

**Q2 2014**

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# **IRAN**

## **AGRIBUSINESS REPORT**

INCLUDES 5-YEAR FORECASTS TO 2018





# Iran Agribusiness Report Q2 2014

INCLUDES 5-YEAR FORECASTS TO 2018

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## Part of BMI's Industry Report & Forecasts Series

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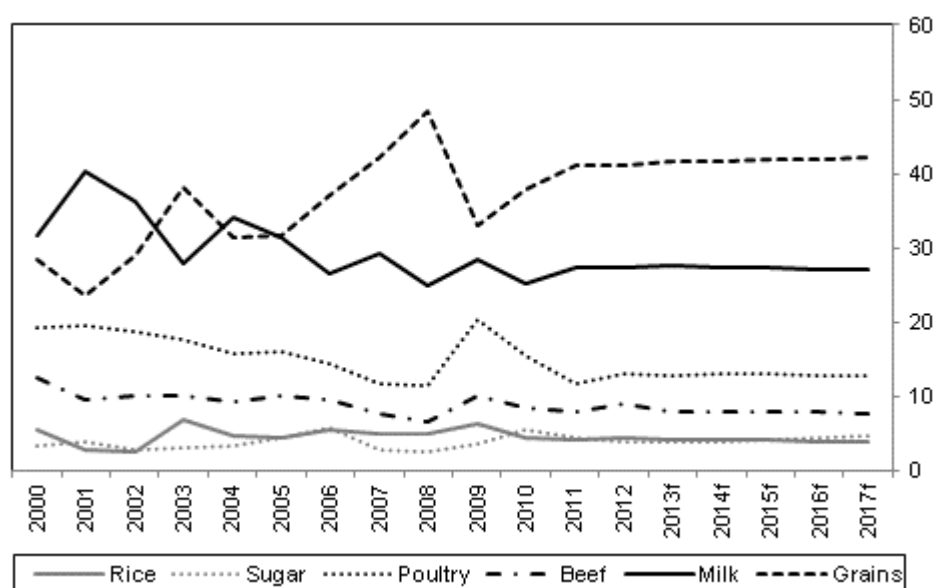


## BMI Industry View

**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 replace 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.

### Grains Ahead

Iran - BMI Agribusiness Market Value By Commodity (% of total)



Note: The BMI Market Value is an addition of all domestically produced commodities' value (calculated by multiplying the production with the international benchmark prices, converted in US\$/tonne); f = forecast. Source: BMI.

### Key Forecasts

- **Wheat production growth to 2017/18: 9.3% to 15.3mn tonnes.** Wheat yields are expected to improve in line with 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: 29.9% to 2.6mn 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: US\$11.05bn in 2014** (down 2.4% compared with 2013; growth forecast to average 0.7% annually between 2014 and 2018).
- **2014 real GDP growth: 2.8%** (up from -3.5% in 2013; predicted to average 3.6% over 2014-2018).
- **2014 consumer price inflation: 26.0% year-on-year (y-o-y)** (down from 35.0% y-o-y in 2013; predicted to average 15.0% y-o-y over 2014-2018).

### 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 lifting 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. 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.
-

## Business Environment

### Business Environment SWOT Analysis

- |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strengths</b>     | <ul style="list-style-type: none"><li>▪ The Foreign Investment Promotion and Protection Act gives some protection to foreign investors and now allows relatively good terms for the repatriation of profits.</li><li>▪ Although stifled in the years since the Islamic Revolution, Iranians have traditionally been renowned for their entrepreneurial skills - a factor that is potentially a strong pull for foreign investors.</li></ul>                               |
| <b>Weaknesses</b>    | <ul style="list-style-type: none"><li>▪ Progress on the privatisation front remains slow despite some recent encouraging signs.</li><li>▪ Foreign firms are currently unable to own Iran's hydrocarbon resources. The resultant 'buy back' deals offer less advantageous terms than those elsewhere, limiting hopes of new investment.</li></ul>                                                                                                                          |
| <b>Opportunities</b> | <ul style="list-style-type: none"><li>▪ As part of the fourth five-year development plan 2005-2009, the government ended tax and customs concessions afforded to the country's quasi-statal bonyads, or foundations.</li></ul>                                                                                                                                                                                                                                            |
| <b>Threats</b>       | <ul style="list-style-type: none"><li>▪ UN, US and EU sanctions on Iran's banking and energy sectors are making it very difficult for foreign companies to undertake financial transactions with Iranian entities, and much riskier to invest in the hydrocarbon sector.</li><li>▪ Central bank supervision of charitable funds will be stepped up sharply after it emerged that a number of these funds had collapsed due to indiscriminate lending practices.</li></ul> |

# Industry Forecast

## 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 more difficult the import of grains and feed. 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: Iran Beef & Veal Production & Consumption, 2013-2018**

	2013	2014f	2015f	2016f	2017f	2018f
Beef & Veal Production, '000 tonnes <sup>1</sup>	237.0	239.1	242.7	246.4	250.1	253.8
Beef & Veal Consumption, '000 tonnes <sup>1</sup>	410.0	429.7	449.4	472.8	497.4	523.3

Notes: <sup>f</sup> BMI forecasts. Sources: <sup>1</sup> USDA, OECD-FAO.

**Table: Iran Poultry Production & Consumption, 2013-2018**

	2013	2014f	2015f	2016f	2017f	2018f
Poultry Production, '000 tonnes <sup>1</sup>	789.0	800.0	824.0	848.7	874.2	900.4
Poultry Consumption, '000 tonnes <sup>1</sup>	850.0	865.3	893.8	923.5	954.4	986.6

Notes: <sup>f</sup> BMI forecasts. Sources: <sup>1</sup> USDA, OECD-FAO.

### 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 3.4% in real terms in 2014 and 2015 respectively, compared with the five-year average of 1.5%), which will support business and consumer confidence and foster investment in the coming years (see 'Returning To Growth In 2014', January 7).

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.

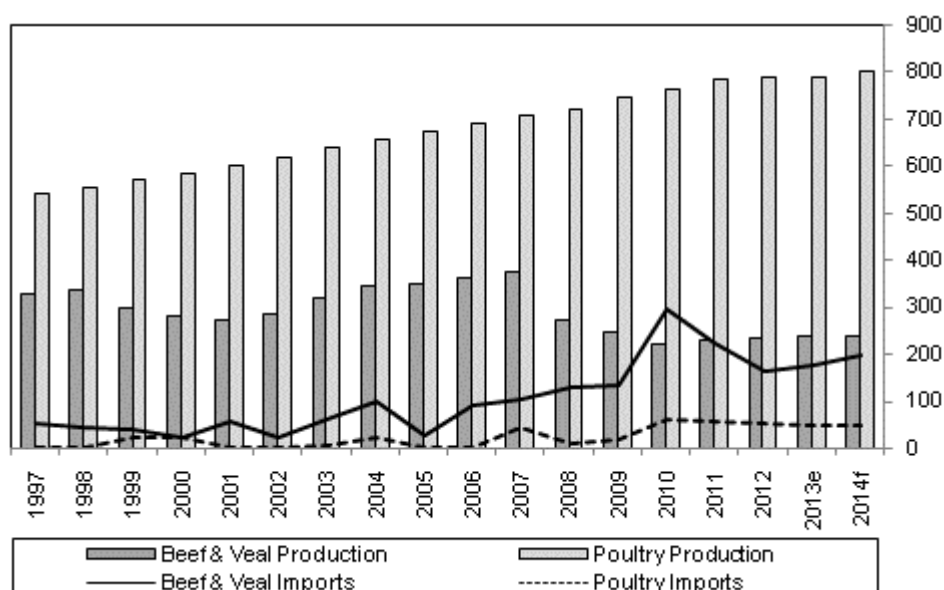
In the medium term, the lifting of international sanctions will ease the difficulty of importing grains into Iran, which will push down feed prices and boost livestock margins. Food import challenges escalated over 2013, as the US blacklisted Iran's shipping, shipbuilding, energy and ports management 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). 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 = 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 (US\$735mn) 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: Iran Beef & Veal Production & Consumption, 2008-2013**

	2008	2009	2010	2011	2012	2013
Beef & Veal Production, '000 tonnes <sup>1</sup>	270.0	249.0	220.0	232.0	235.0	237.0
Beef & Veal Consumption, '000 tonnes <sup>1</sup>	405.0	382.0	516.0	457.0	399.0	410.0

Sources: <sup>1</sup> USDA, OECD-FAO.

**Table: Iran Poultry Production & Consumption, 2008-2013**

	2008	2009	2010	2011	2012	2013
Poultry Production, '000 tonnes <sup>1</sup>	722.0	745.0	765.0	785.0	787.0	789.0
Poultry Consumption, '000 tonnes <sup>1</sup>	732.0	763.0	824.0	838.0	830.0	850.0

Sources: <sup>1</sup> USDA, OECD-FAO.

## 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.

## Rice Outlook

**BMI Supply View:** Rice is the third largest grain produced in Iran, behind wheat and barley. In the 2012/13 season, which ended in September 2013, we estimate rice production increased by 3.5% year-on-year (y-o-y) to 1.6mn tonnes on the back of stable yields of 4.19 tonnes per hectare (ha) and area harvested (at 560,000ha). We believe output will grow for a fifth consecutive year in 2013/14, to 1.7mn tonnes, up 4.4% y-o-y. Production growth will stem from higher yields, estimated at 4.24 tonnes/ha by the US Department of Agriculture.

We deem the government's plan to reach self-sufficiency by 2016 as unrealistic given the current broad stagnation in area harvested and yields. The country usually records a 1.5mn-1.7mn tonnes deficit, which we see remaining around this level in the coming years. To 2017/18, we expect production to grow by 13.0% on the 2012/13 level to reach 1.8mn 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 by 1.8% in 2014 to 3.4mn 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 nuclear 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 3.6mn tonnes in 2018.

Table: Iran Rice Production &amp; Consumption, 2013-2018

	2013e	2014f	2015f	2016f	2017f	2018f
Rice Production, '000 tonnes <sup>1</sup>	1,605.0	1,676.1	1,711.0	1,745.0	1,779.0	1,812.9
Rice Consumption, '000 tonnes <sup>1</sup>	3,358.6	3,419.5	3,478.7	3,535.9	3,591.2	3,644.2

Notes: <sup>e</sup> BMI estimates. <sup>f</sup> BMI forecasts. Sources: <sup>1</sup> USDA.

