

# CHAPTER 1

# Key Findings



## 1. Introduction

A country is dependent on the export of commodities (or “commodity-dependent”) when its merchandise exports are heavily concentrated on primary commodities. The source of commodity dependence can be linked to a country’s persistent or structural conditions, such as its resource endowment and factor composition, institutional framework, geographic situation, history among other factors. Consistent with the definition previously outlined by UNCTAD, UNCTAD member States are considered to be commodity-dependent if more than 60 per cent of their merchandise export value comes from commodities.<sup>1,2</sup>

It is important to monitor and analyse the evolution of commodity dependence, as this dependence has been found to have negative implications, in different ways, for a country’s welfare and development.

First, commodity-dependent countries (CDCs), and in particular commodity-dependent developing countries (CDDCs), are vulnerable to negative shocks that affect the quantities and/or the prices of the commodities exported. This is in addition to other types of supply or demand shocks that impact the economy (Sachs and Warner, 2001; Deaton, 1999; Blattman et al., 2007; Van der Ploeg and Poelhekke, 2009; Frankel, 2010; Van der Ploeg, 2011). All types of shocks to quantities and prices can have both temporary and persistent effects, depending on the commodity being produced and the nature of the shock. The size and impact of transitory shocks depend on the resilience of the country concerned, something that is particularly relevant in CDDCs, as well as on the affected economic agents themselves (Cecchetti et al., 2011; De Gregorio, 2013; Rojas-Suarez, 2015). The combination of supply and demand shocks affecting specific commodities has resulted in commodity prices that are very volatile and show positive autocorrelation, even on an annual basis (Deaton, 1999; Van der Ploeg and Poelhekke, 2009; Venables, 2016). Commodity prices are directly linked to the terms of trade of CDCs, so an increase in the volatility of commodity prices can translate into an increase in the volatility of terms of trade. Terms of trade shocks may harm growth, worsen distribution of income, and raise the odds of highly disruptive currency crises (Hausmann, 2010), particularly in vulnerable CDDCs.<sup>3</sup> Improved institutional quality and financial development can both be beneficial to boost resilience to such shocks.

Second, commodity dependence can negatively impact CDCs, and in particular CDDCs, because they are exposed to the sharp reduction or even reversal of capital inflows (a phenomenon often called a “sudden stop”). Capital inflows into CDDCs that are more closely integrated into international capital markets are often linked to commodity price trends over multi-year periods (Reinhart et al., 2016), as well as to the evolution of international financial conditions. This occurs because the economic cycle of CDCs, and in particular that of CDDCs, is often aligned with persistent commodity price movements, and changes in national income resulting from changes in the terms of trade result in changes to the perceived “creditworthiness” of national assets (Fernández-Arias and Montiel, 1996). In addition to the effects of “sudden stops” on investment and economic growth (Eichengreen and Gupta, 2016), there can also be short- and medium-term negative effects on consumption, poverty, inequality and inflation. As commodity prices often follow persistent, multi-year cycles (Cuddington and Jerret, 2008; Fernandez et al., 2020), the linkage to capital inflows over multi-year periods for CDDCs more closely connected to international capital markets can be particularly important.

A strong net foreign asset position, including foreign currency reserves, is likely to play a crucial role in helping to boost the resilience of CDDCs to negative commodity price shocks—for example, by allowing more adaptive fiscal and monetary policy responses to the shock. Also, in the event of positive commodity price shocks, the form and quality of institutions and policy frameworks, which affect resilience to negative shocks, could determine the adjustment path taken by a country. Relatively high foreign currency reserves

<sup>1</sup> UNCTAD has 195 member states. The analysis in this study focuses on those 191 member states for which UNCTADStat had individual trade data available during the period of analysis. (Specifically, no trade data were available for Monaco, San Marino and the Holy See, and data for Liechtenstein are merged with data for Switzerland.) See <https://unctadstat.unctad.org/EN/for-more-information-on-data-availability-and-the-characteristics-of-UNCTADStat>.

<sup>2</sup> Commodity dependence is calculated as total commodity exports divided by “allocated” merchandise exports. Allocated trade includes all exports that can be attributed to one of the individual 259 product lines in the database. In the individual country profiles in section 2, both allocated and total exports are included. See UNCTAD (2019) for a detailed discussion.

<sup>3</sup> For example, Avom et al. (2021) show that terms of trade volatility increases growth volatility in African countries.



and low exposure to foreign debt may also facilitate the implementation of sustainable growth policies across persistent commodity cycles.

This document is divided into two parts. The first part identifies and characterizes CDCs. It also discusses the recent evolution of commodity prices, commodity export values, and the net asset position of these countries, with a focus on CDDCs as they are often more vulnerable to commodity price shocks. The second part is dedicated to country-specific commodity-dependence profiles that also include selected economic and social indicators.

The next section looks closely at the state of commodity dependence around the world from 2019–2021, characterizing it along geographic, income and development status criteria. Section 3 discusses the recent evolution of commodity prices and highlights the very high volatility during 2019–2021. Changes in the net foreign positions of CDDCs are analysed in conjunction with variations in commodity prices. Available commodity price information used to decompose the value of commodity exports shows that recent changes in the variable were in most cases the result of changes in prices rather than volumes. Section 3 also considers the consequences that commodity price volatility may have in terms of debt sustainability. Conclusions are presented in section 4, followed by the data appendix.

## 2. Characterizing commodity dependence during 2019–2021

### 2.1. How important are commodity exports as a share of international merchandise trade?

Before discussing commodity dependence, it is important to consider the relative size of trade in commodities by groups and specific commodities around the world.<sup>4</sup> In fact, trade in commodities constitutes an important part of total international merchandise trade: during 2019–2021, commodities constituted 28.8 per cent of world exports of goods.<sup>5</sup>

Table 1 shows the relative importance as a share of total world commodity exports of selected key commodities or commodity groups: agricultural products, energy products, and minerals, ores and metals. Energy products accounted for 38.6 per cent of all world commodity exports in 2019–2021, followed by agricultural products with 35.6 per cent, and minerals, and ores and metals with the remaining 25.6 per cent. Note that the top five commodities by value during the period accounted for more than half (53 per cent) of all world commodities exports during the period: petroleum and petroleum products (30.2 per cent),<sup>6</sup> precious metals (9.7 per cent),<sup>7</sup> hydrocarbons gas (5.3 per cent),<sup>8</sup> copper (4 per cent)<sup>9</sup> and iron ore including ferrous waste (3.8 per cent).<sup>10</sup>



<sup>4</sup> All trade-related calculations, including the measure of commodity dependence, are based on UNCTADStat trade data disaggregated at three digits using the Standard International Trade Classification Revision 3 (SITC 3). At the time of this writing, trade information was available for the set of countries included in the analysis until 2021. Therefore, the consequences of the war in Ukraine on commodity dependence are not part of the analysis.

<sup>5</sup> Based on UNCTADStat export data for 2019–2021. Exports of all allocated products were considered a proxy for total exports.

<sup>6</sup> SITC codes 333, 334 and 335.

<sup>7</sup> SITC codes 289, 681 and 971.

<sup>8</sup> SITC codes 342, 343, 344 and 345.

<sup>9</sup> SITC codes 283 and 682.

<sup>10</sup> SITC codes 281 and 282.

**Table 1**  
Commodity exports by value (period mean) and as a share of world commodity exports, 2019–2021

Products	Exports in millions of dollars	Product type	Share of commodities exports (per cent)
Petroleum and products	1,646,127.50	Energy	30.2
Hydrocarbons gas	289,660.05	Energy	5.3
Coal	121,601.75	Energy	2.2
Electricity	43,189.59	Energy	0.8
Gold, silver and platinum group metals	526,906.66	Minerals	9.7
Copper	216,336.94	Minerals	4.0
Iron ore and ferrous waste	206,125.15	Minerals	3.8
Other minerals, ores, and metals	183,422.36	Minerals	3.4
Aluminium	152,436.16	Minerals	2.8
Pearls and precious stones	119,962.02	Minerals	2.2
Oil seeds, vegetable fats and oils	185,646.41	Agricultural	3.4
Fruit and preparations	175,812.18	Agricultural	3.2
Meat and preparations	167,299.14	Agricultural	3.1
Beverages and tobacco	161,229.58	Agricultural	3.0
Other raw materials	155,047.05	Agricultural	2.8
Fish and preparations	154,974.53	Agricultural	2.8
Other food	141,371.82	Agricultural	2.6
Vegetables	114,780.42	Agricultural	2.1
Dairy products	97,205.34	Agricultural	1.8
Animal feed	89,694.90	Agricultural	1.6
Other cereals and preparations	82,862.87	Agricultural	1.5
Wood and cork	75,659.69	Agricultural	1.4
Cocoa and chocolate	52,441.13	Agricultural	1.0
Sugar and preparations	48,306.96	Agricultural	0.9
Wheat	48,598.83	Agricultural	0.9
Maize	41,570.56	Agricultural	0.8
Coffee	41,458.76	Agricultural	0.8
Rice	26,304.93	Agricultural	0.5
Animal fats and mixtures	26,417.55	Agricultural	0.5
Other tropical products	22,711.21	Agricultural	0.4
Cotton	18,273.75	Agricultural	0.3
Rubber	13,684.48	Agricultural	0.3

Source: UNCTAD secretariat based on the UNCTADStat database.

## 2.2. How many commodity-dependent states are there?

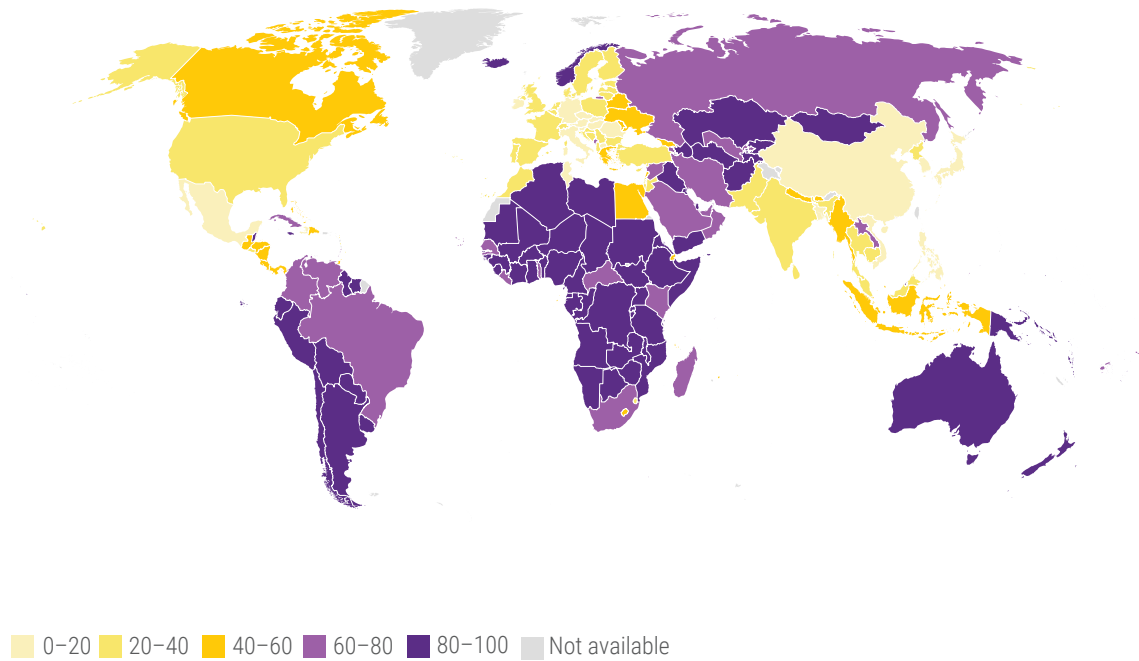
During 2019–2021, 101 of the 191 UNCTAD member States (52.9 per cent) included in the analysis were commodity-dependent, meaning that commodities constituted more than 60 per cent of the value of their exports, on average. For an additional 14 countries, commodities constituted more than half of exports during the period, but below the 60 per cent threshold. This is a small decrease with respect to the 106 commodity-dependent member states in 2012–2014.

Importantly, 95 of 142 developing countries (66.9 per cent) were commodity-dependent during 2019–2021. Figure 1 shows countries' shares of commodity exports as a share of merchandise exports during that period.<sup>11</sup>

<sup>11</sup> The values of exports considered for the calculation of commodity dependence are those exports that can be allocated to a specific export line at three-digit SITC codes. UNCTADStat statistics on total goods exports are larger than allocated goods exports for most countries and include exports that cannot be attributed to specific product lines.

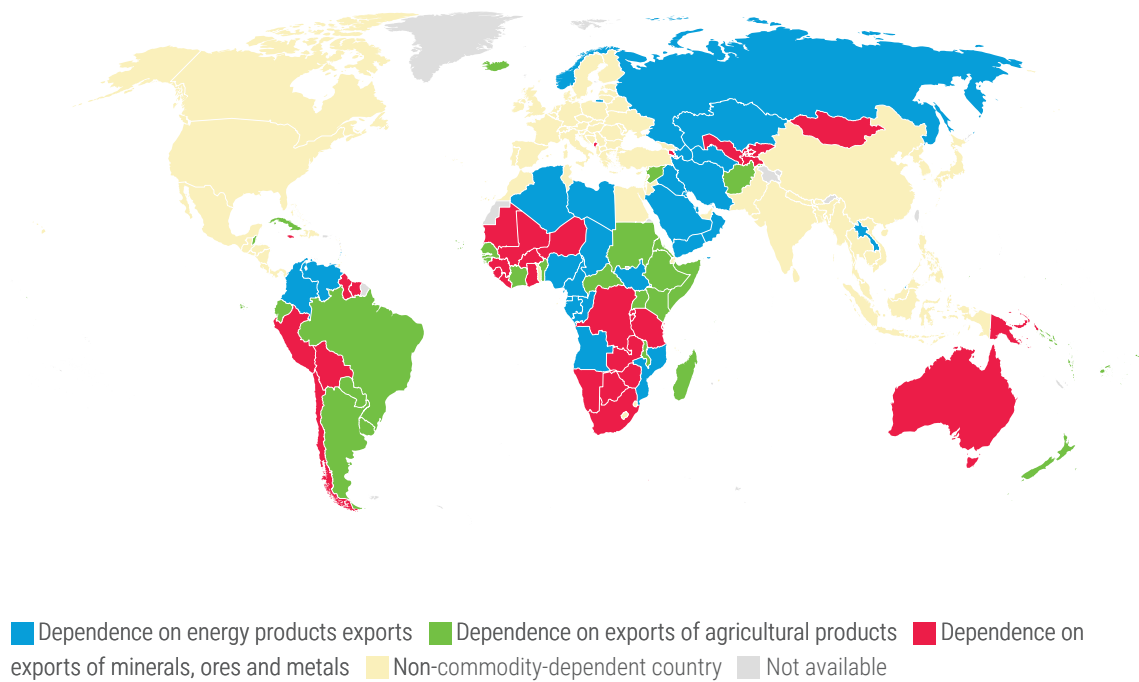


**Figure 1**  
World commodity dependence: Commodity dependence as a share of allocated merchandise exports, 2019–2021 (per cent)



Source: UNCTAD secretariat based on the UNCTADStat database.

**Figure 2**  
Commodity dependence by dominant export product group, 2019–2021

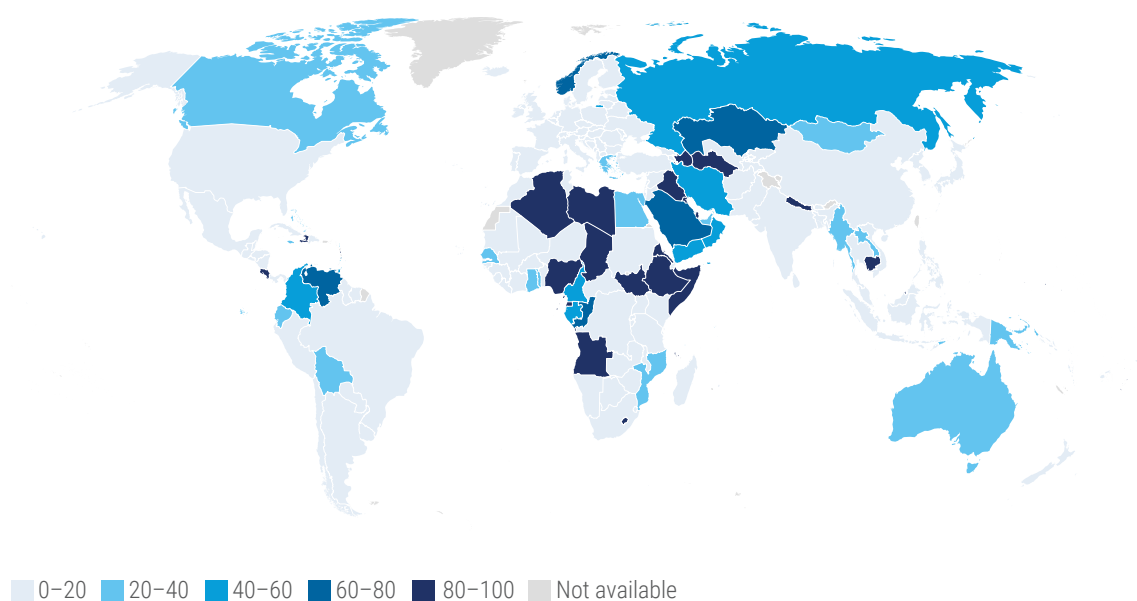


Source: UNCTAD secretariat based on the UNCTADStat database.

### 2.3. What are the commodities exported by commodity-dependent countries?

CDCs usually (but not always) feature a concentration of commodity exports on a group of commodities. Figure 2 presents the dominant type of commodity exported by each commodity-dependent country during the period of analysis. In 38 countries, the dominant commodity group was agricultural products, in 30 countries it was energy products, and in 31 countries it was minerals, ores and metals.<sup>12</sup> To provide more details on the degree to which each country is a commodity exporter, figures 3, 4 and 5 show the export shares of each country of energy products, minerals, ores and metals, and agricultural products. By comparing figure 2 with figures 3, 4 and 5, it can be observed that the dominant group of commodity exports in many cases matches a very large share of exports of one type of commodity, especially in Africa and in several countries of West and Central Asia.

