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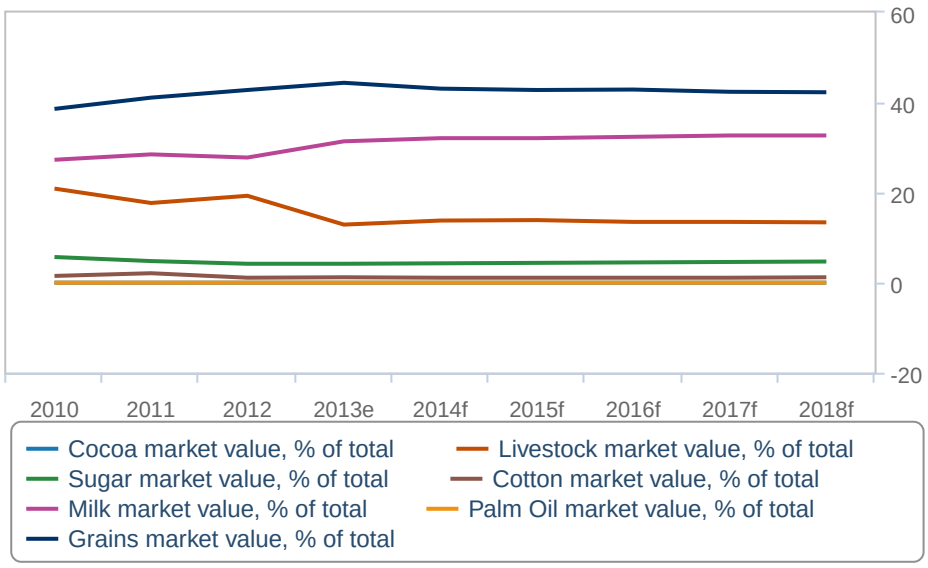
BMI Industry View

BMI View: *Financial sanctions designed to pressure Tehran over its nuclear programme are playing havoc with Iran's ability to import goods. Food price inflation is soaring, leading to a serious decrease in meat consumption. The use of barter in place of regular trade can be seen as a feasible, albeit temporary, way of circumventing sanctions to meet demand. Although President Hassan Rouhani, who is more moderate than his predecessor Mahmoud Ahmadinejad, will most likely adopt a more conciliatory stance with the West, many sanctions are expected to remain in place. Over the longer term, we believe that the continued investment by the government to improve infrastructure - such as the improvement of irrigation systems - will help the country to turn away from its backward agrarian system and will yield results in terms of better-quality grains. We are especially upbeat in our outlook for grains and sugar production.*

Agribusiness Market Value

BMI Market Value By Commodity (2010-2018)



e/f = BMI estimate/forecast. Source: FAO, BMI

Key Forecasts

- **Wheat production growth to 2017/18: 6.5% to 14.7mn tonnes.** Wheat yields are expected to improve owing to the modernisation of technology, including hardier grains variants, greater access to relevant inputs and a larger area of the country benefiting from new irrigation facilities.
- **Sugar consumption growth to 2018: 20.5% to 2.4mn tonnes.** Sugar demand will be mainly driven by population growth.
- **Poultry production growth to 2017/18: 14.1% to 900,400 tonnes.** Growth will be driven by domestic demand and the effects of increased investment.
- **BMI Universe Agribusiness Market Value: USD47.2bn in 2014** (down 6.1% compared with 2013; growth forecast to average 1.1% annually between 2013 and 2018).
- **2014 real GDP growth: 2.8%** (up from -2.9% in 2013; predicted to average 3.1% from 2013-2018).
- **2014 consumer price inflation: 23.0% year-on-year (y-o-y)** (down from 35.6% y-o-y in 2013; predicted to average 16.0% y-o-y from 2013-2018).

Key Developments

The outlook for Iran's livestock and dairy sectors in the short and medium term is improving. A recovery in farms' profitability will help production to grow in 2013/14 after two seasons of stagnation on the back of skyrocketing feed prices. In the medium term, the easing of sanctions is likely to boost Iran's economy, paving the way for substantial foreign investment that has been on hold. There has been recent progress in talks between Iran and Western countries to reach an agreement on the former's nuclear programme: Iran and the so-called P5+1 countries - China, France, Russia, the UK and the US plus Germany - on November 24 2013 reached an understanding on the implementation of a deal under which sanctions on some of Iran's trade in goods and services will be suspended.

The oil and gas industry, along with infrastructure, would be obvious beneficiaries; however, agribusiness projects, especially in the livestock and dairy sectors, also are likely to benefit from the easing of sanctions. Large agribusiness companies are already present in Iran and most, such as **Danone**, entered the market before international sanctions were imposed in 2012.

Since the agreement, Iran has made a number of deals related to grain and fertilisers imports, which demonstrates that hurdles to imports are easing. In September 2013, Iran's Agricultural Support Services Company issued a tender to buy 60,000 tonnes of potassium sulphate, its first tender in two years. Belgian chemical firm **Tessenderlo** won this tender. In February, Iran bought at least 400,000 tonnes of wheat from Russia and the European Union in the first big state-sponsored purchase since December 2013. We

believe private Iranian buyers are likely to make more active purchases this year as trade becomes easier in line with the easing of restrictions on Iran's banking system. The government stepped up state purchases in recent years in order to deal with rising hurdles to trade.

The aforementioned sanctions have also affected the rice industry, and Iran has been increasingly relying on Indian rice exporters since 2011. India was one of the few countries to have a barter trade system and other payment mechanisms with Iran, which helped India to import oil and export rice and other items to Iran. However, the recent progress in talks between Iran and Western countries to reach an agreement on the former's nuclear programme may weaken the Indian advantage by eventually allowing free trading in US dollars. This is likely to favour Thai and mostly Pakistani exports, as these countries are traditionally the largest suppliers to Iran.

SWOT

Agribusiness

SWOT Analysis

Strengths	▪ A diverse landscape and climate provides Iran with strong fundamentals, positioning the country as arguably the most productive agricultural state in the Middle East. ▪ The country's sugar-processing infrastructure is relatively well developed. ▪ Iran's milk production and added-value processing infrastructure is well developed.
Weaknesses	▪ A history of periodic droughts due to inadequate rainfall can undermine production. ▪ A reliance on oil exports for GDP revenue suggests that investment in agriculture predominantly depends on volatile external factors. ▪ An inefficient state sector, coupled with a strong state presence in an array of agricultural sectors, diminishes potential producer gains, limiting private investment. ▪ Increased investment in irrigation could serve to improve agricultural output, and yet it is enormously costly. ▪ The government has an implied favourable agricultural policy in order to boost self-sufficiency, yet its openness to imports suggests that it has not followed through.
Opportunities	▪ A satisfactory conclusion to the stand-off with the West (fuelled by disagreement regarding Iran's nuclear intentions) may lead to an increase in foreign investment. ▪ Investment in the development of irrigation could offset some of the production losses associated with drought.
Threats	▪ The prevalence of grey or informal markets serves to hinder the efficient flow of goods through official channels, thus limiting the scope for fiscal-based investment. ▪ In the future, subsidies may drain funds away from areas in which they could be better and more sustainably spent.

SWOT Analysis - Continued

- The constant speculation regarding the status of Iran's uranium enrichment programme could dampen investor confidence in the local business environment.

Industry Forecast

Grains Outlook

BMI Supply View: Wheat and barley are the main crops cultivated in Iran. Wheat is the dominant cereal crop, accounting for almost 70% of aggregate cereal production. Irrigated wheat covers only one-third of the total wheat area; as a result, the bulk of the wheat crop depends on the performance of seasonal precipitation. Most of the rain-fed wheat crop is concentrated in the north-western region of the country. Small amounts of rice and maize are also produced in the country.

Grains production in 2014/15 will record mixed results, as we forecast wheat production to decline, while corn and barley output will grow. We have revised down our estimate for wheat production, as drought conditions over 2014 affected yields. We now see production coming at 13.2mn tonnes, down 7.0% year-on-year (y-o-y), compared with a previous forecast of 14.1mn tones. Corn production will grow by a weak 1.1% y-o-y to 1.8mn tonnes, while barley will show strong growth of 5.0% y-o-y to 3.4mn tonnes.

Over the long term, wheat yields are expected to improve owing to the modernisation of technology, including hardier grains variants, greater access to relevant inputs and a larger area of the country benefiting from new irrigation facilities. However, despite recent improvements, wheat yields in Iran are still fairly low by world standards - comparable to the level seen in Turkey but some way below that of Pakistan. Our forecast to 2017/18 sees wheat production increasing by 6.5% on the 2012/13 level to 14.7mn tonnes. The longer-term outlook for corn is optimistic, but coming from a low base in 2012/13: we forecast corn production to increase by 40.8% to 1.8mn tonnes in 2017/18. We expect barley production in 2017/18 to be up 9.7% on 2012/13, at 3.7mn tonnes.

BMI Demand View: One of the biggest factors likely to influence demand for grains over our forecast period is the ongoing effort by Iran's government to phase out food subsidies in a bid to limit the country's fiscal concerns. Economic sanctions may also drive prices up due to their negative impact on the capacity of importers to gain access to credit, although government intervention in the form of direct trade negotiations with major wheat-producing countries may mitigate the effects of this. As a result of these factors, food prices are at elevated levels. In 2015, we expect domestic consumption of wheat to decline in line with production, by 0.5% y-o-y to 16.8mn tonnes. We are forecasting 4.0% growth in consumption for corn; demand for barley is forecast to rebound by 5.0% following the steep decline recorded in 2013/14.

As the government phases out bread subsidies, we expect wheat consumption growth to be lacklustre. Our forecasts envisage wheat consumption growing by 9.4% on the 2013 level to 17.9mn tonnes in 2018. Barley

and corn consumption will show stronger growth owing to the needs of the livestock sector. Corn consumption is forecast to grow by 18.2% to 6.9mn tonnes, while barley is forecast to grow by 5.3% to 4.8mn tonnes. Production growth for barley and wheat will generally outpace consumption growth (controlling for base effects). Despite this, Iran will remain dependent on imports to fulfil its grain needs through to 2018. The recent progress in negotiations between Iran and Western countries over its programme could help to ease sanctions.

Table: Corn Production & Consumption (Iran 2013-2018)

	2013	2014f	2015f	2016f	2017f	2018f
Corn production, '000 tonnes	1,300.0	1,750.0	1,770.0	1,790.0	1,810.0	1,830.0
Corn production, % y-o-y	-51.9	34.6	1.1	1.1	1.1	1.1
Corn consumption, '000 tonnes	5,850.0	6,084.0	6,327.4	6,517.2	6,712.7	6,914.1
Corn consumption, % y-o-y	-3.3	4.0	4.0	3.0	3.0	3.0

f = BMI forecast. Source: USDA, BMI

Table: Barley Production & Consumption (Iran 2013-2018)

	2013	2014f	2015f	2016f	2017f	2018f
Barley production, '000 tonnes	3,400.0	3,250.0	3,412.5	3,514.9	3,620.3	3,728.9
Barley production, % y-o-y	17.2	-4.4	5.0	3.0	3.0	3.0
Barley consumption, '000 tonnes	4,600.0	4,232.0	4,359.0	4,511.5	4,669.4	4,842.2
Barley consumption, % y-o-y	12.2	-8.0	3.0	3.5	3.5	3.7

f = BMI forecast. Source: USDA, BMI

Table: Wheat Production & Consumption (Iran 2013-2018)

	2013	2014f	2015f	2016f	2017f	2018f
Wheat production, '000 tonnes	13,800.0	14,500.0	14,065.0	14,346.3	14,705.0	15,072.6
Wheat production, % y-o-y	11.3	5.1	-3.0	2.0	2.5	2.5
Wheat consumption, '000 tonnes	16,400.0	16,892.0	16,807.5	17,177.3	17,555.2	17,941.4
Wheat consumption, % y-o-y	10.1	3.0	-0.5	2.2	2.2	2.2

f = BMI forecast. Source: USDA, BMI

No End Of Imports Despite Hurdles To Trade

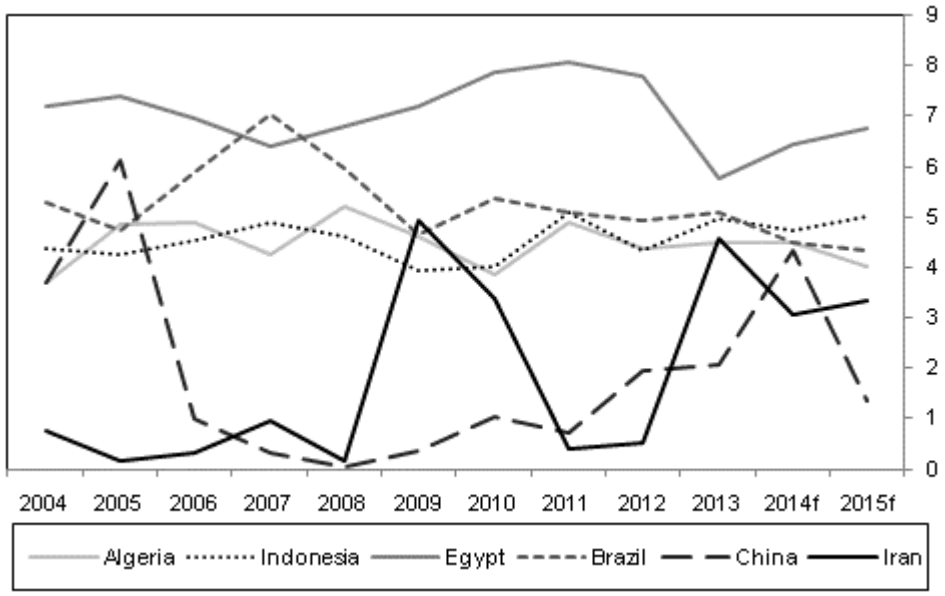
Pressure on Iran's grains imports escalated significantly in 2013 owing to the tightening of international sanctions in connection with its nuclear programme. The country is trying to diversify its supplier base in order to improve food security. Despite recording a bumper wheat crop in 2013/14, Iran will maintain relatively high imports as it maintains its stockpiling policy.

The new international sanctions imposed on Iran regarding its disputed nuclear programme in 2013 increased difficulties in importing food. The US National Defense Authorization Act (NDAA), which came into effect on July 1 2013, blacklisted Iran's shipping, shipbuilding, energy and ports management sectors, adding to other sanctions targeting the banking sector and key oil exports. The sanctions aim to force Tehran to negotiate on a nuclear programme it says is peaceful but which Western states fear has military aims.

While the NDAA has an explicit exemption for food, medicine and other humanitarian goods, foreign shipping firms are gradually pulling out of Iran. China, which is among Tehran's main allies, saw its shipping companies exit Iran, with China Shipping Container Lines (**CSCL**) and COSCO Container Lines stopping their activities with Iran in 2013. Taiwanese lines Evergreen and Yang Ming Marine as well as two major South Korean lines also bowed out, leaving only TS Lines of the major carriers still calling at the country's ports. Indeed, even local feeder services are also now removing themselves.

