



Trade After Turmoil:

Vulnerabilities of export
markets after COVID-19
in low- and middle-
income countries

IISD REPORT



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Export Market Vulnerability Study

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Executive Summary

This project is meant to help the international community anticipate the most significant emerging priorities by providing a high-level analysis of the exposure of individual developing economies to trade disruptions from markets' reactions to COVID-19. We use readily available data on economic conditions prior to the onset of the pandemic to capture individual developing economies' exposure to known economic mechanisms. The project constitutes an initial foray into this field by providing a scorecard for quick reference for understanding trade issues in particular developing countries.

The discussion focuses on the secondary economic impacts of COVID-19 through trade and international economics, leaving the primary impacts of the disease and health-based shutdowns for other research projects. Likewise, the intention is to focus on vulnerabilities of least-developed and developing countries to such shocks and transmission mechanisms. Using economic theory, we can identify the conditions that make certain market scenarios more likely, and we can compare this knowledge to the data available before the crisis. For some data, the information captured is slow to change, so even information that is relatively old can be useful.

This document is meant to inform policy-makers on key sources of macroeconomic risk and provide a comparative assessment of the potential trade disruptions following COVID-19. Understanding these risks will help policy-makers anticipate the policy landscape and market challenges as the economic consequences of the pandemic progress. One key focus of the project is to underscore the potential fallout from macroeconomic risks to the trade sector from elements outside of that sector, including changes to foreign direct investment (FDI), currency risk, and risk arising from human development shortfalls.

We divide our analysis into five markets: production, trade, capital, currency, and labour. In addition to providing an overall assessment of each country's exposure to risk from each sector in our scorecard, we review each sector—including the relevant data and the relevant mechanisms separately—making a note of individual countries with particular issues in the text.

In looking at production, we review the overall level of production growth before describing the sectoral composition of production and exposure to specific sectors potentially affected by COVID-19. The most problematic scenario would be for a country to have a low capital-to-labour ratio, weak GDP growth leading into the crisis, and reliance on sectors that are particularly badly hit. While it is difficult to accurately forecast GDP changes under such uncertain conditions, the level of exposure in key sectors of production could be a strong indication of the level of risk faced by an individual country. The insight in this discussion gives more of an international context to understand where some red flags might be occurring.

In the trade sector, the main consideration relates to exposure to internationally integrated value chains in production. We have two methods for describing value chain exposure: intermediate goods as described by the United Nations' (UNs') broad economic categories (BEC) codes in trade data, and UN-Eora data on value added of one country to another



country's exports. This latter indicator is useful in giving exposure to value chains focused on specific large countries. We provide information on exposure to the United States and China.

In light of the COVID-19 pandemic, policy-makers' objectives will likely shift away from efficiency and growth toward risk management and resilience to international shocks in trade policy. While this is probably necessary from a strategic standpoint, the resulting short-term shift to more protectionist policies can lead to a protraction of the original shock, as countries rethink their exposure to global value chains and move away from previous trade patterns. In this case, countries that were already vulnerable to global value chain shocks will likely bear the brunt of this strategic realignment. We therefore urge countries to diversify global value chains rather than dismantling them or resorting to protectionism—this requires a significant international focus on market power and unequal bargaining positions in vertically integrated markets.

When considering potential negative demand shocks from COVID-19, decreases in the financing of new capital projects pose significant risks to international markets. Sudden decreases in official development assistance (ODA) and remittance payments can lead to humanitarian crises in already vulnerable countries, but these sources of income also contribute to capital formation, so such countries will also need longer-term structural support in dealing with potential decreases in production capacity. Sudden decreases in FDI can lead to a “sudden stop” (Calvo 1998), in which domestic business investment and capital formation are also severely negatively affected, leading to a collapse of export markets. In addition, high depreciation rates and weak banking sectors can leave countries vulnerable to long-term decline in the absence of overseas finance.

When it comes to capital markets, policy-makers should be highly sensitive to the fact that this crisis will have lasting effects on investment channels, even in best-case scenarios. Investment decisions have long-lasting impacts on labour productivity, overall production capacity, and economic development indicators. The negative shock to international demand from COVID-19 will necessarily propagate through time as a result of this channel.

In light of trade shocks from COVID-19, currency market considerations are central to understanding how a country responds. Appreciation in a country's exchange rate makes exports less attractive to international buyers, while exchange rate depreciation dilutes the returns to international investors. If a country has strong exposure to specific industries or value chains affected by COVID-19, then the demand shock can lead to exchange rate depreciation and a disproportionate decrease of foreign investment. From here, the scenarios only get worse: currency crises, sudden stops, banking crises, runaway government debt, and hyperinflation.

Policy-makers should have at least a basic understanding of currency markets and their states in order to make informed decisions about trade, production, and capital markets. For one, it is the main mechanism through which government finances affect international trade, and currency markets overshadow capital markets in terms of assets held and traded daily. This will only be more important moving forward as COVID-19 will likely stress government budgets in developed and developing countries alike, making currency considerations more pressing for international trade. Rather than any particular fact from this section, policy-



makers should try to familiarize themselves with the basic causality of the risks described, as this will affect their understanding of each of the other sections, compounding all other types of risk in this document.

A lack of robust labour markets, vulnerable populations (including gender disparities), and a market disparity between access to food and supply of food on international markets make the human aspect of a negative trade shock particularly troublesome. In addition, people pushed out of a job or into poverty as a result of such a negative shock represent a drain on productivity and fiscal resources within a country, prolonging and protracting the impact of the negative demand shock on the people most vulnerable. In light of COVID-19, we see that living conditions in individual countries leave populations exposed to negative shocks in international demand.

Questions of poverty, access to labour markets, food scarcity, and gender relations are hardly new. However, policy-makers should be acutely aware that in addition to being a problem in and of themselves, each of these problems is a potential aggravating factor for any potential negative demand shock from trade. When considering the practical elements of international trade, the prevalence of informal labour markets, vulnerable populations, and undernourished populations push a country's comparable advantage further toward production sectors defined by low marginal productivity of labour, reinforcing trade patterns that can be harmful to long-term investment and capital development.

The IISD is currently involved in a larger-scale project exploring trade patterns in agriculture, focusing explicitly on how countries deal with international trade shocks and how trade patterns interact with undernourishment in the presence of these shocks. This work is ongoing.



Table of Contents

1.0 Introduction	1
Background Research and Literature Review.....	2
2.0 Methods	3
Limits of Forecasting and Simulation Models.....	4
3.0 Our Representative Selection of Countries.....	6
4.0 Overview of Economic Risk for Selected Countries.....	8
5.0 Production Market.....	11
6.0 International Trade.....	20
7.0 Capital Markets.....	29
8.0 Currency Markets	36
9.0 Labour Markets	48
10.0 Conclusion	59
References	61
Appendix 1. Country-Level Data	65



List of Figures

Figure 1. Conditional convergence.....	11
Figure 2. Sectoral Composition of Production	13
Figure 3. Vulnerable industries' share of GDP.....	15
Figure 4. International tourism, export receipts.....	16
Figure 5. Intensity of local competition index.....	18
Figure 6. Trade levels and balance (% of GDP).....	20
Figure 7. Intermediate goods exports.....	23
Figure 8. Exports of ores and minerals	24
Figure 9. Exposure to Chinese export markets	26
Figure 10. Exposure to US export markets	27
Figure 11. Capital formation.....	30
Figure 12. International capital sources.....	32
Figure 13. Domestic credit provided by the financial sector	34
Figure 14. Fixed exchange rate regime	38
Figure 15. Flexible exchange rate regime	38
Figure 16. Mixed exchange rate regime.....	40
Figure 17. Debt outlook.....	41
Figure 18. Fiscal revenue.....	43
Figure 19. Foreign currency liabilities.....	45
Figure 20. Employment participation.....	49
Figure 21. Vulnerable employment.....	52
Figure 22. Political stability and absence of violence index.....	55
Figure 23. Food access indicators	57

List of Tables

Table 1. Countries included in the analysis.....	6
Table 2. Risk scorecard for selected countries.....	9
Table 3. Exchange rate regimes.....	37



1.0 Introduction

In addition to the immediate crisis caused by the COVID-19 pandemic to health, government finances, and economic activity, there is likely to be a secondary effect on global demand throughout international markets. This is likely to put pressure on trade networks and expose countries to a number of potential secondary risks, such as currency crises or capital market failures. Countries outside the high-income category are particularly vulnerable to this, as decades of globalization and supply chain integration have left them exposed to sudden shifts in international demand and investment shifts.

This project is meant to help the international community anticipate the most significant emerging priorities by providing a high-level analysis of the exposure of individual developing economies to trade disruptions from markets' reactions to COVID-19. We use readily available data on economic conditions prior to the onset of COVID-19 to capture the exposure of individual developing economies to known economic mechanisms. The project comprises an initial foray into this field by providing a scorecard for quick reference for understanding trade issues in particular developing countries. The resulting dashboard includes information on various economic mechanisms that are known to cause vulnerabilities to export and import shocks.

The discussion focuses on the secondary economic impact of COVID-19 through trade and international economics, leaving the direct impact of the disease and health-based shutdowns for other research projects. Likewise, the intention is to focus on vulnerabilities of least-developed and developing countries to such shocks and transmission mechanisms. Finally, as the economic conditions following COVID-19 are rapidly changing and highly uncertain, we focus on vulnerabilities leading up to the onset of the virus. For many indicators, the most recent data available is annual data from 2018, but some data points for slowly changing conditions go back to 2015.

This analysis is meant to inform policy-makers on key sources of macroeconomic risk and provide a comparative assessment of the potential trade disruptions following COVID-19. Understanding this risk will help policy-makers anticipate the policy landscape and market challenges as the economic consequences of COVID-19 progress. One key focus of the project is to underscore the potential fallout from macroeconomic risk to the trade sector from elements outside of that sector, including changes to foreign direct investment (FDI), currency risk, and risk arising from human development shortfalls.

The issues described in this document are widely known and discussed in policy-making circles within individual countries. Indeed, we expect some countries to have already taken measures to mitigate the risks described in this document. The value added here is threefold. First, we try to draw links between international economics and trade policy, which are often viewed separately. This allows us to consider larger systemic issues in the context of trade. Second, we try to use data and known mechanisms to aid the international community in anticipating challenges. Finally, a risk-based survey of 60 countries provides context for a broad comparison between countries to describe where specific global risks are likely to materialize.



The intended audience in this context is professional non-economists who would like to fully understand the global economic conditions and risks that are likely to occur as a result of COVID-19. The discussion explains economic mechanisms and concepts that are not intended to be controversial or novel, aiming rather at describing the fundamental state of a representative selection of developing countries.

Background Research and Literature Review

We divide the relevant literature into three parts. First, we have the recent literature describing the current state of the economy leading into the COVID-19 crisis and early indications of how the crisis is affecting developing economies. Because academic papers tend to require longer timeframes for publication, these papers are mostly published by international policy organizations, many with their own internal peer-review processes. Examples of these include Buera et al. (2020), Gurhy et al. (2020), the World Bank (2020), and United Nations Conference on Trade and Development (UNCTAD) (2020).

One notable exception to this rule, however, is the initiative by the European Centre for Economic Policy Research (CEPR), which has facilitated the quick publication of COVID-related research in their Covid Economics: Vetted and Real Time Papers, which publishes economic research on this topic through an expedited review process and allows authors to seek further publication of the same research in established peer-reviewed journals. This initiative has produced three editions each week since January, providing a rich source of COVID-related economic research. Most of this work focuses on developed countries and domestic management of the crisis, but Nonvide (2020) focuses explicitly on Africa, and Baldwin and Tomiura (2020) and Baldwin and Weder di Mauro (2020) focus explicitly on trade.

The second source of literature is on historical parallels to the current crisis. In the context of negative international demand shocks and value chain disruption, the 2008 crisis is the closest parallel for our purposes. Following the US crisis, the disruptions to trade were significant and protracted, and there is a large amount of literature detailing these mechanisms after the crisis, including some focused on developing countries (Dullien, 2010; Naudé, 2009) and vertical supply chain linkages (Bems et al., 2011; Escaith, 2009). For issues such as FDI decreases and risk of currency crises, the Asian financial crisis also provides relevant lessons and empirical results (see Dabla-Norris et al., 2010; Herzer & Klasen, 2008; Johnson, 2006).

Finally, we have the general empirical and theoretical literature on development macroeconomics, international trade, and international finance. For the most part, this project uses applications of the basic concepts in these fields. Agénor and Montiel (2015) provide a strong overview of the macroeconomic issues faced by developing countries. Calvo and Reinhart (1999) have a similar overview focusing on capital and sub-Saharan Africa. This understanding is augmented by a series of papers on specialized topics, such as transmission of shocks internationally (Canova, 2005) and business cycle issues specific to developing countries (Agénor et al., 2000; Neumeier & Perri, 2005).



2.0 Methods

This study identifies risks based on well-known economic mechanisms that can lead to specific types of crises.

The data here comes from a variety of sources, listed along with the data in the appendices. However, most of it has been accessed from either the World Bank, the International Monetary Fund (IMF), the UN, the Organisation for Economic Co-operation and Development (OECD), or the World Trade Organization (WTO), as these international organizations serve as focal points for the collection and dissemination of data. Furthermore, these organizations are regularly involved with scrutinizing and verifying the legitimacy of collection practices of their data. As a result, we can safely use these data series with relative confidence that the numbers are the best available for what they aim to represent.

