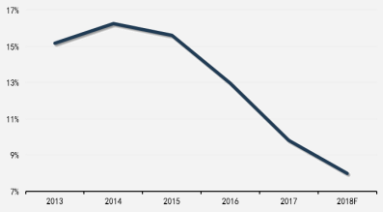
前海期貨 QIANHAI FUTURES

Sector ☑ Vegetable Oil

Stocks-to-use ratio of vegetable oil in China drops：



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Vegetable Oil

Demand-supply structure tightens

Abstract

- EI Nino climate reduced the output of vegetable oil and lowered the stocks-to-use ratio. Vegetable oil in China has been in the process of destocking, thus the inventory is declining.
- Reduction of soybean supply may shrink the output of soybean oil in 2018. Official reserve of rapeseed oil has declined 90% after destocking in past years. The palm oil output also grew slower and per unit yield may decrease caused by Malaysian palm trees' ageing. In sum, the supply of vegetable oil will be under expectation.
- Since the supply is under expectation, buying on the dips is recommended. Meanwhile, longing soybean oil-to-meal ratio and soybean oil basis shall be considered.

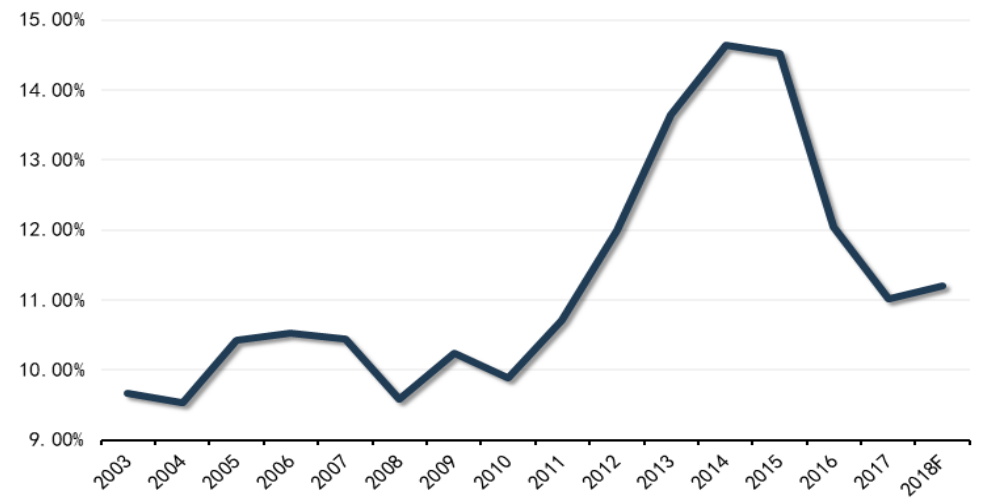
- Demand-supply of vegetable oil becomes tight
- Unoptimistic prospect of soybean oil supply
- Continuous destocking of rapeseed oil
- Declined yield per acre may drag down the supply of palm oil
- Investment strategy recommendation

I. Demand-supply of vegetable oil becomes tight

A. Global stocks-to-use ratio of vegetable oil decreased rapidly

Benefitted from the rapid economy growth and the improvement in household consumption in emerging countries, such as China and India, global demand and supply pattern of vegetable oil has been growing steadily. The stocks-to-use ratio of vegetable oil swung between 9% and 15%, with the latest high level of 14.64% in 2014. But later, due to El Nino climate, palm oil production was below market forecasts, driving global supply growth of vegetable oil from 6% in 2014 down to 0% in 2016 sharply. Meanwhile, the global demand growth kept around 3% annually. Therefore, the inventory reduced so quickly that brought the ratio back to low level 11%.

Fig. 1 Global stocks-to-use ratio of vegetable oil



Source：Wind

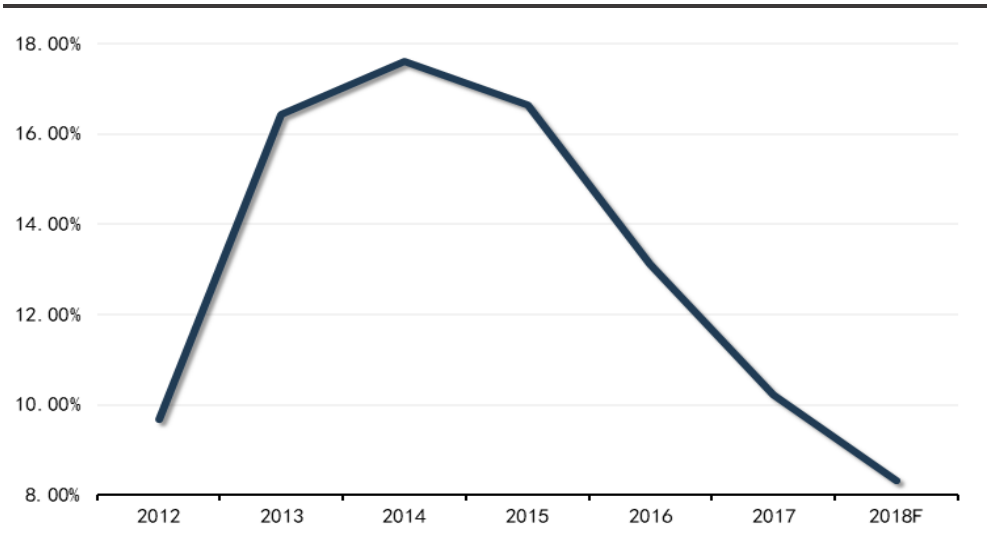
According to USDA's report, the worldwide vegetable oil output is expected to be 198.62 million tons in 2017/18, which will be up by 9.33 million tons or 4.93% YoY. The demand will be 191.51 million tons and up by 7.4 million tons or 4.02% YoY. The carry-over inventory will increase from 20.28 to 21.44 million tons. The stocks-to-use ratio will increase by 0.18% to 11.2%, however, it will be still

at a low level.

