Food and Agriculture Organization
of the United Nations

Comparing Crises:
Great Lockdown versus Great Recession

Comparing crises: "Great Lockdown" vs "Great Recession"

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Food and Agriculture Organization of the United Nations, Rome, 2020

Required citation:
Schmidhuber, J. and Qiao, B. 2020. *Comparing Crises: Great Lockdown versus Great Recession*. Rome, FAO. https://doi.org/10.4060/ca8833en

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ISBN 978-92-5-132526-1
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ACKNOWLEDGMENTS

The authors appreciate the valuable comments, corrections and inputs provided by Boubaker Ben-Belhassen, Maximo Torero and Abdolreza Abbassian. They are equally grateful to Ettore Vecchione and Araceli Cardenas for the design and publishing support.

EXECUTIVE SUMMARY

A comparison of the Great Lockdown of 2020 underway with the Great Recession of 2009, reveals some regularities, yet many differences. Notably, the shock associated with the Great Recession arose out of economy-wide stress, particularly high-income countries, while in direct contrast, the Great Lockdown was borne outside of the global economic system, and seemingly is set to leave most countries severely affected, high and low-income countries alike. Both crises, however, have led to similar impacts to economies throughout the world, with significant contractions to economic growth, economic activity and employment.

For global food and agriculture, the Great Recession unfolded as a combination of two distinct crises that followed each other from 2007 to 2009. The initial 2007-2008 crisis was largely limited to food and agriculture, arising from a combination of supply and demand shocks within the global food sector. The 2009 crisis arose from an external demand side shock, brought about by the sharp contraction in overall economic activity in 2009, which is now known as the Great Recession. When referring to the Great Recession, this paper distinguishes two distinct sub-crises, i.e. the global food crisis of 2007-2008 and the global recession of 2009.

Findings

The findings of the study show that the commonalities of both crises manifest in sharp declines in economic activity combined with equally sharp increases in unemployment. Yet, these aggregate changes mask a number of subtle differences in how and where impacts are the hardest felt. In the Great Recession of 2009, significant contractions in Gross Domestic Product (GDP) were largely limited to high- and middle-income countries, whereas many low-income countries experienced only mild reductions in income growth, if any at all. This is in stark contrast to the expected effects of the current crisis. According to the IMF's latest World Economic Outlook (April 2020), the Great Lockdown will again hit the GDP of high-income countries (-6.1 percent in 2020) proportionately more than the low-income ones (-1.0 percent in 2020), but seemingly, no country or country group will escape the crisis unscathed. All-in-all, COVID-19 is expected to lead to much deeper recessions at both the country and global level than that of the Great Recession.

Indeed, the commodity boom associated with the Great Recession proved beneficial to commodity exporters of emerging nations, especially those situated in Latin America and in "Developing and Emerging Europe", whereby they reaped the rewards of soaring commodity prices. During the Great Lockdown, their fortunes are expected to reverse strongly to the point that they are foreseen to be the hardest hit, with concomitant economic contractions for each region of -5.2 percent in 2020.

Another important finding is that Island states, whether high-income or low-income, did not escape the contractionary impacts of the Great Recession, and are also unlikely to elude the recessionary consequences of the Great Lockdown. Again, Small Island Developing States (SIDS) are especially vulnerable, given their lack of economic diversification and their high dependence on tourism and remittances. The latter are expected to sharply decline in 2020. With their added high dependence on food imports and other basic necessities, the vulnerability of these countries is expected to sharply increase under the current Global Lockdown. Equally worrying is the indebtedness of many developing countries that have

instigated lockdown measures, which could exacerbate their illiquidity and fiscal constraints that may ultimately lead to debt defaults.

Many developing countries that are vulnerable to COVID-19 are also susceptible to localised shocks, particularly in Africa, in the form of locust outbreaks or other pest and disease incidences, as well as civil strife. These countries require special attention. The world food economy was ill-prepared for the shocks that characterized the global food crisis in 2007-2008 and the recession that followed in 2009. A combination of adverse supply (poor crops in several exporting countries) and positive demand shocks (biofuels) created a sudden and substantial gap in food supplies that could not be met by a drawdown of stocks, which incidentally, were hovering around multi-year lows. Spiking transportation costs and adverse policy reactions (notably, export restrictions) exacerbated the impact of the supply gap on international markets and resulted in a pronounced price hike for basic foods.

A compelling finding of this study is that the initial conditions of the Great Lockdown are in stark contrast to those of the Great Recession and are far more supportive to avoiding an all-out potential food crisis. Food stocks are ample, staple food prices are low, trade is much more diversified with more and more importers and exporters partaking in global trade. Farmers are also on an assured footing, with fertilizer, energy and other input prices at very low levels, and where relevant, given the collapse in demand for biofuels, competition for agricultural feedstocks for energy has diminished.

That said, where agriculture and associate supply chains are labour-intensive, the effects of the Great Lockdown are bearing down prominently. Labour market shocks arise from mobility restrictions on workers and the direct health impacts of the new coronavirus, weighing directly on the ability of workers to produce or process food. They also arise from unemployment and underemployment and a possible deterioration of occupational health and safety (OHS) standards.

Finally, a commonality between both crises concerns logistics, in that local and international distribution channels constitute an important channel of transmission of macroeconomic shocks into food and agriculture. While the Great Recession caused transportation costs to rise across all modes of transportation, the impacts of the Great Lockdown are strongly differentiated across transportation modes. Costs for bulk shipments are at levels close to the all-time lows, while they reached all-time highs during the Great Recession. However, costs for container and truck transportation, while still low overall, could be highly exposed, particularly if labour and or container shortages become more commonplace. The hardest hit segment is air cargo, particularly for foods transported in the bellies of passenger planes; as these shipments have come to a near standstill, volumes of food shipped, especially for perishables, have precipitously declined creating large price wedges for high value foods between exporting and importing regions. Again, island states and SIDS in particular are most severely affected, given their remoteness from regular transportation routes.

Guidance for policy

This study finds that “global stabilisers” – allowing market forces to equilibrate markets –are key to solidifying the fundamentals for international food security. However, the hindrances to logistics and distribution must be addressed and mitigated. In this regard, governments must recognise the importance of ensuring that trade, whether internal or international,

remains open and frictionless, free from restrictions, and meets capacities in terms of volumes. This also implies speedy clearances at customs, borders and ports.

The truism that food is the most fundamental need, necessitates that farmers and agricultural workers are placed on the same footing as health workers engaged in fighting COVID-19. The same is true for global and national food systems to be equally regarded as health systems in ensuring that hunger and poor nutrition are left unabated, which requires that farmers maintain and invest in productivity with access to affordable credit, and consumers have normal access to procure food needs on the international marketplace Not all countries can manage, especially SIDS, which are highly dependent on food imports, as well as localised shock-prone countries in sub-Saharan Africa, and therefore international intervention will be required to safeguard their populations.

INTRODUCTION AND OBJECTIVE

With the new coronavirus spreading rapidly, the impacts of the COVID-19 pandemic on global agricultural markets are becoming increasingly apparent. The contours of these impacts are shaped by changes in macroeconomic environments, energy and credit markets, and importantly, input prices and prices in agricultural factor markets. Some of these shifts resemble those of previous global crises, while others are markedly different. Understanding and analysing differences and similarities to the crisis of 2007-2009 through lessons learnt can help target policy responses in addressing the challenges of the ongoing severe economic crisis.

This assessment gathers evidence as is available so far and compares the two crises based on a number of selected indicators. It brings to the fore commonalities and differences, examines the underlying factors and the initial conditions that explain sector-specific differentials. The assessment identifies differences in the effect on the food and agricultural sector between the two crises and across countries and commodities. Based on these comparisons, it identifies hotspots of the current crisis and potential areas for targeting policy responses to address related problems.

Table 1: Overview – Comparing Crises

	Great Recession	Great Lockdown (estimated/probable)
1. GDP growth	-0.1%	-3%, estimates
High income	-3.3%	-6.1%, estimates
Middle income	2.8%	-1.0%, estimates
Low income		
2. Unemployment	Sharp rise	Highest since the Great Depression
3. Equity prices	"Lehman crash"	"Corona crash"
World (MSCI ACWI)	-42.2%	-16.39% by April 2020
Developed Markets (23)	-40.7%	-15.7% by April 2020
Emerging markets	-53.3%	-21.11% by April 2020
4. EX Rates	US Dollar weakness	US Dollar strength
5. Transportation costs		
bulk	Prices at all-time highs	Prices near all-time lows
airfreight	No major impact on capacity	Sharp decrease in capacity
6. Macro policy response		
Monetary	Beginning of QE	Multitude of QE and QE-like programs (PEPP, ESM, etc.)
Fiscal (by 10 April 2020)	Moderate expansion, large differences across countries	Massive expansion: 11.7% of GDP in advanced G20, 2% in emerging G20
7. Trade (merchandise)	Sharp contraction by 17%	Possible contraction by 13.6%-32%, estimates
8. Food and Agriculture		
Food prices	Boom-bust-boom	Bust
Supply	Several simultaneous crop failures	Ample supply, generally good prospects for 2019/20
Demand	Added demand from biofuels	Declining biofuel use, African swine fever
Food Stocks		
Levels	Multi-year low	Multi-year high (twice 2007)
Stocks-to-use	Multi-year low	Multi-year high
Concentration of "storers"	High, CR5=64%	Very high, CR5=73%
Agricultural Trade	Sharp contraction by 4.5%	Possible contraction by 7.1%-13.5%, estimates
9. Input prices	All-time highs	Multi-year lows
10. Agricultural policy response		
Exports	Export restrictions and bans	Occasional export restrictions
Imports	Focus on lower tariff barriers	Focus on higher non-tariff barriers
11. Investment in agriculture	Investment boom followed commodity boom	Investment bust to follow?

Sources are compiled in Annex 3

Impacts on overall economic activity – GDP levels and growth

In reaction to the outbreak, practically all national, international and private agencies have revised down their economic growth forecasts. The extent and duration of the predicted slowdown or downturn across these forecasts differ widely and estimates are being updated as new information about the spread and likely duration of the pandemic become available. But all forecasts point to across-the-board contractions in GDP.

On 2 March 2020, the Organization for Economic Cooperation and Development (OECD) revised its global growth forecast for 2020. Even in the best-case scenario of limited outbreaks in countries outside of China, a sharp slowdown in global GDP growth is expected in the first

half of 2020. It is argued that supply chains in most sectors would be significantly disrupted, commodity markets would be hit hard, tourism could drop precipitously, and overall economic confidence would falter.

In addition, the OECD offered a much more significant growth reduction scenario. A broader contagion across the wider Asia-Pacific region and in advanced economies – as has happened in China - could cut global growth to as low as 1.5 percent in 2020, halving the OECD's previous 2020 projection released in November 2019. Containment measures and loss of confidence would hit production and spending, and drive some countries into deep recession, including Japan and the Euro area.

As the severity of the crisis became increasingly manifest, national and international institutions further cut their growth forecasts. For instance, the economic outlook of the Federal Reserve Bank of St. Louis projected the United States of America unemployment rate to reach 30 percent in the second quarter of 2020, reflecting shutdowns to combat the spread of COVID-19. The same outlook expected an unprecedented 50 percent drop in GDP for the second quarter of 2020.

On 14 April 2020, the IMF released its World Economic Outlook, which forecasts a global recession to the tune of -3 percent fall in world GDP in 2020. This compares to a mere -0.1% reduction in 2009. The IMF expects global growth to rebound in 2021 with a growth rate of 5.8% in 2021. Relative to the outlook prior to the Great Lockdown, GDP growth will still lie considerably below the level expected for 2021. The cumulative output loss in both 2020 and 2021 amounts to US dollar 9 trillion according to the IMF (IMF, World Economic Outlook, April 2020, 2020). The IMF projections also suggest that all country groups, rich and poor alike, will experience an economic contraction. While the anticipated recessions in high-income countries will be deeper and will last longer, also low-income countries will be affected.

The Great Lockdown: Unlike the Great Recession, a truly global crisis

While the Great Lockdown will result in a deeper global recession, the Great Recession was mainly an economic crisis of developed countries. Based on World Bank data, the country groups of "lower middle income" and even more so those in the "low income" category survived the Great Recession relatively unscathed (Figure 1) . Some commodity exporters, many of which are middle income emerging economies, even saw their GDP rise in the aftermath of the initial 2007-2008 crisis, benefitting from both high energy and food prices. Overall, the Great Recession was mainly a "high-income" and "upper middle income country" crisis, not a low-income country crisis (Figure 1).