The data presented here is the most representative of the concepts discussed for the countries included in the data sample. For series in which a few countries were missing, we included the sets while indicating missing data with “n/a.” However, we tried to limit series in which large portions of our sample countries were missing key data. In some circumstances, data for key countries was available in previous years—in those cases, we included the previous years’ data with an indication that it was not up to date.

In most instances, the latest available annual data was for the year 2018, as 2019 data would largely become available during the year 2020. When a small portion of sample countries had data available for 2019 in a series, we included only 2018 data for consistency with the rest of the sample.

Some series, particularly with respect to trade data, required our own calculations based on data series available from the UN. We describe the way in which we calculated that data in the section where we discuss the series itself.

The values from the indicators in each market are combined into an overall risk scorecard, listing the qualitative judgement of risk faced by each country. These risk scores are determined by a weighted average of the composite indices multiplied by the standard deviation from the mean of that indicator in our dataset. Using the standard deviation from the mean has a variety of useful traits: it allows us to compare values of different units, it allows us to deal with missing data by effectively treating that country’s data as if it were equal to the mean, and it allows us to properly assign weights to each criterion by normalizing the elements of the distributions. By normalizing in this way, the risk scores are all based on relative comparisons to other countries in our list of sample countries. The risk assessment should therefore be interpreted as a qualitative assessment of the relative risk of a particular country to a particular economic problem, rather than any specific indication of the quantitative likelihood of a particular event happening. The distribution of risk scores is only normalized for the first and second moments, so the rest of the distributional qualities of the indicators should be reflected in the distribution of risk scores (if most variables lie on a normal distribution, we should expect most risk scores to be grouped between 4-6, with only a few instances of 0s and 10s).



Following the overview of all sectors, we give an analysis of each sector independently, discussing the mechanisms in each sector and how the chosen indicators reflect on each mechanism. The list of all indicators for a particular market and their respective values is given in the appendices.

Limits of Forecasting and Simulation Models

Our approach of focusing on initial conditions and explaining known transmission mechanisms was chosen due to the highly uncertain economic situation and the resulting unreliability of economic forecasting and modelling tools. The pandemic's effect on world economic output is still developing.¹ With many countries still restricting movement and social activity, the full scope of the initial disruption has yet to be determined. From this shock, a variety of economic mechanisms and scenarios are possible, from standard business cycle mechanisms to the possibility of credit freezes and international emergencies such as sudden stops and balance of payments crises.

It is, therefore, very difficult to predict economic activity in this environment. Any economic forecast published in the current circumstances will contain a high degree of uncertainty and require many caveats on the policy framework and other assumptions made to create estimates in this environment. This is especially true for forecasts that use structural macroeconomic models, in which the calibration of many parameters could be affected by the crisis. For example, the capital-to-labour ratio in production processes could be severely altered by the crisis, and depreciation of capital is likely to be affected by limits to the maintenance of equipment and buildings during the restrictions on movement.

The limits on forecasting and modelling in this environment are significant in leading economies of Europe and North America—these problems are magnified in countries outside the high-income category, where data is less readily available. Furthermore, models often developed and calibrated for developed economies are potentially less accurate when applied to the developing world. This is exacerbated by the fact that such countries are often more vulnerable to known economic mechanisms, with unstable underlying conditions and higher degrees of policy and institutional uncertainty.

Nonetheless, economic forecasts, especially those that incorporate structural models, are very useful. Known economic phenomena and mechanisms can be represented through models to quantify risk to specific types of situations. By specifying equations through which variables interact, we can explain economic phenomena with a degree of precision that is not available elsewhere. Given the uncertainty in our current environment, using these models to forecast is difficult, but they are still useful in their explanatory value.² We can use our knowledge of the models to make qualitative judgements where quantitative forecasts are unavailable.

¹ For a good discussion of the limitations from making early judgements based on available data, see Ioannides (2020).

² One interesting example of using the model for explanatory value to this is Eichenbaum et al. (2020). They use the model to guide our best understanding of how to balance containment with economic loss, erring on the side of saving lives.



While providing precise economic predictions is therefore difficult in the current circumstances, we can still provide insight on risk to individual economies based on their states prior to the crisis. Using economic theory, we can identify the economic conditions that make certain scenarios more likely, and we can compare this knowledge to the available data before the crisis. For some data, the information captured is slow to change, so even information that is relatively old can be useful. For example, labour markets are particularly sensitive to demographic changes, which move along generational timescales. Similar types of analyses include Hevia and Neumeyer (2020), the World Bank (2020), and Noy et al. (2020). We differ in their approaches by providing an overview of the issues stemming from trade shocks while explaining the potential mechanisms and scenarios for non-technical audiences.

In the light of COVID-19, some researchers have done some good work in finding recent data and adapting models more appropriate to our current context. For example, Wren-Lewis and Keogh-Brown (2010) have a good analysis of the economics of a flu pandemic, and economic models of natural disasters have also been adapted.³ These models and data represent the best available for people who need some sort of specific forecast, even though they are highly uncertain.⁴ Our approach is to focus more on broad trends with the hope that accuracy can be improved by foregoing some precision.

³ See Ludvigson et al. (2020).

⁴ *The Economist* (2020) has a good description of the limitations of higher-frequency data compared to lower-frequency official data.



3.0 Our Representative Selection of Countries

We limit our analysis to a representative sample of 60 low- and middle-income countries, chosen for their size and data availability (see Table 1).

Table 1. Countries included in the analysis

Africa, North Sahara	Algeria (DZA) Egypt (EGY)	Libya (LBY) Morocco (MAR)	Tunisia (TUN)
Africa, Sub-Sahara	Benin (BEN) Botswana (BWA) Burkina Faso (BFA) Cameroon (CMR) Côte d'Ivoire Ethiopia (ETH) Gambia (GMB)	Ghana (GHA) Guinea (GIN) Kenya (KEN) Lesotho (LSO) Mali (MLI) Mauritania (MRT) Namibia (NAM)	Nigeria (NGA) Rwanda (RWA) Senegal (SEN) South Africa (ZAF) Uganda (UGA) Zambia (ZMB) Zimbabwe (ZWE)
Central America and Caribbean	Costa Rica (CRI) Cuba (CUB) Dominican Republic (DOM)	El Salvador (SLV) Guatemala (GTM) Haiti (HTI)	Honduras (HND) Jamaica (JAM) Nicaragua (NIC)
East Asia	Cambodia (KHM) Mongolia (MNG)	Philippines (PHL) Thailand (THA)	Vietnam (VNM)
Europe	Albania (ALB) Bosnia and Herzegovina (BIH)	Moldova (MDA) North Macedonia (MKD)	Serbia (SRB)
Middle East	Jordan (JOR)	Lebanon (LBN)	West Bank & Gaza (PSE)
South & Central Asia	Armenia (ARM) Bangladesh (BGD) Georgia (GEO)	Kyrgyz Republic (KGZ) Nepal (NPL)	Pakistan (PAK) Sri Lanka (LKA)
South America	Bolivia (BOL) Colombia (COL)	Ecuador (ECU) Paraguay (PRY)	Peru (PER)



Overall, these countries comprise 6% of world GDP, with an average overall GDP growth rate in 2018 of 7%, compared to an average of 5.5% for all countries where data was available. However, the sample countries received 42% of remittances and 11% of FDI receipts in the same year. In terms of natural assets, the countries selected account for 24% of the world's population and 20% of the world's surface area.

According to the World Bank's *Changing Wealth of Nations 2018* dataset, these countries account for 5% of the world's total wealth but 14% of the world's natural capital, consisting of 21% of global agricultural land, 8% of global forests (including 15% of global timber forests), 22% of global protected areas, and 8% of global subsoil assets. In contrast, the sample countries account for 4% of produced capital and 4% of human capital, according to the same dataset.

Thus, these countries overrepresent worldwide composition on natural resource wealth and population numbers compared to their economic size. However, that is not to say that the selection is a list of economies rich in natural resources nor of high-population countries. Of the 20 countries with the highest concentration of wealth in natural resources, only five are in our selection. Likewise, the selection includes only 8 of the top 20 countries in terms of population.



4.0 Overview of Economic Risk for Selected Countries

We present the risk of each country in our analysis by market. The risks are scaled from 1 to 10, with 10 being the highest level of risk for that market. Given the novel nature of the current pandemic, the risk scale used here has not been calibrated to represent any particular probability of a specific crisis occurring. Instead, a value of 10 simply represents the highest likelihood of that market being vulnerable to a crisis, in our estimation.

The risk values assigned on the chart are determined by a weighted average of the composite indices for each indicator multiplied by the standard deviation from the mean of that indicator for that country. Thus, a value of 0 would indicate that the value of that indicator was equal to the mean of the indicator for all countries in our dataset, and a value of negative 1 should be interpreted as one standard deviation below the mean of that indicator for our dataset. Missing data is treated as if the indicator were equal to the mean of the dataset, as there is no information to distinguish it either positively or negatively, and we therefore treat it as neutral. One could potentially take the absence of data for an indicator as a negative signal, but we decided against that in order to focus on the information that was actually available.⁵ These weighted averages are then converted to a risk score from 0 to 10, indicating the severity of potential risks relative to other countries in the sample set.

One particular benefit of this scorecard is that it highlights the confluence of potential factors affecting a country. Within each market, we present a more detailed analysis that includes and explains relevant macroeconomic indicators. Some countries have particularly troublesome numbers for one indicator within a market while having some other mitigating data within the same market. Therefore, the risk overview presents a unified picture of our understanding of the overall risk in a particular market. This approach allows us to highlight countries that may not seem to have significant risk when assessing an individual macroeconomic indicator, but the confluence of multiple indicators reveals a pattern of exposure across multiple areas.

We refrain from presenting an overall risk level for any individual country, as there are many possible mechanisms for the COVID-19 pandemic to lead to an economic crisis within a country. As a result, potential important distinctions in the nature of risks might be lost by providing a single risk indicator. By providing a risk score for each industry, we hope to draw the reader into a focus on the nature and source of macroeconomic risk in a particular country rather than the overall level.

⁵ This also allowed us to include indicators that we might otherwise have excluded for the number of countries with missing data.

**Table 2.** Risk scorecard for selected countries

	Production	Trade	Capital	Currency	Labour
Albania	6	0	8	5	3
Algeria	7	7	0	2	5
Armenia	3	5	6	6	4
Bangladesh	0	7	2	1	8
Benin	4	5	5	4	7
Bolivia	4	10	4	2	3
Bosnia and Herzegovina	5	4	6	5	4
Botswana	0	8	2	0	1
Burkina Faso	2	6	6	4	9
Cambodia	6	4	6	6	1
Cameroon	4	7	5	2	4
Colombia	3	8	5	3	2
Costa Rica	4	5	3	3	1
Côte d'Ivoire	2	5	3	4	8
Cuba	4	3	6	4	0
Dominican Republic	3	6	3	2	2
Ecuador	4	7	3	4	4
Egypt	4	4	5	3	4
El Salvador	5	3	7	7	2
Ethiopia	3	6	4	3	6
Gambia	3	2	9	4	7
Georgia	6	5	6	6	4
Ghana	1	7	7	3	1
Guatemala	3	3	6	2	5
Guinea	0	4	7	2	6
Haiti	6	7	10	2	10
Honduras	5	7	6	3	4
Jamaica	10	6	5	4	2
Jordan	7	4	6	9	4
Kenya	4	3	6	3	9
Kyrgyz Republic	6	6	10	6	3



	Production	Trade	Capital	Currency	Labour
Lebanon	5	4	8	10	6
Lesotho	4	2	10	1	5
Libya	2	6	5	4	7
Mali	6	6	6	4	6
Mauritania	1	5	3	7	6
Moldova	4	5	8	5	5
Mongolia	1	9	5	10	2
Morocco	5	2	2	3	5
Namibia	5	5	5	4	4
Nepal	1	1	4	2	3
Nicaragua	8	3	5	4	4
Nigeria	3	7	4	2	7
North Macedonia	3	4	5	3	2
Pakistan	3	1	4	3	10
Paraguay	4	5	3	2	6
Peru	4	6	3	2	2
Philippines	2	4	3	1	3
Rwanda	3	3	8	4	5
Senegal	2	2	6	4	4
Serbia	4	4	6	4	3
South Africa	3	4	3	2	1
Sri Lanka	6	0	3	3	5
Thailand	6	4	1	0	3
Tunisia	7	4	5	5	5
Uganda	1	5	7	4	9
Vietnam	3	6	3	1	1
West Bank and Gaza	6	4	10	8	8
Zambia	1	7	5	4	7
Zimbabwe	2	7	6	5	8

