

SPECIAL REPORT

ECONOMIC RESEARCH

April 19th, 2016

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How to feed the dragon? Food safety poses challenges and opportunities in China's Agricultural Sector

All eyes on China's imports, while China eyes overseas acquisitions

The agricultural sector has been left in the cold as the market focuses on the tectonic shift between manufacturing and services in China. Although the contribution of GDP fell 10% from almost two decades ago to 9% in 2015, the importance of agricultural sector could not be dismissed, especially when you look at the economy with one-fifth of world's population.

China's agricultural market is important to the world and the reasons are obvious: China needs to feed its own population, at the same time, it also serves as one of the largest markets to global firms. Rapid population growth, rising income and urbanization have all contributed to surging imports of agricultural products in China (**Chart 1**). Chinese corporates have started a overseas spending spree and two of the top ten M&A deals by value are food related (**Table 1**). However, opportunities come with challenges with a change in consumption pattern, low productivity, pollution, and more importantly, food safety, which is the core issue.

The paper will discuss a) China's agricultural trade after the accession into the WTO and the performance of Chinese companies; b) Overseas investment by Chinese corporates to secure supply and technology; c) New development in government policies to support industry upgrade; and d) the outlook of Chinese agricultural sector.

Table 1: Top 10 China M&A Deals

Year	Target	Acquirer	Value (USD m)	Industry
2013	Nexen Energy	CNOOC	17,432	Energy
2007	Sunac China	CDH Investments Fund, New Horizon Capital	9,011	Real Estate
2009	Addax Petroleum	China Petrochemical	8,827	Energy
2015	Pirelli & C. SpA	China National Chemical, Silk Road Fund Co Ltd*	7,104	Materials
2014	Las Bambas Copper Deposit	MMG Ltd, CITIC Group, CNIC	7,005	Materials
2013	Smithfield Foods	WH Group	6,955	Food
2015	Celestial Domain Investment	China Overseas Land	5,451	Real Estate
2012	AMC Entertainment Holdings	Dalian Hexing Investment	4,540	Consumer
2014	Noble Agri	COFCO Corp	4,000	Food
2009	National Transmission Corp	State Grid Corp of China*	3,950	Energy

Source: Bloomberg * Include acquirer(s) from other countries

WTO opened the gateway of opportunities

Here's how the story begin. China's imports has surged since the accession to the World Trade Organization (WTO). Imports increased from barely 3.2% of world total imports in 2002 to 9.2% in 2014 (**Chart 2**). China is now the largest importer of agricultural goods, and also the largest producer (**Chart 3**).

Overall, the US and Brazil are the key suppliers of China's food imports, followed by the EU (**Chart 4**). Among all products, China runs the largest deficit in oilseeds, of which more than 90% is soybeans (**Chart 5**). Soybean meal is an important protein source for feeding farm animal, and China has a very concentrated import source from the US, Brazil and Argentina (**Chart 6**).

Chart 1
 Rising Income and Agricultural Imports

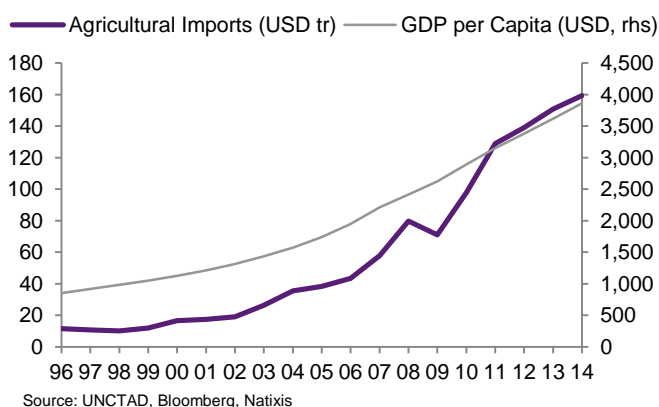


Chart 2
 Global Market Share of China's Agricultural Trade (%)

