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Grain price rises and related risks

Global grain prices on the rise

Since the 1960s, global grain prices have experienced six periods with notable increases, each driven by changes in supply and demand and international financial conditions. Since the World Bank's grain price index peaked at the end of 2012, prices have declined for nearly eight years. Grain prices have now bottomed out, and factors driving up prices outweigh stabilizing factors, meaning a continued rise in prices is likely.

Key stabilizing factors

There has been a significant rise in global grain supply and demand over the past six decades amid technological advances and population expansion. Meanwhile, progress in energy technologies such as biofuel production has become a new source of growth in demand for grains.

Constrained by the tight balance between supply and demand and an imbalance in production and sales across regions, there has been a rise in demand for international and intertemporal allocation of grain. The rapid development of the international grain market has facilitated grain allocation across regions and helped reduce fluctuations in grain prices. Moreover, historically high grain inventory levels should offset the impact of unexpected declines in grain supply on global grain prices.

Also, the global grain price cycle has been correlated with the global economic cycle. Historically, a spike in grain prices has rarely been seen during economic downturns or recessions.

Increasing uncertainties for grain prices

Extreme weather events are a major risk factor for international grain supply. Amid global warming, there have been more frequent and more destructive extreme weather events, posing new challenges for grain production that may exacerbate the imbalance in grain supply and demand across regions. Upside risks in international grain prices should prevail in a market dominated by producers over the long run.

In addition, global grain prices could rise on stronger inflation expectations as superabundant liquidity around the globe could make asset prices frothier. Currently, the global gold-oil price ratio is far above its long-term average, and the gold-grain price ratio is reaching historical highs, meaning oil and grain are relatively undervalued. Amid higher expectations of future inflation boosted by extremely accommodative financial conditions, the spillover of capital and speculative demand could mean a new round of grain price increases is more likely.

Against the backdrop of rising imbalances in global food supply and demand across regions, the decoupling between China and the US could disrupt international grain trade patterns. As China's grain trade deficit with the US has expanded in recent years, if their decoupling affects the grain sector, a consequent decrease in grain supply could lead to higher food prices in China. The structural problems caused by food inflation and non-food deflation could then give rise to stagflation risks in China.

Grain price hikes may depress risk asset performance

Soaring grain prices usually prompt inflation expectations and concerns about policy tightening. Given the current monetary policy stance around the globe, inflation, including food prices, may prevent countries from launching extremely accommodative monetary policies and force them to face up to their structural problems.

Risks: Slower-than-expected macroeconomic recovery, inflation misses expectations, commodity prices exceed expectations.

2020 has seen unprecedented price movements. For the first time in history, the US ten-year Treasury yield dropped below 1%, the yield spread between the ten-year Chinese government bond and US Treasury exceeded 2.4pp, global oil prices plunged into negative territory, and gold exceeded US$2,000 per ounce.

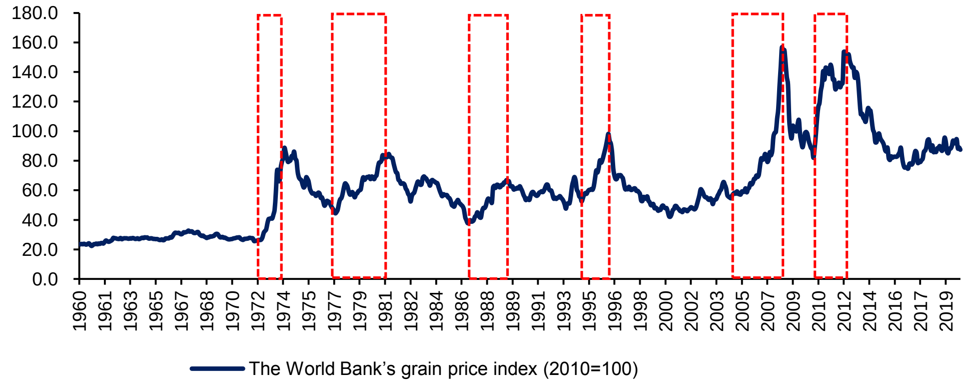
Will grain prices be the next surprise?

Currently, global grain prices are still at post-2012 lows, but risks for price hikes are heightening on both a regional and broader scale, making unexpected grain price movements likely. Major factors causing grain price fluctuations include stronger inflation expectations, as evidenced by the surge in the gold price, potential threats to grain supply amid frequent extreme weather events, and greater price upside risk in China than in other grain-surplus countries such as the US amid the decoupling between China and the US.

