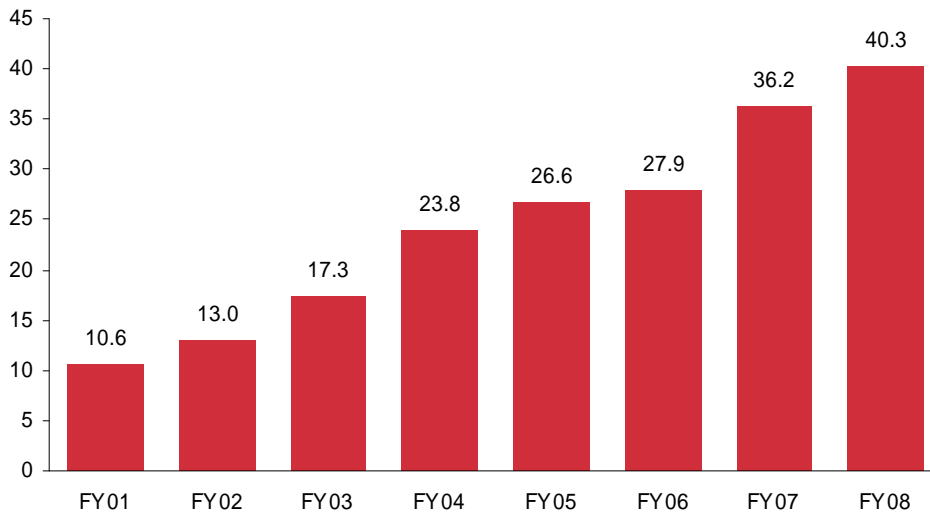
Diversified and integrated

Debt, debt, debt

Ethanol overtook gasoline in February 2008

Leader in sugar and ethanol...

Exhibit 279. Sugarcane crushed (m tons)



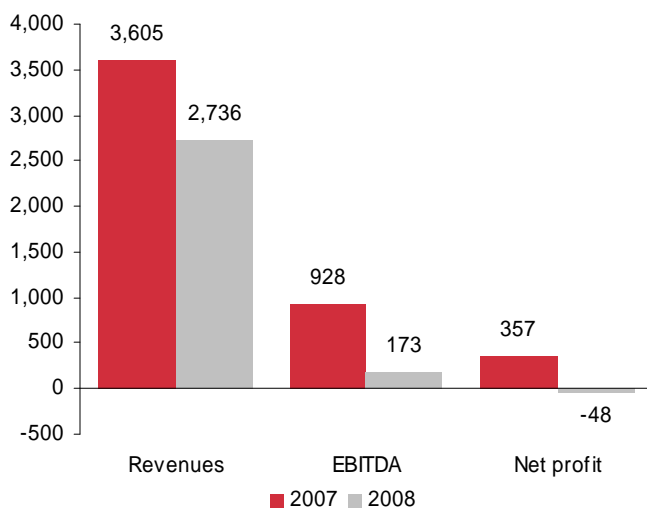
Source: Company data, Nomura estimates

In April 2008, in a sign of increasing vertical integration, Cosan acquired Esso Brazil, which was involved in the marketing and distribution of fuels and the production and marketing of lubes and specialities. In August, Cosan announced plans to build an ethanol pipeline in Brazil's São Paulo state, to reduce its logistics costs. The company also has plans to generate electricity at its mills from bagasse, the residue left after sugarcane processing. Cosan is also looking at selling carbon credits from its mills, adding a new revenue stream.

...diversifying into power, carbon trading and fuel distribution

In 2008, the company crushed 40.3m tons of sugarcane, yielding 3.15m tons of sugar and 1.57m litres of ethanol. Net revenues in 2008 were BRL2,736m, while EBITDA was BRL173m and net losses were BRL48m. The loss was primarily due to the decline in EBITDA which in turn was the result of lower prices for sugar and ethanol.

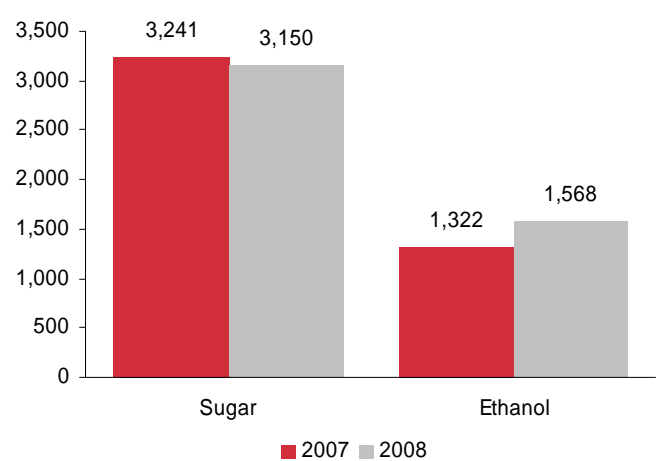
Exhibit 280. Financial snapshot (BRLm)



Source: Company data

Cosan raised US\$400m from an IPO on the São Paulo Stock Exchange in November 2005. Cosan Ltd, the holding company, owns a 56.1% stake in Cosan. Cosan Limited was listed on the NYSE in September 2007

Exhibit 281. Operational snapshot - Revenues (BRLm)



Source: Company data

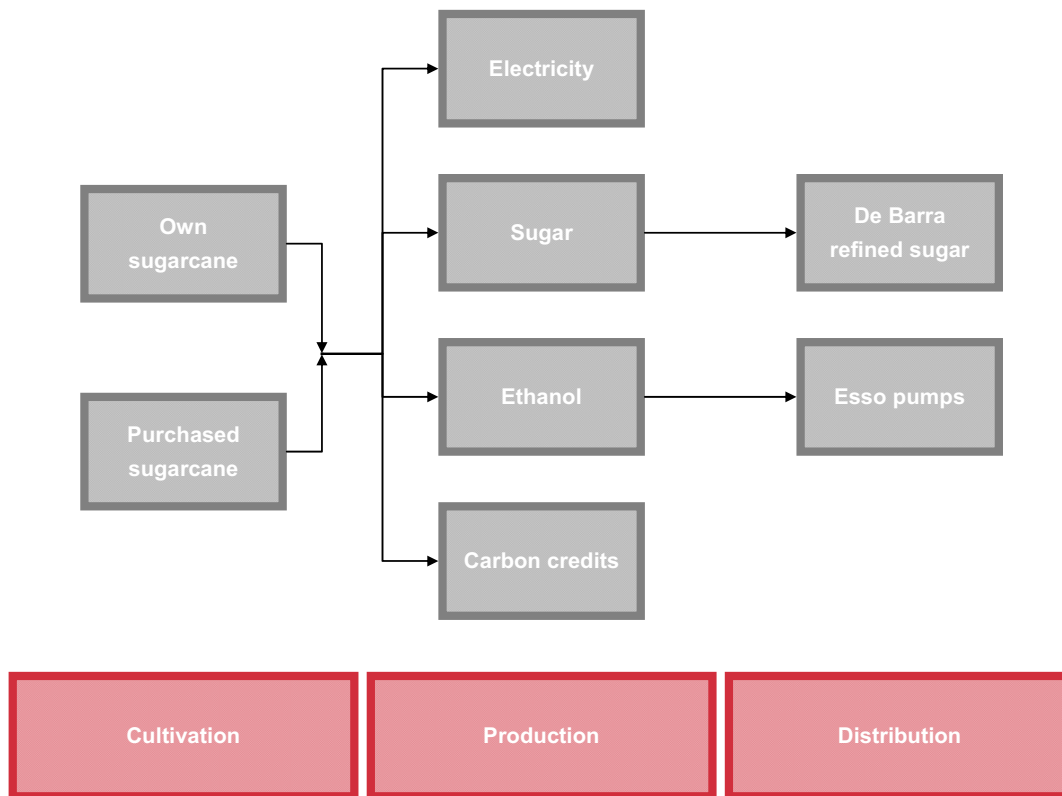
IPO in November 2005

Strategy

Although in operation since 1936, Cosan was officially established only in 2000. Since then, the company has grown rapidly on the back of acquisitions and partnerships. The company's strategic focus over the next few years is on (1) increasing capacity through brownfield and greenfield expansion, (2) reducing costs through operating improvements such as mechanisation, (3) adding revenue streams such as electricity and carbon credits and (4) strengthening vertical integration in the form of fuel distribution.

Vertical integration is the aim

Exhibit 282. Presence across the value chain



Source: Company data

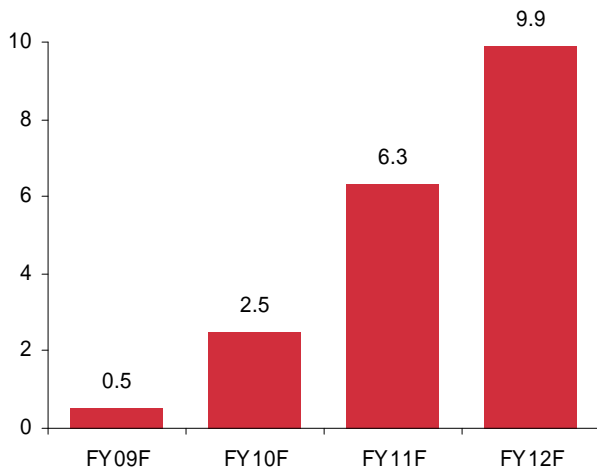
Green-field and brown-field expansion

Cosan has some pretty ambitious expansion plans. A major green-field project is the construction of a dedicated ethanol facility in the State of Goias. The facility will likely have a sugarcane crushing capacity of 9.9m tons divided among three mills. The mill will likely be operating at full capacity by 2012 and cost approximately US\$650m. The estimated annual ethanol output from the mill is over 900m litres.

Green-field crushing capacity of 10m tons and brown-field of 10.6m tons

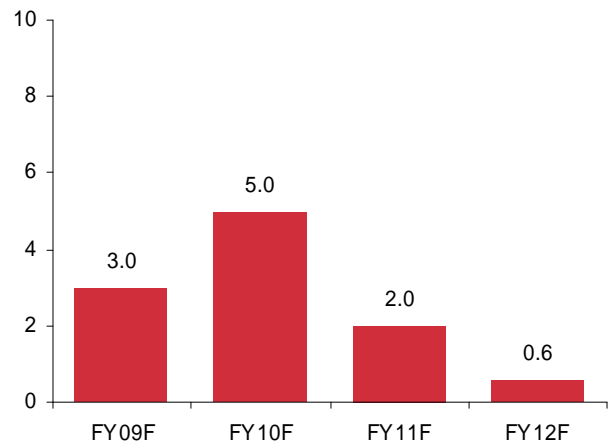
Cosan also plans to add a further 10.6m tons of crushing capacity across seven of its existing facilities. Total crushing capacity is thus expected to rise from the current 40m tons to almost 61m tons by 2012.

Exhibit 283. Green-field facility – crushing capacity (m tons)



Source: Company data

Exhibit 284. Annual brown-field capacity additions (m tons)



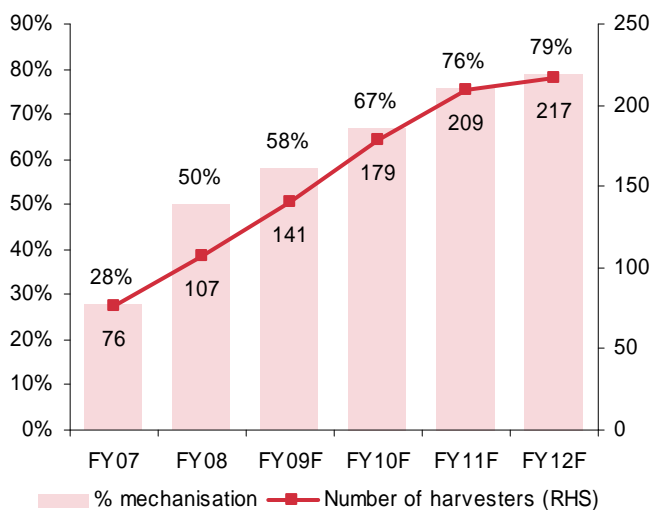
Source: Company data

Operating improvements

Cosan is pursuing operating improvements in all of its business areas as a means of reducing costs and improving productivity. Chief among these is harvest mechanisation. Cosan has increased its number of harvesters over the past few years and intends to increase the level of mechanisation to 79% by 2012. Further operating improvements are planned in the agricultural, industrial and logistics areas, netting EBITDA savings of US\$93m from 2009.

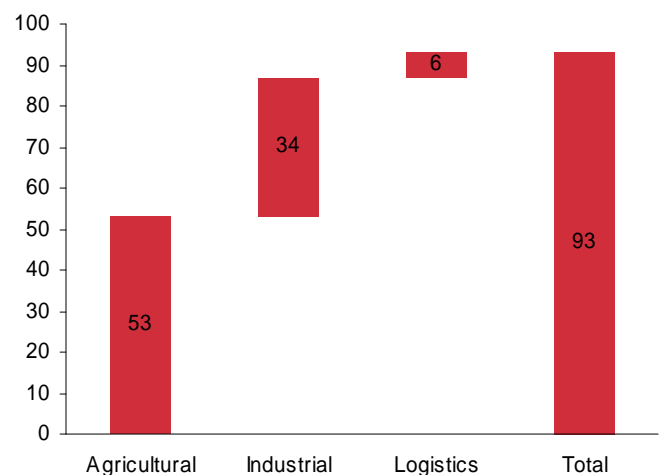
Incremental EBITDA improvements

Exhibit 285. Increasing mechanisation



Source: Company data

Exhibit 286. EBITDA improvements from 2009 (US\$m)



Source: Company data

Co-generation

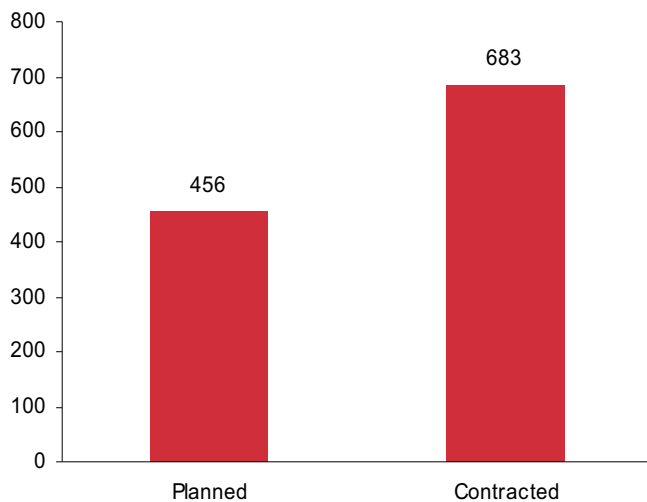
In December 2005, Cosan was one of the winners of the New Energy Auction, enabling it to supply power to the Brazilian grid from its Costa Pinto and Rafard mills. Since then, Cosan has been adding co-generation capabilities at most of its mills. By 2009, Cosan expects to supply 1,139GWh annually. In addition, in its new green-field facility at Goias, the company expects to have 351GWh of surplus energy for sale of by 2014.