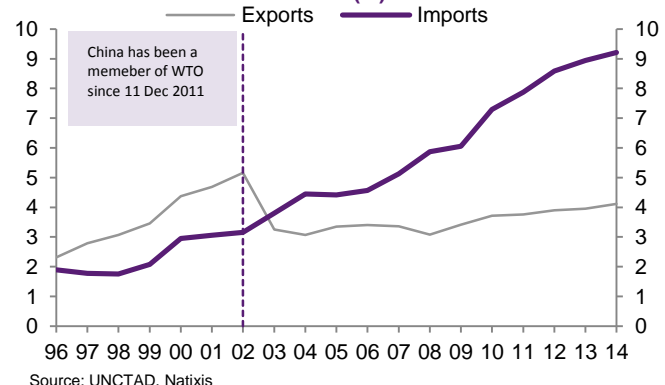
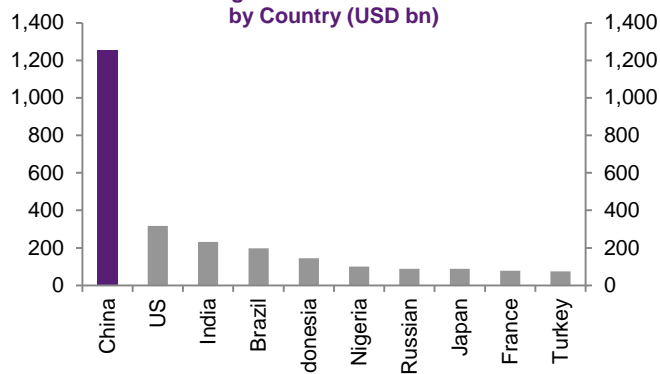
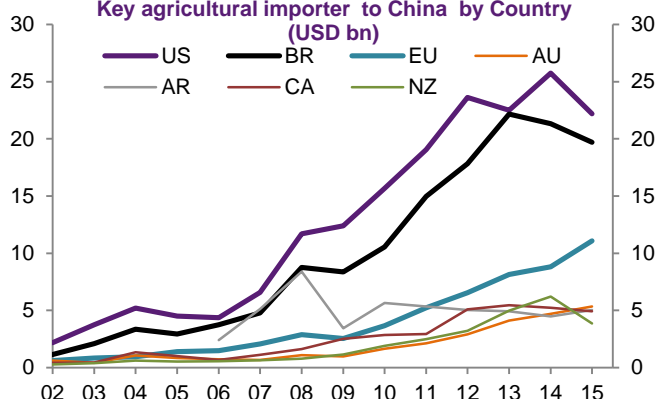


Chart 3
Gross Agricultural Production Value
by Country (USD bn)



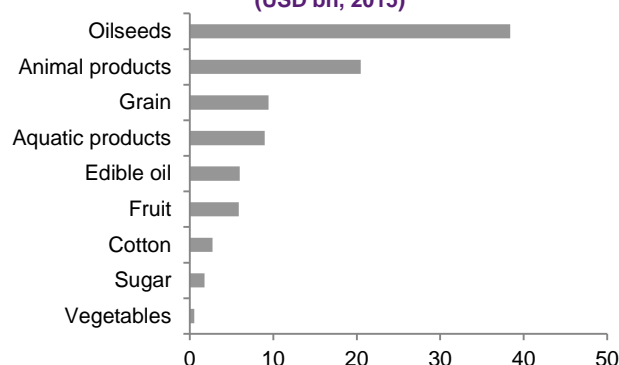
Source: FAO, Natixis; Value as of 2012

Chart 4
Key agricultural importer to China by Country
(USD bn)



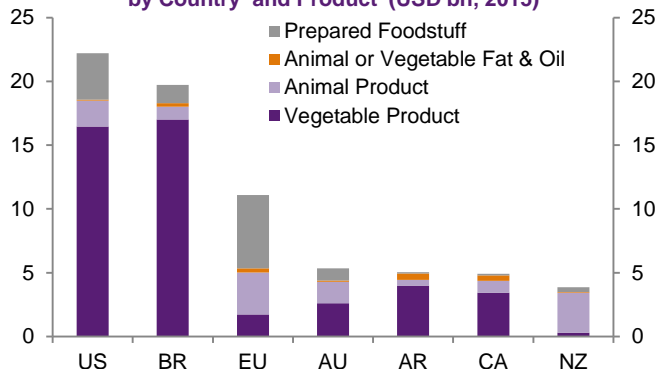
Source: CEIC, Natixis

Chart 5
Trade Balance of Key Agricultural Products
(USD bn, 2015)



Source: World Bank, Natixis

Chart 6
Gross Agricultural Production Value
by Country and Product (USD bn, 2015)