Global grain price cycle

Since the 1960s, global grain prices have experienced six periods of notable increases, each driven by changes in supply and demand and international financial conditions. The first uptrend occurred in 1972-74, when the nominal international grain price index soared by 186% in two years due to a surge in demand for cross-border food purchases caused by crop failure in the former Soviet Union, the US, Europe and other major grain-producing regions. The second round was during 1977-81, mainly due to crop losses in major grain-producing countries and the appreciation of the US dollar. The third round happened during 1986-89, when grain production plunged 25-40% due to severe drought in North America, and prices rose amid strong economic growth due to investment and consumption expansion in the west. The fourth round was during 1994-96, when international grain prices spiked amid an imbalance in supply and demand as arable land shrank in major crop-producing regions such as Russia and Eastern Europe while demand in developing countries such as China rose. The fifth round was in 2005-08, as oil prices surged amid the global economic boom, leading to a sharp rise in demand for biofuel production. The most recent grain price rise was in 2010-12, caused by expectations of lower global grain production as a result of extreme weather events in the US.

Figure 1: International grain price movements



Source: World Bank, GF Securities Development & Research Center
Notes: World Bank defines the nominal international grain price index by assigning a 30.1% weighting to rice, 25.2% to wheat, 40.7% to corn and sorghum, and 4.1% to barley.

An upcycle in global food prices has begun Since the World Bank's grain price index peaked at the end of 2012, prices have declined for nearly eight years. Grain prices have now bottomed out, and factors driving up prices outweigh stabilizing factors, meaning a continued rise in prices is likely.

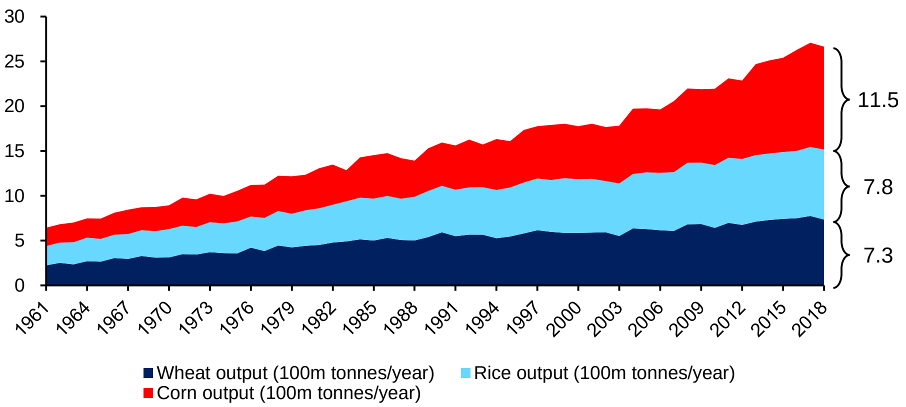
Stabilizing factors

Major stabilizing factors include technology, demand, trade, inventory and weak economic growth.

Technological advances have boosted production. There has been a significant rise in global grain supply and demand over the past six decades amid technological advances and population growth.

Global grain production has been expanding since the 1960s. Data from the United Nations Food and Agriculture Organization (FAO) show that global production of wheat, rice, and corn reached 2.66bn tonnes at the end of 2018, nearly 3.6 times the level in 1961. This came as global arable land grew by a mere 15.5% and was a result of technological advances and large-scale adoption of highly-efficient pesticides and fertilizers. In 2017, 192m tonnes of fertilizers was consumed around the globe, 6.2 times the level in 1961.

Figure 2: Grain output worldwide



Source: FAO, GF Securities Development & Research Center

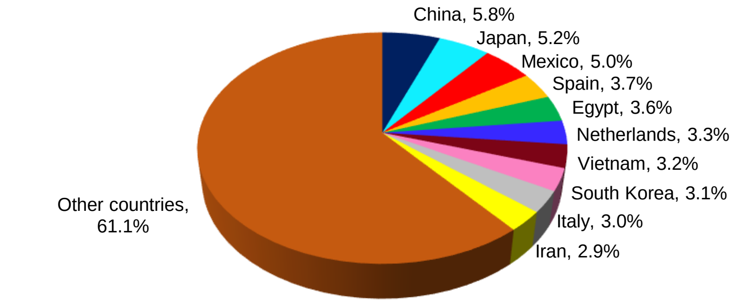
The surge in grain supply has occurred alongside a dramatic rise in food demand. The global population increased more than 1.5 times from 3.0bn to 7.6bn during 1960-2019. Rising incomes and spending and greater demand for food products such as meat, eggs, milk and pastries has meant growth in food demand has far outpaced population growth over the past six decades.