Unstable Imports

Select Countries - Wheat Imports (% of total)



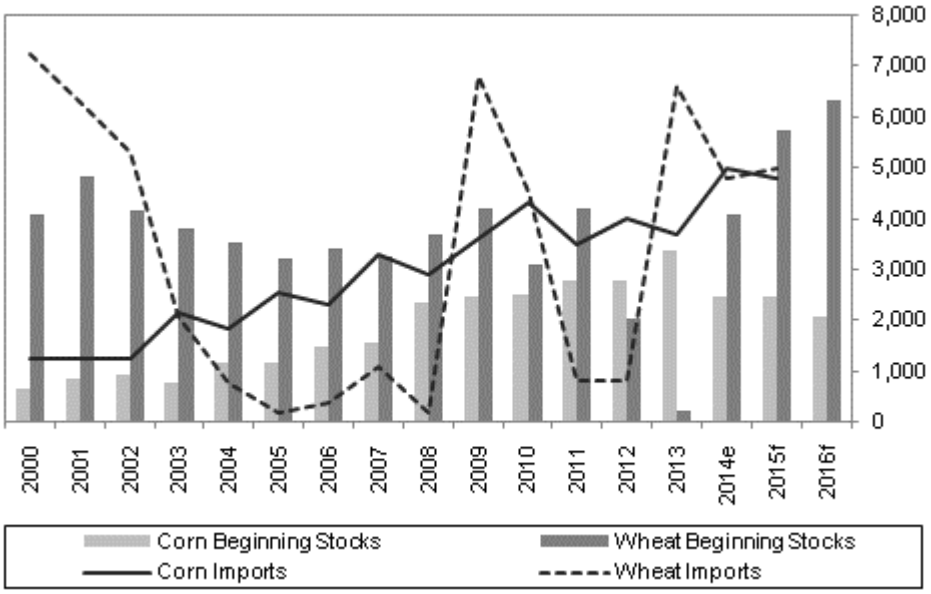
f = BMI forecast. Source: BMI, USDA

A large share of Iran's food imports traditionally arrive by ship. As a result, the extra freight-related import burden on basic goods pushed up food prices, which are already skyrocketing owing to lower supply and currency volatility. These additional hurdles meant grain shipments to Iran can command a risk premium of USD10-20/tonne over international prices, according to industry sources.

Easing of sanctions is expected to modestly boost throughput activity at the country's top ship container handling port, Bandar Abbas. **BMI**'s Shipping team forecasts that container handling volume in Bandar Abbas will grow by 3.1% in 2014, in sharp contrast to the 25% fall in 2013.

Stockpiling Policy

Iran - Wheat & Corn Beginning Stocks & Imports ('000 tonnes)

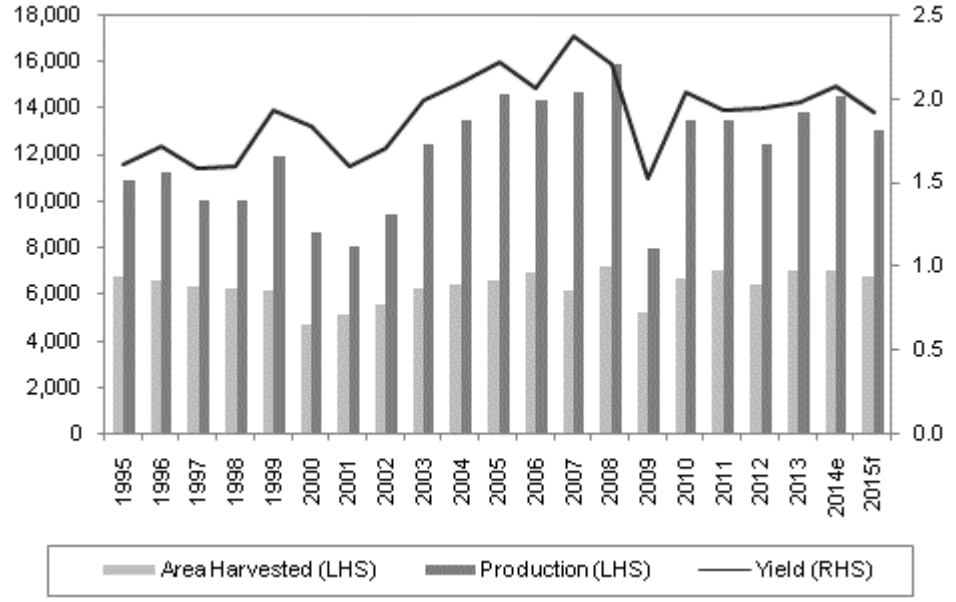


e/f = BMI estimate/forecast. Source: BMI, USDA, FAO

Iran has been ramping up efforts to diversify its supplier's base, especially from Caspian Sea neighbours. For wheat, the country looked at Kazakhstan and Russia in 2013/14, as they reaped bountiful harvests, while extra corn came from Ukraine. Grains imports are likely to remain historically elevated in 2013/14 and 2014/15, as Iran maintains an active stockpiling policy in order to foster its food security and avoid public unrest despite soaring food prices. Wheat imports should ease, as the rebound in domestic production in 2013/14 and 2014/15 and high stocks (at 6.5mn tonnes at the beginning of the 2014/15 season, compared with the 10 year average at 3.5mn tonnes) will limit import needs. We believe imports will exceed the production deficit of 1.4mn tonnes, and hover around 4mn-5mn tonnes in 2013/14 and 2014/15, compared with 6.6mn tonnes in 2012/13.

On An Uptrend

Iran - Wheat Production ('000 tonnes), Area Harvested ('000ha) & Yields (tonnes/ha)



e/f = BMI estimate/forecast. Source: BMI, USDA, FAO

Grains Background

Grains are cultivated throughout Iran and are an extremely important part of the local farming sector. Wheat is the main grain, accounting for almost 70% of the aggregate cereal production, followed by barley and then corn. These crops, particularly wheat and barley, are grown extensively on farmlands in mountainous areas of the country. According to the FAO, irrigated wheat covers only one-third of the total wheat area, and the majority of the wheat crop depends on the weather - namely rain. Most of the rain-fed wheat crop is concentrated in the north-west of the country. Since droughts ravaged the country between 1999 and 2001, the area of land under irrigation has increased, which has led to improved yields, even in subsequent drought years.

The Iranian grains sector is highly regulated. Producers receive subsidised access to input costs such as fertiliser and pesticides, as well as a guaranteed support price for their crops. Wheat is then sold to consumers at heavily subsidised rates. Despite government aid, farmers often complain that the support price is too low for them to turn an acceptable profit, and that the support allows inefficient farmers to continue producing wheat when other activities would have been a better use of capital and labour. This has inhibited the development of larger, more efficient farms and drained funds that could have been used to further boost infrastructure, such as irrigation. The effect of more targeted support for farming can be seen in the rapid rise in wheat production in the past decade. Increased investment in irrigation saw average yields rise considerably over the five years before the drought of 2008/09.

Despite the improvements in infrastructure, large areas of the country, particularly in the north and west, are still reliant on rain-fed agriculture. In some areas this is because the land is unsuitable for irrigation, but other areas could benefit from improved access to water, particularly in years when rains are below average. These areas also suffer from a lack of mechanisation, with a very low density for harvesters compared with the irrigated areas in the south and east of Iran. With the government now in the process of abolishing its subsidies on food, money could become available for funding infrastructure improvements which will, in time, help to bring down the cost of food.

Table: Barley Production & Consumption (Iran 2008-2013)

	2008	2009	2010	2011	2012	2013
Barley production, '000 tonnes	3,104.0	1,547.0	3,446.0	3,210.0	2,900.0	3,400.0
Barley production, % y-o-y	5.0	-50.2	122.8	-6.8	-9.7	17.2
Barley consumption, '000 tonnes	3,600.0	3,550.0	3,700.0	3,900.0	4,100.0	4,600.0
Barley consumption, % y-o-y	5.9	-1.4	4.2	5.4	5.1	12.2

Source: USDA, BMI

Table: Corn Production & Consumption (Iran 2008-2013)

	2008	2009	2010	2011	2012	2013
Corn production, '000 tonnes	2,361.0	1,778.0	1,643.0	2,140.0	2,700.0	1,300.0
Corn production, % y-o-y	9.0	-24.7	-7.6	30.2	26.2	-51.9
Corn consumption, '000 tonnes	5,150.0	5,350.0	5,650.0	5,650.0	6,050.0	5,850.0
Corn consumption, % y-o-y	10.8	3.9	5.6	0.0	7.1	-3.3

Source: USDA, BMI

Table: Wheat Production & Consumption (Iran 2008-2013)

	2008	2009	2010	2011	2012	2013
Wheat production, '000 tonnes	15,887.0	7,957.0	13,480.0	13,500.0	12,400.0	13,800.0
Wheat production, % y-o-y	8.3	-49.9	69.4	0.1	-8.1	11.3
Wheat consumption, '000 tonnes	15,500.0	15,800.0	16,800.0	15,700.0	14,900.0	16,400.0
Wheat consumption, % y-o-y	1.3	1.9	6.3	-6.5	-5.1	10.1

Source: USDA, BMI

Risks To Outlook

In the near term, Iran's grains sector will remain at risk of adverse weather conditions. This is despite the prospect of increased investment. The droughts in the 2008/09 harvest season saw grains production drop by almost one-third, highlighting the need for greater investment into improving infrastructure.

A key downside risk to consumption is the further removal of food subsidies. While the full effect of grain prices owing to the subsidy decrease is yet to be known, sudden increases in food price inflation caused by the abandonment of the subsides (which we have already been seeing) could result in long-term grain consumption levels decreasing despite the fact that grains are a staple food in Iran. Conversely, should the subsidies be re-instituted, consumption growth could increase beyond our current forecasts.

The impact of sanctions presents a further downside risk, although so far the government has succeeded in preventing food shortages by purchasing huge quantities of grains. If sanctions continue, this may not be a viable policy in the longer term, since it is dependent on the presence of surpluses in major grain producers and the willingness of trading partners to circumvent banking controls.

Rice Outlook

BMI Supply View: Rice is the third largest grain produced in Iran, behind wheat and barley. Rice production has been growing at a slow pace over recent years, as area under cultivation stagnates and yield growth is weak. In the 2014/15 season, which started with the harvest in August 2014, we estimate rice production in Iran will grow for the sixth consecutive year. Output will reach 1.68mn tonnes, up 1.2% year-on-year (y-o-y). This trend is likely to continue in 2015/16, with production reaching 1.71mn tonnes. Area harvested has been slowly growing in the past two years and could reach 600,000ha in 2014/15, compared with the 10 year average of 570,000 ha. Yields will remain in line with long term averages, as the country recorded drought conditions in 2014.

We deem the government's plan to reach self-sufficiency by 2016 as unrealistic. Overall, areas under cultivation of rice as well as yields have been stagnating over the past 20 years, to around 580,000 ha and 4.21tonne/ha respectively. The country usually records around a 1.7mn tonne deficit, which we see stagnating in the coming years. The government recently replaced its initial target of attaining self-sufficiency in 2013. To 2017/18, we expect production to grow by 14.3% on the 2012/13 level to reach 1.78mn tonnes. Our fairly pedestrian assessment of local rice production is a result of the competition that local producers face from imports. Although imports are monitored, they continue to grow and have discouraged local producers from making the necessary investment to bolster domestic output growth. Our forecast for a moderate increase in production out to 2017/18 reflects expectations for demand growth and efforts to increase self-sufficiency in light of sanctions.

BMI Demand View: Rice is an important dietary staple in Iran, eaten nationwide in a variety of dishes. We forecast that demand will grow in 2014 by 1.8% to 3.36mn tonnes and continue expanding steadily each year to the end of our forecast period in 2018. However, we note that widespread international sanctions

imposed on the country could continue to curb consumption in the medium term. Iran typically imports more than half of its rice for domestic consumption (55% in 2012/13), but payment for any imports into Iran have faced difficulties as letters of credit or international transfers of funds through banks have been nearly impossible to carry out. The government has attempted to ensure food imports by entering bilateral trading arrangements with major rice exporters, circumventing the restrictions on financial transactions through the exchange of oil and other commodities. The recent progress in negotiations between Iran and Western countries over its programme could help ease sanctions.

Over the longer term, we believe that steadily rising disposable incomes will lead to consumers trading up from corn and particularly from wheat-and-vegetable-based dishes to more meat-and-rice-based meals. We therefore forecast rice consumption to grow by 8.5% on the 2013 level to 3.58mn tonnes in 2018.

Table: Rice Production & Consumption (Iran 2012-2018)

	2012	2013	2014f	2015f	2016f	2017f	2018f
Rice production, '000 tonnes	1,550.0	1,560.0	1,660.0	1,680.0	1,713.6	1,747.9	1,782.8
Rice production, % y-o-y	2.6	0.6	6.4	1.2	2.0	2.0	2.0
Rice consumption, '000 tonnes	3,280.0	3,300.0	3,359.9	3,418.0	3,474.2	3,528.5	3,580.7
Rice consumption, % y-o-y	0.9	0.6	1.8	1.7	1.6	1.6	1.5

f = BMI forecast. Source: USDA, BMI

Total Import Volume Relatively Unaffected Despite Sanctions

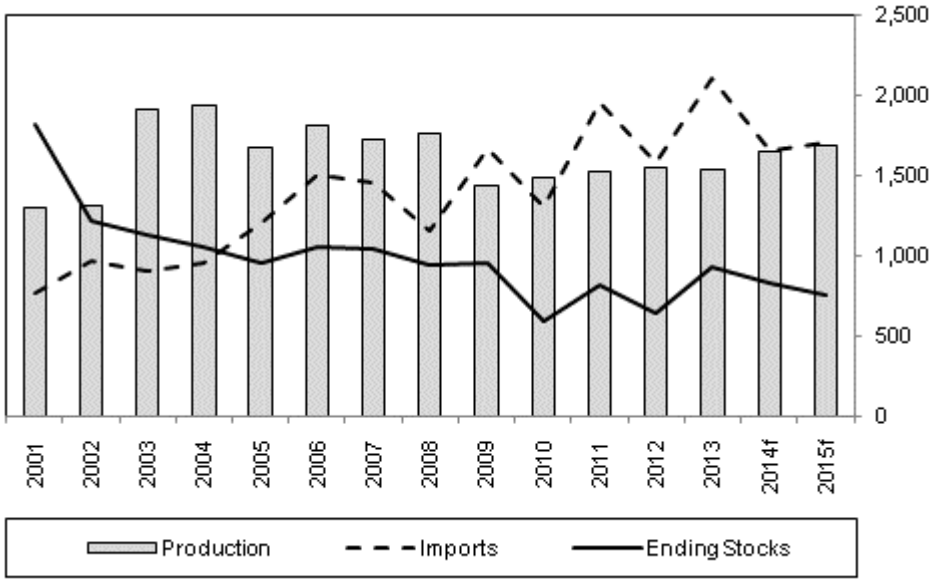
Financial sanctions imposed by the US and EU to pressure Tehran over its nuclear programme are playing havoc with Iran's ability to import goods, including food. Food and consumer items are not targeted by sanctions, but the sanctions make deals and payments between traders difficult. Iran defaulted on payments for rice from India, its top supplier, in 2012. As a result, some exporters to Iran have stopped selling rice to the country with the customary 90 days credit for payment. Even payments considered more secure, via agents in the UAE, are being affected due to currency fluctuations.

India's largest rice supplier, **KRBL Limited**, which is also the largest Indian exporter of basmati rice, is reportedly looking to East and West Africa for new markets in the wake of falling global rice prices and export restrictions to Iran, the largest buyer of basmati rice. **LT Foods**, which exports to Iran and is another major Indian rice exporter, is also allegedly sourcing for new markets to sell to.

Despite these difficulties, Iran is still able to import much-needed food supplies. However, the value of imports has skyrocketed. Total shipments in 2013/14 are likely to reach 1.65mn tonnes, down from 1.9mn tonnes in 2012/13. This is higher than the 10-year average of 1.4mn tonnes. In 2014/15, import growth is likely to ease given stocks, and should reach 1.7mn tonnes, up by a mild 3.0% y-o-y (compared with the annual growth of imports of 8.7% in the past 10 years).