Source: CEIC, Natixis

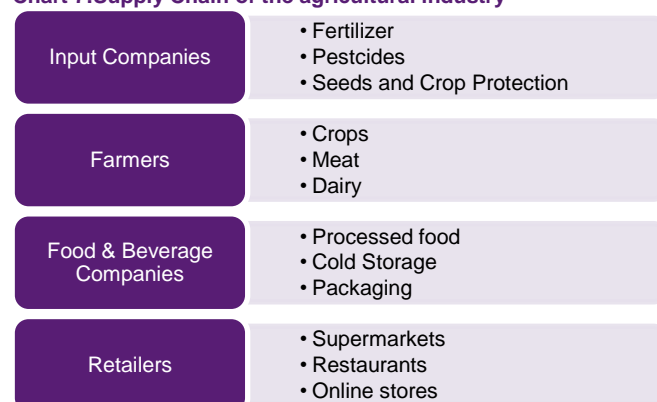
But Chinese producers are not among the winners

Despite the huge increase in trade, not every player in is benefited from the change. **Chart 7** shows the supply chain of agricultural industry.

Winners are downstream importers and retailers, and further upstream input companies. Importers and retailers enjoy the ride of surging demand for higher quality food, while input companies have increased sales as government policy focuses on increase in production volume.

On the flip side of the coin, the agricultural producers, which are in the middle of the supply chain, have weakened since the entry into WTO. Labor cost rises as the rural population moves to cities, which put China into a tradeoff between rising rural income and price stability. Hence, a support price mechanism is introduced, but the initiative turns out pushing Chinese agricultural price above the global market price. This does not only worsen China's competitiveness in world exports, but also hurt domestic sales as the price of imported food could be lower than locally farmed produce.

Chart 7: Supply Chain of the agricultural industry



Source: Natixis

We take a closer look into corporate performance by analyzing the companies that belongs to the agricultural sectors within the top 3000 companies by asset in China and rest of the world (**Table 2**). In terms of debt, Chinese agriculture corporates are less leveraged than the globe with a heavier reliance on short term debt. The interest expense is higher, which also leads to a lower EBITDA-to-interest expense ratio, a measure of corporates ability of repayment. From the revenue side, despite intense price competition, China corporates has a higher profit margin due to a lower effective tax rate.

Table 2: Key Indicators of Agricultural Corporates

	China	Global
Total Liabilities/Common Equity	63	137
Short Term/Total Liabilities	89	49
Interest Expense/Total Debt	6	4
EBITDA/Interest Expense	3	5
Profit Margin	4	1
Effective Tax Rate	15	27

NB Companies without full set of data is excluded and median is used for analysis.
Source: Natixis estimates

Overseas investment as the key to secure supply and technology

Resources and technology are the major challenges in China's agricultural sector driven by a change in consumption pattern, low productivity, food safety and pollution (**Chart 8**). Foreign producers and input companies are being put on the spotlight as Chinese firms seek expansion in capacity, higher quality of corporate governance and management, as well as advance technology to streamline the production.

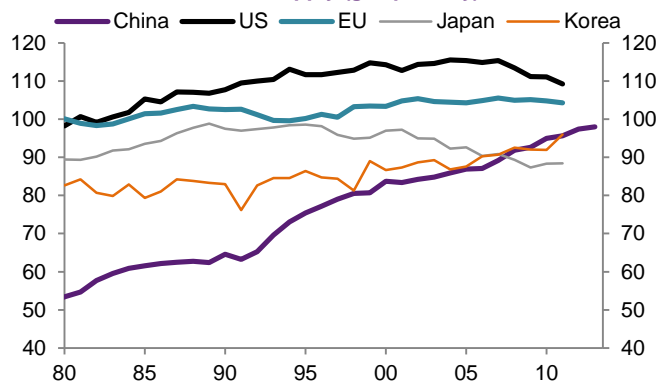
Chart 8



Source: Natixis

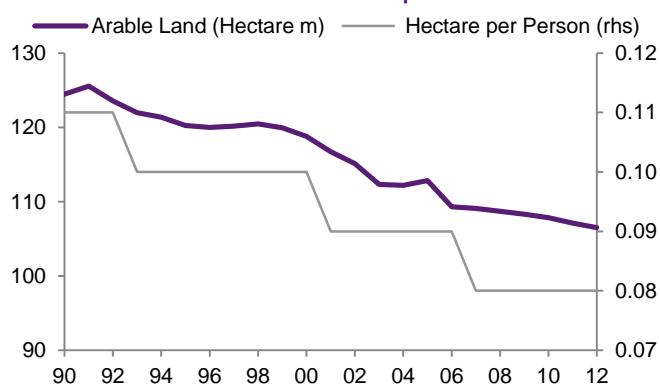
A change in **consumption pattern** is driven by rising income, which has provided Chinese consumers more choices in dietary, and has fueled the growth in protein supply (**Chart 9**). The increase in meat consumption has provided opportunities for poultry producers but also put pressure on China's agricultural sector, especially when the manufacturing and service sectors have undergone enormous growth and arable land was turned into other uses (**Chart 10**). In order to fill the import gap, Chinese firms have to invest abroad to secure supply and technology (**Chart 11**), especially in ways to improve productivity, and more importantly, to have a higher practicing standard on food safety.