Revenues from power to grow exponentially

Since energy generation from bagasse is classified as clean and renewable, Cosan has been admitted to the Clean Development Markets or carbon credits markets. Thus co-generation, besides satisfying Cosan's energy requirement and producing surplus electricity for sale, also provides Cosan with tradable carbon credits.

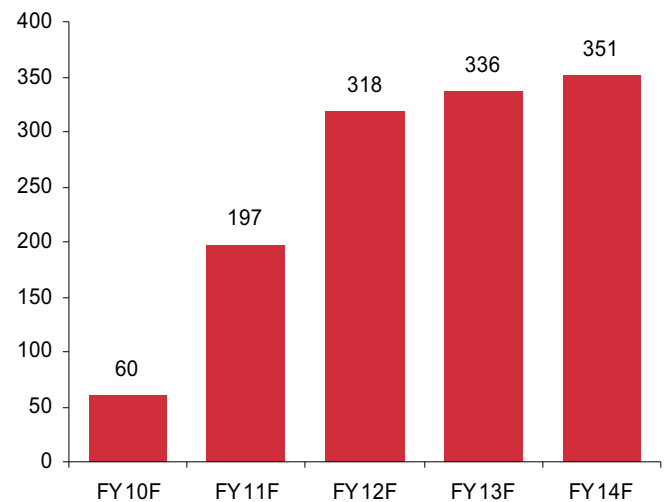
Future revenues from electricity and carbon credits are likely to be a small part of Cosan's total revenues. However, we estimate that even if only 5% of revenues are derived from such sources this will be sufficient to afford some reduction in the volatility of Cosan's top line.

Exhibit 287. Planned/contracted energy generation (GWh)



Source: Company data

Exhibit 288. Energy generation in Goias green-field facility (GWh)



Source: Company data

Vertical integration

In April 2008, Cosan entered into an agreement with ExxonMobil to acquire its Brazilian downstream assets (Esso Brazil), including its fuels distribution and lubes businesses, for US\$1,024m. This acquisition enabled Cosan to be present at every point in the ethanol value chain from sugarcane cultivation to retail fuel distribution. In 2007, Esso's net revenues totalled BRL9.2bn, its EBITDA reached BRL275.8m and net profit totalled BRL138.5m.

Operations

Cosan cultivates sugarcane on approximately 300,000 ha of land – 54,000 ha owned and 246,000 ha leased. Its suppliers cultivate another 200,000 ha of land with technical and financial support from Cosan. The sugarcane is processed at one of Cosan’s 17 mills. Of these 17 mills, 15 have the capability to produce both sugar and ethanol, thus giving Cosan the flexibility to change its production mix based on demand. The company supplies to both local and export markets with sugar dominating exports while ethanol dominates local consumption.

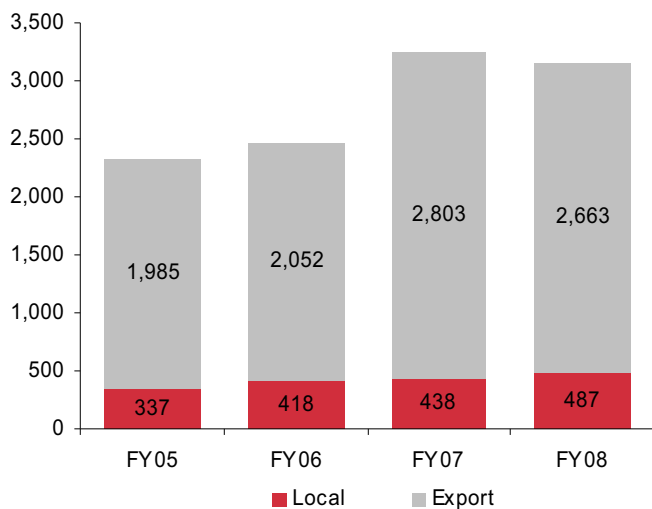
17 mills; 15 of those can produce both sugar and ethanol

Sugar

Cosan produces a wide variety of sugar, including raw or Very High Polarization (VHP), organic, crystal and refined sugars. VHP is its principal product. In the local market, Cosan also sells its branded De Barra sugar. Since 2005, Cosan’s sugar volumes have increased steadily, except in 2008 when the company opted to increase its inventories and reduced sales due to depressed prices.

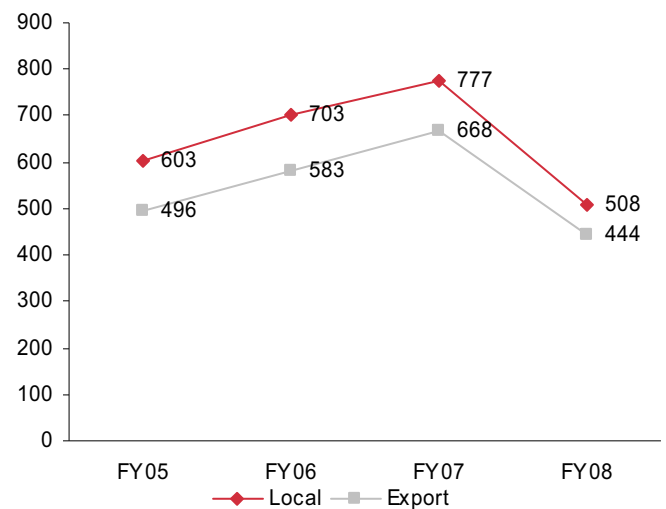
Reasonably stable business

Exhibit 289. Sugar volume ('000s of tons)



Source: Company data

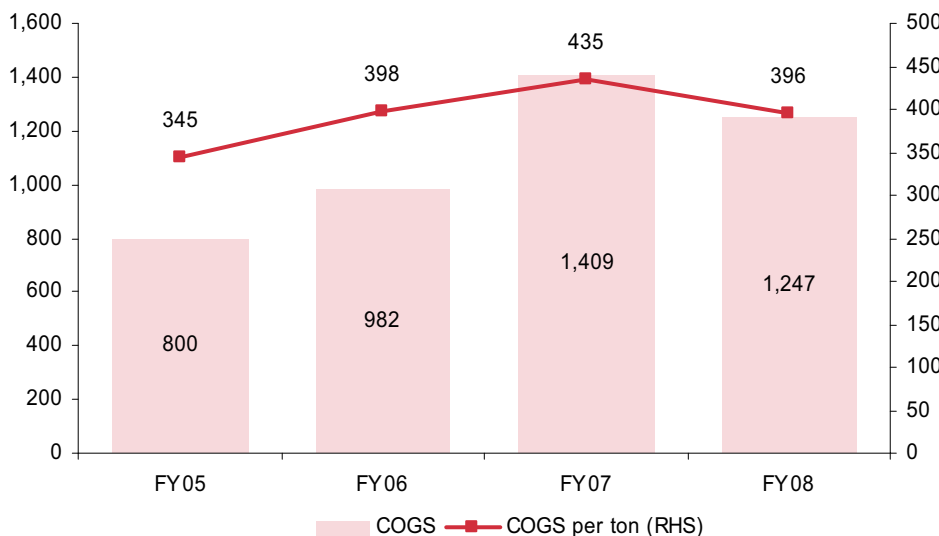
Exhibit 290. Sugar prices (BRL/ton)



Source: Company data

The cost of goods sold (COGS) per ton followed a similar pattern – rising since 2005 and declining in 2008. This is to be expected as the primary component of COGS ie, the cost of sugarcane, tracks the price of sugar.

Exhibit 291. COGS(BRLm) and COGS/ton (BRL)



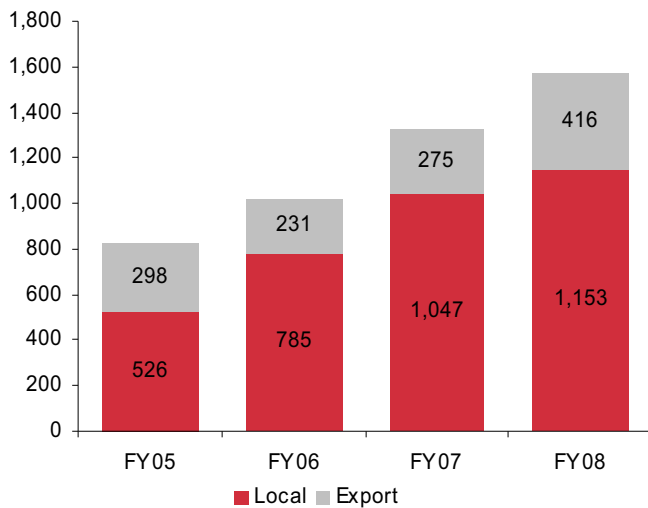
Source: Company data

Ethanol

Cosan produces both fuel and industrial ethanol for local and export markets, with local sales representing 74% of the total in 2008. Ethanol sales have grown significantly over the past few years on the back of increased ethanol adoption across the world, and in Brazil and the US in particular. In February 2008, for the first time, Brazilian monthly demand for ethanol surpassed that of gasoline. This is largely due to the development of flex-fuel cars that can run on any combination of gasoline and ethanol, including 100% ethanol or 100% gasoline.

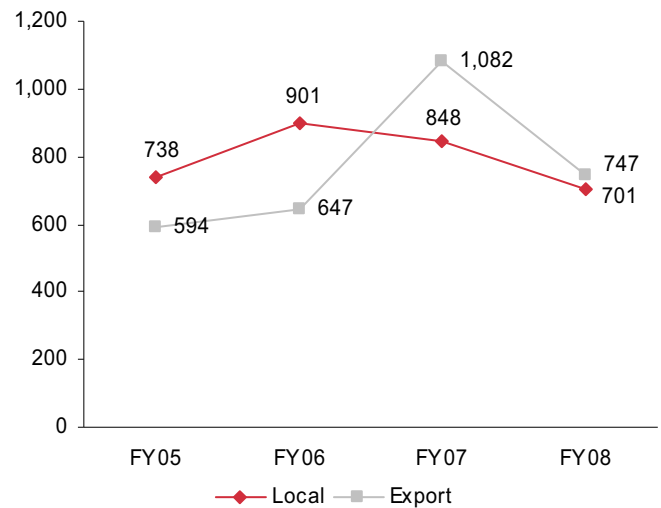
Huge growth in fuel ethanol

Exhibit 292. Ethanol volume (m of litres)



Source: Company data

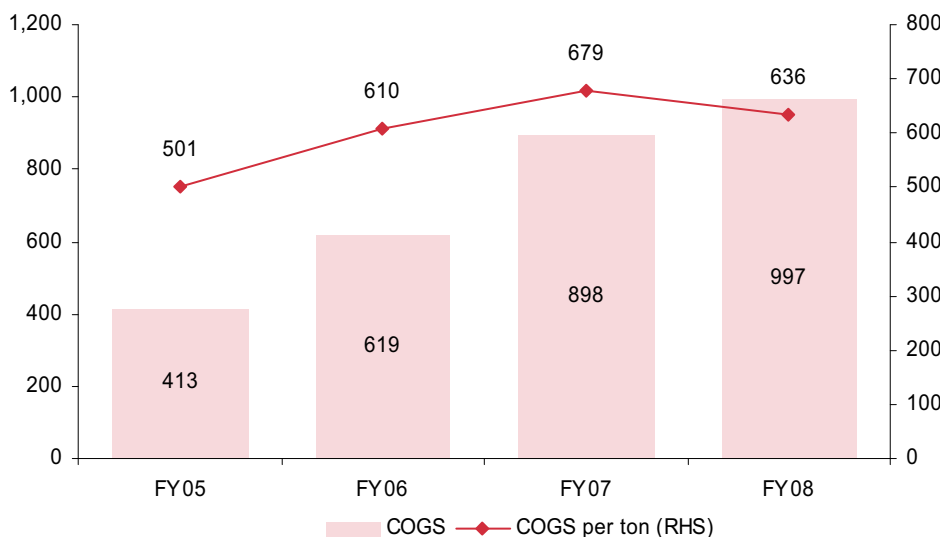
Exhibit 293. Ethanol prices (BRL/thousand litres)



Source: Company data

The COGS for ethanol – again a function of sugarcane – varied in a similar way to that of sugar.

Exhibit 294. COGS(BRLm) and COGS/ton (BRL)



Source: Company data

Prospects and outlook

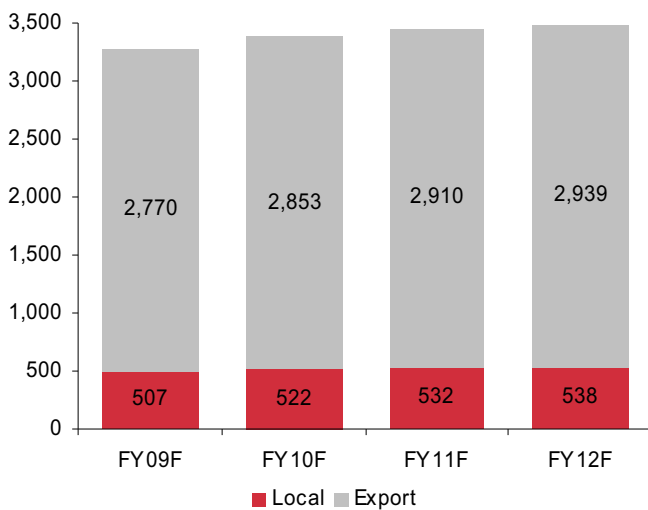
Cosan's focus is to expand its ethanol production activities and generate additional revenues from electricity and carbon credits. Our forecasts are broadly in line with the company's own projections.

Focus on ethanol

Sugar

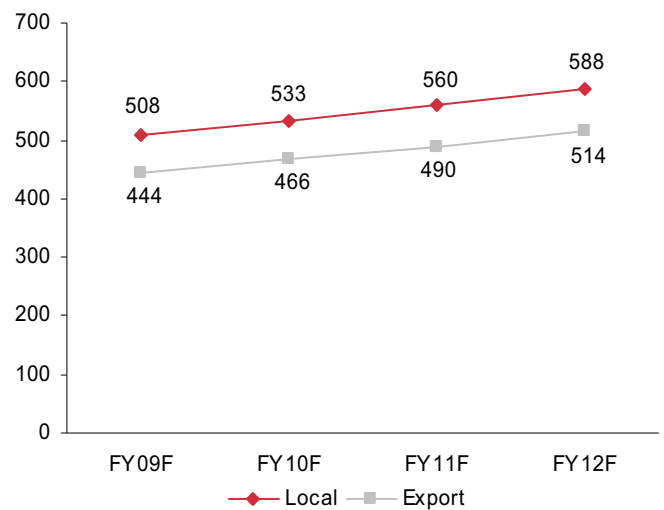
Given the company's focus on ethanol, we expect sugar sales, both local and export, to grow modestly. Given the tight supply situation, sugar prices will likely increase. However, COGS per ton would not rise in our view, due to the efficiencies derived from operational improvements.