High Imports

Iran - Rice Production, Ending Stocks & Imports ('000 tonnes)



f = forecast. Source: BMI, USDA

Iran To Re-Diversify Its Import Sources Should Sanctions Ease

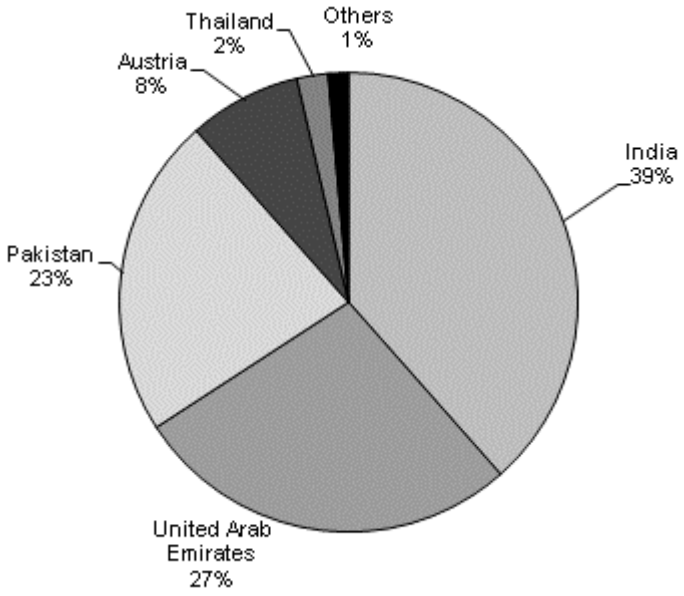
Iran has been increasingly relying on Indian rice exporters due to Western sanctions since 2011. India was one of the few countries to have a barter trade system and other payment mechanisms with Iran, which helped India to import oil and export rice and other items to Iran. This led to a surge in India's basmati rice exports, and Iran quickly overtook Saudi Arabia and the UAE to become the largest buyer of Indian basmati rice in 2012/13.

However, the recent progress in talks between Iran and Western countries to reach an agreement on the former's nuclear programme may weaken the Indian advantage by eventually allowing free trading in US

dollars if Iran dismantles its nuclear programme in six months. Iran and the so-called P5+1 countries - China, France, Russia, the UK and the US plus Germany - on November 24 2013 reached an understanding on the implementation of a deal under which sanctions on some of Iran's trade in goods and services will be suspended. The signing of the interim accord is a positive step in negotiations, in our view, and could lead to the lifting of additional sanctions (especially those on banking).

India Is Traditionally The Largest Supplier

Iran - Rice Imports By Country, 2011 (% total volume imported)



Note: Data for UAE mainly represents re-exported rice to Iran originally from India, Pakistan and Thailand. Source: Trade Map, BMI

The lifting of sanctions is likely to increase Iran's demand for Thai and Pakistani rice. Pakistan, which is the only other major basmati rice producer in the world and which also neighbours Iran, stands to gain the most. Pakistani exporters have had difficulties so far in obtaining commercial letters of credit, a vital process in international trade, owing to the poor availability of international banking between the two countries.

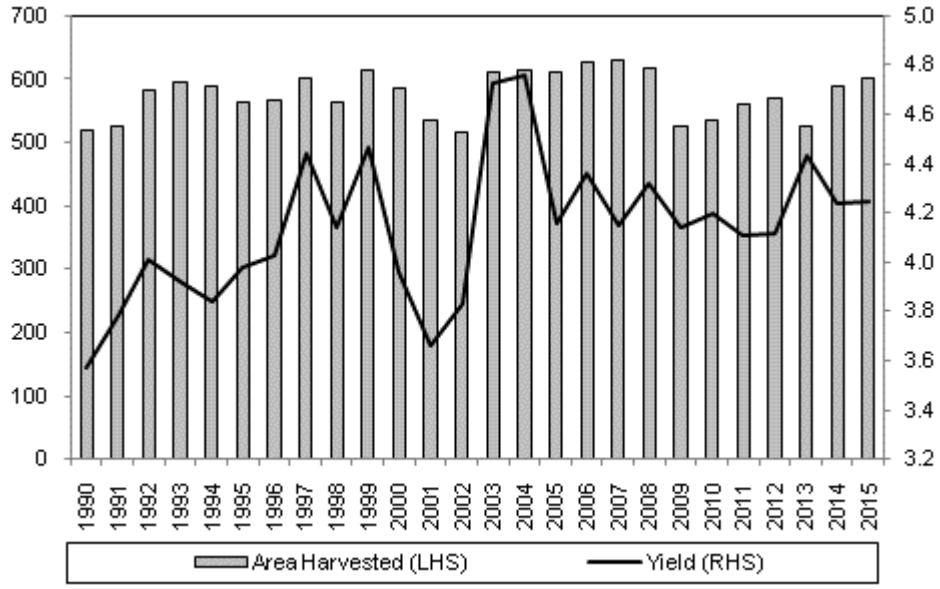
Thailand is now looking to restart exporting to Iran, after a default by a private Thai rice exporter in 2011 halted shipments. Iranian officials are supposed to inspect Thailand's production procedures from field to shipment in Q414 in order to re-allow exports.

Moreover, Iran is stiffening its rules regarding rice imports, which will be detrimental to India's basmati exports. Iran decided to revise in March 2014 the accepted level of arsenic content in basmati rice. The government also decide to increase the import duty for basmati rice to 45% from 22% in September. India sales to Iran have plunged recently, as exports were at around 50,000-60,000 tonne a month since February 2014, compared with 130,000 imported

In the longer term, we do not expect India to continue as a major exporter of non-basmati rice given the unpredictability of its export policies. Indeed, we view India as an unstable source of rice over the long term.

Broadly Stagnating

Iran - Rice Area Harvested ('000 ha) & Rough Rice Yields (tonnes/ha)



Source: BMI, USDA

Table: Rice Production & Consumption (Iran 2008-2013)

	2008	2009	2010	2011	2012	2013
Rice production, '000 tonnes	1,758.0	1,441.0	1,487.0	1,510.0	1,550.0	1,560.0
Rice production, % y-o-y	2.0	-18.0	3.2	1.5	2.6	0.6
Rice consumption, '000 tonnes	3,000.0	3,100.0	2,950.0	3,250.0	3,280.0	3,300.0
Rice consumption, % y-o-y	-6.3	3.3	-4.8	10.2	0.9	0.6

Source: USDA, BMI

Risks To Outlook

Drought continues to represent an incalculable downside risk to output. Although investment is urgently needed to improve irrigation, there is little likelihood that we will see the positive impact of such investment on production over our forecast period. UN-backed trade sanctions will exacerbate these risks. Such sanctions will impact agricultural investment as well as Iranian GDP.

Given that Iran remains quite heavily dependent on rice imports, risks to demand are closely associated with the state of the global rice market. In the short term, **BMI** predicts global surpluses and lower prices on the back of good harvests in the leading producers, China and India, but there is always the risk that prices could move steeply upwards if a major producer experiences a poor crop. The Iranian government could struggle to effectively subsidise these high-cost imports, which pose a downside risk to our demand forecasts. Naturally, continued good harvests present an upside risk, assuming that Iran can continue to finance its rice imports in the face of sanctions.

A sustained period of high prices or potential import shortages due to sanctions could provide the stimulus domestic farmers need to invest in increasingly local production. This represents an upside risk to our production forecast. Simultaneously, the effects of long-running sanctions on household expenditure present a downside risk for consumption of rice, especially if, as expected, Iran is unable to wean itself off imports.

Sugar Outlook

BMI Supply View: Iran is widely regarded as having failed to exploit its sugar production resources as a result of inadequate investment and a lack of public and private sector support. A failure to control imports, which have flooded in despite modest import tariff increases, has been blamed for a growing number of bankruptcies at state-owned sugar plantations.

Out to our five-year forecast to 2017/18, we forecast sugar production to expand by a weak 4.9% on the 2012/13 level to 1.1mn tonnes. Although Iran is instituting plans to increase production out to 2020, we have not yet seen significant progress and therefore maintain a cautious forecast. Production capacity is slowly growing, as shown by the opening of a new sugar mill in Oshnavieh with 500,000 tonnes capacity in 2013.

BMI Demand View: We expect sugar demand to bounce back in 2014 and 2015 after subdued growth in 2013. GDP growth is forecast to return to positive territory in 2014 and 2015, of 2.8% and 2.9% respectively, after it contracted by 2.9% in 2013. The slight easing of consumer price inflation will also support consumption. We see sugar demand growing by 5.0% in both years, reaching 2.2mn tonnes in 2015. In the longer term, we expect demand to grow by 20.5% to 2018, with sugar consumption reaching 2.4mn tonnes.

This increase will be driven mainly by population growth and by the development of packaged sugar confectionery. Demand for modern packaged sugar confectionery in Iran remains immature, while traditional sugar confectionery products are extremely popular. Stronger promotional activities undertaken by key players in the category has made many sugar confectionery products more visible and accessible through grocery retail channels, and this has given more Iranian consumers a chance to try packaged sugar confectionery as an alternative to simpler traditional alternatives such as sugar cubes.

Table: Sugar Production & Consumption (Iran 2013-2018)

	2013e	2014f	2015f	2016f	2017f	2018f
Sugar production, '000 tonnes	1,050.0	1,029.0	1,008.4	1,038.7	1,069.8	1,101.9
Sugar production, % y-o-y	9.4	-2.0	-2.0	3.0	3.0	3.0
Sugar consumption, '000 tonnes	1,980.0	2,079.0	2,183.0	2,248.4	2,315.9	2,385.4
Sugar consumption, % y-o-y	1.5	5.0	5.0	3.0	3.0	3.0
Sugar market value, % of total	4.2	4.3	4.4	4.5	4.6	4.7

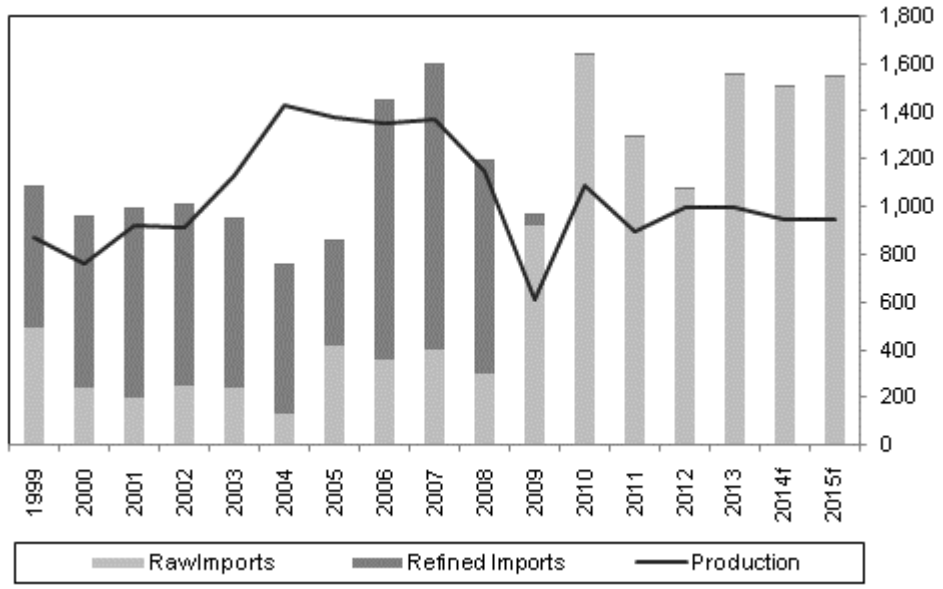
e/f = MI estimate/forecast. Source: National sources/BMI

Oil And Electricity As Sweetener In Deal For Foreign Sugar

Iran is multiplying the deals to bypass the difficulties stemming from the international sanctions imposed in recent years and to import sugar. There are renewed reports that Iran imported sugar from India for the first time since Western sanctions were tightened at the start of 2012. According to Reuters, Indian traders struck deals to export 60,000 tonnes of raw sugar to Iran for March-April 2014 delivery. Until now, India has been unable to pay in full for Iranian oil imports because tightened US sanctions have made it difficult to access US dollars for transactions with Iran. Instead, New Delhi and Tehran have set up a mechanism to use the rupee, which is not freely traded on global markets, for 45% of oil dues and to pay Indian exporters in order to skirt Western sanctions. Such talks of sugar trade between Iran and India spread in 2012 and 2013, but the deal was rejected several times. In July 2013, Pakistan decided to allow sugar exports to Iran in exchange for electricity imports, according to local media sources.

Favouring Local Mills

Iran - Sugar Production & Imports ('000 tonnes)



Source: BMI, USDA

Big Plans, Big Problems

According to the managing director of Iran's State Commerce Organization and the **Sugar Cane Industry Development Company** (SCIDC), the country is aiming to more than double production of cane sugar by the end of the decade and become self-sufficient. By 2020, the state-run company is hoping to boost annual production to 2.06mn tonnes. This is to be achieved by increasing the area planted to sugar cane by 94%, as well as increasing yields from the already high level of 87.7 tonnes per hectare (ha) to 110 tonnes/ha. This is to be accompanied by large investment in new refineries, including the building of the region's largest refinery near the southern port of Bandar Imam Khomeini. We are highly sceptical about the feasibility of these goals. Sugar production peaked in 2006/07, reaching 1.4mn tonnes, and we do not expect the country to reach this level by the end of our forecast period in 2017/18.

Although SCIDC's ambitious investment plans give hope for the future of the sector, it is important to recognise that Iranian sugar production has been in the doldrums for the past few years. In 2006 and 2007, Mahmoud Ahmadinejad's administration, flush with funds from rising energy prices, drastically increased

the volume of sugar imports to keep domestic prices low. Since then, imports have remained rather high compared with the needs of the country. The high stock levels kept domestic prices suppressed and saw the area planted to sugar crops fall. The drought in 2008 further hit production. While we do expect production to recover in the coming years, we are less optimistic than the government and expect Iran to remain a net sugar importer throughout our forecast period.

Table: Sugar Production & Consumption (Iran 2008-2013)

	2008	2009	2010	2011	2012	2013e
Sugar production, '000 tonnes	1,145.0	610.0	1,085.0	900.0	960.0	1,050.0
Sugar production, % y-o-y	-16.4	-46.7	77.9	-17.1	6.7	9.4
Sugar consumption, '000 tonnes	2,275.0	2,467.0	2,724.0	2,124.0	1,950.0	1,980.0
Sugar consumption, % y-o-y	2.9	8.4	10.4	-22.0	-8.2	1.5
Sugar market value, % of total	2.6	3.8	5.7	4.8	4.2	4.2

e = BMI estimate. Source: National sources/BMI

Risks To Outlook

The main risk to our sugar production forecast relates to the potential for greater levels of investment in the sector. Public sector support for the sugar industry does not appear forthcoming in spite of import tariff increases. Meanwhile, the prospect for private sector investment is similarly bleak. The likely imposition of further UN sanctions, in addition to the pressure already exerted by US sanctions on financial transactions, would prejudice future investment in the sector.

On the demand side, the biggest risk to our consumption forecast comes from high prices. Prices are expected to remain high by historical standards, and this could pose a threat to the sustainability of domestic demand in a country that is dependent on costly imports. If sanctions are maintained in the longer term, the costs of such imports will only increase.