Chart 9
Protein Supply (g/capita/day)



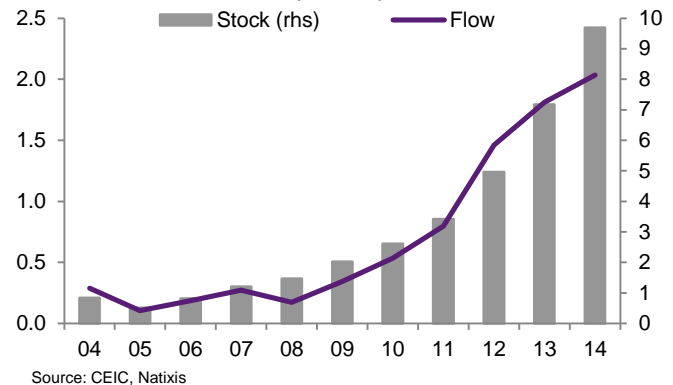
Source: FAO, Natixis

Chart 10
Arable land and Hectare per Person



Source: FAO, Bloomberg, Natixis

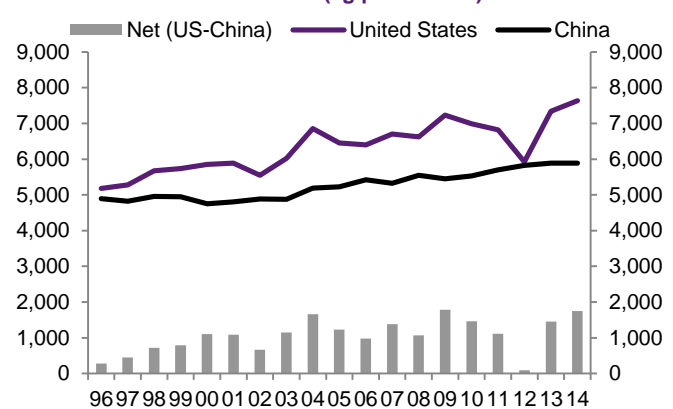
Chart 11
China Outward Direct Investment in Agriculture (USD bn)



Source: CEIC, Natixis

In terms of **productivity**, an increase in sales volume does not necessarily imply efficient production. China has suffered from the problem of low yield per area. For example, the cereal yield is lower compared to the US, and the gap is widening (**Chart 12**). The main reason is not only the highly fragmented farmland, which makes large scale production and utilization of agricultural machineries very difficult, but also the technological difference between the two countries on agriculture, especially at the input stage.

Chart 12
Cereal Yield (kg per hectare)



Source: World Bank, Natixis

The issue on **food safety** is a side effect of intense price competition that producers may prioritize cost efficiency and production volume over other factors, including safety issues. Although there are regulations in place, given the fragmented arable land in China, it is difficult to monitor and trace the root cause of food safety issue. **Table 3** shows China has outpaced US in the number of farms. Consolidation of farmland is taking place to increase productivity but the process remains slow.

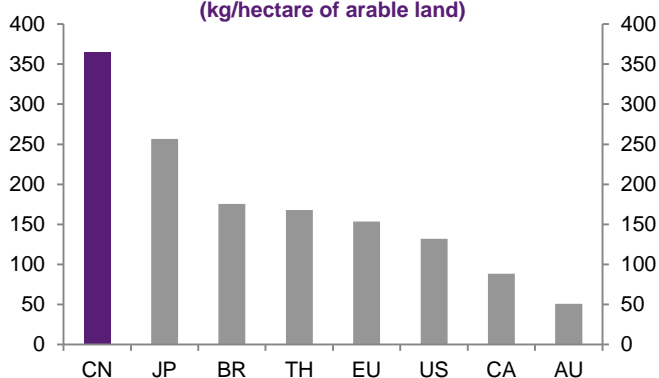
Table 3: Comparison of Chinese agricultural industry with US