B. Vegetable oil inventory in China declines continuously

The vegetable oil in China mainly comes from direct import or is processed by imported raw materials. Palm oil import is one of the most important sources, however, in recent years, imported palm oil's price has been sustainably higher than the local price. At the same time, the import reduced from over 5 million tons in 2012 to below 3.5 million tons in the past two years. What's more, the rapeseed supply has fallen because of the declining planting area, and the official reserve of rapeseed oil has been sold off almost. Although other varieties' output increased slightly, the total supply stayed low. Therefore, domestic vegetable oil supply should be still in the destocking process, further releasing inventory pressure. On the other side, the consumption is expected to increase from 33.61 million tons in 2016/17 to 34.47 million tons in 2017/18, including 17.3 million tons of soybean oil, 7.22 million tons of rapeseed oil and 4.85 million tons of palm oil. Before now, domestic stocks-to-use ratio of vegetable oil sharply declined from 17.61% in 2014 to 10.23% in 2017 and shall keep dropping to 8.32% in 2018.

Fig. 2 Declined Stocks-to-use ratio of vegetable oil in China



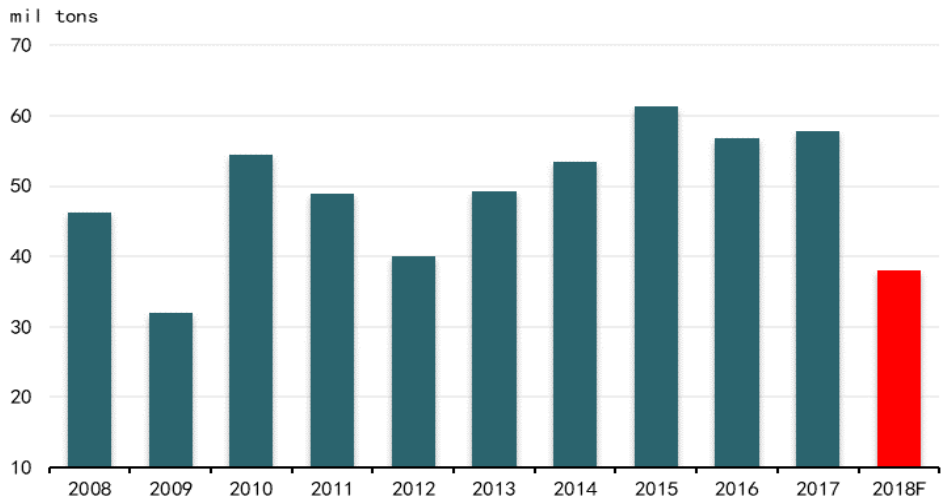
Source：Wind

II. Unoptimistic prospect of soybean oil supply

A. Soybean supply tightens

80% of the world's soybeans were provided by the North and South America and China imported most. Currently, the South American soybean production in 2018 should be predictable. Brazil will overtake the U.S. as the largest soybean producer all over the world, which can produce 117 million tons, up by 2.09% from 114.5 million tons last year. Argentina, which has experienced the most severe hot and dry weather in nearly 30 years, has seen a 31.66% reduction in output, according to the most optimistic forecast. In sum, Argentina's soybean output reduced nearly eight times that of Brazil's, so the South American soybean production has been sharply reduced.

Fig. 3 Slumped soybean output in Argentina



Source：Wind

U.S. soybean production will become the dominant factor affecting global supply in the second half of 2018. At present, soybeans have been successfully seeded, with the latest process reaching 77%, higher than the same period of last year. We believe that, consistent with USDA's forecast, the final sown acreage may reduce 1-2%. Firstly, since 2000, the American soybean planting

area had been relatively stable in the subsequent years after it increased dramatically. In 2017, it rose by 8%. Secondly, from the beginning of 2018, the average price ratios of soybean to corn, wheat, cotton are 2.71, 2.18 and 12.41, lower than 2.74, 2.33 and 13.05 at the same period of last year. Moreover, the total sown area in the U.S. has remained stable, so the higher prices for other crops the greater probability of reduction in the planting size of soybeans. Thirdly, benefitting from a weaker exchange rate, the increased competitiveness of South American soybeans may reduce the willingness of U.S. farmers to grow soybeans.

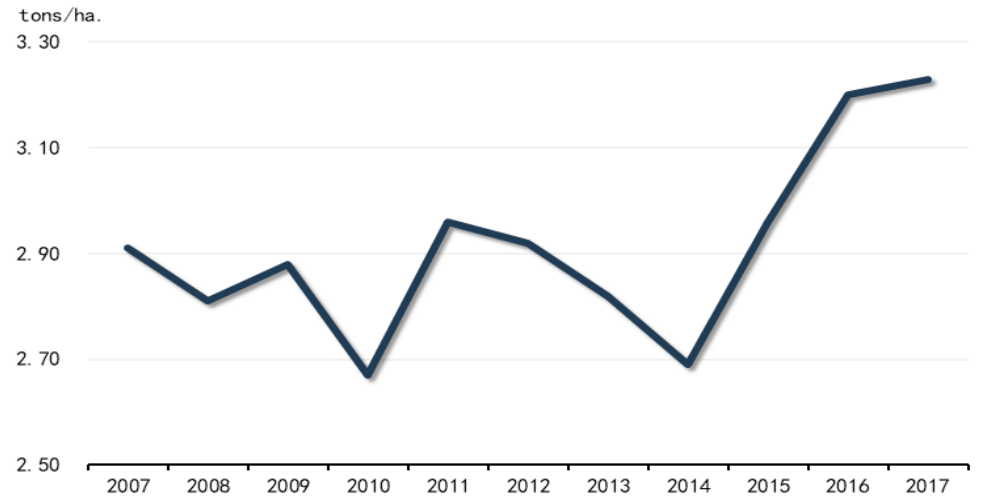
Table 1 Sown acres of U.S. crops

Crop（mil acres）	2014	2015	2016	2017
Corn	90.6	88.0	94.0	90.2
Soybean	83.3	82.7	83.4	90.1
Wheat	56.8	55.0	50.1	46.0
Cotton	11.0	8.6	10.1	12.6
Total crops	257.6	252.0	253.4	252.1