Dairy Outlook

BMI Supply View: The short- and medium-term outlook for Iran's dairy sector is looking brighter, as improving profitability conditions, coupled with ongoing easing of international sanctions, bode well for growth. Milk production has been hurt in recent years by international sanctions - although the sanctions have an explicit exemption for food - which made it more difficult to import grains and feed. We expect Iran's dairy sector to continue on the path to recovery after skyrocketing feed prices led to a decline or stagnation in meat and milk output over the past two seasons. Indeed, milk production is projected to grow in 2013/14, by 1.0% year-on-year (y-o-y) to 7.7mn tonnes.

We also retain a cautious assessment of the milk sector's long-term production prospects. Almost all of Iran's milk is destined for local markets, where prices have traditionally been kept artificially low by the government. Over our five-year production forecast to 2017/18, we see output expanding moderately, by 13.7% on the 2012/13 level to 8.7mn tonnes. This reflects the highly domestic nature of the milk industry and the likelihood that the government will end subsidies.

BMI Demand View: Milk consumption slowed in recent years as production declined. International sanctions, coupled with the cutting of subsidies for the dairy sector, sent domestic milk prices through the roof. Previously, despite the fact that prices were kept artificially low by government subsidies, dairy products were expensive for millions of low-income Iranians. The government had deemed milk an important source of multi-nutritional sustenance, which means fresh milk is subsidised. The government has also set out consumption growth plans in its national development programme. However, data is hard to come by, and we doubt that the government has reached its goal in significantly increasing per capita consumption of milk. The government is likely to reinstate high subsidies to the sector once financial pressure on the country eases. Consumption is expected to pick up in 2014, by 2.0% y-o-y to 3.0mn tonnes, as milk prices ease in line with lower grains prices. We forecast consumption out to 2018 to grow by 14.8% to 3.4mn tonnes and per capita consumption to rise by an even smaller 8.0% to 40.8kg, suggesting that population growth surpasses consumption growth per capita.

Table: Milk Production & Consumption (Iran 2013-2018)

	2013e	2014f	2015f	2016f	2017f	2018f
Milk production, '000 tonnes	7,650.0	7,726.5	7,958.3	8,197.0	8,443.0	8,696.2
Milk production, % y-o-y	-1.9	1.0	3.0	3.0	3.0	3.0
Liquid milk consumption, '000 tonnes	2,926.0	2,984.5	3,074.1	3,166.3	3,261.3	3,359.1
Liquid milk consumption, % y-o-y	2.9	2.0	3.0	3.0	3.0	3.0
Milk market value, % of total	31.4	32.1	32.1	32.4	32.7	32.7

e/f = BMI estimate/forecast. Source: National sources/BMI

Improving Outlook Amid Easing Of Sanctions

The short- and medium-term outlook for Iran's dairy sector is looking brighter, as improving profitability conditions, coupled with ongoing easing of international sanctions, bode well for growth. In the short term - over the 2013/14 season - we expect Iran's livestock and dairy sectors to continue on the path to recovery after skyrocketing feed prices led to a decline or stagnation in meat and milk output over the past two seasons. Large agribusiness companies are already present in Iran, and most, such as Danone, entered the market before international sanctions were imposed against the country in 2012. Danone markets fresh dairy and baby nutrition products via its partnership with local dairy company Sahar and sells water under the brand Damavand. Danone also established its own factory in 2011, located in Qazvin province. Bel Groupe, also involved in the dairy sector, sells some products to Iran.

Arduous Expansion

The Iranian dairy sector is struggling to expand owing to structural and infrastructure issues. The milk collection network has been neglected despite the government's efforts to support prices and subsidise inputs. Smallholders lack the facilities to store and transport milk to major markets, which leave them at the mercy of traders who offer far less than the government's minimum price for milk. Despite buoyant demand, there is little investment in the sector. Until infrastructure improves, Iran's modern dairy sector will remain clustered around large population centres.

Table: Milk Production & Consumption (Iran 2008-2013)

	2008	2009	2010	2011	2012	2013e
Milk production, '000 tonnes	7,699.9	7,905.4	7,950.0	8,000.0	7,800.0	7,650.0
Milk production, % y-o-y	0.1	2.7	0.6	0.6	-2.5	-1.9
Liquid milk consumption, '000 tonnes	2,675.0	2,750.9	2,814.0	2,887.0	2,843.0	2,926.0
Liquid milk consumption, % y-o-y	2.6	2.8	2.3	2.6	-1.5	2.9
Milk market value, % of total	25.5	28.9	27.3	28.5	27.8	31.4

e = BMI estimate. Source: National sources/BMI

Risks To Outlook

Rising prices remain one of the main downside risks to milk consumption; the prospect of rising milk prices follows a sustained period of artificially low prices. This development could jeopardise local demand for dairy products, especially value-added items, which would likely become prohibitively expensive.

Meanwhile, owing to differing storage and transport infrastructure, access to milk in some provinces is easier than in others. This can create local price differentials and similarly poses a downside risk to our consumption forecasts.

Iran's regular unwillingness to adhere to international norms often leaves it ostracised from the global community, thus limiting its trade links. With the local milk market relatively oversupplied, the absence of strong export potential could discourage production. UN-backed sanctions, if they continue in the medium-to-long term, present a significant downside risk to both production and consumption. Production would be affected in the form of the government's inability to direct investment towards much needed upgrading and expansion of the infrastructure needed for efficient distribution. Consumption will also be affected if Iranian incomes fall sufficiently to render dairy products too expensive for consumers.

Livestock Outlook

BMI Supply View: The short- and medium-term outlook for Iran's livestock sector is looking brighter, as improving profitability conditions, coupled with ongoing easing of international sanctions, bode well for growth. Meat production has been hurt in recent years by international sanctions - although the sanctions have an explicit exemption for food - which made the import of grains and feed more difficult. We expect Iran's livestock sector to continue on the path to recovery after skyrocketing feed prices led to a decline or stagnation in meat and milk output over the past two seasons.

We forecast poultry production to grow by 1.4% year-on-year (y-o-y) in 2013/14 to 800,000 tonnes (an improvement from historically weak growth of 0.3% y-o-y in 2011/12 and 2012/13). For beef and veal, output is forecast to grow by 0.9% y-o-y to 239,100 tonnes in 2013/14. Easing feed and meat prices will boost profitability and domestic demand for meat. Our five-year forecast to 2017/18 envisages poultry production expanding by 14.1% on the 2012/13 level to 900,400 tonnes, driven by domestic demand and the effects of increased investment. For beef and veal, we see production expanding by 7.1% between 2012/13 and 2017/18 to 253,800 tonnes. Although it was once dominated by small holdings, the Iranian beef sector has begun to commercialise, which is likely to help to improve efficiency and production volumes. Stronger growth could be achieved were it not for the limitations of grazing room and the beef industry's reliance on relatively expensive grain imports. The production and import of pork and pork products is prohibited under Iran's Islamic law. We deem the government's goal to reach self-sufficiency in poultry and beef as overly optimistic.

BMI Demand View: We believe meat consumption slowed in 2012 and 2013 on the back of rising domestic meat prices resulting from international sanctions and high feed prices. We expect demand to recover in 2014, with poultry consumption growing by 1.8% y-o-y and beef by 4.8% y-o-y. Over our forecast period to 2018, we expect poultry and meat production to grow in line with population and disposable income growth. Rising disposable incomes are likely to benefit the consumption of beef at the expense of poultry as higher-income consumers trade up to the more expensive meat. We expect poultry consumption to expand by 16.1% on the 2013 level to 986,600 tonnes in 2018. Beef consumption is expected to make up the ground lost in the early years of our forecast period, increasing by 27.6% to 523,300 tonnes in 2018. The high growth rate is due to base effects, as demand was weak in 2013.

Table: Beef Production & Consumption (Iran 2013-2018)

	2013	2014f	2015f	2016f	2017f	2018f
Beef & veal production, '000 tonnes	237.0	239.1	242.7	246.4	250.1	253.8
Beef & veal production, % y-o-y	0.9	0.9	1.5	1.5	1.5	1.5
Beef & veal consumption, '000 tonnes	410.0	429.7	449.4	472.8	497.4	523.3
Beef & veal consumption, % y-o-y	2.8	4.8	4.6	5.2	5.2	5.2

f = BMI forecast. Source: National sources/BMI

Table: Poultry Production & Consumption (Iran 2013-2018)

	2013	2014f	2015f	2016f	2017f	2018f
Poultry production, '000 tonnes	789.0	800.0	824.0	848.7	874.2	900.4
Poultry production, % y-o-y	0.3	1.4	3.0	3.0	3.0	3.0
Poultry consumption, '000 tonnes	850.0	865.3	893.8	923.5	954.4	986.6
Poultry consumption, % y-o-y	2.4	1.8	3.3	3.3	3.3	3.4

f = BMI forecast. Source: National sources/BMI

Opportunities In Livestock Amid Easing Of Sanctions

The short- and medium-term outlook for Iran's livestock and dairy sectors is looking brighter, as improving profitability conditions, coupled with ongoing easing of international sanctions, bode well for growth. In the short term - over the 2013/14 season - we expect Iran's livestock sector to continue on the path to recovery after skyrocketing feed prices led to a decline or stagnation in meat output over the past two seasons. We forecast poultry production to grow by 1.4% y-o-y in 2013/14 to 800,000 tonnes (compared with historically weak growth of 0.3% y-o-y in 2011/12 and 2012/13). For beef and veal, output is forecast to grow by 0.9% y-o-y to 239,100 tonnes in 2013/14.

The improvement is linked to two main factors. First, livestock farms will see an improvement in profitability in line with our forecast for international grain and feed prices to remain low in 2014. Given the fact that Iran has been importing more than 25% of its wheat needs and 65% of its corn consumption in 2013, lower grain prices will ease production costs. Second, food price inflation in the country is decelerating slightly, which will support demand. Food price inflation came in at 38.7% y-o-y in November

2013, compared with the 51.9% average over the first 10 months of 2013. That said, given the fact that food prices remain at historically elevated levels, we expect meat consumption to recover only mildly.

In the medium term, the improvement in Iran's economic outlook - as well as the recent progress in talks between Iran and Western countries to reach an agreement on the former's nuclear programme - bode well for the country's business and investment environment. BMI's Country Risk team is forecasting an improvement in Iran's economy (we forecast GDP to expand by 2.8% and 2.9% in real terms in 2014 and 2015 respectively, compared with the five-year average of 1.6%), which will support business and consumer confidence and foster investment in the coming years (*see 'Returning To Growth In 2014', January 7 2014*).

Moreover, Iran and the so-called P5+1 countries - China, France, Russia, the UK and the US plus Germany - on November 24 2013 reached an understanding on the implementation of a deal under which sanctions on some of Iran's trade in goods and services will be suspended. The signing of the interim accord is a positive step in negotiations, in our view, and could lead to the lifting of additional sanctions (especially those on banking). The lifting of sanctions would boost Iran's economy, paving the way for substantial foreign investment that has been on hold due to Tehran's pariah status. The oil and gas industry, along with infrastructure, would be the obvious beneficiaries, but agribusiness projects also could be important beneficiaries, especially in the livestock and dairy sectors.

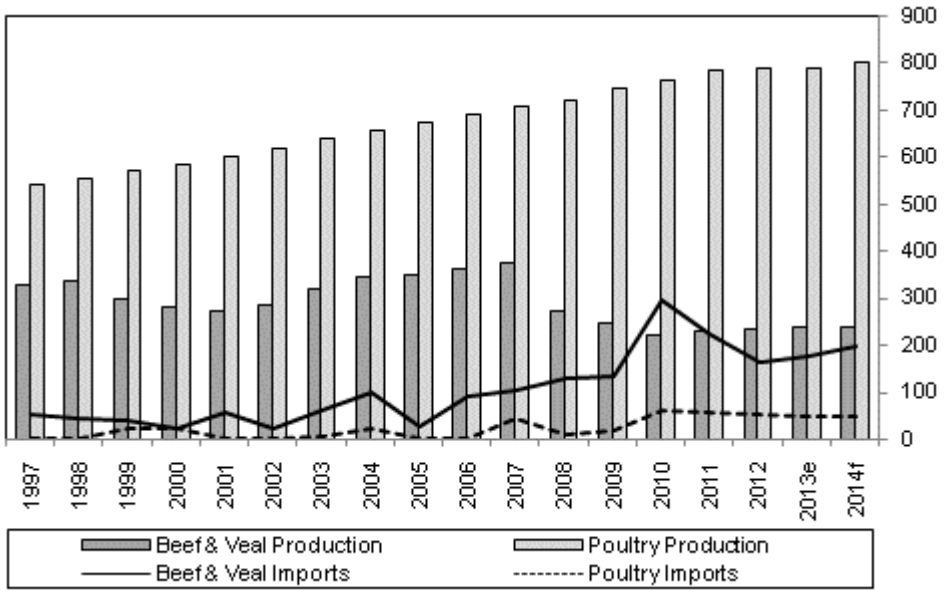
Investment in Iran has been significantly hampered by international sanctions, the country's opaque business environment, as well as a challenging macroeconomic picture over the past few years. Recent developments regarding nuclear negotiations and the easing of sanctions have seen renewed interest by foreign businesses in the Iranian market. For instance, in January, a French delegation of more than 100 companies visited Iran, including representatives of the agribusiness industry, indicating that there is still tremendous international appetite for the sector. Large agribusiness companies are already present in Iran and most, such as Danone**,** entered the market before international sanctions were imposed in 2012.

In the medium term, the lifting of international sanctions will ease the difficulty of importing grains into Iran, which will push down feed prices and boost livestock margins. Food import challenges escalated over 2013, as the US blacklisted Iran's shipping, shipbuilding, energy and ports management sectors, adding to other sanctions targeting the banking sector and key oil exports. While the sanctions have an explicit exemption for food, medicine and other humanitarian goods, foreign shipping firms are gradually pulling out of Iran, and banking and financing of food trade are reportedly difficult.

Despite our expectations for improvement, a measure of caution is warranted. For one, we do not expect a significant uptick in foreign investment until a longer-term agreement on the nuclear programme is reached (*see 'FDI Susceptible To Nuclear Talks', January 7 2014*). Despite the increase in interest from international companies, we believe the majority of investors will maintain a 'wait and see' approach until a more long-lasting agreement on the nuclear deal is reached. Moreover, the continuation of banking sanctions will limit investment by domestic companies for now.

Growing Import Dependence

Iran - Beef & Poultry Production & Imports ('000 tonnes)



e/f = BMI estimate/forecast. Source: BMI, USDA

Beef Self-Sufficiency Nowhere In Sight

The government announced in 2013 plans to increase Iran's meat production capacity with large-scale investment over three years. The Central Association of Animal Breeders has submitted a programme to parliament in which Iran will reach self-sufficiency in beef production by 2016. According to this association, the government plans to allocate IRR900bn (USD735mn) for the implementation of the programme, with investments in animal facilities.

We deem this goal as overly ambitious. In fact, we forecast Iran's beef production deficit to widen from 173,000 tonnes in 2012/13 to 269,500 tonnes in 2017/18. Various livestock companies currently operate at only 20 to 30% of their production capacity. Animals delivered to slaughterhouses are often underweight and do not meet the accepted quality standards.

The government is trying to put a brake on imports, which have been increasing in recent years due to the growing imbalances in the domestic sector. Beef imports are likely to reach 200,000 tonnes in 2013/14, compared with the 10-year average of 133,000 tonnes. Iran mainly imports beef from low-price producers such as India and Pakistan. Iran is also close to signing a deal with New Zealand for the import of meat from that country, according to the Veterinary Organization of Iran.