**Figure 3**  
Exports of energy: Share of allocated merchandise exports, 2019–2021 (per cent)



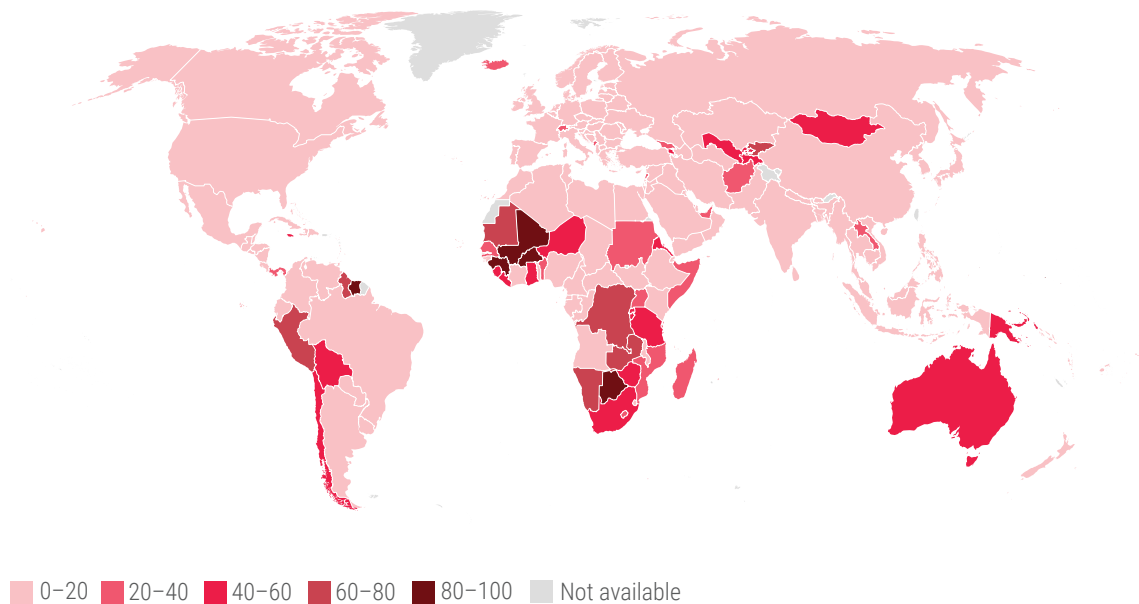
Source: UNCTAD secretariat based on the UNCTADStat database.



<sup>12</sup> In the case of two countries (Togo and United Arab Emirates), it was not possible to consistently identify the dominant commodity group due to the presence of large volumes of exports of manufactured products that may partially or totally be re-exports, so they were excluded from the figure.

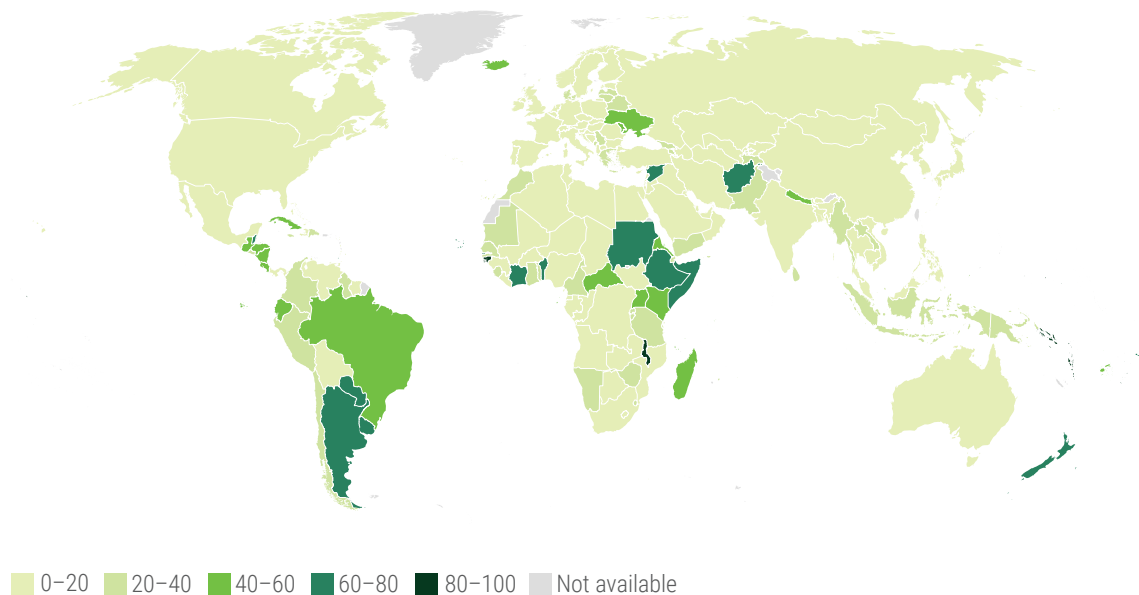


**Figure 4**  
Exports of minerals, ores and metals: Share of allocated merchandise exports, 2019–2021 (per cent)



Source: UNCTAD secretariat based on the UNCTADStat database.

**Figure 5**  
Exports of agricultural products: Share of allocated merchandise exports, 2019–2021 (per cent)

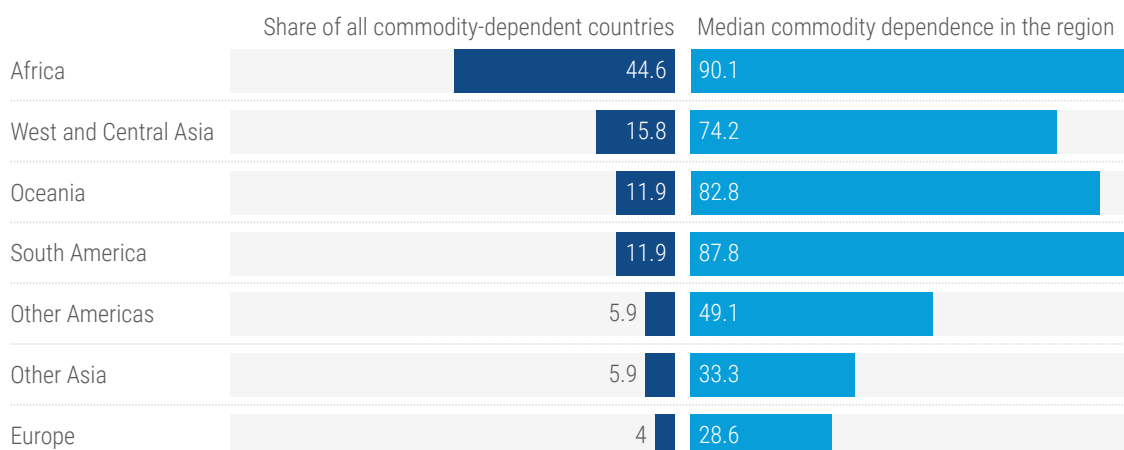


Source: UNCTAD secretariat based on the UNCTADStat database.

## 2.4. Where are commodity-dependent countries located?

Figure 6 shows clearly that commodity dependence is predominant in Africa, South America and Oceania, followed by West and Central Asia. These four regions combined account for 85 of all 101 commodity-dependent UNCTAD member States (84 per cent), with close to half of all CDCs being in Africa.<sup>13</sup>

**Figure 6**  
**Commodity dependence by region, 2019–2021 (per cent)**



Source: UNCTAD secretariat based on the UNCTADStat database.

Africa was also the region with the highest commodity dependence during the period examined (2019–2021), with a median value of commodity exports of 90 per cent of all merchandise exports, closely followed by South America with 87.8 per cent and Oceania with 85.7 per cent. All 12 countries in South America were commodity-dependent during the period, while in Oceania 12 of 14 countries (85.7 per cent) and in Africa, 45 of 53 countries (83.3 per cent) were commodity-dependent. Additionally, of the 22 countries of West and Central Asia, 16 (72.7 per cent) were commodity-dependent, with a median share of 74.4 per cent of their exports being commodities. As shown by figure 6, the rest of the world's regions had much lower median commodity export shares, and few countries in these regions were commodity-dependent during the period.

## 2.5. Commodity-dependent regions are also regions where exports are concentrated on only a few products

Figures 7 and 8 show the degree of export concentration for each country in the world during 2019–2021, as well as the summary distribution of export concentration in different regions, measured by the adjusted Theil's T index.<sup>14</sup> In both figures, the very high levels of export concentration of countries in Oceania and Africa stand out, followed by those in South America and Central and Western Asia, highlighting the heterogeneity of export concentration across regions.<sup>15</sup> Note that while more than three-quarters of countries in Asia outside of its Western and Central region and 90 per cent of those in Europe had export concentrations below the world median level, 86 per cent of countries in Oceania and 81 per cent of countries in Africa had exports that were more concentrated than the world median level.

<sup>13</sup> Africa accounted for 44.6 per cent of all CDCs and for 47.4 per cent of CDDCs in 2019–2021.

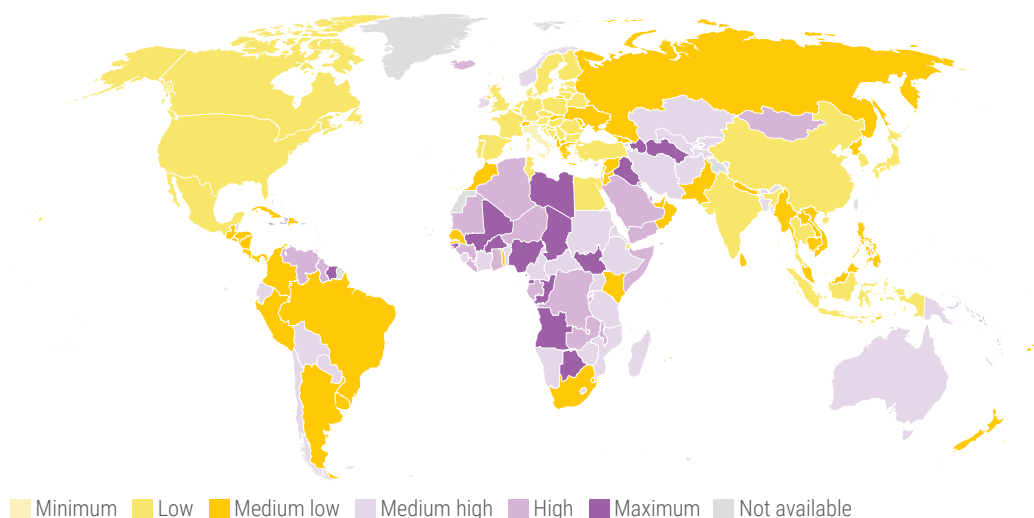
<sup>14</sup> Following Cárcamo-Díaz and Nkurunziza (2019), an “adjusted” version of Theil's T concentration index is computed. Section 2 of that publication presents the methodology for calculating Theil's T index, its adjusted version, and other measures of export concentration like the Herfindahl-Hirschman Index and the Gini coefficient. For all countries, the adjusted index uses the maximum possible number of exported product lines, instead of varying it over time according to the number of product lines in each period with positive registered data. This addresses the sensitivity of Theil's T index to the number of lines exported, which can be a problem due to data measurement error and the possible inclusion of re-exports into export data of many developing countries.

<sup>15</sup> The ranking of these regions according to export concentration, measured by the normalized Hirschman-Herfindahl index, puts Central and West Asia in third place and South America in fourth, maintaining the rankings for all other regions.





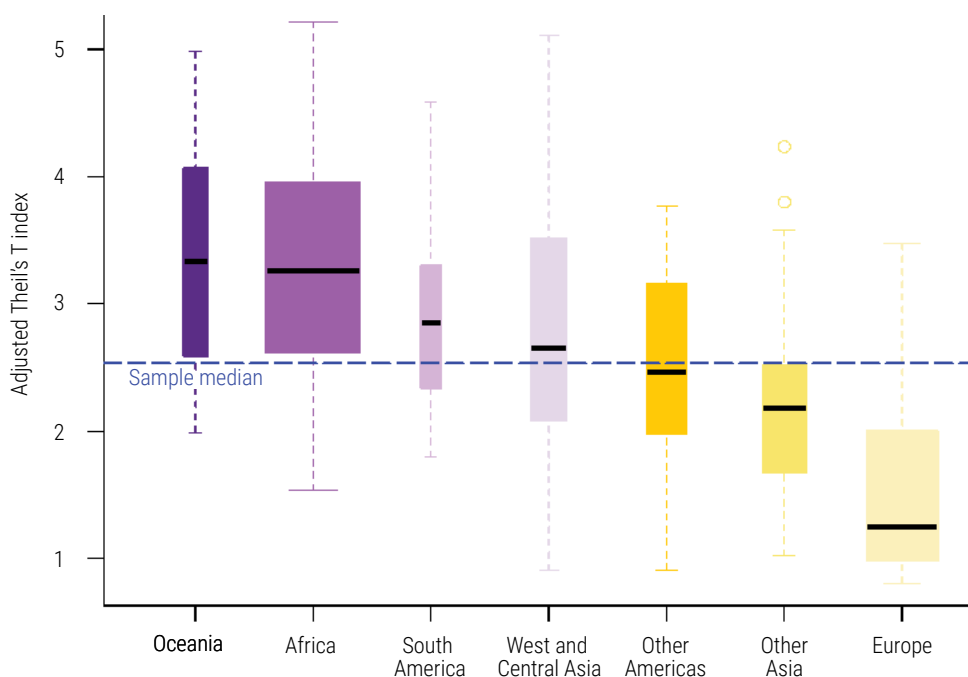
**Figure 7**  
Export concentration as measured by the adjusted Theil's T index, 2019–2021



Source: UNCTAD secretariat based on UNCTADStat database.

Note: Sample values for the adjusted Theil's T index go from a minimum value of 0.81 (corresponding to Italy) to a maximum value of 5.22 (corresponding to South Sudan). Values in this range were divided into six quantiles, with the upper probabilities of the "minimum," "low," "medium low," "medium high" and "high" quantiles being 16.6 per cent, 33.3 per cent, 50 per cent, 66.6 per cent and 83.6 per cent, respectively. This allows for clearly seeing the heterogeneity even within the countries with export concentration values over the sample median (i.e. those countries in the "medium high," "high" and "maximum" brackets).

**Figure 8**  
Summary distribution of export concentration by region as measured by the adjusted Theil's T index, 2019–2021



Source: UNCTAD secretariat based on the UNCTADStat database.

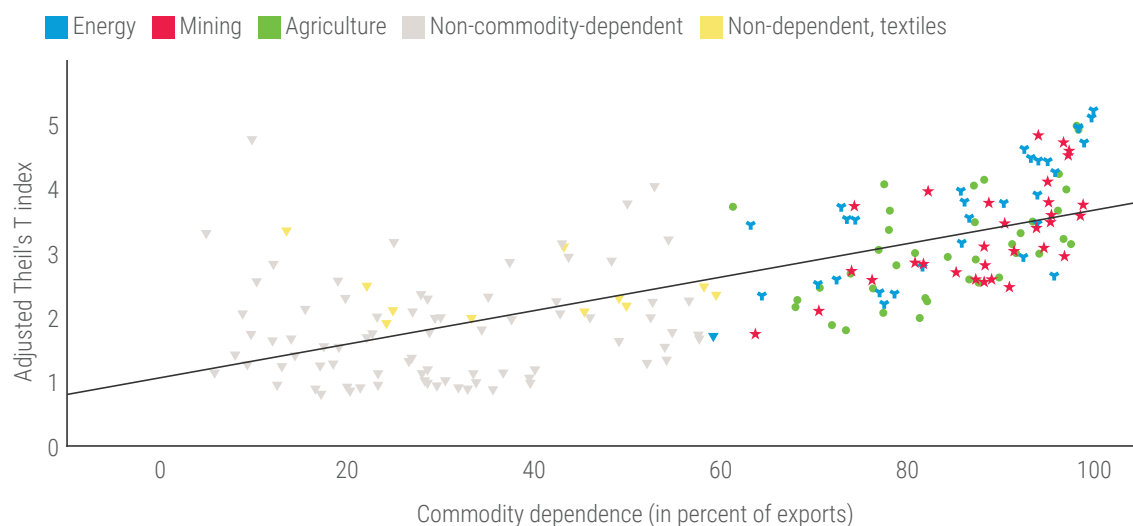
Note: The boxplots present summary information about a sample's centre, spread and skewness, while also indicating observations that may be potential outliers. The "box" of the boxplot is defined by the first and third quartiles of the sample in each group and indicates the median of each group with a line within the box. The width of each box is proportional to the number of countries in each group. The upper (lower) "whisker" extends from the hinge to the highest (lowest) value that is within 1.5 times the inter-quantile range of the hinge. See Fox (2015: 41–44) for further details.

Figure 9 shows that export-concentrated countries also are mostly commodity-dependent, apart from a few countries that concentrate in exporting textiles, such as Bangladesh and Haiti. This means that countries that export only a few products also happen to export products whose prices are very volatile, and which are subject not only to persistent trends and cycles but also to very high short-term volatility. Figure 9 shows the high positive correlation between commodity dependence and export concentration. Moreover, the high export concentration and commodity dependence of some energy- and mineral-exporting countries (marked in blue and red points, respectively) are particularly visible. As mentioned earlier, another interesting feature is that several countries where at least 25 per cent of total merchandise exports are textiles (marked with yellow symbols) have medium or medium-high levels of export concentration.

In several countries, only one product or group of closely related products accounts for the majority of total exports. In 35 countries, half of which are in Africa, exports of one product line (at the three-digit SITC level) account for more than half of all merchandise exports, while in 13 of them, two-thirds of which are in Africa, a single product line concentrates more than three-quarters of all merchandise exports. All countries shown in table A.1 in the appendix are also commodity-dependent, and the product line that accounts for half or more of their merchandise exports is a commodity (at the three-digit SITC level). Also of note is that in three-quarters of the countries in table A.1, the product accounting for more than 50 per cent of all exports was an energy or mineral product, with a high incidence of petroleum (and its derivatives) and gold.