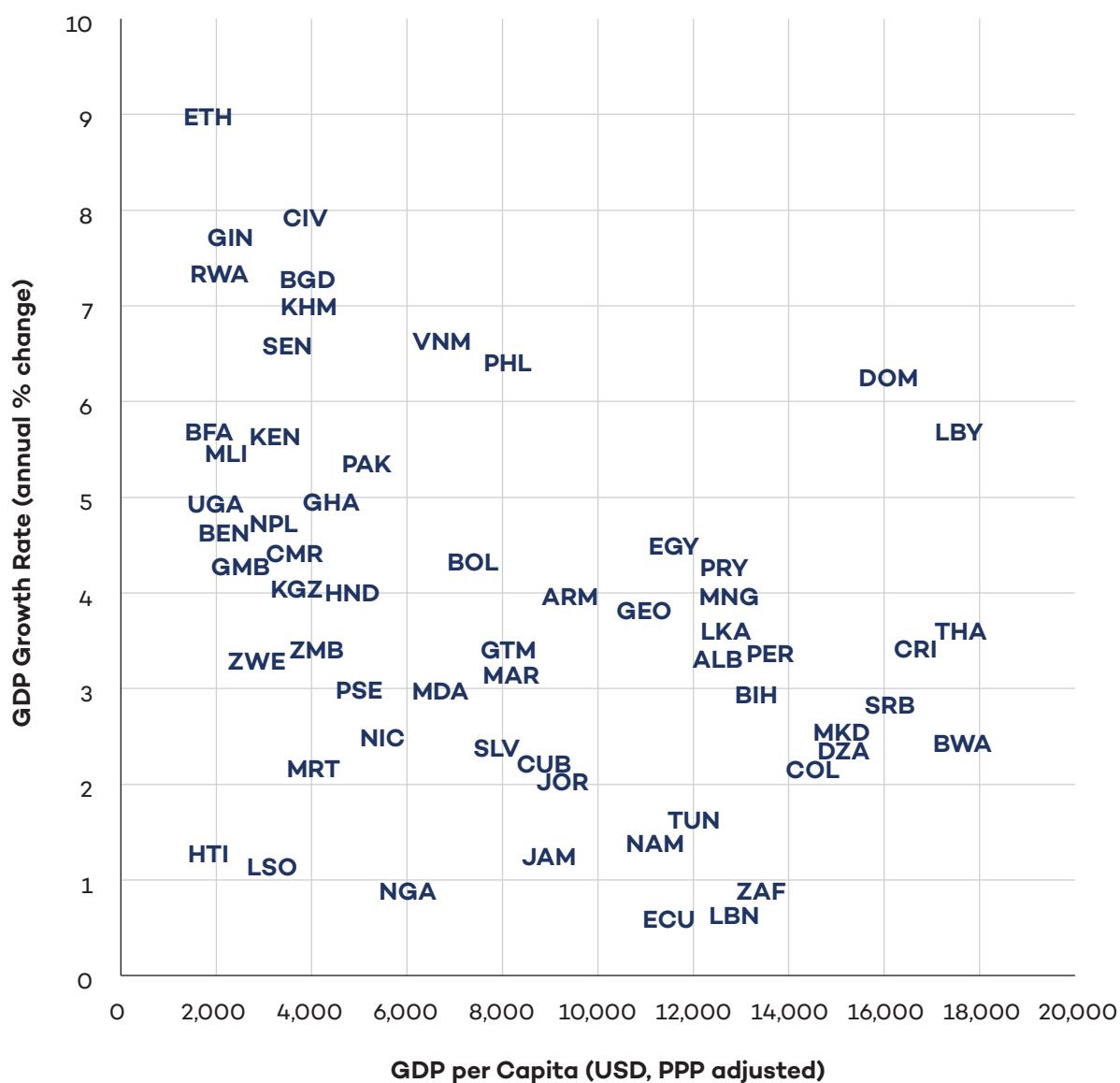
Following this section, each market is analyzed in turn, with the specific risks and data from each market given in detail.



5.0 Production Market

To give an initial understanding of the conditions in each economy, the first set of information to consider is how that economy actually functions. For this, composition of production remains an important indicator. In recent years, GDP as an economic indicator been criticized regarding its ability to fully capture the state of economic activity, especially in developing countries, as it ignores issues such as income inequality and wealth disparities. However, it is often a good starting point for describing the nature of production and vulnerabilities in production sectors, as we are doing here. In addition, while GDP growth does not capture many issues related to development, it is still strongly correlated with other business cycle properties, and long, stable GDP growth is strongly correlated with political stability and improved living conditions.

Figure 1. Conditional convergence



Source: World Bank, n.d.b.



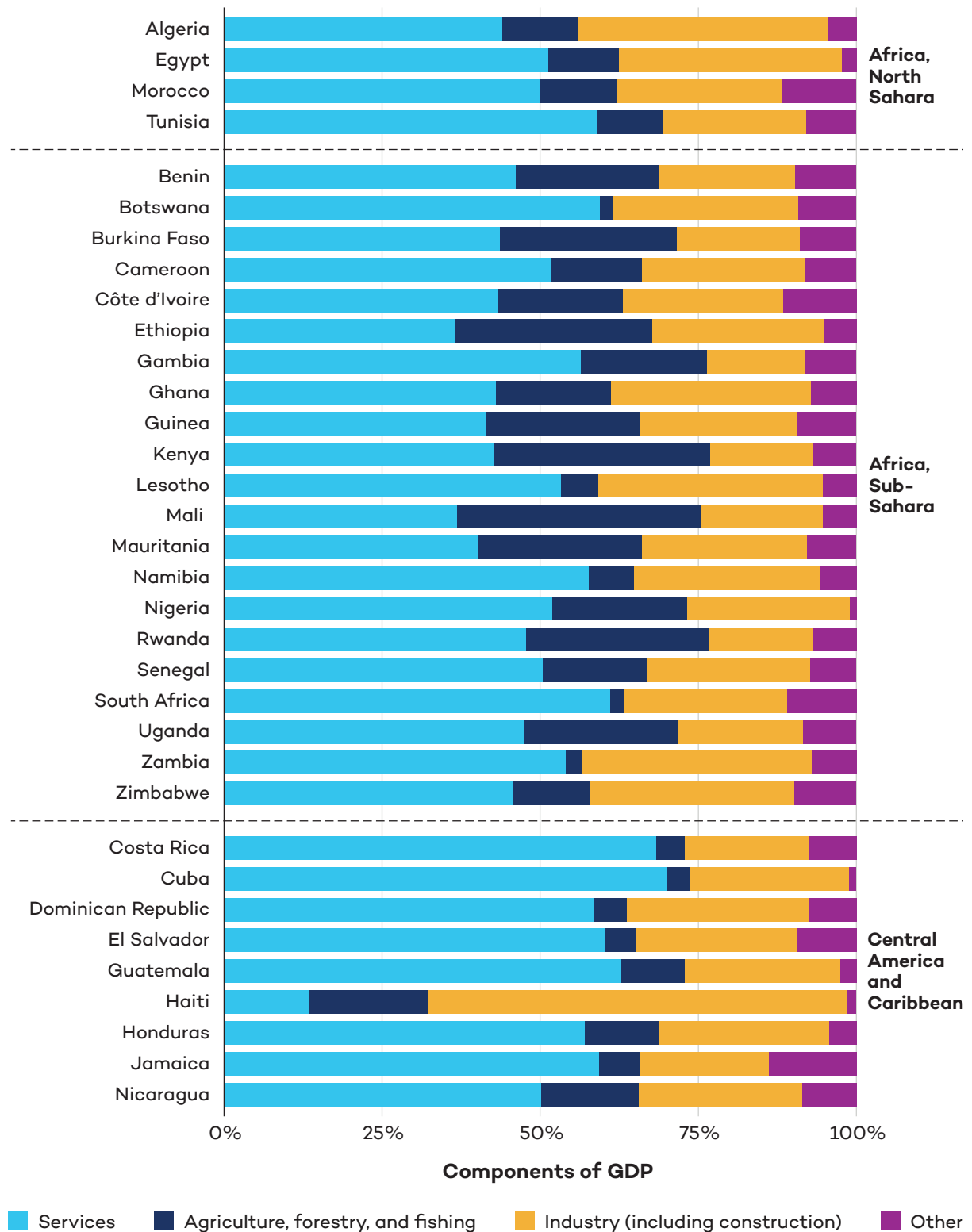
We therefore begin by analyzing GDP growth. This represents how much production of goods and services expands each year. Historically, sustained, stable GDP growth of 2% to 3% over long periods is associated with long-term increases in living standards. More recently, developing economies have exhibited historically high GDP growth, often in the double digits. Economic theory tells us that we should expect higher levels of economic growth for less-developed countries, as they have a potentially higher marginal benefit from capital development. This is a concept called “convergence,” as the faster growth in less-developed countries should lead to a decrease in differences between countries over time. Such convergence is often viewed as conditional on the existence of institutions and labour markets conducive to growth in the developing countries. Furthermore, this theory is based on organic growth based on domestic investment; allowing for international investment can increase the pace of economic growth in good years. Furthermore, there is also significant potential for very high economic growth after natural disasters, economic crises, or political conflict, so very high levels of GDP growth might reflect these conditions rather than particularly strong economies.

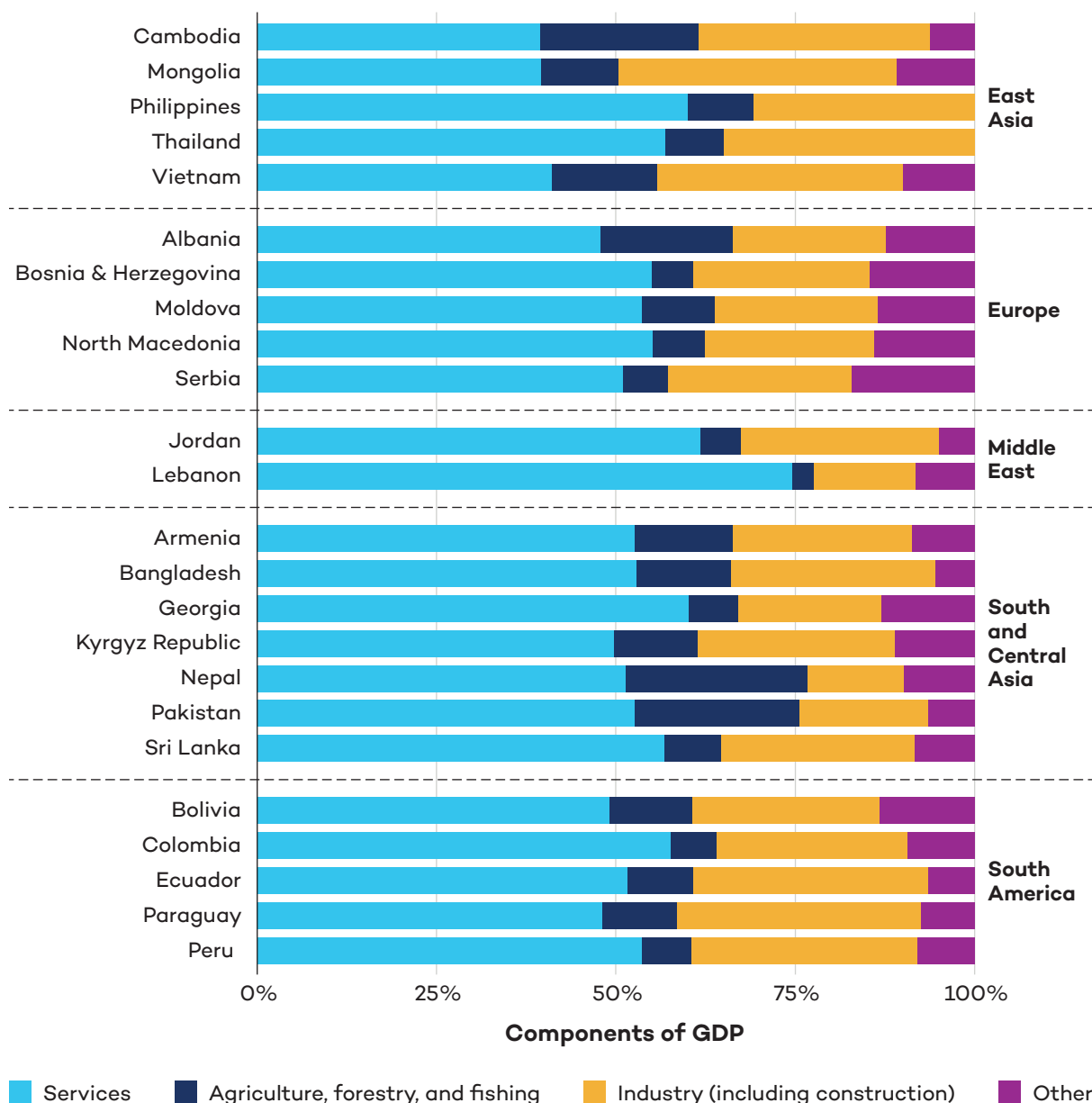
Figure 1 shows the convergence concept visually. Countries with higher GDP per capita rates tend to exhibit lower GDP growth rates, as many opportunities for high-yield investments have been realized. We can see a rough “horizon,” or downward sloping upper edge, starting with Ethiopia, moving down to Côte d’Ivoire, Vietnam, Philippines, Egypt, and Paraguay. The Dominican Republic and Libya are exceptions to this horizon trend. A handful of countries are below this horizon, meaning that their GDP growth rate is underperforming compared to their GDP levels. This reflects the idea that such convergence is conditional on strong markets and institutions and suggests that these countries require institutional development.

While Figure 1 does not say anything explicitly about vulnerabilities to a potential trade shock from COVID-19, it provides valuable context on the state of each country in its progress in economic development ahead of the shock. If a country lies below the horizon, it is entering into this period of international economic turmoil from a weakened position. One would expect GDP growth that is already relatively low to continue to underperform during a crisis, and the institutional causes for such underperformance are likely to hinder any policy efforts to address the crisis.



Figure 2. Sectoral Composition of Production





Source: World Bank. n.d.b.

Figure 2 shows the sectoral composition of production. There are multiple ways of breaking GDP into components. The sectoral composition divides production by the value added in each sector toward the overall net production in a given year. At the highest level, these are crudely broken down into agriculture, industry, and services, though there is often a significant portion of GDP that is unclassified.