Exhibit 295. Sugar volume ('000s of tons)



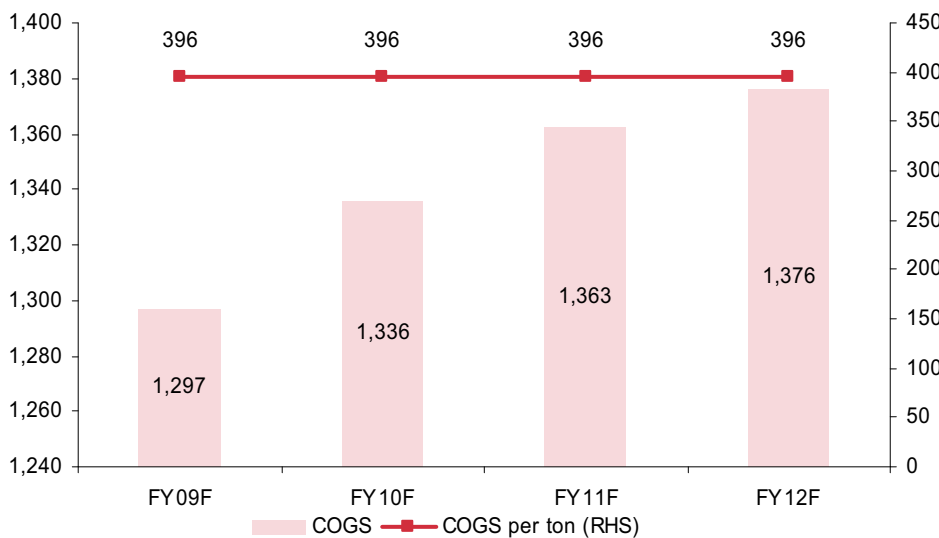
Source: Company data

Exhibit 296. Sugar prices (BRL/ton)



Source: Company data

Exhibit 297. COGS(BRLm) and COGS/ton (BRL)

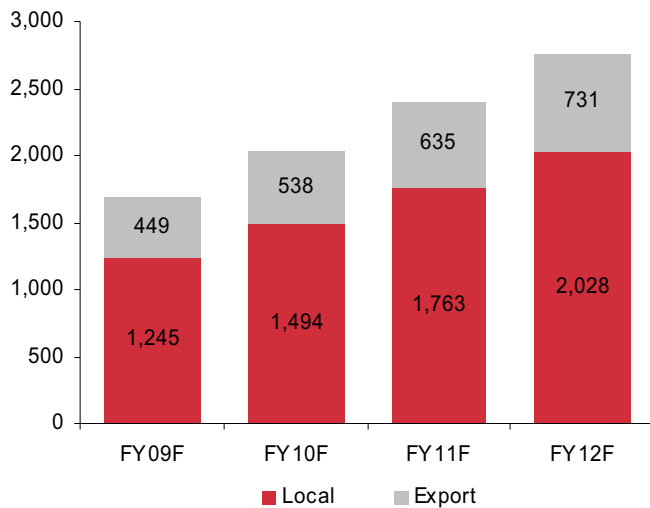


Source: Company data

Ethanol

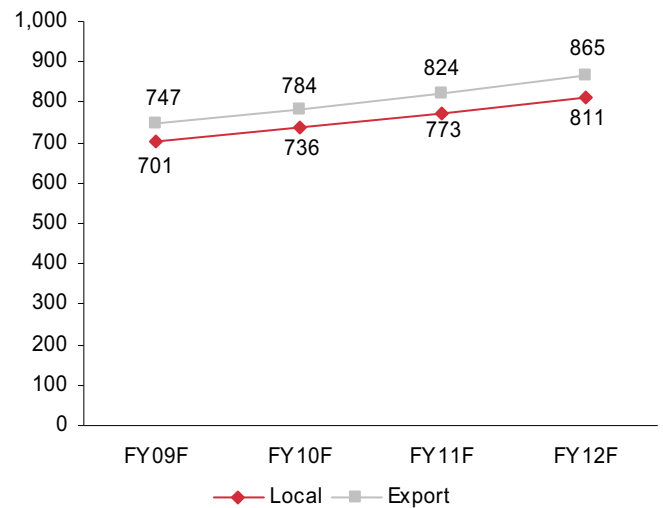
Ethanol will likely be a growth driver for Cosan both in terms of volume and revenue. The proportion of Cosan's sugarcane diverted to ethanol production is likely to increase steadily in the next few years and reach some 50% by 2010, in our view.

Exhibit 298. Sugar volume ('000s of tons)



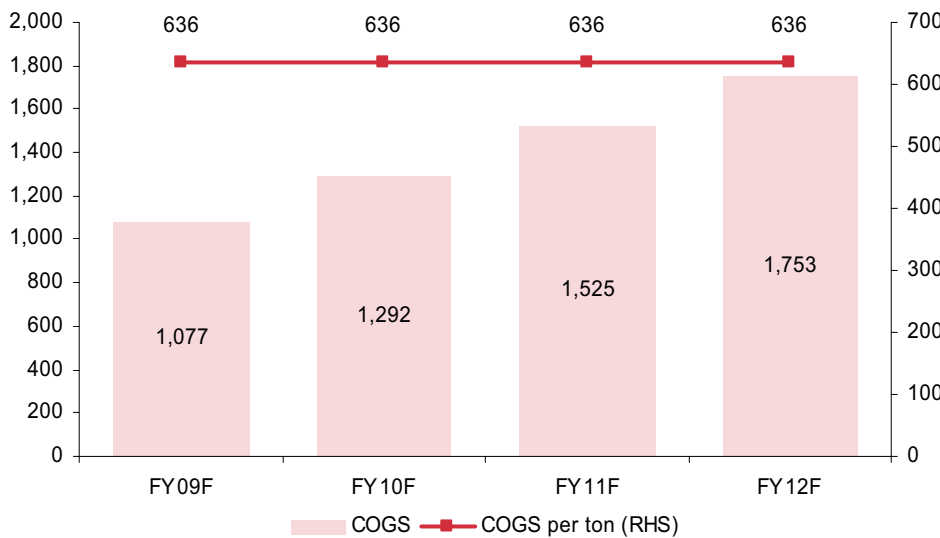
Source: Company data

Exhibit 299. Sugar prices (BRL/ton)



Source: Company data

Exhibit 300. COGS(BRLm) and COGS/ton (BRL)



Source: Company data

Capital expenditure

Cosan's expansion plans are ambitious and it has a capex schedule to match. The green-field ethanol facility in the State of Goias will be the major capex item over the next four years, followed by co-generation and brown-field expansion.

Green-field facility – a major item of capex

Exhibit 301. Capex schedule (BRLm)

Capex	2008	2009F	2010F	2011F	2012F
Green-field	94	276	414	345	237
Brown-field	264	235	324	173	57
Genetic improvements	25	23	0	0	0
Operating improvements	48	29	19	0	0
Mechanized harvest	59	66	66	0	0
Co-generation	149	313	138	125	125
Sugarcane planting	257	270	284	298	313
Inter-harvest maintenance	155	155	155	155	163
Total	1,051	1,366	1,399	1,095	895

Source: Company data, Nomura estimates

Valuation

In valuing Cosan by DCF, we have employed a WACC of 15% to reflect the risks associated with Brazil. Moreover, the company's expansion plans are ambitious and we see additional risks at the current time. To take into account Cosan's long-term growth potential, we have selected a terminal growth rate of 3%. Our DCF-derived fair value comes to BRL9.61 per share.

Financial statements

Income statement (BRLm)

Year-end 30 Apr	FY07	FY08	FY09F	FY10F	FY11F
Revenues	3,605.1	2,736.1	2,940.2	3,451.2	4,013.6
Cost of goods sold	(2,184.1)	(2,045.8)	(2,115)	(2,232.9)	(2,395.8)
Other operating expenses	(492.9)	(517.5)	(541.4)	(600)	(659.9)
EBITDA	928.1	172.8	283.7	618.3	957.9
Depreciation & amortisation	(297)	(341.3)	(401.7)	(538.1)	(634.5)
EBIT	631.1	(168.5)	(118)	80.2	323.5
Interest income	46.6	76.8	13.2	95.8	91.7
Interest expense	(309.9)	(375.2)	(288.5)	(301.5)	(405.5)
Other non-operating expenses	199.5	397.9	64.3	(9.9)	15.1
Pre-tax profit	567.3	(69)	(329.1)	(135.4)	24.8
Tax	(203.9)	18.7	115.2	47.4	(8.7)
Minority interest	(6.2)	2.5	-	-	-
Net profit	357.2	(47.8)	(213.9)	(88)	16.1
Shares year end	193.1	265.6	272.5	272.5	272.5
EPS	1.8	(0.2)	(0.8)	(0.3)	0.1
DPS	0.4	-	-	-	-
Dividend payout per share (%)	21.2%	-	-	-	-

Company, Nomura estimates

Balance sheet (BRLm)

Year-end 30 Apr	FY07	FY08	FY09F	FY10F	FY11F
Property, plant & equipment	2,013.1	2,771.4	3,735.5	4,583	5,016.1
Intangible assets and goodwill	1,133	1,161	975	819	688
Investments	216.5	272	272	272	272
Other long-term assets	675.9	905.8	905.8	905.8	905.8
Total fixed assets	4,038.7	5,109.9	5,888.3	6,579.8	6,881.8
Inventories	503.4	570.5	589.8	622.7	668.1
Trade debtors	112.3	86.5	85.4	100.3	116.6
Short-term investments	610.8	1,159.5	215.2	215.2	215.2
Cash and cash equivalents	643.8	65.8	478.8	458.7	519.6
Other current assets	354.4	401.2	408.9	421.9	439.9
Total current assets	592	578	587	607	633
Total assets	6,263.4	7,393.5	7,666.4	8,398.6	8,841.3
Shareholders' equity	1,610.8	3,308.1	3,472.2	3,384.2	3,400.3
Minority interest	20.2	17.7	17.7	17.7	17.7
Shareholders' equity	1,631	3,325.8	3,489.9	3,401.9	3,418
Long-term debt	2,770.4	2,136.2	2,236.2	3,036.2	3,436.2
Other long-term liabilities	1,250	1,336.1	1,336.1	1,336.1	1,336.1
Long-term liabilities	4,020.4	3,472.3	3,572.3	4,372.3	4,772.3
Short-term debt	89	83.3	83.3	83.3	83.3
Trade creditors	113.8	191	197.5	208.5	223.7
Other current liabilities	389	303.4	305.7	314.9	326.3
Current liabilities	591.8	577.7	586.5	606.7	633.3
Total liabilities	4,612.2	4,050	4,158.8	4,979	5,405.6
Total liabilities & shareholders' equity	6,263.4	7,393.5	7,666.4	8,398.6	8,841.3

Company, Nomura estimates

Cashflow (BRLm)					
Year-end 30 Apr	FY07	FY08	FY09F	FY10F	FY11F
Net profit	357.2	(47.8)	(213.9)	(88)	16.1
Depreciation & amortisation	520.7	542.7	587.4	694.1	765.5
Gain from chg in fair value of biological assets	-	-	-	-	-
Gain on equity investments	0.1	(6.6)	-	-	-
Income from affiliates	-	-	-	-	-
Other non-cash items	119.7	(52.7)	-	-	-
Increase/decrease in working capital liabilities	(313)	2.9	8.9	20.2	26.6
Decrease/increase in working capital assets	165	(352.8)	(25.8)	(60.8)	(79.8)
Other operating cashflow	(182.2)	(105)	-	-	-
Operating cashflow	667.5	(19.3)	356.5	565.5	728.4
Disposal of subsidiary	-	-	-	-	-
Sale of fixed assets	-	-	-	-	-
Capital expenditure	(683.5)	(1,050.5)	(1,365.8)	(1,385.6)	(1,067.5)
Increase In Investments	113.4	(531.4)	944.2	-	-
Cashflow - other investing	(0.6)	(2.6)	-	-	-
Cashflow - investing activities	(570.7)	(1,584.5)	(421.6)	(1,385.6)	(1,067.5)
Proceeds from issuance of common stock	6.9	1,742.6	378	-	-
Increase In long-term borrowings	854.7	198.3	100	800	400
Decrease in borrowings	(375.6)	(839.4)	-	-	-
Dividends paid	-	(75.8)	-	-	-
Cashflow - other financing	-	-	-	-	-
Cashflow from financing	486	1,025.7	478	800	400
Change In cash and equivalents	582.8	(578.1)	413	(20.1)	60.9
Cash & equivalents b/f	61	643.8	65.8	478.8	458.7
Translation adjustments	-	-	-	-	-
Cash & equivalents c/f	643.8	65.8	478.8	458.7	519.6

Company, Nomura estimates

Our view

It may lack the public profile of Cosan, its sugar-to-farms peer, but SLC Agricola (SLC) is a prominent agricultural producer in Brazil. It manages to be ambitious and conservative simultaneously. The company is well capitalised and, through efficient use of inputs, can maintain its position as a leading low-cost producer.

Anchor themes

- SLC benefits from all the supply-side factors which are inherent to Brazil: low labour costs, low government interference, a favourable climate and opportunities to add to its 170,000 ha of land under cultivation.
- The company hedges its risk and has diversified its operations both geographically and in terms of crop split. Efficiencies and research and development activities point towards a long-term attitude to its business. Crucially, the company's indebtedness is low.

Closing price on 16 October **BRL9.17**

Fair value estimate **BRL12.98**

Upside/downside **+42%**
EPS difference from consensus **+14%**

Source: Nomura

Nomura vs consensus

Our forecasts are higher than consensus.

The cream of the crop

① High crop yields

SLC has better crop yields than its peers in Brazil. Yields for cotton and soybeans are also higher than average American yields. The latter advantage is a natural one ie, the climate and the soils of the country, whilst the former is input driven ie, the mechanised production processes employed to enhance output and productivity.

② Emphasis on double cropping

SLC harvests corn and cotton crops twice a year thanks to favourable climatic conditions and the use of modern technology. This helps to utilise land more effectively and dilute fixed costs. The company has ambitious plans to increase double-cropped land over the next few years. We estimate the proportion of land under the second crop will increase from 15% in 2007 to 30% by 2012. This would increase revenues from agricultural production, as well as margins.