As a result of the high dependence of their exports on a few commodity products, these countries are particularly vulnerable to negative shocks to the price or quantity of this product, with the potential negative consequences discussed in the introduction to this paper. Again, a point of importance is that countries with highly concentrated export baskets are both highly vulnerable to a shock affecting their exports and are concentrated on products that are particularly volatile: commodities.

**Figure 9**  
Export concentration and commodity dependence, 2019–2021 (adjusted Theil's T index)



Source: UNCTAD secretariat based on UNCTADStat database.

## 2.6. Commodity-dependent countries are usually poor and less developed

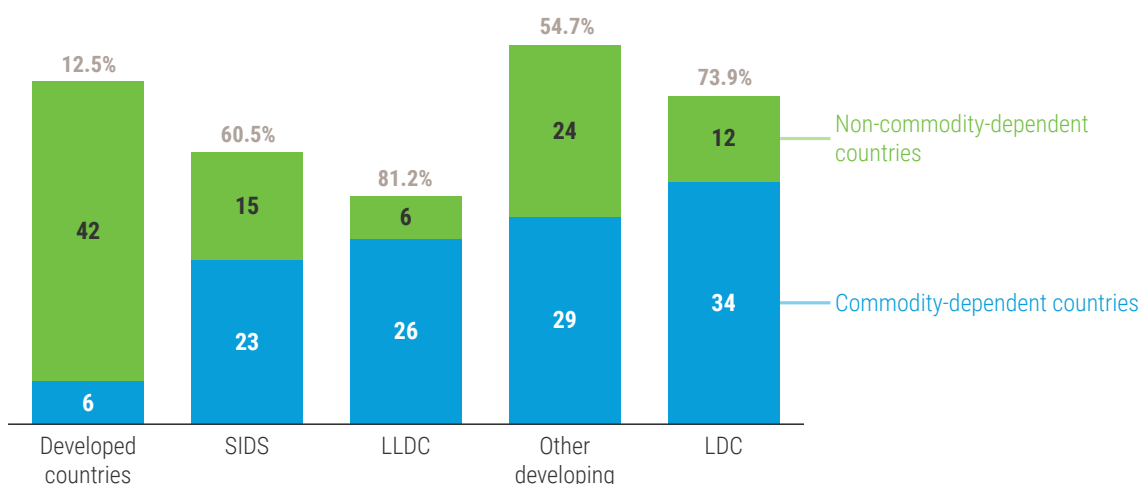
Another important dimension of commodity dependence is its well-established link with low levels of development. Figure 10 shows that during 2019–2021, while only 12.5 per cent of developed countries were commodity-dependent, 81.2 per cent of landlocked developing countries (LLDCs),<sup>16</sup> 73.9 per cent of

<sup>16</sup> Three countries pertain both to the LDC and SIDC groups, while 14 countries pertain to both the LDC and the LLDC groups. North Macedonia and Moldova are included in both the LDC group and the “Developed” country group in the UNCTADStat database. See [https://unctadstat.unctad.org/EN/Classifications/DimCountries\\_All\\_Hierarchy.pdf](https://unctadstat.unctad.org/EN/Classifications/DimCountries_All_Hierarchy.pdf)



least developed countries (LDCs), 60.5 per cent of small island developing states (SIDS), and 54.7 per cent of other developing countries were commodity-dependent. This highlights that commodity dependence particularly affects the most vulnerable developing countries—namely LDCs, LLDCs and SIDS.

**Figure 10**  
Commodity dependence by development group, 2019–2021 (per cent share by development level; and number of countries in each group)

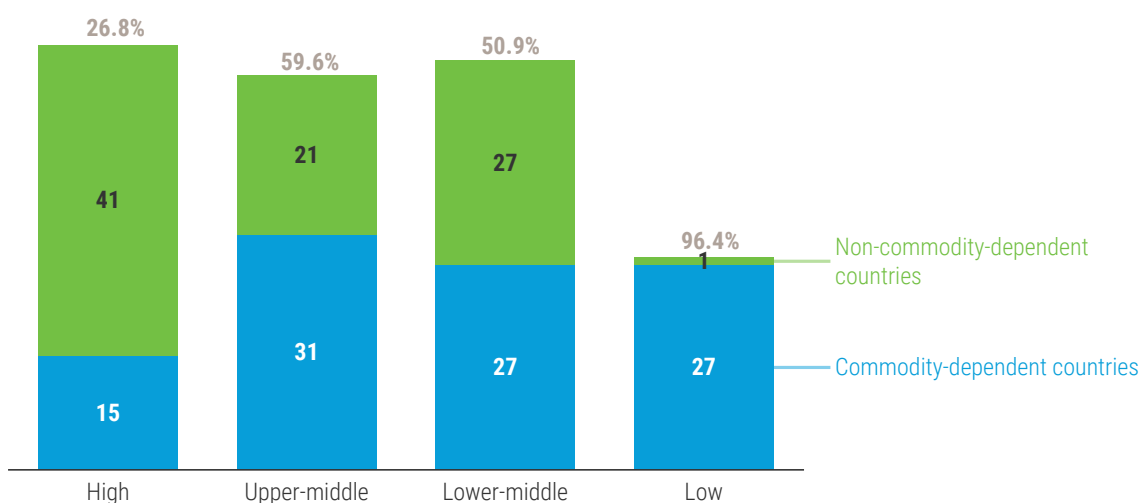


Source: UNCTAD secretariat based on the UNCTADStat database.

Note: The percentage above each column indicates the share of commodity-dependent countries in each group.

Figure 11 classifies each country according to World Bank income categories, showing that almost all low-income countries (96.4 per cent) are commodity dependent, compared with around a quarter of high-income countries (26.8 per cent). Over half of the countries in the two middle-income categories are commodity-dependent.

**Figure 11**  
Commodity dependence by income group, 2019–2021 (per cent share by income group; and number of countries in each group)



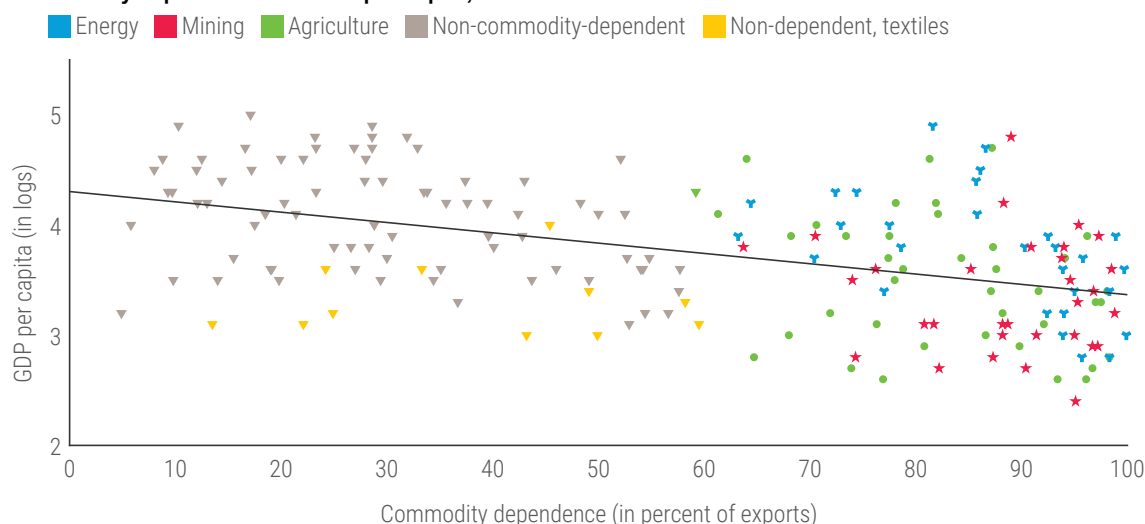
Source: UNCTAD secretariat based on UNCTADStat and World Bank data.

Note: The percentage above each column indicates the share of commodity-dependent countries in each group. The total number of commodity-dependent countries totals 100 and not 101 because the Bolivarian Republic of Venezuela is not included in any income group in the World Bank's World Development Indicators dataset.

The negative correlation between commodity dependence and income per capita is shown more clearly in figure 12. The figure also shows the dominant type of product group exported, and separates countries that are not commodity-dependent between those that are important exporters of textile products (those where textiles are more than 25 per cent of total exports) and those that are not. Of note is that the poorer non-commodity-dependent countries have textiles or agricultural products as their leading exports. While not shown, data further indicate that other variables measuring development show similar results when used in place of the level of income per capita. Notably, a country's Human Development Index value is significantly and negatively correlated with export concentration and commodity dependence.

**Figure 12**

**Commodity dependence and GDP per capita, 2019–2021**



Source: UNCTAD secretariat based on UNCTADStat and World Bank data.

The relationship between export concentration and commodity dependence on one side and income or development levels on the other is possibly not unidirectional. While structural change and export diversification result in increased income per capita and human development levels, as a country develops its stock of per capita human and physical capital also increases, factor productivity resulting from technological change increases, institutions improve, structural change accelerates, and the productive and export sectors diversify.

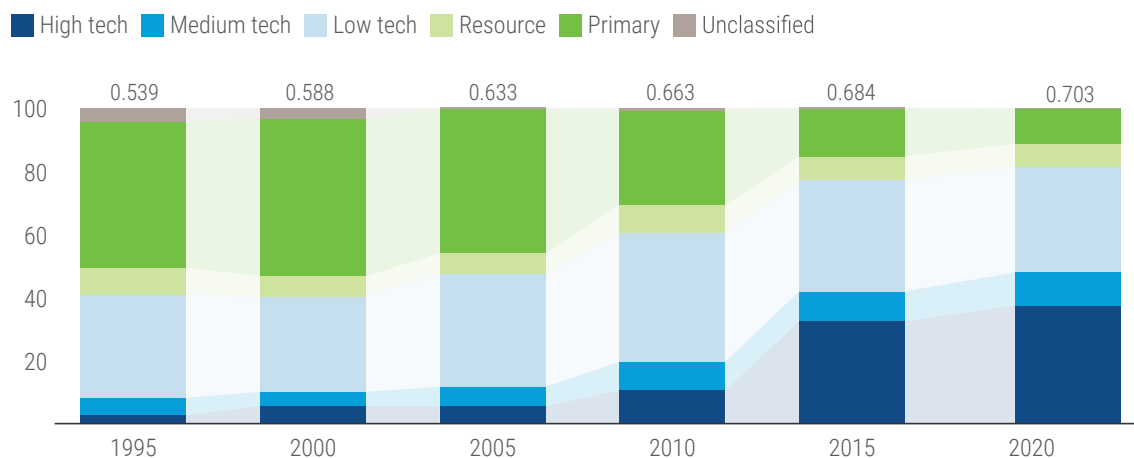
Looking closer at trade composition shows how several countries that have gone through a structural change process, diversifying production and trade and increasing their technological content, have increased their level of development. This process of diversification and structural transformation is made dynamic by a strong export-oriented tradable sector that boosts economic growth through specialization, learning-by-doing and technological upgrading (Alessandria et al., 2021; Herrendorf et al., 2014).

For example, figure 13 shows the evolution of Viet Nam's exports between 1995 and 2021 according to their technological composition, using the classification introduced by Lall (2000) as well as the level of the country's Human Development Index (HDI). While the increase in high-technology exports was accompanied by a significant increase in imports of parts (e.g. electronic components), different indicators show a progressive increase in the local content of high-technology exports during the 2019–2021 period. Total exports from Viet Nam increased from US\$5.5 billion in 1995 to US\$334.5 billion in 2021, with primary and resource-based exports increasing from US\$2.8 billion to US\$37.9 billion during the period. This shows that while export diversification and structural transformation implies successfully increasing the size and share of production and export of non-commodities, it does not necessarily mean that the production and export of commodities and the products based on them cannot also be dynamic. During the same period, Viet Nam's HDI value improved from 0.539 in 1995, or 60.9 per cent of the value of the country with the highest HDI score at the time (the United States, with 0.885), to 0.703 in 2021, or 73.1 per cent of the value of the country with the highest HDI score at the time (Switzerland, with 0.962).



**Figure 13**

**Viet Nam's Human Development Index value and export composition according to technological content, selected years, 1995–2020**

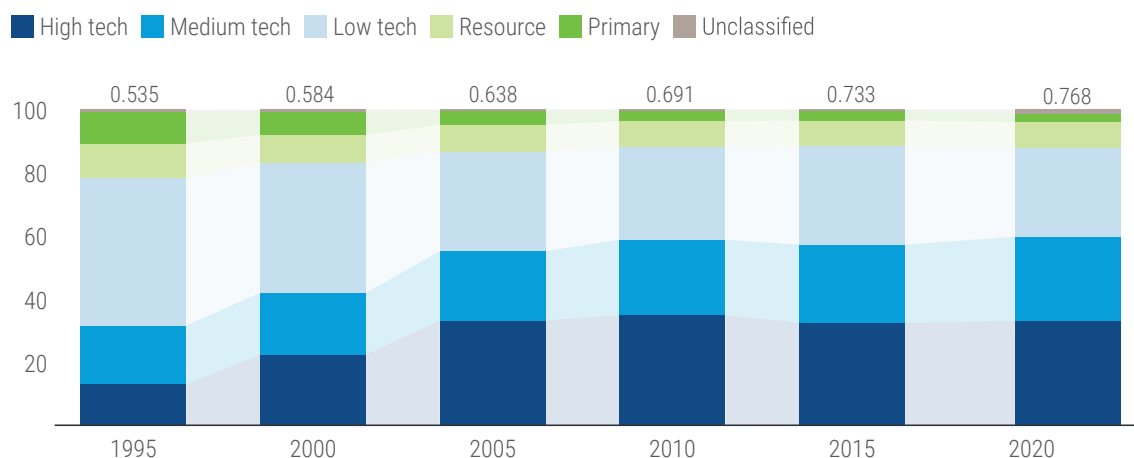


Source: UNCTAD secretariat based on UNCTADStat and United Nations Development Programme data.  
Note: The number above each column indicates the Human Development Index value for that year.

Figure 14 shows the evolution of the same variables in China during the 1995–2021 period. China's exports of primary and resource-based manufactures were halved from 21 per cent of exports in 1995 to 10.5 per cent in 2021. However, the value of exports of these products increased dramatically during the period, from US\$31.3 billion in 1995 to US\$352.5 billion in 2021. In 1995, 46.6 per cent of China's exports were low-technology manufactures, dominated by textiles, garments and footwear (30.6 per cent of exports). By 2021, the share of low-technology exports in total exports had fallen to 28.3 per cent, with the share of textiles, garments and footwear falling to 11.2 per cent of total exports. Middle- and high-technology exports increased from 18.6 per cent and 13 per cent of exports in 1995, respectively, to 26.6 per cent and 33 per cent of total exports in 2021. These changes in the composition of exports occurred while total exports increased from US\$148.8 billion in 1995 to US\$3,362 billion in 2021. In parallel, the China's HDI value increased from 0.535 in 1995, or 60.5 per cent of the value of the country with the highest HDI score at the time (the United States, with 0.885), to 0.768 in 2021, or 79.8 per cent of the value of the country with the highest HDI score at the time (Switzerland, with 0.962).

**Figure 14**

**China's Human Development Index value and export composition according to technological content, selected years, 1995–2021**



Source: UNCTAD secretariat based on UNCTADStat and United Nations Development Programme data.  
Note: The number above each column indicates the Human Development Index value for that year 3.

### 3. Recent evolution of commodity prices and net foreign assets in commodity-dependent countries

#### 3.1. Commodity prices have been very volatile

Figure 15 shows the monthly evolution of three commodity price indices between 1995 and early 2023, deflated by the United States Consumer Price Index, as well as a long-term trend. The figure shows the start of the COVID-19 pandemic in December 2019 with a vertical line. The brisk fall in energy prices following implementation of travel restrictions around the world, one of the initial responses to the onset of the pandemic in early 2020, can be clearly observed. However, there were only small reductions in both minerals and metals and agricultural product price indices, and those reductions rapidly reversed by mid-2020. During 2021 and early 2022, commodity prices increased, in parallel with the post-COVID-19 economic recovery, followed by the war in Ukraine. Notably, despite the volatility of prices during the period, the trend in prices was above historical levels at the time of this writing (March 2023), and even more so in December 2021. Figure 15 also shows the very high volatility of the real prices of energy, as well as those of minerals and metals, during 2020 and 2021.<sup>17</sup>

**Figure 15**  
Commodity price indices and trends, selected years, from January 1995 to February 2023 (index, 2010 = 100)



Source: UNCTAD secretariat based on World Bank data.

Note: The trend shown in the figure was calculated by the authors using the Christiano-Fitzgerald filter, with a maximum oscillation frequency of 128 months, implemented in R by the *mFilter* package (Balcilar, 2019). In order to address the issues with filtering finite series, data for 1960–2023 were used and mirrored.

<sup>17</sup> Nominal prices of each commodity were deflated by the United States Consumer Price Index for all urban consumers, according to the United States Bureau of Labor Statistics.