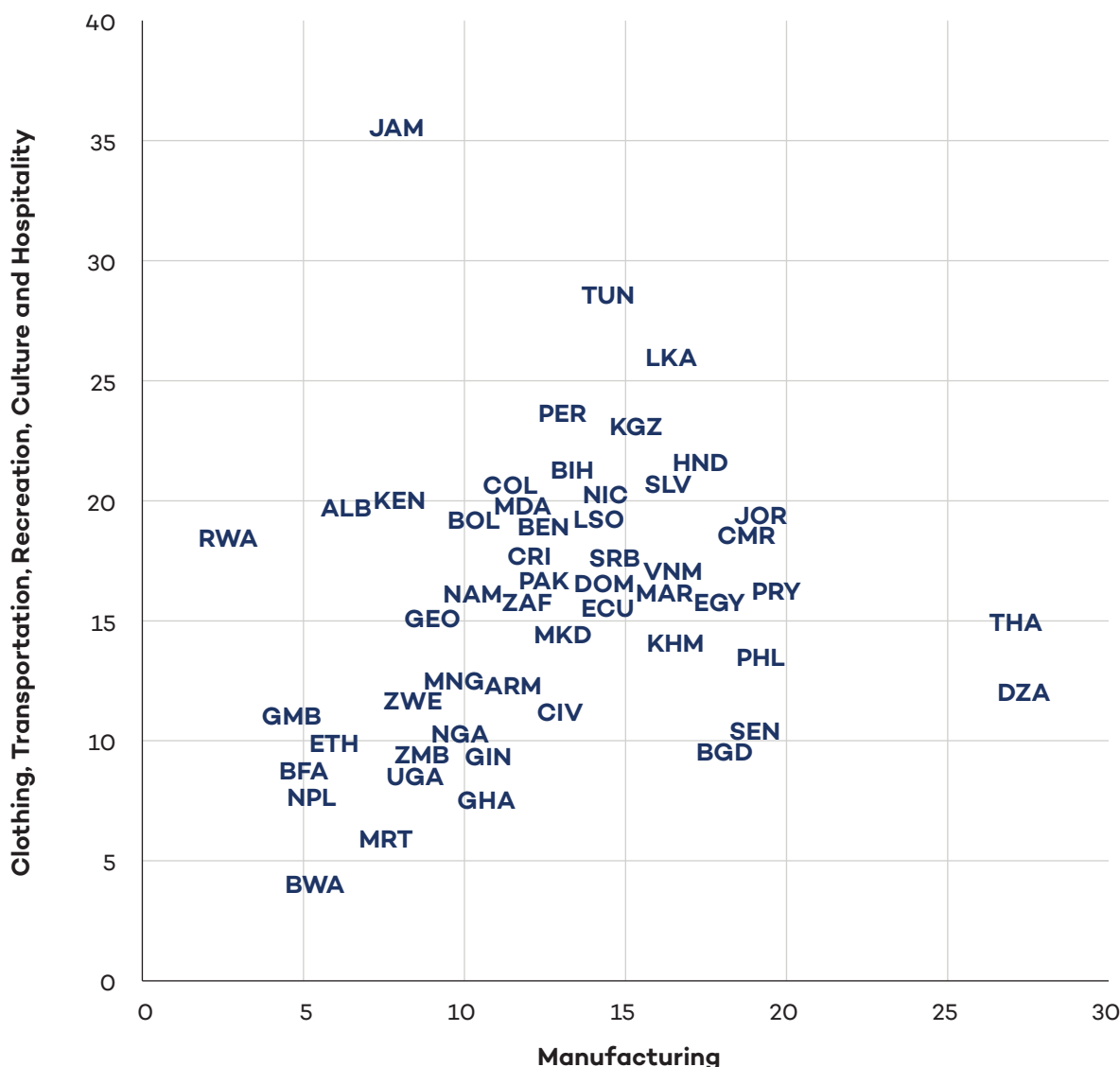
Traditionally, high economic development has been associated with a shift from agriculture to services, with industry acting as an intermediate step of development. This is because the service industry is associated with higher scalability and tied less to the physical constraints of natural resources or machinery. Indeed, for some economies where services make up less than 40%, we might have cause to worry. More importantly, countries with high concentrations of production in agriculture are less likely to have made the transition to more efficient farming practices and are more likely to have significant proportions of the population dependent



on subsistence farming. One important caveat to Figure 2 is that industry includes some “primary activities” that are traditionally grouped with agriculture, such as extracting natural resources such as mining and quarrying. Thus, the agricultural/industry division does not provide a full picture of primary versus manufactured items, but a high concentration in agriculture does nonetheless represent a high concentration in non-manufactured goods.

In terms of COVID-19 pandemic risks, industry is particularly vulnerable through the global value chain exposure in manufacturing. Figure 3 shows the size of industries that are particularly vulnerable to issues surrounding the pandemic.

Figure 3. Vulnerable industries’ share of GDP



Sources: World Bank, n.d.b; World Bank, 2017.

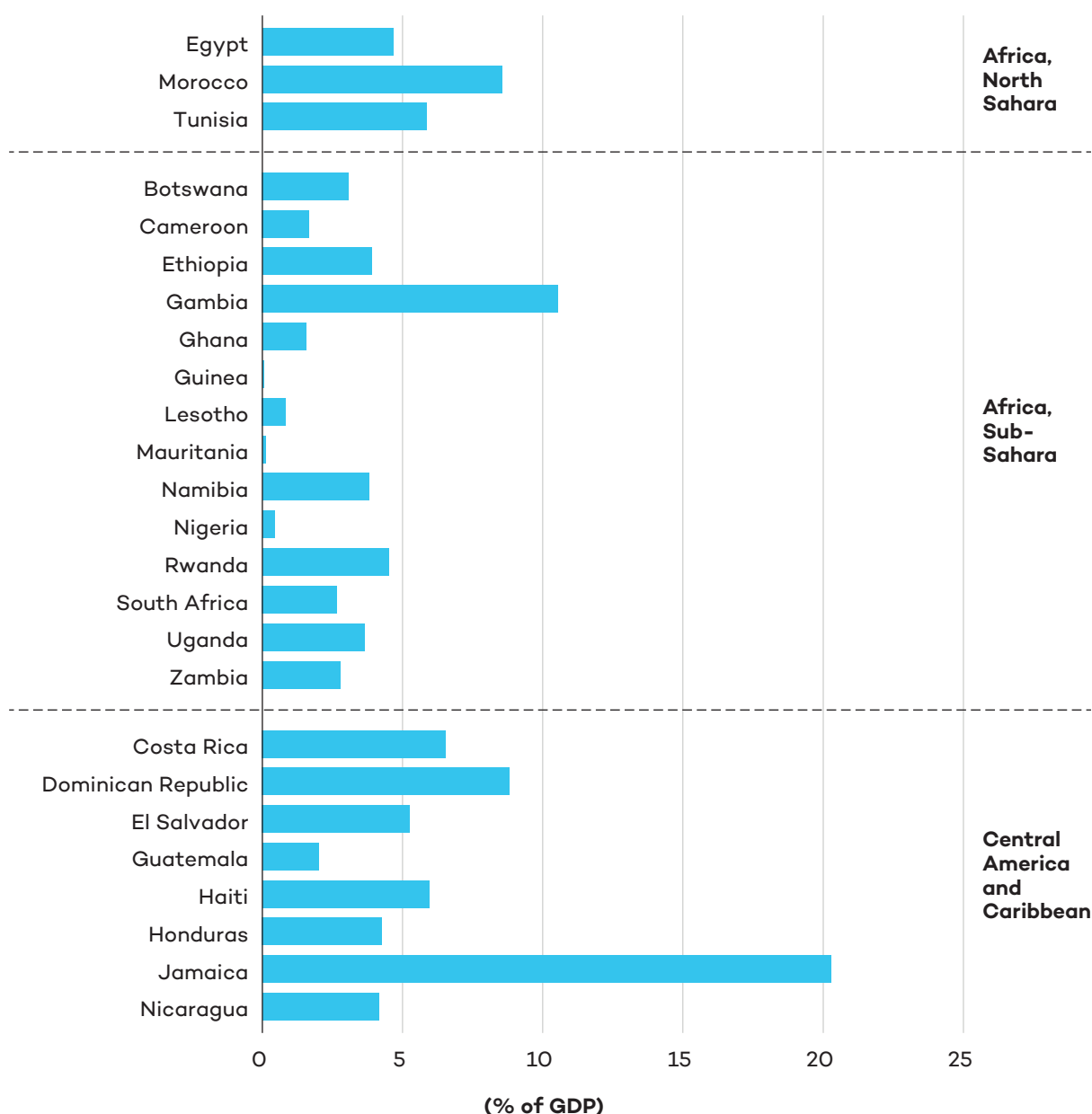
At the more granular sectoral level, we have also included some information on sectors that are likely to be particularly badly hurt by the pandemic. The first of these is manufacturing, since it represents a large portion of four different sectors: “clothing and footwear,” “transportation,” “restaurants and hotels,” and “actual recreation and culture.” With the exception of clothing and

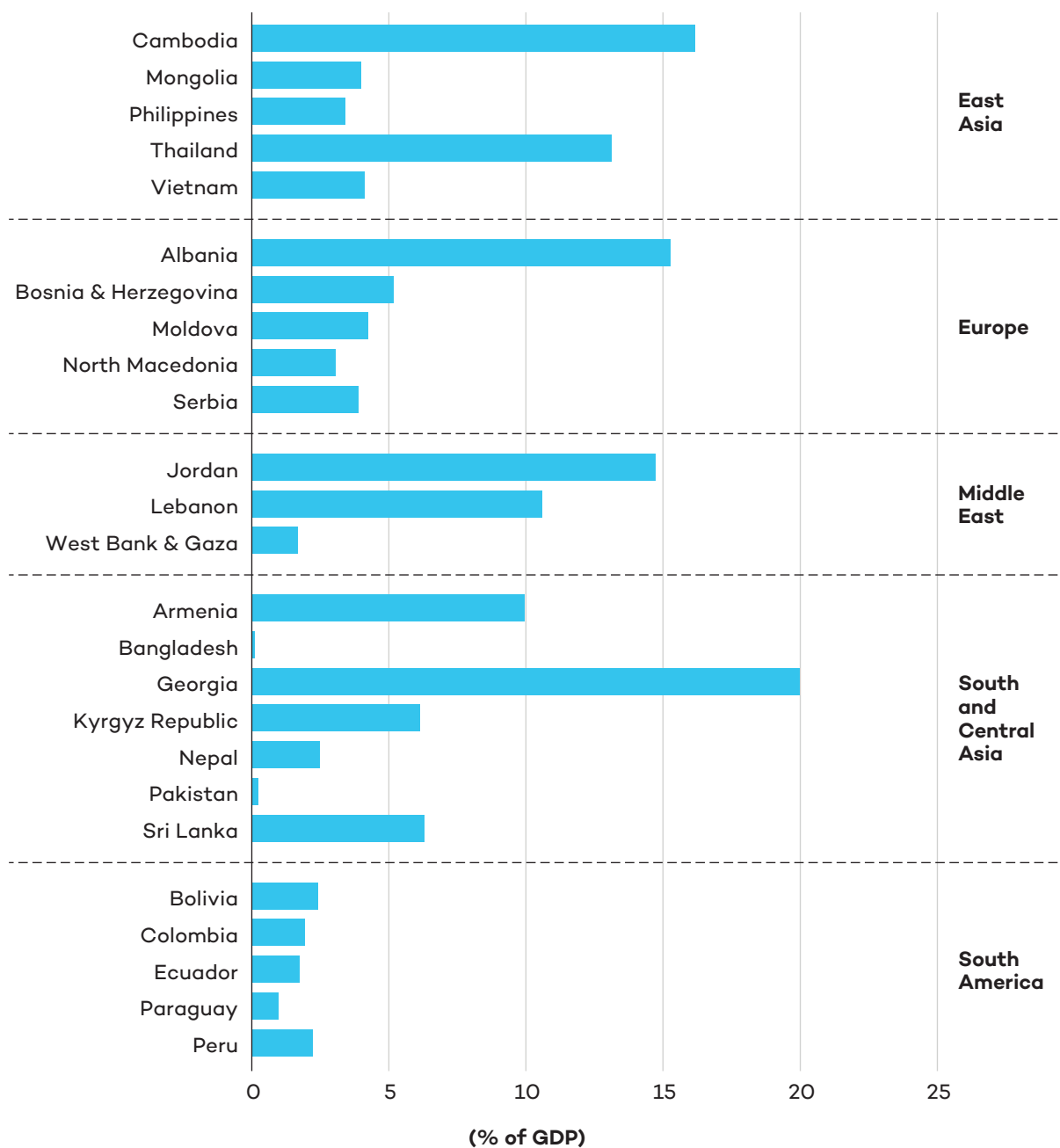


footwear, these are services that mostly focus on social activity—which has been significantly restricted due to the pandemic. The “clothing and footwear” sector has also been included because these products are mostly sold in retail stores, which have been shut due to health restrictions. While the average of our sample countries at 16.2% of GDP is lower than the world average of 17%, this is still significant exposure to these hard-hit industries.

The share of GDP from international tourism is shown in Figure 4. This is technically recorded as an export, as the service is provided to nationals of other countries who transfer money to the domestic economy in return for these services. This industry is expected to be particularly badly hit, as the restrictions on international travel are expected to last for much longer than restrictions on domestic activity, and customers in the industry tend to plan far in advance. In international tourism, our sample set is more highly exposed than the world average, with a sample average of 5.4% of GDP, compared to 2% worldwide.