Source：USDA

In addition, the soybean yield prospect is not optimistic, either. In the past three years, per unit yield in the U.S. has grown substantially from 2.69 tons/ha. to 3.23 tons/ha., up by 20%. Moreover, it has exceeded the trend yield for three consecutive years, which means the probability of further promotion is lower. Although the NOII and SOI indices have returned to neutral level, drought area has enlarged over past three weeks. As of May 15th, the region in the U.S. without abnormal droughts or dryness was only 54.36%, greatly lower than the level of 83.42% in the last year. Accordingly, U.S. may face a fall of the yield this year because of the dry weather, and the soybean output will be negatively impacted. As a result, the stocks-to-use ratio may end the 3-year uptrend.

Fig. 4 Soybean yield has improved greatly since 2014



Source：Wind

Domestically speaking, China has continued to call for the reduction of corn planting in the "Sickle Bay" to replant crops such as soybeans and rice, and increased subsidies for soybean cultivation. The soybean planting area in 2017 increased significantly and the total production reached 14.94 million tons, an increase of 15.46% YoY. In 2018, the main producing areas will continue to increase subsidies, such as Heilongjiang's CNY150 for crop rotation and fallow and CNY200 for planting, CNY350 in total. It is expected that farmers will continue to increase their willingness to plant. According to the forecast of the National Grain and Oil Confidence Center, domestic soybean area will increase to 8.47 million hectares and production will increase to 15.8 million tons in 2018/19. However, domestic soybeans only account for 14% and are mainly used for food, so the increase of output will impose limited impact on the supply of soybean oil.

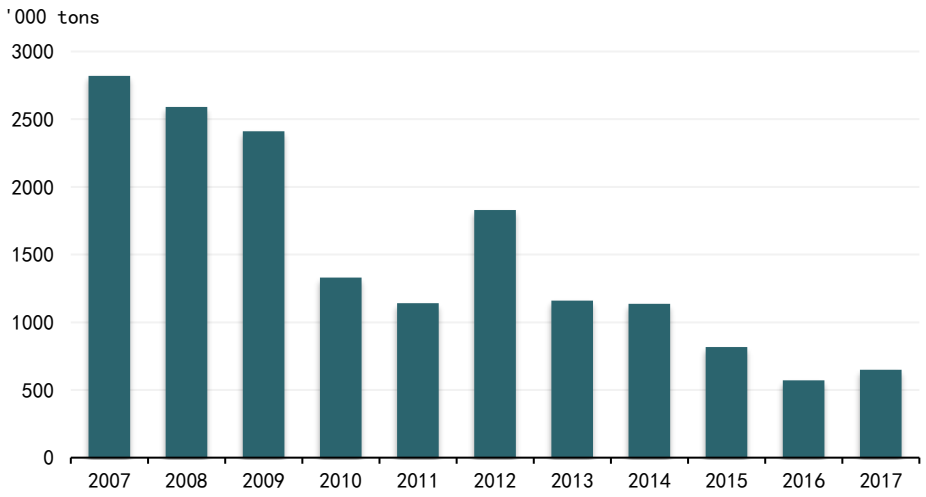
B. Demand-supply structure of soybean oil will become better

The domestic supply of soybean oil mainly comes from overseas imports and soybean crushing. However, because of the increase in domestic crushing capacity, soybean oil imports continued to decline in the past decade, down

from 2.82 million tons in 2007 to 650,000 tons in 2017 and have remained low since 2018. Therefore, soybean crushing has become the main source. Because of the lower abroad planting cost, the soybeans for crushing mainly come from imports.

However, looking forward to soybean imports in 2018, the United States and Argentina's soybean production is expected to decline in varying degrees. The external supply capacity will decline, and Argentina will shift from the original export to a substantial import. Although the sales volume of American agricultural products to China will increase by 35%-40% this year, soybean exports will be difficult to grow. Firstly, before the trade friction, soybeans have become the main agricultural product exported to China from the United States. The annual trade volume is as high as US$14 billion, and there is limited space for further growth. The growth of agricultural trade in the future will depend more on incremental products such as beef and dairy products. Secondly, the competitiveness between South and North American soybeans is quite similar. However, since April, due to factors such as inflation, the Argentine Peso and Brazilian Real have rapidly devalued by more than 10%, decreasing the competitiveness of American soybeans. With the continuous appreciation of the U.S. dollar, U.S. soybeans will be more difficult to compete with South America's.

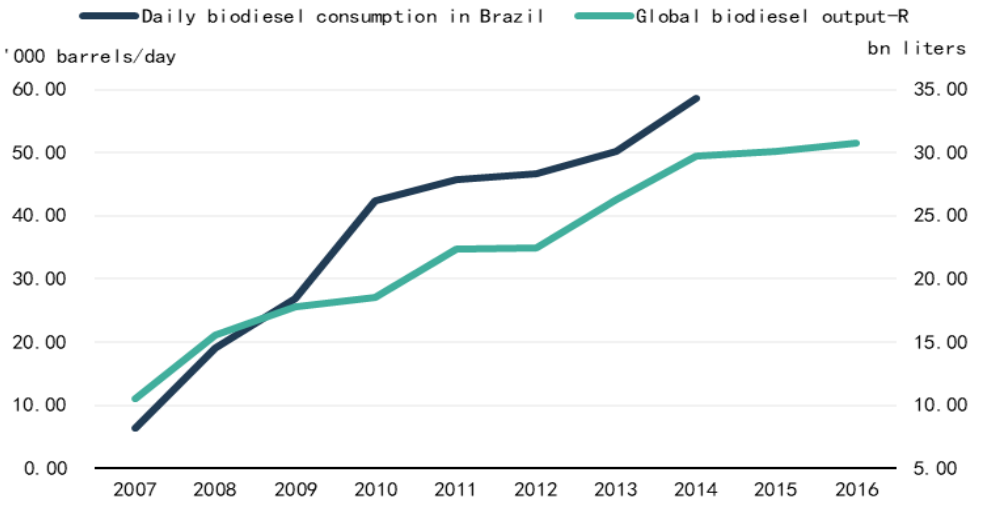
Fig. 5 Constantly decreased soybean oil import in China