Table: Beef Production & Consumption (Iran 2008-2013)

	2008	2009	2010	2011	2012	2013
Beef & veal production, '000 tonnes	270.0	249.0	220.0	232.0	235.0	237.0
Beef & veal production, % y-o-y	-28.2	-7.8	-11.6	5.5	1.3	0.9
Beef & veal consumption, '000 tonnes	405.0	382.0	516.0	457.0	399.0	410.0
Beef & veal consumption, % y-o-y	-15.4	-5.7	35.1	-11.4	-12.7	2.8

Source: National sources/BMI

Table: Poultry Production & Consumption (Iran 2008-2013)

	2008	2009	2010	2011	2012	2013
Poultry production, '000 tonnes	722.0	745.0	765.0	785.0	787.0	789.0
Poultry production, % y-o-y	1.7	3.2	2.7	2.6	0.3	0.3
Poultry consumption, '000 tonnes	732.0	763.0	824.0	838.0	830.0	850.0
Poultry consumption, % y-o-y	-2.5	4.2	8.0	1.7	-1.0	2.4

Source: National sources/BMI

Risks To Outlook

UN sanctions pose an increasing risk to our meat production and consumption forecasts. Specifically, prolonged sanctions would restrict investment into the country's livestock industry, inhibiting growth in

production. Sanctions have already begun to affect Iran's capacity to import agricultural commodities, and the availability and affordability of beef for Iranian consumers will be particularly badly affected the longer sanctions continue. As sanctions filter through to Iranian disposable incomes, Iranians may reduce meat consumption as they trade down to cheaper foodstuffs.

Some poultry farmers believe that the government should exercise a more active role in buying from farmers so as to stabilise production - and prices - in order to prevent a glut of domestic poultry in the event of an external shock dampening export demand. Such government support could result in a rise in production, although it would also represent a risk in terms of encouraging greater production efficiency.

Rising costs of feed and farm inputs also pose a risk to our production forecasts. As much of Iran's livestock is grown on small-scale farms, the impact of rising grain and input costs such as fertiliser and diesel will no doubt drag on production growth in the long term.

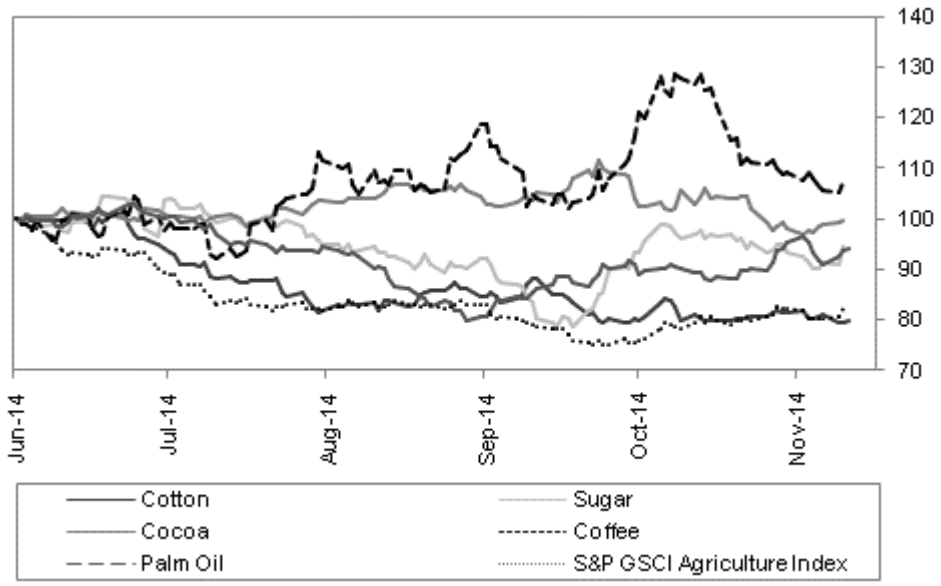
Commodities Price Analysis

Monthly Softs Strategy

- Soft prices will generally trend higher on a three-month horizon. In particular, cotton and palm oil will continue to recover from the low levels reached in Q314.
- Coffee will trend lower over the period and will be one of the underperformers among the softs complex.
- Although sugar prices will head higher in 2015, a significant rally is unlikely in the next three months.

Palm Oil, Cotton To Perform Well

Select Commodities Prices, Rebased



Notes: June 2 2014 = 100; all prices are front-month contracts except for palm oil (three-month). Source: Bloomberg, BMI

Cocoa: Prices To Recover In 2015

Cocoa prices will continue to edge down to GBP1,900/tonne over Q414, as the West African harvest is coming online. Moreover, demand in the EU is weakening, with Q314 cocoa grindings decreasing by 1.1% to 327,866 tonnes. Although fears over Ebola have abated lately, we believe prices would strongly react to any new evidence of the disease spreading to key cocoa growing countries. Prices will therefore remain volatile over the coming months.

Temporary Weakness

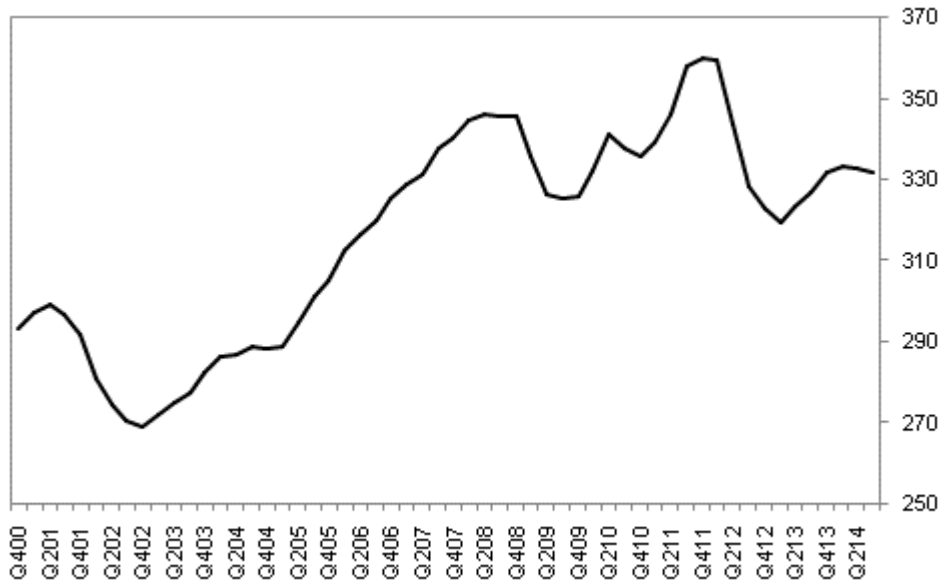
Front-Month LIFFE Cocoa, GBP/tonne (weekly chart)

Source: Bloomberg, BMI

However, we believe that the strong supply picture and decreasing prices will be temporary, and the return of normal weather conditions over the coming quarters will expose structural problems in the global cocoa market. Prices will recover from current levels over 2015 and are likely to peak in Q215. We forecast a global market deficit of 18,000 tonnes in 2013/14 and 120,000 tonnes in 2014/15, and expect prices to average GBP2,000/tonne in 2015. There are upside risks to our forecasts as an Ebola outbreak in Cote d'Ivoire or Ghana could severely disrupt supply chains.

Demand Slowing Down

Europe - 12 Month Trailing Cocoa Grindings ('000 tonnes)



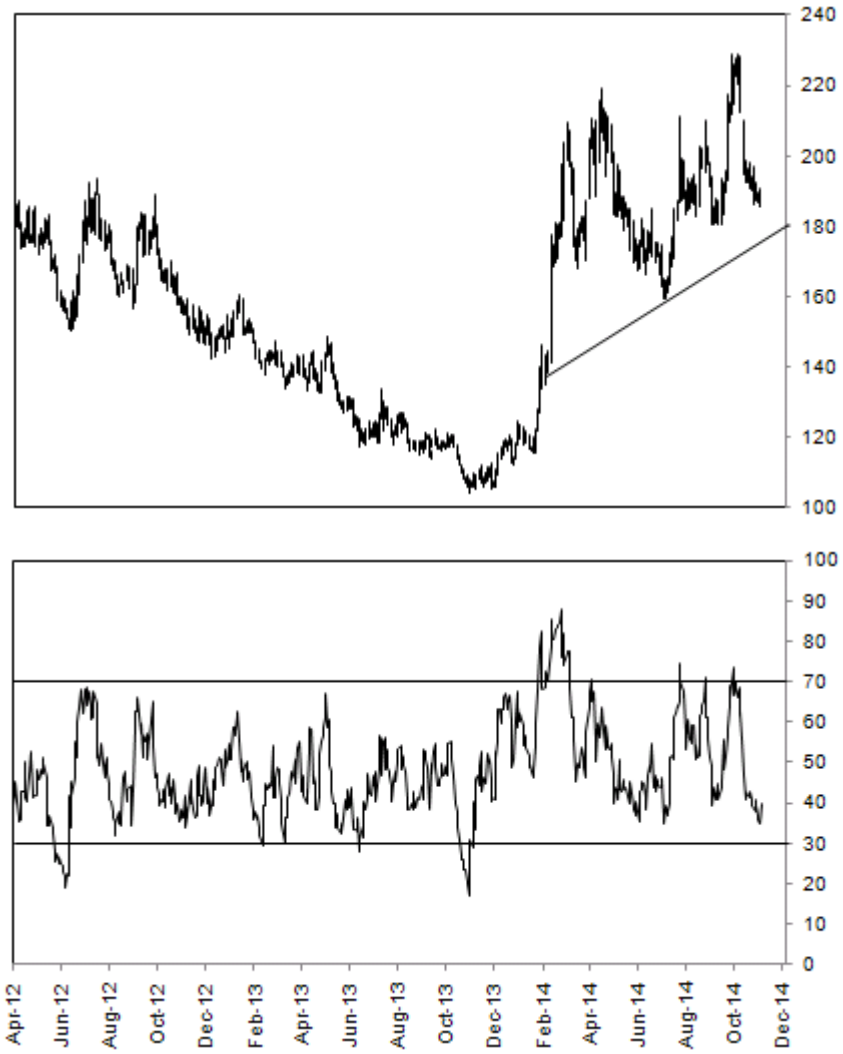
Source: ECA, BMI

Coffee: Prices To Fall Due To Improved Brazilian Production

Arabica coffee prices will remain volatile in Q414 as the 2015/16 Brazilian harvest enters its sensitive flowering period. Prices will moderate over the coming months, as we believe improved weather in Brazil will lead to a larger 2015/16 crop year-on-year (y-o-y). Technical and sentiment indicators also suggest that prices have considerable room to decline.

Prices Easing

Second-Month ICE Coffee (USc/lb, weekly) & RSI (below)



Source: Bloomberg, BMI

Although we have revised up our price forecasts for 2015 and 2016 due to the strength recorded over 2014, we see prices averaging lower than Q414 prices next year. We expect coffee to average USc160/lb in 2015 and USc145/lb in 2016 (from a previous forecast of USc145/lb and USc140/lb, respectively). The key reason for the upward revision is the continued deterioration in supply prospects from Brazil due to record breaking drought. However, production outside of Brazil will be strong by recent historical standards. In

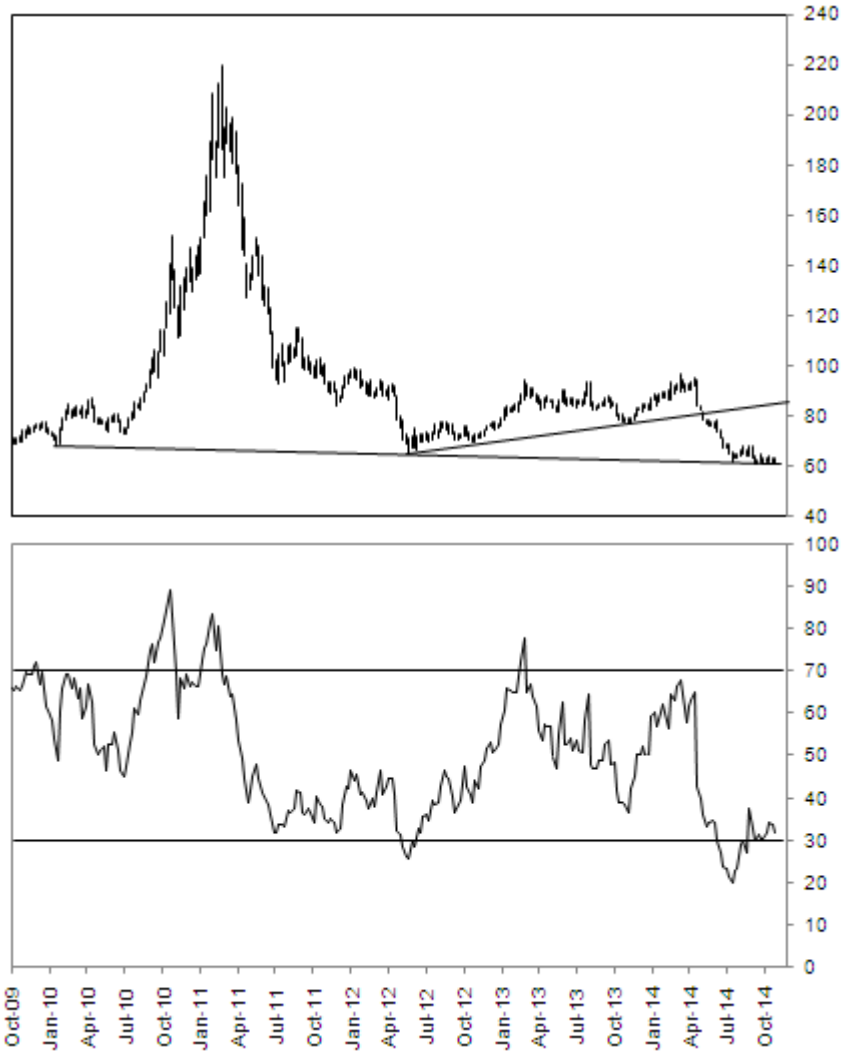
2015/16, we believe the return of rainfall will lead to an increase in Brazilian down-year production, and ultimately another global market surplus in 2015/16, underpinning our view for prices to average lower.

Cotton: Prices Bottoming Out

We believe cotton prices will remain weak on a three- to six-month horizon, trading within the USc60.00-70.00/lb range. Global supply will remain ample due to the bountiful US harvest in September-October and a continued slowdown in import demand from China. Prices will start to rebound in 2015 and average higher over the year, at USc76.00/lb, compared with USc75.00/lb in 2014. The global surplus will shrink to 2.4mn 480lb bales in the 2015/16 season, compared with 5.8mn bales in 2014/15 and 8.8mn bales in 2013/14.