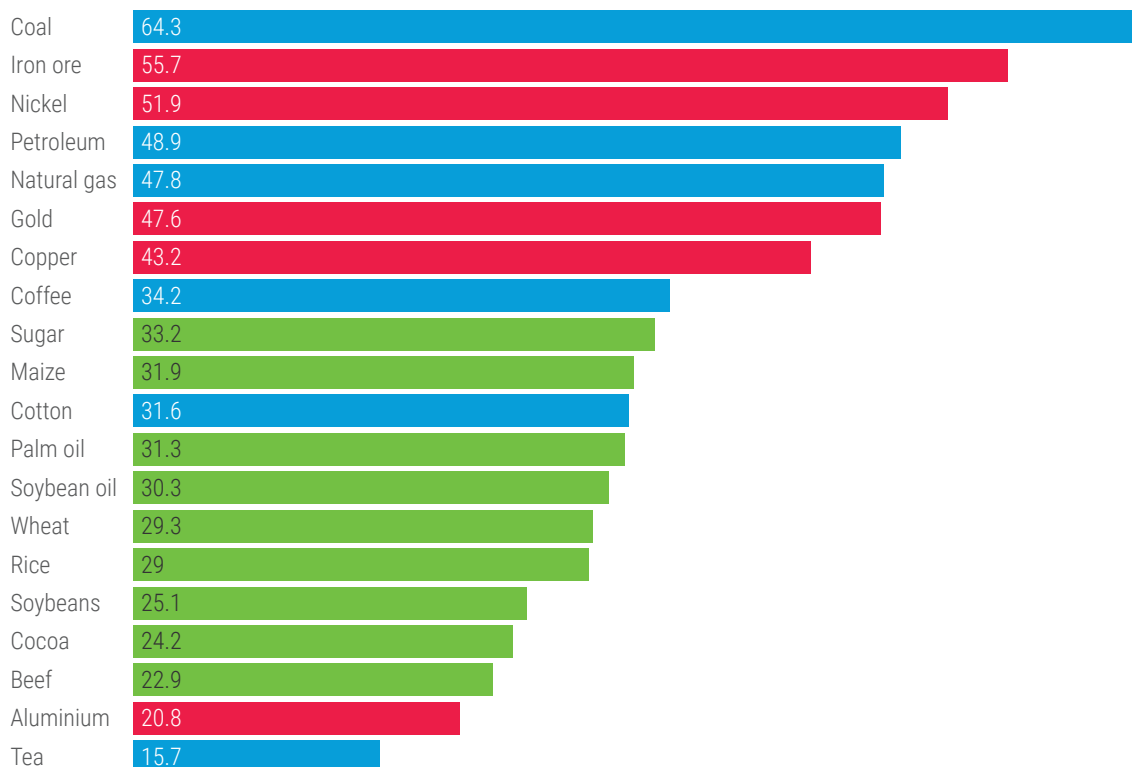


Figure 16 reports the coefficient of variation computed for a selected sample of commodities as a measure of price volatility. Calculations using a robust measure of volatility—the quartile coefficient of dispersion—show qualitatively similar results.

Energy commodities and several metals—including not only base metals such as iron ore, nickel and copper, but also gold—had the highest real price volatility during 2019–2021,<sup>18</sup> with the standard deviation of monthly prices exceeding 40 per cent of the value of the mean in all cases, as shown in figure 16. In general, agricultural products (including agricultural raw materials such as cotton) had lower volatility, but with significant dispersion across the group.<sup>19</sup>

**Figure 16**

**Volatility of the real prices of selected commodities, coefficient of variation (January 1995 to February 2023)**



Source: UNCTAD secretariat based on UNCTADStat and World Bank pink sheet monthly data

Note: Coal corresponds to the “Coal, Australian” series, petroleum to “Crude oil, average,” natural gas to “Natural gas index,” coffee to “Coffee, Arabica,” rice to “Rice, Thai 5%” and tea to “Tea, average” in the sourced data.

The period under analysis for commodity dependence, 2019 to 2021, was one of the most volatile periods for commodity prices in recent years. However, different patterns in annual variations emerge. Ten of the 16 commodities reported in figures 17 to 21 faced a negative price shock in 2020 followed by a positive one in 2021. This pattern was observed for all energy commodities, aluminum, nickel, beef, chicken, maize and cotton. The opposite pattern is seen for rice. Other commodities such as sugar, wheat, cocoa, coffee, palm oil, and soybean oil, as well as metals like copper and iron ores, experienced an increase, on average, in both years. Note that tobacco is the only commodity with a negative price shock in both 2020 and 2021. As discussed by Kabundi et al. (2022), during the 2020 global recession associated with the COVID-19 pandemic, changes in commodity prices were closely associated with changes in global economic activity.

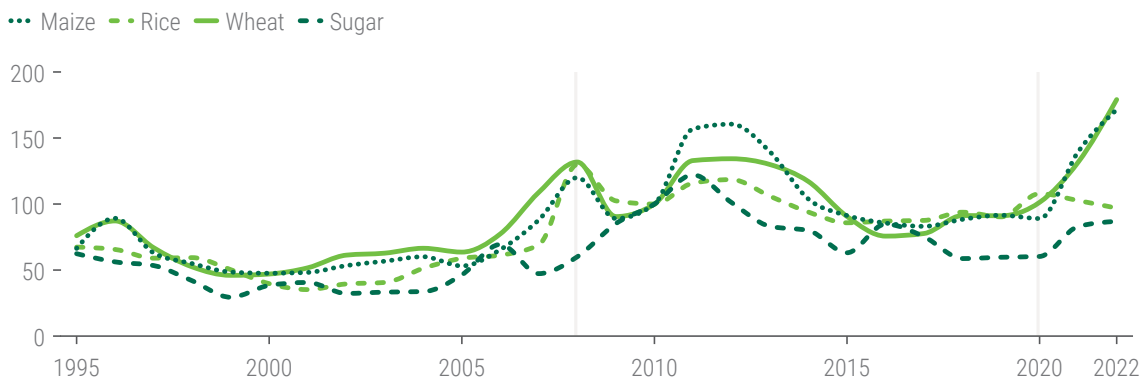
Energy commodities are by far those that faced the widest price variations during 2020 and 2021. The natural gas average price index fell 26 per cent in 2020, then increased by 187 per cent in 2021. This represents the largest variation since 1995 for any of the four energy commodities shown in figure 21. As

<sup>18</sup> Although not shown in figure 16, silver also had very high real price volatility during the period, similar to gold.

<sup>19</sup> In order to control for seasonality in commodity prices, the coefficient of variation of commodity prices was calculated after extracting such cyclical movements, obtaining qualitatively similar results.

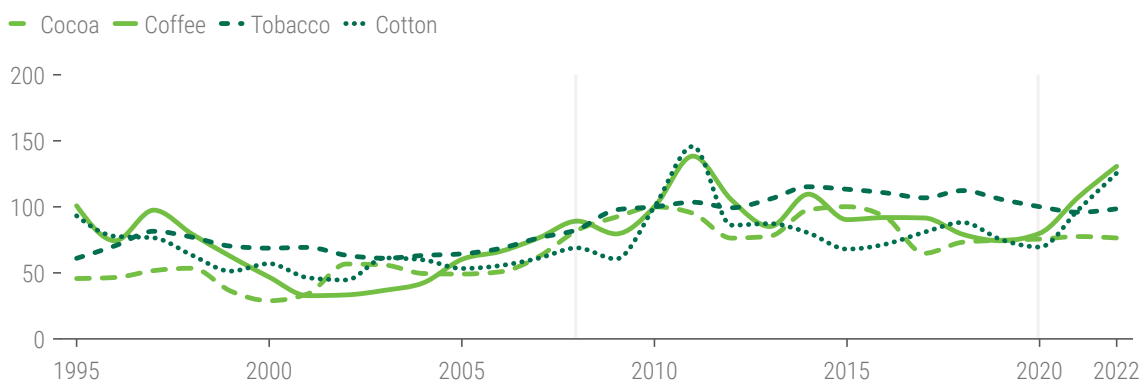
for crude petroleum, the corresponding figures are a fall of 32 per cent and an increase of 67 per cent, respectively. Among minerals, the largest swing is found for aluminum, whose average price fell by 5 per cent in 2020 and increased by 45 per cent the following year, reflecting the energy-intensive nature of primary aluminum manufacturing in the face of the aforementioned volatility in energy prices. Among major crops, maize showed the largest rebound in its average price in 2021. After decreasing by about 3 per cent in 2020, the price for maize increased by 57 per cent in 2021.

**Figure 17**  
Price trends of selected crops, selected years, 1995–2022 (index, 2010 = 100)



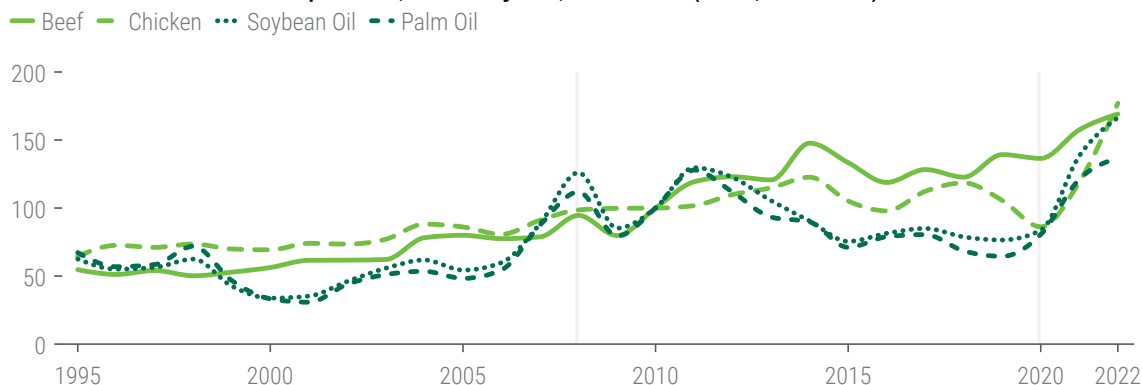
Source: UNCTAD secretariat based on World Bank data.  
Note: Vertical lines correspond to years of global crisis, 2008 and 2020.

**Figure 18**  
Price trends of selected tropical commodities, selected years, 1995–2022 (index, 2010 = 100)



Source: UNCTAD secretariat based on World Bank data.  
Note: Vertical lines correspond to years of global crisis, 2008 and 2020.

**Figure 19**  
Price trends of selected food products, selected years, 1995–2022 (index, 2010=100)



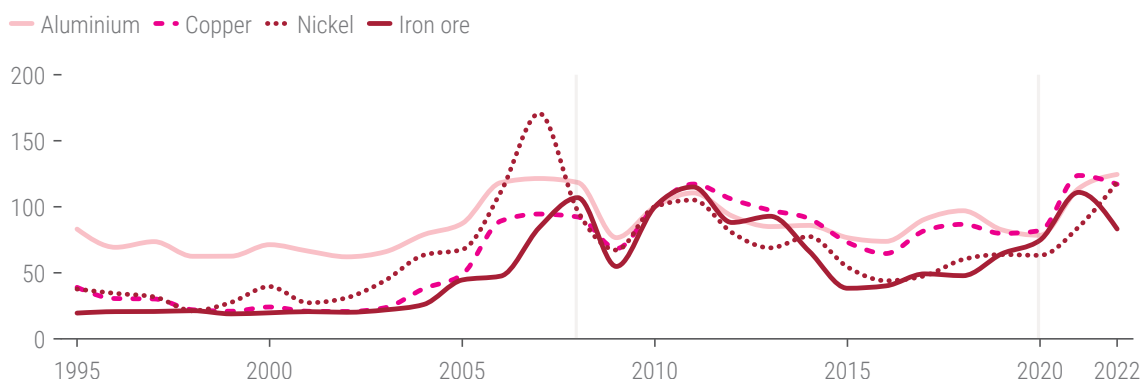
Source: UNCTAD secretariat based on World Bank data.  
Note: Vertical lines correspond to years of global crisis, 2008 and 2020.





**Figure 20**

Price trends of selected metals, minerals and ores, selected years, 1995–2022 (index 2010 = 100)

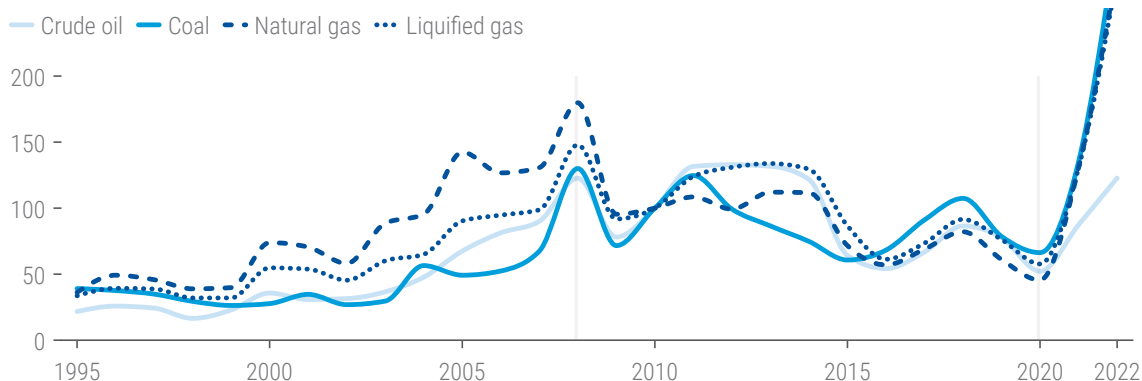


Source: UNCTAD secretariat based on World Bank data.

Note: Vertical lines correspond to years of global crisis, 2008 and 2020.

**Figure 21**

Price trends of selected energy commodities, selected years, 1995–2022 (index, 2010 = 100)



Source: UNCTAD secretariat based on World Bank data.

Note: Vertical lines correspond to years of global crisis, 2008 and 2020.

The successive downswings and upswings observed during 2020 and 2021 translated into an increase in price volatility for several commodities with respect to the pre-COVID-19 period.<sup>20</sup> The largest increases were for natural and liquefied gas, coal, copper, aluminum and cotton. As for crops, price volatility was only marginal except in the case of maize.<sup>21</sup>

In 2022, most commodities faced an increase in their nominal prices. Not surprisingly, the largest positive variations were for energy commodities, followed by maize and wheat, in parallel with the war in Ukraine.<sup>22</sup> Prices decreased for cocoa, rice, copper and iron ore.

### 3.2. Changes in the value of commodity exports in 2019–2021 reflected changes in commodity prices

Commodity price movements, as mentioned above, had a key role in driving the value of commodities trade, and hence on the levels of commodity dependence around the world during the period. Figures 22 to 25 report trends of world export values (solid lines) of 16 commodities and their decomposition into

<sup>20</sup> IMF (2022) illustrates such an increase using weekly price information.

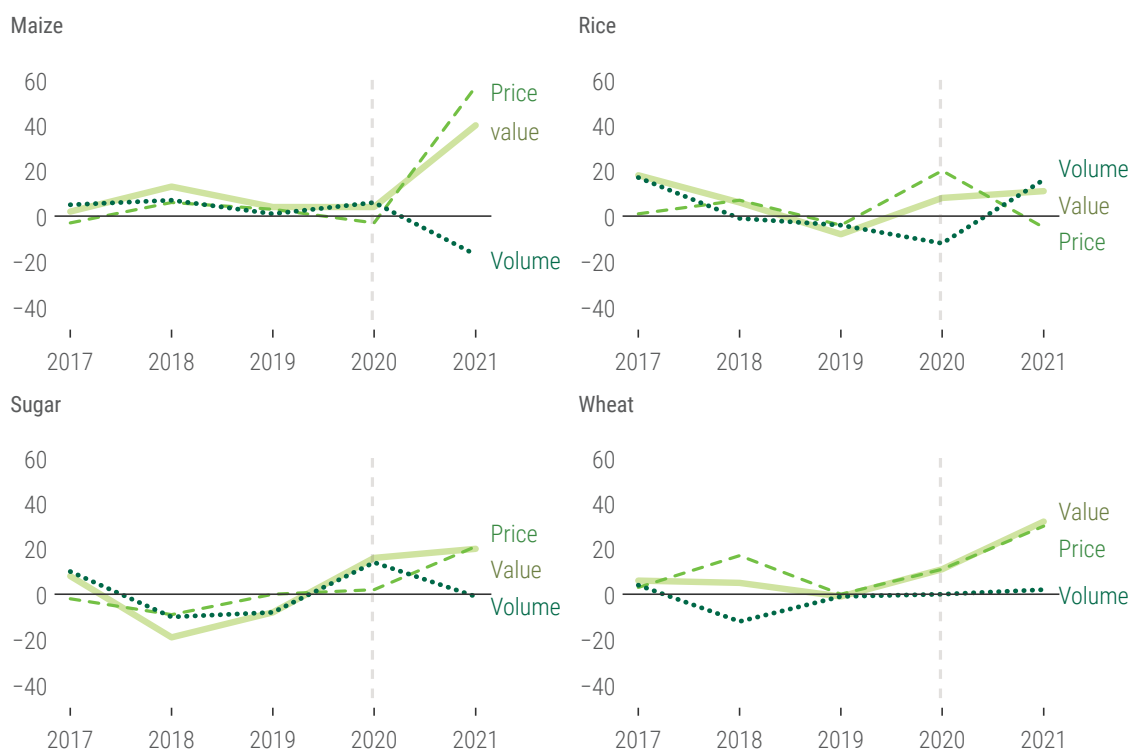
<sup>21</sup> See IMF (2021) for a detailed analysis.

<sup>22</sup> See UNCTAD (2022, 2023). See also the Agricultural Market Information System's Market Monitor, various issues, available at [www.amis-outlook.org/amis-monitoring#.ZFaoAqDMK8U](http://www.amis-outlook.org/amis-monitoring#.ZFaoAqDMK8U). Price increases for energy, fertilizers and agricultural products such as wheat occurred largely during the first half of 2022.

price and volume changes.<sup>23</sup> For metals, minerals and ores, variations in the value of exports essentially reflected price variations during 2019–2021. Exported volumes of commodities in this group remained relatively constant on an annual basis during the period. As for energy commodities, global demand fell, except for liquefied natural gas. In the case of coal, export volume fell by about 40 per cent in 2021. However, the downward movement of quantities exported had already started in 2019, in parallel with increasing concerns about the role of coal in greenhouse gas emissions, and the pandemic may have accelerated an ongoing structural change in global demand for this fossil fuel.

**Figure 22**

**Decomposition of export value variations: Selected crops, 2017–2021 (per cent)**



Source: UNCTAD secretariat based on the UNCTADStat and World Bank databases.  
Note: Vertical dashed line corresponds to the global crisis of 2020.