### Total Import Volume Relatively Unaffected Despite Sanctions In 2012

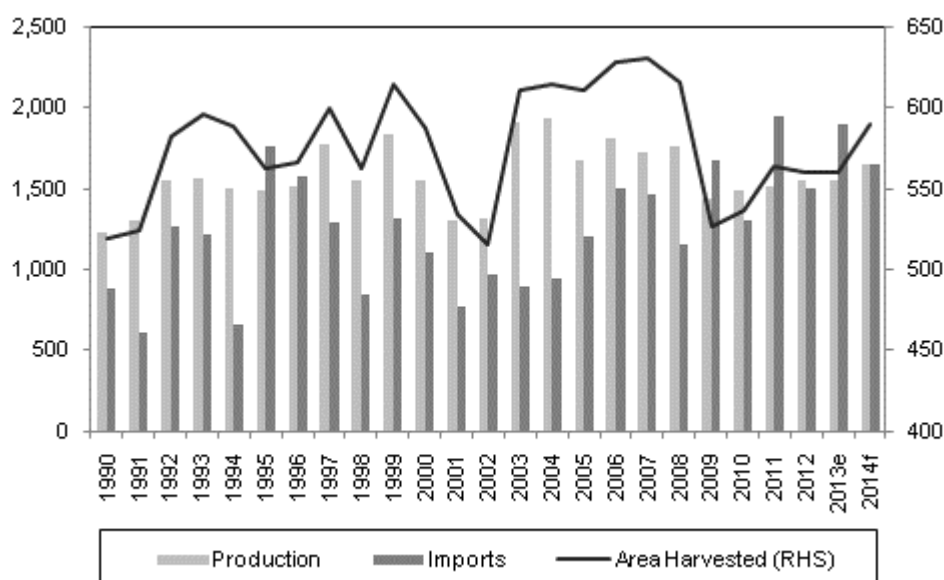
Financial sanctions imposed by the US and EU to pressure Tehran over its nuclear programme are playing havoc with Iran's ability to import goods, including food. Food and consumer items are not targeted by sanctions, but the sanctions make deals and payments between traders difficult. Iran defaulted 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. In fact, rice imports between March (the start of the Iranian calendar year) and October 2013 came in at 1.3mn tonnes, up 78% y-o-y. However, the value of imports has been buoyed by the trading difficulties stemming from the sanctions. Iran paid US\$1.46bn for the March-October imports, up 114% y-o-y, at a time when international CBOT rice prices decreased by 2.4%. India's rice export prices rose by 7.6% y-o-y over the March-October period. India remains Iran's largest provider. 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.

## High Imports

Iran - Rice Production & Imports, '000 tonnes (LHS) & Area Harvested, '000 ha (RHS)



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).

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.

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.

**Table: Iran Rice Production & Consumption, 2008-2013**

	2008	2009	2010	2011	2012	2013e
Rice Production, '000 tonnes <sup>1</sup>	1,758.0	1,441.0	1,487.0	1,510.0	1,550.0	1,605.0
Rice Consumption, '000 tonnes <sup>1</sup>	3,000.0	3,100.0	2,950.0	3,250.0	3,302.4	3,358.6

Notes: <sup>e</sup> BMI estimates. Sources: <sup>1</sup> USDA.

## **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.

We forecast sugar output to grow 3.0% in 2013/14 to 981,800 tonnes. As for our five-year forecast to 2017/18, we forecast sugar production to expand by 15.9% 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 outlook. Production capacity is slowly growing, as demonstrated by the opening of a new sugar mill in Oshnavieh with capacity for 500,000 tonnes in 2013.

**BMI Demand View:** We expect sugar demand to bounce back in 2014 after subdued growth in 2013. Indeed, we believe Iranian GDP growth will return to positive territory in 2014 and grow by 2.8%, after it contracted by 3.5% in 2013. The slight easing of consumer price inflation will also support consumption. We see sugar demand growing by 10.0% y-o-y to 2.2mn tonnes in 2014. We expect demand to grow by 29.9% to 2018, with sugar consumption reaching 2.6mn tonnes. This increase will be driven mainly by population growth.

**Table: Iran Sugar Production & Consumption, 2013-2018**

	2013e	2014f	2015f	2016f	2017f	2018f
Sugar Production, '000 tonnes <sup>1</sup>	953.2	981.8	1,011.3	1,041.6	1,072.9	1,105.1
Sugar Consumption, '000 tonnes <sup>1</sup>	1,998.2	2,198.0	2,307.9	2,400.2	2,496.2	2,596.0

Notes: <sup>e</sup> BMI estimates. <sup>f</sup> BMI forecasts. Sources: <sup>1</sup> FAPRI, USDA.

### Oil And Electricity As Sweetener In Deal For Foreign Sugar

Iran is increasingly turning to deals that allow it to bypass the difficulties stemming from the international sanctions imposed in recent years (payment and logistics challenges). In 2012, there was discussion that Iran might consider importing Indian sugar with the Indian rupees it received from its exports of oil to India. Indeed, India has been unable to pay in full for Iranian oil imports because tightened US sanctions have



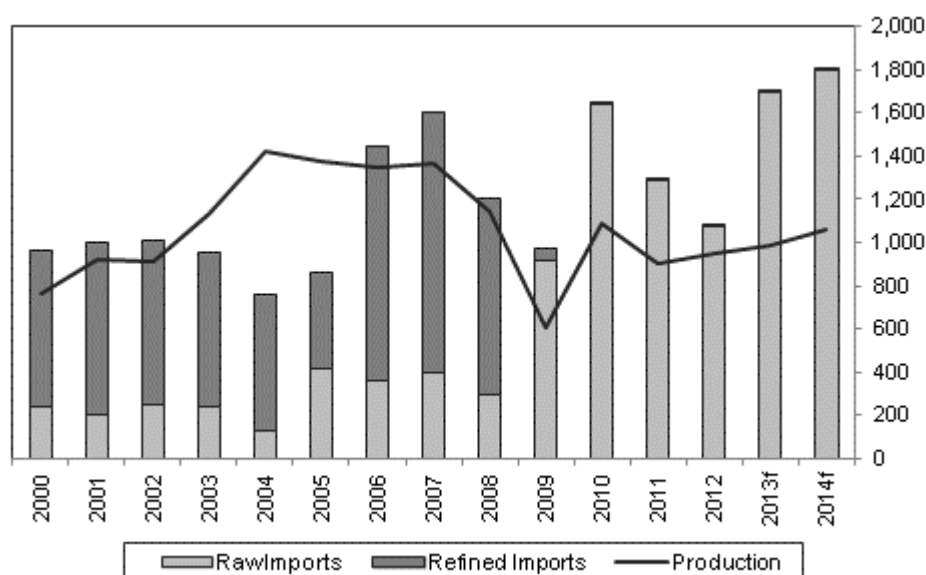
made it difficult to access US dollars for transactions with Iran. The deal was apparently rejected in October 2013.

In July 2013, Pakistan decided to allow sugar exports to Iran in exchange for electricity imports, according to local media sources.

Brazil is expected to remain the main provider of sugar to Iran. In 2012, it shipped 900,000 tonnes to Iran, or 47% of total Iranian imports.

## Favouring Local Mills

Iran - Sugar Production & Imports ('000 tonnes)



f = BMI forecast. 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: Iran Sugar Production & Consumption, 2008-2013**

	2008	2009	2010	2011	2012	2013e
Sugar Production, '000 tonnes <sup>1</sup>	1,145.0	610.0	1,085.0	900.0	930.0	953.2
Sugar Consumption, '000 tonnes <sup>1</sup>	2,275.0	2,467.0	2,724.0	2,124.0	1,903.0	1,998.2

Notes: <sup>e</sup> BMI estimates. Sources: <sup>1</sup> FAPRI, USDA.

### 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 more difficult the import of 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: Iran Milk Production &amp; Consumption, 2013-2018

	2013	2014f	2015f	2016f	2017f	2018f
Milk Production, '000 tonnes <sup>2</sup>	7,650.0	7,726.5	7,958.3	8,197.0	8,443.0	8,696.2
Liquid Milk Consumption, '000 tonnes <sup>1,2</sup>	2,926.0	2,984.5	3,074.1	3,166.3	3,261.3	3,359.1

Notes: <sup>f</sup> BMI forecasts. <sup>1</sup> Figures is total milk minus whole milk powder and cheese consumption. Sources: <sup>2</sup> FAO, 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 (see *'Opportunities In Livestock Amid Easing Of Sanctions' in Livestock Outlook - Iran - Q2 2014*). 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: Iran Milk Production & Consumption, 2008-2013**

	2008	2009	2010	2011	2012	2013
Milk Production, '000 tonnes <sup>2</sup>	7,699.9	7,905.4	7,950.0	8,000.0	7,800.0	7,650.0
Liquid Milk Consumption, '000 tonnes <sup>1,2</sup>	2,675.0	2,750.9	2,814.0	2,887.0	2,843.0	2,926.0

Notes: <sup>1</sup> Figures is total milk minus whole milk powder and cheese consumption. Sources: <sup>2</sup> FAO, 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.

## 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; therefore, 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-west of the country. Small amounts of rice and maize are also produced in the country. We believe Iran's grains production grew for the second consecutive year in 2013/14 after output was hurt by dry weather in 2011/12, when output fell by around 10% year-on-year (y-o-y). Harvesting of the 2013/14 wheat crop was completed in August 2013, and we estimate production at 14.3mn tonnes, up 2.0% y-o-y. For barley, we believe output came in at 3.5mn tonnes, up 1.5% y-o-y.

Planting of the 2014/15 wheat and barley crops is completed. In the main rain-fed cropping areas in the north-west, drier-than-normal conditions in October were followed by abundant precipitation in November, which improved soil moisture and favoured the establishment of crops before the dormancy period in winter. Crops also benefited from January storms that further renewed irrigation reserves for warm-season crops. We see wheat and barley production growing by 1.0% and 3.0% y-o-y respectively in 214/15 thanks to this favourable weather.

Over the long term, wheat yields are expected to improve on the back of 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 9.3% on the 2012/13 level to 15.3mn tonnes. The longer-term outlook for corn is less optimistic; we forecast corn production to increase by 5.2% to 1.8mn tonnes in 2017/18 on the back of an expected increase in demand from the livestock sector. We expect barley production in 2017/18 to grow 14.2% on 2012/13, to 3.9mn 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 owing 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 2014, we expect domestic consumption of wheat to grow by 2.0% y-o-y to 16.6mn tonnes. We are forecasting 2.0% growth in consumption for corn in 2014; demand for barley is forecast to drop by 2.0%.

As the government phases out bread subsidies, we expect lacklustre wheat consumption growth. Our forecasts envisage wheat consumption growing by 10.4% on the 2013 level to 18.0mn 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 12.6% to 6.6mn tonnes, while barley is forecast to grow by 11.5% 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 the former's nuclear programme could help to ease sanctions.