Source：Wind

Therefore, the increase in soybean imports of China will mainly depend on Brazil. However, the increase in Brazilian soybean production in 2017/18 is limited, and as international crude oil price climbs to about US$80/barrel once again, the development of the Brazilian biodiesel industry will also squeeze soybean exports. At the policy level, due to the rate of capacity utilization of biofuel processing industry less than 50%, the Brazilian government raised the biofuel blending rate by 2 percentage points to 10% in March 2018, which is one year earlier than planned. Moreover, Brazil also plans to increase the mix proportion to 15% by 2025. At present, the main source of biodiesel is soybean oil, which accounts for about 75%. In 2017, Brazil's biodiesel production reached 4,300 million liters and the consumption of soybean oil was 2.743 million tons, accounting for 33% of the total production. According to this calculation, Brazil's biodiesel production will reach nearly 5,400 million liters in 2018, and it will consume nearly 3.5 million tons soybean oil, which means that new additions of soybean export will be more limited.

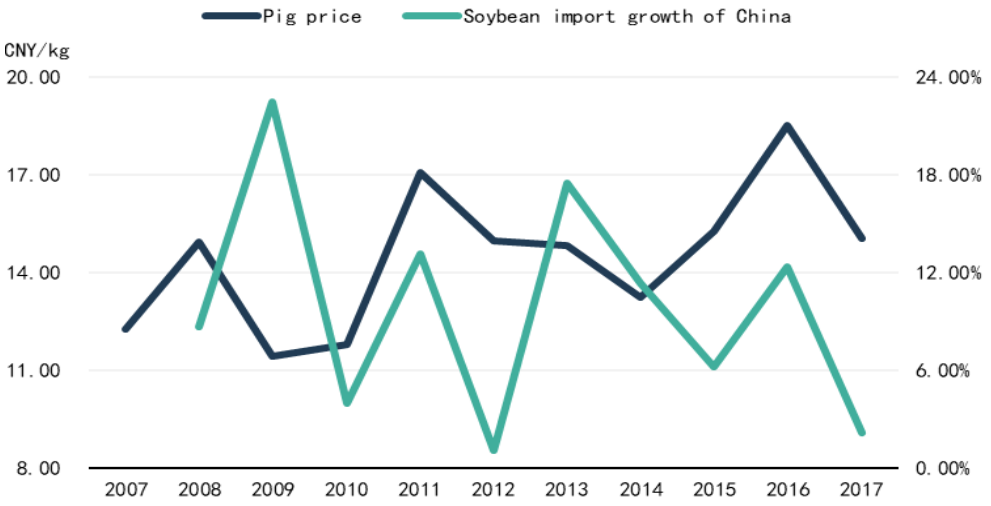
Fig. 6 Rapidly grown biodiesel consumption in Brazil



Source：Wind

In China, the import volume of soybeans is highly correlated with the price of pork. For example, pork price hit new highs in February 2008, September 2011, and June 2016, which led significant improving of soybean imports in 2007/08, 2011/12 and 2016/2017. However, the growth rate of imports in the subsequent years slowed down significantly. Moreover, domestic pig price has continued to weaken in recent years and has reduced to less than 10 CNY/kg recently. Therefore, it is expected that there will be no significant increase in soybean imports this year. From the latest data, as of April this year, domestic soybean imports have actually dropped by 3.88%.

Fig. 7 High pig price drove up the soybean import



Source：Wind

On the other side, domestic pig price has been continuing to decline. There is a CNY 300 loss for breeding an outsourced piglet, therefore pig stocks hardly rise. That may drag down the feed requirements. Moreover, the latest crush margin of imported soybeans has dropped sharply to less than 100 CNY/ton, and the operating rate of oil plants has dropped to the lowest level in the past three years. In summary, soybean imports would hardly increase in 2018, and the enthusiasm of the oil production will remain low. Soybean oil production will not be optimistic.

III. Continuous destocking of rapeseed oil

A. The rapeseed supply becomes tight

Since 2014, global rapeseed production growth has remained in a low level, mainly due to the declined planting area. Although the planting area increased by 5.5% in 2017, which led to a production growth by 4.4%, the planting area growth rate in 2018 will retrace to a low level because of the low planting income. According to the USDA's report in May 2018, the planting area would only increase by 2.32% to 36.59 million acres in the coming year. Considering

the decline of per unite yield, rapeseed production will only increase 1.55% to 75.43 million tons, which will be the fourth lowest level in the past decade. In the main productive country, Canada, Ministry of Agriculture also expects that rapeseed production in 2018/2019 will be only 21.7 million tons, an increase of only 1.82%. It will be a significant slowdown compared to the 6-12% annual growth in the past three years. Due to the steady growth in demand of crushing, global rapeseed stocks-to-use ratio will fall within 9%, 0.22% lower than last year, and substantially below the average level of 11.59% before 2014.