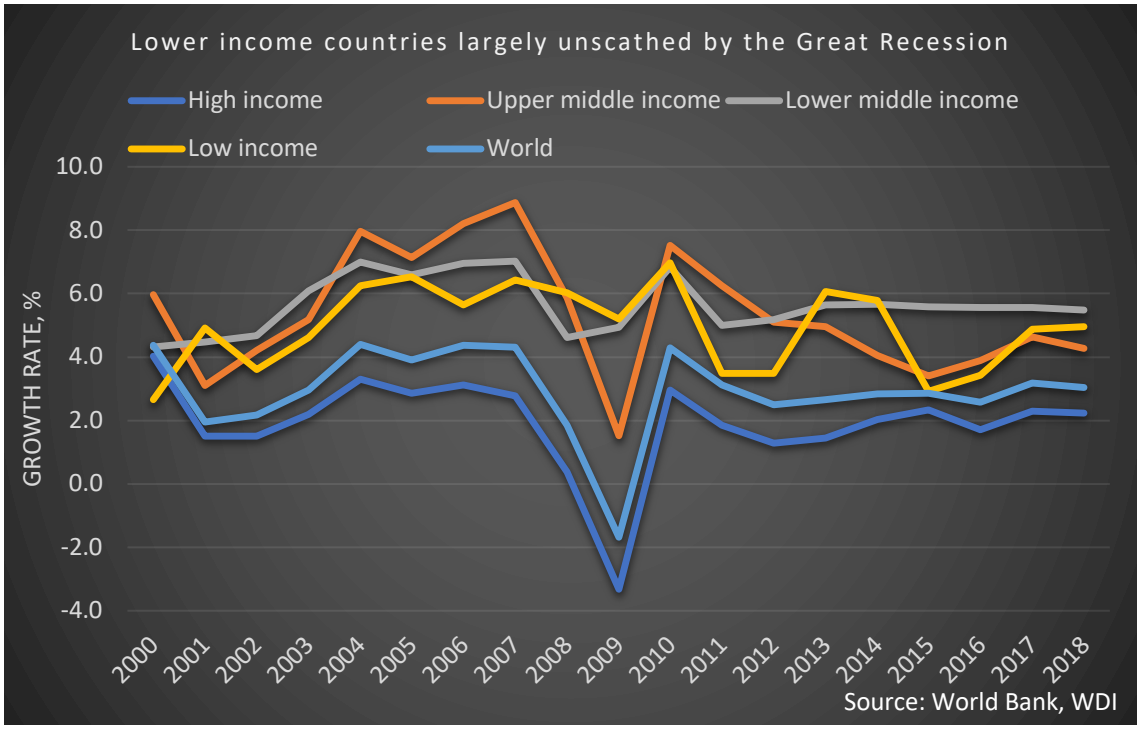

Figure 1: GDP growth, annual changes in percent, by income group

The Great Lockdown by contrast appears to affect developing countries more severely. The revised IMF outlook of 14 April 2020 (IMF, World Economic Outlook, April 2020, 2020) predicts GDP of emerging and developing countries to contract by 1 percent in 2020, those of energy and commodity exporters such as Russian Federation and Brazil by -5.5 percent and -5.3 percent, respectively. Relative to the prior IMF predictions of January 2020, the GDP of emerging and developing countries will be lower on average by 5.4 percent; particularly hard hit will be Latin America and Developing Europe, where the new (April) GDP projections for 2020 will respectively be -7.4 percent and -7.8 percent lower than expected in January. Many of these emerging economies are commodity exporters and thus heavily exposed to the sharp deterioration in energy and metal prices (Table 1) and, to a lesser extent, falling prices of agricultural products (denominated in US Dollars). This outcome would be in a stark contrast with the Great Recession and, despite the relatively high GDP levels in these countries, could result in higher poverty and even undernourishment problems.

Table 2: Energy and metal prices since January 2020

	Unit Price (Mar20)	Unit Price (Feb20)	Unit Price (Jan20)	Mar/Feb	Mar/Jan
oil, WTI (USD/Barrel)	22.43	53.78	58.34	-58.3%	-61.6%
Platinum (USD/Ounce)	600.48	982.10	1020.20	-38.9%	-41.1%
Palladium (USD/Ounce)	1703.56	2677.30	2496.41	-36.4%	-31.8%
Silver (USD/Ounce)	12.85	18.40	18.06	-30.2%	-28.9%
copper (USD/Ton)	4854.85	5729.00	6244.50	-15.3%	-22.3%
nickel (USD/Ton)	11370.00	12681.50	13842.50	-10.3%	-17.9%
Lead (USD/Ton)	1673.00	1938.75	1952.85	-13.7%	-14.3%
Aluminum (USD/Ton)	1583.00	1711.15	1815.74	-7.5%	-12.8%
iron ore (USD/DM Ton)	89.57	86.15	94.80	4.0%	-5.5%
Gold (USD/Ounce)	1506.95	1621.31	1560.82	-7.1%	-3.5%

Island states are always hard hit

While the group of low-income and middle-low income countries escaped the Great Recession relatively unscathed, high income countries had to bear the brunt of global shocks. These are at least the effects visible at a high level of aggregation across countries. This differentiation between rich and poor no longer holds for island economies. Practically all island states, rich and poor alike, saw their incomes plunge in 2009 (Figure 4). They were exposed through a number of different channels, not least their high reliance on tourism and lack of diversification, on remittances and their distance to major markets, which made transportation to and from their markets more expensive. The 2020 crisis will exert an even more significant shock on island economies, given their massive dependency on the tourism and hospitality sector.

SIDS will be hardest hit

In many SIDS, inbound tourism accounts for more than 60 percent of GDP (Figure 5) and early indications suggest a contraction in the sector by up to 90 percent. And while island economies may benefit from lower transportation costs, the adverse impacts on inbound tourism, lower inbound remittances and the direct health exposure of created by COVID-19 on their labour-intensive economies are likely to exceed such benefits by a wide margin.

Many SIDS are not only exposed through their high dependence on tourism, they also import large shares of the food they consume. The food import dependency rates (FAO, FAOSTAT, 2020)[1] depicted in Figure 2 suggest that many SIDS are not only dependent on tourism for their foreign exchange earnings, but also spend a large share of these earnings on food imports. Therefore, without export earnings from tourism, their capacity to import food is in jeopardy.

[1] Estimates are based on FAOSTAT, see Annex 2 for methodological details

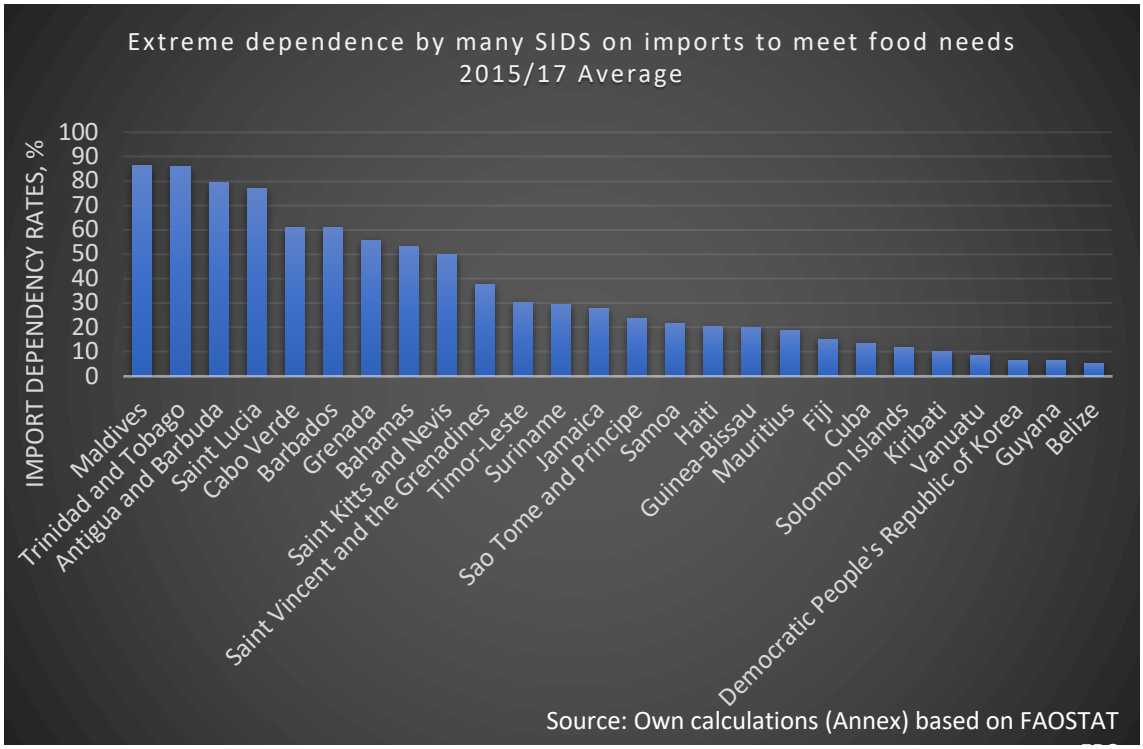

Figure 2: Import dependency rates (%) of Small Island Developing States

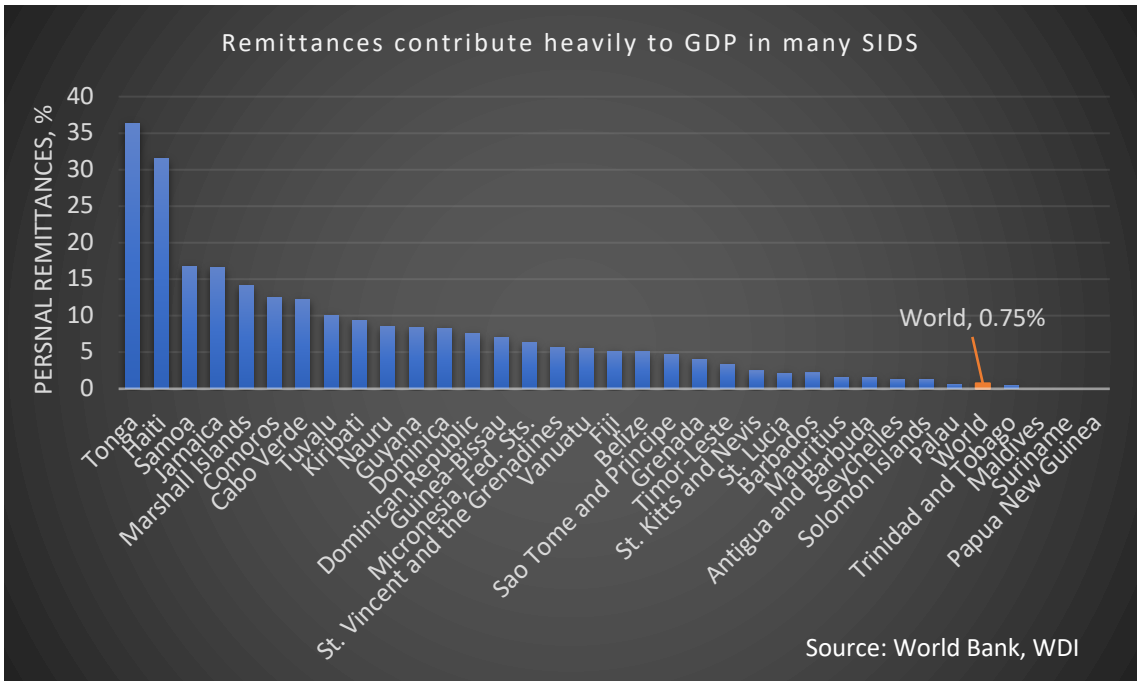

Figure 3: Personal remittances, share of GDP, 2016-2018 average

In addition to export earnings from inbound tourism, SIDS are also dependent on remittances for their foreign exchange supply (Figure 3). Under the Great Lockdown, many SIDS are being affected not only through tourism, but also through lower remittances, as many citizens of SIDS working abroad could lose their jobs or see their wages cut. In summary, this means that SIDS face a particularly precarious situation where their high food import dependency is no longer supported by inflows of foreign exchange, neither from tourism nor from remittances.

This underlines that SIDS must receive particular policy attention and assistance to avoid more significant hardship.