**Table: Iran Barley Production & Consumption, 2013-2018**

	2013e	2014f	2015f	2016f	2017f	2018f
Barley Production, '000 tonnes <sup>1</sup>	3,400.0	3,450.0	3,553.5	3,660.1	3,769.9	3,883.0
Barley Consumption, '000 tonnes <sup>1</sup>	4,329.0	4,242.4	4,390.9	4,527.0	4,671.9	4,826.1

Notes: <sup>e</sup> BMI estimates. <sup>f</sup> BMI forecasts. Sources: <sup>1</sup> USDA.

**Table: Iran Corn Production & Consumption, 2013-2018**

	2013e	2014f	2015f	2016f	2017f	2018f
Corn Production, '000 tonnes <sup>1</sup>	1,740.0	1,750.0	1,770.0	1,790.0	1,810.0	1,830.0
Corn Consumption, '000 tonnes <sup>1</sup>	5,879.2	5,996.8	6,146.8	6,306.6	6,464.2	6,619.4

Notes: <sup>e</sup> BMI estimates. <sup>f</sup> BMI forecasts. Sources: <sup>1</sup> USDA.

**Table: Iran Wheat Production & Consumption, 2013-2018**

	2013e	2014f	2015f	2016f	2017f	2018f
Wheat Production, '000 tonnes <sup>1</sup>	14,000.0	14,280.0	14,422.8	14,711.3	15,005.5	15,305.6
Wheat Consumption, '000 tonnes <sup>1</sup>	16,275.0	16,600.5	16,932.5	17,271.2	17,616.6	17,968.9

Notes: <sup>e</sup> BMI estimates. <sup>f</sup> BMI forecasts. Sources: <sup>1</sup> USDA.

### **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.

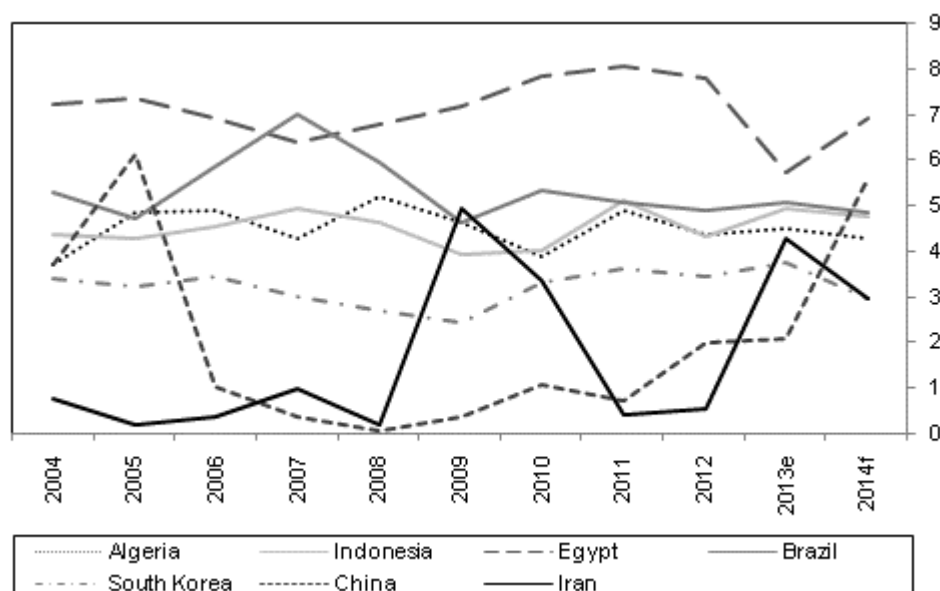
The new international sanctions imposed on Iran regarding its disputed nuclear programme in 2013 increased difficulties in importing food. The US National Defense Authorization Act (NDAA), which came into effect on July 1 2013, blacklisted Iran's shipping, shipbuilding, energy and ports management sectors, 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)



e/f = estimate/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 US\$10-20/tonne over international prices, according to industry sources.

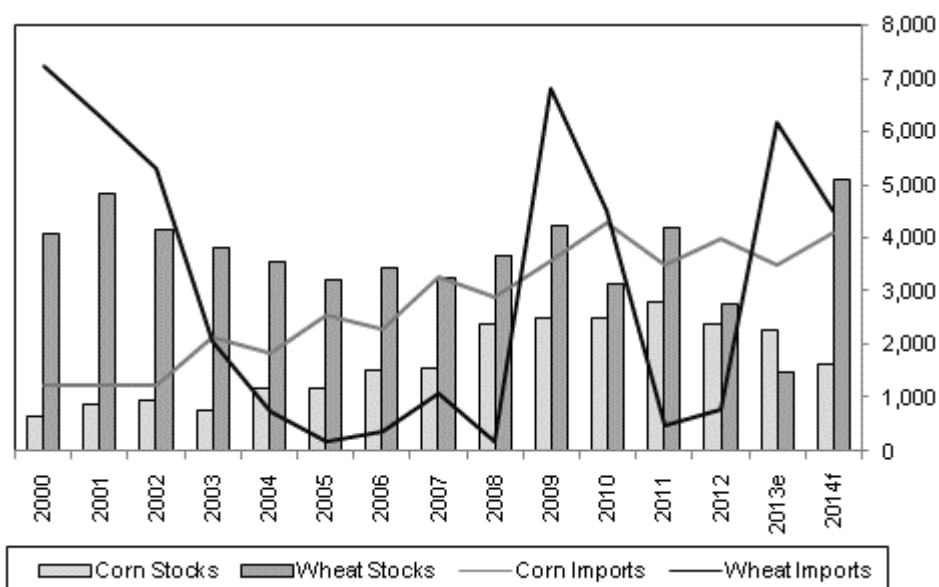
Easing of sanctions is expected to modestly boost throughput activity at the country's top ship container handling port, Bandar Abbas. **BMI's** Shipping team forecasts that container handling volume in Bandar Abbas will grow by 3.1% in 2014, in sharp contrast to the 25% fall in 2013.

Iran has been ramping up efforts to diversify its supplier base, especially from Caspian Sea neighbours. For wheat, the country is looking at Kazakhstan and Russia, which are harvesting strong crops in 2013/14, while extra corn will most likely come from Ukraine. Grains imports are likely to remain historically elevated in 2013/14, as Iran maintains an active stockpiling policy in order to foster its food security and avoid public unrest despite soaring food prices. Wheat imports are expected to ease, as the rebound in domestic production (to 14.2mn tonnes, up 2.0% y-o-y) and high stocks (at 5.1mn tonnes at the beginning of the

season, compared with the 10-year average at 3.3mn tonnes) will limit import needs. We believe imports will exceed the production deficit of 1.4mn tonnes and hover around 4-5mn tonnes, compared with 6.2mn tonnes in 2012/13.

## Stockpiling Policy

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



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

## Easing Sanctions Mean Lower Import Hurdles

There has been progress on nuclear negotiations in recent months in the negotiation between Iran and Western countries over the Republic'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 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).

Since the agreement, Iran has made a number of deals related to grain and fertilisers imports. 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. **Unifert**, a Lebanese fertiliser trading firm, is executing the physical and financial transactions. Though the tender was issued before the November political agreement, the improvement in ties after Hassan Rouhani's election in August had generated optimism, according to Reuters.

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, as relaxed Western sanctions have made deals easier. 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 has stepped up state purchases in recent years in order to face rising hurdles to trade (*see below*).

### **Government Intervenes To Ease Effects Of Sanctions**

Sanctions applied by the US to Iran's third largest bank, **Bank Tejarat**, following a ban on any US dealings with Iran's central bank, have made it more difficult for the country to finance its commodities imports. The US sanctions mean that any foreign bank dealing with Iranian banks are refused access to the US financial system. This has resulted in many European banks ending their dealings with Iranian banks, reducing sharply the amount of money available to finance commodities trade to the country. Commodities trade finance is highly concentrated among **BNP Paribas**, **Societe Generale**, **Crédit Agricole** and **Rabobank**, which have all indicated that they have stopped providing financing to Iran for commodities trading.

Iran is a very large grain importer, and the country's 2011/12 harvest was smaller due to poor weather conditions, thus increasing the country's import dependence during 2012. Iranian wheat imports are usually handled by the private sector, but the state decided to step in and aid purchasing. The government's goal is to secure stocks and limit food price inflation in order to avoid public unrest. The **Government Trading Corporation of Iran** (GTC), which procures, stores and distributes basic staples including grains, flour and sugar, is stepping up activity and has strong ability to import food despite financial sanctions. The GTC is discreetly contacting traders directly for offers, and not using the usual method of official tenders. Iran has also started building grain stocks since the beginning of 2013, with purchases of wheat from Australia and Germany and corn from Ukraine.

The Economic Times (India) reported in May 2012 that the Indian government may look to offload some of its massive wheat stores through sales to Iran as New Delhi looks to reduce its fuel import bill of US\$12bn. Yahya Ale-Eshagh, president of the Tehran Chamber of Commerce, Industries and Mines, confirmed Tehran's interest in such a deal on a visit to New Delhi. However, Iran's heavy activity in the market in early

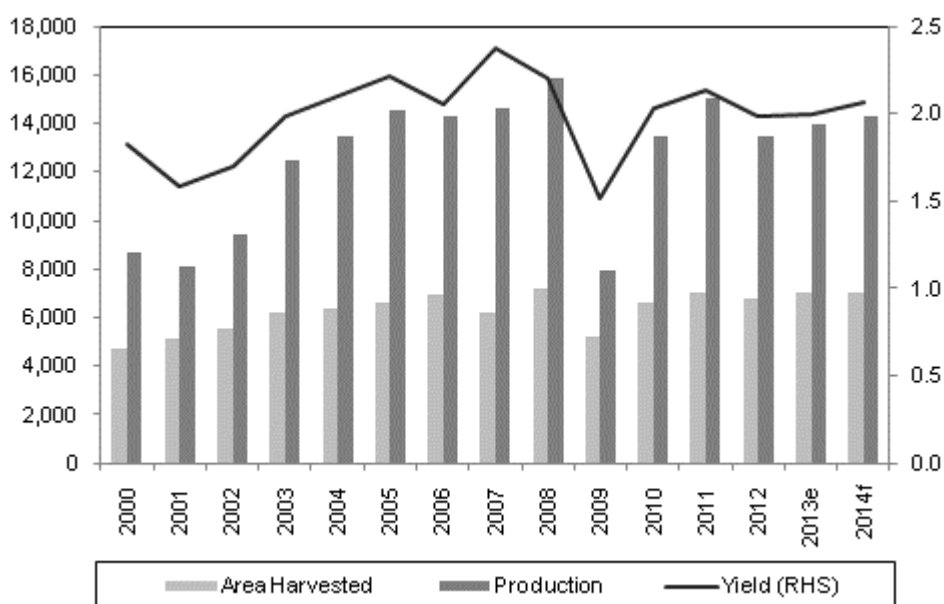
2012 has allowed it to build up sufficient reserves of wheat to reduce its import requirements for wheat in 2012/13 by some 32% on the previous year, according to the Food and Agriculture Organization (FAO).