Fig. 8 Slower rapeseed output growth in Canada

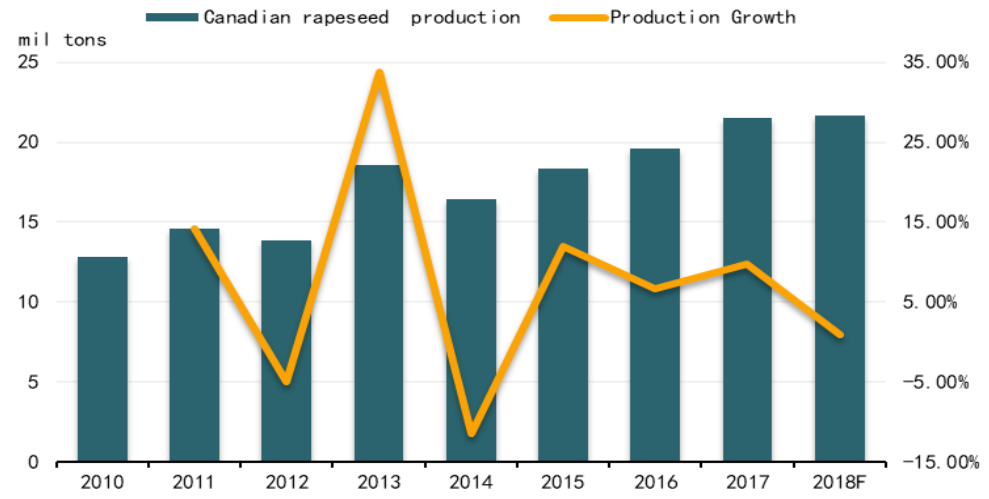


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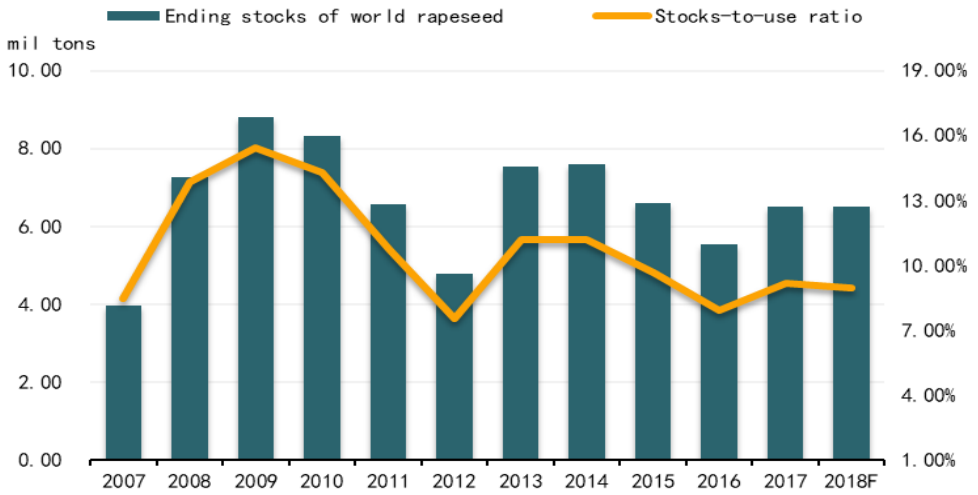
Fig. 9 Stocks-to-use ratio for global rapeseed becomes lower



Source：Wind

At the same time, China's rapeseed output has experienced continuous reduction. Due to the elimination of a temporary policy for purchasing and stockpiling in June 2015 and the low domestic purchase price of rapeseed, the growth rate of rapeseed planting area witnessed sustained decline from 7.59 million hectares in 2014 to 7.2 million hectares in 2017, cutting down above 5% over the past three years. Furthermore, given that the planting income from rapeseed is still in down trend, the farmer's planting intention also weakens, especially in Hubei and Hunan province, so it is expected that the downward trend will be hard to improve.

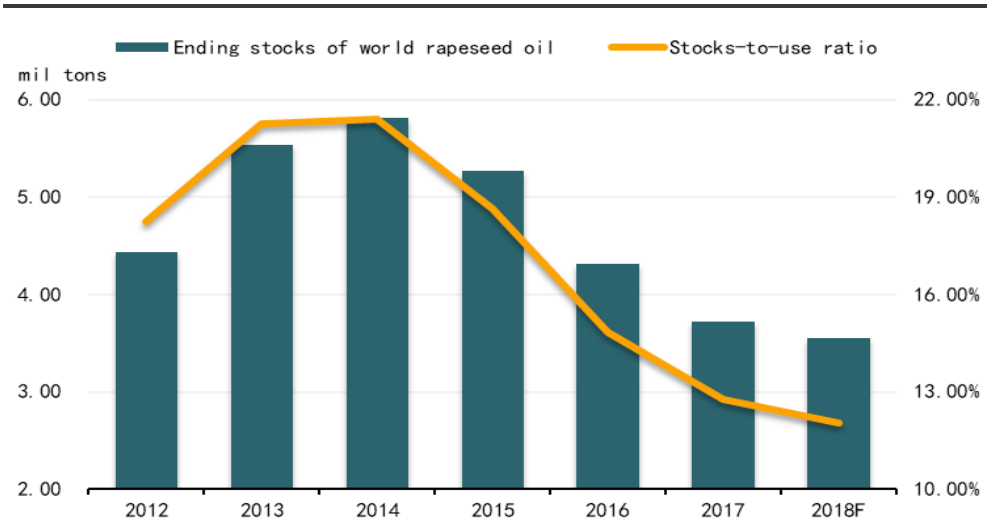
B. Remarkable rapeseed oil destocking

The tight rapeseed supply also brings about a decline in rapeseed oil output. Global production maintained an overall growth rate of over 5% annually by 2013, while it is only 1-2% per year since 2014. Although the ending stocks has augmented to 3.72 million tons in 2017 from one million tons ten years ago, the stocks-to-use ratio has dropped sharply from the top of 21.24% in 2014 to 14.84%. According to the USDA's latest forecast, the rapeseed oil in 2018 will merely increase 2.68% to 29.52 million tons, whereas high-growth demand

inevitably depresses inventory, which is about slide to 3.55 million tons, and the stocks-to-use ratio will go down to 12.77%, further tightening the supply and demand pattern.