Rebound On The Cards

Second-Month ICE Cotton, USc/lb (weekly chart) & RSI (below)



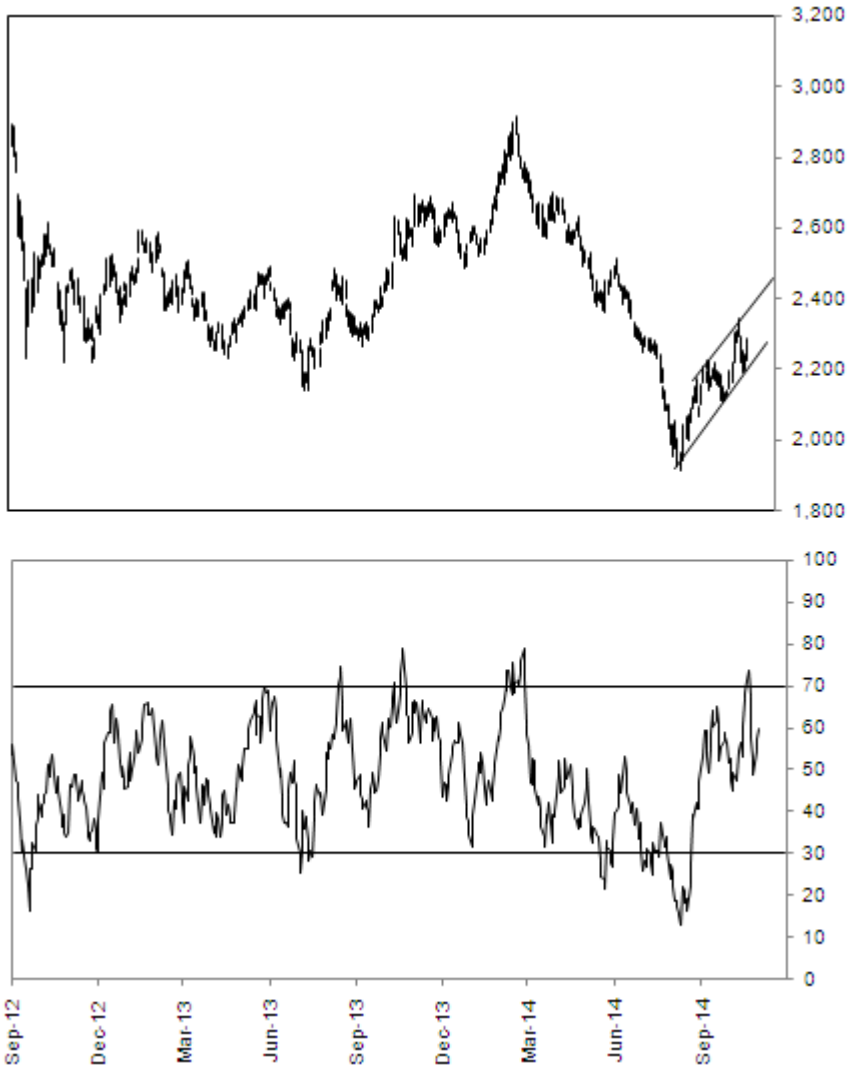
Source: Bloomberg, BMI

Although we remain positive on cotton prices over 2015, we note there are mounting downside risks for prices. **First**, the Chinese government decided to maintain subsidies in secondary producing provinces, after hinting it would only keep supporting cotton production in Xinjiang, the top cotton growing province. Therefore, the decrease in China's cotton production in 2015/16 will not be as large as previously thought. **Second**, the recent drop in oil prices is sending polyester prices lower, as oil is one of the main inputs for

man-made fibres. This will limit cotton's competitiveness, in spite of the sharp decline in prices recorded in 2014.

Heading Higher In 2015

Third-Month MDE Palm Oil, MYR/tonne (Weekly chart) & RSI (below)



Source: Bloomberg, BMI

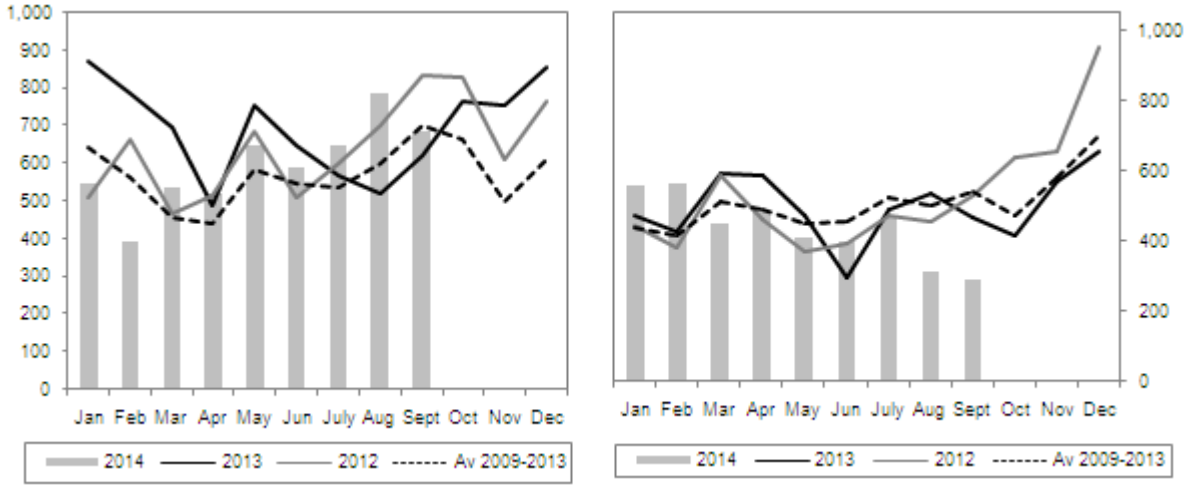
Palm Oil: Prices To Head Higher

Palm oil prices will trade in the MYR2,200-2,300/tonne range over the coming weeks following the rally experienced over September and October. Stocks in Malaysia are elevated (2.2mn tonnes as of October, up 17.3% y-o-y) and will keep prices in check.

We expect palm oil prices to head higher and reach MYR2,500/tonne as the market tightens in 2015. We forecast global production growth to slow in 2014/15 after a strong 2013/14 season, while global demand for palm oil will accelerate in 2015. India's palm oil import demand will be strong in 2015, driven by the decrease in domestic supply of alternative oilseeds and by a more positive macroeconomic outlook.

Strong Imports Ahead, Especially From India

Palm Oil - India (LHC) & China (RHC) Monthly Imports ('000 tonnes)



Note: Includes crude and refined palm oil imports. Source: MPOB, China General Customs Administration, BMI

Although palm oil prices will head higher over the coming quarters, they are unlikely to stage a significant rally, as prices will be capped by the large global supply of oilseeds. Moreover, a lacklustre macroeconomic outlook in some of the largest consumers of palm oil and weak oil prices in 2015 will constrain gains for palm oil prices. Indeed, low oil prices will limit the attractiveness of blending palm-oil based biodiesel into gasoline and therefore cap that aspect of palm oil demand.

Higher Prices To Come In 2015

Front-Month ICE Sugar, USc/lb (daily chart)

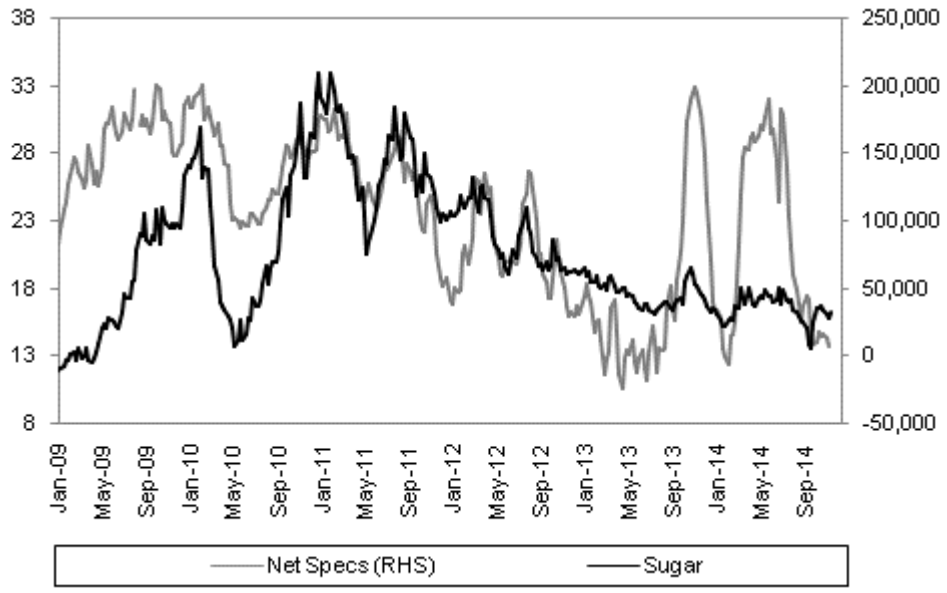
Source: Bloomberg, BMI

Sugar: Heading Higher In 2015

Sugar prices will remain subdued over the coming weeks, despite production fears surrounding Brazil and key Asian producers such as Thailand, China and India. The ongoing sell-off in the Brazilian real will limit the upside for sugar prices priced in US dollars, as elevated sugar prices denominated in BRL incentivises exports.

Limited Downside Risk

ICE Sugar - Front-Month Price (USc/lb) Net Long Speculative Positions (RHS)



Source: Bloomberg, BMI

We believe price strength is likely to come in the first half of 2015, as the global market will tighten. We forecast the global surplus will decline to 2.5mn tonnes in 2014/15, compared with 8.3mn tonnes in 2013/14. However, a significant rally in prices is unlikely to happen, as the Brazil currency will continue to weaken in 2015, while global supply will remain satisfactory. Although we continue to believe prices will average higher in 2015, we are in the process of revising down our average price forecast of USc18.50/lb for the year.

Table: SELECT COMMODITIES - PERFORMANCE & BMI FORECASTS

Commodity	Unit	Spot Price	YTD (% Chg)	1 Year (% Chg)	2013 (ave)	YTD (ave)	5 Year (ave)	2015f (ave)	2016f (ave)
Barley	EUR/tonne	224	8.2	10.9	226	210	na	190	190
Class 3 Milk	USD/cwt	17.3	-7.3	-0.4	18.08	20.53	17.21	18.50	19.00
Cocoa (London)	GBP/tonne	1,933	11.7	14.9	1,576	1,921	1,213	2,000	1,950
Coffee	USc/lb	185	67.5	75.2	126	177	125	160	145
Corn	USc/bushel	377	-10.7	-12.8	578	419	450	430	450

SELECT COMMODITIES - PERFORMANCE & BMI FORECASTS - Continued

Commodity	Unit	Spot Price	YTD (% Chg)	1 Year (% Chg)	2013 (ave)	YTD (ave)	5 Year (ave)	2015f (ave)	2016f (ave)
Cotton	USc/lb	63.2	-25.4	-18.9	83.4	78.6	60.4	76.0	78.0
Feeder Cattle	USc/lb	239	43.3	45.5	151	201	106	na	na
Lean Hogs	USc/lb	89.9	5.2	2.1	89.4	109.0	65.8	na	na
Live Cattle	USc/lb	167	24.3	26.0	126	149	94	na	na
Palm Oil	MYR/tonne	2,267	-14.7	-12.8	2,405	2,428	2,634	2,350	2,425
Rough Rice	USD/cwt	11.62	-25.1	-26.4	15.47	14.22	14.26	14.70	15.00
Soy Oil	USc/lb	33.1	-14.9	-18.9	45.8	37.5	43.9	na	na
Soybean	USc/bushel	1,080	-17.7	-18.1	1,407	1,276	1,048	1,150	1,100
Soymeal	USD/tonne	410	-6.4	-4.3	433	429	286	na	na
Sugar #11	USc/lb	16.28	-0.8	-8.9	17.47	16.50	11.01	18.50	19.00
Wheat	USc/bushel	531	-12.3	-17.7	684	587	717	605	625

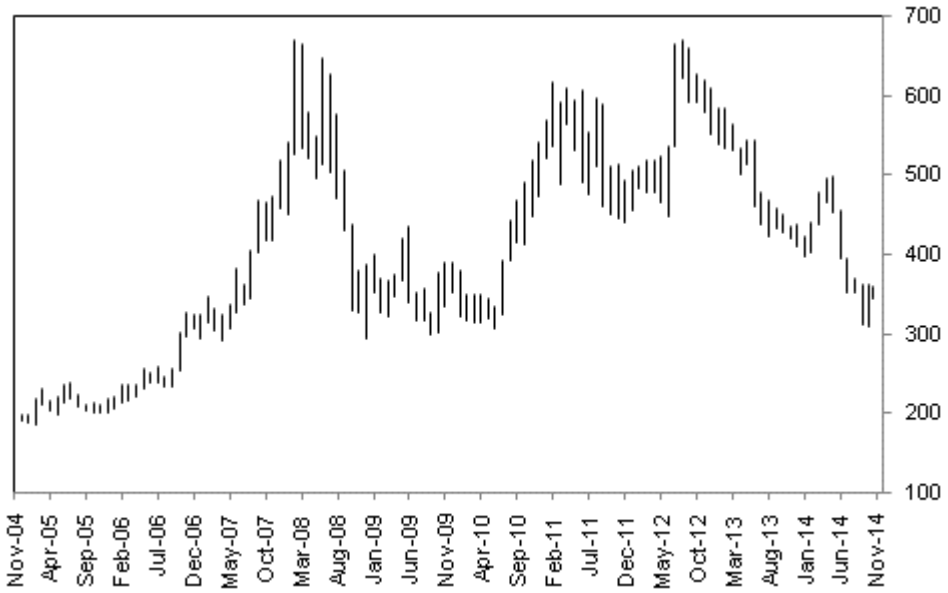
Note: Prices as of November 12 2014. na = not applicable. Source: BMI, Bloomberg

Monthly Grains Strategy

- The S&P GCSI Grains Index will not break below the 300 level, as has been our core view for some months.
- Corn and soybean prices will consolidate in the coming weeks after showing strength since the beginning of October. Both commodities will average higher than current levels in 2015.
- Rice prices will remain subdued over the coming months but will strengthen in 2015 as the global market tightens.

Break Below 300 Less Of A Threat

S&P GSCI Grains Index (Monthly Chart)



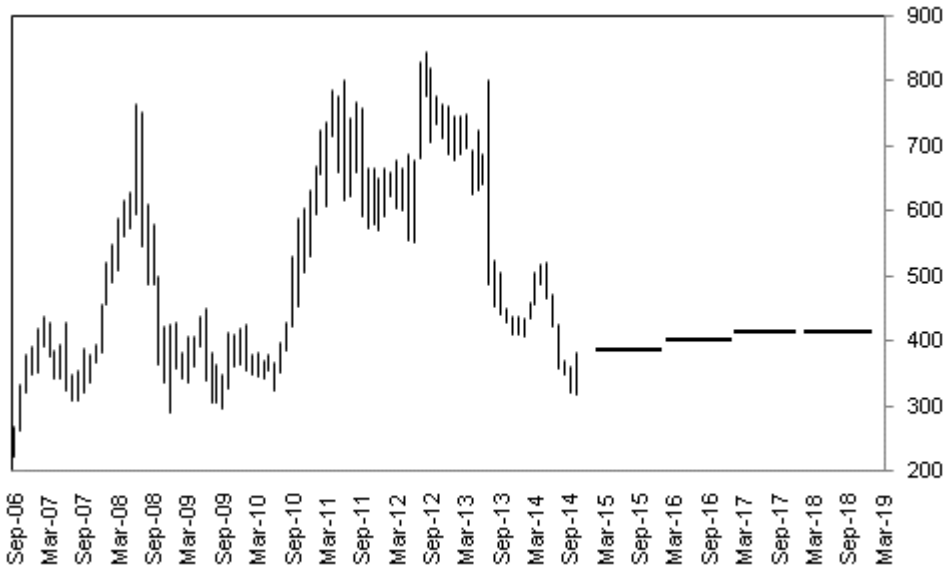
Source: Bloomberg

Corn: Heading Higher In 2015

Recent price strength in corn leading up to mid-November will slow in the remainder of Q414. Since the beginning of October, CBOT corn prices have risen by over 15%. This is mainly due to unfavourable crop weather across the Americas region, leading to slow progression of the US harvest and delays in plantings in Latin America. Corn prices (along with soybean) will consolidate over the remainder of 2014 as short-covering activity will slow following considerable price increases in October, and as the US dollar rally pauses for breath over the coming weeks.