As well as global population growth, which is a long-term factor in determining growth in grain demand, progress in energy technologies such as biofuel production has become a new source of demand growth.

Meanwhile, constrained by the tight balance between supply and demand and an imbalance in production and sales across regions, there has been a rise in demand for international and intertemporal allocation of grain, leading to rapid development of the international grain market.

Global trade of corn, rice and wheat rose by 505% from 1961 to 480m tonnes in 2018, with value surging by 2,258% to US$117.7bn. The biggest grain producers are countries such as the US, Canada, Brazil, Russia and Ukraine. The US has dominated exports of corn and rice, exporting 40% of the world's total. Russia is the biggest wheat exporter with a 20% global market share. Demand for grain imports is high in countries with densely-populated areas such as China, Japan, Mexico, Spain and Egypt, but each purchases less than 6% of total export volume, meaning buyers are fragmented in the international market, and producers play a dominant role.

Figure 3: Grain imports as a percentage of the world's total grain trade volume in 2018

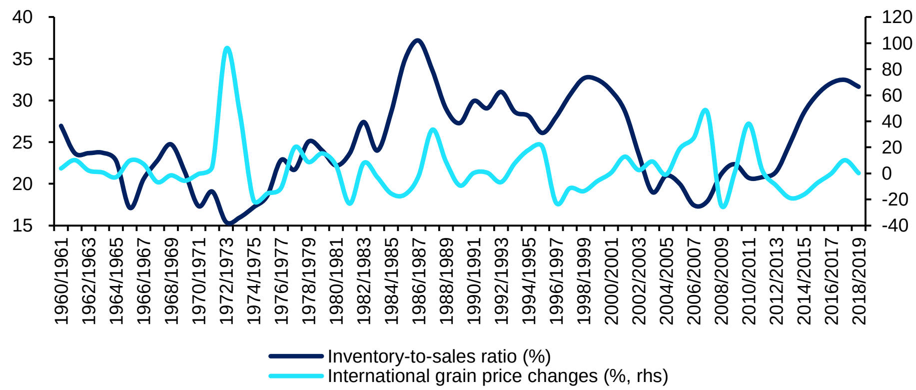


Source: FAO, GF Securities Development & Research Center

Moreover, historically high grain inventory levels should offset the impact of fluctuations in grain supply and demand on global grain prices.

Grain inventory levels are closely related to supply stability. Over the past six decades, global grain inventory has averaged 25.1% of annual consumption. When the proportion is too low, inventory is less able to offset the impact of crop losses, which results in higher global grain prices. Currently, global grain inventory remains at historically high levels, which should ensure stable prices.

Figure 4: Global grain inventory to sales ratio and price changes

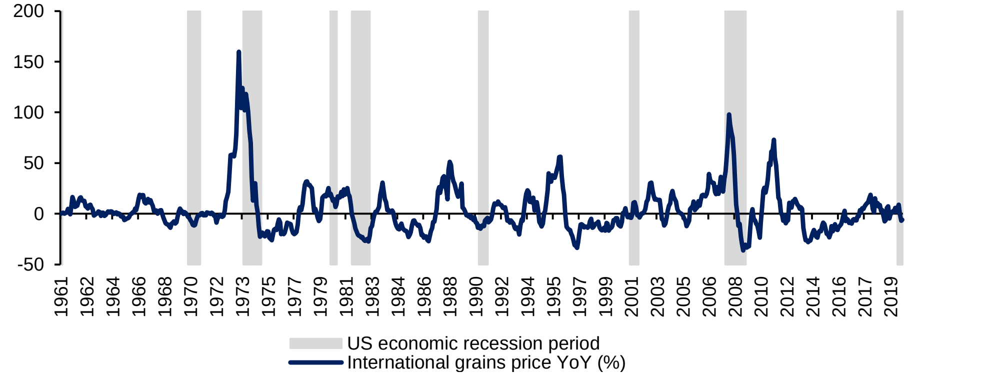


Source: USDA, World Bank, GF Securities Development & Research Center

Finally, the global grain price cycle has been correlated with the global economic cycle. Historically, a spike in grain prices has rarely been seen during economic downturns or recessions.