The rapeseed oil in China mainly comes from direct import and domestic rapeseed crush. At present, around 90% rapeseed oil is imported from Canada. However, the total import has dropped from 1.26 million tons to 0.7 million tons over the past five years, presenting a continuous decline trend. Meanwhile, the decreased crop yield has brought about a decline of sown area, which drags down domestic rapeseed oil output from 4.87 million tons to 3.2 million tons. Domestic consumption of rapeseed oil has maintained growth, increased by 25% over the past five years. Therefore, rapeseed oil supply largely relies on the consumption of inventory, which leads to a constant falling in ending stocks by almost 9% from above 6 million tons to 0.62 million tons in 2017/18, and the stocks-to-use ratio has also declined from 144% to 11.52%. In conclusion, rapeseed oil destocking has scored remarkable effect.

Fig. 10 Rapidly declined stocks-to-use ratio of rapeseed oil in the world



Source：Wind

Table 2 China's demand-supply structure of rapeseed oil

(mil tons)	Beginning stocks	Output	Import	Consumption
2013/14	4.30	4.87	1.26	4.27
2014/15	6.16	3.98	0.63	4.50
2015/16	6.27	3.93	0.85	5.95
2016/17	5.10	3.12	0.71	7.00
2017/18	1.93	3.33	0.74	5.38

Source：Bric Group

It's worth pointing out that the decreased rapeseed oil state reserve will further tighten the supply. China had sold off 210 thousand tons rapeseed oil reserve in January, with another 900 thousand tons directionally sold to Sino Grain Reserves Corporation (SINOGRAIN), so the remained reserve is only 135.6 thousand tons. Due to the scarcity of reserved rapeseed oil supply, SINOGRAIN won't be in hurry to sell the oil, and it is even more likely that the oil will be priced out, thus the market impact is expected to be lower than the past. Considering the limited remaining reserve, the ability of the country's oil regulating over the market will gradually weaken, the market demand pattern of rapeseed oil will become more significant in future.

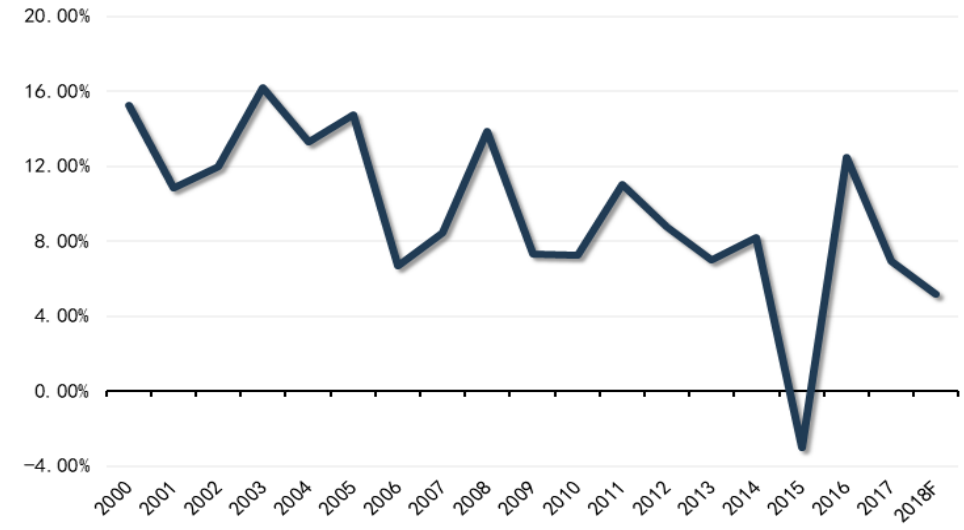
However, the rapeseed supply has been still in downtrend since this year. In 1Q18, the rapeseed import had decreased 21.13% YoY to 985.4 thousand tons, and the import in 2Q18 is forecasted to be within normal range, so the total import in 1H18 is still expected to fall above 20%, which may drag down the crush in coastal oil plants and tighten the supply of rapeseed oil. Nowadays, the stocks of rapeseed oil present a downward trend. According to the data of Cofeed, national rapeseed oil inventory in ports decreased 29% to around 300 thousand tons in the 21st week. Meanwhile, the oil plant only remains approximately 100 thousand rapeseed oil stocks with 45% decrease. Therefore, the supply situation of rapeseed oil seems unoptimistic.

IV. Declined yield per acre may drag down the supply of palm oil

Since 2000, the average annual growth rate of global palm oil production and consumption has been in the range of 6-6.5%, with the production of Indonesia and Malaysia accounting for about 85% of the world's total production. Although the USDA's latest report predicts that global palm oil output will increase by 4.45 million tons to 69.72 million tons in the coming year and the stocks-to-use ratio will upgrade from 14.7% to 16.44%, the overall supply shows an easing pattern. However, regarding specific main producing countries such as Indonesia and Malaysia, the growth rate of Indonesia production has shown signs of slowing down, and Malaysia's production may be below the expectation due to the yield drop.

The palm oil production of Indonesia has accounted for 55% of the world's share. Moreover, since Indonesia's palm tree sown area continues to expand with relatively young age of trees, coupled with sound precipitation last year, based on historical data forecast that production usually rises three quarters after the precipitation, the Indonesian palm oil production has a high probability of maintaining a high growth rate this year. The latest forecast shows that palm oil production will grow by 6.94% to 38.5 million tons. However, it is worth pointing out that although the growth rate remains at a high level, it has been significantly lower than the average annual growth rate of 8.14% in the previous ten years, and even lower than the 12.5% growth rate in the previous year, showing a trend of slower growth.