③ Well diversified land bank

SLC has 10 farms spread across five Brazilian states, thus reducing dependence on the output from one single farm. The company has acquired more than 81,000 ha since its IPO in June, 2007 and plans to increase its total cultivated land from 170,000 ha presently to 270,000 ha by 2010. The company's net debt/equity ratio is low.

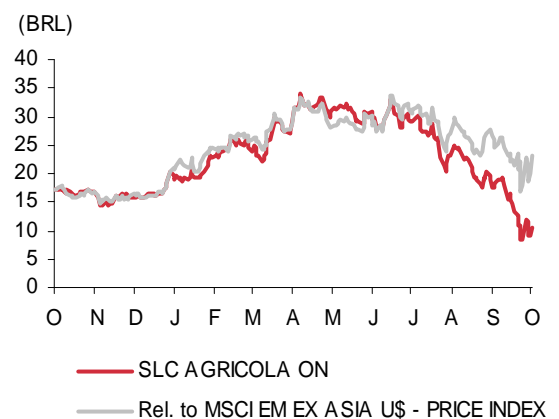
④ Initiating coverage with a BUY rating

We use a WACC of 15% to give us a DCF-derived fair value of BRL12.98 per share.

Key financials & valuations

31 Dec (BRLm)	FY07	FY08F	FY09F	FY10F
Revenues	268.7	503.9	645.1	818.1
EBITDA	65.3	186.3	239.1	278.8
Net profit	31.6	121.7	144.5	170
EPS (BRL)	0.4	1.2	1.5	1.7
EPS growth (%)	-	200%	25.0%	13.3%
P/E (x)	26	7.5	6.3	5.3
EV/EBITDA (x)	14.2	5	3.9	3.3
Price/book (x)	1.6	1.4	1.1	0.9
Dividend yield (%)	-	-	-	-
ROE (%)	8.8%	20.8%	20.2%	19.4%
Net debt/equity (%)	3.6%	8.9%	(6.1%)	(18.5%)

Company, Nomura estimates



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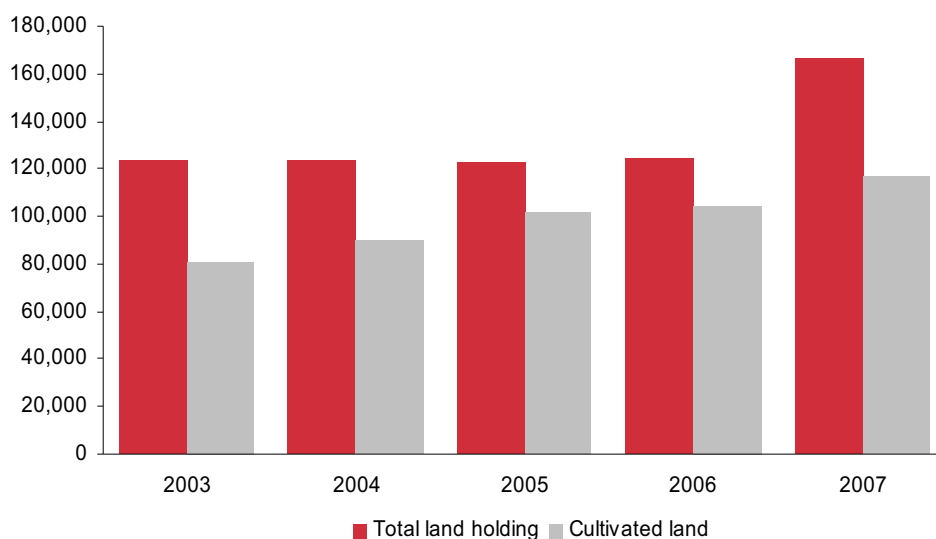
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Company background

SLC Agricola (SLC) is one of the largest Brazilian agricultural companies, with more than 170,000 ha of land under cultivation spread across 10 production units in five different states of Brazil. The company's primary business is the harvesting and marketing of soybean, corn, cotton and coffee. Founded in 1977, in the state of Rio Grande do Sul, SLC was initially involved in the cultivation of soybeans and wheat. It was involved in a joint venture with John Deere between 1979 and 1999 to produce harvesters and tractors. SLC also actively buys, develops and sells agricultural land.

One of the largest agricultural companies in Brazil

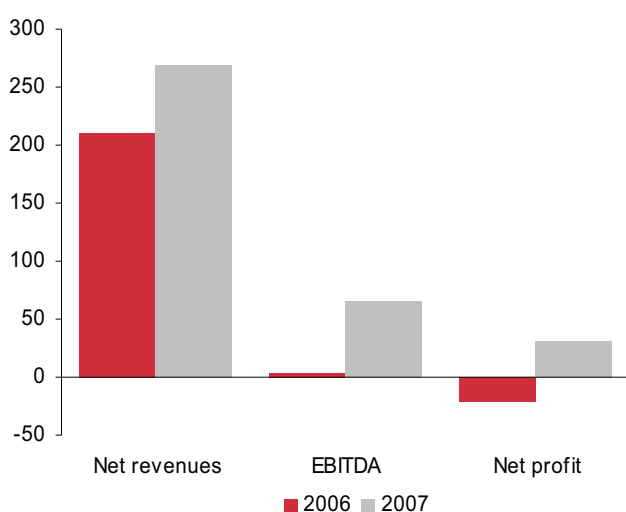
Exhibit 302. Total land holding and cultivated land (ha)



Source: Company data

The company generated net revenues of BRL268.7m in 2007, (+27% y-y). Net profits in 2007 were BRL31.6m, compared to a loss of BRL20m in 2006. Total crop production in 2007 was 449,000 tons, up from 358,000 tons in 2006.

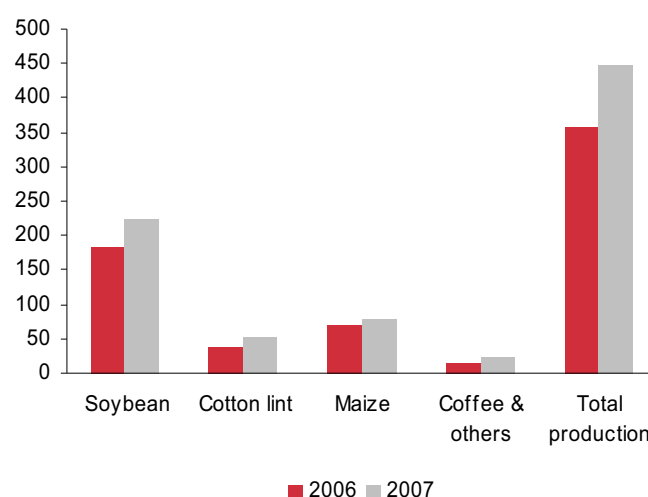
Exhibit 303. Financial snapshot – 2006 and 2007(BRLm)



Source: Company data

The company listed via an IPO in June 2007 when it raised BRL490m, valuing the company at BRL1.3bn. The company made another public offering in June 2008, offering 13.4m shares at a price of BRL27.50 per share, raising BRL368.5m. SLC is controlled by SLC Participações, which in turn is controlled by the Logemann family.

Exhibit 304. Crop production ('000 tons)



Source: Company data

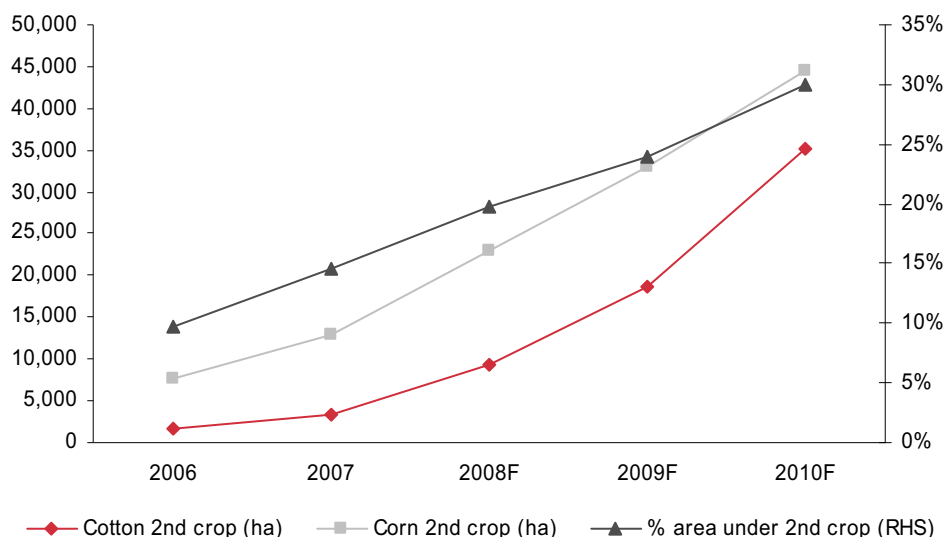
Strategy

Higher output from double cropping

The company harvests cotton and corn twice in a single season, which is possible because of Brazil's climate and the company's use of technology. This is an advantage enjoyed by many farmers in Brazil and Argentina and presents an advantage for SLC in the form of higher planted area on the same farm and lower production costs. The company plans to increase its harvest of second crops which will help in generating higher revenues and improving cost efficiency.

Second crops lead to higher revenues and lower costs

Exhibit 305. Land under second crops



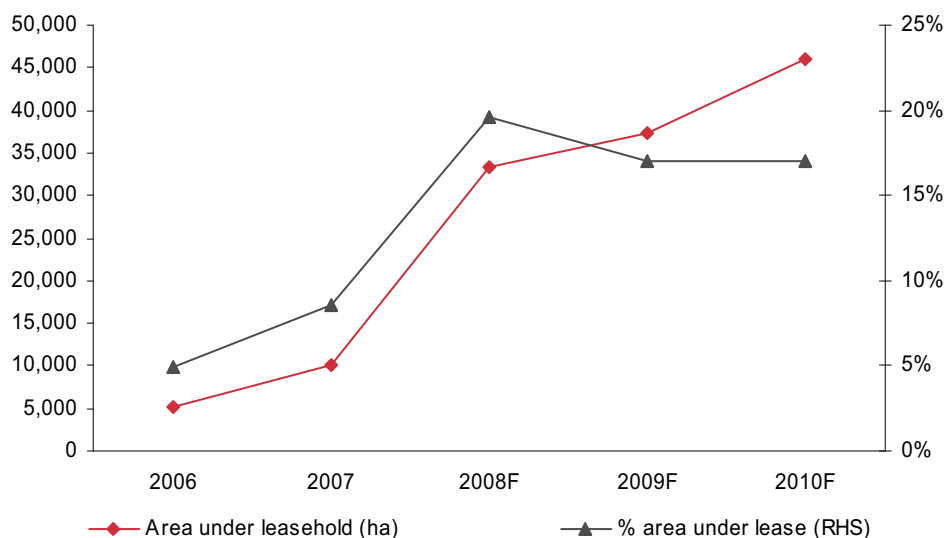
Source: Company data, Nomura estimates

SLC has already increased the proportion of land used for second harvests from 10% of total cultivated land in 2006 to approximately 15% in 2007.

Expand production by leasing land

In order to increase total planted area, the company is looking to expand the amount of land leased from third parties and that are close to its existing farms. The plan is to use its existing infrastructure more effectively and gain economies of scale especially in fixed costs which were close to 27.3% of total production costs for the 2006/2007 season.

Exhibit 306. Land under lease



Source: Company data, Nomura estimates

Acquiring land with the potential for price appreciation

When acquiring land for cultivation, SLC looks for land where there could be price appreciation. The factors which will be analysed include soil, climate, topography, region and price per hectare. The company's target area is the Cerrado region, a vast, tropical savannah region in Brazil (see the Brazil section of this report for more details). The company has steadily increased its land bank and has acquired close to 81,000 ha since its IPO in June 2007, with an investment of nearly BRL243m. The table below highlights land and production units acquired since June 2007.

Potential for land value appreciation

Exhibit 307. Land and new production units acquired

Data	Farm	Location	Area (ha)	BRLm	BRL/ha
June 2007	Panorama production unit	Correntina / BA	5,722	20.23	3,536
July 2007	Palmeira	Buriti / MA	186	0.05	253
August 2007	Paiaguás	Deciolândia / MT	3,380	14.38	4,254
October 2007	Pamplona	Cristalina / GO	4,282	24.29	5,675
November 2007	Piratini production unit	Jaborandi / BA	25,002	31.46	1,259
December 2007	Planeste	Balsas / MA	315	0.27	860
May 2008	Planorte	Sapezal / MT	10,635	82.95	7,800
June 2008	Palmares production unit	Barreiras / BA	5,165	35.00	6,776
October 2008	Santa Filomena	Piauí State	26,598	34.97	1,315

Source: Company data

Reduce operating costs and improve productivity through research

SLC has emphasised investment in research in order to reduce operating costs and maintain high productivity. This effort is aimed at improving the company's information systems, introducing higher quality seeds, using transgenic products and fertilisers and implementing effective means of pest control. The company has designated 675 ha and a team of agronomists and agricultural technicians to conduct proprietary research. It has also been exploring the possibility of using sugar cane to make bio-fuels.

Maintaining high crop yields and exploring bio-fuels opportunity

Foreign exchange and commodity price hedging

The company has hedged a large portion of its agricultural output against fluctuations in commodity prices and exchange rates. Only a small share of these hedging transactions is done in the form of futures and options in international stock exchanges; the company prefers to use direct forward contracts with clients. The following table shows SLC's hedged positions as of June 30, 2008.

SLC is substantially hedged against commodity and currency fluctuations

Exhibit 308. Hedged positions as at June 30, 2008

	Cotton	Soybeans	Corn	FX Rate
2008	65%	78%	44%	88%
2009	33%	8%		26%

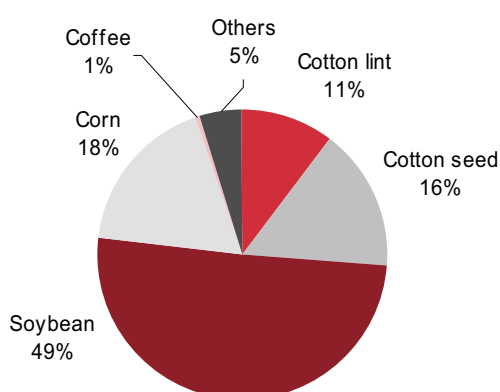
Source: Company data

The company intends to continue insulating itself from external fluctuations by hedging a majority of its output.