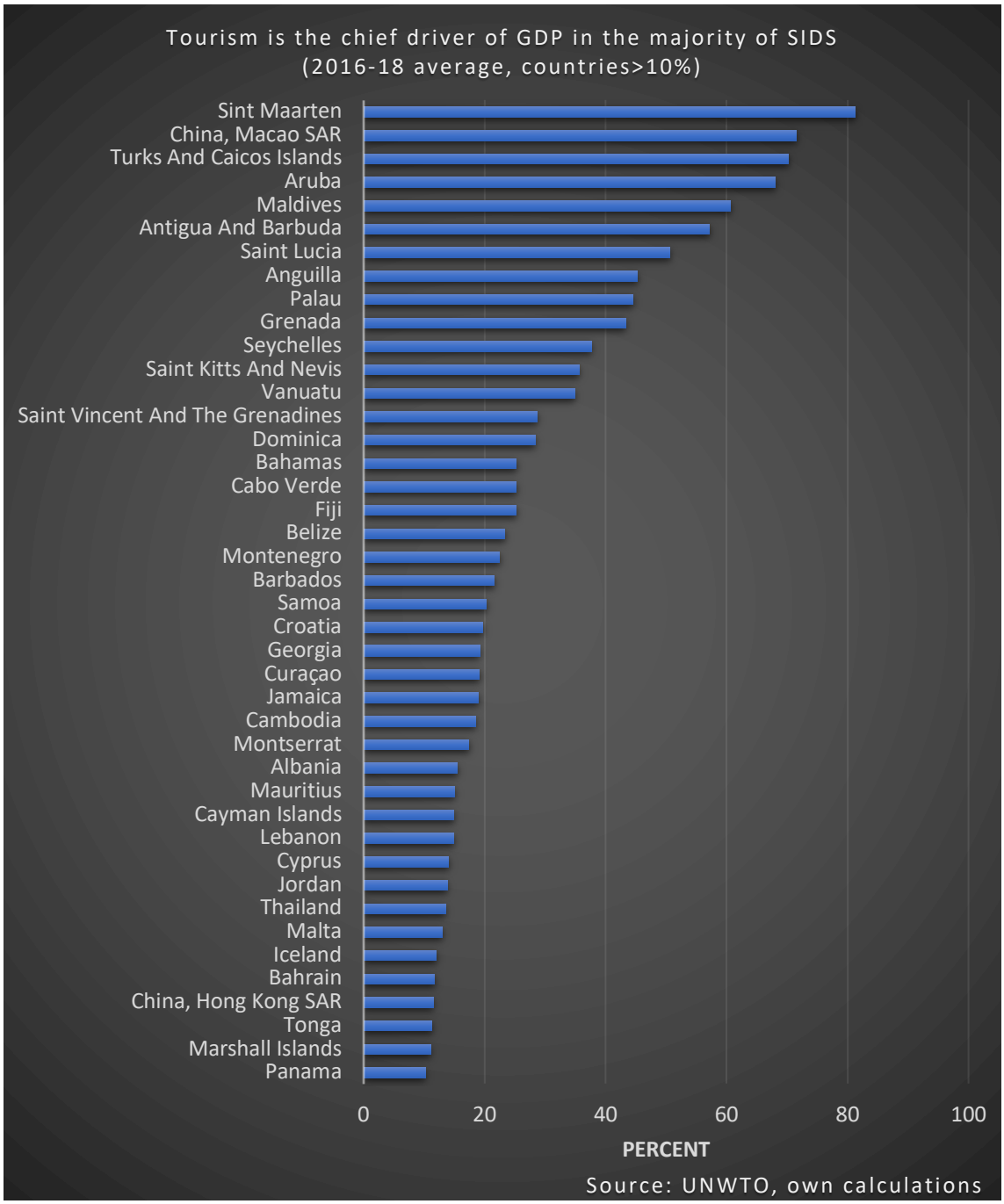

Figure 4: Share of inbound tourism in GDP, by country, 2016-18 average

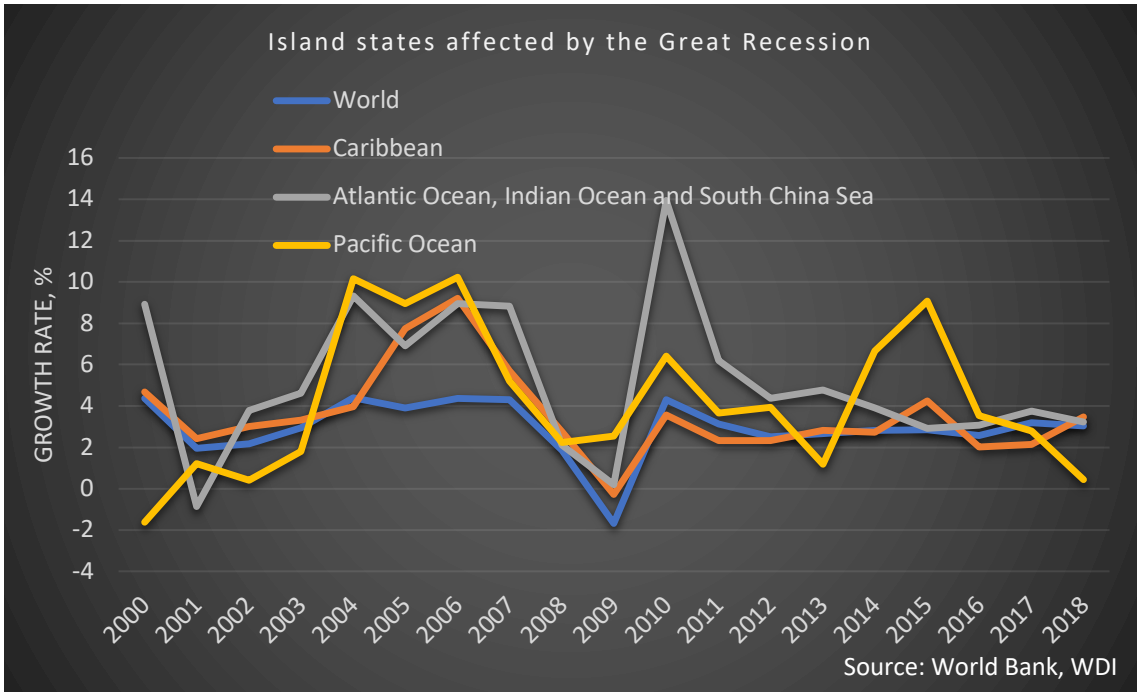

Figure 5: GDP growth, island states, annual changes in percent

Credit markets

The 2007-2009 crisis was in its core a "credit crunch" – a sharp drop in liquidity - which mainly affecting developed markets. Higher food prices and economic spill-over effects notwithstanding, developing countries remained less directly affected, not least in their lower exposure to the financial instruments (sub-prime mortgages, CDOs) that were undermining the financial sector in developed countries. The 2020 crisis also affects credit markets and there are reasons to assume that developing countries could be hard hit, given their high indebtedness in foreign currencies, sharply falling exchange rates and low commodity and energy prices which make it harder to service these debts.

In response to the COVID-19 crisis, central banks around the world intervened in lowering interest rates. By 23 March 2020, 39 central banks[2] had lowered interest rates or increased liquidity. Despite these interventions, market rates for borrowing fresh capital have often risen,[3] particularly in low-income countries. A Jubilee Debt Campaign (jubileedebt.org, 2020) reported that interest rates have on average risen by 3.5 percentage points for low- and middle-income countries since mid-February, and that costs for new borrowing stood at 10 percent.

A recent report (UNCTAD, 2020) by the United Nations Conference on Trade and Development (UNCTAD) showed how sustained debts could pose a larger problem for the global economy and financial system. According to the report, in 2018, total debt (private, public, domestic and

[2] Inter alia, the Central Banks of the United States of America (Fed), Euro Area (ECB), United Kingdom of Great Britain and Northern Ireland (BoE), Brazil, Chile, China, Hong Kong SAR, Indonesia, the Republic of Korea, Mexico, New Zealand, Norway, Peru, Philippines, Poland, Romania, South Africa, Thailand, and Turkey.

[3] There are several factors that led to higher interest rates. Importantly, the rapid price declines in other asset classes, notably equities, forced many investors to sell bonds (including T-bills and German bunds). This in turn led to downward pressure on bond prices and increases in the underlying yields (interest rates).

external) across developing countries was equal to almost twice their combined GDP—the highest ever. The build-up of private debt by non-financial corporations, e.g., private and public enterprises, which now amounts to nearly three-quarters of total debt in developing countries (a much higher ratio than in advanced economies), is seen as particularly concerning. According to UNCTAD, inherently volatile "foreign shadow financial institutions" have played a major role in fuelling this accumulation, such that around one-third of private non-financial corporate debt is located in low-income countries. Similarly, a report by the IMF (IMF, Macroeconomic Developments and Prospects in Low-Income Developing Countries, 2018)shows that rising debt levels have led to increased debt vulnerabilities in many low-income developing countries (LIDCs). While debt vulnerabilities remain contained in the majority of LIDCs, some 40 percent of them currently face significant debt-related challenges, up from 21 percent in 2013. Nine-of-twelve countries that moved from "low/moderate risk" to "high risk/in debt distress" are located in sub-Saharan Africa.

With rising costs for capital, the impacts would also be felt in agriculture, notably capital-intensive forms of production. Credit markets could become an important channel of transmission, adversely affecting capital-intensive agriculture. Capital intensive production in low-income countries (e.g. row crops in Latin America) could be particularly hard hit. This would further deteriorate the commodity terms-of-trade for many commodity-dependent LIDCs that has been underway since the last price hike in 2012.

Exchange rates

One of the immediate outcomes to the 2020 COVID-19 crisis has been an adverse change in exchange rates. Figure 7 presents the changes in exchange rates since January 2020 for most of the largest economies relative to the US Dollar. A common feature of the currency shifts was a significant (trade-weighted) appreciation of the US dollar against almost all other currencies, visible in Figure 6. The same holds, albeit to a lesser extent, for the Euro.

The rising US Dollar prior to and during the Great Lockdown has had immediate impacts on world trade and international prices. The Dollar strength has made non-US exporters more competitive and kept a lid on US Dollar denominated commodity prices, notably maize and sugar, which suffered from both lower energy prices and high export availabilities. Over the medium-term, the Dollar strength in conjunction with higher commodity prices could add to inflationary pressures in commodity exporting countries. It could also add to existing problems in servicing dollar-denominated debts, which have seen a massive increase over the past years.

The exact opposite shifts in exchange rates were observed during and after the Great Recession. Particularly the so-called commodity currencies that benefited from a run-up in commodity prices and saw their currencies appreciate vis-à-vis the US Dollar. Figure 6 compares the trade-weighted changes in exchange rates against the US Dollar between the two crises.

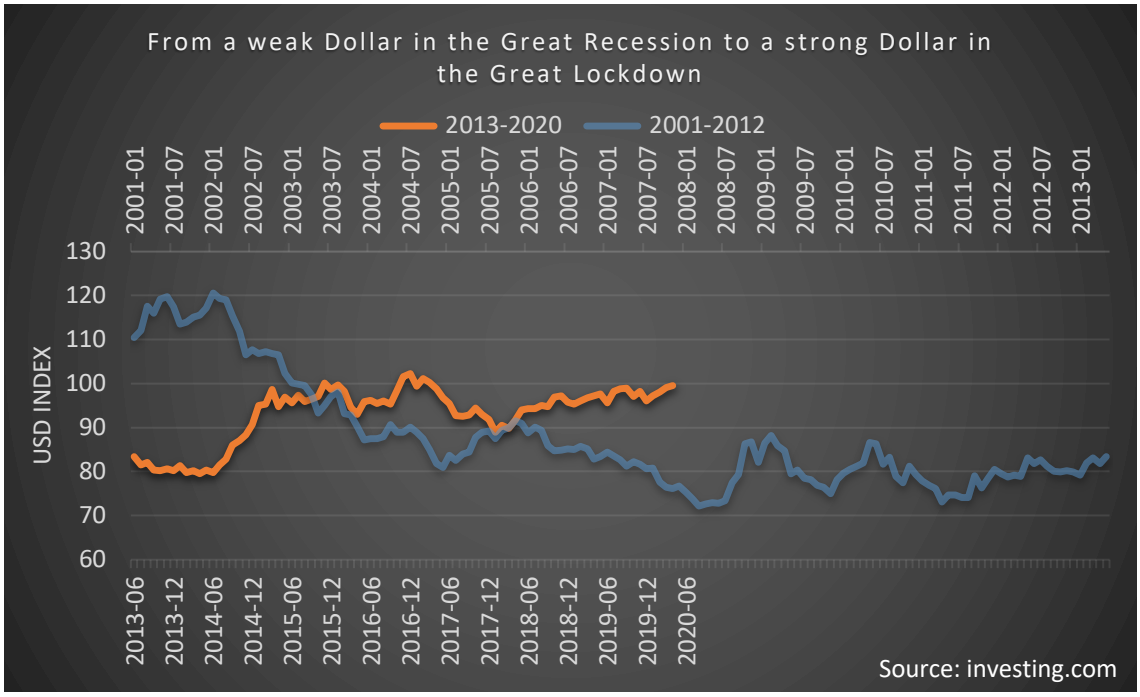

Figure 6: US Dollar Index, Trade-weighted USD exchange rate

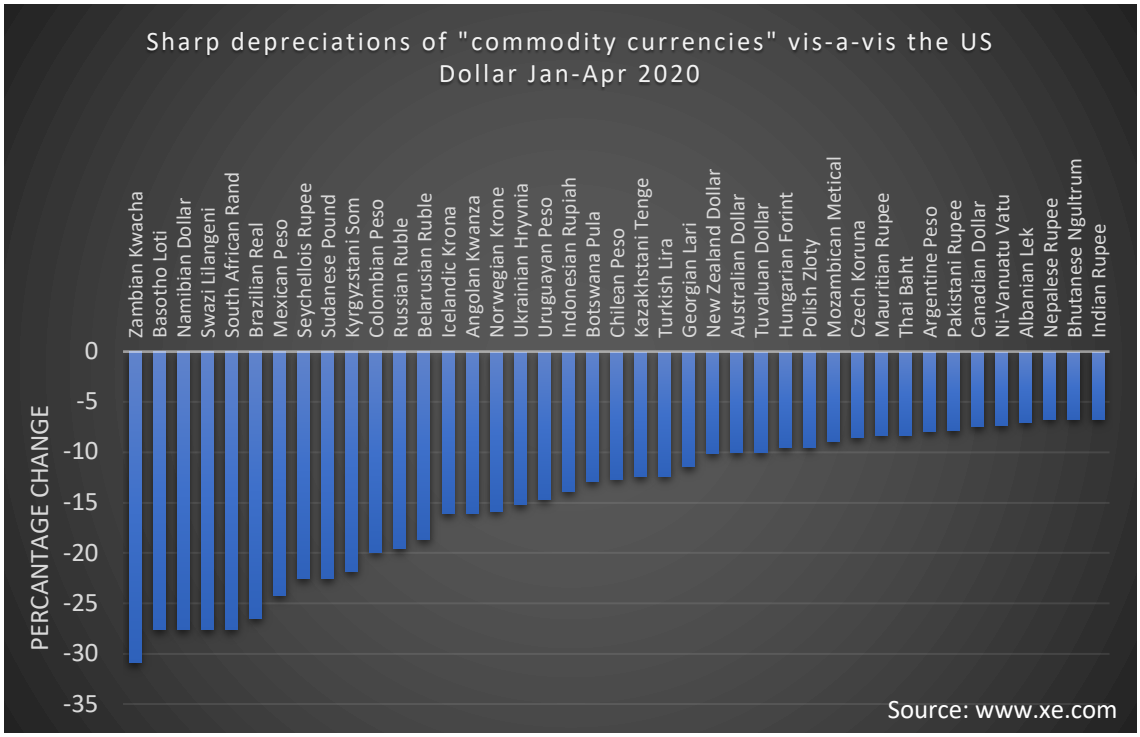

Figure 7: Depreciation rates in percent, January – March 2020, by country

Trade

Total merchandise trade

In a first impact assessment, the World Trade Organisation (WTO) estimated that total merchandise trade is expected to fall between 13 to 32 percent in 2020 (WTO, Trade set to plunge as COVID-19 pandemic upends global economy, 2020). The WTO notes that “the wide

range of possibilities for the predicted decline is explained by the unprecedented nature of this health crisis and the uncertainty around its precise economic impact. But according to WTO the decline will likely exceed the trade slump brought on by the global financial crisis of 2008-09" (Figure 8).