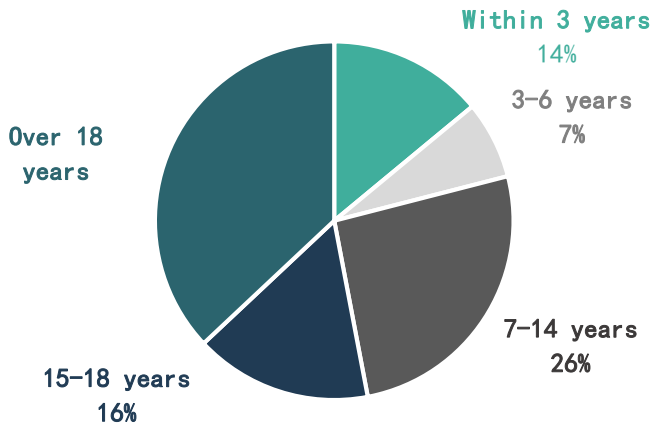
Fig. 11 Slower grown palm oil output in Indonesia



Source：Wind

In Malaysia, the growth rate of palm trees' sown area has dropped from the previous 6% to about 3%. Furthermore, the yield per acre failed presenting the feature of booming season due to the ageing trees, showing a worrisome production prospect. Specifically speaking, the palm tree will begin seeing output growth recession at the age of 15-18 and be phased out from the age of 18. According to the Wilmar, the proportion of palm trees aged above 15 in declined stage and the palm trees aged above 18 in phased out period had reached 52% in 2015, and the proportion would continue to increase over time. Based on the planting time, since the area of palm trees in Malaysia had expanded rapidly before 1999, the age of the group of trees has already entered the phase-out period, that is, the period of output recession, which can drag down the growth of Malaysian palm oil.

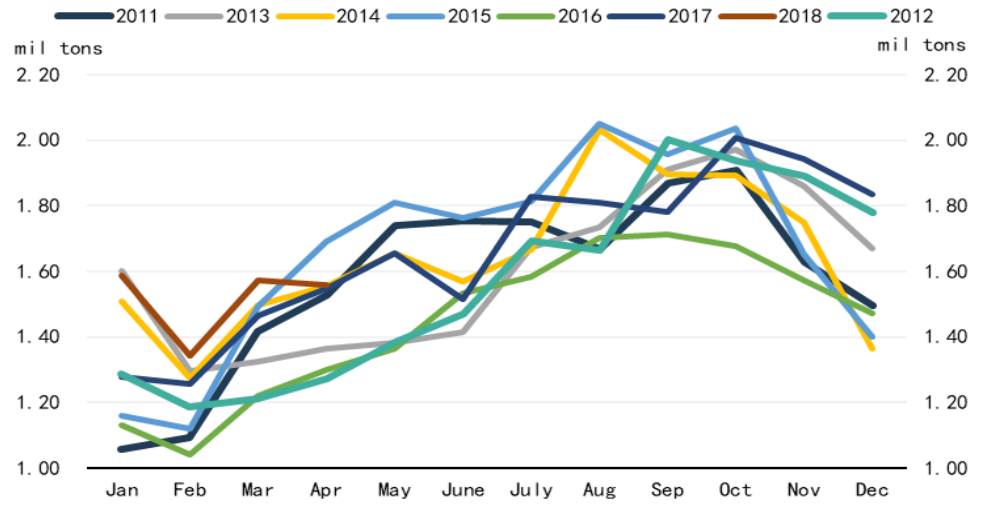
Fig. 12 Palm tree age mix in Malaysia



Source：Wilmar

At present, Malaysian palm oil production has begun showing anomalous growth from April to May. According to the historical data, Malay palm oil production seasonally increases from March to September or October every year. Moreover, since Malaysia's precipitation in most of 2017 was higher than the average of previous 5 years, the yield per acre and the total output should perform better in 2018. However, according to the MPOB, Malaysia’s palm oil production in April was only 1.5583 million tons, which was a decrease of 1.0% MoM, breaking the year-on-year increase pattern in 2011-2017 over the same period, and the yield was also slightly lower than the 1.4 tons/ha. in March. Meanwhile, since the export and consumption surpassed the output, Malaysian palm oil ending stocks have fallen by 6.4% MoM to 2.17 million tons at the end of April, the lowest since September last year. In the first half of May, the yield of Malay palm oil continued to decline by 6.03%, production fell by 9.45%, and the oil output rate decreased by 0.65%, continuing a declining trend.

Fig. 13 Monthly palm oil output in Malaysia



Source：Wind

India will be the major impact on demand this year. The import accounts for more than 60% of Indian oil consumption. In 2016/17, the total import of oil and fat was 13.25 million tons, and the palm oil import was 9.4 million tons, accounting for 71% of the total. To protect domestic farmers, India has raised the import tax rate for oil for four consecutive times since the second half of 2016. The latest tax raise is in March, and India has raised import duties on crude palm oil and refined palm oil to a 10-year highest level, that is, the rate on CPO increased from 30% to 44% and the rate on refined palm oil increased from 40% to 54%, both higher than other vegetable oils. However, Indian oil consumption per capita in 2015 was only 15.3 kg, far lower than the world average, and its per capita GDP is only about US$1,000. Given that there is a significant correlation between GDP and the consumption per capita of fats and oils at 30 kg, it can be expected that India's oil and fat consumption will still be in a long-term growing stage. Therefore, Indian palm oil import increase may be affected by the higher duty rates but the import will remain stable.