The government has managed to partially get around payment constraints by using currencies other than dollars and euros as alternative trade finance and by using barter deals involving gold or oil, as in the proposed deal with India. In fact, as it is impossible for grains traders selling to Iran to obtain letters of credit from European banks, which control the majority of commodities trade financing deals, exporters to Iran have found new payment systems involving disbursement in other currencies and through non-Western banks.

The government has also banned from October 2012 the export of around 50 basic goods, including wheat, flour, sugar, and red meat, as the country takes steps to preserve supplies of essential items in the face of sanctions.

### On An Uptrend

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



e/f = 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: Iran Barley Production & Consumption, 2008-2013**

	2008	2009	2010	2011	2012	2013e
Barley Production, '000 tonnes <sup>1</sup>	3,104.0	1,547.0	3,446.0	3,210.0	2,900.0	3,400.0
Barley Consumption, '000 tonnes <sup>1</sup>	3,600.0	3,550.0	3,700.0	3,700.0	3,900.0	4,329.0

Notes: <sup>e</sup> BMI estimates. Sources: <sup>1</sup> USDA.

**Table: Iran Corn Production & Consumption, 2008-2013**

	2008	2009	2010	2011	2012	2013e
Corn Production, '000 tonnes <sup>1</sup>	2,361.0	1,778.0	1,643.0	1,736.0	1,730.0	1,740.0
Corn Consumption, '000 tonnes <sup>1</sup>	5,150.0	5,350.0	5,650.0	5,650.0	5,850.0	5,879.2

Notes: <sup>e</sup> BMI estimates. Sources: <sup>1</sup> USDA.

**Table: Iran Wheat Production & Consumption, 2008-2013**

	2008	2009	2010	2011	2012	2013e
Wheat Production, '000 tonnes <sup>1</sup>	15,887.0	7,957.0	13,500.0	15,030.0	13,500.0	14,000.0
Wheat Consumption, '000 tonnes <sup>1</sup>	15,500.0	15,800.0	16,800.0	16,200.0	15,500.0	16,275.0

Notes: <sup>e</sup> BMI estimates. Sources: <sup>1</sup> USDA.

## 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 subsidies (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.

## Commodities Price Analysis

### Monthly Softs Update

- We believe **softs will continue to outperform grains in 2014**, as we forecast higher prices over the year for cocoa, palm oil, sugar and coffee. In comparison, we forecast lower or stable prices for grains over the coming year.
- **Cocoa is likely to be the outperformer among softs over the year**, as uncertainty over production prospects in West Africa, combined with recovering demand, will push prices higher in the coming months.
- Our view for the Brazilian *real* to weaken further in the coming years will limit upside for coffee and sugar.

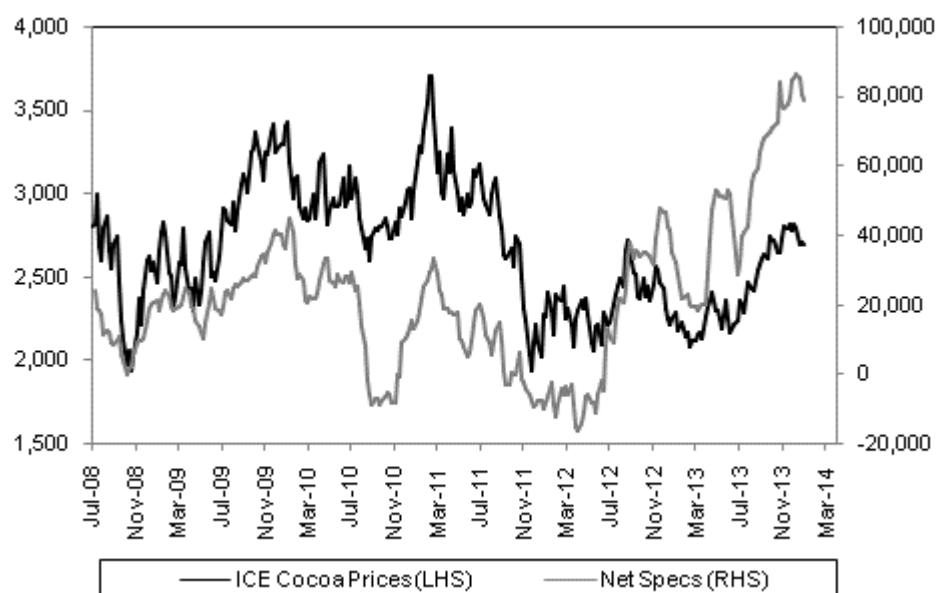
#### **Cocoa: Higher Prices Ahead**

We expect cocoa prices to remain supported in the coming months and trade between GBP1,600/tonne and GBP1,800/tonne. Even in a context of uncertainty over changes to the Ghanaian subsidy programme and Cocobod's financial difficulties, weather conditions have been favourable enough to prevent any price break above GBP1,800/tonne. We believe this will continue to be the case in the short term. Cocoa net speculative long positions have already reached a record, and we believe this will limit the upside for prices in the near term.



## Everyone's Bullish

Front-Month ICE Cocoa (US\$/tonne, LHS) & Net Speculative Long Positions



Source: Bloomberg, BMI

Prices will eventually break above GBP1,800/tonne over the course of 2014. Indeed, we see no significant improvement in supply coming in the medium term and forecast production deficits in the coming years. Moreover, the cocoa butter/raw bean ratio is at its highest level since 2008, which will provide an incentive for processors to buy beans for grinding at a time when European demand is improving. Prices are likely to steadily strengthen in the next two years, averaging GBP1,850/tonne in 2014 and GBP2,000/tonne in 2015, compared with GBP1,576/tonne in 2013.

## Prices To Break Eventually

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



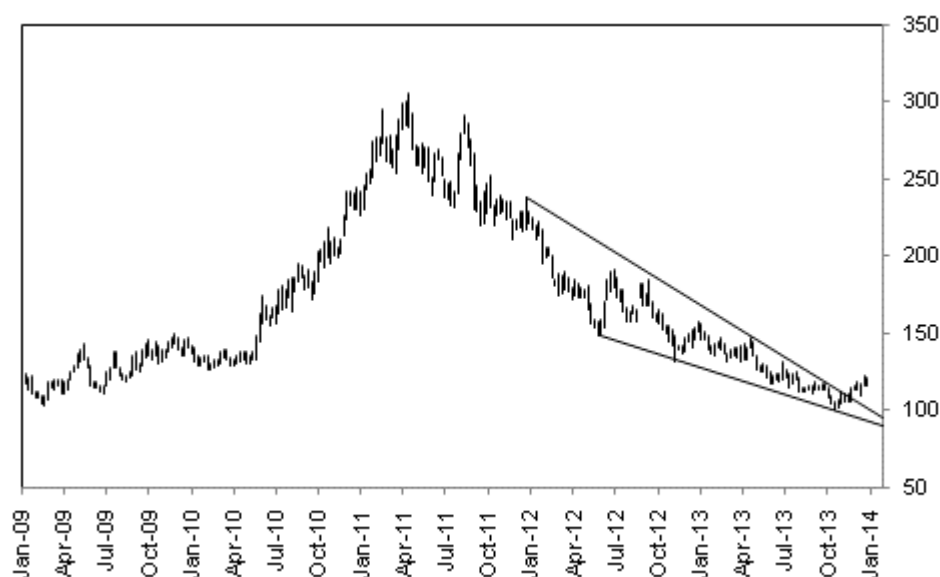
Source: Bloomberg, BMI

### Coffee: Range Trading Ahead

Our view for coffee prices to bottom at US\$100/lb has played out very well, and we now expect prices to range trade between US\$110-130/lb in the near term. The upside to prices is limited for now, as global coffee supply is excellent owing to a bumper crop from Brazil and stronger-than-expected output from Colombia. Also, the weakening of the Brazilian real over the year will keep coffee prices capped. Our Country Risk team forecasts the Brazilian real to average BRL2.35/US\$ in 2014 and BRL2.40/US\$ in 2015, compared with BRL2.16/US\$ in 2013. Another sharp weakening of the currency would cushion the effect of lower global prices on producer margins, encouraging production.

## Little Upside Potential For Now

Front-Month ICE Coffee (USc/lb, weekly)

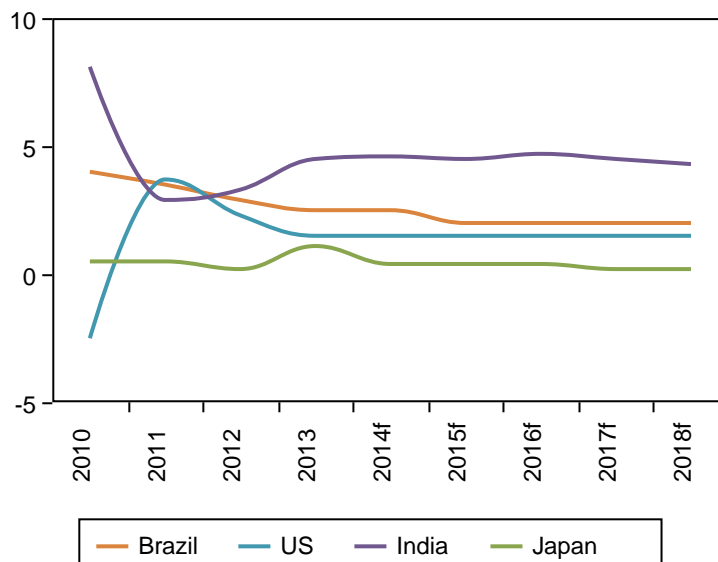


Source: Bloomberg, BMI

We see prices averaging higher in the coming years, at USc120/lb in 2014 and USc130/lb in 2015, after bottoming at USc100/lb in 2013. Global prices that are below production costs could limit reinvestment in the crop, making trees more vulnerable to disease and weather events. Also, farmers in major producers including Brazil, Colombia, Vietnam and Indonesia are likely to consider hoarding in the face of sharply declining profitability.