Soon To Reach A Bottom

Front-Month CBOT Corn, USc/bushel, Monthly Chart

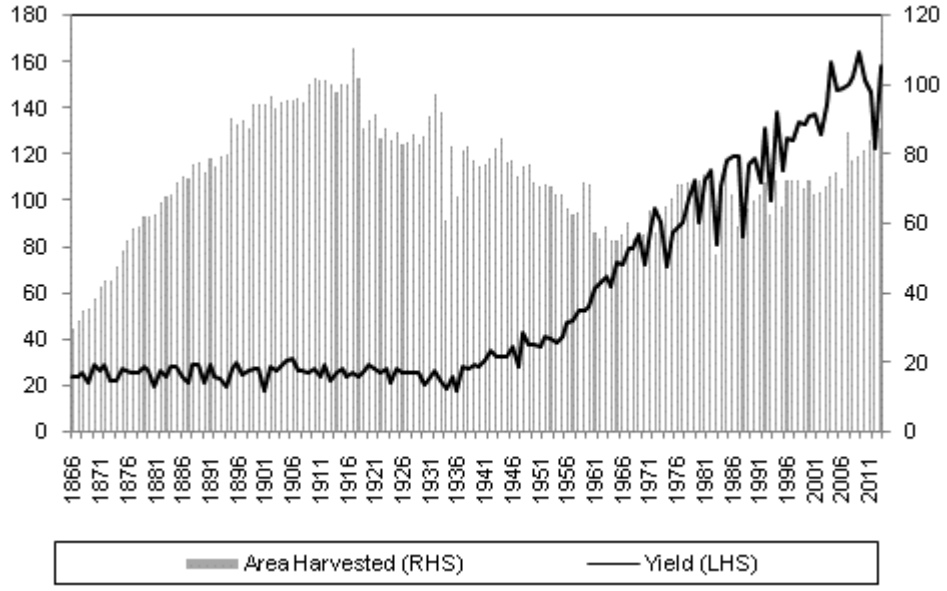


Note: Horizontal lines represent BMI annual average forecasts. Sources: BMI, Bloomberg

Corn prices will average USc425/bushel in 2015, up from current levels around USc375/bushel, as the currently large global market surplus will turn into a deficit in 2015/16. Global production in 2015/16 will contract due to lower prices which will lead to reduced plantings, while global consumption growth will remain steady. In 2015/16, we are forecasting US output to decline by around 25mn tonnes from this year's record crop of 365mn tonnes, which contributes to our view of a global market deficit of 15mn tonnes for the 2015/16 season.

Pushing The Limits

United States - Corn Area Harvested (mn acres) & Yields (bushels/acre)



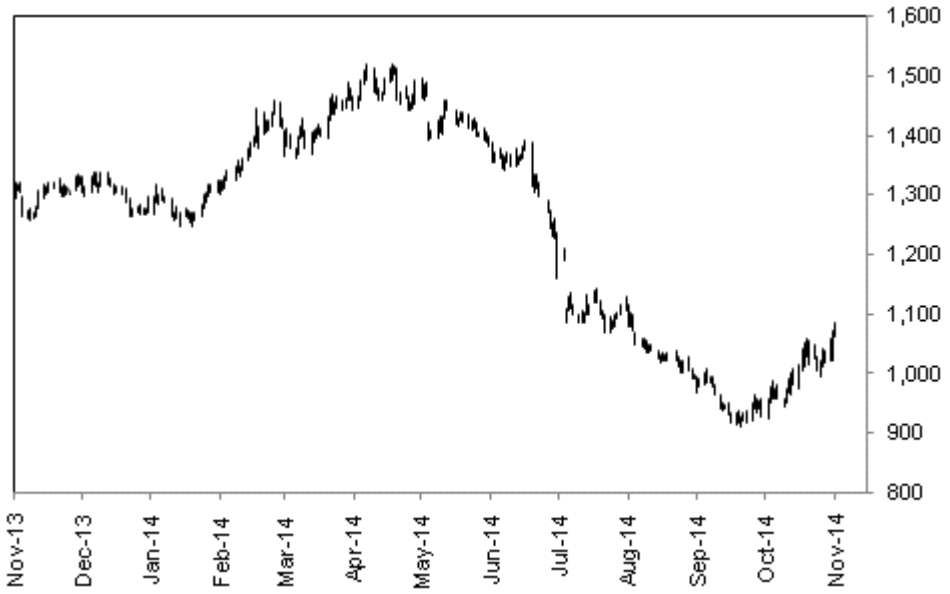
Sources: USDA, NASS, BMI

Soybean: Higher In 2015, But Will Lag Corn

Soybean prices have demonstrated similar strength to corn since the beginning of October. We believe that prices will consolidate over Q414, in much the same manner as corn. Soybean export demand is currently strong, though we believe prices will moderate as the large US soybean harvest translates into higher US stocks. Planting progress in Latin America will also accelerate over the rest of the year, as much-needed rains have fallen across Argentina and Brazil. Prices will pick up from Q215, as soybean plantings in the US will decline year-on-year (y-o-y) as less marginal land is used. We forecast prices to average USc1,150/ bushel in 2015.

Heading Higher In 2015

Second-Month CBOT Soybean (USc/bushel)

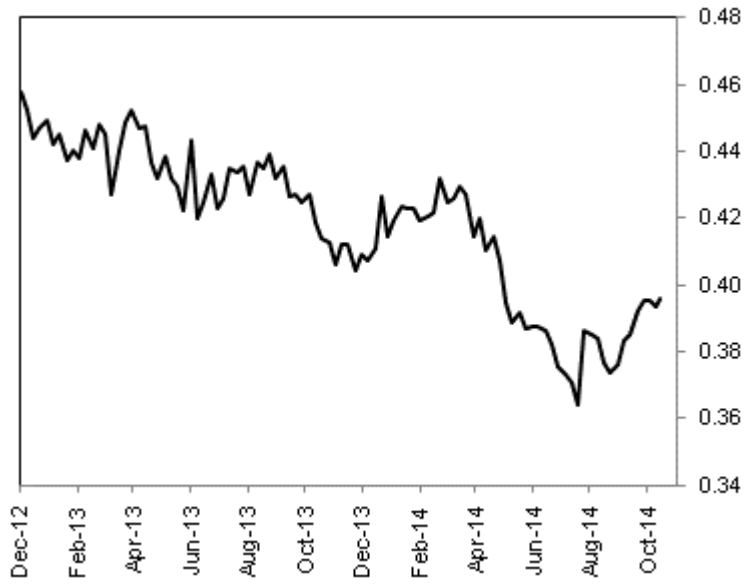


Source: Bloomberg

We maintain our view that CBOT corn prices will continue to outperform CBOT soybean prices over the coming months, which we entered into our Commodities Strategy Table on September 22 *(see 'Corn To Outperform Soybean Over Next Year', September 22)*. Our global production view for corn and soybean is based on the fact that soybean will continue to be more profitable to grow than corn. Soybean and corn compete for acreage, and corn prices remain at historically low levels relative to soybean. Though the delay in soybean plantings in Latin America has led to a slower increase in the corn/soybean price ratio than we initially expected in September, the medium-term fundamentals remain the same, and weather conditions are returning to average.

Further Gains Ahead

Price Ratio - September 2015 CBOT Corn/Soybean (weekly chart)



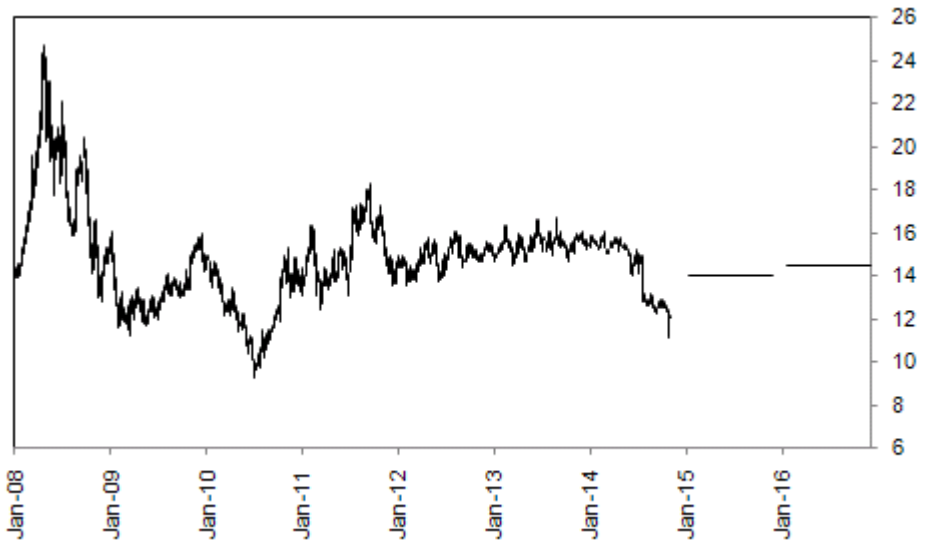
Note: An increase in the ratio implies corn outperformance. Sources: Bloomberg, BMI

Rice: Tighter Market In 2014/15

Rice prices will remain weak over Q414 and early 2015, trading within the USD12.00-13.00/cwt range. The global rice market is currently well supplied, amidst the ongoing harvest of a bumper US crop and large export supply in Asia, with Thailand releasing its hefty stocks and reaccelerating exports. Moreover, we forecast the US dollar to gradually appreciate over the coming months, which will limit upside for prices due to a pricing effect (as CBOT rice is priced in US dollars) and by a demand effect (as export demand will be reduced for US rice).

Heading Up In 2015

Front-Month CBOT Rough Rice (weekly, USD/cwt) & BMI Forecasts

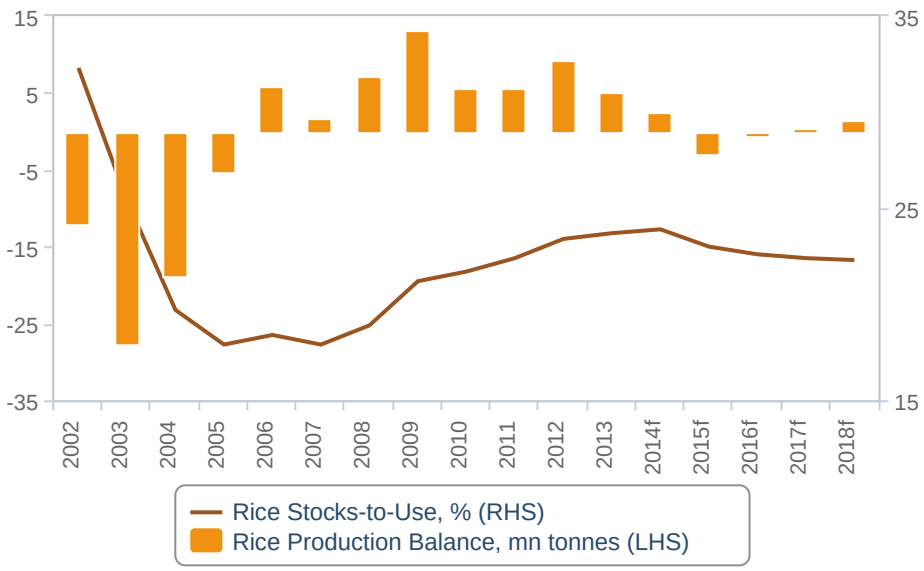


Note: Horizontal lines represent BMI average annual forecasts. Source: Bloomberg, BMI

Rice prices will recover over 2015, as the global market will tighten over the 2014/15 season. Prices will average significantly higher than current levels in 2015 and 2016, at USD14.00/cwt and USD14.30/cwt respectively, compared with USD14.30/cwt in 2014. We forecast that after two years of decreasing production surpluses in 2012/13 and 2013/14, the global market will shift into a deficit of 3.0mn tonnes in 2014/15. This compares with the average annual surpluses of 5.6mn tonnes recorded over the past five years. Global production will stagnate in 2014/15, while consumption will steadily expand owing to relative demand inelasticity and price attractiveness. As a result, the stocks-to-use ratio will decrease in 2015 for the first time since 2007, to 23.0%, albeit still above the 10-year average of 21.0%.

Turning Into Deficit

Rice - Global Production Balance (mn tonnes, LHS) & Stocks-To-Use Ratio (%)



f= BMI forecast. Sources: USDA, BMI

Wheat: Tighter Market Than Corn & Soybean

Similar to corn and soybean, wheat prices will head higher into 2015. The major northern hemisphere harvests for the 2014/15 season are now complete, and large crops in many countries, combined with the recent sell-off in corn, have contributed to a considerable decline in prices since May 2014. Australia, the fifth largest exporter of wheat in the world, will see production decline 5.6% y-o-y in 2014/15 to come in at 25.5mn tonnes. This will help prices head higher as Q414 draws to a close.

Will Pick Up In 2015

Front-Month CBOT Wheat (USc/bushel)

Source: Bloomberg

From 2014-2017, wheat will be the worst-supplied commodity out of corn, soybean and rice. We believe that the global wheat market will record a minor surplus of 0.7mn tonnes in 2014/15, and this will turn to a deficit of 1.8mn tonnes in 2015/16. This will result in a stocks-to-use ratio of 25.8% in 2015/16, well below its five-year average of 27.4%. We therefore expect wheat to average higher than current levels in 2015, at USc605/bushel.

Table: Selected Commodities - Performance & BMI Forecasts

Commodity	Unit	Spot Price	YTD (% Chg)	1 Year (% Chg)	2013 (ave)	YTD (ave)	2015f (ave)	2016f (ave)
Barley	EUR/tonne	224	8.2	10.9	226	210	190	190
Class 3 Milk	USD/cwt	17.38	-6.9	0.2	18.08	20.52	18.50	19.00
Cocoa (London)	GBP/tonne	1,900	9.8	11.6	1,576	1,920	2,000	1,950
Coffee	USc/lb	185	67.2	79.6	126	177	160	145
Corn	USc/bushel	381	-9.7	-11.3	578	419	425	440
Cotton	USc/lb	62.2	-26.6	-20.3	83.4	78.6	76.0	78.0
Palm Oil	MYR/tonne	2,226	-16.3	-14.5	2,405	2,427	2,350	2,425
Rough Rice	USD/cwt	11.79	15.4	8.2	15.47	14.21	14.00	14.30
Soybean	USc/bushel	1,052	-19.8	-20.3	1,407	1,275	1,150	1,100
Sugar #11	USc/lb	16.24	-1.0	-8.8	17.47	16.49	18.50	19.00
Wheat	USc/bushel	542	-10.5	-16.0	684	587	605	625

Note: Prices as of November 13; Sources: BMI, Bloomberg

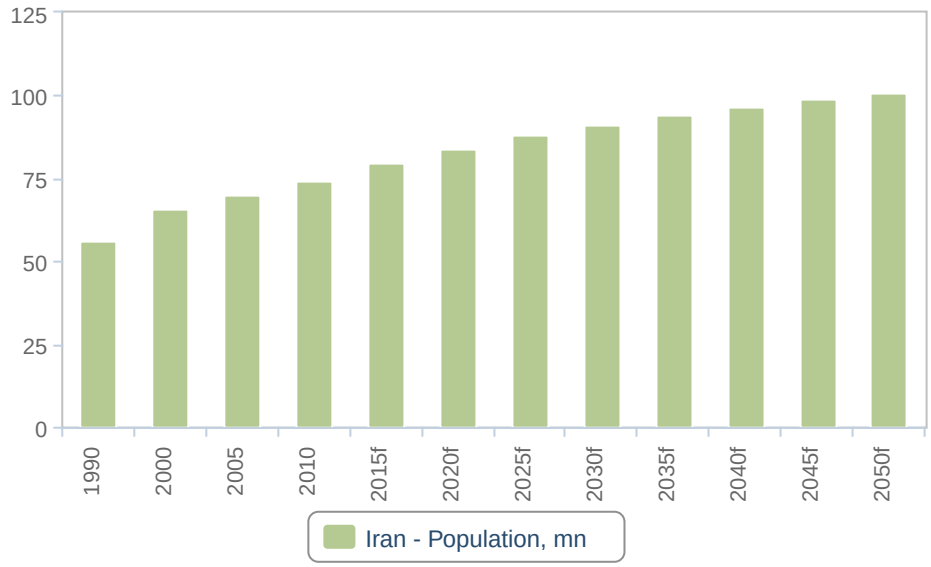
Demographic Forecast

Demographic analysis is a key pillar of **BMI**'s macroeconomic and industry forecasting model. Not only is the total population of a country a key variable in consumer demand, but an understanding of the demographic profile is essential to understanding issues ranging from future population trends to productivity growth and government spending requirements.