The impact of economic cycles on grain prices mainly stems from changes in consumer spending patterns. During an economic expansion, a rise in household income leads to consumption upgrades and diversified consumption of grain products, which in turn supports international grain prices. During a recession, people are forced to cut non-essential spending in order to meet their basic needs, thus grain prices may fall amid shrinking demand.

Figure 5: International grains price cycle & US economic cycle



Source: NBER, World Bank, GF Securities Development & Research Center

Increasing uncertainties for grain prices

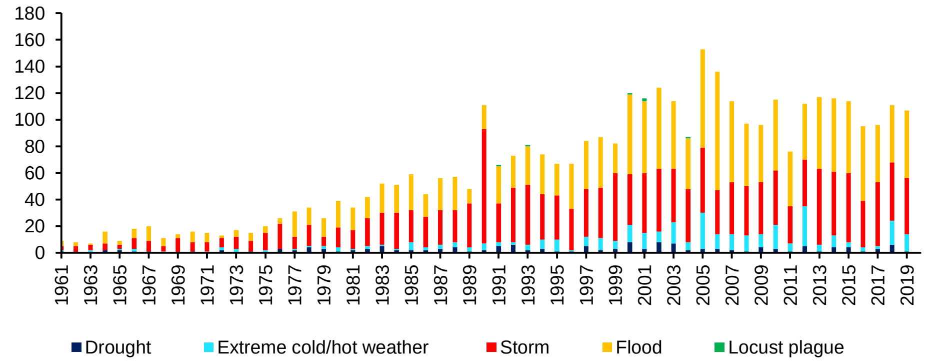
Extreme weather events are a major risk factor for grain supply, and changes in financial conditions and geopolitical deterioration this year may also disrupt grain prices.

(1) Weather-related uncertainties

Extreme weather events (droughts, flooding, cold waves) are a major factor causing fluctuations in global grain production. As major grain-producing areas are located in subtropical and temperate regions where extreme weather events occur more frequently, international grain production may drop when such events occur and persist.

Extreme weather events have occurred more frequently, and become more destructive and prolonged, posing long-term challenges for global grain supply. KU Leuven's database shows that there has been a marked increase in the occurrence of extreme weather events globally over the past 60 years with increasing duration and scope of impact. 2019 saw 107 extreme weather-related disasters such as droughts, extreme cold/heat, storms, floods and locust plagues in the world's top ten grain-producing countries, up by 30.5% compared with two decades ago, with floods and storms accounting for the highest proportion (47.7% and 39.3% respectively). Amid global warming, extreme weather events are increasingly likely and destructive, posing new challenges for grain production that may exacerbate the imbalance in grain supply and demand across regions. Upside risks in international grain prices should prevail in a market dominated by producers over the long run.

Figure 6: Extreme weather events in the world's top ten grain-producing countries



Source: The International Disaster Database of KU Leuven, GF Securities Development & Research Center

Note: The world's top 10 grain producing countries/regions are China, the US, Brazil, Australia, India, Indonesia, the EU, Russia, Argentina, Canada.

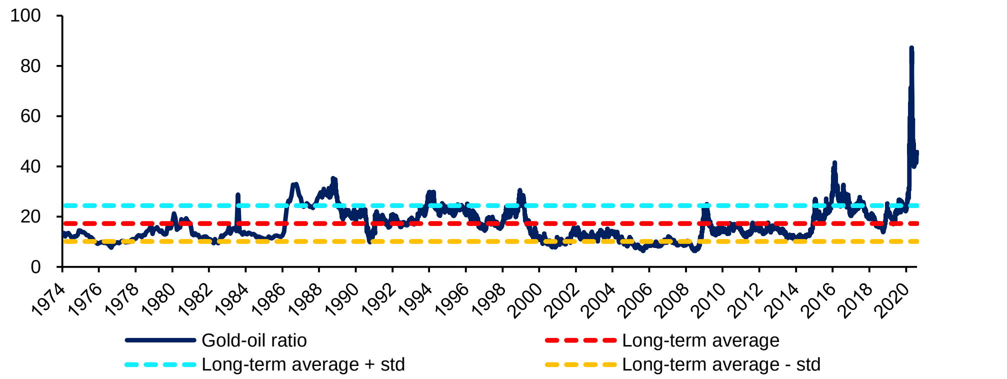
As well as extreme weather, factors such as price fluctuations in factors of production may also affect grain supply. As modern grain production relies heavily on the use of pesticides and fertilizers, price changes in these products can be reflected in grain prices. Moreover, changes in long-term elements such as arable land area, farming population and planting technologies can also influence grain production growth.