## Only India To Show Strong Growth

Select Countries - Annual Coffee Consumption (% chg y-o-y)



f = BMI forecast. Sources: BMI, ICO, USDA

### Cotton: More Weakness In 2014

Our view for prices to strengthen and trade towards the US\$86.00/lb level has played out well; we had cautioned that China would encounter difficulty selling its voluminous stocks on the domestic market because of the relative lack of competitiveness of local cotton prices relative to imports. Also, we warned that the cotton market was entering a supply trough before the 2014/15 harvest starts in June 2014. Ultimately, we estimate that the global cotton market will see a deficit of 683,000 480lb bales in 2013/14.

## Still Above Historical Average

Cotton Price Ratio - China 328 Grade In Shanghai/ICE Contract



Source: Bloomberg, BMI

However, from Q214 onwards, we expect cotton prices will start easing again towards support at US\$80.00/lb. Supply is expected to loosen, and we forecast the global market to move back into a 1.6mn bale surplus in 2014/15. Moreover, China will end its market-distorting stockpiling policy for the 2014/15 crop and replace it with targeted subsidies to farmers, especially in the regions it considers the most productive. Chinese cotton imports will ease significantly in the coming year, as the government will release its hefty stocks on the domestic market. As a result, we have revised down our 2014 price forecast to US\$80.00/lb (from US\$89.00/lb previously) and forecast prices to average US\$84.00/lb in 2015.

## More Weakness Ahead

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



Source: Bloomberg, BMI

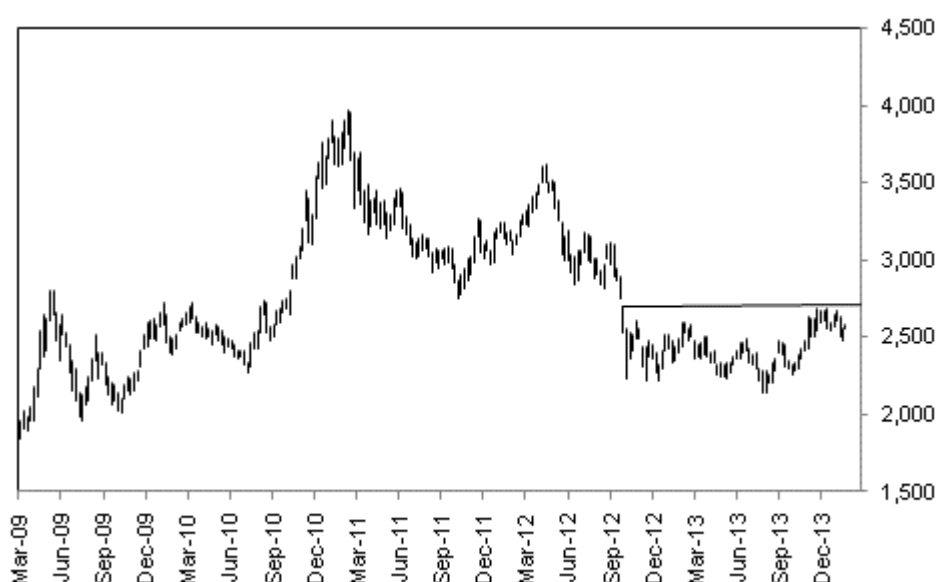
### Palm Oil: Limited Upside To Come

Our view for palm oil prices to range trade between MYR2,500/tonne and MYR2,750/tonne has played out well, and we expect prices to continue trading in this range in the near term. Strength will come from disappointing production growth in Malaysia and Indonesia and resilient import demand, especially from India. India recently announced an increase in its processed palm oil import tax, which is likely to

encourage crude palm oil imports in the near term. Also, our expectation for the rupee to strengthen in the coming months will make imports gradually cheaper.

## Trading Towards Resistance Again

Three-Month MDE Palm Oil (MYR/tonne, weekly)

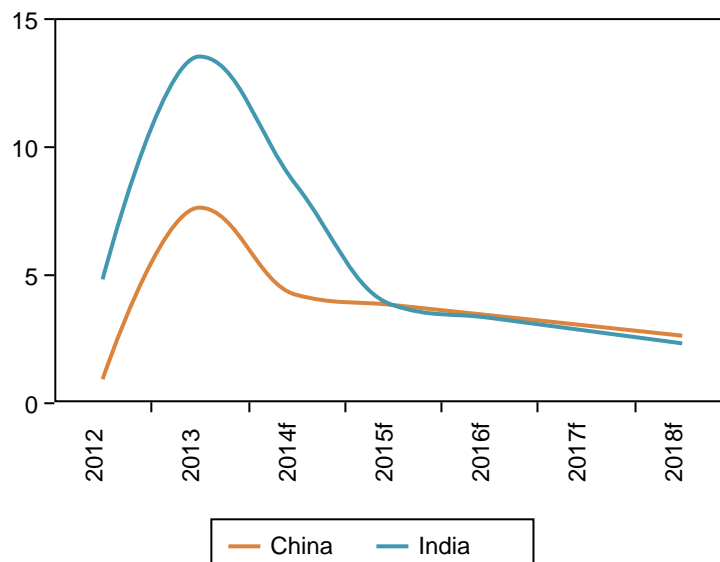


Source: Bloomberg, BMI

We continue to believe prices will rebound in 2014 and average higher for the first time in three years, at MYR2,650/tonne. Prices are likely to continue on that trajectory in 2015 and average MYR2,700/tonne as production expansion continues to slow in Indonesia and Malaysia. Consumption growth will hold steady despite lacklustre macroeconomic performance in key consuming emerging markets. Still, we do not expect more drastic strength in the coming years, as the premium of palm oil over soy oil (a direct substitute, but considered to be of lower quality) has increased significantly over the past year, which will encourage consumption of soy oil at the expense of palm oil in the medium term.

## Demand Growth To Remain Strong

India & China - Palm Oil Consumption Growth (% y-o-y)



f = BMI forecast. Source: USDA, BMI

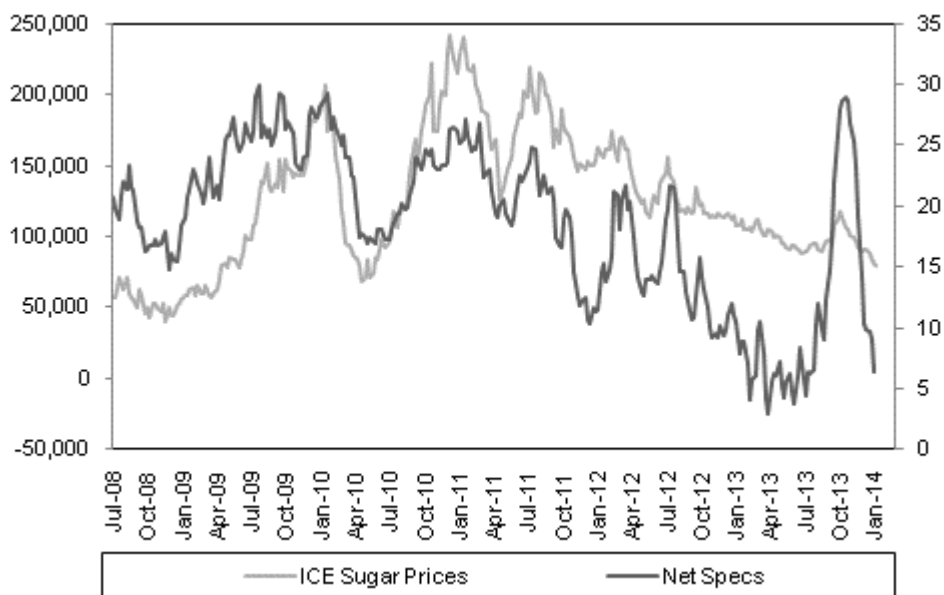
### Sugar: Bottom To Be Found

Our view for prices to trade towards support at US\$15.00/lb has played out well, and we still expect prices to find a bottom around the US\$15.00/lb level. Technicals suggest that sugar prices are bottoming out, with the relative strength index on the weekly chart in oversold territory. Net speculative long positions are also back towards their previous low, indicating that most investors are already bearish on sugar prices and that their position could turn around and support prices in the near term.



## Back Towards Previous Lows

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

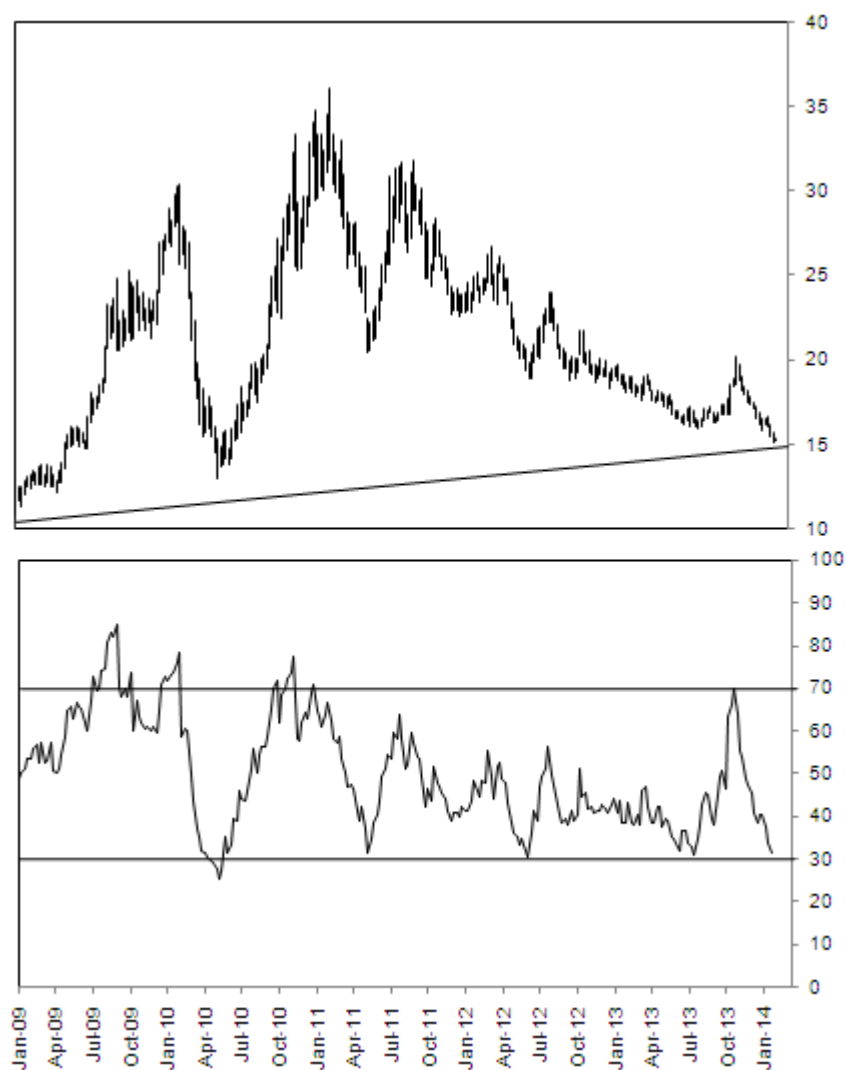


Source: Bloomberg, BMI

We believe prices will remain weak over the near term and trade between USc15.00/lb and USc15.50/lb as the global market is currently well supplied in line with the ongoing Australian, Thai and Indian harvests. Also, Chinese sugar import demand is likely to be weaker in the coming months as the country achieved record stocks. However, prices are unlikely to break below support at USc15.00/lb.