Figure 4. International tourism, export receipts



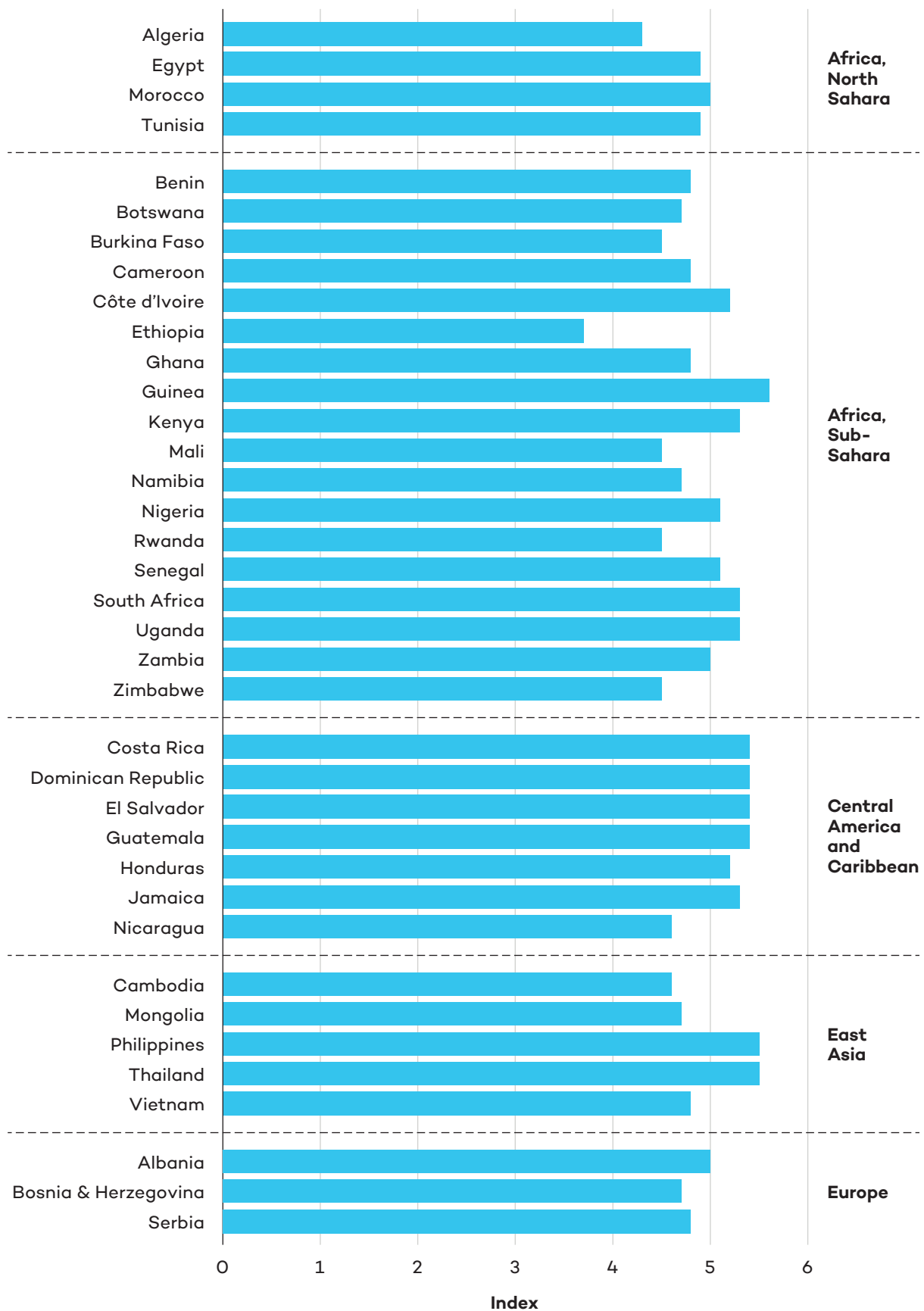


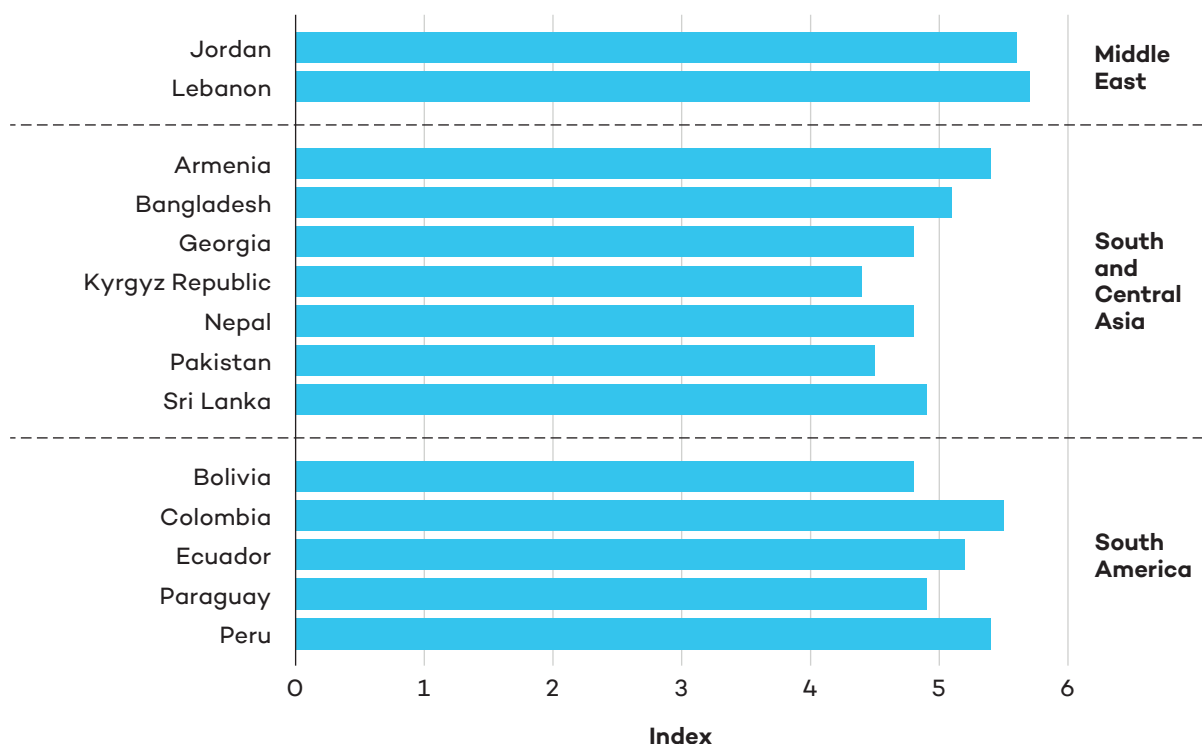
Source: UN World Tourism Organization, n.d.; World Bank estimates, n.d.e.

As a final thought, we have included an indicator of market competition for each country. While this is a crude aggregate, it represents the potential danger to COVID-19 shocks through a variety of channels. First, countries and industries with a significant degree of market concentration (lack of competition) are likely to suffer more significant disruptions if one or two key companies declare bankruptcy. In addition, existing firms can potentially exploit market turbulence to expand their market power by forcing competitors out of business or buying them outright at low prices. This would increase the potential for market disturbance from monopolistic pricing. Finally, just as firms can potentially use the market turmoil to expand influence in their own market, they can potentially use the same turmoil to expand influence in vertically integrated markets, acting as monopsonies to suppliers and exploiting their bargaining power in labour markets.



Figure 5. Intensity of local competition index





Source: World Economic Forum, 2018.

Thus, our initial concern when considering a particular country's risk to trade shocks from COVID-19 is the overall development state and sectoral composition of production in that country. We know certain sectors will be disproportionately affected by health measures intended to limit the spread of the virus, and the exposure to those sectors should be a starting point for assessing overall potential demand shocks. The most problematic scenario would be for a country to have a low capital-to-labour ratio, with a reliance on sectors that are particularly badly hit. While it is difficult to accurately forecast GDP changes under such uncertain conditions, the level of exposure in key sectors of production could be a strong indication of the level of risk faced by an individual country.

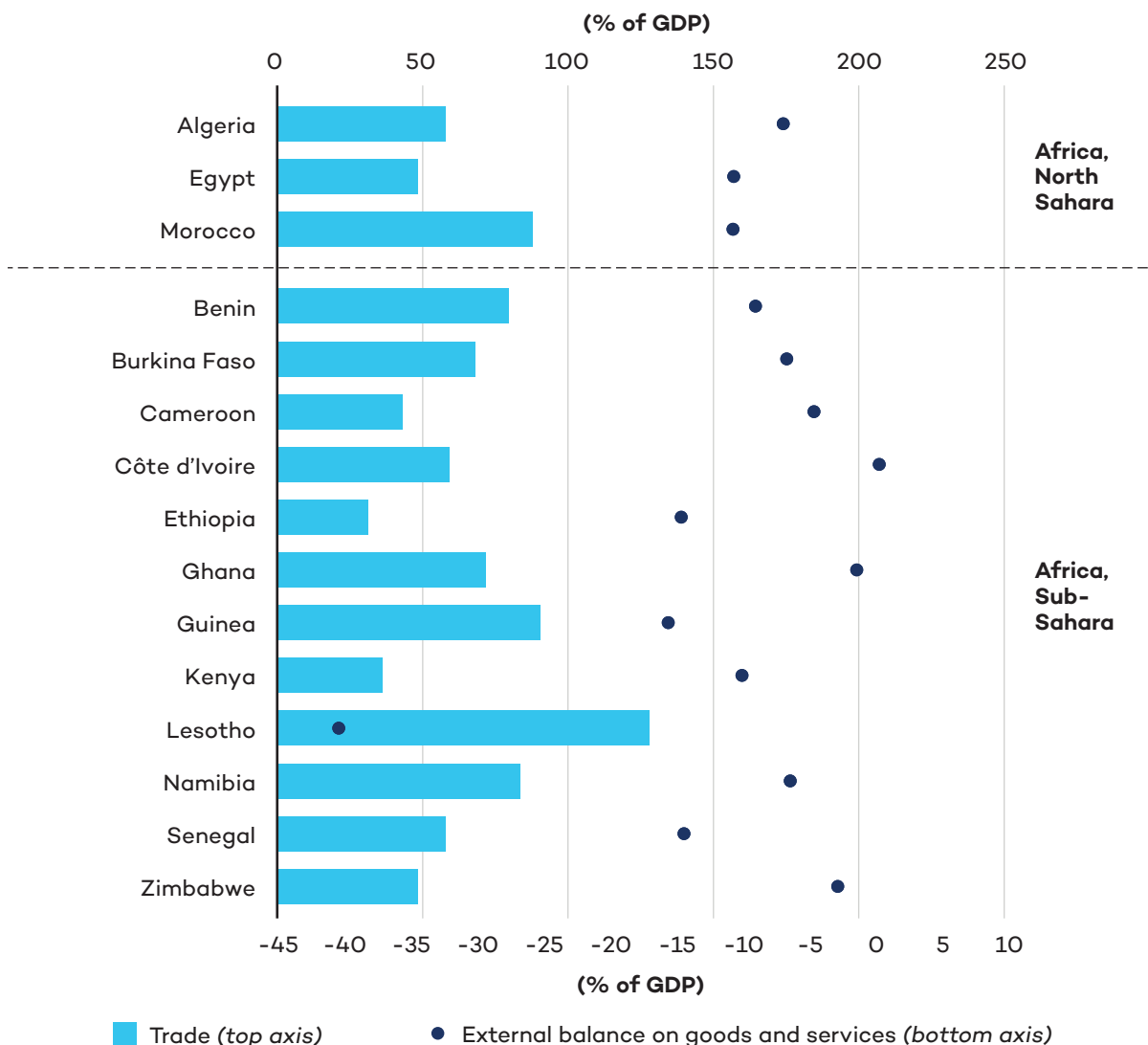
Policy-makers should already be aware of the sectoral composition of the country they serve. This is a fundamental aspect of economic management—understanding the market in which one operates. The insight provided here is intended to give an international context to understand where some red flags might be occurring. For example, Algeria has the highest proportion of output from manufacturing in our sample, but its local competition is the second lowest. While its GDP growth rate was relatively low leading into the crisis, this was somewhat offset by the fact that it had a relatively high GDP per capita. Another red flag would be Jamaica, whose risk is driven by very high exposure to almost all the sectors likely to be most affected by the COVID-19 pandemic. Much of this is likely driven by international tourism from its wealthy neighbour to the north, a dynamic that is long-standing but facing new pressures from the impact of the virus.