As for agricultural commodities, patterns are more heterogeneous, most probably reflecting differences in structural parameters such as import demand elasticities across commodities.<sup>24, 25</sup> Export decomposition results suggest that, except for wheat and cocoa, variations in exported volumes were more pronounced than in the case of non-agricultural commodities. In the case of rice, there was a similar increase in export value in both 2020 and 2021. However, while value growth was essentially driven by rising prices in 2020, it was driven essentially by increasing volumes in 2021 as prices slightly decreased. Exports of wheat increased during the COVID-19 pandemic despite some significant increases in prices.

Regarding commodity export value trends before the COVID-2019 pandemic, data suggest that during 2017 and 2018 commodity exports (i.e. values at the country-commodity level) were predominantly characterized by a positive price shock. Negative price shocks became strongly predominant in 2019,

<sup>23</sup> The following formula is applied: Annual variation in export value = annual variation in (unit) price + annual variation in volume. Annual variations in volume are obtained by subtracting annual variation in international prices as reported in the World Bank dataset from annual variations in export values.

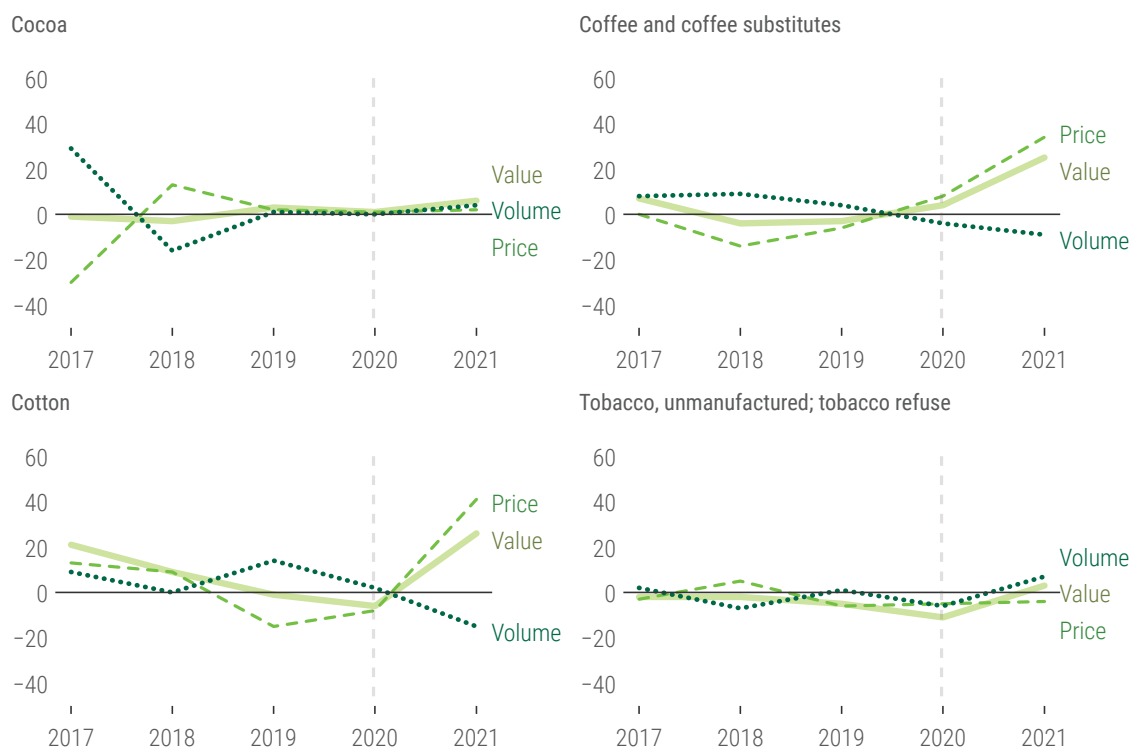
<sup>24</sup> Export restrictions on certain commodities introduced by several countries, mostly between March and September 2020, may have had a temporary impact on international trade of the affected commodities. However, most of the COVID-19-related export restrictions were abandoned by the third quarter of 2020, and in most cases they covered a relatively small share of international trade flows of affected commodities.

<sup>25</sup> See World Bank (2020a, 2020b) for a detailed analysis.



as shown by decreasing prices of several energy commodities. Negative price shocks also prevailed over positive ones in 2020, but their incidence was less marked than the year before due to high intra-year volatility driven by effects of the pandemic on food commodities and certain crops, as discussed earlier. In 2021, 90 per cent of export flows involving certain commodities were characterized by an increase in prices.

**Figure 23**  
**Decomposition of export value variations: Selected tropical commodities, 2017–2021 (per cent)**



Source: UNCTAD secretariat based on the UNCTADStat and World Bank databases.  
Note: Vertical dashed line corresponds to the global crisis of 2020.

About 50 per cent of countries recorded higher shares of commodity exports in total merchandise exports in 2017. That share fell in 2018 and dropped to 40 per cent in 2019, then increased in the following two years to reach 52 per cent in 2021. Increases in shares in total merchandise exports in 2020 occurred essentially for food products. That trend was to a large extent the result of a negative global trade shock in 2020. Indeed, global demand for several types of manufactures fell relative to global demand for commodities, at least for those commodities perceived as essential, like food. The share of food products in total merchandise exports moved from about 3 per cent to almost 4 per cent, while the share of transportation goods such as motor vehicles fell from more than 10 per cent to about 8.5 per cent. As an automatic consequence, the relative importance of food commodities in global trade increased. The 2021 increase in the share of commodities in total merchandise exports is not due to a composition effect but to significant price increases for several commodities, especially energy, during that year. Such a positive association has not been systematically observed across a longer period. For instance, in 2018 positive price shocks in most countries led to a decline in commodities shares in total merchandise exports. That result points to the importance of structural demand parameters such as import demand elasticities in conjunction with the size of price shocks in defining the evolution of commodity dependence.

**Figure 24**

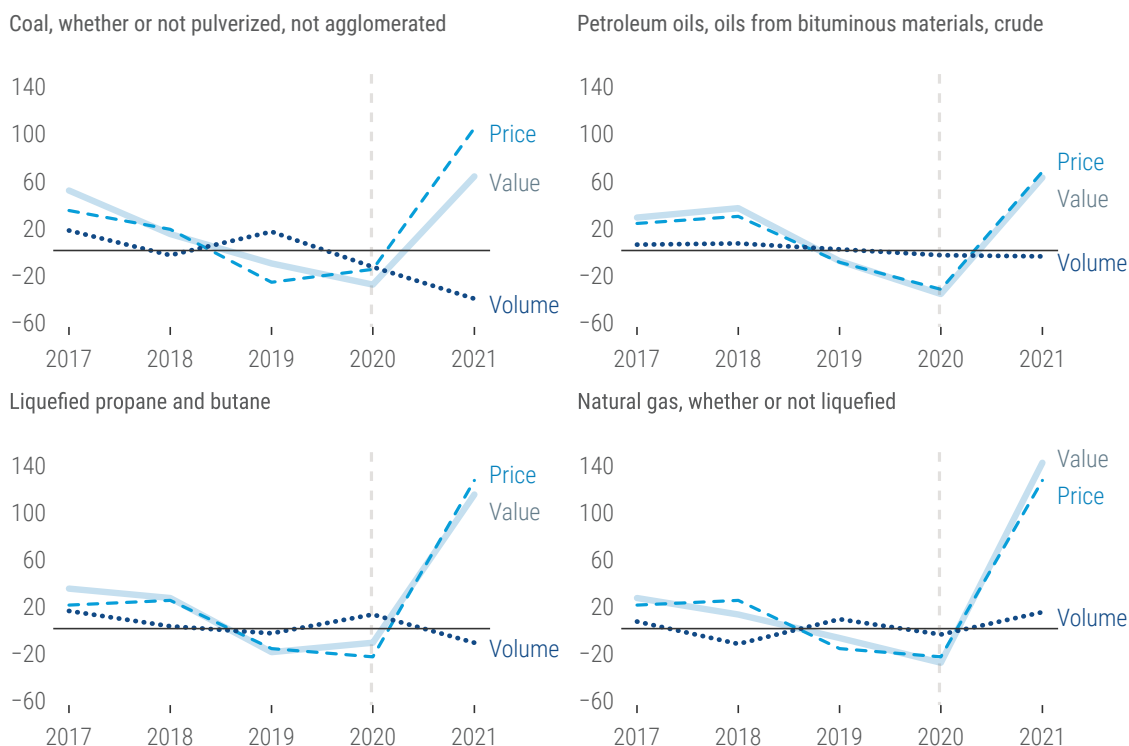
**Decomposition of export value variations: Metals, minerals and ores, 2017–2021 (per cent)**



Source: UNCTAD secretariat based on UNCTADStat and the World Bank databases.  
Note: Vertical dashed line corresponds to the global crisis of 2020.

**Figure 25**

**Decomposition of export value variations: Selected energy commodities, 2017–2021 (per cent)**



Source: UNCTAD secretariat based on UNCTADStat and the World Bank data.  
Note: Vertical dashed line corresponds to the global crisis of 2020.



### 3.3. How have net public assets and international capital flows evolved in commodity-dependent developing countries during the period?

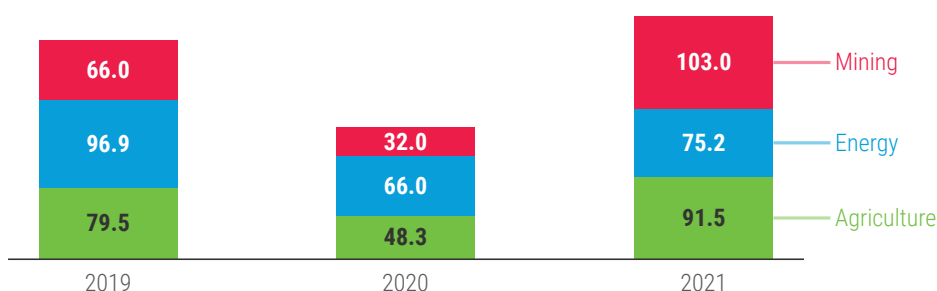
Changes in commodity prices are usually accompanied by changes in the net foreign asset position of CDDCs. These latter changes result from (i) the impact of commodity price changes on the current account of the balance of payments, via changes in the terms of trade, and (ii) the impact of commodity price changes on the financial account as a result of private and public actors' decisions on asset acquisition, which in turn are affected by, among other factors, changes in the perceived solvency of CDDC actors.

During the 2019–2021 period, capital inflows into CDDCs moved in parallel with the evolution of international financial conditions, investor appetite, commodity price trends and other factors that were in turn significantly influenced by the COVID-19 pandemic.<sup>26</sup> Figures 26a and 26b show the temporary reduction of capital inflows in 66 CDDCs in 2020. The reduction reflects the temporary tightening in financial conditions in both developed and emerging markets, as well as the deterioration in risk appetite and the decline in commodity prices during the first four months of 2020.

Figure 26a shows the reductions in capital inflows in countries exporting all three different types of commodities, while Figure 26b shows that reductions in capital inflows occurred in both foreign direct investment and other capital flows between 2019 and 2020. Both figures also show the rapid recovery of capital inflows in 2021, in parallel with increased commodity prices and favourable international financial conditions.

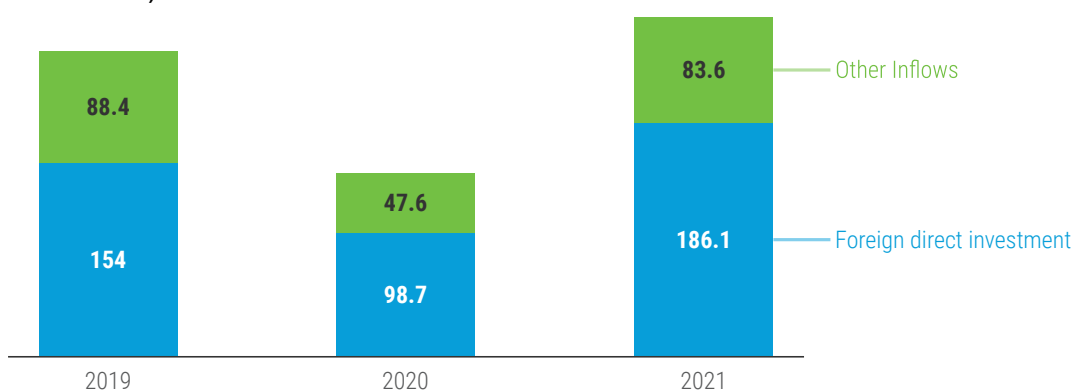
**Figure 26a**

**Capital inflows in selected commodity-dependent developing countries by dependency group, 2019–2021 (billions of United States dollars)**



**Figure 26b**

**Capital inflows in selected commodity-dependent developing countries by type, 2019–2021 (billions of United States dollars)**



Source: UNCTAD secretariat based on International Monetary Fund data.

<sup>26</sup> See the 2019–2022 issues of the International Monetary Fund's Global Financial Stability Report, available at <https://www.imf.org/en/publications/gfsr>

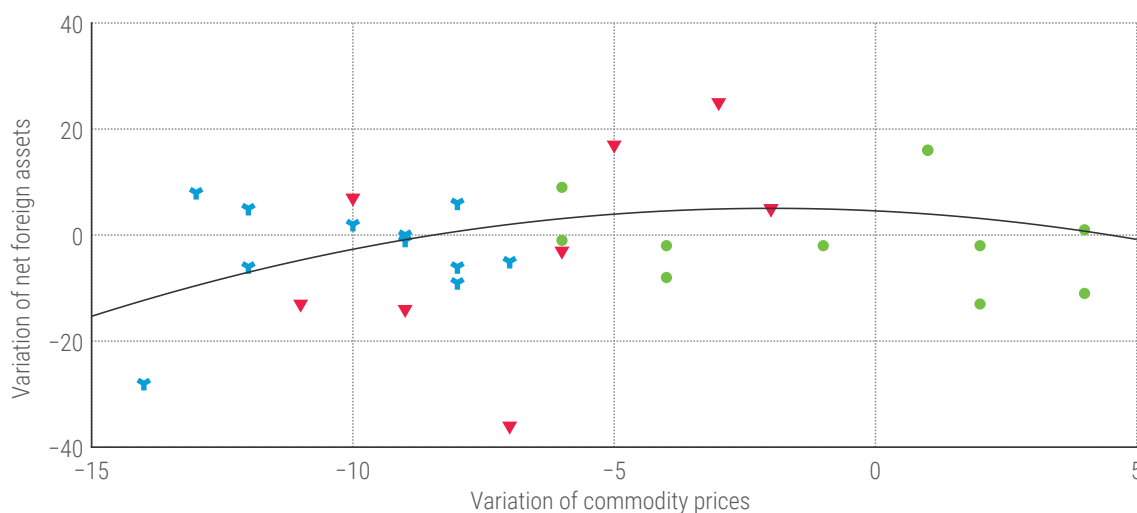
Figures 27a-c present the correlation between foreign assets to foreign liabilities ratios in each country, and country-specific weighted averages of commodity prices, for 2019, 2020 and 2021.<sup>27</sup>

The very functioning of the balance of payments implies that improvements in the current account of CDDCs due to higher commodity prices are balanced by an increase of claims on foreigners by the private and/or public sector. Rebalancing may also occur via the accumulation of foreign currency reserves by the central bank. Economic agents may also react to changes in the different components of the balance of payments. In that context, standard theory would predict that countries enjoying windfall revenues due to an increase in commodity prices could experience an improvement in their net foreign asset position via an intertemporal consumption-smoothing effect, and vice versa (Obstfeld and Rogoff, 1995). In other words, the relationship between net foreign asset positions and changes in commodity prices should be positive. In practice, such a relationship may not always hold, as Figure 27a suggests, because either the private sector, the public sector or both change domestic absorption, and/or the preference for domestic versus foreign assets also changes. Indeed, the quadratic relationship represented by the solid line suggests instead an inverted-U correlation in 2019 when considering countries exporting all types of commodities. Reductions in commodity prices are mainly associated with negative changes in asset-to-liability ratios, while increases in commodity prices improve the net foreign asset position, except for the case of very large increases in commodity prices. In that case, asset-to-liability ratios fell during the period. This may suggest that large increases in commodity prices are associated with changes in domestic absorption, including via the expansion of public expenditure, and eventually lead to the deterioration of general macroeconomic conditions.<sup>28</sup>

The magnitude of price variations at the country level in both 2020 and 2021 increased substantially with respect to those observed in pre-COVID-19 years. However, the range of variation in asset-to-liability ratios diminished. It can also be seen that the strength of the association between price variations and variations in foreign asset positions increased significantly in 2020 and remained high in 2021.

**Figure 27a**

**Variation in selected commodity-dependent developing countries of commodity prices and net foreign assets, 2019 (per cent)**



Source: UNCTAD secretariat based on International Monetary Fund data.

Note: Only countries with shares of represented commodity exports in total commodity exports larger than 20 per cent are represented in the figure.

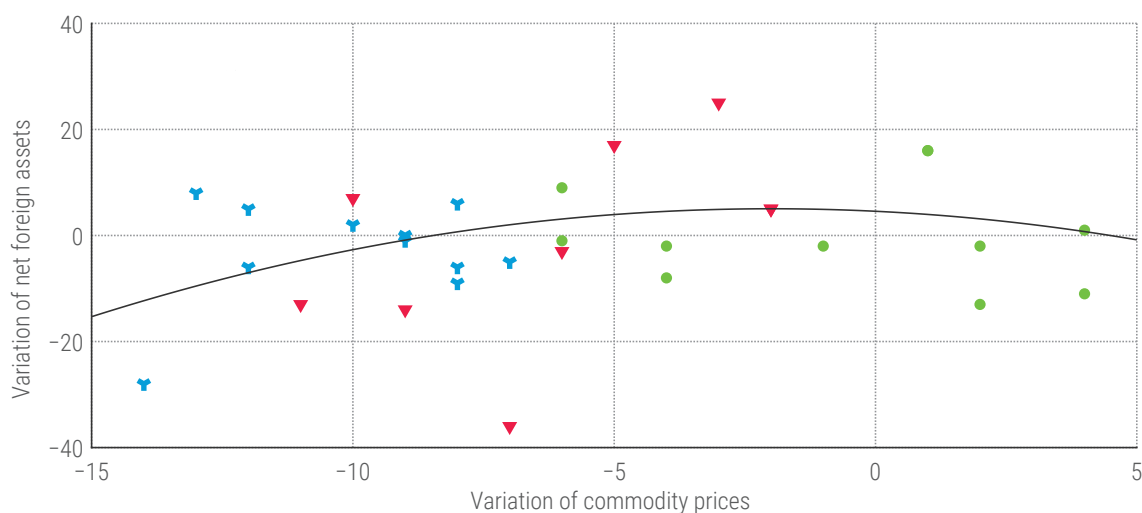
<sup>27</sup> Commodity exports cover only those commodities for which price information is available.