## Close To Bottom

Front-Month ICE Sugar (USc/lb, weekly) & RSI (below)

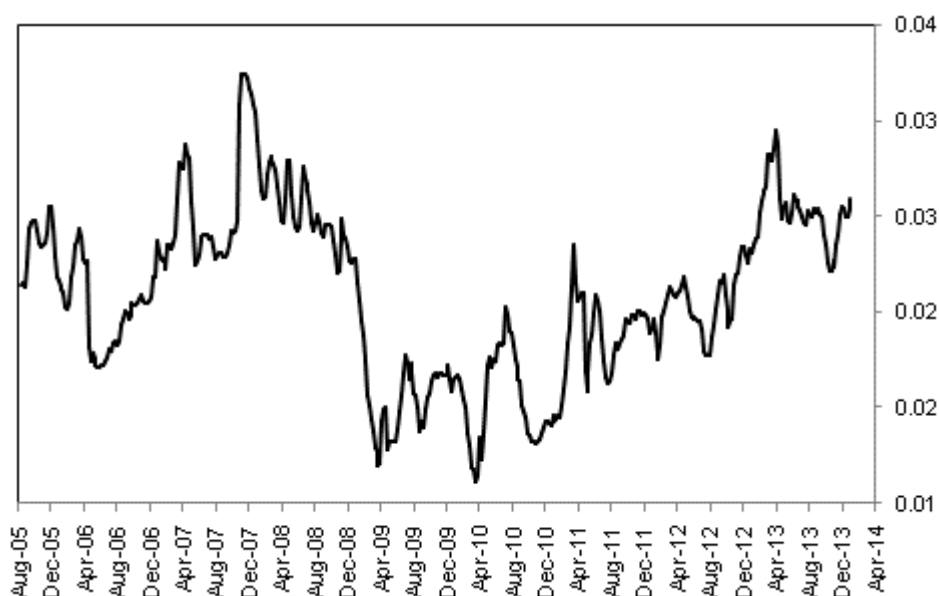


Source: Bloomberg, BMI

Over the medium term, underlying fundamentals will gradually become more supportive. **First**, we believe production will stagnate in large producers such as Brazil and Thailand as low prices discourage investment in the crop. The Brazilian harvest could also be subject to weather risks as moisture levels in cane fields have been reported to be low for the coming 2014/15 season.

## Still High By Historical Standards

### ESALQ Price Ratio - Brazilian Ethanol/Sugar



Source: Bloomberg, BMI

Second, the ethanol/sugar ratio in the country is still largely in favour of ethanol, indicating that Brazilian mills will continue to divert more cane to ethanol than sugar in 2014/15. We forecast prices to recover from H214 onwards, averaging US\$18.00/lb in 2014 and US\$18.50/lb in 2015. We see downside risks to these forecasts considering the current level reached by sugar prices, but we believe the trend of slightly higher prices in the coming years will play out.

**Table: Select Commodities - Performance & BMI Forecasts**

Commodity	Spot Price	Spot Price	YTD (% chg)	1 Year (% chg)	2013 Ave	YTD (ave)	2014 (BMI ave)	2015 (BMI ave)
Barley	202	202	-2.4	-19.2	226	203	225	215
Class 3 Milk	21.18	21.18	13.4	24.6	18.08	19.72	16	15.50
Cocoa (London)	1,711	1,711	-1.1	18.6	1,576	1,730	1,850	2,000
Coffee	116	116	4.5	-22.2	126	118	120	130
Corn	428	428	1.3	-41.3	578	425	425	425
Cotton	88.0	88.0	4.0	10.1	83.4	84.7	80.0	84.0

## Select Commodities - Performance &amp; BMI Forecasts - Continued

Commodity	Spot Price	Spot Price	YTD (% chg)	1 Year (% chg)	2013 Ave	YTD (ave)	2014 (BMI ave)	2015 (BMI ave)
Feeder Cattle	170	170	1.8	17.5	151	169	na	na
Lean Hogs	85.9	85.9	0.5	0.2	89.4	86.1	80	80.0
Live Cattle	142	142	5.3	12.6	126	138	110	110
Palm Oil	2,555	2,555	-2.8	5.9	2,405	2,535	2,650	2,700
Rough Rice	15.49	15.49	15.4	8.2	15.47	15.61	14	13.70
Soy Oil	37.9	37.9	-2.3	-27.7	45.8	37.9	na	na
Soybean	1,284	1,284	-2.2	-11.5	1,407	1,304	1,300	1,250
Soymeal	419	419	-4.2	-0.6	433	432	na	na
Sugar #11	15.16	15.16	-7.6	-16.3	17.47	15.62	18.00	18.50
Wheat	567	567	-6.4	-27.3	684	581	610	625

Note: Performance as of January 22 2014. Source: BMI, Bloomberg

## Table: BMI Commodities Strategy

	Entry Date	Entry Level	Gain/(Loss)	Rationale
<b>AGRICULTURE</b>				
-	-	-	-	-
<b>ENERGY</b>				
-	-	-	-	-
<b>METALS</b>				
Bearish spot silver	13-Nov-13	20.85	4.66%	Continued US economic recovery to erode demand for gold and silver in the West
Bearish Iron Ore (SGX third-month swap)	09-Jan-14	126.25	6.14%	Chinese import growth to slow; supply to improve.

Note: Returns do not take into account roll yield, unless stated otherwise. Source: BMI, Bloomberg

## Monthly Grains Update

- **Grain prices will underperform softs** in the coming quarters, benefiting from ample supply.
- **Corn and soybean will trade sideways** in the near term, close to key support levels.
- **Wheat prices will show more weakness** before finding a base in the US\$530-550/bushel area.
- **Rice prices will remain supported over the short term**, but we expect prices to ultimately average lower in 2014 owing to ample global supply.

### **Corn: Remaining Low**

We believe corn prices will trade sideways to slightly higher in the coming months but remain low relative to recent years, as the global market remains very well supplied. Even though we expect a decline in production from major southern hemisphere producers Brazil and Argentina in 2013/14, the US harvest has contributed to the 35mn tonne surplus of the global corn market for the ongoing 2013/14 season, one of the largest surpluses in decades. Looking at the 2014/15 season, we forecast a 2.6% year-on-year decline in US corn production in 2014/15, as plantings will most likely fall year-on-year. However, corn consumption growth will be subdued given the lacklustre prospects for the livestock sector this year and a fall in ethanol production.

## Stable For Now

Front-Month CBOT Corn, US\$/bushel (weekly chart) & RSI (below)



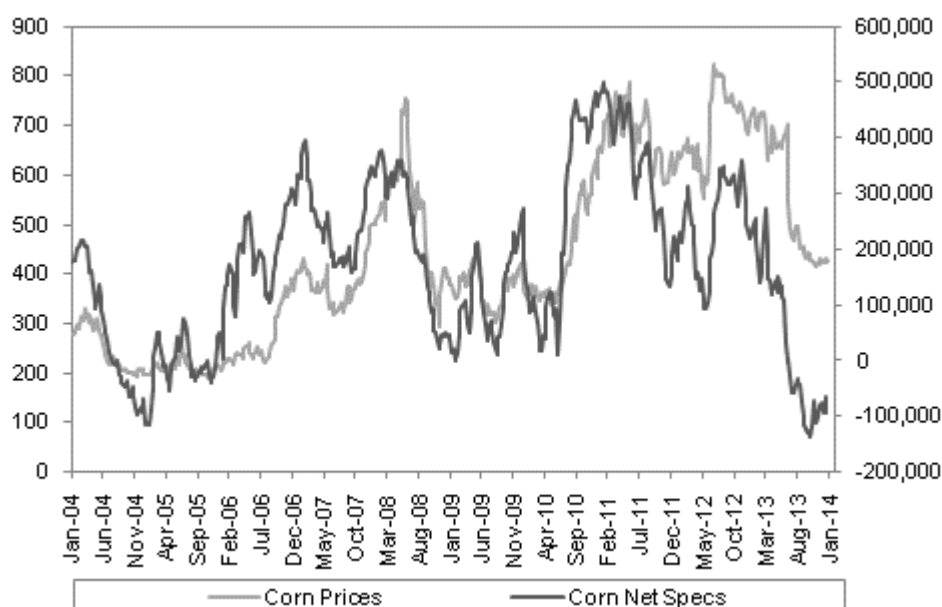
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Sources: BMI, Bloomberg

Ample supply and comparatively mild demand growth will help corn prices average close to spot levels in 2014 and 2015 (at US\$425/bushel), the lowest level in three years on an annual average basis.

## In Negative Territory

Front-Month CBOT Corn (USc/bushel, LHS) & Speculative Net Long Positions (RHS)



Source: Bloomberg

### Rice: Weakness In H214

A poor 2013/14 US rice crop, combined with a worsening supply outlook in Asia, will keep CBOT prices supported over the short term. Production prospects in various Asian countries, including Thailand, India and China, are deteriorating as a result of inclement weather. We believe prices will eventually ease over the course of 2014 and average lower during the year as supply rebounds following 2013/14's disappointing harvest. After following an upward trend for the past two years, rice prices are losing steam and have stagnated since November 2013. We believe rice will head significantly lower in the second half of 2014 and in the process break key multi-year support at US\$15.00/cwt.