In addition, biodiesel demand for palm oil may boom again given that international crude oil price has returned to around US$80 per barrel. In 2015,

Indonesia has established a fund to support the development of the domestic biodiesel industry. The fund uses palm oil export tariff as a source of funds to support biodiesel consumption by remedying the difference between biodiesel and conventional diesel. According to the Indonesian government's forecast, the biodiesel output will rise from 2.95 million tons to 3.5 million tons in 2018. Based on this estimate, the biodiesel production will consume about another 500,000 tons of CPO. What's more, the policy carried out in Malaysia is the B7 standard launched since 2015. According to the 11th Malaysian scheme from 2016 to 2020, the biodiesel blending rate for the highway sector will reach 15% by 2020. In the context of the rapid rise in international oil prices, Malay's biodiesel blending ratio is expected to improve again. In 2017, the country produced 480 million liters of biodiesel, and the CPO consumption was 423 thousand tons. If the B10 standard is carried out, the CPO consumption increase will approach 200 thousand tons.

V. Investment strategy recommendation

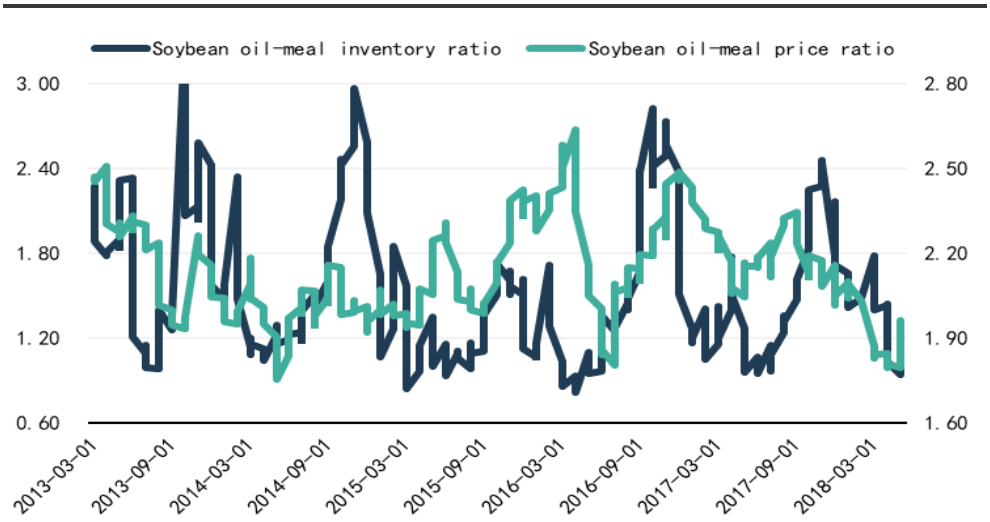
A. Trend following strategy: Buy on the dips

The overall demand for oil and fat in China has grown steadily and the impact of supply has become more prominent. Nowadays the soybean oil faces possible decline of the soybean supply, and the stocks-to-use ratio may keep on going down. The rapeseed oil has been destocking for several years and is faced with scarce rapeseed oil state reserve and a 90% decline in the inventory. The palm oil production growth is slowing down and may encounter the decreased yield per acre because of the ageing of Malaysian palm trees. Considering that the oil prices are hovering at low levels, the improvement in supply is expected to lift the price and buying on the dips is recommended, with the variety being rapeseed oil, soybean oil and palm oil in turn.

B. Spreads strategy: Buy soybean oil-to-meal ratio

According to statistics, when soybean oil-to-meal inventory ratio hits a low level, the oil-to-meal price ratio will begin going upwards in the next three to six months. Currently, the inventory ratio has dropped below 1, and the price ratio also lingers around the low level of 1.8. Moreover, domestic soybean oil stocks continue declining, but the stocks of soybean meat were too high, and the pig price has already broken below 10 CNY/kg, dimming the prospect of pig breeding. Overall, all above factors suggest buying strategy on the soybean oil-to-meal ratio.

Fig. 14 The soybean oil-to-meal inventory ratio leads the price ratio

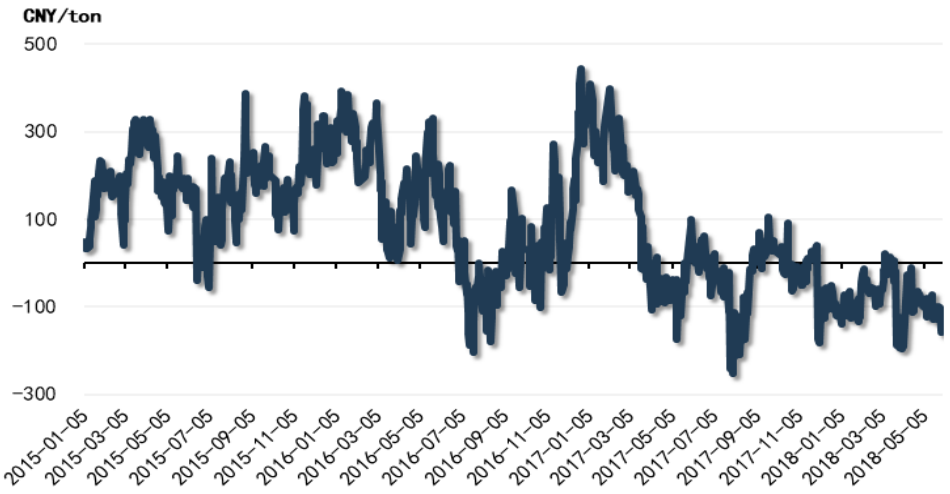


Source：Wind

C. Arbitrage strategy: Buy soybean oil basis

Restricted by high inventory and the off-season consumption, the soybean basis has been in the negative range for half a year. Nowadays the basis is -143 CNY/ton, a low level from -200 to 400 over past three years, so the buying basis strategy holds a margin of safety.

Fig. 15 Soybean basis is at low level



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