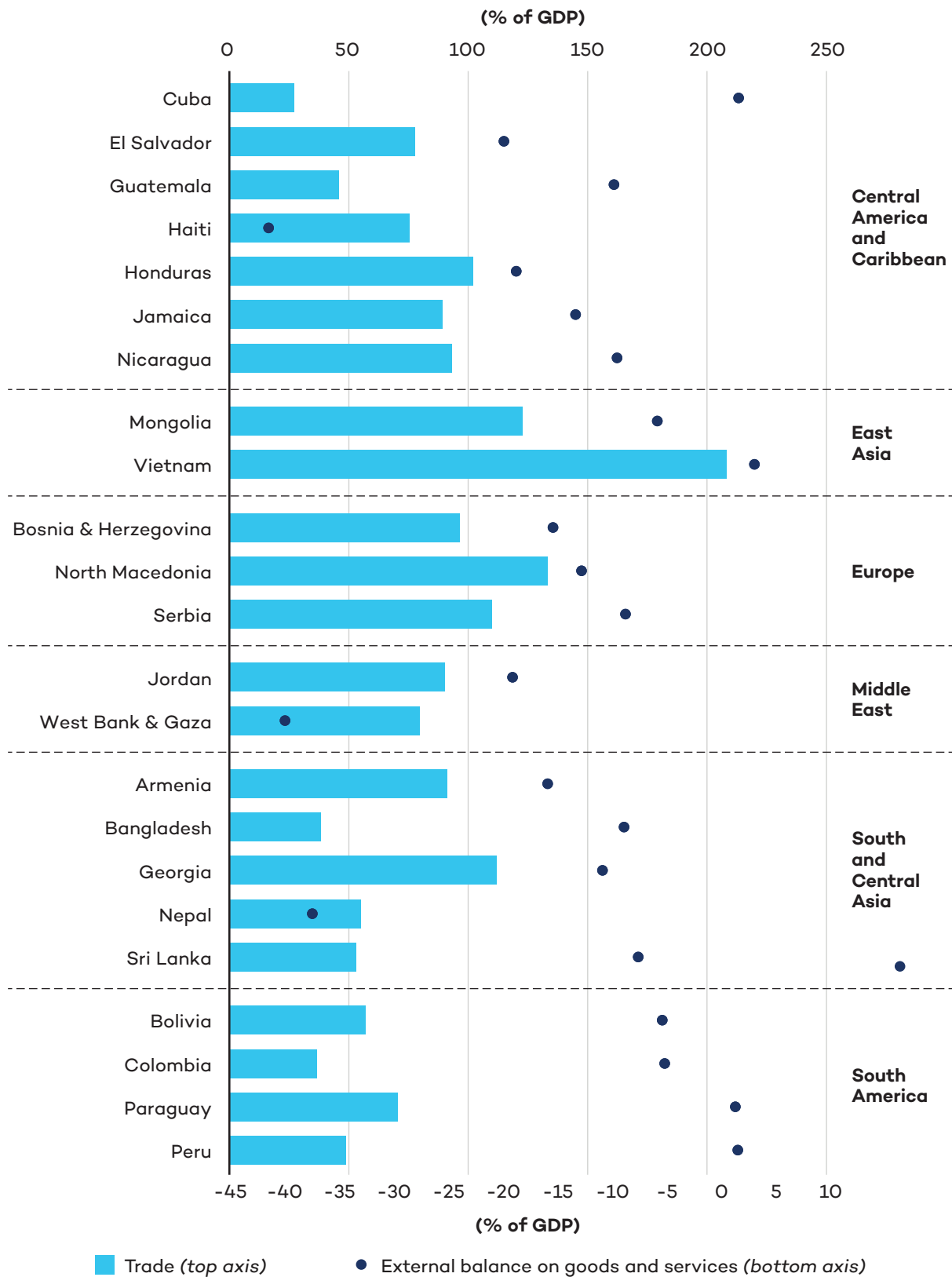


6.0 International Trade

The primary motivation for this project is to anticipate the state of developing economies prior to COVID-19 to assess their vulnerabilities to an international trade shock. In terms of production, we have already touched on industries that might be disproportionately affected by a decrease in demand from COVID-affected sectors, which would presumably include export demand. The aim here is to describe individual countries' exposure to global trade markets, to determine the potential magnitude of disturbances to global supply chains. In addition to an anticipated fall in demand from COVID-affected sectors, we are likely to see a fall in global demand due to the health restrictions on movement and economic activity, and we are likely to see a subsequent fall in supply as individual countries' production capabilities are affected by the virus.

Figure 6. Trade levels and balance (% of GDP)





Source: World Bank, n.d.a.

To provide an initial overview, Figure 6 provides an indication of the relative magnitude of trade and its overall state prior to the onset of COVID-19. For the magnitude of trade, we



use trade as a percentage of GDP, in which we add the overall size of imports and exports and report them in relation to the size of GDP in a particular economy. This is not to say that imports and exports are components of GDP; the comparison to GDP is made purely for scaling effects in order for us to compare the size of international trade to the production of the economy as a whole. In fact, in some economies in our sample, the size of trade is higher than overall production, represented by a percentage higher than 100. Such countries are highly exposed to international markets and are therefore potentially vulnerable to international trade shocks.

Figure 6 also includes the external balance of goods and services, often also called “balance of trade” or “net exports.” This is the difference between the value of exports and imports, expressed again as a percentage of GDP.⁶ Significantly negative values in this indicator represent a large trade deficit, meaning the country is importing far more than it is exporting, probably signifying that it is spending far more than it is producing. This could be for a variety of reasons: for example, the importing country could contain a significant number of elderly people who are spending what they have previously saved, or the country could contain a large number of residents who work in a bordering country, earning in one country and spending in another. However, large sustained trade imbalances can be a cause for concern, as large deficits are usually accompanied by large flows of payments to other countries, reducing the monetary base and undercutting aggregate demand in the domestic economy. In our selection of countries, 50 out of 60 were running a trade deficit in 2018, and 16 of those had deficits larger than 15% of GDP. For these countries, a sharp decrease in international trade would imply that a significant amount of demand for goods and services in the country could not be met, and prices would have to increase, or people would have to consume less (probably both would occur). Of significant concern are Lesotho, Mauritania, and the Kyrgyz Republic, as these countries have both a large exposure to trade markets and a significant trade deficit. However, this is tempered in the overall trade risk evaluation by the fact that their overall exposure to other trade issues is not as great.

A paramount issue for international trade in light of the COVID-19 pandemic is exposure to global value chain linkages. In recent years, global export markets for manufactured goods have been characterized by increased integration of supply chains across borders. That is, the components used in manufacture for goods exported from a particular country come increasingly from a variety of other countries. Thus, a disruption in the production or export markets from a particular country can cause significant disruptions in the supply chain and lead to negative supply shocks in other countries’ export markets.⁷

In an attempt to focus on exposure to global value chains, we use two approaches. First, we use UN Comtrade data, which provides detailed accounts of individual countries’ export statistics categorized by the classification of goods for tariff purposes. We are able to use these classifications to group the merchandise exports statistics by BEC codes into the categories

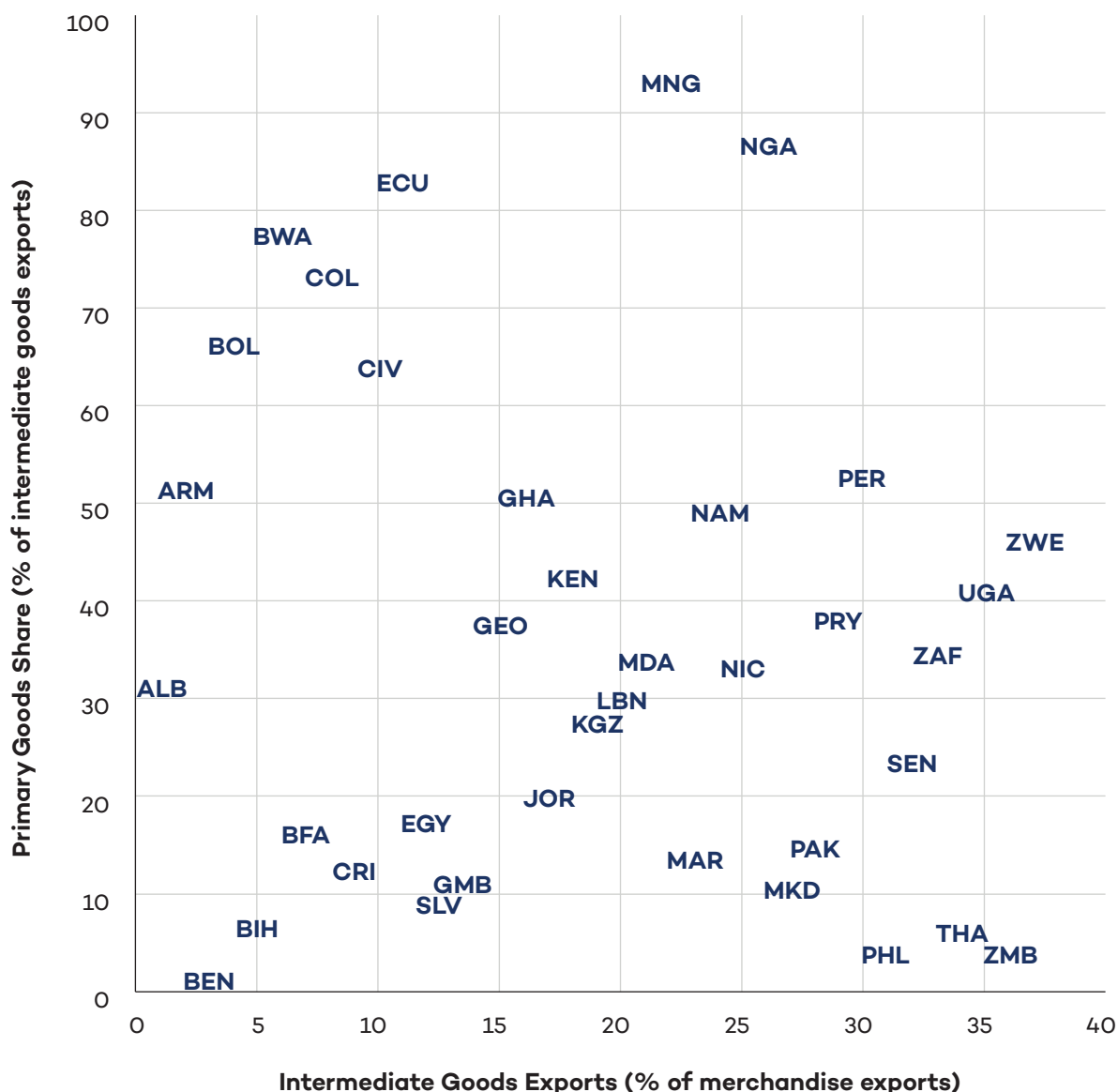
⁶ In contrast to the previous indicator, this actually is often used as a composite of GDP when we decompose GDP into expenditure components (consumption, investment, etc.).

⁷ One reason for focusing on export markets in this context is that the integration of supply chains is part of a larger effort to take advantage of economies of scale and comparative advantage in the supply of individual components by concentrating on global markets. Thus, the industries that are focused on this type of behaviour tend to be strongly represented in the export sector.



of consumption goods, intermediate goods, and capital goods, in accordance with other publications. The BEC codes also allow us to distinguish which of these are primary goods, as opposed to processed goods. This permits us to identify economies whose export markets are still driven by natural resource extraction, a well-documented source of economic instability.

Figure 7. Intermediate goods exports

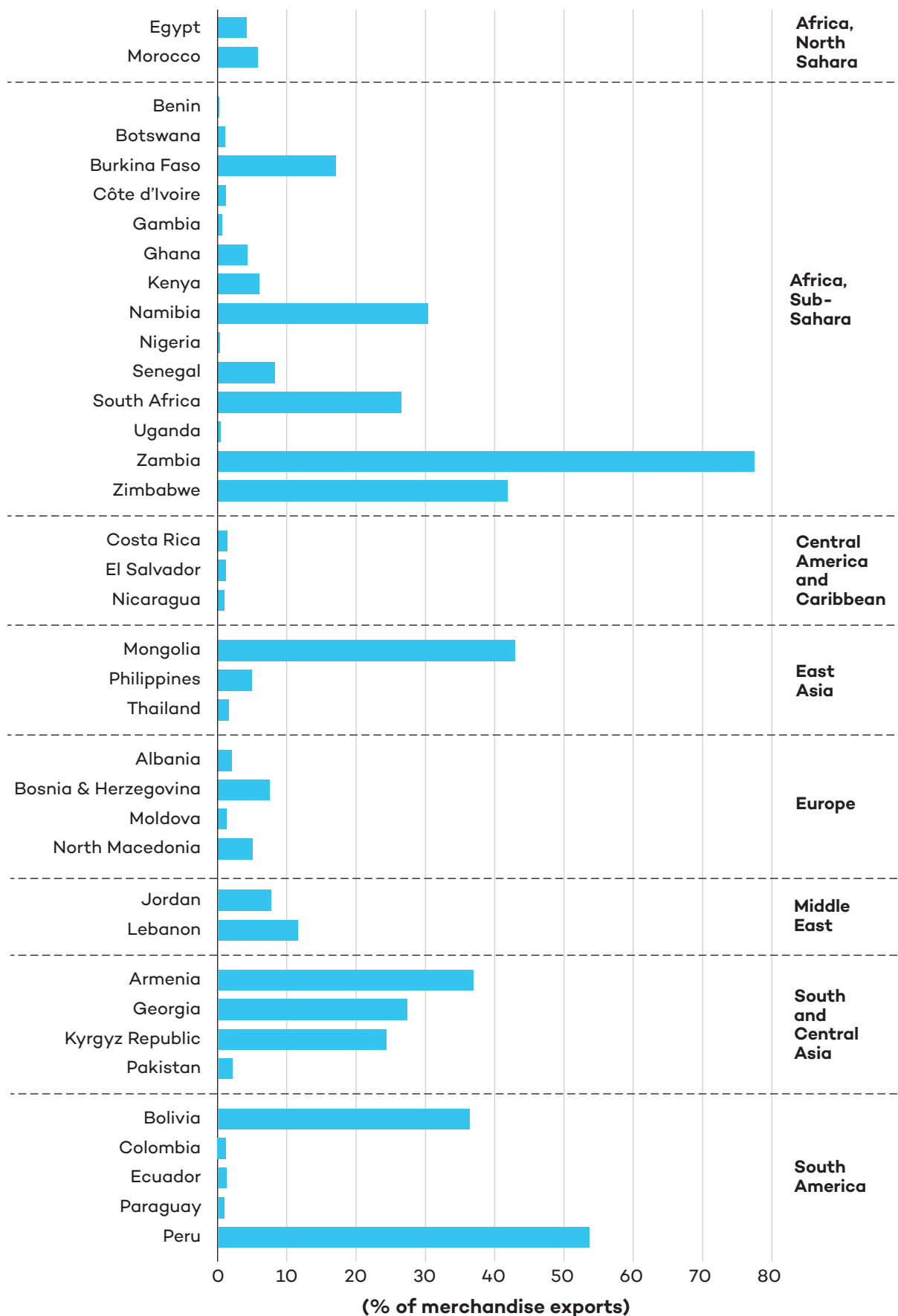


Source: United Nations, n.d.