<sup>28</sup> High increases in commodity prices and their association with a fall in the net foreign asset position may find some explanation in the approach employed by Tornell and Lane (1999) and verified empirically in Arezki and Brückner (2012).



**Figure 27b**

Variation in selected commodity-dependent developing countries of commodity prices and net foreign assets, 2020 (per cent)

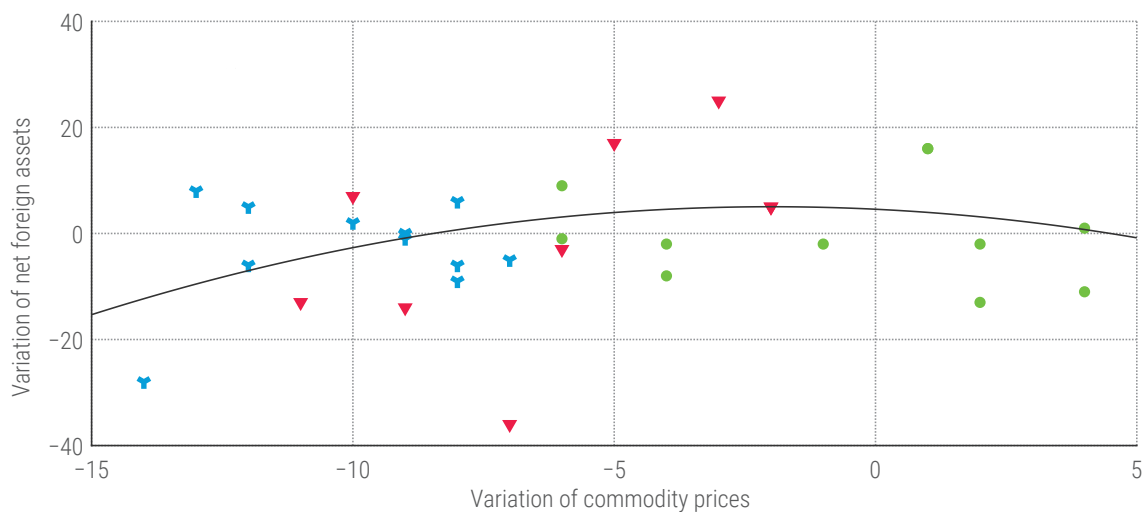


Source: UNCTAD secretariat based on International Monetary Fund data.

Note: Only countries with shares of represented commodity exports in total commodity exports larger than 20 per cent are represented in the figure.

**Figure 27c**

Variation in selected commodity-dependent developing countries of commodity prices and net foreign assets, 2021 (per cent)



Source: UNCTAD secretariat based on International Monetary Fund data.

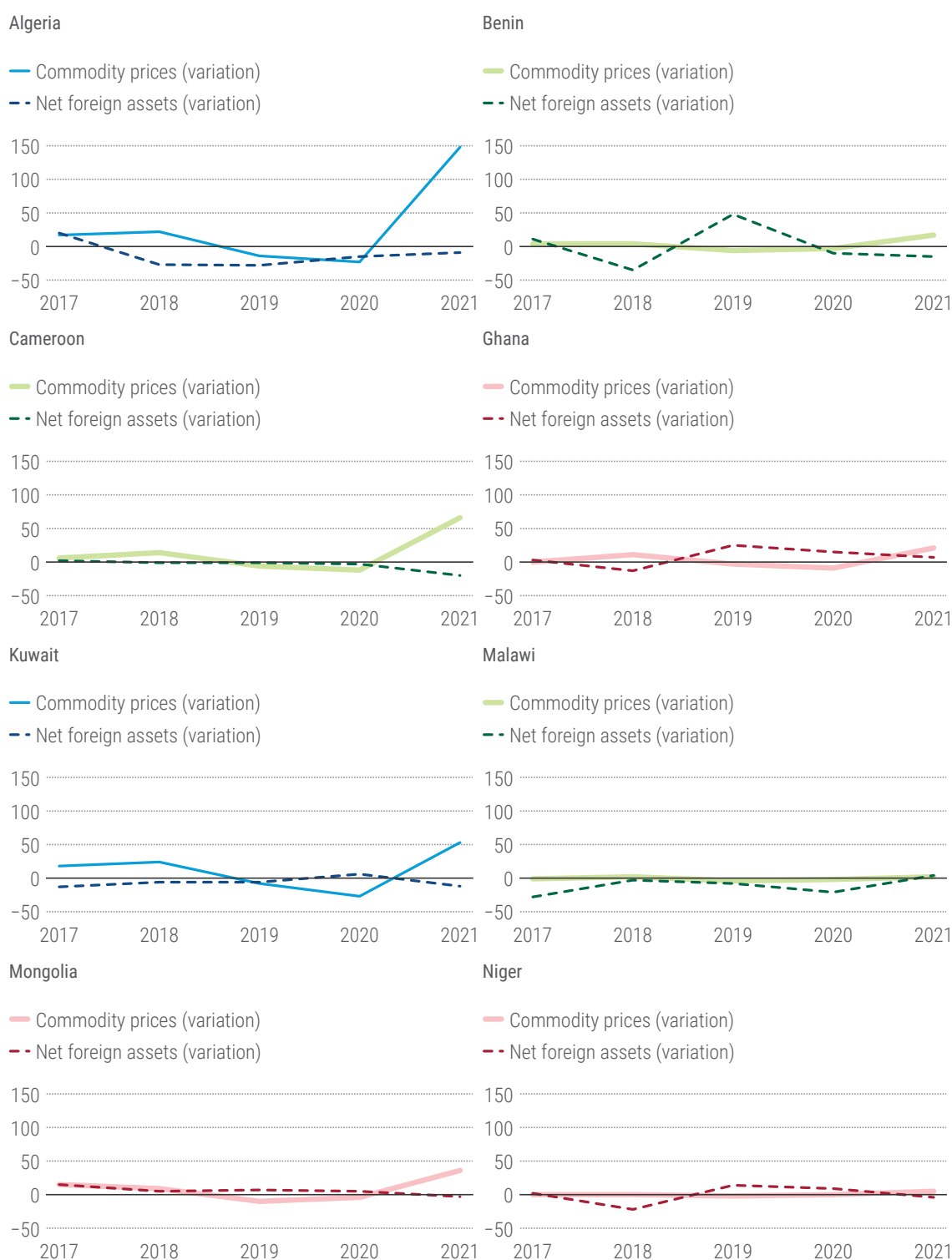
Note: Only countries with shares of represented commodity exports in total commodity exports larger than 20 per cent are represented in the figure.

A positive relationship between commodity price variations and net foreign asset variations, in line with standard theoretical predictions, is obtained for 2020 where commodity prices predominantly fell, although with high intra-year volatility as explained above. The latter fact indicates that net foreign asset positions may have deteriorated in parallel with increased uncertainty fueled by the COVID-19 pandemic, which resulted in the worsening of international economic conditions and the deterioration of the fiscal balances of many CDDCs. In 2021 a negative relationship emerged, on average, between commodity prices and asset-to-liability ratios. While most price variations were positive, the net foreign asset positions of several CDDCs in the sample deteriorated.

Figure 28 presents the variation in asset-to-liability ratios and the variation in average commodity prices observed for a selection of countries from 2017 to 2021.<sup>29</sup>

**Figure 28**

**Variations of net international assets position and commodity prices , 2017–2021 (per cent)**



Source: UNCTAD secretariat based on International Monetary Fund data.

<sup>29</sup> Results for the whole sample of countries represented in the dataset are shown in figure A.1 of the data appendix.





In general, it can be seen that the degree of dependence on commodity exports matters more than the dominant type of commodity exported in explaining large variations—whether positive or negative—in the net foreign asset positions of countries. As mentioned previously, the reaction of net foreign asset positions to commodity price variations increased in 2020 and 2021. The outbreak of the COVID-19 pandemic in early 2020 resulted in a decrease in export prices for most countries that year as compared with the average of 2019, as discussed above. However, the most affected countries in terms of their net foreign asset position were those exporting mainly energy commodities. Other strongly affected countries are heavily dependent on mineral exports, such as Ghana, Mongolia and Niger, or on agricultural exports, such as Benin and Cameroon. Countries with more diversified baskets of commodity exports faced lower price variations during the first months of the pandemic.

No systematic pattern emerges for 2021. Positive variations in prices observed can be associated with either an improvement or degradation in net foreign asset positions. No remarkable improvement is observed except for Malawi, which improved its net foreign asset position after a significant degradation in 2020. As for countries with decreasing ratios, several were dependent on exports of agricultural goods, like Cameroon. In this country, despite an increase of more than 80 per cent in the average prices of its commodity export basket, its asset-to-liability ratio fell by almost a fifth. A similar case is Benin, where despite a rise of about 20 per cent in the average prices of its commodity exports, its net foreign asset position worsened by about 10 per cent. Only two other countries experienced similar contrasting patterns, the Russian Federation and Kuwait. Both depend on energy commodities exports.

Higher commodity price volatility, if associated with lower fiscal revenues, can lead to a significant increase in external public debt alongside a reduction in debt maturity.<sup>30</sup> Commodity price volatility, especially among CDDCs with high commodity dependence, may affect a country's capacity to honour both debt interest payments and the principal's reimbursement (Eberhardt and Presbitero, 2021). For the 2019–2021 period, there was a negative association between commodity price movements and international assets positions in most energy-dependent CDDCs where there was a wide variation in prices, such as Angola, Zambia, Angola and Ghana. In countries where there were more moderate price changes, the relationship does not show any systematic direction. It is positive for countries like Brazil and Paraguay but negative for countries like Colombia, Nicaragua and São Tomé and Príncipe. Except for Colombia, the latter countries are dependent on the export of agricultural products.

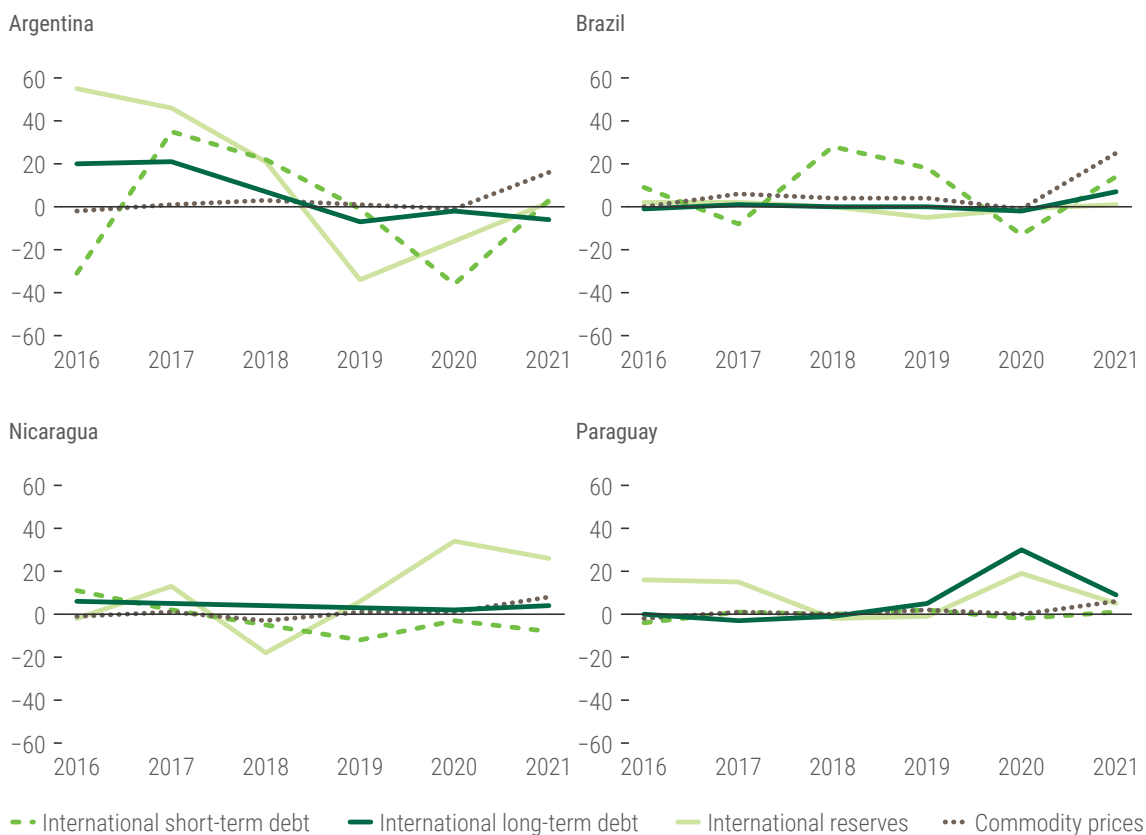
The decomposition of debt stocks by maturity (i.e. short-term versus long-term) indicates that the adjusting component is short-term debt in most cases, as shown in Figures 29a-d. However, while short-term debt tends to react positively to large variations in prices for lower commodity-dependent countries, it reacts negatively in the case of several higher commodity-dependent countries and in particular for those in the 40 to 60 per cent group. Countries like Ghana, Mozambique and Angola saw their stock of short-term debt either decreasing or at least not growing with the event of large increases in their commodity export price index. However, other energy-export-dependent countries such as Colombia and the Russian Federation both saw their stock of short-term debt increase in association with a jump in their commodity export price index of about 50 per cent. For countries exporting principally non-energy commodities, the picture is at best mixed, with a much weaker association emerging between short-term debt stocks and commodity price volatility. While Brazil saw its short-term debt increase, Nicaragua experienced the reverse.

As mentioned previously, changes in current account positions due to variations in revenues from commodity exports may also lead to some variations in foreign currency reserves held by central banks, conditional on a variety of factors such as the de facto exchange rate regime and the strength of demand for debt denominated in domestic currency, among others. A priori, a positive association would be expected between commodity prices and international reserve variations, as was observed in most countries in the pre-COVID-19 period. Moreover, during that period, the higher the dependence on commodity exports, the stronger the association. However, as shown in figures 29a-d, the pandemic period has been characterized by a more nuanced picture. While the association remains positive for countries with low levels of commodity dependence, such as Brazil, it turns negative in many countries, particularly those that are heavily dependent on commodities, such as mineral exporters like Zambia.

<sup>30</sup> The discussion here focuses on the income side of the fiscal balance without including the analysis of fiscal expenditure, which in several countries is a key driver of the evolution of net foreign assets. See IMF (2021).

**Figure 29a**

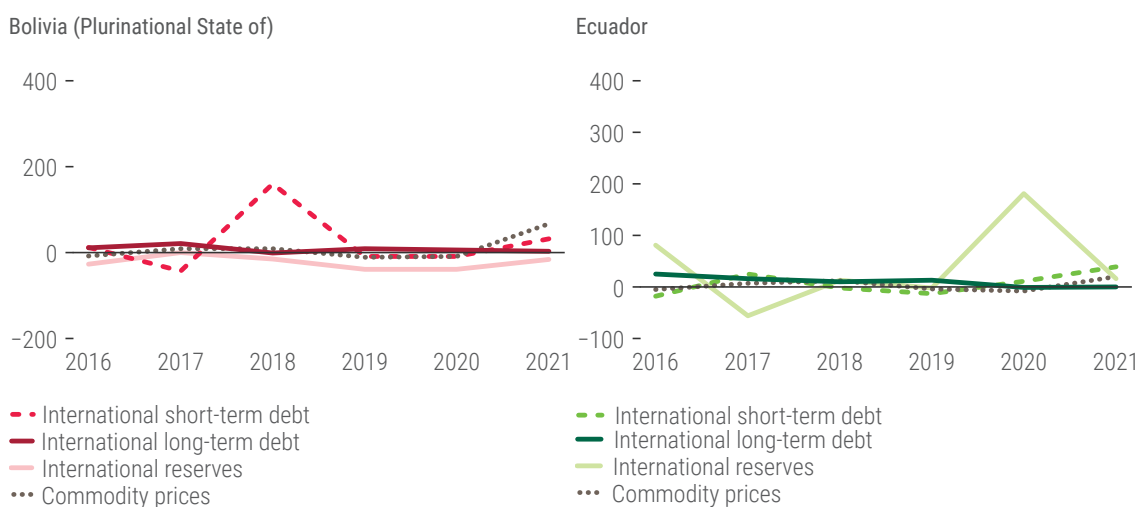
Variations in commodity prices, international debt securities by maturity, and international reserves (except gold): 20 to 40 per cent commodity export shares, 2016–2021 (per cent)



Source: UNCTAD secretariat based on International Monetary Fund data.