	China*	US^
Farms with cropland	184m	1.6m
Farms that raised pigs for slaughter	52m	56 thousands
Farms that raised broilers	24m	33 thousands

NB *China cropland date in 2006 with the rest in 2014 ^US data in 2012
Source: PwC, Natixis

Lastly, **pollution** remains as the key factor threatening sustainability. China's agricultural sector had been input driven and the growth in recent production is generally fueled by the increased use of chemicals. In a more precise measurement, China's fertilizer consumption is higher than other major agricultural producers around the globe (**Chart 13**). Excess usage of fertilizers and pesticides could have negative impact on both sales (food safety, branding) and production cost (expenditure on agricultural chemicals). As a result, demand for a more effective way of utilizing agricultural chemicals has risen from consumers as well as producers, and the media has reported potential overseas acquisitions of input companies in the upstream supply chain.

Chart 13
Fertilizer consumption
(kg/hectare of arable land)

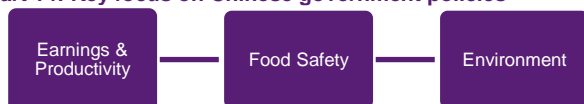


Source: World Bank, Natixis; Value as of 2013

13th Five-Year Plan is in place to help

Given the headwinds in the agricultural sector, the Chinese government is ready to steer the wheel towards the right direction. While China has 12 years of continuous increase in agricultural production, the focus will not be put in boosting production volume anymore. In the 13th Five-Year Plan, the key priorities are consolidating farmlands and improving productivity, ensuring grain self-sufficiency, and food security and safety. Hence, there will be a series of agricultural subsidies and financial investment reformation.

Chart 14: Key focus on Chinese government policies



Source: Natixis

Government policy plan in 2016

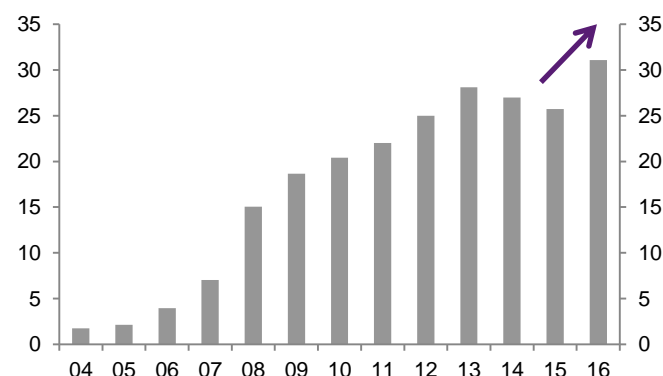
First, there are policies to help agricultural sector to **increase earnings and productivity**. The major government support is shown in **Table 4** and subsidy surges again after falling in 2015 (**Chart 15**). The government will combine the three subsidies (improved seeds/breeds, general input and direct payment) into a single supportive subsidy, and to encourage moderate scale operation and protect cultivated land fertility. However, the switch does not come without risks. The combination of three subsidies could also lead to higher land cost as land owner could plan to increase rent to compensate the loss in subsidies.

At present, agricultural subsidies is structured as Generalized System of Preferences (GSP), but new policies will tilt towards large scale producers, industry experts and new agricultural business entities, which means subsidies will be directed to whoever grows the grain. This is a policy response to the criticism on the current system that small farmers could enjoy a variety of subsidies by simply controlling farmland without actually growing grains, while other players are difficult to get subsidies.

Table 4: Key Government Measures in Agriculture

Subsidy	Start Year
Four Key Subsidies	
Improved seeds/breeds*	2002
General input subsidy*	2006
Direct payment to grain producers*	2004
Agricultural machinery	2002
Other Measures	
Strategic reserves	2007
Minimum support price of grains	2004
Rotational Grazing	2003
Grain for green programme	1999
NB * The three payments that is combined in 2016.	
Source: MoA, Natixis	

Chart 15
Subsidies to Agricultural Sector (USD bn)



Source: MoF, Natixis

Another major change is the implementation of target price, which will ultimately replace the temporary reserve system. Pilot programme towards market economy that producers will sell based on market price has been run on cotton and soybean since last year.

When the market price is lower than the target price, the government will give subsidies taking price spread, arable area, production and sales into reference. The move would reduce the export disadvantage that domestic agricultural products is more expensive than the world due to price support.