(2) Stronger inflation expectations amid excess liquidity

Superabundant liquidity around the globe could make asset prices frothier, and the elevated gold-oil price ratio may push up grain prices.

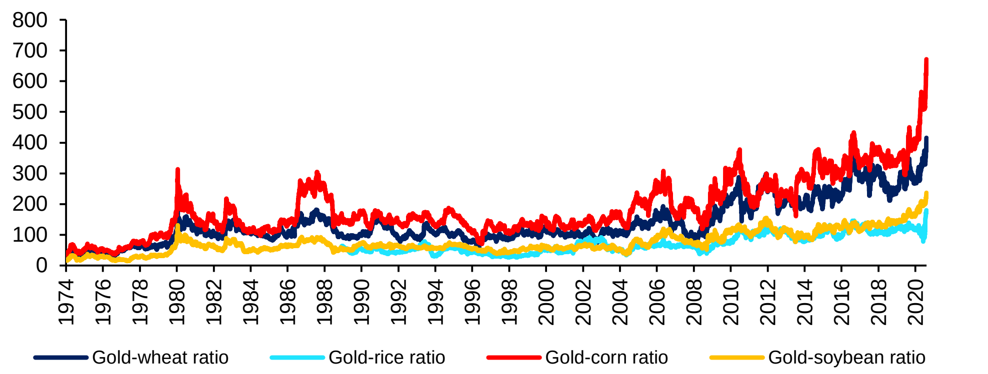
The prices of risk assets such as US stocks and safe havens such as gold have reached historical highs recently, while US bond yields and the US dollar index have declined, indicating a clear improvement in risk appetite amid excess liquidity. At present, the international gold-oil price ratio is more than 2 standard deviations above its long-term average, and the ratios of the gold price to the prices of major crops such as wheat, rice, corn and soybeans have all reached new highs, meaning oil and grain are relatively undervalued. Amid expectations of higher inflation going forward boosted by extremely accommodative financial conditions, the spillover of capital and speculative demand could mean that a new round of grain price increases is more likely.

Figure 7: International gold-oil price ratio



Source: Bloomberg, Wind, GF Securities Development & Research Center

Figure 8: Gold-grain price ratios



Source: Bloomberg, Wind, GF Securities Development *& Research Center*

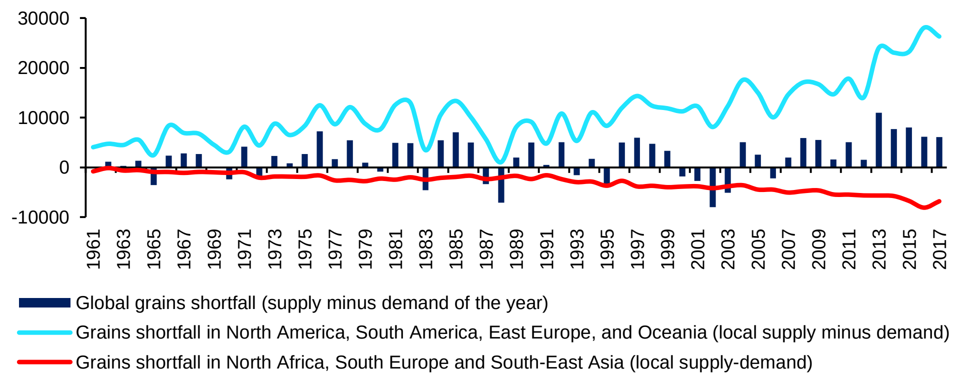
(3) Regional imbalances and decoupling between China and the US

The global grain market has maintained a tight balance between supply and demand on the whole, but there have been pronounced imbalances between regions.

Major grain-producing regions are located in subtropical and temperate zones, and China, the US and India are three major grain producers. In 2018, China/the US/India produced 0.61/0.47/0.32bn tonnes of grain, accounting for a combined 47% of total global production. China and India accounted for a higher share of rice and wheat production, producing a combined 39% of the world's rice and 27% of its wheat, while the US produces more corn, accounting for 28% of the world's corn production.