Figure 7 presents the exposure of countries to global value chains by comparing the share of merchandise exports classified as intermediate goods, on the horizontal axis, with the proportion of those intermediate goods that are classified as primary (or not processed), on the vertical axis. There are 12 countries in our sample in which over 80% of merchandise trade can be classified as an intermediate good, implying high exposure to a potential drop in demand from countries that then use those intermediate goods for production.



Figure 8. Exports of ores and minerals



Source: United Nations, n.d.



We have limited data on exports of ores and metals (Figure 8). However, the data available gives a preliminary indication of which economies are particularly exposed to various primary goods sectors. For example, while Armenia and Peru have high exposure to the ores and minerals market, their overall exposure to the primary goods market isn't as high as Botswana, Colombia, Ecuador, or Nigeria, all of which have very low exposure to ores and minerals markets. Zambia seems to be an anomaly here, as its exports of ores and minerals seem to be much higher than its overall exports of primary goods. This likely represents the copper trade, which is the country's largest export commodity. It seems that both primary and processed copper are classified under the same code for the BEC classifications, grouping them both as processed.⁸

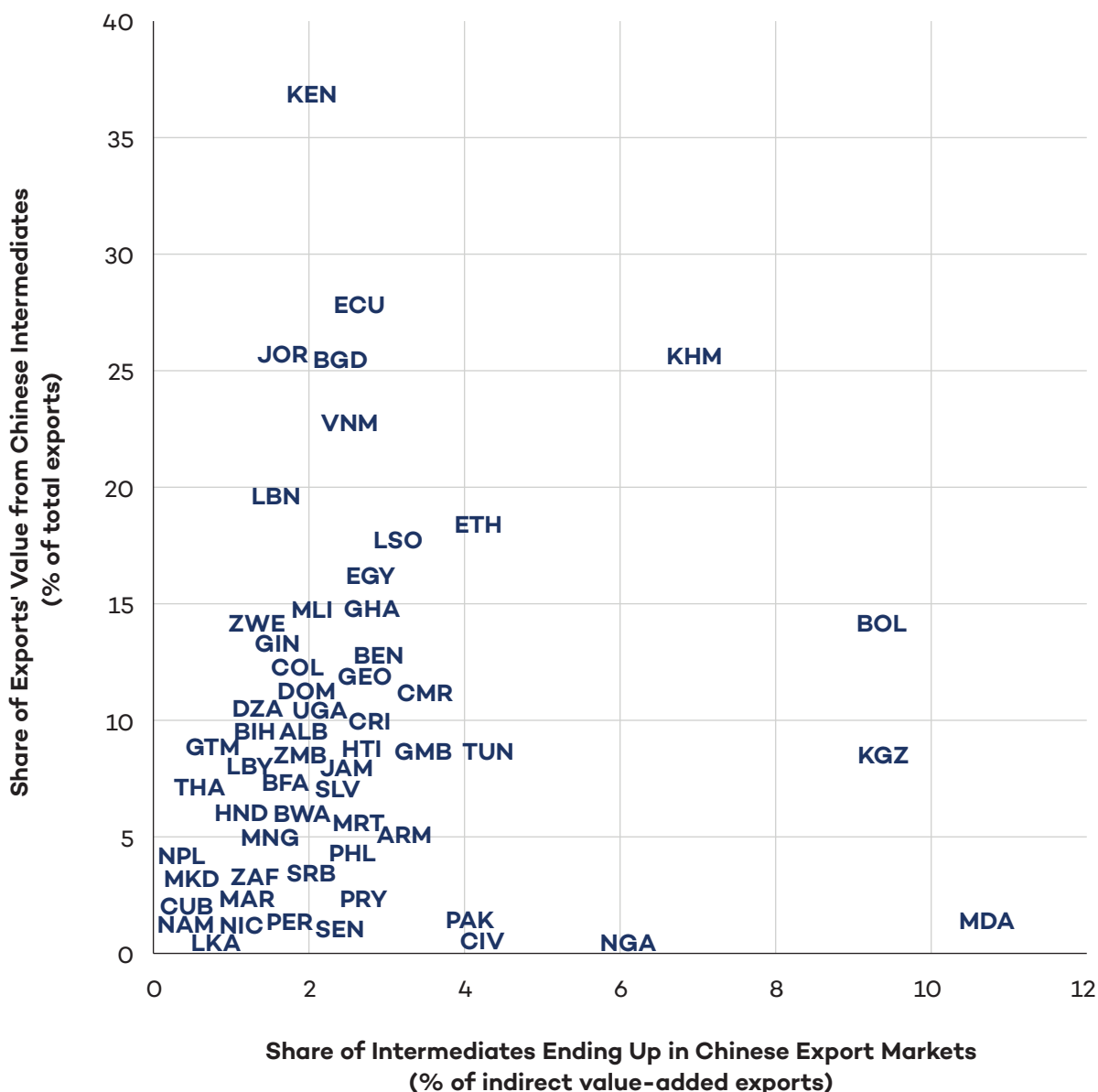
Our second method for assessing a country's exposure to global value chain shocks uses another UN project, the UN–Eora database. Through the use of extensive input–output tables, this dataset allows us to examine the value added from one country's export of intermediate goods to another country's export of final goods. For our purposes, we can use this to determine how much exposure each country in our sample has to potentially dominant trading partners, such as the United States and China.

For this, we have two indicators, exposure to export markets in China and the United States, and share of a country's exports' value originating from China or the United States. That is, the first indicator tells us how much of a country's intermediate goods *go to* China or the United States for later export, and the second tells us how much of a country's own export market of final goods relies on Chinese and American intermediates.

⁸ This is probably because the SITC codes that the BEC is based upon do not distinguish between refined and unrefined copper until the lowest level of classification, and the BEC groups by higher levels of classification.



Figure 9. Exposure to Chinese export markets

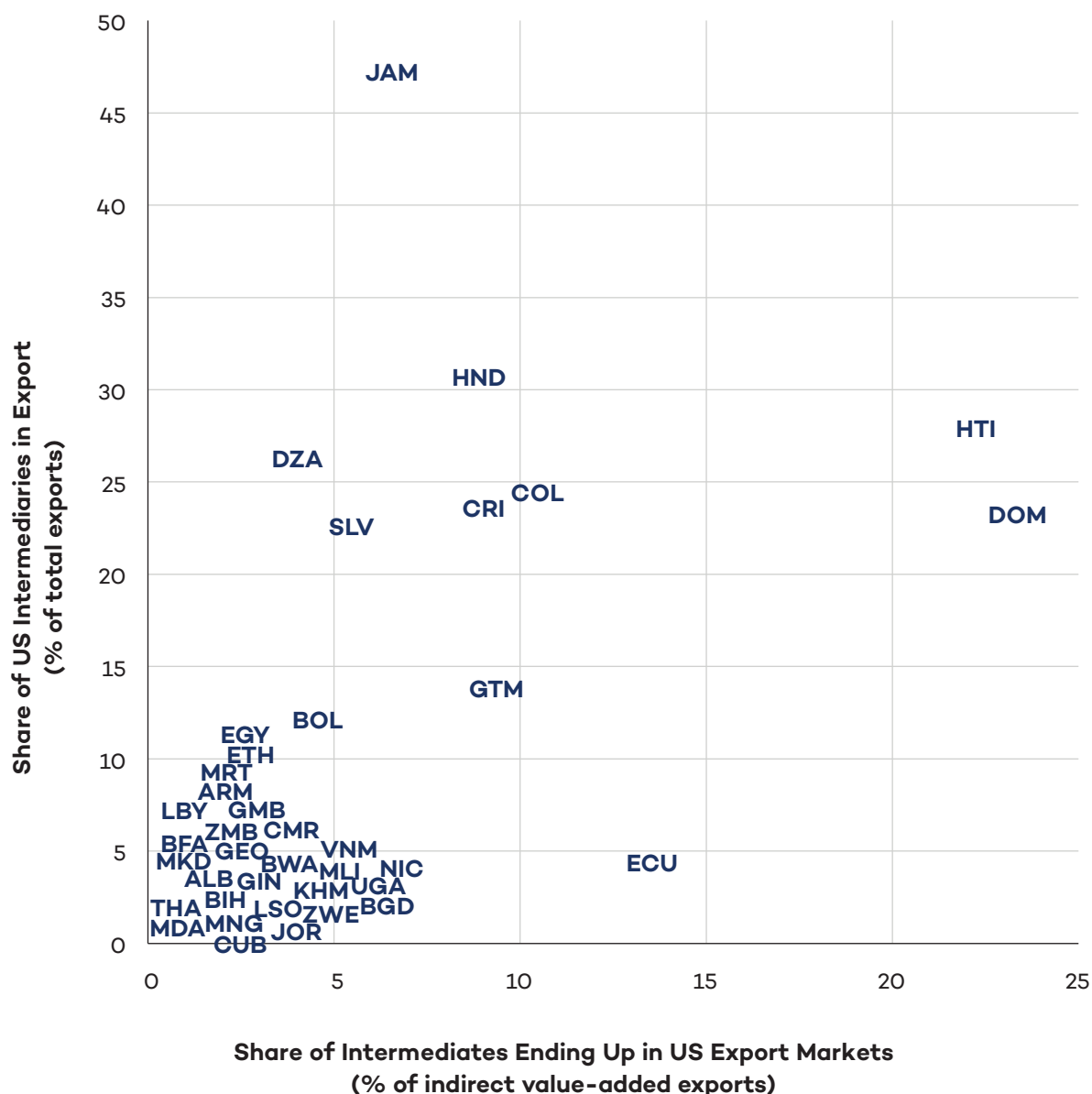


Source: UN–Eora Database, n.d.

Figure 9 shows how exposed countries in our sample set are to Chinese markets. The horizontal axis shows China’s share of intermediates exported from a particular country, while the vertical axis shows the proportion of a country’s export value derived from Chinese intermediates. Therefore, countries further from the origin have a greater exposure to value chains tied to Chinese export markets. We can see that China has a strong presence in countries on the Asian continent, with notable exceptions of Thailand and Sri Lanka, but we can also start to see a significant presence on the African continent and the Middle East, with Kenya and Jordan leading the way.



Figure 10. Exposure to US export markets



Source: UN–Eora Database, n.d.

Similarly, Figure 10 shows the same indicators for the U.S. market. As one would expect, many countries in the western hemisphere have a high exposure to the American export market, but a significant handful do not, such as Cuba, Nicaragua, Paraguay, and Peru. Furthermore, the United States does not seem to capture a large portion of intermediate goods demand for most of its trading partners. Only a handful of countries receive more than 10% of their intermediate goods from the United States, and most of these have a relatively small level of international trade in general.

One notable exception to this is Honduras, which derives 30% of its exports from U.S.-made intermediaries while running a trade deficit of 18.6% of GDP and trade volumes in excess of 100% of GDP. Its primary export is textiles, mostly knit cotton products using cotton and synthetic yarn imported from the United States. It is vulnerable to both a sudden decrease



in the demand for clothing and textiles on the international market or a decrease in supply of materials from the United States. Both of these would be destabilizing and lead to a significant loss of income, but the former would lead to deflation while the latter would be inflationary, making policy anticipation and responses even more difficult.

Comparing the two charts, we see strategies start to emerge. China seems much more involved in intermediate goods exports than the United States, importing and exporting intermediate goods to the same countries. In contrast, the United States seems to have a limited scope in exporting intermediate goods, and the countries that do import U.S. intermediates tend not to ship relatively large portions of their intermediates to the United States. This suggests much stronger international value chain integration in Chinese markets. Furthermore, we see seemingly independent spheres of influence for China and the United States in terms of supply chain integration, with the exception of Ecuador. Ecuador ships a lot of intermediate goods to the United States (presumably oil) but relies much more heavily on Chinese intermediate goods for its own exports.

In addition to the trade disruptions resulting from demand reduction and supply chain disruptions from COVID-19, we are also likely to see policy-makers respond to their exposure to global value chains moving forward. Policy-makers' objectives will likely shift away from efficiency and growth toward risk management and resilience to international shocks. While this is probably necessary from a strategic standpoint, the temporary effect of this can lead to a protraction of the original shock, as countries move away from previous patterns. In this case, countries that were already vulnerable to global value chain shocks will likely bear the brunt of this strategic realignment.

We therefore urge countries to diversify global value chains rather than dismantling them or resorting to protectionism. This will require a significant international effort to aid developing countries that are particularly exposed to international markets. Regional cooperation through trade blocs will be central to making sure that key downstream partners do not pit producing countries against each other. In this context, the international community should renew its focus on market power and unequal bargaining positions in vertically integrated markets.



7.0 Capital Markets

Following from trade flows overseas, the natural next step is to assess capital formation and flows of investments and returns overseas. “Capital formation” refers to the creation of new capital goods, or instruments that are used to produce other goods and services. These are things like factories, machines, tools, offices, and computers used in producing goods and services. When we discuss capital markets, we are effectively talking about the sources of finance for institutions to build such capital goods.