Operations

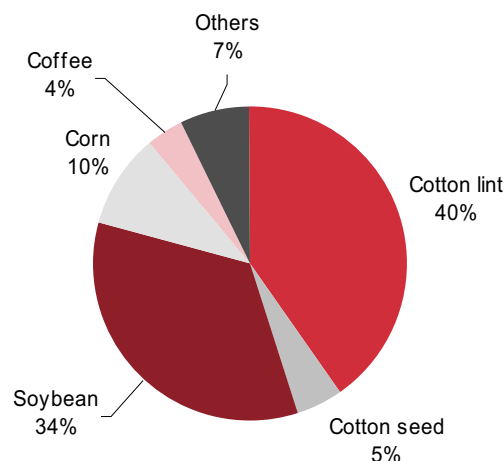
SLC's operations are characterised by scale and the use of up-to-date technologies. The company owns more than 217,000 ha land and focuses on acquiring farm properties in regions which have recently opened up to large-scale agricultural activities. SLC produced 449,000 tons of crops including soybeans, cotton, corn, coffee and wheat. Soybean and cotton lint are the major revenue drivers and contributed 49% and 11% of total production respectively in 2007. However, in terms of revenues, their contribution was 34% and 40%, respectively, due to the higher unit price of cotton.

Exhibit 309. Volume sold breakdown – 2007



Source: Company data

Exhibit 310. Gross revenues breakdown – 2007



Source: Company data

Land

Of the total estimated planted area of 170,656 ha in 2008, 103,510 ha would be owned by the company, 33,732 ha would be planted as a second crop of corn and cotton and 33,414 ha would be leased.

Exhibit 311. Area breakdown (ha)

	2005/2006	2006/2007	2007/2008F
Own area	89,166	90,102	103,510
Second crop	10,219	17,121	33,732
Leased area	5,159	9,989	33,414
Total planted area	104,544	117,212	170,656

Source: Company data

The company has increased its planted area aggressively in past few years from 81,100 ha in 2003 to 117,200 ha in 2007. This involved acquiring large farms as well as leasing farms close to their existing units. In 2007 it expanded the total planted area by 12% over 2006 and second crops planted area by 68% during the same period. The following table gives the breakdown of planted area by crops cultivated.

Aggressive land expansion in recent years

Exhibit 312. Planted area breakdown (ha)

	2005/2006	2006/2007	2007/2008F
Soybeans	63,699	68,537	81,806
Cotton	27,145	29,027	47,506
Cotton second crop	1,740	3,262	9,237
Corn	2,075	977	3,244
Cotton second crop	7,599	12,902	23,075
Corn seeds	673	817	893
Wheat	880	957	1,420
Coffee	733	733	971

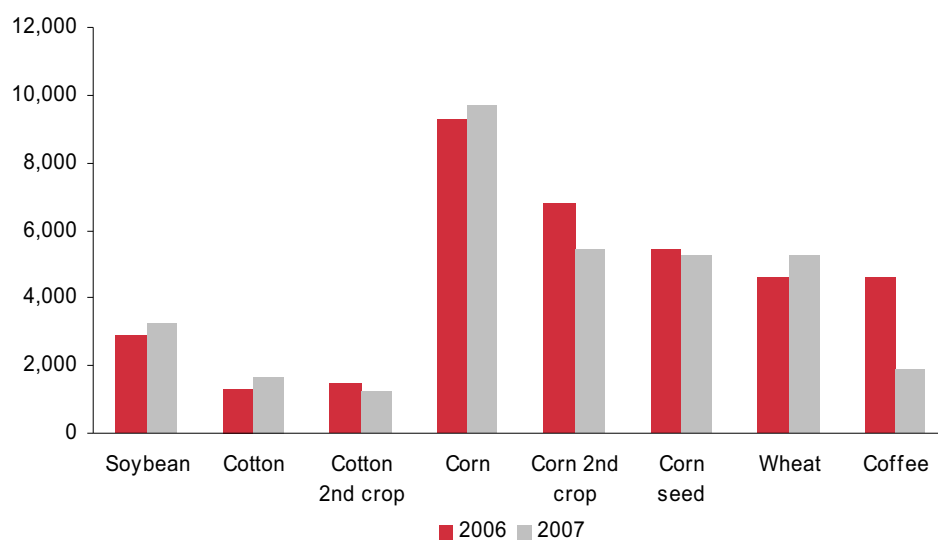
Source: Company data

Crop yields

SLC's yields are above the Brazilian average for all crops and higher still than the average American yields for cotton and soybeans. SLC's high productivity comes from a mechanised production process, crop rotation, soil correction and the favourable location of its farms.

Yields higher than Brazilian average for all crops; higher than American average for cotton and soybean

Exhibit 313. Crop yields in FY06 and FY07 (kg/ha)



Source: Company data, Nomura estimates

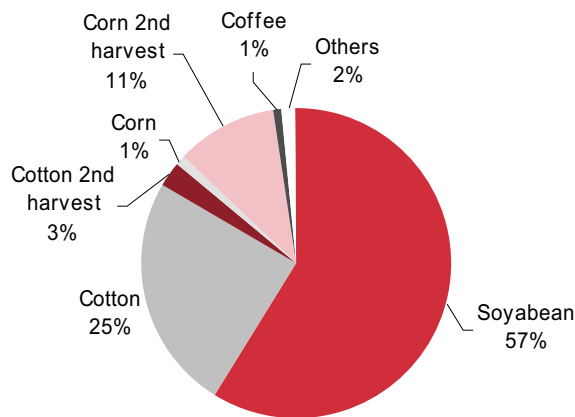
The lower yield for coffee in 2007 is due to coffee's production cycle of approximately 2 years. Average productivity of coffee for the past five-years season was 3,558 kg/ha almost 250% higher than the Brazilian average.

Prospects and outlook

The company plans to increase its cultivated land to 220,000 ha by 2009 and further to 270,000 ha by 2010. We believe this is achievable given the company's focus on land acquisition, coupled with increasing the proportion of second harvest on existing farms. According to our forecasts, land under second harvest of cotton would increase from 3% of total cultivated land in 2007 to 13% in 2012. Similarly, land under a second corn harvest will likely increase from 11% in 2007 to 17% in 2012.

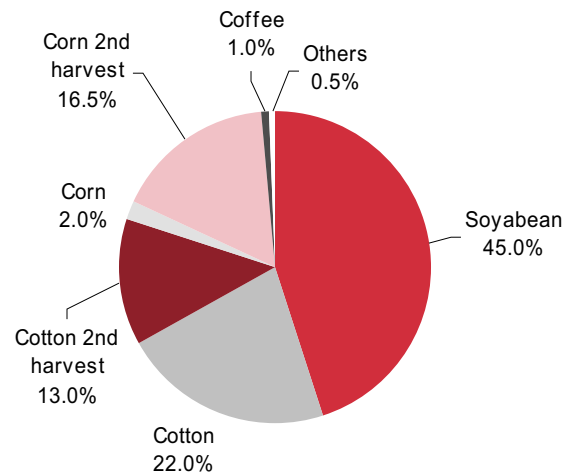
Growth in cultivated land to drive revenues

Exhibit 314. Cultivated land break up - 2007



Source: Company data, Nomura estimates

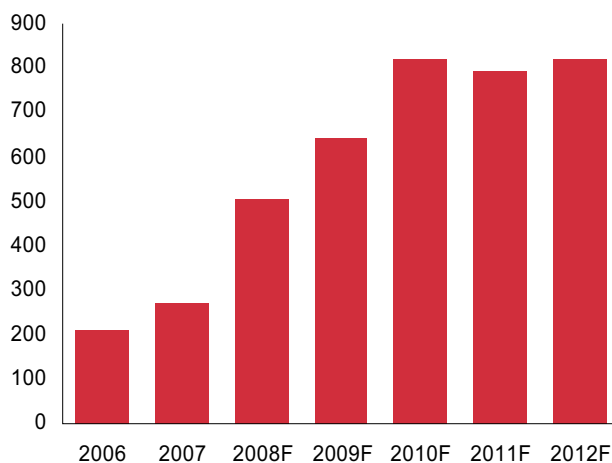
Exhibit 315. Cultivated land break up – 2012F



Source: Nomura estimates

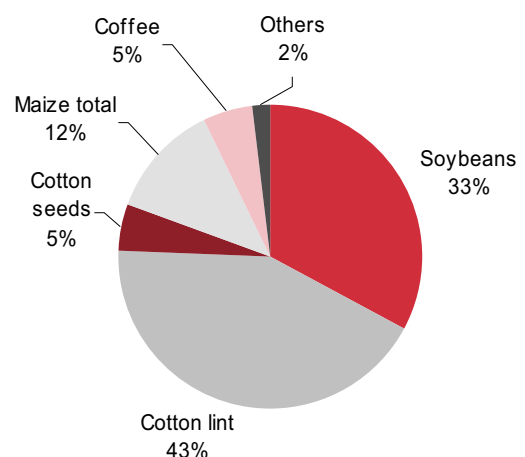
Since crop yields are already high compared to Brazilian and American averages; we do not forecast an aggressive rise in yields going forward. We estimate 2008E revenues will grow by nearly 88% from 2007 revenues of BRL269m. We further expect a healthy 5-year compound annual growth in revenues of about 25% from 2008. Cotton and soybeans will likely continue to be the major contributors to revenue.

Exhibit 316. Net revenues 2007– 2012E (BRLm)



Source: Company data, Nomura estimates

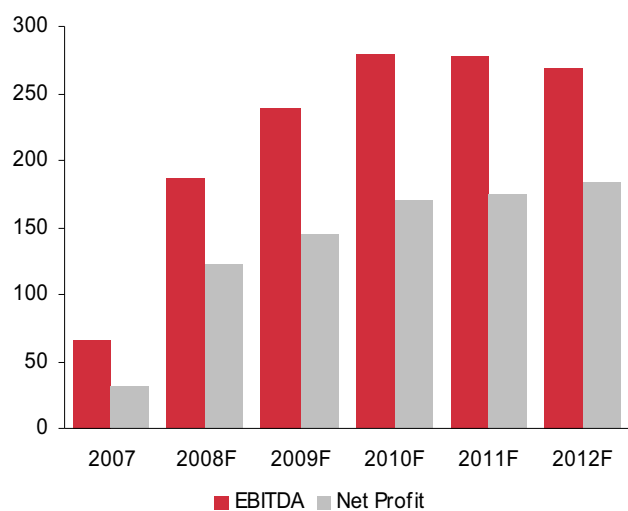
Exhibit 317. Net revenues breakdown – 2012F



Source: Nomura estimates

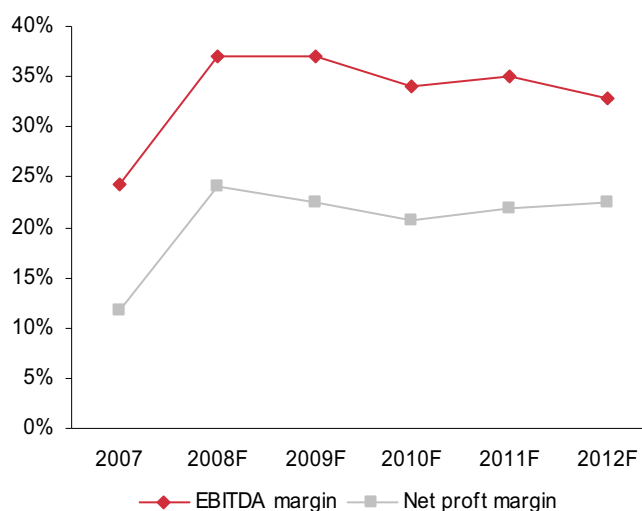
We believe that the company will maintain healthy EBITDA margins in the future based on its average production cost guidance. EBITDA is expected to increase by 44% from a level of BRL186m in 2008E to BRL269m in 2012E. We expect the tax rate to continue at the present level of 29%.

Exhibit 318. EBITDA and Net profit – 2007– 2012F (BRLm)



Source: Company data, Nomura estimates

Exhibit 319. EBITDA and Net profit margin – 2007– 2012F (%)



Source: Company data, Nomura estimates

Valuation

We have employed the discounted free cash flow method to value SLC. The weighted average cost of capital is taken to be 15%, and the terminal growth rate is assumed to be 3% from 2013. We arrive at a share value of BRL12.98 per share.

Financial statements

Income statement (BRLm)

Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Revenues	211.1	268.7	503.9	645.1	818.1
Cost of goods sold	(183)	(165.1)	(263.1)	(336.1)	(450.5)
Other operating expense sub-total	(24)	(38.3)	(54.5)	(70)	(88.9)
EBITDA	4.2	65.3	186.3	239.1	278.8
Depreciation & amortisation	(26.1)	(29.4)	(33)	(45.4)	(52.9)
EBIT	(21.9)	35.9	153.3	193.7	226
Interest income	5.5	14.2	11.7	10.4	19.1
Interest expense	(17.4)	(16)	(17.6)	(19.4)	(20.3)
Other non-operating expenses	17.1	10.6	25	20	16
Pre-tax profit	(16.8)	44.7	172.4	204.6	240.8
Tax	12.2	(13.1)	(50.6)	(60.1)	(70.7)
Minority interest	(15.4)	-	-	-	-
Net profit	(20)	31.6	121.7	144.5	170
Shares year end	-	89.5	98.9	98.9	98.9
EPS	-	0.4	1.2	1.5	1.7
DPS	-	-	-	-	-
Dividend payout per share (%)	-	-	-	-	-

Company, Nomura estimates

Balance sheet (BRLm)

Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Property, plant & equipment	157.1	309.4	463.5	521.9	556.4
Intangible assets and goodwill	1	1	1	1	1
Investments	-	-	-	-	-
Other long-term assets	77	98	98	98	98
Total fixed assets	234.6	408.2	562.3	620.7	655.2
Inventories	88.5	135	137	119.7	123.4
Trade debtors	4.2	13.2	20.8	21.3	27
Short-term investments	-	-	-	-	-
Cash and cash equivalents	31.4	166.6	147.9	273.2	403.1
Other current assets	90.9	124.6	124.6	124.6	124.6
Total current assets	215	439	430	539	678
Total assets	449.6	847.6	992.6	1,159.5	1,333.3
Shareholders' equity	191.9	523.1	644.8	789.3	959.4
Minority interest	27	22.6	22.6	22.6	22.6
Shareholders' equity	218.9	545.6	667.4	811.9	981.9
Long-term debt	69.2	58.5	65.5	72.5	72.5
Other long-term liabilities	25.7	41.2	41.2	41.2	41.2
Long-term liabilities	94.9	99.7	106.7	113.7	113.7
Short-term debt	91.8	126.7	139.7	152.7	152.7
Trade creditors	11.4	15	18.2	20.6	24.4
Other current liabilities	32.6	60.6	60.6	60.6	60.6
Current liabilities	135.8	202.3	218.5	233.9	237.7
Total liabilities	230.7	302	325.2	347.6	351.4
Total liabilities & shareholders' equity	449.6	847.6	992.6	1,159.5	1,333.3

Company, Nomura estimates

Cashflow (BRLm)					
Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Net profit	(20)	31.6	121.7	144.5	170
Depreciation & amortisation	26.1	29.4	33	45.4	52.9
Gain from chg in fair values biological assets	-	-	-	-	-
Gain on equity investments	(1.4)	-	-	-	-
Income from affiliates	-	-	-	-	-
Other non - cash items	67.5	7.7	-	-	-
Increase/decrease in working capital liabilities	(10.4)	47.1	3.2	2.4	3.8
Decrease/increase in working capital assets	29.4	(87.7)	(9.5)	16.8	(9.4)
Other operating cashflow	1.2	2.3	-	-	-
Operating cashflow	92.4	30.4	148.4	209.1	217.3
Disposal of subsidiary	-	-	-	-	-
Sale of fixed assets	-	-	-	-	-
Capital expenditure	(14.2)	(171.5)	(187.2)	(103.8)	(87.4)
Increase in investments	0	(0.1)	-	-	-
Cashflow - other investing	(7.6)	(35.2)	-	-	-
Cashflow - investing activities	(21.7)	(206.8)	(187.2)	(103.8)	(87.4)
Proceeds from issuance of common stock	60	308	-	-	-
Increase in long-term borrowings	64.2	170.5	20	20	-
Decrease in borrowings	(153.9)	(158.6)	-	-	-
Dividends paid	(37.3)	(8.4)	-	-	-
Cashflow - other financing	-	-	-	-	-
Cashflow from financing	(66.9)	311.6	20	20	-
Change in cash and equivalents	3.7	135.2	(18.8)	125.4	129.9
Cash & equivalents b/f	27.7	31.4	166.6	147.9	273.2
Translation adjustments	-	-	-	-	-
Cash & equivalents c/f	31.4	166.6	147.9	273.2	403.1

Company, Nomura estimates

Our view

Cresud has made some exceptional gains from the trading of farming assets in recent years. However, much of that growth has been driven by the artificially depressed prices and subsequent recovery that defined Argentina after 2002. This benign environment is unlikely to continue.