However, due to uneven world population distribution, major grain-producing countries such as China and India are also major consumers and importers of grains given their large population, resulting in regional imbalances of grain supply and demand despite a tight global balance. In sparsely populated places such as North America, South America, Eastern Europe and Oceania, the oversupply of grain has continued to rise, and the annual food surplus in these areas amounted to 260m tonnes in 2017. In contrast, the shortfall in grain supply in regions with densely-populated areas such as North Africa, Southern Europe and Southeast Asia has been expanding. In 2017, the shortage amounted to 68m tonnes. The increasing regional imbalances have led to a rise in international trade of grain each year.

Figure 9: Grain supply and demand gap in two key regions (10k tonnes)

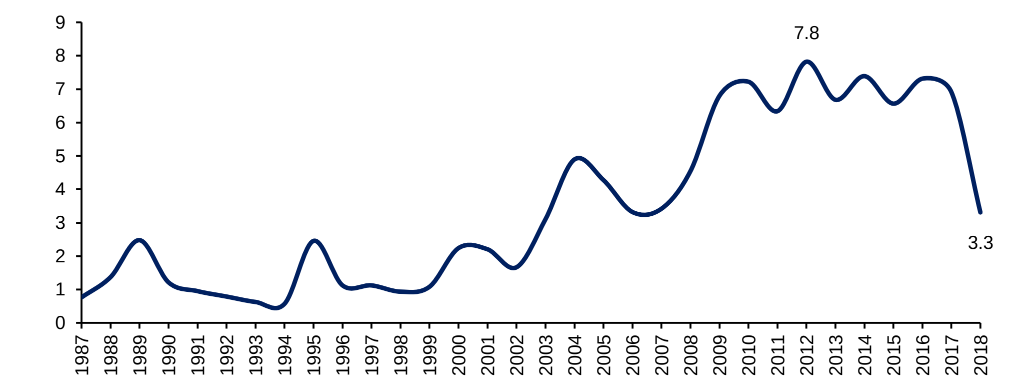


Source: FAO, GF Securities Development & Research Center

Notes: Supply refers to combined production of wheat, rice, and corn each year minus grain trade and inventory changes

However, the global grain trade pattern that has taken shape over years is being disrupted. For example, grain trade between China and the US has been expanding since the late 1980s when China opened up its farm produce market and increased imports of soybean, wheat and corn to meet domestic demand for food and animal feed. In 1987, trade in staple crops between China and the US accounted for less than 1% of total trade among G20 countries, by the end of the 2008 financial crisis, the proportion had risen to around 7% and has stayed around that level since then. However, the trade between the two countries has been hit by the recent trade conflict. The proportion of staple crop trade between China and the US to the G20 total plunged to 3.3% in 2018. This reflects how the marginal decoupling between China and the US has squeezed the global grain trade and added to the risk of grain price fluctuations.

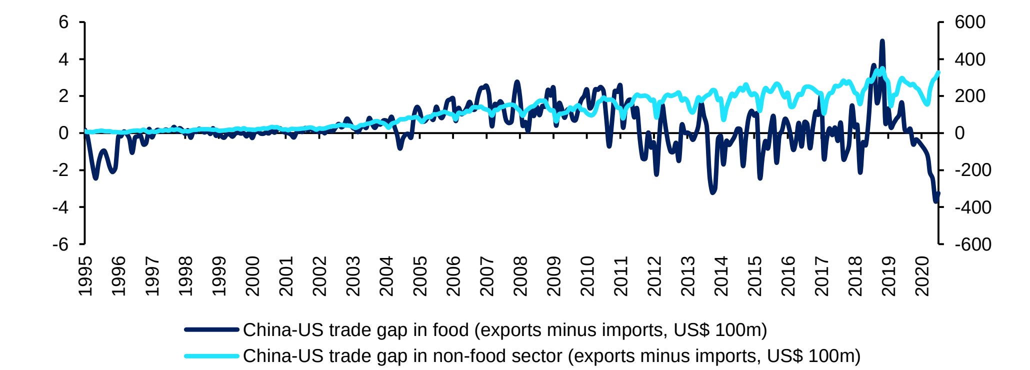
Figure 10: Grain trade between China and US as a percentage of total grain trade among the G20