**Figure 29b**

Variations in commodity prices, international debt securities by maturity, and international reserves (except gold): 20 to 40 per cent commodity export shares, 2016–2021 (per cent)

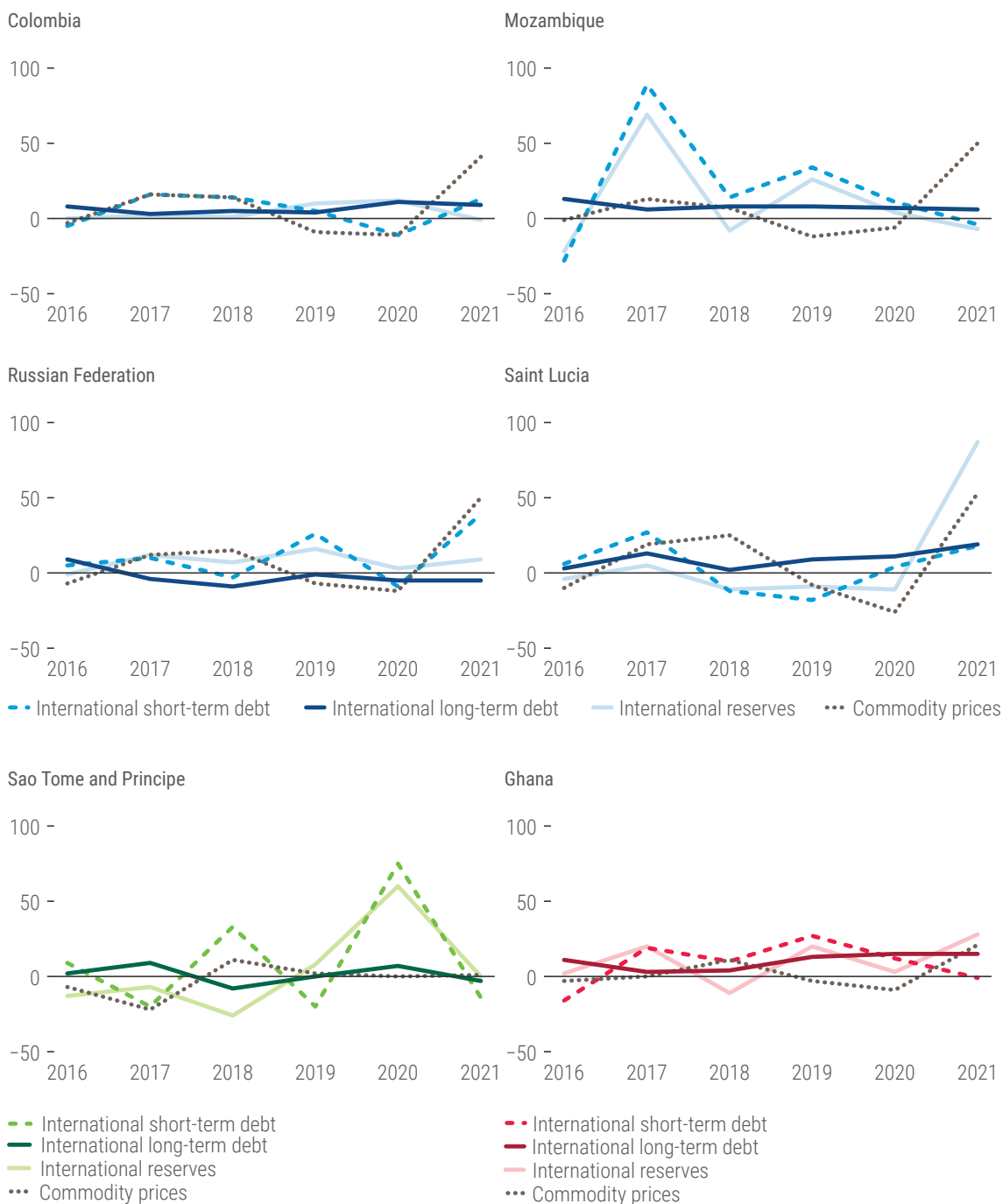


Source: UNCTAD secretariat based on International Monetary Fund data.



**Figure 29c**

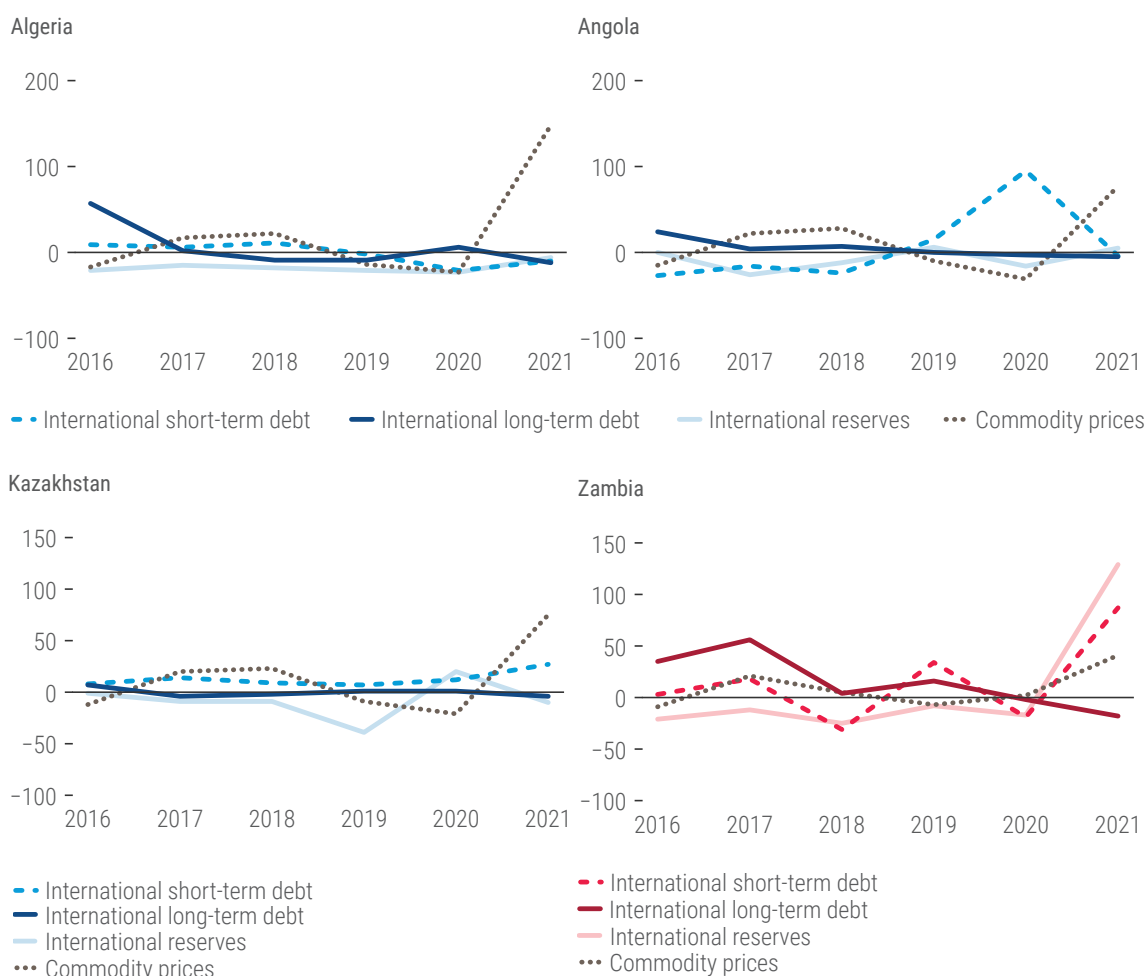
**Variations in commodity prices, international debt securities by maturity, and international reserves (except gold): 40 to 60 per cent commodity export shares, 2016–2021 (per cent)**



Source: UNCTAD secretariat based on International Monetary Fund data.

**Figure 29d**

**Variations in commodity prices, and international debt securities by maturity, and international reserves (except gold): over 60 per cent commodity export shares, 2016–2021 (per cent)**



Source: UNCTAD secretariat based on International Monetary Fund data.

## 4. Conclusions

Commodity dependence is predominantly a developing country problem, as 94 per cent of CDCs are developing countries, and two-thirds of developing countries are commodity-dependent, as opposed to only 12.5 per cent of developed countries being commodity-dependent. CDCs also tend to be poorer: while almost all (96 per cent) low-income countries are commodity-dependent, only 27 per cent of high-income countries are commodity-dependent, and half of those are petroleum and gas exporters. Commodity dependence, which is pervasive in Africa, Oceania and South America, also affects a disproportionate share of countries with special needs: 81 per cent of LLDCs, 74 per cent of LDCs and 61 per cent of SIDS are commodity-dependent.

CDCs are particularly vulnerable to commodity price volatility, which continues at extremely high levels. Indeed, commodity prices remain one of the most important factors driving economic aggregates (Schmitt-Grohe and Uribe, 2018). Global shocks to commodity prices account for a significant share of output fluctuations in CDCs (Fernandez et al., 2017; Ben Zeev et al., 2017). During the 2019–2021 period, commodity prices were extremely volatile following the onset of the COVID-19 pandemic and during the subsequent recovery. In 2022 and early 2023, commodity price volatility remained very high, influenced by the war in Ukraine and by changes in international financial conditions that followed a generalized increase in inflationary pressures.



In the medium and long term, CDDCs need to diversify their production and exports in order to reduce vulnerability to the challenges posed by commodity dependence. However, this requires implementation of a structural transformation process directed towards reducing the relative importance of the commodities sector in the export basket and in the economy at large. Such a process requires sustained policy efforts along different dimensions for an extended period (UNCTAD, 2019). For this reason, CDDCs also need to increase their resilience to negative commodity price shocks in the short and medium terms to better weather negative commodity price shocks while the longer-term economic and export diversification efforts proceed. This is particularly important for the most vulnerable CDDCs, such as LDCs, LLDCs and SIDS. To be successful, several policy areas such as fiscal policy, macro-prudential policy and financial innovation would need specific attention.

A number of different measures have been proposed to support the resilience of public sector finances in CDDCs and strengthen the capacity of these countries to mitigate (or at least not exacerbate) negative commodity price shocks (Frankel et al., 2013; Frankel, 2013). Notably, these include the deepening and diversification of the tax base, forward-looking budgetary practices (including multi-year budgets), different types of fiscal rules, and the use of asset funds to save temporary (but persistent over several years) windfalls for times of low commodity prices. However, an important requirement for the successful implementation of policy measures to boost the resilience of public finances in CDDCs is related to the degree of social consensus about the advantages, the form and the timing of saving windfalls during times of high prices. Reaching broad social consensus on the establishment of this type of inter-temporal fiscal policy management can be challenging in CDDCs with low institutionalization, a low degree of political consensus and dialogue, and large unsatisfied demand for public services. Section 3 showed that at different times, commodity price increases were linked to a deterioration of national asset-to-liability ratios, potentially due to increasing domestic absorption possibly as a result of increases in public expenditure. Finally, CDDCs need to adopt a long-term view to taking advantage of their natural resource abundance as an important tool in their efforts to implement a sustainable, consensus-based structural transformation that helps them meet the Sustainable Development Goals.



## Bibliography

- Aghion P, Angeletos G M, Banerjee A and Manova K (2010). Volatility and growth: Credit constraints and the composition of investment. *Journal of Monetary Economics*. 57:246–265.
- Alessandria G A, Johnson R C and Yi K M (2021). Perspectives on Trade and Structural Transformation. Working Paper Series No. 28720. National Bureau of Economic Research.
- Ardanaz M and Izquierdo A (2022). Current expenditure upswings in good times and public investment downswings in bad times? New evidence from developing countries. *Journal of Comparative Economics*. 50:118–134.
- Atta-Mensah J (2004). Commodity-Linked Bonds: A Potential Means for Less-Developed Countries to Raise Foreign Capital. Working Paper No. 2004-20. Bank of Canada
- Avalos F and Lombardi M J (2015). The biofuel connection: impact of US regulation on oil and food prices. Working Paper No. 487. Bank of International Settlements.
- Arkezi R and M Brückner (2012). Commodity windfalls, polarization, and net foreign assets: Panel data evidence on the voracity effect. *Journal of International Economics*. 86:318-326.
- Anand R (2012). How Should Emerging Market and Low-Income Country Central Banks Respond to Commodity Price Shocks? In Arezki R, Pattillo C A, Quintyn M G, and Zhu M, eds. *Commodity Price Volatility and Inclusive Growth in Low-Income Countries*. International Monetary Fund.
- Balcilar M (2019). mFilter: Miscellaneous Time Series Filters”, R package version 0.1-5. <https://CRAN.R-project.org/package=mFilter>
- Barlevy G (2007). On the Cyclicity of Research and Development. *American Economic Review*. 97:1131–1164.
- Behzadan N, Chisik R, Onder, H and Battaile B (2017). Does inequality drive the Dutch disease? Theory and evidence. *Journal of International Economics*. 106:104–118.
- Ben Zeev N, Pappa E and Vicondoa A (2017). Emerging economies business cycles: The role of commodity terms of trade news. *Journal of International Economics*. 108:368–376.
- Blattman C, Hwang J and Williamson J G (2007). Winners and Losers in the Commodity Lottery: The Impact of Terms of Trade Growth and Volatility in the Periphery 1870–1939. *Journal of Development Economics*. 82(1):156–79.
- Bredenkamp H (2012). Commodity Price Volatility: Impact and Policy Challenges for Low-Income Countries. In Arezki R, Pattillo C A Quintyn M G, and Zhu M, eds. *Commodity Price Volatility and Inclusive Growth in Low-Income Countries*. International Monetary Fund.
- Cárcamo-Díaz R and Nkurunziza J (2019). Do Differences in the Types of Commodities Exported Matter for Export Concentration? UNCTAD/DITC/COM/2019/4. Geneva and New York.
- Cárcamo-Díaz R and Pineda-Salazar R (2014). Economic growth and real volatility: The case of Latin America and the Caribbean. Macroeconomía del Desarrollo Working Paper No. 161. UNECLAC.
- Cecchetti S, King M and Yetman J (2011). Weathering the Financial Crisis: Good Policy or Good Luck? Working papers No. 351. Bank of International Settlements.
- Cuddington J T and Jerrett D (2008). Super Cycles in Mineral Commodities. *IMF Staff Papers*. 55:541-565.
- Deaton A (1999). Commodity Prices and Growth in Africa. *Journal of Economic Perspectives*. 13(3):23- 40.
- De Gregorio J (2013). Resilience in Latin America: Lessons from Macroeconomic Management and Financial Policies. Working Paper No. 259. International Monetary Fund.



- Eberhardt M and Presbitero A F (2021). Commodity prices and banking crises. *Journal of International Economics*. 131:103474.
- Fernández A, Schmitt-Grohé S and Uribe M (2020). Does the Commodity Price Super Cycle Matter? Working Paper No. 27589. National Bureau of Economic Research.
- Fernandez A, Schmitt-Grohe S and Uribe M (2017). World shocks, world prices, and business cycles: An empirical investigation. *Journal of International Economics*. 108(1):S2-S14.
- Fernandez-Arias E and Montiel P J (1996). The surge in capital inflows to developing countries: an analytical overview. *The World Bank Economic Review*. 10:51–77.
- Frankel J A, Vegh C A and Vuletin G (2013). On graduation from fiscal procyclicality. *Journal of Development Economics*. 100:32–47.
- Frankel J (2017). Four Proposals. R Arezki and R Boucekkine, eds. *Natural Resources, Finance and Diversification: Diagnostics and Policies*. The World Bank.
- Frankel J A (2013). A solution to fiscal procyclicality: the structural budget institutions pioneered by Chile. Series on Central Banking Analysis and Economic Policies no. 17. Central Bank of Chile.
- Frankel J A (2010). The Natural Resource Curse: A Survey. Working Paper No. 15836. National Bureau of Economic Research.
- Herrendorf B, Rogerson R and Valentinyi Á (2014). Growth and Structural Transformation. *Handbook of Economic Growth vol. 2*. Elsevier. Amsterdam.
- IMF (2022). *Global financial stability report: Shockwaves from the war in Ukraine test the resilience of the financial system*. Washington D.C.
- IMF (2021). *World Economic Outlook, recovery during a pandemic*. Washington D.C.
- IPCC (2023). *AR6 Synthesis Report: Climate Change 2023*. United Nations. New York.
- Kaminsky G L (2010). Terms of Trade Shocks and Fiscal Cycles. Working Paper Series No. 15780. National Bureau of Economic Research.
- Koren M and Tenreyro S (2007). Volatility and Development. *The Quarterly Journal of Economics*. 122(1): 243–87.
- Kabundi A, Vasishtha G and Zahid H (2022). The nature and drivers of commodity price cycles. Baffes J and Nagle P, eds. *Commodity Markets: Evolution, Challenges, and Policies*. World Bank.
- Lall S (2000). The Technological Structure and Performance of Developing Country Manufactured Exports, 1985–98. *Oxford Development Studies*. 28:337–369.
- Martin P and Rogers C A (2000). Long-term growth and short-term economic instability. *European Economic Review*. 44:359–381.
- Obstfeld M and Rogoff K (1995). The intertemporal approach to the current account. In Grossman G and Rogoff K, eds. *Handbook of International Economics vol. 3*. Elsevier. Amsterdam.
- Reinhart C M, Reinhart V and Trebesch C (2017). Capital flow cycles: a long, global view. In IMF 18th Jacques Polak Annual Research Conference papers and proceedings.
- Reinhart C M, Reinhart V and Trebesch C (2016). Global cycles: Capital flows, commodities, and sovereign defaults, 1815–2015. *American Economic Review*. 106:574–580.
- Rojas-Suárez L (2015). Emerging Market Macroeconomic Resilience to External Shocks: Today versus Pre-Global Crisis. Essay. Center for Global Development.
- Sachs J D and Warner A M (2001). The curse of natural resources. *European Economic Review*. 45:827–838.
- Sinnott E (2009). Commodity prices and fiscal policy in Latin America and the Caribbean. Mimeo. World Bank.