Anchor themes

- Cresud has been a listed entity since the 1960s. The company has begun to expand across Latin America and, like the international grain trading companies, has a considerable corporate DNA and pedigree. Its strategy looks opportunistic on the surface but underneath is a company with an evolutionary instinct for survival.
- Latin American farming is highly fragmented. Cresud with 443,000 ha of land across the grain, dairy and beef sectors is both well capitalised and well placed to be at the forefront of consolidation. The company has a net cash position and is poised to benefit from a longer-term turnaround in the sector's fortunes.

The easy years are over

① The easy years are over

Argentina's financial crisis during 2001/2002 heralded a period of great opportunity across the country's agricultural sector. Rising grain prices, export-driven growth and a reversal of the exchange rate position from its low point all combined to make subsequent years easy ones in which to make money from farming and rising land values. Cresud's land sales have shown an average uplift of 218% over book value in recent years. However, this situation may be turning. We cannot discount the possibility of another crisis in Argentina given its current political and economic worries.

② Diversification of interests

Cresud has begun to expand its interests into other areas of Latin America as well as into other sectors of the market. It has a 14.4% interest in Brasilagro, a 24% stake in Cactus SA, a feedlot and meat packing company, 20,000 ha of land in Paraguay and a 42.2% stake in IRSA, a property/real estate developer. Its farming activities are spread across the grain, beef farming and dairy operations, which adds to its appeal.

③ Scale of activities

Cresud owns 18 farms, leases another 46 farms and owns 443,000 ha of land. Its plans include further expansion in Brazil, Paraguay, Uruguay and possibly Bolivia. In a fragmented industry, Cresud is at the forefront of development in the sector. A US\$288m rights issue provides the company with capital in a market where it is restricted.

④ Initiating coverage with a BUY rating

Applying a WACC of 17% gives us a DCF-derived fair value of US\$9.70 per ADR. Even on the basis of a 20% WACC Cresud looks oversold.

Closing price on 16 October **US\$7.22**

Fair value estimate **US\$9.70**

Upside/downside **+34%**
EPS difference from consensus **51%**

Source: Nomura

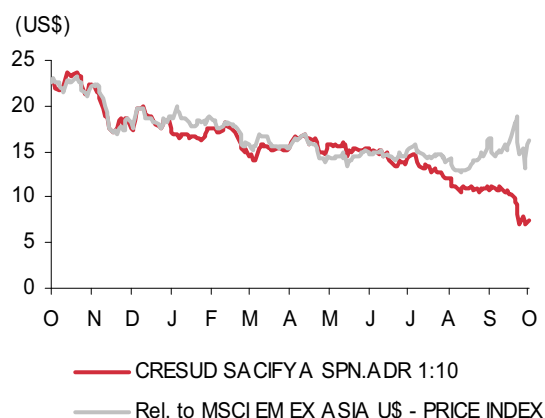
Nomura vs consensus

Our forecasts are above consensus.

Key financials & valuations

30 Jun (ARSm)	FY08	FY09F	FY10F	FY11F
Revenues	162.6	346.8	395.3	441.5
EBITDA	49.3	96.3	107.3	111.1
Net profit	23	93.9	99.5	104.2
EPS (ARS)	0.6	1.9	2	2.1
EPS growth (%)	-	216.7%	5.3%	5.0%
P/E (x)	36.7	12.2	11.5	11
EV/EBITDA (x)	1	0.5	0.5	0.5
Price/book (x)	0.7	0.6	0.6	0.6
Dividend yield (%)	1.0%	1.6%	1.7%	1.8%
ROE (%)	1.8%	5.2%	5.3%	5.3%
Net debt/equity (%)	(19.2%)	(10.6%)	(7.1%)	(5.4%)

Company, Nomura estimates



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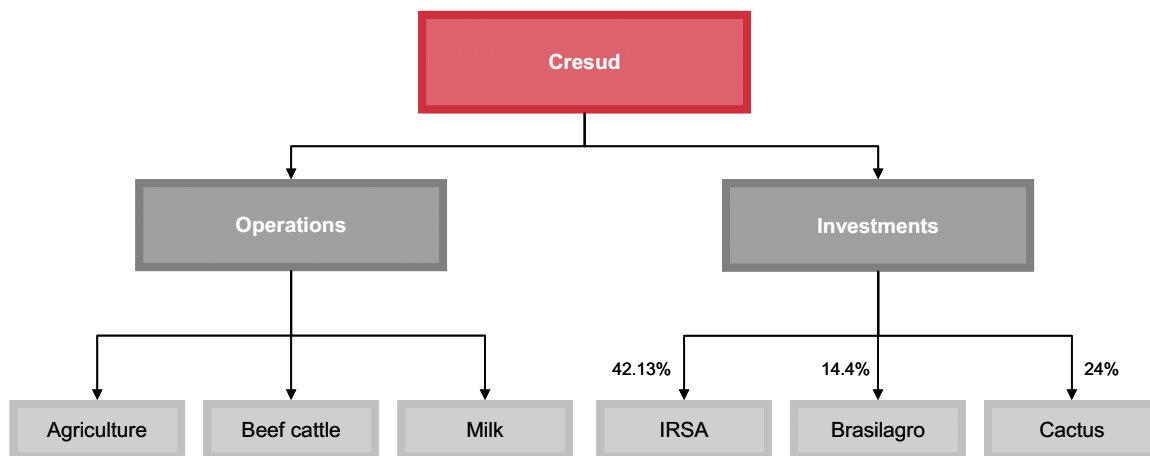
Company background

Cresud is one of the leading agricultural and cattle breeding companies in Argentina. It controlled 676,195 ha of land at the end of June 2008. The company activities can be broken down broadly into two activities: the first is the production of crops, beef cattle and milk. The second activity is farm development. Cresud is involved in the purchase, development and sale of rural farms and other properties. At the end of June 2008, the company owned 443,532 ha of land, had concession rights on 162,000 ha of land and had leased 63,000 ha of land.

One of the largest agri companies in Argentina

Cresud also has stakes in agricultural companies across South America, notably Argentina and Brazil. In Argentina, the company owns a 24% stake in Cactus Argentina – one of the largest feedlot operators. In Brazil, Cresud has a 14.4% stake in Brasilagro, which owns more than 166,000 ha across eight farms. Apart from these agriculture-related investments, Cresud also owns a 42.13% ownership interest in IRSA, which is one of the leading real estate operators in Argentina.

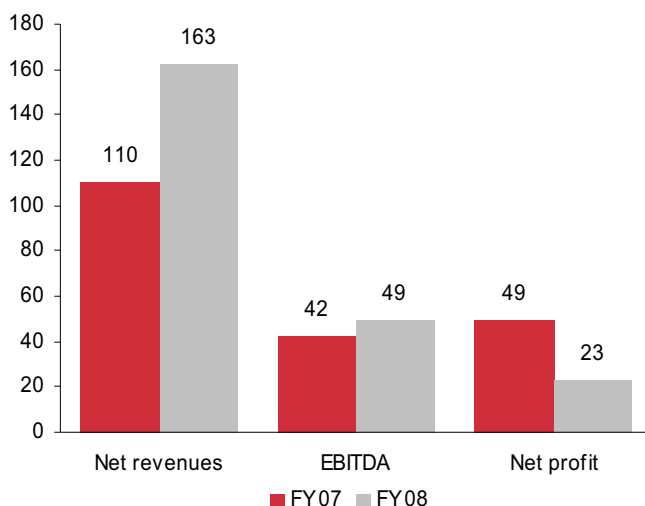
Exhibit 320. Cresud – operations and investments



Source: Company data

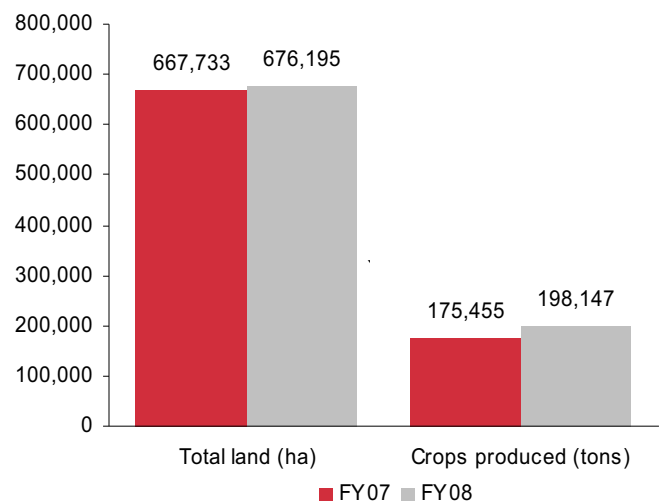
During FY 2008 Cresud's revenues were ARS163m, a 47% increase y-y. EBITDA was ARS49m, a 16% y-y increase compared to FY 2007. But due to a fourfold increase in financial losses, post-tax profits were down heavily from ARS49m in FY 2007 to ARS23m in FY 2008.

Exhibit 321. Financial snapshot (ARSm)



Source: Company data

Exhibit 322. Operational snapshot



Source: Company data

Cresud has been listed on the Buenos Aires Stock Exchange since 1960 and on NASDAQ since 1977. In March 2008, the company raised US\$288m through an offer of 180m new shares. The free float is 66% of the 50.15m ADRs listed on NASDAQ as at 25 September 2008.

Strategy

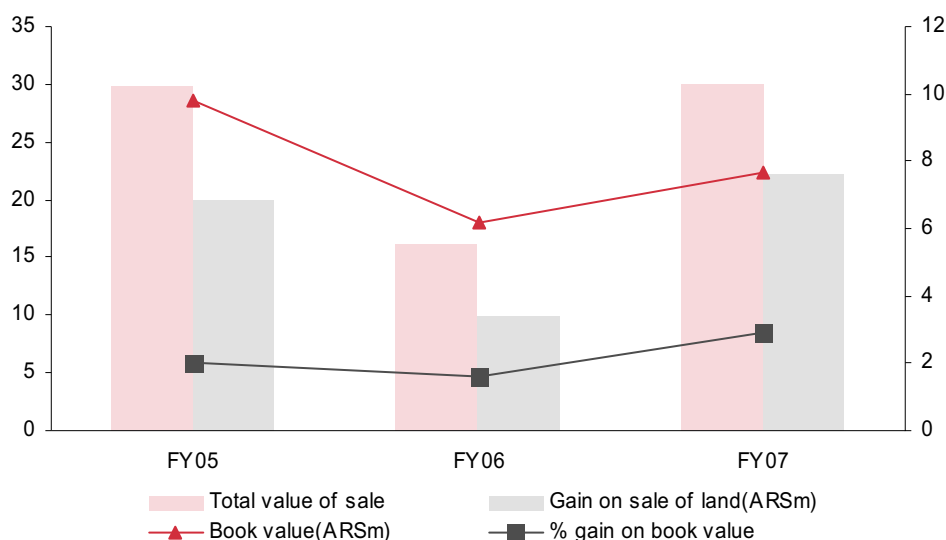
Acquiring land with appreciation potential

Cresud's strategy is to acquire large farms which are underutilised and transform them into productive land units through the use of advanced farming techniques. Once the land is repaired, the company sells the farms. Gains from asset sales (ie, farms) have contributed more than 40% of Cresud's EBITDA in recent years. The company plans to develop 240,000 ha of the "Los Pozos" farm which offers significant appreciation potential. In FY 2008, Cresud acquired 11,766 ha of farmland at a total price of US\$2.1m in three separate deals. It also sold 9,230 ha of land at a total price of US\$7.7m gaining more than US\$6.3m in the transactions.

Cresud has made sizeable gains in recent years from selling its farms. The company made gains of ARS20m in FY 2005, ARS10m in FY 2006, ARS22m in FY 2007 and ARS20m in FY 2008. This represents an average 218% gain on book value from the sale of land between FY 2005 and FY2007.

Cresud will likely continue exploiting the opportunities offered by real estate appreciation

Exhibit 323. Gain from sale of farms



Source: Company data

Improvements in productive yield

Cresud uses high quality fertilisers and chemicals, improved crop rotation techniques and better equipment to increase crop yields. In the case of beef and milk production, Cresud looks to use better breeding and health techniques to increase production.

International expansion

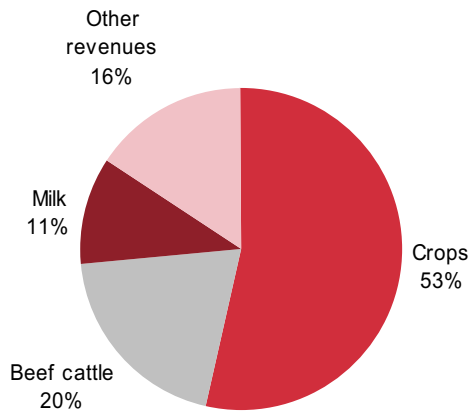
Cresud is seeking to repeat its strategy in other Latin American countries. This would enhance its strategy of geographical diversification and reduce risks related to the weather and the price volatility of commodities. The company plans to use some part of the US\$288m raised from the recent rights issue to finance expansion opportunities in Brazil, Paraguay, Bolivia and Uruguay. The company recently acquired 20,000 ha of land in Paraguay and is planning to acquire another 50,000 ha there.