Source: FAO, GF Securities Development & Research Center
Notes: Grains include rice, wheat, corn, and soybean

If the decoupling continues, China's food prices may move in the same direction as non-food prices, meaning inflation may occur in both food and non-food prices. China's food trade with the US has been stable over the past 25 years, but its trade deficit in food has been expanding. Meanwhile, China's non-food exports to the US have been much higher than imports since 2004, with the surplus expanding in the past 15 years. The gap between China-US trade in food and non-food may mean their current trade structure is perhaps a result of interventions by the two countries. In any case, a decoupling may lead to a decrease in food supply and higher food prices in China, while an oversupply of other goods may depress non-food prices. The structural problems caused by the concurrence of inflation in food prices and deflation in non-food prices may cause stagflation risks for China.

Figure 11: China-US trade surplus/deficit in food and non-food sectors



Source: Wind, GF Securities Development & Research Center

Conclusion

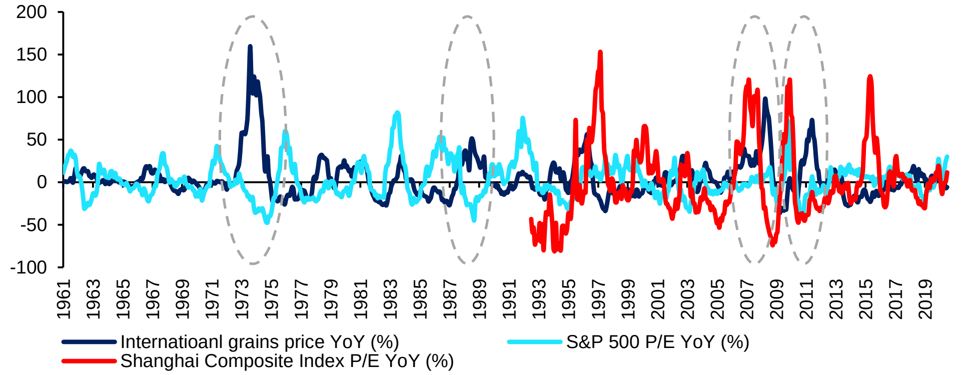
An upcycle in global grain prices has begun. Although stabilizing factors for grain prices remain in place such as technological advances, high inventory levels and relatively weak global demand as well as trade, which helps to smooth out regional fluctuations, uncertainties for grain prices are on the rise.

Destabilizing factors for grain prices now include extreme weather events, inflation expectations and decoupling between China and the US, with the latter two becoming more prominent this year. If two of the three major destabilizing factors deteriorate at the same time, there could be greater upside risks for grain prices, and if all three factors come into play at the same time, the rise in grain prices may exceed expectations. Unlimited monetary easing around the globe and weak demand during economic recovery mean unexpected grain price movements and stronger-than-expected inflation may be inevitable if money supply continues to be loosened or crop failures occur.

In relative terms, grain price shocks could deal a greater blow to countries with a deficit in grain trade. China's non-food trade deficit has been expanding in recent years, and if China and the US decouple in terms of food trade due to the trade conflicts, the supply shock may push up grain prices even if the overall economy remains weak.

Grain price hikes may depress risk asset performance. Take the stock market as an example. In the past six decades, when international grain prices rose by more than 50%, the valuations of the S&P 500 and the Shanghai Stock Index were weak. Soaring grain prices usually prompt inflation expectations and concerns about policy tightening. Given the current monetary policy stance around the globe, inflation, including of food prices, may prevent countries from launching extremely accommodative monetary policies and force them to face up to their structural problems.

Figure 12: YoY changes in grain prices, S&P 500 P/E and Shanghai Composite Index P/E



Source: Wind, Bloomberg, World Bank, GF Securities Development & Research Center

Risks:

Slower-than-expected macroeconomic recovery, inflation misses expectations, commodity prices exceed expectations.

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Buy	Stock expected to outperform benchmark by more than 15%
Accumulate	Stock expected to outperform benchmark by more than 5% but not more than 15%
Hold	Expected stock relative performance ranges between -5% and 5%
Underperform	Stock expected to underperform benchmark by more than 5%

Sector ratings	
Positive	Sector expected to outperform benchmark by more than 10%
Neutral	Expected sector relative performance ranges between -10% and 10%
Cautious	Sector expected to underperform benchmark by more than 10%

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