## Supported For Now

Front-Month CBOT Rough Rice, US\$/cwt (weekly chart)



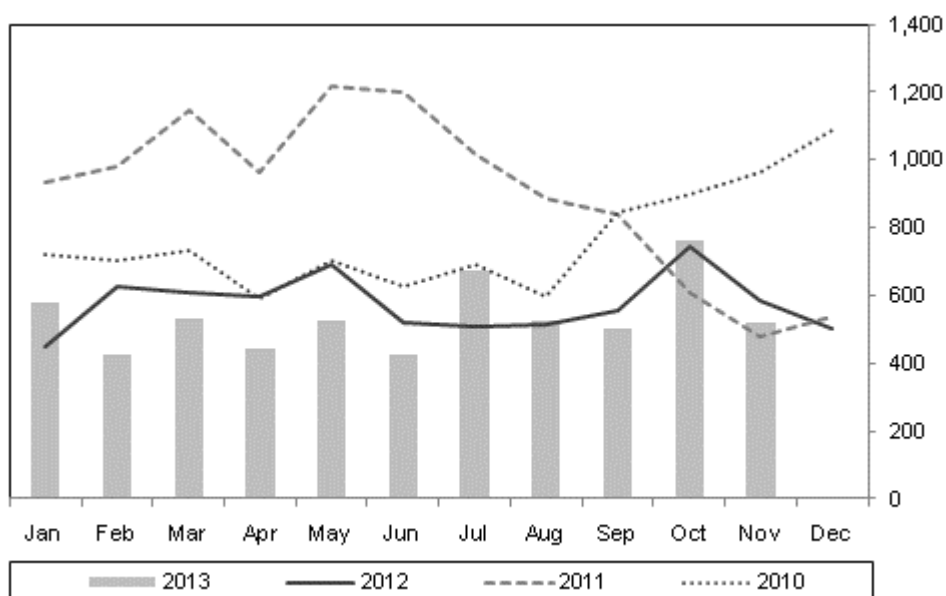
Source: BMI, Bloomberg

Export supply from Thailand will recover in the coming quarters, as Thai export prices have tumbled in recent months and are now at a similar level to competitors. Overall, we forecast the global surplus to improve to 5.8mn tonnes in 2014/15, compared with 3.8mn tonnes in 2013/14. We see rice prices averaging US\$14.00/cwt in 2014 and US\$13.80/cwt in 2015.



## Pickup Imminent

Thailand - Rice Exports ('000 tonnes)



Source: BMI, Thai Rice Exporters Association

### Soybean: Trading Sideways

We believe soybean prices will trade around current support coming at US\$1300/bushel in the near term, before heading lower at the start of the 2014/15 US harvest in September. Although Brazil and Argentina will start exporting in the coming months, we still see downside risks to Brazilian export potential, as the country has historically faced delays and bottlenecks when exporting bumper crops. Moreover, although China officially confirmed in January that it will phase out its soybean stockpiling policy, we believe this will have a limited impact on Chinese soybean imports given the already large reliance on imports to meet domestic demand.

## Line In The Sand

Front-Month CBOT Soybean, US\$/bushel (weekly chart)



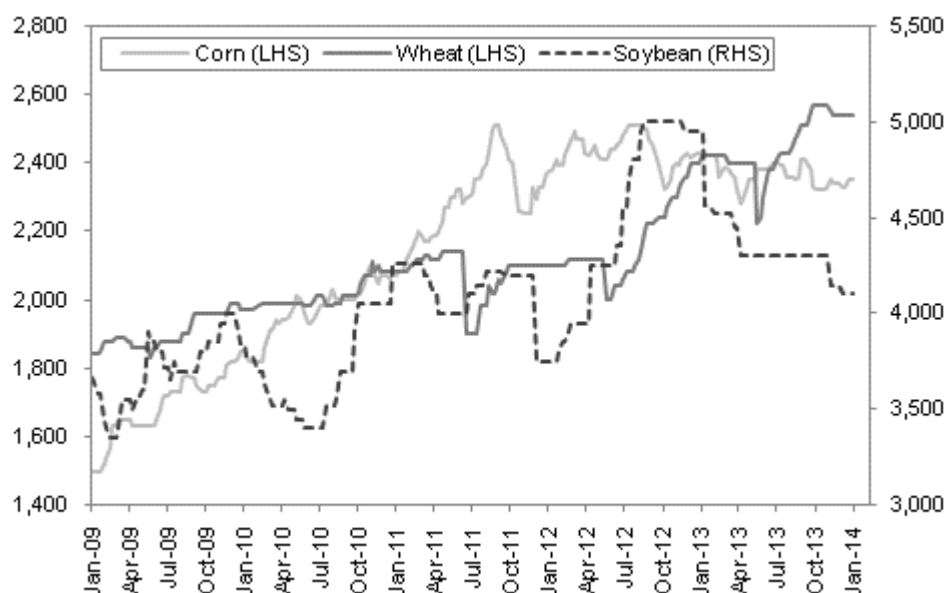
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Source: BMI, Bloomberg

We maintain our 2014 soybean price forecast at US\$1,300/bushel but we have revised down our price forecasts for 2015 and 2016, to US\$1,250/bushel. We expect another season of strong production growth in the US in 2014/15, following a record harvest in Latin America in 2013/14.

## Wheat Prices Bucking The Trend

China - N.2 Corn Spot Price In Dalian, N.3 Wheat Spot Price In Henan & N.2 Soybean Spot Price In Dalian (CNY/tonne)



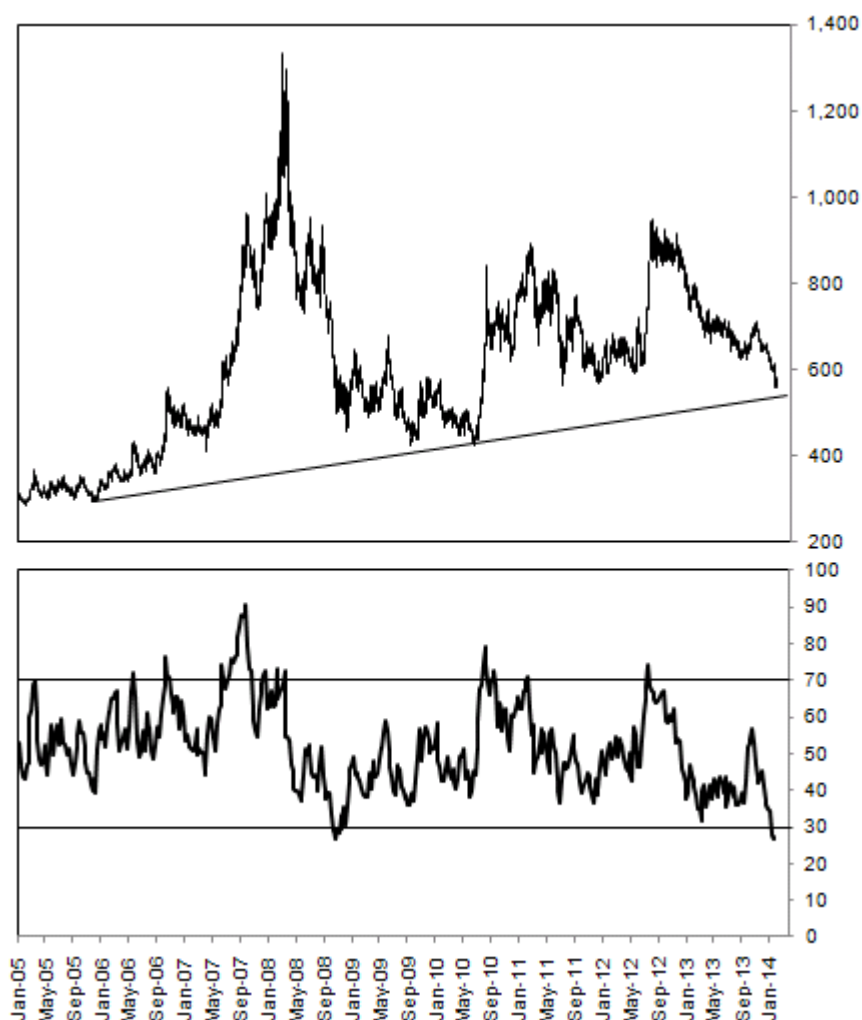
Source: BMI, Bloomberg

### Wheat: Finding A Base In 2014

We expect wheat prices to show further weakness in the near term before finding a base around the US\$530-550/bushel area. The 2013/14 production and export outlook for the Black Sea region has improved greatly in recent months. Indeed, exports picked up at the end of 2013, when the global market usually records a seasonal trough. The good supply prospects for 2014/15 will also put pressure on wheat prices in the coming months; plantings in the northern hemisphere look promising given the current relative profitability of wheat. Finally, we believe import demand growth in 2014/15 could be more subdued than in 2013/14. As a result, we have revised down our 2014 wheat forecast to US\$610/bushel (from US\$650/bushel previously).

## Heading To Support

Front-Month CBOT Wheat, US\$/bushel (weekly chart) & RSI (below)



Source: BMI, Bloomberg

The global market will tighten slightly towards the end of 2014, as low prices at the time of plantings in the southern hemisphere (May-July in Australia) will deter area expansion. This will help prices recover moderately and average higher in 2015, at US\$625/bushel.

Table: Select Commodities - Performance &amp; BMI Forecasts

Commodity	Unit	Spot Price	YTD (% chg)	1 Year (% chg)	2013 Ave	YTD (ave)	2014 (BMI ave)	2015 (BMI ave)
Barley	EUR/tonne	202	-2.4	-19.2	226	203	225	215
Class 3 Milk	US\$/cwt	21.18	13.4	24.6	18.08	19.72	16.00	15.50
Cocoa (London)	GBP/tonne	1,717	-0.8	15.8	1,576	1,731	1,850	2,000
Coffee	USc/lb	116	5.0	-25.7	126	118	120	130
Corn	USc/bushel	427	1.2	-41.4	578	425	425	425
Cotton	USc/lb	87.94	3.9	10.0	83.36	84.65	80.00	84.00
Feeder Cattle	USc/lb	170	1.8	17.5	151	169	na	na
Lean Hogs	USc/lb	85.9	0.5	0.2	89.4	86.1	80.0	80.0
Live Cattle	USc/lb	142	5.4	12.7	126	138	110	110
Palm Oil	MYR/tonne	2,571	-2.2	6.6	2,405	2,536	2,650	2,700
Rough Rice	US\$/cwt	15.49	15.4	8.2	15.47	15.61	14.00	13.70
Soy Oil	USc/lb	38.2	-1.6	-27.1	45.8	37.9	na	na
Soybean	USc/bushel	1,284	-2.2	-11.5	1,407	1,304	1,300	1,250
Soymeal	US\$/tonne	418	-4.5	-0.9	433	432	na	na
Sugar #11	USc/lb	15.23	-7.2	-15.9	17.47	15.62	18.00	18.50
Wheat	USc/bushel	566	-6.6	-27.4	684	581	610	625

Notes: Prices As Of January 22, 2014; na = not available. Sources: BMI, Bloomberg

Table: BMI Commodities Strategy

	Entry Date	Entry Level	Gain/(Loss)	Rationale
<b>AGRICULTURE</b>				
-	-	-	-	-
<b>ENERGY</b>				
-	-	-	-	-
<b>METALS</b>				
Bearish spot silver	13-Nov-13	20.85	3.72%	Continued US economic recovery to erode demand for gold & silver in the West
Bearish Iron Ore (SGX third-month swap)	09-Jan-14	126.25	4.16%	Chinese import growth to slow, supply to improve.