Focus on expansion in Brazil, Paraguay, Bolivia and Uruguay

Operations

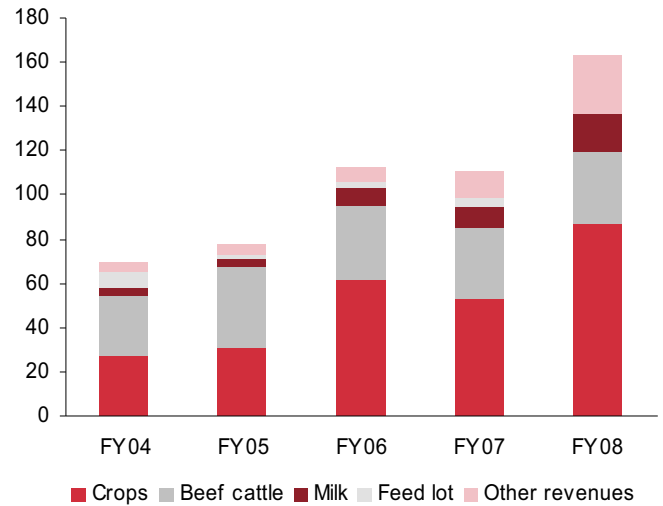
Crops accounted for 53% of revenues in FY 2008 while beef cattle contributed 20% to the top line. The revenue share of crops has increased from 39% in FY 2004 whereas the share of beef cattle has halved from 40% in FY 2004.

Exhibit 324. Gross revenues breakdown – FY 2008



Source: Company data

Exhibit 325. Gross revenues (AR\$M)

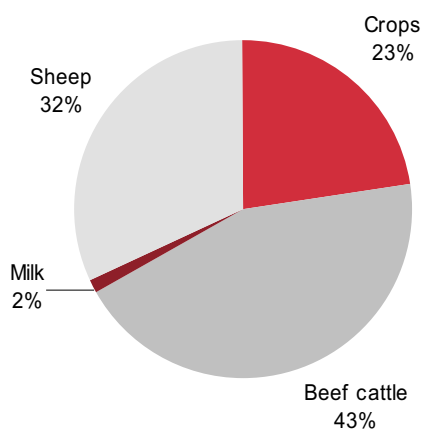


Source: Company data

Land

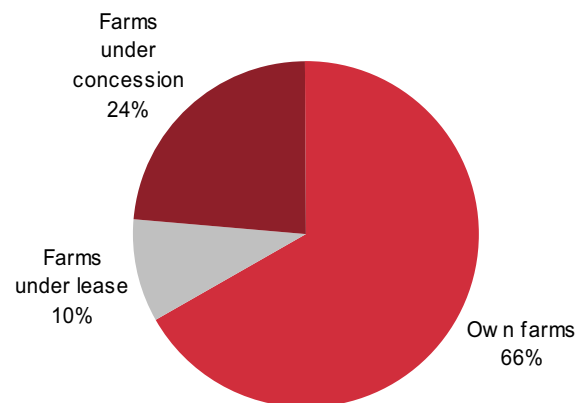
Cresud operates 18 of its own farms and 46 leased farms and utilises more than 282,000 ha of land to produce crops, milk, beef and wool. Over 43% of that land is used for beef cattle production, while sheep occupy 32%.

Exhibit 326. Area breakdown by use – FY 2008



Source: Company data

Exhibit 327. Area breakdown by source – FY 2008



Source: Company data

The company has increased its planted area significantly over the past few years. In FY 2008 it expanded its total planted area by 19.3% to 63,900 ha compared to the FY 2007 planted area of 53,579 ha.

Aggressive land expansion in recent years – compound growth of 24% over the last 5 years

Exhibit 328. Sown land for crop production (ha)

	2005/2006	2006/2007	2007/2008
Own area	24,279	27,047	29,640
Leased area	17,004	25,307	30,449
Land under concession	0	1,225	3,811
Total planted area	41,283	53,579	63,900

Source: Company data

Agriculture

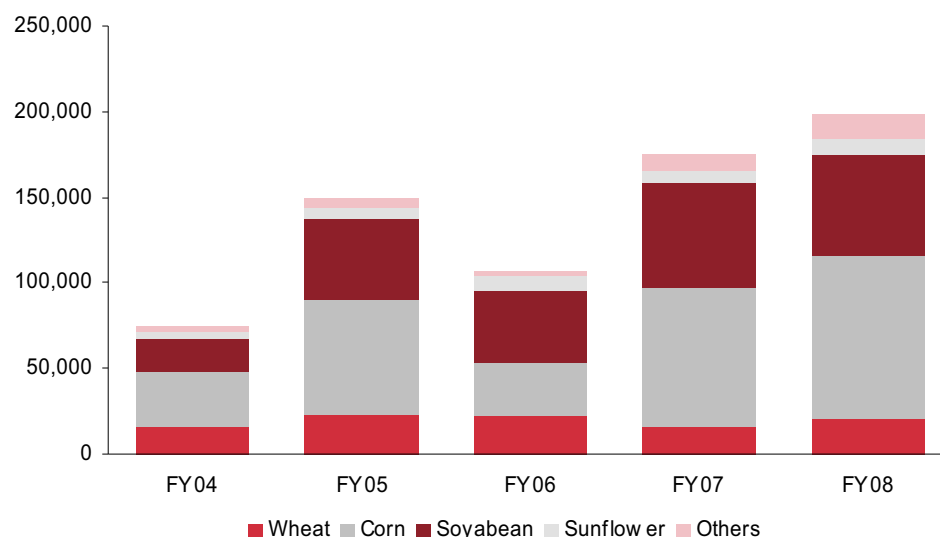
Cresud's crop production is concentrated on grains such as wheat and corn, and oilseeds such as soybean and sunflowers. Crops like sorghum represent a small portion of the total planted area. The total crop produced in FY 2008 was 198,146 tons which was 13% higher than the FY 2007 output of 175,455 tons. Soybeans and corn are the chief crops in terms of cultivated area as well as revenues – almost 70% of the total cultivated land was used to produce soybeans and corn in FY 2008.

Exhibit 329. Area breakdown by crops sown (ha)

Crops	2006/2007	2007/2008	% increase / (decrease)
Wheat	7,636	6,114	(20%)
Corn	14,225	18,294	29%
Soybean	22,453	22,051	(2%)
Sunflower	5,245	6,317	20%
Others	3,320	5,931	79%

Source: Company data

Of the total crop output in FY 2008, corn contributed 47% soybeans 30% and wheat 11%. The company has increased corn production in the past few years both in absolute terms and as a percentage of total production. Total crop production has grown at a compound rate of 28% from FY 2004 to FY2008.

Exhibit 330. Crop production from FY 2004 to FY 2008 (tons)

Source: Company data

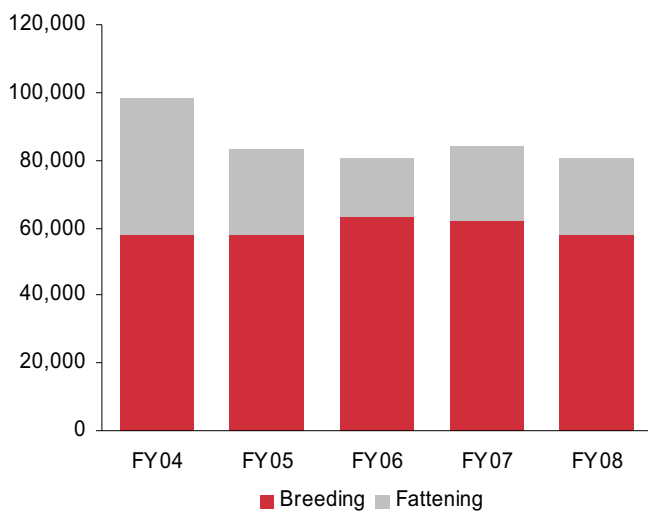
A major part of output is sold to buyers according to fixed-price agreements. Cresud earned total revenues of ARS87m from the sale of crops in FY 2008. This was 63% higher than last year's crop revenue of ARS53m. Gross profits from this business have also grown by a healthy 77% from ARS26m in FY 2007 to ARS46m in FY 2008.

Beef cattle

Beef production primarily involves the breeding and fattening of animals. When market conditions are favourable, the company buys and fattens cattle from third parties and

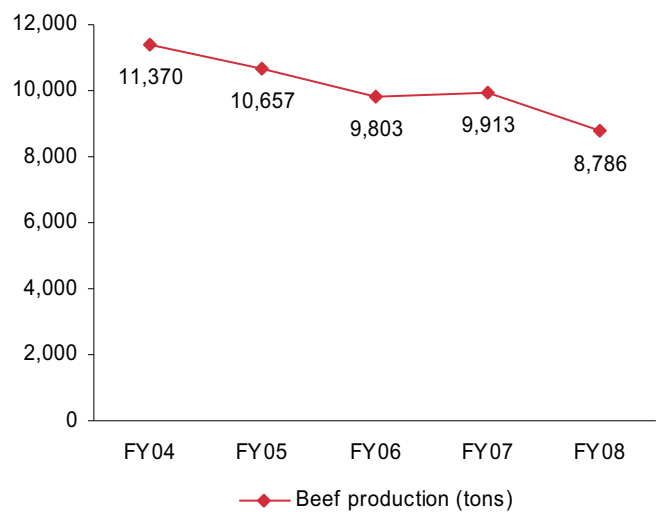
sells them to slaughterhouses and supermarkets. At June 2008, Cresud owned 80,358 heads of cattle, spread over 90,000 ha. Beef production was 8,786 tons in FY 2008 and generated total revenues of ARS32.4m, almost 20% of consolidated revenues.

Exhibit 331. Heads of beef cattle FY04 - FY08



Source: Company data

Exhibit 332. Beef production (tons) FY04 - FY08



Source: Company data

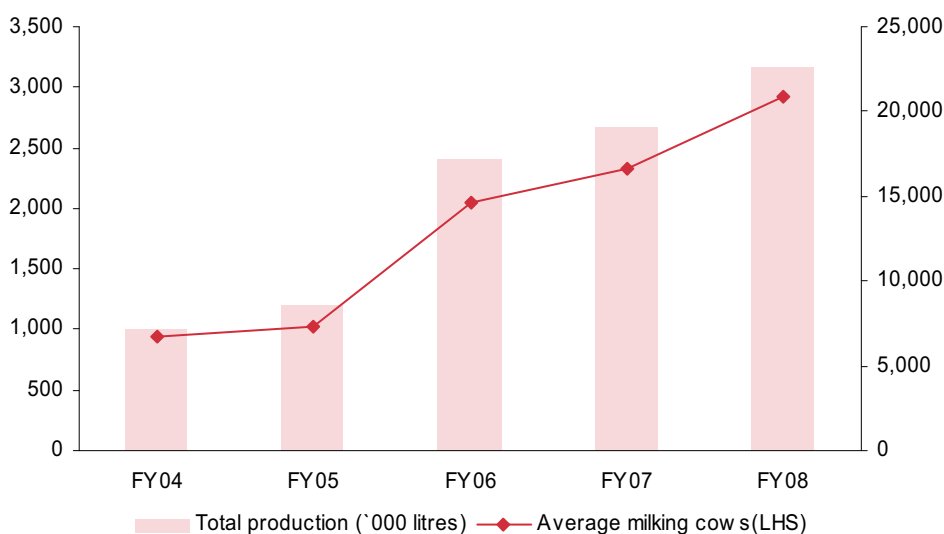
The declining number of heads and beef production has been due to the disposal of cattle farms over the past few years and the shift towards agriculture. The company plans to concentrate cattle farming operations on “Los Pozos” farm which now has 50,000 heads of cattle.

Milk Production

Milk production in FY 2008 was 25% higher than last year due to the increase in the number of cows and higher productivity. Cattle assigned to milk production increased from 6,507 heads spread across 2,376 ha in FY 2007 to 7,866 heads spread across 4,092 ha in FY 2008. Revenues from this business have shown a steady growth from ARS3m in FY 2005 to ARS17m in FY2008.

Revenues from milk production increased at a compounded rate of 48% over the past 5 years

Exhibit 333. Milk production and average number of milking cows



Source: Company data

Grain brokerage business - FyO.com

The grain brokerage business, conducted through FyO.com, is a minor part of Cresud’s operations. However, it is growing rapidly – revenues increased by 161.5% in

FY 2008. It was launched in November 1999 to sell products, buy inputs and obtain loans and insurance. Cresud took a 70% stake in the company for ARS3.5m in May 2000. The website presently has an average of 15,000 visitors per day and is one of the leading suppliers of market information to the sector. It started trading futures and options in FY 2007 and has also become a dealer. The high growth rate was attributed to a 59.6% rise in the brokerage business, a 308% increase in sales of inputs, a 230% increase in commissions and a 27% increase in technology services.

Equity Investments

Apart from its operations, Cresud has minority stakes in a number of other agricultural companies. The major ones are listed below.

Brasilagro

See separate note for details.

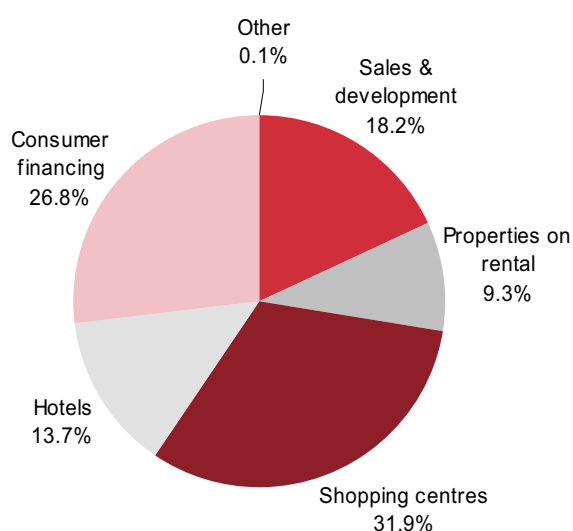
Cactus Argentina S.A. (Cactus)

Cresud owns a 24% stake in Cactus, which operates a feedlot on a 170 ha farm with a capacity for approximately 25,000 heads of cattle. Companies keep an inventory of cattle in the feedlot in order to ensure a constant supply of high quality beef. In January 2007 Cactus acquired EAASA, a meat packing company with the capacity to slaughter and process 9,500 heads of cattle per month. The location of EAASA's plant provides an advantage in terms of its proximity to beef production centres and also to the feedlot owned by Cactus.