Although target price is sensible theoretically, the application could be challenging as the overall subsidies cost could be higher than the difference between the market price and the target.

Second, strong emphasis is being put on **food safety**, an area consistently under turmoil. The vast majority of existing subsidies have focused on its incentives to boost production quickly, leading to indiscriminate use

of fertilizers and pesticides. This could indeed maintain the food production growth in a year or two, but detrimental to long run food security.

To solve this problem, China has passed the new "Food Safety Law" in October 2015, and Han Changfu, the Minister of Agriculture, said in a press conference in March 2016 that China has started the preparation work on revising the "Agricultural Product Quality Safety Law", which is a key supplement to the "Food Safety Law".

Although the government has a clear stance in regulatory enforcement, the key is to implement in practice instead of simply having food safety policy on paper. The difference between policy and practice remains as the key issue due to the aforementioned monitoring issues on land fragmentation.

Third, agricultural machinery and chemicals together form an important part in modern agricultural production in maintaining high efficiency and yield. Despite the obvious benefits, improper usage of such tools would put **environmental sustainability** at risk, which in turns threaten food supply. Using out-of-date machinery could generate unnecessary pollution. Too much fertilizer does not only increase production costs, but also resulted in long term issue such as land compaction and soil acidification. According to Ministry of Agriculture, the pesticide expenditure on vegetables and fruits has increased 90% comparing to 2002. Therefore, it is critical to control the usage of the machinery, "food of food" and pest repeller to ensure sustainability.

The government has already upgraded the emission standard of agricultural machinery. The subsidy on National II standard (an looser pollution standard) was halted since October 2015 and no new National II machines could be produced and sold by non-road engine producers after April 2016. History has shown that government incentive subsidies work quite well to change these business behavior (**Chart 16**).

In terms of chemicals, the government has recognized this as an issue, and the Ministry of Agriculture has approved the action plans to stop the growth of fertilizer and pesticide use by 2020 (**Table 5**). The aim is to encourage use of higher quality pesticides in terms of high efficiency, low toxicity and residue.

Table 5: Objectives of 2020 Action Plan

		2020 Target	Change
Fertilizers			
Structure	Soil testing and fertilizer technology	90%	-
	Manure returns to field	60%	+10%
	Straw returns to field	60%	+25%
Method	Fertilization machinery per major crop area	40%	+10%
	Integration of fertilizer	1.5 m acres	+8000 acres
Utilization	Fertilizer utilization of main crop	40%	+1%/yr
Pesticides			
Green Pest Prevention		30%	+10%
Integrated Pesticides Management of Diseases and Insects		40%	+10%
Main Crop Coverage Ratio		40%	+5%

Source: MoA, Natixis

Outlook: It is all about confidence and technology

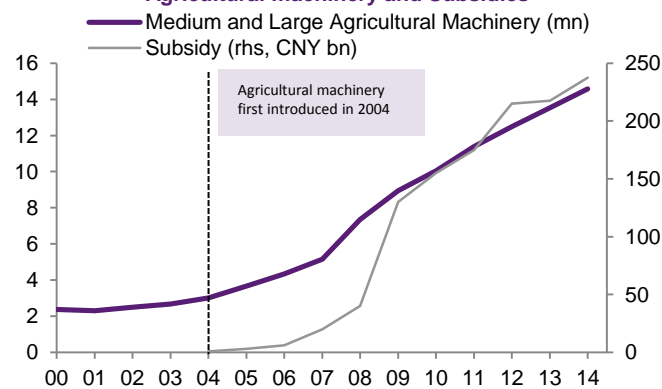
The priorities of China's agricultural sector has switched from purely chasing production volume to increasing productivity and safety through technological integration, with food safety as the core issue.

Moving along the supply chain, the outlook for input companies and retailers are positive, while the mixed prospect of agricultural producers depends on how successful is the government effort to increase food safety standard.

The Chinese government is supportive in the agricultural sector and has taken the step in reform, such as the reallocation of three key subsidies, progressive implementation of target price, and policies to phase out heavy pollution machineries. However, more effort is needed in land reform and industry consolidation in the highly fragmented sector.

All in all, China needs to grow its capability of agricultural production, not only in terms of production volume, price competitiveness but more importantly on food safety and environmental protection so that it can enjoy sustainable food supply to feed its large population.

Chart 16
Agricultural machinery and Subsidies



Source: CEIC, MoA, Natixis

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