*Note: Returns do not take into account roll yield, unless stated otherwise. Source: BMI, Bloomberg*

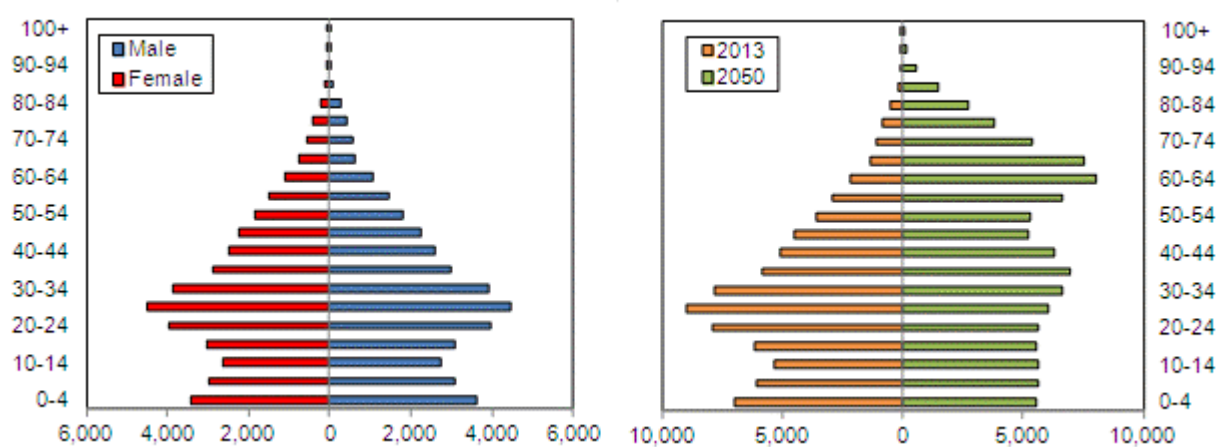
## Demographic Forecast

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 key to understanding issues ranging from future population trends to productivity growth and government spending requirements.

The accompanying charts detail Iran's population pyramid for 2013, the change in the structure of the population between 2013 and 2050 and the total population between 1990 and 2050, as well as life expectancy. The tables show key datapoints from all of these charts, in addition to important metrics including the dependency ratio and the urban/rural split.

### Population Pyramid

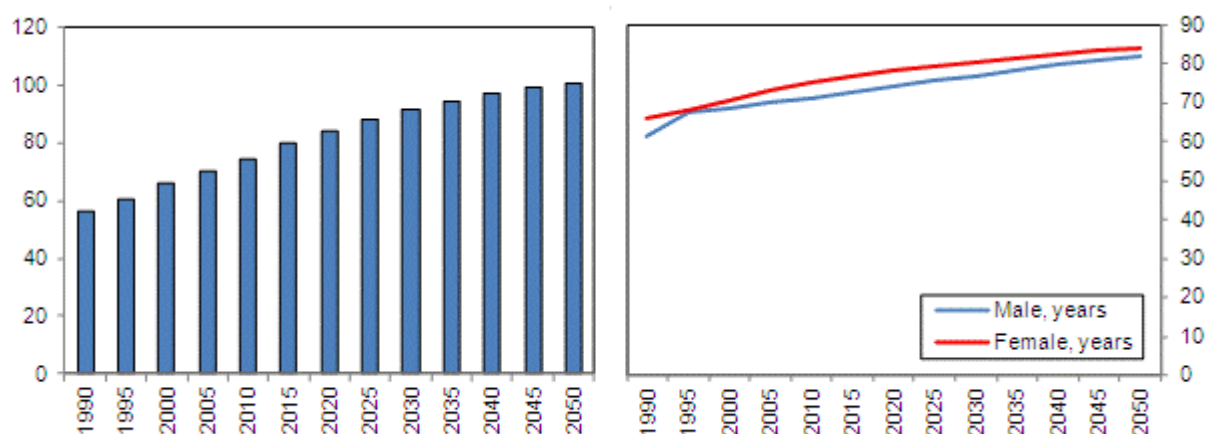
2013 (LHS) And 2013 Versus 2050 (RHS)



Source: World Bank, UN, BMI

## Population Indicators

Population (mn, LHS) And Life Expectancy (years, RHS), 1990-2050



Source: World Bank, UN, BMI

Table: Iran's Population By Age Group, 1990-2020 ('000)

	1990	1995	2000	2005	2010	2013e	2015f	2020f
Total	56,362	60,468	65,911	70,152	74,462	77,447	79,476	84,149
0-4 years	9,313	7,568	6,317	5,484	6,556	7,034	7,146	6,751
5-9 years	8,906	8,983	7,552	5,477	5,416	6,046	6,507	7,117
10-14 years	7,325	8,837	8,981	7,155	5,613	5,357	5,488	6,494
15-19 years	5,823	6,885	8,801	9,248	7,216	6,124	5,644	5,467
20-24 years	4,698	5,222	6,932	9,143	8,994	7,904	7,068	5,596
25-29 years	4,054	4,429	5,316	6,859	8,705	8,978	8,727	6,998
30-34 years	3,536	3,901	4,443	5,202	6,521	7,789	8,485	8,650
35-39 years	3,031	3,393	3,886	4,693	5,210	5,858	6,497	8,410
40-44 years	2,123	2,888	3,372	4,113	4,833	5,057	5,263	6,431
45-49 years	1,621	1,956	2,857	3,421	4,033	4,495	4,758	5,193
50-54 years	1,527	1,469	1,930	2,801	3,245	3,605	3,896	4,665
55-59 years	1,393	1,396	1,431	1,767	2,638	2,933	3,110	3,788
60-64 years	1,140	1,265	1,322	1,336	1,640	2,159	2,500	2,986
65-69 years	899	995	1,146	1,258	1,279	1,379	1,551	2,340
70-74 years	507	717	826	1,056	1,130	1,129	1,143	1,369



**Iran's Population By Age Group, 1990-2020 ('000) - Continued**

	1990	1995	2000	2005	2010	2013e	2015f	2020f
75-79 years	269	344	509	654	803	858	877	902
80-84 years	136	147	203	347	413	482	528	598
85-89 years	49	56	66	113	173	198	217	290
90-94 years	11	14	17	22	39	54	64	85
95-99 years	2	2	3	3	5	7	9	16
100+ years	0	0	0	0	0	1	1	1

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

**Table: Iran's Population By Age Group, 1990-2020 (% of total)**

	1990	1995	2000	2005	2010	2013e	2015f	2020f
0-4 years	16.52	12.52	9.58	7.82	8.80	9.08	8.99	8.02
5-9 years	15.80	14.86	11.46	7.81	7.27	7.81	8.19	8.46
10-14 years	13.00	14.61	13.63	10.20	7.54	6.92	6.90	7.72
15-19 years	10.33	11.39	13.35	13.18	9.69	7.91	7.10	6.50
20-24 years	8.34	8.64	10.52	13.03	12.08	10.21	8.89	6.65
25-29 years	7.19	7.32	8.06	9.78	11.69	11.59	10.98	8.32
30-34 years	6.27	6.45	6.74	7.42	8.76	10.06	10.68	10.28
35-39 years	5.38	5.61	5.90	6.69	7.00	7.56	8.18	9.99
40-44 years	3.77	4.78	5.12	5.86	6.49	6.53	6.62	7.64
45-49 years	2.88	3.23	4.33	4.88	5.42	5.80	5.99	6.17
50-54 years	2.71	2.43	2.93	3.99	4.36	4.65	4.90	5.54
55-59 years	2.47	2.31	2.17	2.52	3.54	3.79	3.91	4.50
60-64 years	2.02	2.09	2.01	1.90	2.20	2.79	3.15	3.55
65-69 years	1.59	1.65	1.74	1.79	1.72	1.78	1.95	2.78
70-74 years	0.90	1.19	1.25	1.50	1.52	1.46	1.44	1.63
75-79 years	0.48	0.57	0.77	0.93	1.08	1.11	1.10	1.07
80-84 years	0.24	0.24	0.31	0.50	0.55	0.62	0.66	0.71
85-89 years	0.09	0.09	0.10	0.16	0.23	0.26	0.27	0.34
90-94 years	0.02	0.02	0.03	0.03	0.05	0.07	0.08	0.10
95-99 years	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02

**Iran's Population By Age Group, 1990-2020 (% of total) - Continued**

	1990	1995	2000	2005	2010	2013e	2015f	2020f
100+ years	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

**Table: Iran's Key Population Ratios, 1990-2020**

	1990	1995	2000	2005	2010	2013e	2015f	2020f
Dependent ratio, % of total working age	94.7	84.3	63.6	44.4	40.4	41.1	42.1	44.6
Dependent population, total, '000	27,416	27,664	25,621	21,569	21,427	22,544	23,530	25,965
Active population, % of total	51.4	54.3	61.1	69.3	71.2	70.9	70.4	69.1
Active population, total, '000	28,946	32,805	40,290	48,583	53,035	54,903	55,946	58,184
Youth population, % of total working age	88.2	77.4	56.7	37.3	33.2	33.6	34.2	35.0
Youth population, total, '000	25,543	25,388	22,850	18,116	17,586	18,436	19,141	20,363
Pensionable population, % of total working age	6.5	6.9	6.9	7.1	7.2	7.5	7.8	9.6
Pensionable population, total, '000	1,872	2,276	2,770	3,454	3,842	4,108	4,390	5,602

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

**Table: Iran's Rural And Urban Population, 1990-2020**

	1990	1995	2000	2005	2010	2013e	2015f	2020f
Urban population, % of total	56.3	60.2	64.0	67.6	68.9	69.4	69.7	70.6
Rural population, % of total	43.7	39.8	36.0	32.4	31.1	30.6	30.3	29.4
Urban population, total, '000	31,749	36,424	42,211	47,394	51,333	53,726	55,362	59,374
Rural population, total, '000	24,613	24,045	23,700	22,759	23,129	23,722	24,114	24,774

e/f = BMI estimate/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, BMI uses 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. BMI selects 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

BMI uses the selected best model to perform forecasting.

It must be remembered that human intervention plays a necessary and desirable role in all of BMI's industry forecasting. Experience, expertise and knowledge of industry data and trends ensure that 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:

- $\beta$  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  $\beta_1$  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  $\beta_2$ .

- 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  $\beta_3$  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  $\beta_4$  is expected.
- Government expenditure typically causes total disposable incomes to rise. So the sign of  $\beta_5$  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  $\beta_6$  is expected.
- $\varepsilon$  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 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.

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