- Schmitt-Grohé S and Uribe M (2018). How important are terms of trade shocks? *International Economic Review*. 59:85-111.
- UNCTAD (2019). Commodity Dependence: A Twenty-Year Perspective. Geneva and New York.
- UNCTAD (2007). World Investment Report 2007: Transnational Corporations, Extractive Industries and development. Geneva and New York.
- Van der Ploeg F (2019). Macro policy responses to natural resource windfalls and the crash in commodity prices. *Journal of International Money and Finance*. 96:263–282.
- Van der Ploeg F (2011). Natural Resources: Curse or Blessing? *Journal of Economic Literature*. 49(2):366-420.
- Van der Ploeg F and Poelhekke S (2009). Volatility and the Natural Resource Curse. *Oxford Economic Papers*. 61(4):727–60.
- Van der Ploeg F and Venables A J (2013). Absorbing a Windfall of Foreign Exchange: Dutch Disease Dynamics. *Journal of Development Economics*. 103:229–43.
- Venables A J (2016). Using natural resources for development: why has it proven so difficult? *Journal of Economic Perspectives*. 30(1):161–184.
- World Bank (2020a). Commodities Market Outlook: A shock like no other: The impact of COVID-19 on commodity markets. Washington D.C.
- World Bank (2020b). Commodities Market Outlook: Persistence of commodity shocks. Washington D.C.





## Data appendix

**Table A.1**

**Countries where one product line was more than half of merchandise exports, mean 2019-2021 (per cent)**

Country	SITC Code	Commodity	Value (Million US dollars)	Export Share
South Sudan	333	Petroleum oils, oils from bitumin. materials, crude	900.7	94
Iraq	333	Petroleum oils, oils from bitumin. materials, crude	63'603.3	90
Botswana	667	Pearls, precious & semi-precious stones	5'039.0	89
Micronesia (Federated States of)	34	Fish, fresh (live or dead), chilled or frozen	50.2	89
Guinea-Bissau	57	Fruits and nuts (excluding oil nuts), fresh or dried	199.6	89
Angola	333	Petroleum oils, oils from bitumin. materials, crude	26'199.8	88
Chad	333	Petroleum oils, oils from bitumin. materials, crude	2'106.9	88
Mali	971	Gold, non-monetary (excluding gold ores and concentrates)	3'795.0	85
Turkmenistan	343	Natural gas, whether or not liquefied	7'288.1	83
Suriname	971	Gold, non-monetary (excluding gold ores and concentrates)	1'599.4	82
Libya	333	Petroleum oils, oils from bitumin. materials, crude	17'445.9	81
Burkina Faso	971	Gold, non-monetary (excluding gold ores and concentrates)	3'372.8	80
Nigeria	333	Petroleum oils, oils from bitumin. materials, crude	36'887.9	77
Congo	333	Petroleum oils, oils from bitumin. materials, crude	4'307.4	74
Azerbaijan	333	Petroleum oils, oils from bitumin. materials, crude	13'167.7	71
Zambia	682	Copper	5'997.4	69
Equatorial Guinea	333	Petroleum oils, oils from bitumin. materials, crude	3'200.0	67
Maldives	34	Fish, fresh (live or dead), chilled or frozen	206.2	67
Vanuatu	34	Fish, fresh (live or dead), chilled or frozen	32.0	66
Kuwait	333	Petroleum oils, oils from bitumin. materials, crude	36'155.5	65
Kiribati	34	Fish, fresh (live or dead), chilled or frozen	6.3	63
Solomon Islands	247	Wood in the rough or roughly squared	252.5	63
Venezuela (Bolivarian Rep. of)	333	Petroleum oils, oils from bitumin. materials, crude	4'986.7	59
Saudi Arabia	333	Petroleum oils, oils from bitumin. materials, crude	142'822.7	59
Saint Lucia	333	Petroleum oils, oils from bitumin. materials, crude	36.7	56

**Table A.1 (continued)**

**Countries where one product line was more than half of merchandise exports, mean 2019-2021 (per cent)**

Yemen	333	Petroleum oils, oils from bitumin. materials, crude	314.3	55
Nauru	34	Fish, fresh (live or dead), chilled or frozen	37.0	55
Gabon	333	Petroleum oils, oils from bitumin. materials, crude	3'017.6	54
Democratic Republic of the Congo	682	Copper	9'010.6	53
Kazakhstan	333	Petroleum oils, oils from bitumin. materials, crude	29'271.0	53
Palau	34	Fish, fresh (live or dead), chilled or frozen	2.1	52
Guinea	971	Gold, non-monetary (excluding gold ores and concentrates)	3'992.2	52
Guyana	971	Gold, non-monetary (excluding gold ores and concentrates)	1'454.7	51
Burundi	971	Gold, non-monetary (excluding gold ores and concentrates)	82.9	50
Malawi	121	Tobacco, unmanufactured; tobacco refuse	450.3	50

Source: Author's elaboration of the basis of UNCTADStat data at 3 digits SITC rev. 3





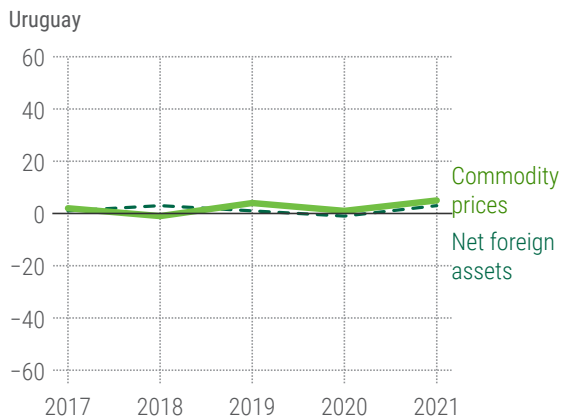
**Figure A.1**

**Changes in net foreign assets position and changes in commodities prices, 2017–2021**

(percentage)

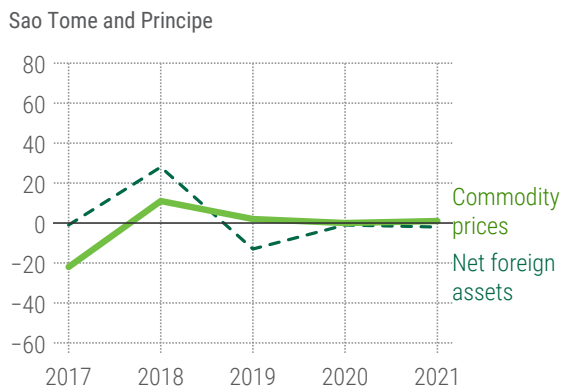
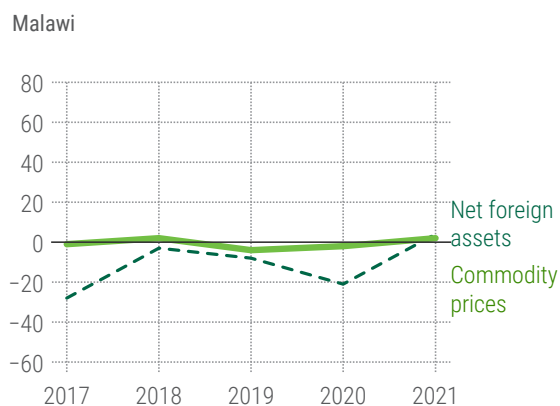
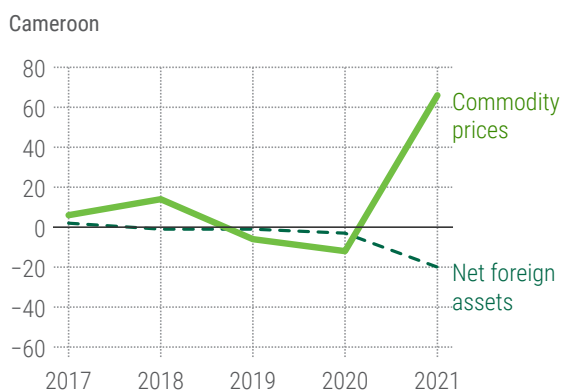
(a) 20 to 40 per cent dependence: agricultural products (includes fishing).



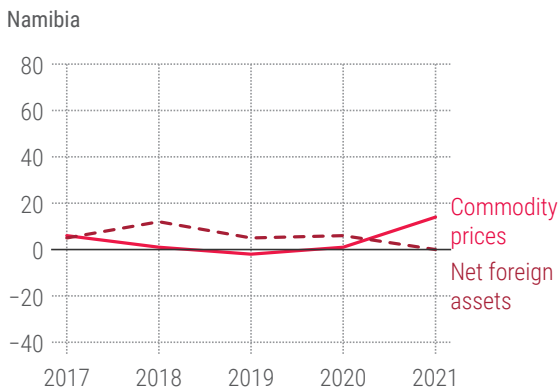
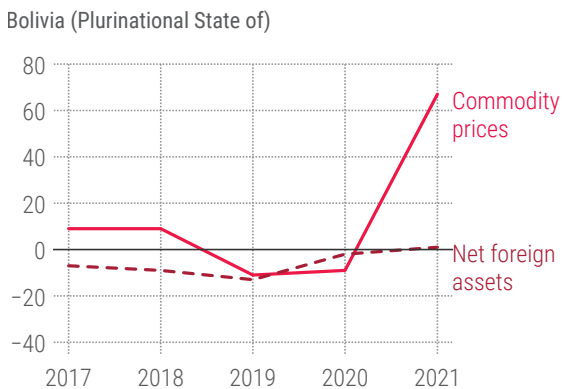


Source: UNCTAD staff elaboration using International Monetary Fund and World Bank data.

(b) over 40 per cent dependence: agricultural products (includes fishing)

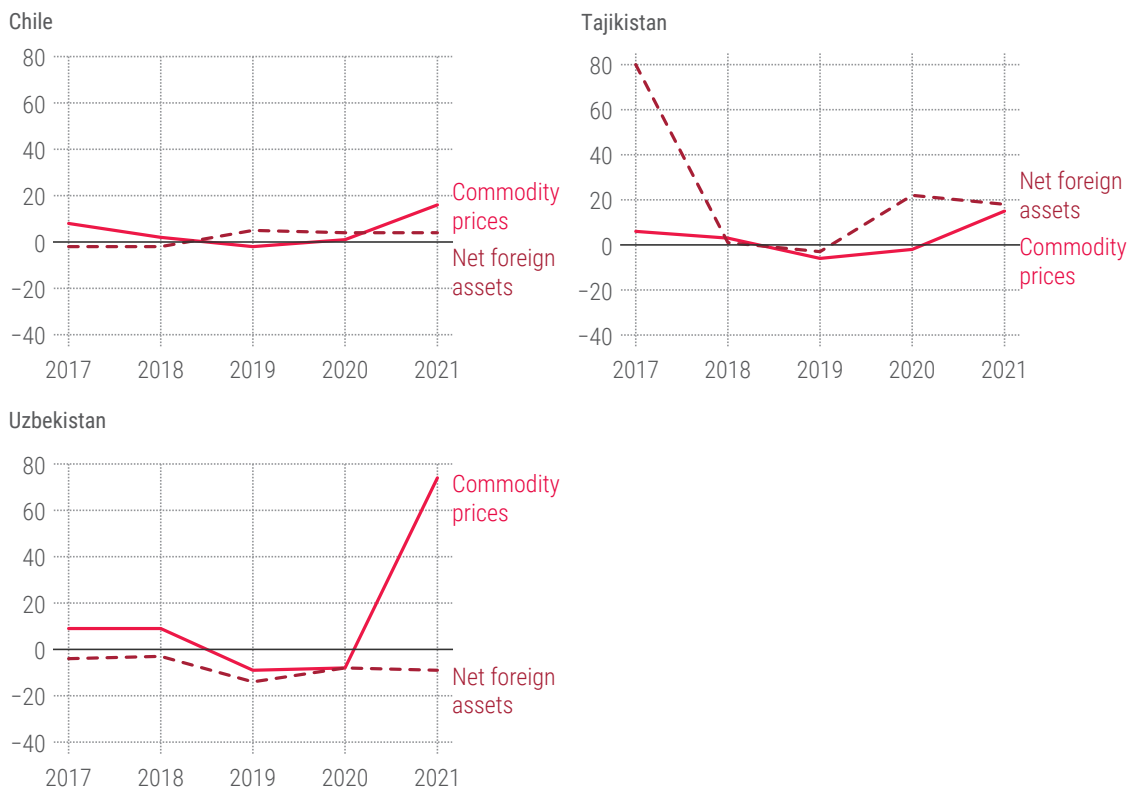


(c) 20 to 40 per cent dependence: mineral products





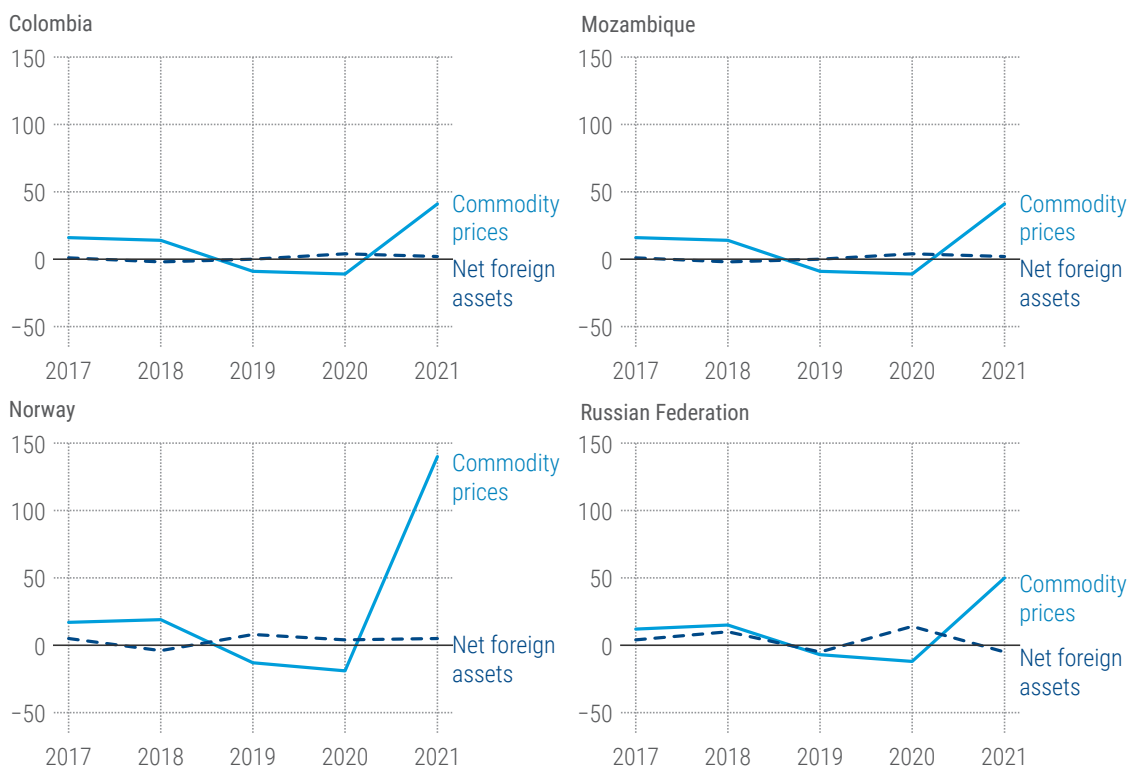
(c) 20 to 40 per cent dependence: mineral products (continued)



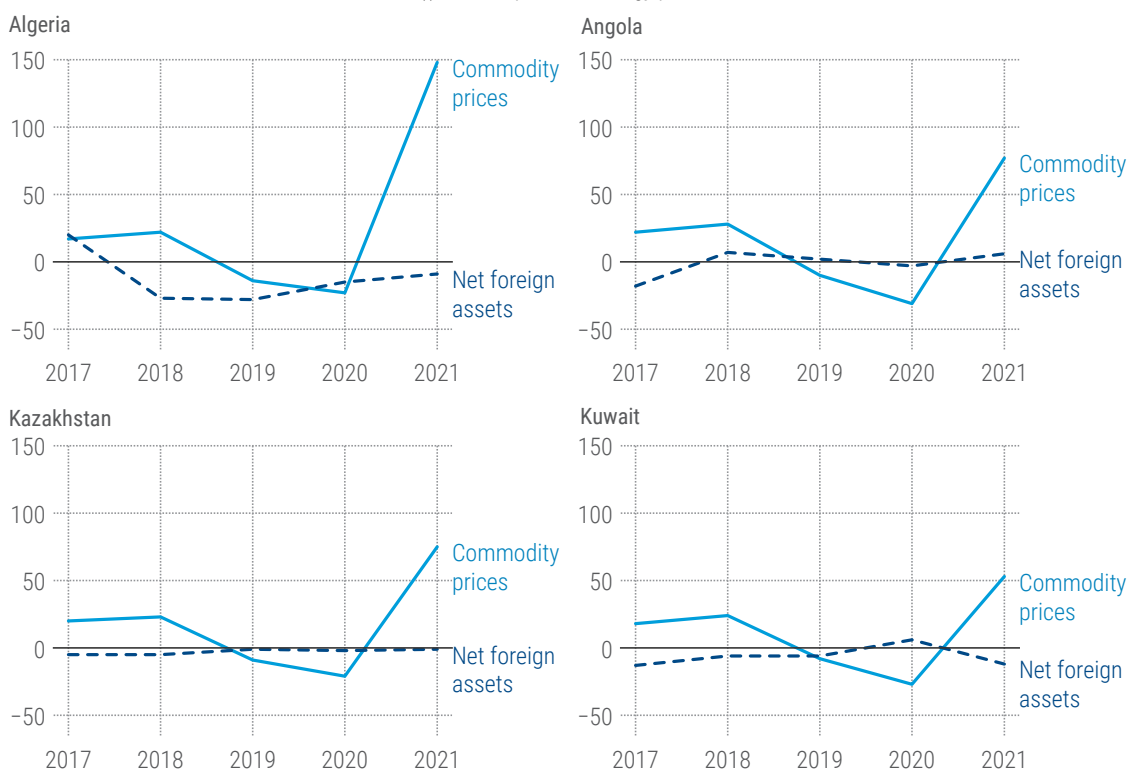
(d) over 40 per cent dependence: mineral products



(e) 40 to 60 per cent: energy products



(f) Over 60 per cent: energy products



Source: UNCTAD staff elaboration using International Monetary Fund and World Bank data.

Note: Countries in Figure A1 are grouped by type and degree of commodity dependence reflected by the share in total merchandise exports of the exports of commodities included in the previous price analysis. For energy commodities, all exporting countries show a degree of dependence above 40 per cent of total merchandise exports.