IRSA

Cresud owns a 42.2% stake in IRSA, which is one of the leading real estate companies in Argentina in terms of total assets. IRSA is involved in the acquisition and development of residential properties and undeveloped land reserves, the development of shopping centres, credit card loans, the acquisition and development of office buildings and other non-shopping centre rental properties and luxury hotels. IRSA had total assets of ARS4.47bn and shareholders' equity of ARS1.92bn at 30 June 2008. It also owns an 11.8% stake in Banco Hipotecario which is one of the leading financial institutions in Argentina. IRSA's revenues rose from ARS738m in FY 2007 to ARS1.08bn in FY2008. Operating income improved from ARS198m to ARS258m over the same period. Cresud's investment in IRSA contributed ARS31.5m to its net profit in FY 2008. The following figure highlights the contribution of various business segments to IRSA's revenue.

Exhibit 334. Revenue breakdown of IRSA – FY 2008



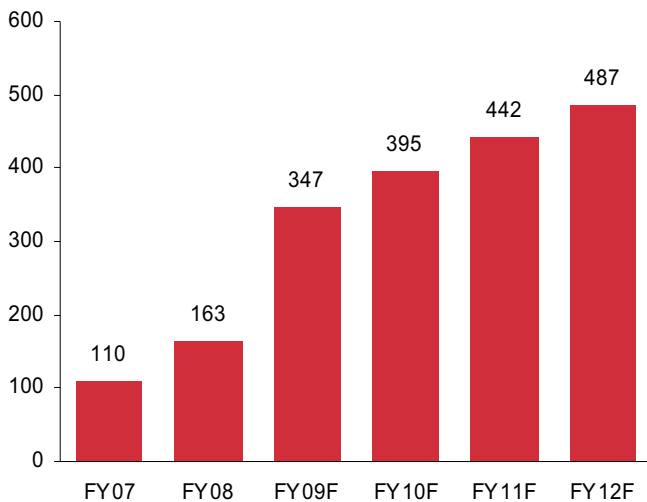
Source: Company data

Prospects and outlook

The company plans to increase cultivated land from 63,900 ha in FY 2008 to 90,000 ha by FY 2009 and also to increase the land allocated for beef cattle production. We believe this is possible given the company's focus on land acquisition. We expect FY 2009 revenues will grow by nearly 113% from FY 2008 revenues of ARS163m. The majority of this increase would be attributable to the agriculture business on account of the expected increase in cultivated land. We further expect a four-year compound annual growth rate in revenues of about 32% from FY 2009 onwards, with crops and beef continuing to be the major contributors.

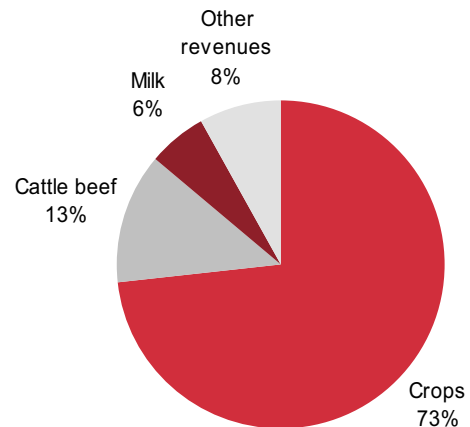
Growth in cultivated land to drive revenues

Exhibit 335. Revenues (ARSm) - FY 2007– FY 2012F



Source: Company data, Nomura estimates

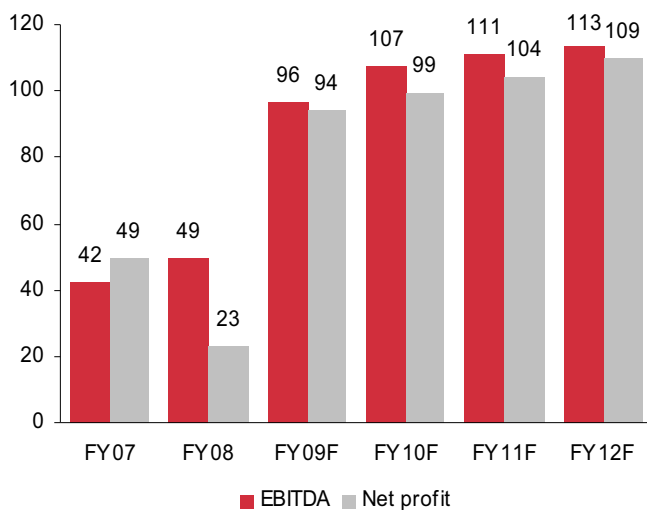
Exhibit 336. Revenue breakdown – FY 2009F



Source: Nomura estimates

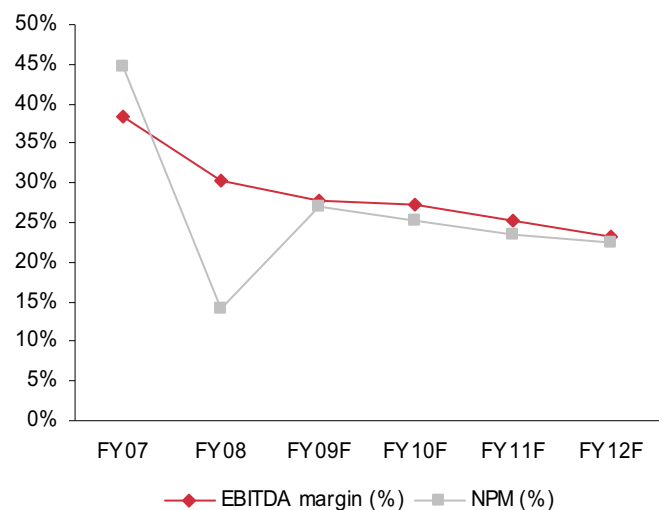
EBITDA is expected to rise significantly from the FY 2008 level of ARS49m to ARS113m in FY 2012 mainly on account of a high growth rate in revenues. We expect EBITDA margins in the range of 23-28%. Also, the recent increases in Cresud's stake in IRSA by 4.43%, and in BrasilAgro by 3.35%, will likely contribute a larger share to net profit, which we expect to rise to ARS109m by FY 2012.

Exhibit 337. EBITDA and net profit (FY 2007 – FY 2012F) (ARSm)



Source: Company data, Nomura estimates

Exhibit 338. EBITDA and net profit margin (FY 2007– FY 2012F)



Source: Company data, Nomura estimates

Valuation

Given the complexity of Cresud's business interests, we have used a combination of valuation techniques to arrive at our fair value. We have employed DCF to value Cresud's operating business, which includes crops, beef cattle and milk. The next component is its land holding. Excluding that used for its farming operations, Cresud owns nearly 420,000 ha. From FY 2005 through FY 2007, Cresud made 218% gains on average on its land sales. However, we realise this is unlikely to be sustainable, especially when it is considered that those gains were made during a benign period immediately after the catastrophic financial collapse in December 2001. Consequently, we are taking a conservative approach to land, which we value at book value. The final component is Cresud's equity investments. Of these, Brasilagro and IRSA are the largest and are also listed. Therefore, we have valued Cresud's stake in these two companies at current market value. The other investments have been valued at book value.

The weighted average cost of capital is taken to be 17% and the terminal growth rate is assumed to be 3% to reflect the growth potential of the company. The fair value, given these assumptions, comes to US\$9.70 per ADR.

However, it would be a useful exercise to consider what would happen if we assign a premium to the book value of land, or a premium/discount to the market value of investments. As the table below depicts, in these circumstances, fair value may vary between US\$8.75 and US\$11.04 per ADR.

Exhibit 339. Sensitivity analysis

		% change in value of equity investments				
		-20%	-10%	0%	10%	20%
% change in value of land holdings	0%	8.75	9.23	9.70	10.18	10.66
	5.0%	8.83	9.30	9.78	10.26	10.74
	10.0%	8.90	9.38	9.86	10.34	10.81
	15.0%	8.98	9.46	9.94	10.41	10.89
	20.0%	9.06	9.53	10.01	10.49	10.97
	25.0%	9.13	9.61	10.09	10.57	11.04

Source: Nomura estimates

Different valuation techniques

Financial statements

Income statement (AR\$M)

Year-end 30 June	FY07	FY08	FY09F	FY10F	FY11F
Revenues	110.3	162.6	346.8	395.3	441.5
Cost of goods sold	(64.7)	(91.2)	(195.2)	(223.1)	(256.5)
Other operating expenses	(3.2)	(22)	(55.3)	(64.9)	(74)
EBITDA	42.5	49.3	96.3	107.3	111.1
Depreciation & amortisation	(4.5)	(5.7)	(7.1)	(8.3)	(8.7)
EBIT	38	43.6	89.2	99	102.4
Interest income	2.9	(30.2)	27.3	20	17
Interest expense	(13.3)	(22.1)	(26.6)	(26.6)	(26.6)
Other non-operating expenses	30.5	32.2	30.8	34.5	38.8
Pre-tax profit	58	23.5	120.7	126.9	131.6
Tax	(8.4)	(0.3)	(26.8)	(27.4)	(27.3)
Minority interest	(0.3)	(0.3)	-	-	-
Net profit	49.4	23	93.9	99.5	104.2
Shares year end	24.7	36.8	50.2	50.2	50.2
EPS	2	0.6	1.9	2	2.1
DPS	0.2	0.2	0.4	0.4	0.4
Dividend payout per share (%)	11.1%	35.9%	20%	20%	20%

Company, Nomura estimates

Balance sheet (AR\$M)

Year-end 30 June	FY07	FY08	FY09F	FY10F	FY11F
Property, plant & equipment	245.9	266.6	395	498.4	549.7
Intangible assets and goodwill	24	23	23	23	23
Investments	541.3	926	970.1	1018.7	1072.2
Other long-term assets	44.3	117.5	121.4	125.5	128.2
Total fixed assets	855.1	1,332.9	1,509.3	1,665.5	1,772.9
Inventories	52.5	111.5	133.7	107	105.4
Trade debtors	37.9	35.8	85.5	97.5	108.9
Short-term investments	39.8	485.3	365	300	250
Cash and cash equivalents	46.9	47.8	25	31.7	53.9
Other current assets	39.6	56.5	57	65	72.6
Total current assets	217	737	666	601	591
Total assets	1,071.9	2,069.8	2,175.6	2,266.6	2,363.7
Shareholders' equity	825	1,762.3	1,837.5	1,917	2,000.4
Minority interest	0.8	1.2	1.2	1.2	1.2
Shareholders' equity	825.8	1,763.5	1,838.6	1,918.2	2,001.6
Long-term debt	24.7	-	-	-	-
Other long-term liabilities	53.7	43.9	43.9	43.9	43.9
Long-term liabilities	78.4	43.9	43.9	43.9	43.9
Short-term debt	122.7	195.6	195.6	195.6	195.6
Trade creditors	30.9	49.5	80.2	91.7	105.4
Other current liabilities	14	17.2	17.2	17.2	17.2
Current liabilities	167.7	262.3	293	304.5	318.2
Total liabilities	246.1	306.3	336.9	348.4	362.1
Total liabilities & shareholders' equity	1,071.9	2,069.8	2,175.6	2,266.6	2,363.7

Company, Nomura estimates

Cashflow (AR\$M)					
Year-end 30 June	FY07	FY08	FY09F	FY10F	FY11F
Net profit	49.4	23	93.9	99.5	104.2
Depreciation & amortisation	4.5	5.7	7.1	8.3	8.7
Gain from chg in fair values of biological assets	(1.2)	2.3	-	-	-
Gain on equity investments	(40.2)	(38.4)	(44.2)	(48.6)	(53.5)
Income from affiliates	-	-	-	-	-
Other non-cash items	(6.9)	(8.7)	(21)	(22.1)	(23.2)
Increase/decrease in working capital liabilities	15.1	38.7	30.7	11.5	13.7
Decrease/increase in working capital assets	(76.7)	(113.9)	(72.5)	6.8	(17.4)
Other operating cashflow	(4.3)	11.4	-	-	-
Operating cashflow	(60.4)	(79.9)	(6)	55.4	32.6
Disposal of subsidiary	-	-	-	-	-
Sale of fixed assets	29.2	43.9	26.3	27.6	29
Capital expenditure	(29.3)	(28)	(144.6)	(121.4)	(68.5)
Increase in investments	(0.7)	(407.5)	-	-	-
Cashflow - other investing	-	-	-	-	-
Cashflow - investing activities	(0.9)	(391.6)	(118.3)	(93.8)	(39.5)
Proceeds from issuance of common stock	-	881.1	-	-	-
Increase in long-term borrowings	84.5	79.2	-	-	-
Decrease in borrowings	(47.4)	(49.4)	-	-	-
Dividends paid	(5.5)	(8.2)	(18.8)	(19.9)	(20.8)
Cashflow - other financing	84.2	15.1	-	-	-
Cashflow from financing	115.8	917.8	(18.8)	(19.9)	(20.8)
Change In cash and equivalents	54.6	446.3	(143.1)	(58.3)	(27.8)
Cash & equivalents b/f	32.2	86.8	533.1	390	331.7
Translation adjustments	-	-	-	-	-
Cash & equivalents c/f	86.8	533.1	390	331.7	303.9

Company, Nomura estimates

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Astarta	AST PW	14.90 PLN	24 Oct 2008	Sell	
Black Earth Farming Limited	BEFSDB SS	12.30 SEK	24 Oct 2008	Neutral	3,8,47,48
Brasilagro	AGRO3 BZ	9.90 BRL	24 Oct 2008	Neutral	
Cosan	CSAN3 BZ	8.80 BRL	24 Oct 2008	Neutral	
Cresud	CRESY US	5.30 USD	24 Oct 2008	Buy	
Kernel	KER PW	12.10 PLN	24 Oct 2008	Sell	
MCB Agricole	4GW1 GR	3.40 EUR	24 Oct 2008	Sell	
Razgulay	GRAZ RU	2.00 USD	24 Oct 2008	Sell	
SLC Agricola	SLCE3 BZ	8.49 BRL	24 Oct 2008	Buy	

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Issuer	Previous Rating	Date of change
Astarta	Initiation	20 Oct 2008
Black Earth Farming Limited	Buy	20 Oct 2008
Brasilagro	Initiation	20 Oct 2008
Cosan	Initiation	20 Oct 2008
Cresud	Initiation	20 Oct 2008
Kernel	Initiation	20 Oct 2008
MCB Agricole	Initiation	20 Oct 2008
Razgulay	Initiation	20 Oct 2008
SLC Agricola	Initiation	20 Oct 2008

Three-year stock price and rating history

Not Available for Astarta



Not Available for Brasilagro
 Not Available for Cosan
 Not Available for Cresud
 Not Available for Kernel
 Not Available for MCB Agricole
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