The WTO expects a recovery in trade in 2021. although the extent of the recovery is likely to be limited. The WTO offers two recovery scenarios and only in the optimistic case, global merchandise trade is likely to resume its pre-crisis trajectory. After the financial crisis of 2008-09, trade never returned to its previous trend (Figure 8). The WTO notes that a "strong rebound is more likely if businesses and consumers view the pandemic as a temporary, one-time shock. In this case, spending on investment goods and consumer durables could resume at close to previous levels once the crisis abates". If the outbreak is prolonged and/or recurring uncertainty becomes pervasive, households and business are likely to spend more cautiously.

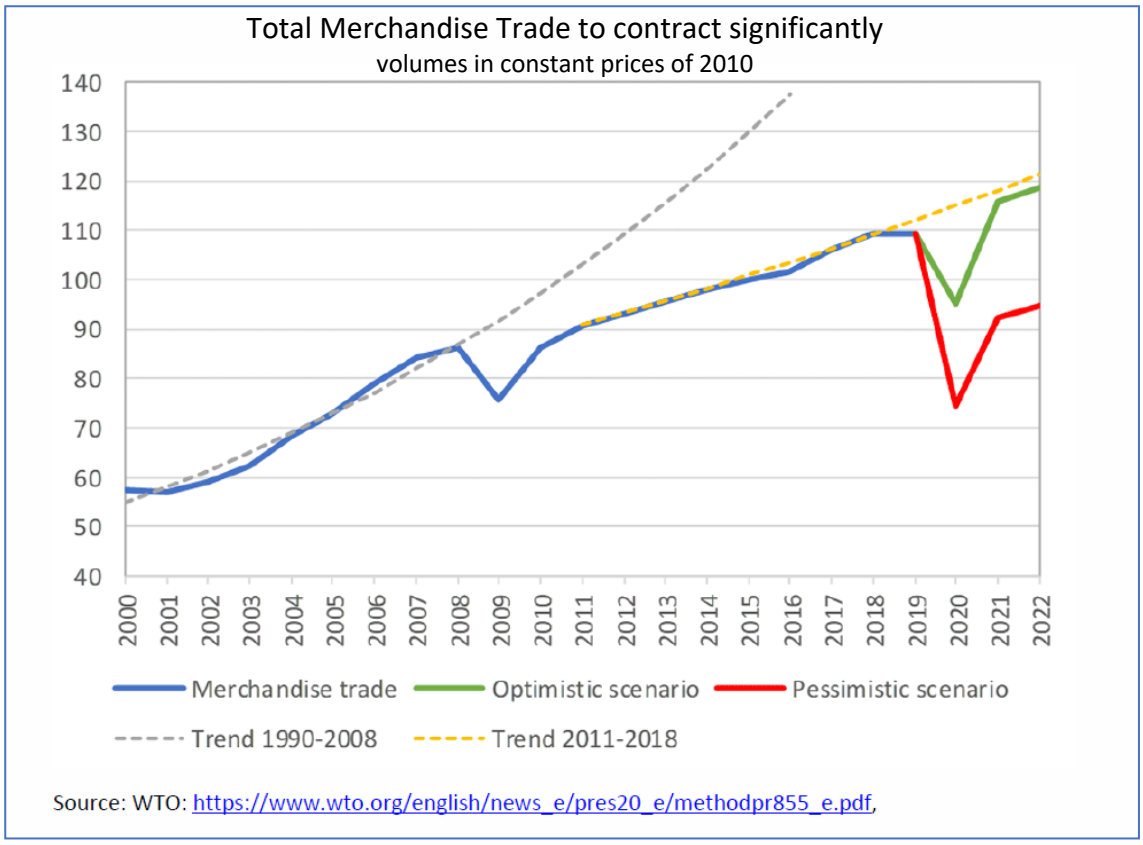

Figure 8: Total merchandise trade, 2000-2022 under different COVID-19 impact assumptions

The WTO study also offers estimates of the extent of impacts across major groups, both across merchandise trade and trade in services (WTO, Methodology for the WTO Trade Forecast of April 8 2020, 2020). Unsurprisingly, trade in health care services will be least affected. Depending on the recovery path, it will decline by -1.2% (V-shaped), -6.4% (U-shaped) and -8.0% (L-shaped recovery). Trade in basic pharmaceutical products is even projected to rise, because it is an important input into the Health Care sector, whose demand alone in the public sector is assumed to rise by 50 percent.

Trade in food and agriculture

Trade in agriculture and processed food is projected to contract more significantly, but less than the average across all goods and services. A number of reasons suggest that agricultural

trade is likely to be less affected by the Great Lockdown than total merchandise trade. First, demand for agricultural products is relatively income inelastic; food is an essential product for all countries, and the options for import substitution, i.e. replacing food imports through domestic production are rather limited in the short-term. Second, a lot of agricultural trade takes place in bulk shipments, highly capital-intensive, highly automatized with little human interaction. Bulk shipments also benefit from lower transportation costs, which account for an above average element of shipments compared to other, more expensive goods. Disruptions due to health reasons or strikes are no-doubt possible, but they are less likely to result in lasting disruptions of bulk shipments. For processed food products, where bulk shipments play a lesser role, the impacts of COVID-19 are expected to be more pronounced. Third, while global value chains in food and agriculture are also becoming increasingly complex, the international division of labour in international food and agriculture is much less pronounced than in other sectors such as consumer electronics or the automotive industry. Finally, international prices for food and agricultural goods have so far remained low or have even declined, which has limited recourse to widespread trade restricting measures such as export bans or taxes.

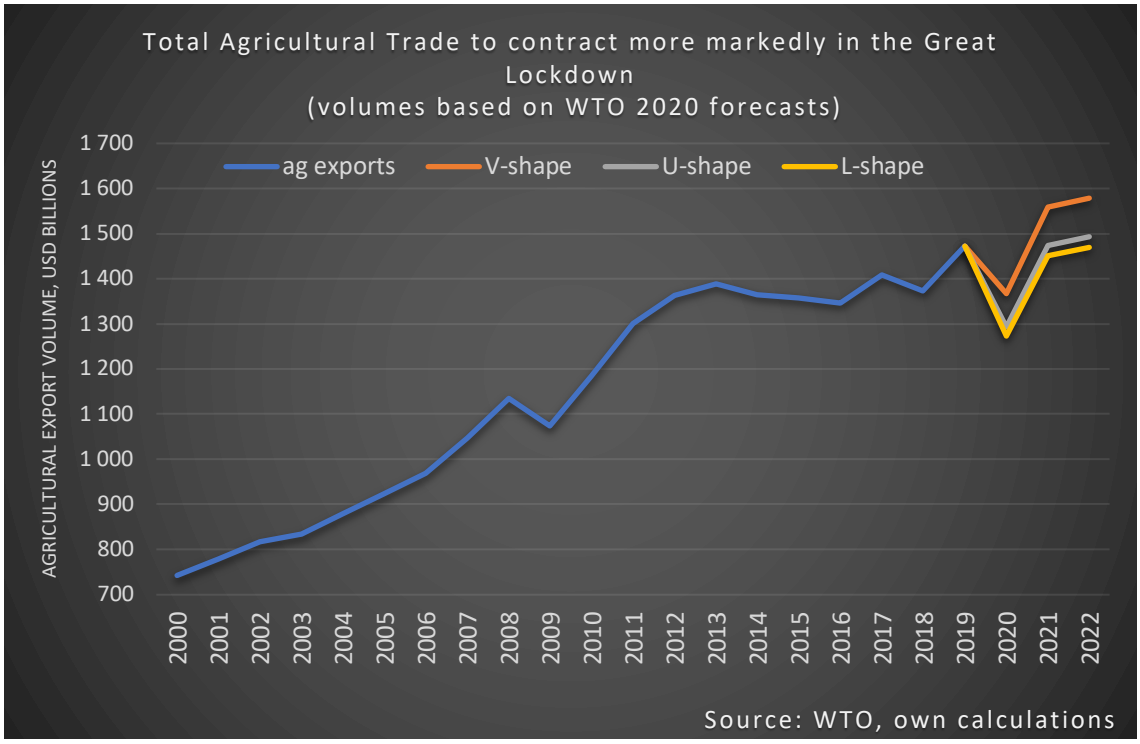

Figure 9: Agricultural trade projections, own calculations based on WTO estimates

Greater diversification in agricultural trade

Exposure of the global trading system to a crisis is also conditioned by the concentration of exporters and importers. A high concentration of exporters makes markets susceptible to logistical constraints or policy interventions (export restrictions) imposed by large players, potentially jeopardising access to food for importers. Conversely, a high concentration on the import side could mean that a sharp reduction in import demand of one or two major importers could jeopardize revenue streams for exporters dependent on these agricultural exports.

Figure 10 depicts the change in concentration for all agricultural commodities, both for exports and imports.[4] The changes are based on the differences between the average Herfindahl-Hirschman Index (HHI) prior to the two crises, i.e. the difference between the average of HHIs from 2013 to 2017 and the average from 2003 to 2007. The calculations are undertaken for all agricultural commodities. Comparing the pre-crisis situation between 2007 and 2009 and in 2020 suggests that the concentration of agricultural trade has declined for many products on both the export and import side, i.e. for many agricultural products. These are the bubbles in the lower left quadrant of Figure 10, i.e. all commodities for which the number of importers and exporters has risen, not declined. This means that, when moving into the 2020 crisis, more exporters and importers were participating in trade, which should make the global trading system for any given commodity more resilient to shocks not more vulnerable.

Despite the greater diversity over importers and exporters in general, there are a number of noticeable deviations from this trend, i.e. commodities where either imports or exports (or both) have become more concentrated over countries. The latter (both more concentrated imports and exports) are commodities depicted in the upper right quadrant of Figure 10, entitled “less diversified imports, less diversified exports”. The most important product in this rubric is the global soybean, where China has become the dominant importer with a world market share close to 65 percent. Also, exports have remained in the hands of a few countries, notably the United States of America, Brazil, Argentina and, more recently, Paraguay.

The generally greater diversification offers added resilience to the agricultural trading system, which should prove increasingly important, as the number of importers and exporters affected by the crisis rises.

[4] Trade values and commodity disaggregation used are based on the trade domain of FAOSTAT.