The accompanying charts detail the population pyramid for 2015, the change in the structure of the population between 2015 and 2050 and the total population between 1990 and 2050. The tables show indicators from all of these charts, in addition to key metrics such as population ratios, the urban/rural split and life expectancy.

Population

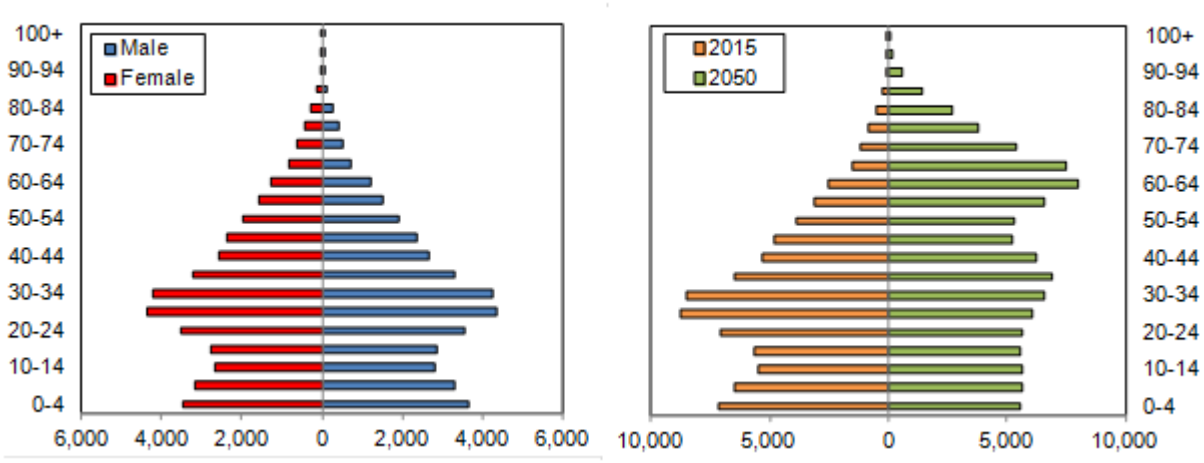
(1990-2050)



f = BMI forecast. Source: World Bank, UN, BMI

Iran Population Pyramid

2015 (LHS) & 2015 Versus 2050 (RHS)



Source: World Bank, UN, BMI

Table: Population Headline Indicators (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Population, total, '000	56,361	65,911	70,152	74,462	79,476	84,148	88,064
Population, % change y-o-y	na	1.6	1.2	1.3	1.3	1.1	0.8
Population, total, male, '000	28,807	33,504	35,917	37,656	39,915	42,307	44,213
Population, total, female, '000	27,554	32,406	34,235	36,805	39,560	41,840	43,850
Population ratio, male/female	1.05	1.03	1.05	1.02	1.01	1.01	1.01

na = not available; f = BMI forecast. Source: World Bank, UN, BMI

Table: Key Population Ratios (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Active population, total, '000	28,945	40,290	48,583	53,034	55,945	58,184	60,945
Active population, % of total population	51.4	61.1	69.3	71.2	70.4	69.1	69.2
Dependent population, total, '000	27,415	25,620	21,569	21,427	23,530	25,964	27,118
Dependent ratio, % of total working age	94.7	63.6	44.4	40.4	42.1	44.6	44.5
Youth population, total, '000	25,543	22,850	18,115	17,585	19,140	20,362	19,984
Youth population, % of total working age	88.2	56.7	37.3	33.2	34.2	35.0	32.8
Pensionable population, '000	1,872	2,770	3,453	3,841	4,389	5,601	7,134
Pensionable population, % of total working age	6.5	6.9	7.1	7.2	7.8	9.6	11.7

f = BMI forecast. Source: World Bank, UN, BMI

Table: Urban/Rural Population And Life Expectancy (Iran 1990-2025)

Indicator	1990	2000	2005	2010e	2015f	2020f	2025f
Urban population, '000	31,748.6	42,210.8	47,393.5	51,332.8	55,362.4	59,374.4	63,078.7
Urban population, % of total	56.3	64.0	67.6	68.9	69.7	70.6	71.6
Rural population, '000	24,613.2	23,700.3	22,758.8	23,129.5	24,113.9	24,774.2	24,985.6
Rural population, % of total	43.7	36.0	32.4	31.1	30.3	29.4	28.4
Life expectancy at birth, male, years	61.2	68.7	70.0	71.3	72.8	74.2	75.5
Life expectancy at birth, female, years	65.8	70.6	73.1	75.1	76.6	78.0	79.2
Life expectancy at birth, average, years	63.4	69.6	71.5	73.1	74.6	76.0	77.3

e/f = BMI estimate/forecast. Source: World Bank, UN, BMI

Table: Population By Age Group (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Population, 0-4 yrs, total, '000	9,312	6,316	5,483	6,555	7,146	6,751	6,148
Population, 5-9 yrs, total, '000	8,905	7,552	5,476	5,416	6,507	7,116	6,729
Population, 10-14 yrs, total, '000	7,324	8,981	7,154	5,613	5,487	6,494	7,105
Population, 15-19 yrs, total, '000	5,822	8,800	9,247	7,215	5,643	5,466	6,474
Population, 20-24 yrs, total, '000	4,697	6,932	9,143	8,993	7,067	5,595	5,424
Population, 25-29 yrs, total, '000	4,054	5,315	6,859	8,704	8,726	6,997	5,541
Population, 30-34 yrs, total, '000	3,535	4,442	5,202	6,521	8,484	8,649	6,937
Population, 35-39 yrs, total, '000	3,030	3,886	4,693	5,210	6,497	8,410	8,579
Population, 40-44 yrs, total, '000	2,123	3,372	4,112	4,833	5,262	6,431	8,333
Population, 45-49 yrs, total, '000	1,620	2,857	3,421	4,032	4,757	5,193	6,353
Population, 50-54 yrs, total, '000	1,526	1,929	2,800	3,244	3,895	4,665	5,101
Population, 55-59 yrs, total, '000	1,393	1,431	1,766	2,637	3,109	3,788	4,548
Population, 60-64 yrs, total, '000	1,140	1,322	1,336	1,639	2,500	2,985	3,652
Population, 65-69 yrs, total, '000	898	1,145	1,257	1,279	1,550	2,340	2,813
Population, 70-74 yrs, total, '000	507	825	1,055	1,129	1,143	1,369	2,090
Population, 75-79 yrs, total, '000	269	508	654	802	876	902	1,105
Population, 80-84 yrs, total, '000	135	203	347	413	528	598	637
Population, 85-89 yrs, total, '000	48	66	112	172	216	290	343
Population, 90-94 yrs, total, '000	10	17	21	38	63	84	119
Population, 95-99 yrs, total, '000	1	2	3	4	8	15	22

Population By Age Group (Iran 1990-2025) - Continued							
	1990	2000	2005	2010	2015f	2020f	2025f
Population, 100+ yrs, total, '000	0	0	0	0	0	1	2

f = BMI forecast. Source: World Bank, UN, BMI

Table: Population By Age Group % (Iran 1990-2025)							
	1990	2000	2005	2010	2015f	2020f	2025f
Population, 0-4 yrs, % total	16.52	9.58	7.82	8.80	8.99	8.02	6.98
Population, 5-9 yrs, % total	15.80	11.46	7.81	7.27	8.19	8.46	7.64
Population, 10-14 yrs, % total	13.00	13.63	10.20	7.54	6.90	7.72	8.07
Population, 15-19 yrs, % total	10.33	13.35	13.18	9.69	7.10	6.50	7.35
Population, 20-24 yrs, % total	8.34	10.52	13.03	12.08	8.89	6.65	6.16
Population, 25-29 yrs, % total	7.19	8.06	9.78	11.69	10.98	8.32	6.29
Population, 30-34 yrs, % total	6.27	6.74	7.42	8.76	10.68	10.28	7.88
Population, 35-39 yrs, % total	5.38	5.90	6.69	7.00	8.18	9.99	9.74
Population, 40-44 yrs, % total	3.77	5.12	5.86	6.49	6.62	7.64	9.46
Population, 45-49 yrs, % total	2.88	4.33	4.88	5.42	5.99	6.17	7.22
Population, 50-54 yrs, % total	2.71	2.93	3.99	4.36	4.90	5.54	5.79
Population, 55-59 yrs, % total	2.47	2.17	2.52	3.54	3.91	4.50	5.17
Population, 60-64 yrs, % total	2.02	2.01	1.90	2.20	3.15	3.55	4.15
Population, 65-69 yrs, % total	1.59	1.74	1.79	1.72	1.95	2.78	3.19
Population, 70-74 yrs, % total	0.90	1.25	1.50	1.52	1.44	1.63	2.37
Population, 75-79 yrs, % total	0.48	0.77	0.93	1.08	1.10	1.07	1.26
Population, 80-84 yrs, % total	0.24	0.31	0.50	0.55	0.66	0.71	0.72
Population, 85-89 yrs, % total	0.09	0.10	0.16	0.23	0.27	0.34	0.39
Population, 90-94 yrs, % total	0.02	0.03	0.03	0.05	0.08	0.10	0.14
Population, 95-99 yrs, % total	0.00	0.00	0.00	0.01	0.01	0.02	0.03
Population, 100+ yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00

f = BMI forecast. Source: World Bank, UN, BMI

Methodology

Industry Forecast Methodology

BMI's industry forecasts are generated using the best-practice techniques of time-series modelling and causal/econometric modelling. The precise form of model we use varies from industry to industry, in each case being determined, as per standard practice, by the prevailing features of the industry data being examined.

Common to our analysis of every industry is the use of vector autoregressions. Vector autoregressions allow us to forecast a variable using more than the variable's own history as explanatory information. For example, when forecasting oil prices, we can include information about oil consumption, supply and capacity.

When forecasting for some of our industry sub-component variables, however, using a variable's own history is often the most desirable method of analysis. Such single-variable analysis is called univariate modelling. We use the most common and versatile form of univariate models: the autoregressive moving average model (ARMA).

In some cases, ARMA techniques are inappropriate because there is insufficient historic data or data quality is poor. In such cases, we use either traditional decomposition methods or smoothing methods as a basis for analysis and forecasting.

BMI mainly uses ordinary least squares estimators. In order to avoid relying on subjective views and encourage the use of objective views, we use a 'general-to-specific' method. **BMI** mainly uses a linear model, but simple non-linear models, such as the log-linear model, are used when necessary. During periods of 'industry shock', for example, if poor weather conditions impede agricultural output, dummy variables are used to determine the level of impact.

Effective forecasting depends on appropriately selected regression models. We select the best model according to various different criteria and tests, including but not exclusive to:

- R^2 tests explanatory power; adjusted R^2 takes degree of freedom into account;
- Testing the directional movement and magnitude of coefficients;
- Hypothesis testing to ensure coefficients are significant (normally t-test and/or P-value);
- All results are assessed to alleviate issues related to auto-correlation and multicollinearity;

Human intervention plays a necessary and desirable role in all or our industry forecasting. Experience, expertise and knowledge of industry data and trends ensure analysts spot structural breaks, anomalous data, turning points and seasonal features where a purely mechanical forecasting process would not.

Sector-Specific Methodology

Within the Agribusiness industry, issues that might result in human intervention could include but are not exclusive to:

- Technology development that might influence future output levels (for example greater use of biotechnology);
- Dramatic changes in local production levels due to public or private sector investment;
- The regulatory environment and specific areas of legislation, such as import and export tariffs and farm subsidies;
- Changes in lifestyles and general societal trends;
- The formation of bilateral and multilateral trading agreements, and political factors.

The following two examples show the demand (consumption) and the supply (production) of rice. Note that the explanatory variables for both are quite similar, but the underlying economic theory is different.

Example Of Rice Consumption Model

$(\text{Rice consumption})_t = \beta_0 + \beta_1*(\text{real private consumption per capita})_t + \beta_2*(\text{inflation})_t + \beta_3*(\text{real lending rate})_t + \beta_4*(\text{population})_t + \beta_5*(\text{government expenditure})_t + \beta_6*(\text{food consumption})_{t-1} + \varepsilon_t$

Where:

- β are parameters for this function.
- Real private consumption per capita has a positive relationship with rice consumption, if rice is a normal good in a particular country. If rice is an inferior good in a country, the relationship is negative. So the sign of β_1 is determined by a specific product within a specific country.
- When inflation is high, people with rational expectations will consume today rather than wait for tomorrow's high price to come. Higher rice demand in year t due to higher inflation in that year leads to an assumed positive sign of β_2.
- The relationship between real lending rate and rice consumption is expected to be negative. When real lending rates increase, disposable incomes, especially for those with mortgage burdens, etc, will decrease. So the sign of β_3 is expected to be negative.
- Of course, other things being equal, growth in rice consumption can also be caused by growth in population. Consequently, positive sign of β_4 is expected.

- Government expenditure typically causes total disposable incomes to rise. So the sign of β_5 is expected to be positive.
- Human behaviour has a trend: A high level of food consumption in previous years means there is very likely to be a high level of food consumption the next year. So the positive sign of β_6 is expected.
- ε is the error/residual term.

Example Of Rice Production Model

$(\text{Rice production})_t = \beta_0 + \beta_1*(\text{real GDP per capita})_t + \beta_2*(\text{inflation})_t + \beta_3*(\text{real lending rate})_t + \beta_4*(\text{rural population})_t + \beta_5*(\text{government expenditure})_t + \beta_6*(\text{food production})_{t-1} + \varepsilon_t$

Where:

- The same as above: the relationship between real GDP per capita and rice production depends on whether rice is normal or inferior good in that country.
- If high inflation is caused by food prices increasing, farmers will be more profitable. Then they will supply more agricultural product (eg rice) to increase their marginal (extra) profit, although this is tempered by the rising cost of other inputs in line with inflation.
- There is a global move towards corporate farming, away from small holdings, in order to achieve greater agricultural productivity. Corporate farming means more investment in the modes of production, ie agricultural machinery. Higher real lending rates discourage investment, which in turn reduce production.
- **BMI** assumes that only the rural population has a positive effect on agricultural product supply.
- With supportive government policy, other things being equal, rice production is expected to go up. Government expenditure is likely to play some role in supporting agribusiness.
- Again, previous food production positively affects this year's prediction.