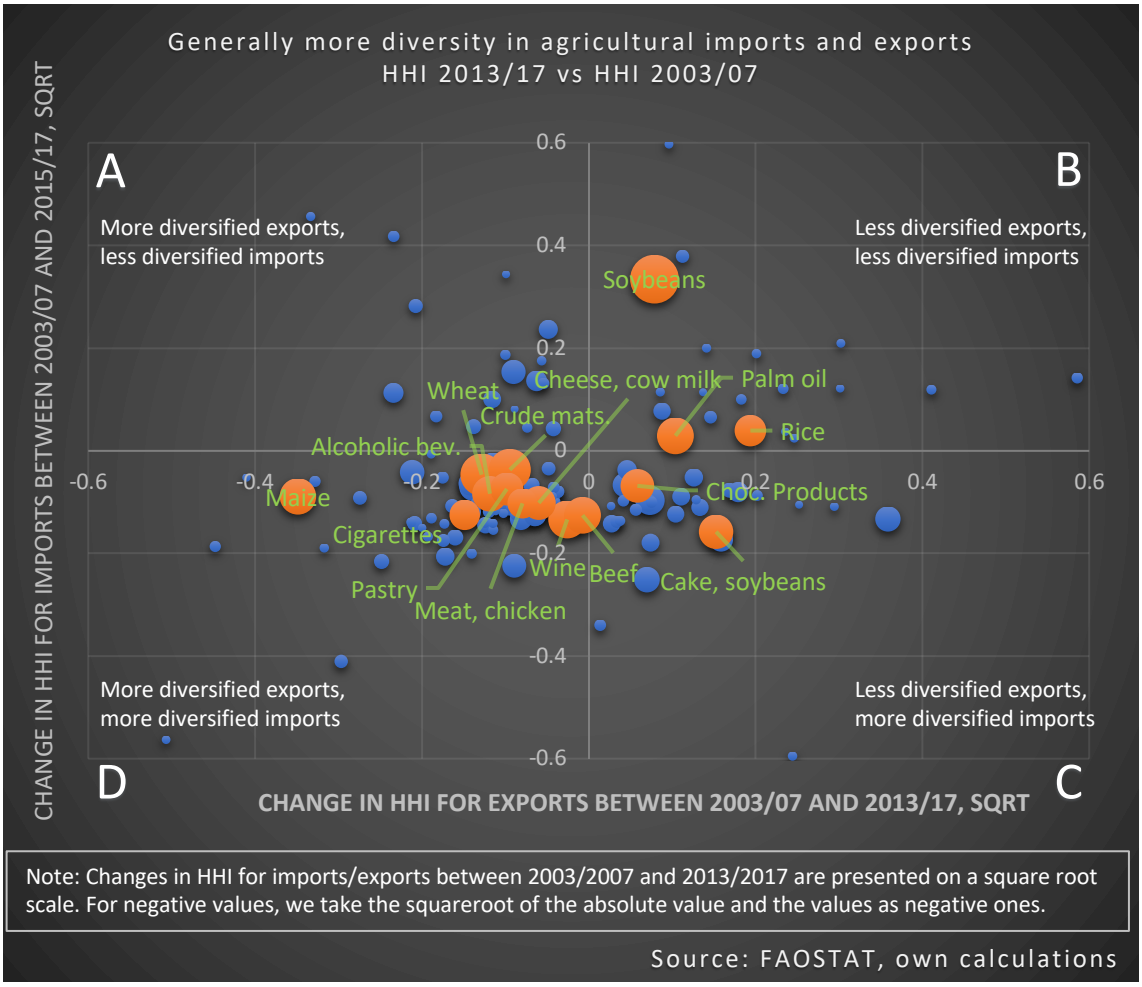

Figure 10: Changes in the HHI for all traded commodities, imports and exports

Food prices

Arguably the most important difference for global food security between the two crises lies in the differences in the levels and the changes in food prices. The 2007-2008 crisis was characterised by a sharp increase in practically all basic food items, whereby staples such as rice and wheat saw the most impressive hikes (Figure 11). The price hikes for basic foods on a global level also made the 2007-2008 crisis a particularly serious one. Consumers were not only losing jobs and incomes; they also saw their purchasing power decline as food prices rose. The price changes caused by the 2020 crisis are in stark contrast to the 2007-2008 developments. With the exception of smaller increases in international quotations for wheat and rice, prices for most other basic foodstuffs actually declined, particularly those for vegetable oils and sugar (Figure 11).

Barring major disruptions in the supply chain, the projected recession means that the trend in generally lower food prices could prevail throughout the current crisis. Lower food prices on international markets should also attenuate global food security concerns compared to the Great Recession; but they cannot necessarily prevent local, national and international disruptions in food supply chains. Neither do they ensure that prices in local currencies do not see increases, given the often-hefty depreciation of currencies against the US Dollar.

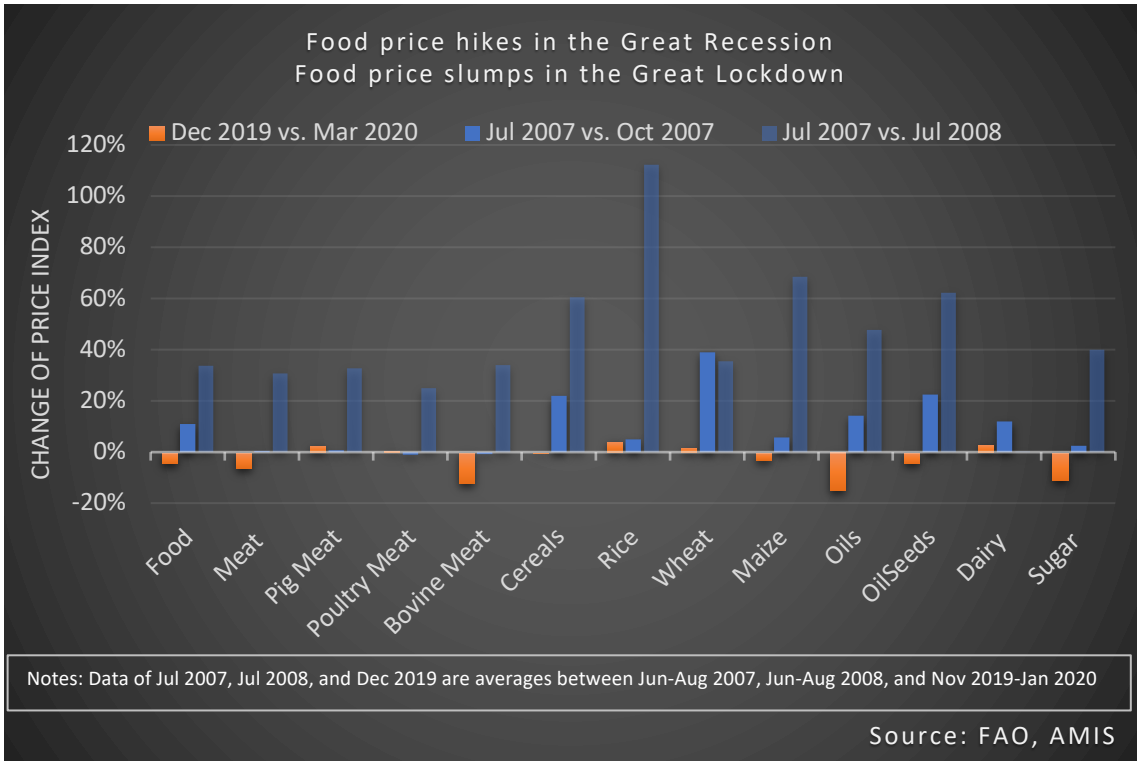

Figure 11: Price changes for food products, Great Recession vs Great Lockdown

Food stocks and "storers"

Food stocks play a critical role in smoothing consumption and contributing to food security.[5] "Storers" smooth out troughs in prices after large harvests by "buying low and selling high". They reduce the risk of expected shortages by holding stocks and thus raise the current prices and lower future ones. When stocks run out, shocks must be absorbed by drops in the use of supplies for animal feed use or biofuels production, or less much desirably, by poor (food insecure) consumers.

At the beginning of the 2007-2008 food crisis, cereal stocks both in absolute terms (Figure 12) and relative to utilization hovered around a multi-year low (Figure 12). These low stock levels made the global food supply system more susceptible to exogenous shocks. A number of shocks were exerted on the global food system, arising from both the supply side and the demand side. On the supply side, successive drought-affected wheat crops in Australia (2006/07 and 2007/08) combined with below-average cereal crop in the European Union in 2006/07, and a low US maize crop in 2006/07 led to a shortage in available supplies, notably for wheat. On the demand side, the burgeoning use of biofuels reduced the availability of maize for food and feed and diverted other grains into non-food uses. In response, prices had to rise to ration demand and create incentives to step-up production for the next season.

[5] Food security analysts therefore monitor the availability of food stocks with great attention. This monitoring task was at the heart of the AMIS project, a G20 initiative, established in the aftermath of the 2007-2008 food crisis. Its main mandate focuses on four important food products that critically influence international food security. This mandate arose from the recognition that low storage levels prior to the 2007-2008 world food crisis comprised the buffer capacity of global food markets to exogenous shocks, arising either from the supply side (weather, droughts or floods) or the demand side (mandated allocation of agricultural products to non-food uses). The 2007-2008 crisis was characterised by both, a supply and a demand shock.

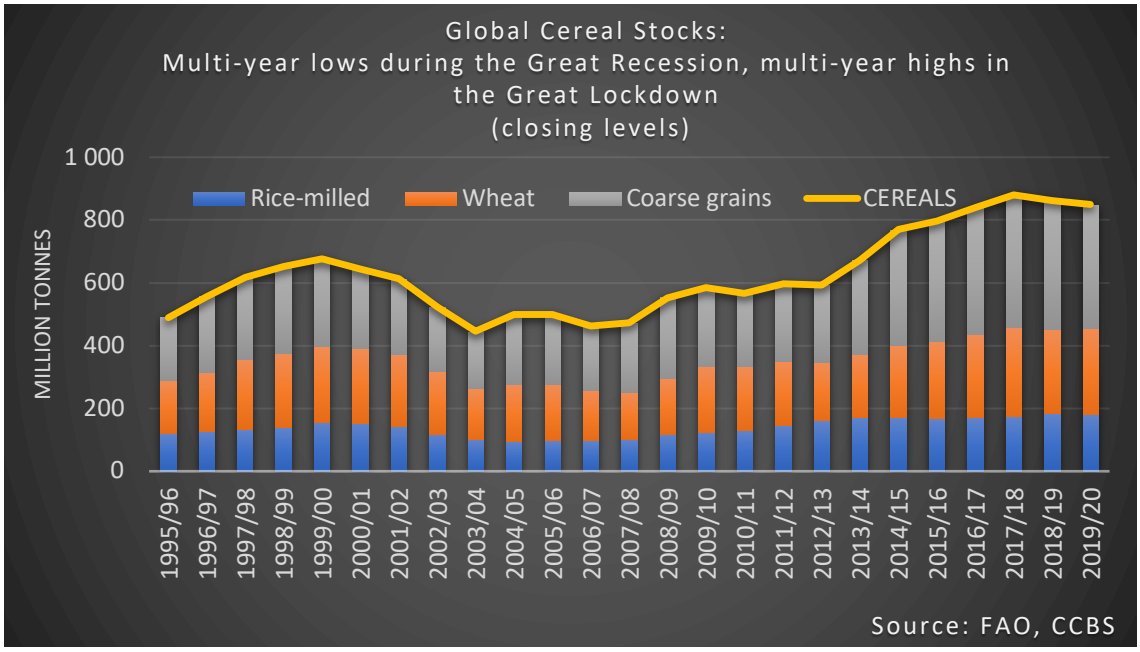

Figure 12: Cereal stocks, evolution across crises

At the beginning of the 2020 COVID-19 crisis, cereal stocks hovered around a multi-year high of about 850mmt. In absolute terms they were nearly twice as high as at the beginning of the 2007-2008 crisis (472mmt) and even relative to utilisation, they had reached levels much above those registered in 2007-2008. These high stocks should provide a solid buffer against adverse shocks such as, for instance, bad weather in the 2020/21 growing season. While important, the absolute levels of stocks are not all that matters for buffer capacity. Equally important is the distribution of stocks over countries, over exporters and importers and importantly their concentration over storers (few or many).

Table 3 summarizes the concentration of cereal stocks for the top 1, 3, 5 and 7 storers in 2007/08 and 2020. All calculations are based on quantities. It shows that the concentration of stocks across countries was already very high in 2007/08 but has further increased over time. A large share of stocks is not only in the hands of a few countries, but also held by storers like China and India who may not be responsive to global price signals. Put into the context of the current crisis, the high stocks held globally may not provide as much buffer capacity as their absolute levels suggest in the case of a disruption in the global supply chains, caused, for instance, by a breakdown in bulk shipment facilities.

Table 3: Concentration ratios of global cereal stocks (closing levels)

	cr1	cr3	cr5	cr7
2007/08	37%	62%	64%	67%
	CHN	CHN, USA, EUR	CHN, USA, EUR, IND, RUS	CHN, USA, EUR, IND, RUS, CAN, UKR
2019/20	49%	65%	73%	76%
	CHN	CHN, USA, IND	CHN, USA, IND, EUR, BRA	CHN, USA, IND, EUR, BRA, ARG, RUS

Energy markets, biofuels and agricultural input markets

Agriculture is a highly energy-intensive industry. Energy markets affect agriculture both on the input and the output side. On the agricultural output side, lower energy prices will reduce the amounts of agricultural feedstocks used for the production of biofuels. The typical feedstocks of sugar cane and maize, are likely to see the most pronounced contractions in demand and the most significant downward pressure on prices.

Trends and absolute levels of energy prices in 2020 are radically different from those in 2007-2008. In 2007-2008, Western Texas Intermediate (WTI) crude oil prices experienced a massive run-up, culminating by mid-2008 at levels close to USD 140/bbl, measured on a monthly average basis (Figure 13). By April 2020, by contrast, crude oil (WTI) prices had fallen below USD 20/bbl (Figure 13) on a monthly basis and even below USD 12 during intra-day lows. On 20 April 2020, quotations for nearby futures of WTI closed at levels of minus USD 35/bbl, reflecting the need to rollover nearby futures to avoid delivery in May. The shifts in the broader energy price index (Figure 20, Annex) do not yet fully mirror the precipitous fall in crude oil prices.

In 2007-2008, the rise in energy prices was so significant that it turned agricultural products into competitive feedstocks for the energy market, siphoning off an increasing quantity of agricultural products from food markets into the biofuels market. The most direct effects were visible in the demand for energy feedstocks, i.e. maize, sugar and vegetable oils; the more indirect effects came through substitution on the demand side and competition for cropland on the supply side, which eventually lifted prices for all agricultural products.

The exact opposite set of drivers was at work at the beginning of the COVID-19 crisis. The sharp decline in energy prices (Figure 13), caused prices of ethanol and biodiesel to collapse and resulted, without any time lag, in strong declines in the demand and prices for bioenergy feedstocks such as maize, sugar and vegetable oils. These effects can create an automatic stabiliser for international food security, they keep prices for basic foodstuffs under downward pressure and help ensure access to food amid falling incomes.

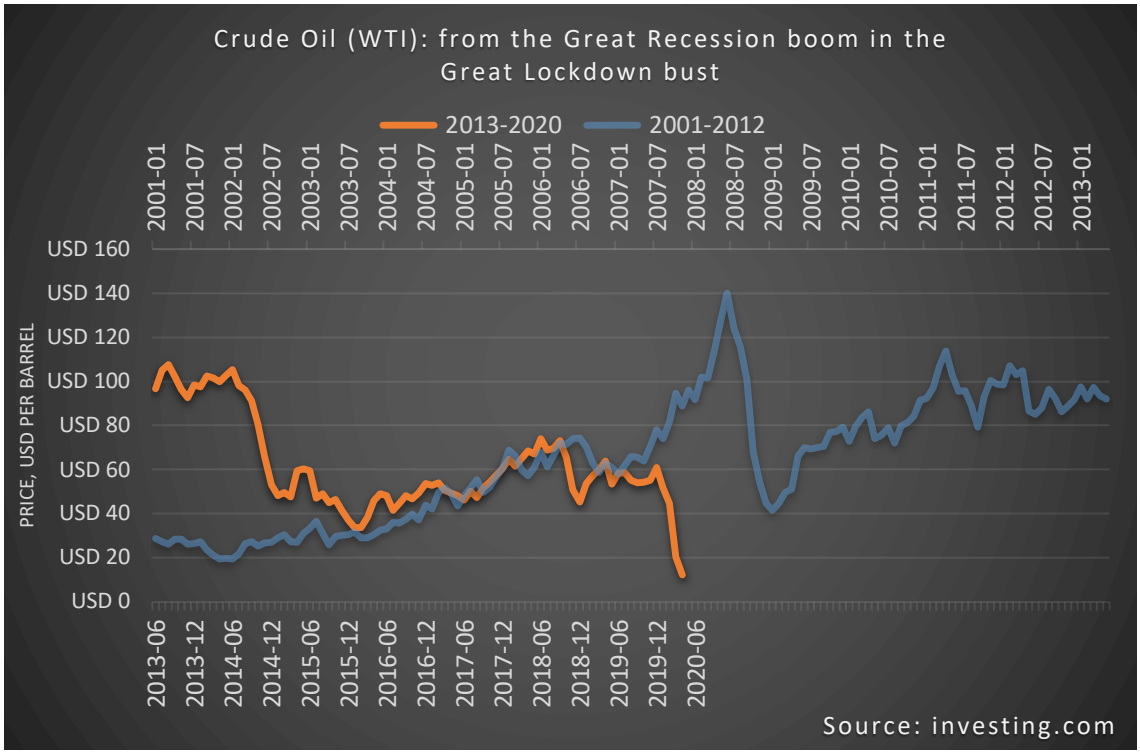

Figure 13: Crude oil prices, Great Recession vs Great Lockdown

The exact opposite is happening during the 2020 COVID-19 crisis. These lower energy costs would affect agricultural production costs through several channels. The direct impacts include lower costs of energy for all forms of mechanisation, including power needed to till fields, for irrigation and for transportation. The indirect impacts are channelled through lower costs of energy-intensive inputs such as fertilizers (Figure 14 and Figure 15), lubricants, pesticides and electricity. These lower input costs would act as an automatic stabiliser for farm incomes and attenuate the direct impacts of lower energy prices and the COVID-19 pandemic more generally.

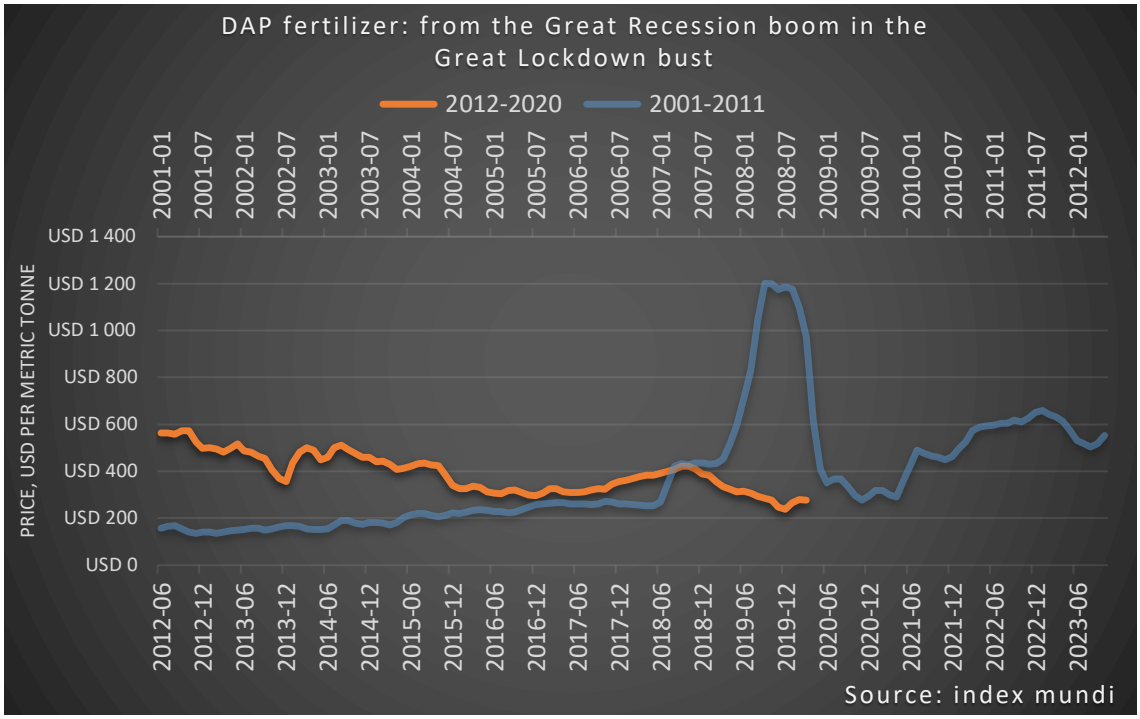

Figure 14: DAP fertilizer prices, Great Recession vs Great Lockdown

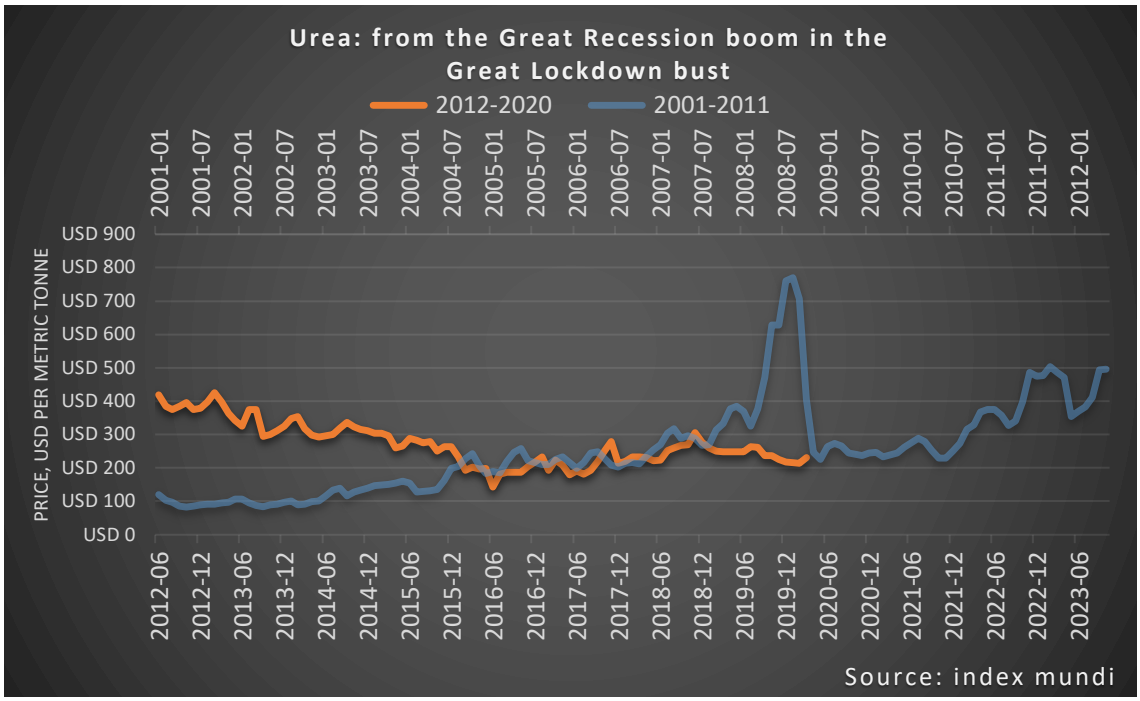

Figure 15: Urea prices, Great Recession vs Great Lockdown

Transportation and supply chain disruptors

The global transportation market for food and agricultural commodities is highly segmented across different modes of transportation. The modes include bulk (ships and barges), container and truck shipments as well as air freight. While they are often connected to multi-modal

global systems, the various modes are affected in different ways by the COVID-19 outbreak and will therefore be discussed separately.

Bulk

Another striking difference between the 2007-2008 and 2020 lies in the development of costs for international bulk shipments. The Baltic Dry Index,[6] which is a benchmark measure for the cost of shipping goods around the world, has reached a multi-year low and is hovering at the lowest level in 25 years (Figure 16). For the first quarter of 2020, the index has slipped more than 40 percent as the rapid spread of the new coronavirus has led to shipping restrictions and weakened demand for dry bulk vessels. The index started to strengthen again in April 2020 as a gradual restart of industrial activity in China led to higher demand for shipping vessels.

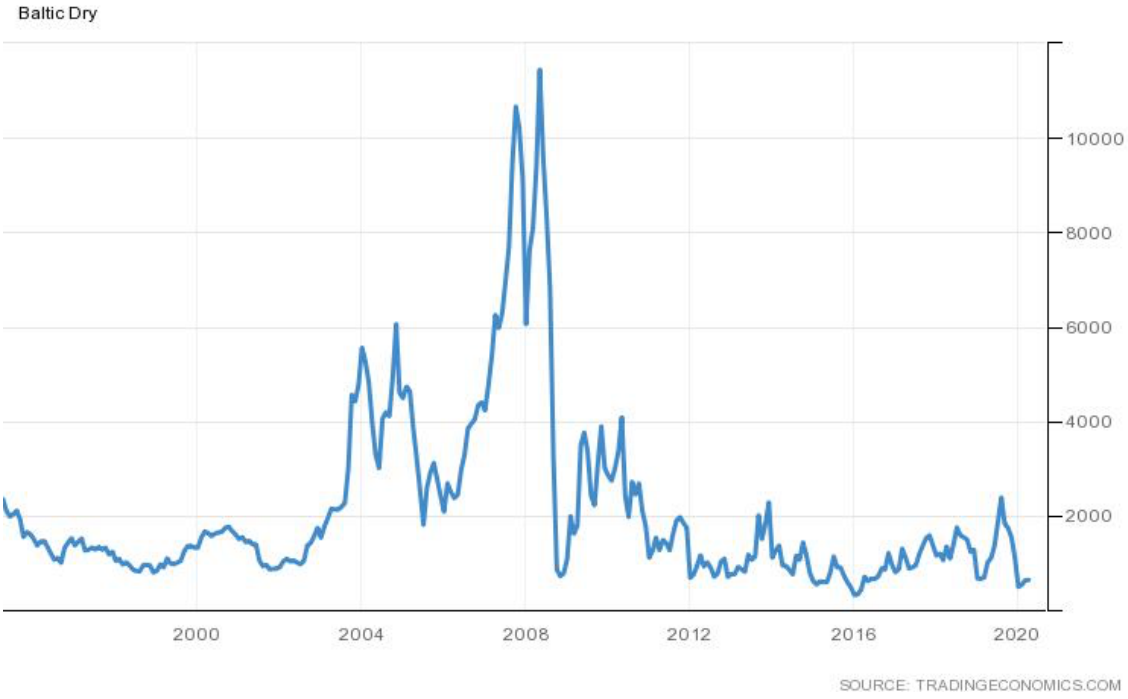

Figure 16: Baltic Dry index, 1995-2020 (tradingeconomics.com, 2020)

These low costs of bulk shipments in 2020 are in stark contrast to the costs experienced prior to and around the 2007-2008 crisis. In November 2007, the Baltic Dry index reached an intermediate high at more than 10000 index points and even exceeded this level in July 2008, with an all-time high at more than 11000 points. These levels are higher by a factor of 20, compared to the weekly lows reached in early April 2020. The vast increase in transportation costs led to considerable price wedges between different grain markets; the price differences of more than 50 USD/tonne in price quotations between the United States of America and European maize being just one example.

[6] The Baltic Dry Index is reported daily by the Baltic Exchange in London. The index provides a benchmark for the price of moving the major raw materials by sea. The index, tracks rates for capesize, panamax and supramax vessels that ferry dry bulk commodities. The Baltic Dry Index is not restricted to Baltic Sea countries or to a few commodities like crude oil. Instead, the Baltic Dry Index takes into account 23 different shipping routes carrying coal, iron ore, grains and many other commodities.

Container and truck transportation

While bulk shipments have seen few disruptions and no upward pressure in prices, container and truck shipments are already affected by the COVID-19 outbreak. These affect mainly second-tier ports, transhipments to land-locked countries and truck transportation within large countries. For instance, shipments of tropical fruits from South-East Asia, which are in season at this time of year (April-May), were disrupted through congestions at ports of Shanghai and Tianjin (Hey, 2020). Reefer containers could not be offloaded on time. This has caused significant losses due to the perishability of the produce. Cargo disruptions have been amplified by severe container shortages stemming from increased imports of pork in response to African Swine Fever. The closure of some wholesale markets due to quarantine measures has further impeded sales. Wholesale prices of Thailand's red-flesh dragon fruit, which has a short shelf-life and is dependent on the Chinese market, dropped by almost 85 percent after exports to China stopped. Prices of longan fruit from Cambodia have plummeted in response to disruptions to shipments to China. Trade in many other tropical fruits has been affected as countries across the globe have initiated stricter border controls or entirely closed their borders in the midst of the COVID-19 pandemic. A prominent example is the durian trade between Malaysia and China. There are also reports of border delays and difficulties of importing mangoes from Thailand to China (FreshPlaza, 2020).

Not only container shipments are under strain, there are also first reports about a lack of truck drivers owing to quarantine restrictions, industrial action or actual illness. Strikes have been announced in the port of Santos and in Argentina; if they materialise, this would be particularly disruptive given the fact that the months of April and May are the peak period for Brazilian soybean exports.

Air freight

The so-called "bellies" of passenger jets are often used to ship high-value goods and foods, making up a small but important portion of cross-border trade around the world. As passenger traffic has collapsed around the world, air freight followed suit. Data from Seabury, a consulting firm, show that global air cargo capacity in the first week of April was 35 percent below its levels the same time last year (Hale, 2020). The fall was initially more pronounced in Hong Kong and China (Mainland) as restrictions from China emerged in late January and early February, but other countries quickly caught up. While capacity increased slightly on specialised cargo planes, the daily international capacity available from the bellies of passenger planes was 80 percent lower globally in the final week of March.

At the same time, demand remained strong for air freight. As supply chains around ports continue to come under pressure, air transport remains a viable alternative for importers and exporters. As a result, prices for air freight, usually measured per kilogramme or tonne of product, have risen. Relative to pre-crisis levels, estimates suggest that prices are up 20 percent to 30 percent across the Asia-Pacific region, and that for some routes, such as Hong Kong to Beijing, they may have jumped by about 50 percent.

KEY MESSAGES

A number of key messages arise from the analysis of the COVID-19 crisis and the comparison with the Great Recession. The salient points can be summarized as follows:

1. The Great Lockdown will result in GDP contractions considerably deeper than those of the Great Recession.
2. Low-income countries saw little change in their GDP growth rates during the Great Recession, which mainly resulted in negative growth rates in high-income countries. While under the Great Lockdown, contractions in GDP growth in low-income countries will be less dramatic than in high-income countries, low income countries will also see sharp declines in GDP, particularly relative to the status-quo ante (baseline projections prior to the crisis).
3. Particularly hard hit will be emerging markets in Europe and Latin America, all of which are heavily dependent on commodity exports, including agricultural exports.
4. Hardest hit of all will be island states, as they were during the Great Recession. Within the group of island states, the SIDS are particularly exposed to the impacts of the Great Lockdown.
5. The world in 2020 is more experienced in dealing with global crises and arguably also better prepared. In high income countries, central banks are now fully familiar with the instruments of monetary easing; they have been adding new instruments to accommodate additional credit needs. On the fiscal side, governments have been lifting spending constraints. However, the large accumulation of debts in low income countries, including in foreign currencies, could spark a credit crunch and result in debt defaults. First impacts are already apparent, including announcement to restructure foreign debts.
6. The initial conditions for world agriculture are more supportive to avoiding a global food crisis. Food production prospects are positive, stocks are high, international (staple) food prices are low, trade is broader based with more importers and exporters participating, costs for bulk transportation are depressed, fertilizer and input prices remain low, energy prices have collapsed and competition from biofuels has virtually seized.
7. While global markets appear to be well supplied and resilient to further shocks, local problems could loom large. Particularly exposed are the SIDS, who see their income base erode amid collapsing revenues from tourism and lower proceeds from inbound remittances, while remaining heavily dependent on food imports.
8. In low- and high-income countries alike, all forms of labour-intensive agriculture are particularly exposed to the impacts of COVID-19. The impacts can be direct through COVID-19 related health issues, restrictions on the movement of workers, taking a toll on the labour force of subsistence farmers and rural workers. They can also be indirect through a deterioration of OHS standards.
9. Where COVID-19 emerges amid other crises such a pest and disease outbreaks (locust, African swine fever), adverse weather conditions, or compromised security (civil strife), the impacts on local food security can rise significantly. Many already food insecure countries in sub-Saharan Africa face such challenges.
10. At the level of international food markets, avoiding supply and export restrictions is of key importance. At the local level, targeted assistance will be required for the SIDS and countries exposed to multiple crises elsewhere.

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ANNEX 1

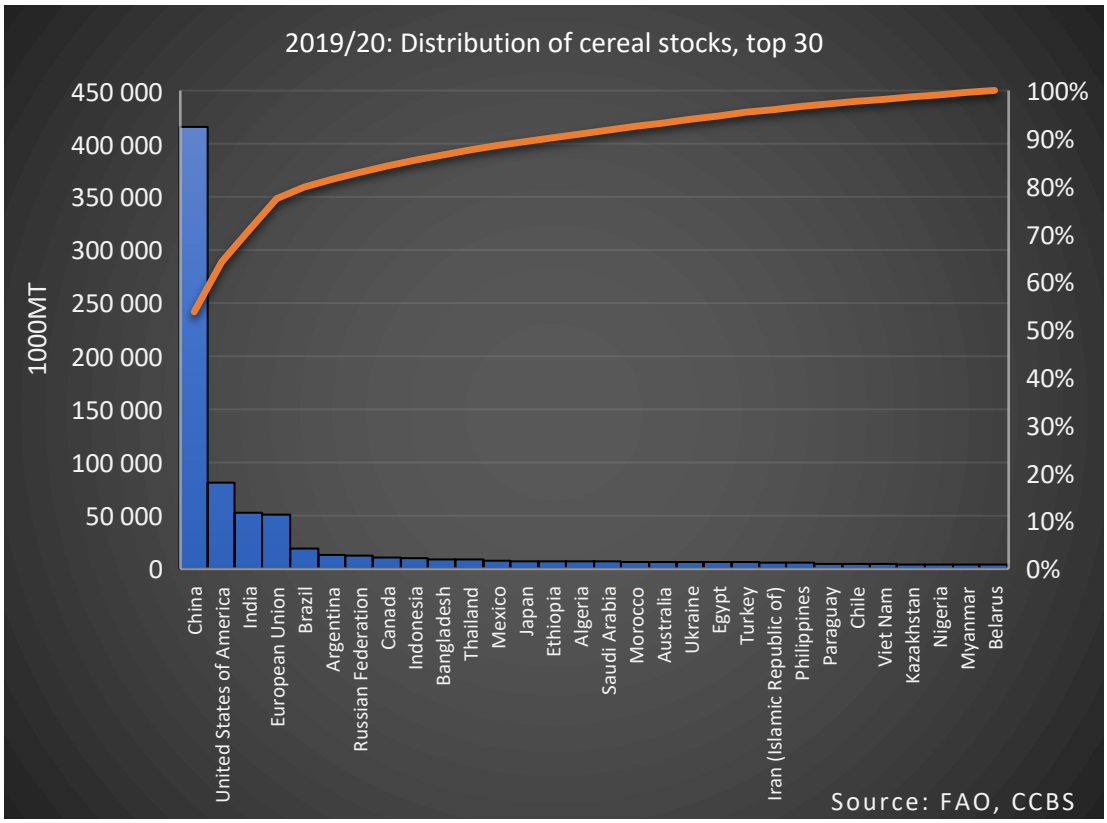

Figure 17: Storers and stocks prior to the Great Lockdown

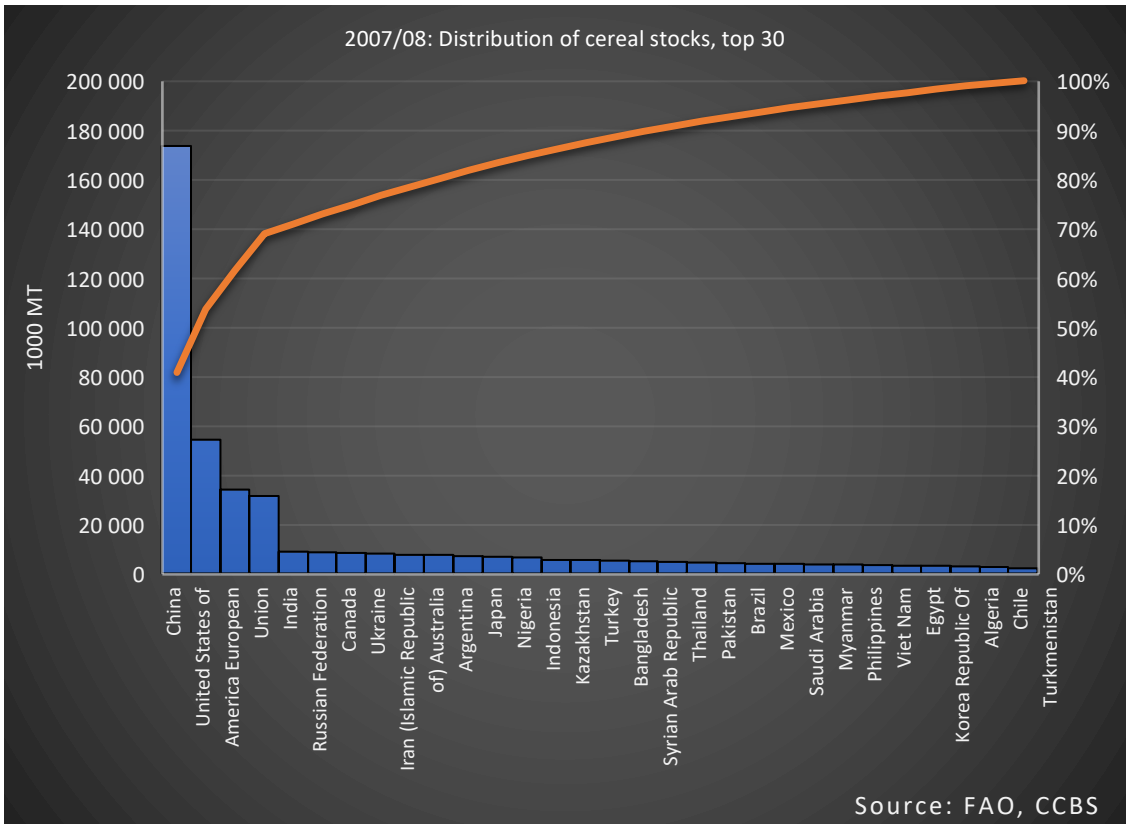

Figure 18: Storers and stocks prior to the Great Recession

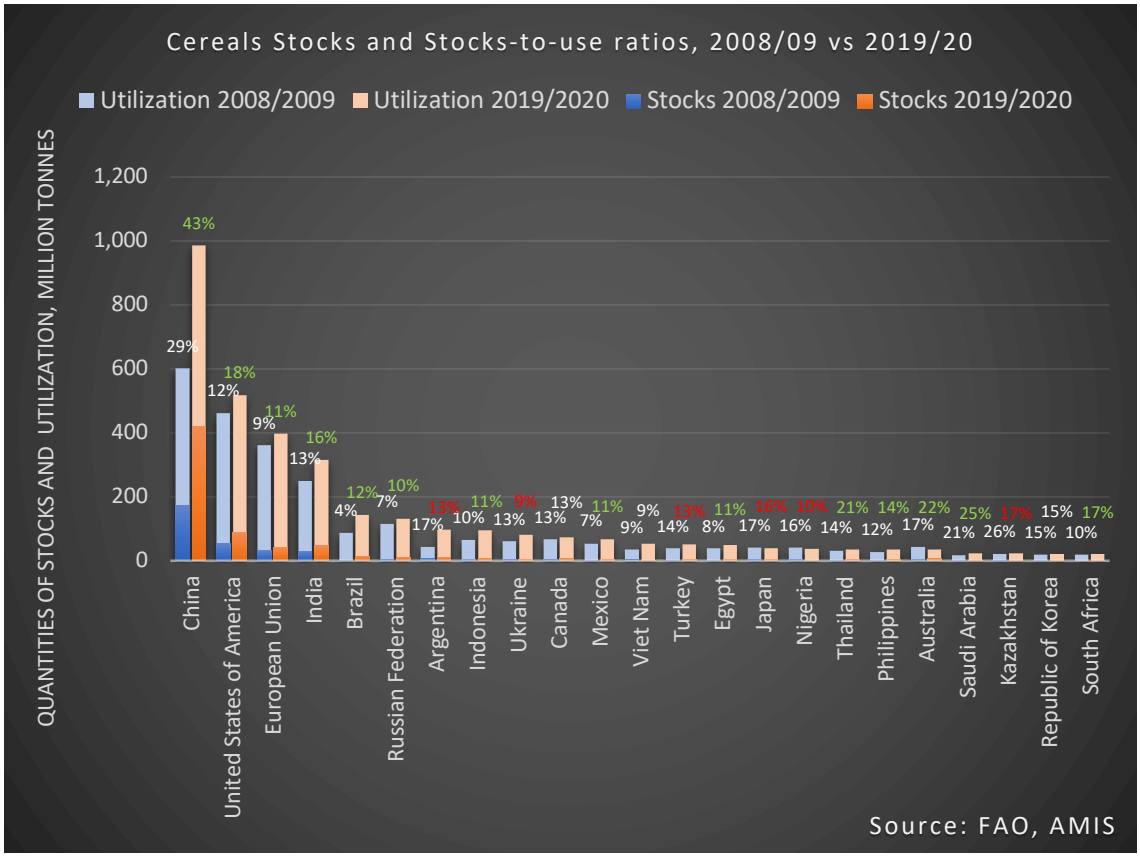

Figure 19: Cereal Stocks and Stocks-to-Use ratios across countries

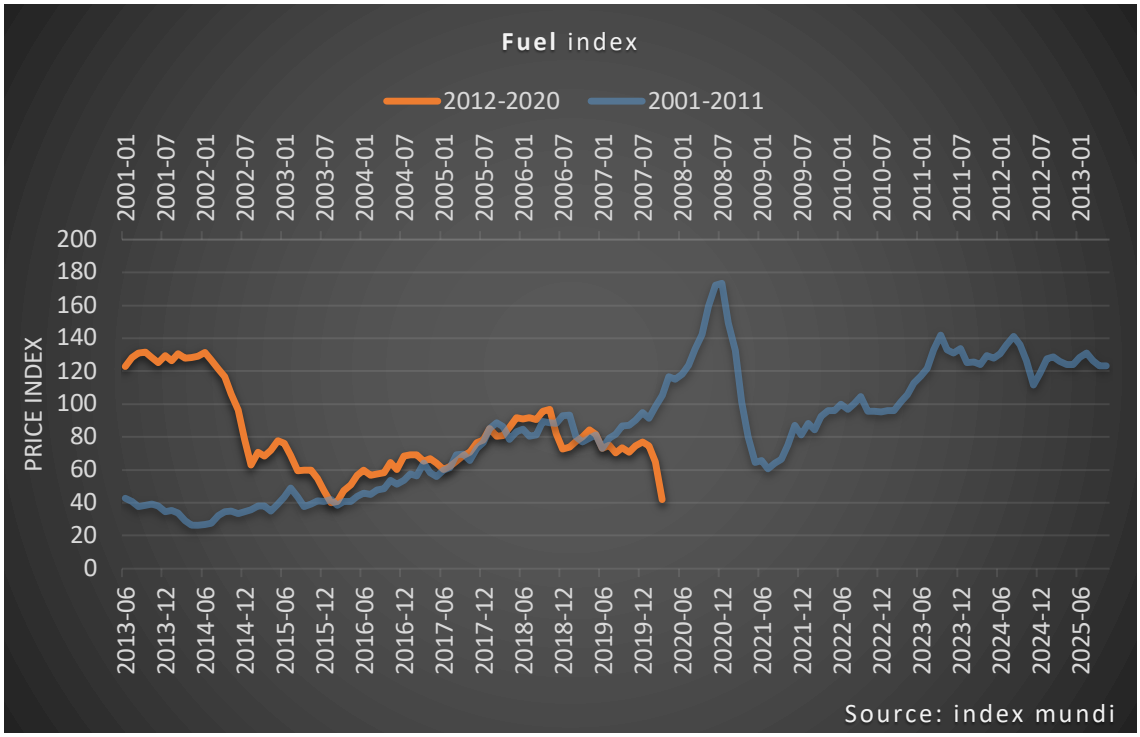

Figure 20: Fuel index, Great Recession vs Great Lockdown

Table 4: Exchange rate changes for the 50 largest economies in 2020 (till 10 April)

			Apr10	Mar10	2 Jan	Apr/Jan	Mar/Jan
1	United States of America	USD	1.00	1.00	1.00		
2	China	CNY	7.04	6.96	6.97	-1.0%	0.1%
3	Japan	JPY	108.40	103.71	108.43	0.0%	4.4%
4	Germany	EUR	0.91	0.88	0.90	-2.0%	1.7%
5	United Kingdom of Great Britain and Northern Ireland	GBP	0.80	0.77	0.76	-5.2%	-1.3%
6	France	EUR	0.91	0.88	0.90	-2.0%	1.7%
7	India	INR	76.12	74.00	71.34	-6.7%	-3.7%
8	Italy	EUR	0.91	0.88	0.90	-2.0%	1.7%
9	Brazil	BRL	5.11	4.67	4.04	-26.5%	-15.6%
10	Canada	CAD	1.40	1.38	1.30	-7.5%	-5.9%
11	Russian Federation	RUB	73.82	71.98	61.77	-19.5%	-16.5%
12	Republic of Korea	KRW	1212.10	1191.12	1158.64	-4.6%	-2.8%
13	Australia	AUD	1.58	1.54	1.43	-10.0%	-7.4%
14	Spain	EUR	0.91	0.88	0.90	-2.0%	1.7%
15	Mexico	MXN	23.46	20.99	18.89	-24.2%	-11.1%
16	Indonesia	IDR	15819.21	14347.26	13894.81	-13.8%	-3.3%
17	Netherlands	EUR	0.91	0.88	0.90	-2.0%	1.7%
18	Saudi Arabia	SAR	3.75	3.75	3.75	0.0%	0.0%
19	Turkey	TRY	6.70	6.15	5.96	-12.4%	-3.2%
20	Eswatini	CHF	0.96	0.93	0.97	0.7%	4.1%
21	Poland	PLN	4.16	3.80	3.80	-9.5%	0.0%
22	Sweden	SEK	9.93	9.49	9.37	-6.0%	-1.3%
23	Belgium	EUR	0.91	0.88	0.90	-2.0%	1.7%
24	Argentina	ARS	64.54	62.58	59.81	-7.9%	-4.6%
25	Thailand	THB	32.66	31.48	30.17	-8.3%	-4.4%
26	Austria	EUR	0.91	0.88	0.90	-2.0%	1.7%
27	Iran (Islamic Republic of)	IRR	41891.29	42032.31	42089.15	0.5%	0.1%
28	Norway	NOK	10.20	9.59	8.81	-15.8%	-8.9%
29	United Arab Emirates	AED	3.67	3.67	3.67	0.0%	0.0%
30	Nigeria	NGN	385.80	366.50	364.93	-5.7%	-0.4%
31	Ireland	EUR	0.91	0.88	0.90	-2.0%	1.7%
32	Israel	ILS	3.58	3.54	3.45	-3.7%	-2.5%
33	South Africa	ZAR	18.02	16.04	14.12	-27.6%	-13.5%
34	Singapore	SGD	1.41	1.39	1.35	-4.9%	-3.1%
35	Malaysia	MYR	4.31	4.24	4.09	-5.4%	-3.7%
36	Denmark	DKK	6.82	6.58	6.69	-1.9%	1.7%
37	Philippines	PHP	50.53	50.50	50.74	0.4%	0.5%
38	Colombia	COP	3900.44	3588.28	3252.53	-19.9%	-10.3%
39	Pakistan	PKR	166.90	157.69	154.75	-7.9%	-1.9%

40	Chile	CLP	846.13	834.77	751.15	-12.6%	-11.1%
41	Bangladesh	BDT	84.91	84.79	85.03	0.1%	0.3%
42	Finland	EUR	0.91	0.88	0.90	-2.0%	1.7%
43	Egypt	EGP	15.75	15.72	16.04	1.8%	2.0%
44	Czechia	CZK	24.62	22.57	22.69	-8.5%	0.5%
45	Vietnam	VND	23461.30	23174.96	23169.99	-1.3%	0.0%
46	Romania	RON	4.41	4.24	4.28	-3.1%	0.8%
47	Portugal	EUR	0.91	0.88	0.90	-2.0%	1.7%
48	Iraq	IQD	1186.61	1194.54	1194.68	0.7%	0.0%
49	Peru	PEN	3.37	3.50	3.30	-2.1%	-5.9%
50	Greece	EUR	0.91	0.88	0.90	-2.0%	1.7%

ANNEX 2: METHODOLOGICAL NOTE EXPLAINING THE CALCULATIONS OF AGGREGATE IMPORT DEPENDENCY

We calculate Imports Dependency Ratios (IDR) of food products and 20 subgroups of food products for individual countries and areas in the periods of 1961/1963, 1989/1991, 2004/2006, and 2015/2017. Food product grouping is based on FAOSTAT Food Balance Sheet (FBS).

For each country/area (c) and food product group (p), the three ratios are derived as follows:

$$\mathrm{IDR}_{c,p} = \frac{Qty_{c,p}^{Im}}{Qty_{c,p}^{Cons}}$$

Where $Qty_{c,p}^{Im}$ and $Qty_{c,p}^{Cons}$ denote quantities (in tonnes) of imports and consumption of a country c and food product group p, respectively. p is a given group of food products as defined in the FBS.

We then calculate IDRs for overall food products across all groups of food (p). As the data of consumption from FBS is available in quantities, it will result in a biased aggregation to aggregate food products based on weight, regardless of the various unit prices, i.e. sum the weight of seafood and meat with the weight of cereals. To be able to produce reasonable aggregated IDRs over commodities, we convert all quantities into values by applying appropriate trade unit values. Considering the possibility of significant variances of unit values across products, we first pool information with commodity groups, create weighted averages, and then apply them to quantities of consumption. The trade data for calculating the unit values are available from UNCOMTRADE which is based on HS system while the consumption data is based on FBS system. Correlation of food products between these two systems is listed in Table 1.

The initial UVs are simply derived as:

$$UV_{c,i_p}^{x} = \frac{Val_{c,i_p}^{x}}{Qty_{c,i_p}^{x}}$$

Where UV_{c,i_p}^{x}, Qty_{c,i_p}^{x}, and Val_{c,i_p}^{x} stand for unit value, total trade quantity, and total trade values of country c and food product i_p from group p on trade flow $x \in \{imports, exports\}$. $\{i_p | i_p \in F_p\}$ is the set of food products in group p (Table 1)

The weighted average unit value $UV_{c,p}^{x}$ is calculated for each food group p as:

$$UV_{c,p}^{x} = \frac{\sum_{i_p}^{Fp} UV_{c,i_p}^{x} \times Val_{c,i_p}^{x}}{\sum_{i_p}^{Fp} Val_{c,i_p}^{x}}$$

In addition, we use weighted average UVs over all flows as estimates of UVs for consumption:

$$UV_{c,p}^{cons} = \frac{\sum_{x}^{Im,Ex} \sum_{i_p}^{Fp} UV_{c,i_p}^{x} \times Val_{c,i_p}^{x}}{\sum_{x}^{Im,Ex} \sum_{i_p}^{Fp} Val_{c,i_p}^{x}}$$

Then aggregated values of imports/exports/consumption for all food of country c are given by:

$$Val_{c}^{Im/Ex/Cons} = \sum_{p} UV_{c,p}^{Im/Ex/Cons} \times Qty_{c,p}^{Im/Ex/Cons}$$

Finally, the aggregated IDRs for overall food products of country/area c can be expressed as:

$$\mathrm{IDR}_{c} = \frac{Val_{c}^{Im}}{Val_{c}^{Cons}}$$

The following product groups have been distinguished:

Table 5: Lists of HS codes of food products in FBS groups

FBS food products group	List of HS codes of food within group
Cereals - excluding beer	1001-1008, 1102-1108
Starchy roots	0701, 0706, 0714
Sugar crops	1212
Sugar & wweeteners	1701-1704, 0409
Pulses	0713
Treenuts	0801, 0802
Oilcrops	1201-1208
Vegetable oils	1507-1515
Vegetables	0702-0705, 0707-0712
Fruits - excluding wine	0803-0814
Stimulants	0901-0903, 1801-1806
Spices	0904-0910
Alcoholic beverages	2203-2208
Miscellaneous	2101-2106
Meat	0201-0205, 0208, 0210
Offals	0206, 0207
Animal fats	1501-1506, 0405, 0209
Milk - excluding butter	0401-0404, 0406
Eggs	0407, 0408, 0410
Fish, seafood	0301-0308
Aquatic products, other	

ANNEX 3: DATA SOURCES FOR THE OVERVIEW TABLE

Data	Source
1. GDP growth	(IMF, World Economic Outlook, April 2020, 2020)
2. Unemployment	(IMF, World Economic Outlook, April 2020, 2020)
3. MSCI indexes	(MSCI, 2020)
4. EX Rates	(xe.com, 2020)
5. Transportation costs	(tradingeconomics.com, 2020)
6. Macro policy response	
Fiscal (by 10 April 2020)	(Stephanie Segal, Dylan Gerstel, 2020)
7. Trade (merchandise)	(WTO, Methodology for the WTO Trade Forecast of April 8 2020, 2020)
8. Food and Agriculture	(FAO, AMIS-OUTLOOK, 2020)
Agricultural Trade	(WTO, Trade set to plunge as COVID-19 pandemic upends global economy, 2020), (UN Comtrade, 2020), own calculations
9. Input prices	(indexmundi.com, 2020)

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