One key reason for focusing on capital formation is that “capital deepening,” or increasing the amount of tools and instruments used in production, is often considered synonymous with modern economic growth. Capital deepening allows an increase the capital-to-labour ratio, meaning each individual worker has more tools at their disposal, allowing each person to produce more.

Another reason for the importance of capital markets is that shifts in investment are often the largest component of economic cycles, meaning that investment has the potential to lead to large economic shifts. In developing countries, this potential volatility can be exacerbated through international flows of capital through a variety of sources. While overseas capital investment can be potentially hugely beneficial, allowing countries to recover from crises and conflict more quickly (Johnson, 2006; Hansen & Rand 2006), the potential for sudden decreases in such investment is significant.⁹

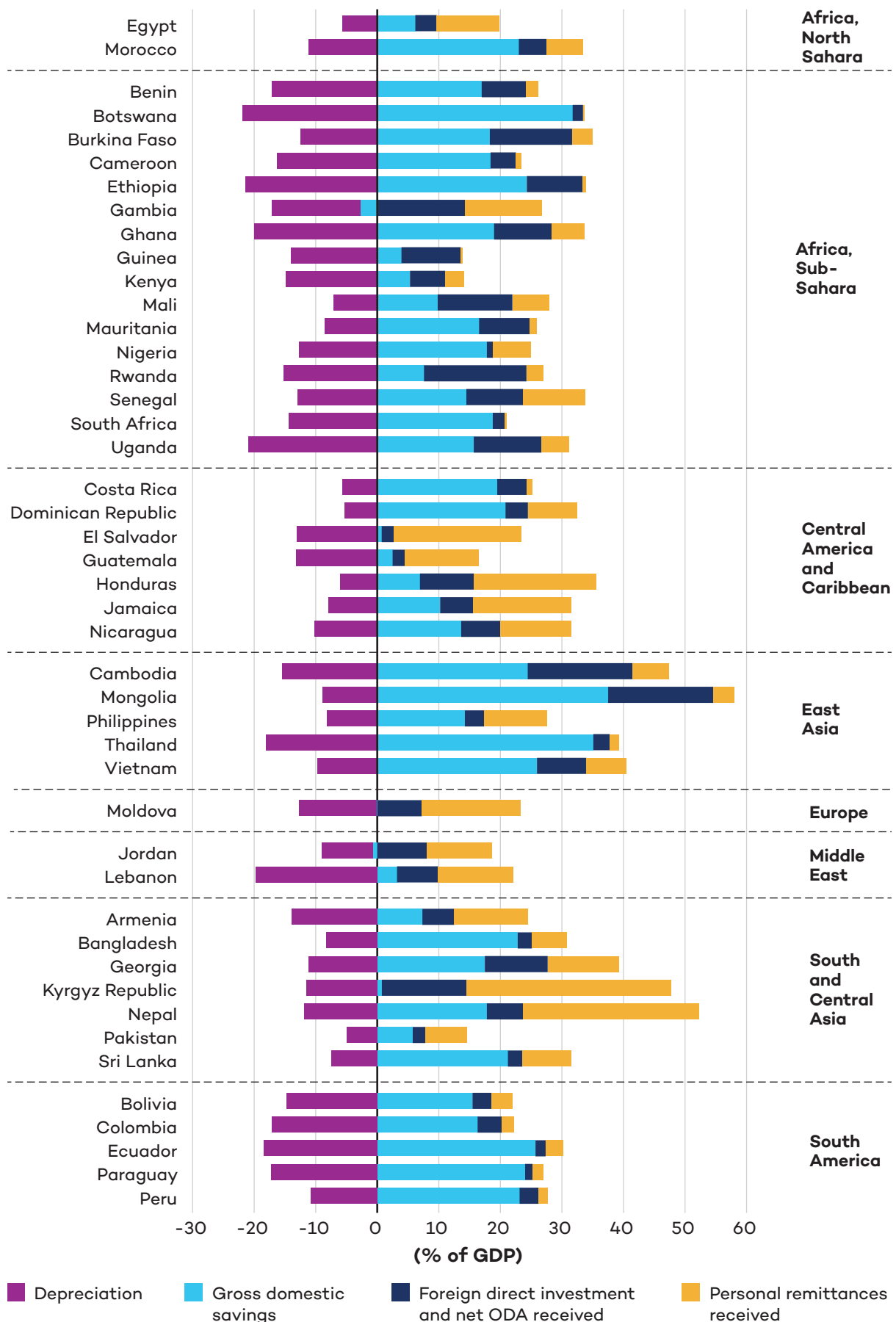
In the theme of investment-driven economic cycles, a particular concern is the concept of “sudden stops,” also known as “capital market reversals” or “capital crises” (Calvo, 1998). This situation occurs when a decrease in capital inflows to a country (e.g., a negative shock to international demand) causes an increase in the cost of financing for domestic markets often combined with decreasing prices for domestic commodities, leading to sharp declines in aggregate demand and often to banking crises. When banking crises accompany sudden stops, the result can be an especially long and protracted recession (Calvo & Reinhart, 2000; Mendoza, 2002).

We therefore have three scenarios that are cause for concern in light of capital markets’ response to the COVID-19 crisis in international trade markets. First, a decline in investment due to overseas demand (including both domestic and foreign investment) can disrupt the long-term structural change in production toward less labour-intensive processes. Second, a short-term decline in investment can lead to a severe recession, including other aspects of recessions such as cyclical unemployment and inflation. And finally, the case of sudden stop, where a shock to investment from international markets causes a spike in the lending rate for companies in a country along with a depreciation of that country’s currency, making overseas borrowing more difficult. This could lead to banking crises and a chain of bankruptcies in capital-intensive industries.

⁹ Admittedly, there are contradictory beliefs that FDI does not contribute to growth (see Herzer and Klasen, 2008). One reason given for this is that FDI might “crowd out” domestic investment. Nonetheless, FDI is still a key part of capital formation, and a reversal in FDI will at least temporarily imply a reduction in capital formation.



Figure 11. Capital formation



Source: World Bank national accounts data, n.d.



Figure 11 provides a rough overview of the sources of funding for new capital in a country in a given year. The primary source of investment for new capital in most economies is through domestic savings. Crudely, this is the amount of goods and services that are produced but not consumed. Theoretically, if people are working and earning money but not spending that money to buy goods and services, then the extra value they create can be diverted toward making new tools, buildings, and machines. Practically, if those same workers put their money in a bank, then the bank can use the value of their deposits to lend to investment projects (though the savings channel should theoretically work without banks, the existence of banks makes it a much smoother process). This value from domestic savings is represented in the figure through “gross domestic savings,” where the term is considered “gross” because it captures the new capital created in a country without deducting for the destruction from depreciation.¹⁰ It is a particularly strong indicator for the process of capital deepening, in which the production process becomes more saturated with tools and equipment that increases the productivity of labour. In developed countries, the level of domestic savings generally lies between 20% and 35%.

In addition to domestic savings, funding for capital goods can also come from a few other sources, notably FDI, official development assistance (ODA), and personal remittances. FDI, or the amount of investment in firms in a country from overseas investors, is a particularly valuable indicator, as it represents private sector contributions to international development and capital formation. It is a mixed blessing for many countries, as foreign investment can allow for market mechanisms to allocate capital efficiently and help countries find a footing on international markets, but foreign investment can also be volatile and quickly diminish during political and economic crises. Furthermore, international firms that engage in FDI often do so under favourable conditions, allowing them to extract huge profits from the activity without necessarily circulating the returns from the activity within the community engaged in production. Decreases in foreign investment can be key contributors to the three potential mechanisms mentioned in the beginning of this chapter.

Figure 11 also shows ODA and personal remittances. While both these sources of finance are often intended for humanitarian purposes or providing basic staples for relatives, the money received is nonetheless value coming from overseas that is a direct substitute for domestic savings. That is, \$1 that is sent from overseas to feed a hungry child potentially frees \$1 within that country to be used for building something in that country. Only when we see the full budget can we see the potential for capital increases in a community.¹¹

We can see the trade-off between FDI and the combination of ODA and remittances in Figure 12. Among the countries in our study that have the highest levels of gross capital formation, there are a few that either have a large income in FDI (e.g., Mongolia and Serbia) or a large income in ODA and remittances (e.g., Haiti, Kyrgyz Republic, and Nepal), but none seem

¹⁰ In the tables in the appendix, this is listed as “consumption of fixed capital.” The terms are effectively synonymous, but we use the term “depreciation” here due to its widespread use in economic theory and discussion. In the appendix, we use the alternative term to align with our data source.

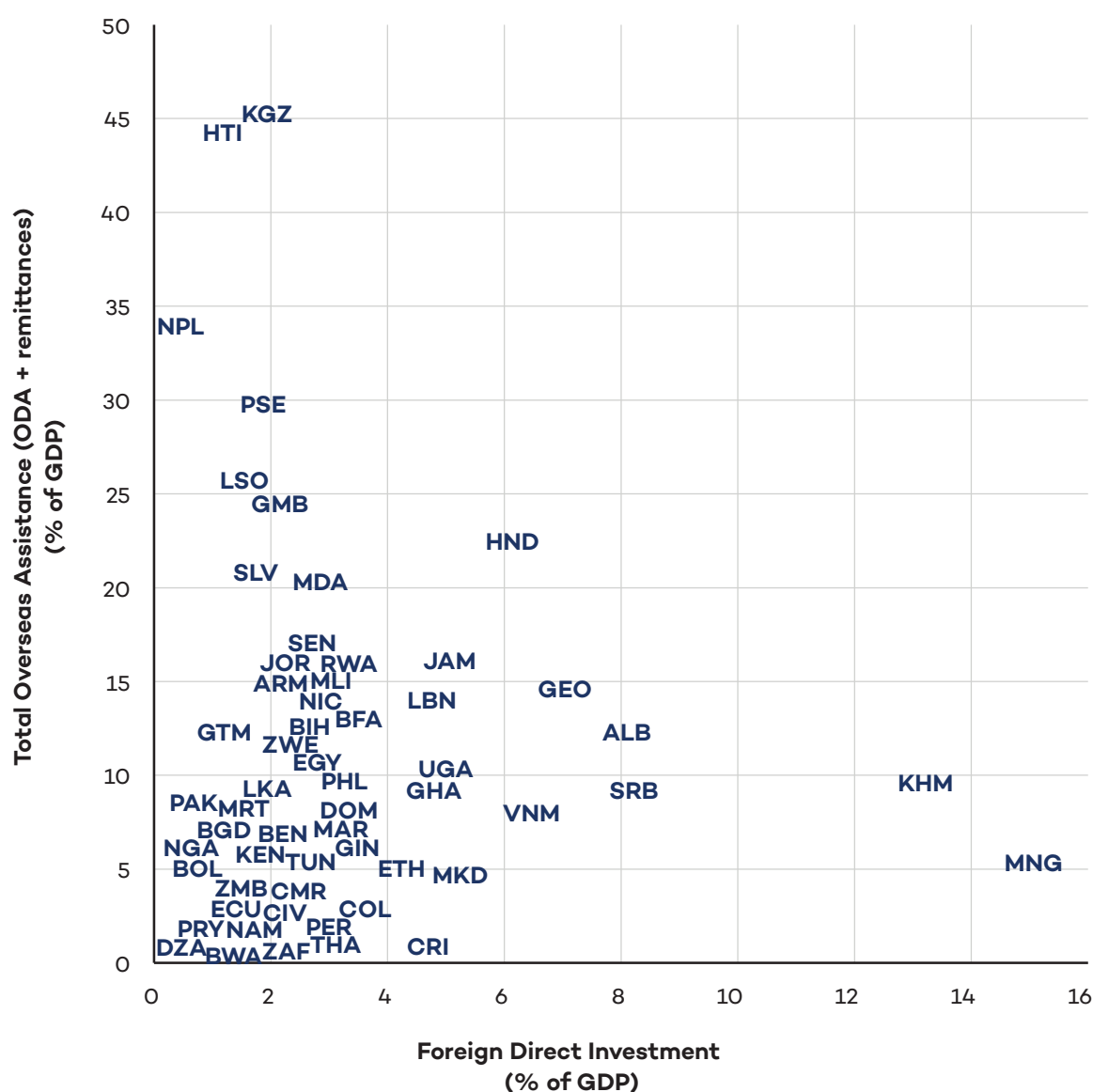
¹¹ This is not a fully accurate composition of gross capital formation. While we have aggregate levels of gross capital formation, given in the appendix, this indicator is not often decomposed in this way, so the aggregates do not add up. Specifically, FDI and gross domestic savings are both direct contributors to the capital account (net of consumption), but ODA and remittances are recorded before consumption has been accounted for.



to have both.¹² This serves to show that significant gross capital formation can be achieved through ODA and remittances and that these inputs should be considered when discussing capital formation.

Figure 12 also demonstrates that some countries have significant exposure to either reversals in international aid and remittances or to FDI. In terms of the potential for sudden stop, the countries reliant on FDI (Mongolia, Cambodia, Albania, and Serbia) should pay particular attention. In conjunction with the next section on currency markets, a potential for overseas divestment could lead to these countries imposing controls on capital flows, which would affect their trade stance considerably.

Figure 12. International capital sources



Sources: International Monetary Fund, n.d.; Organisation for Economic Co-operation and Development (OECD), 2020; World Bank staff estimates.

¹² We deliberately ignore any potential implications of this on the debate regarding international aid and remittances potentially crowding out private investment, as this is beyond the scope of this paper.

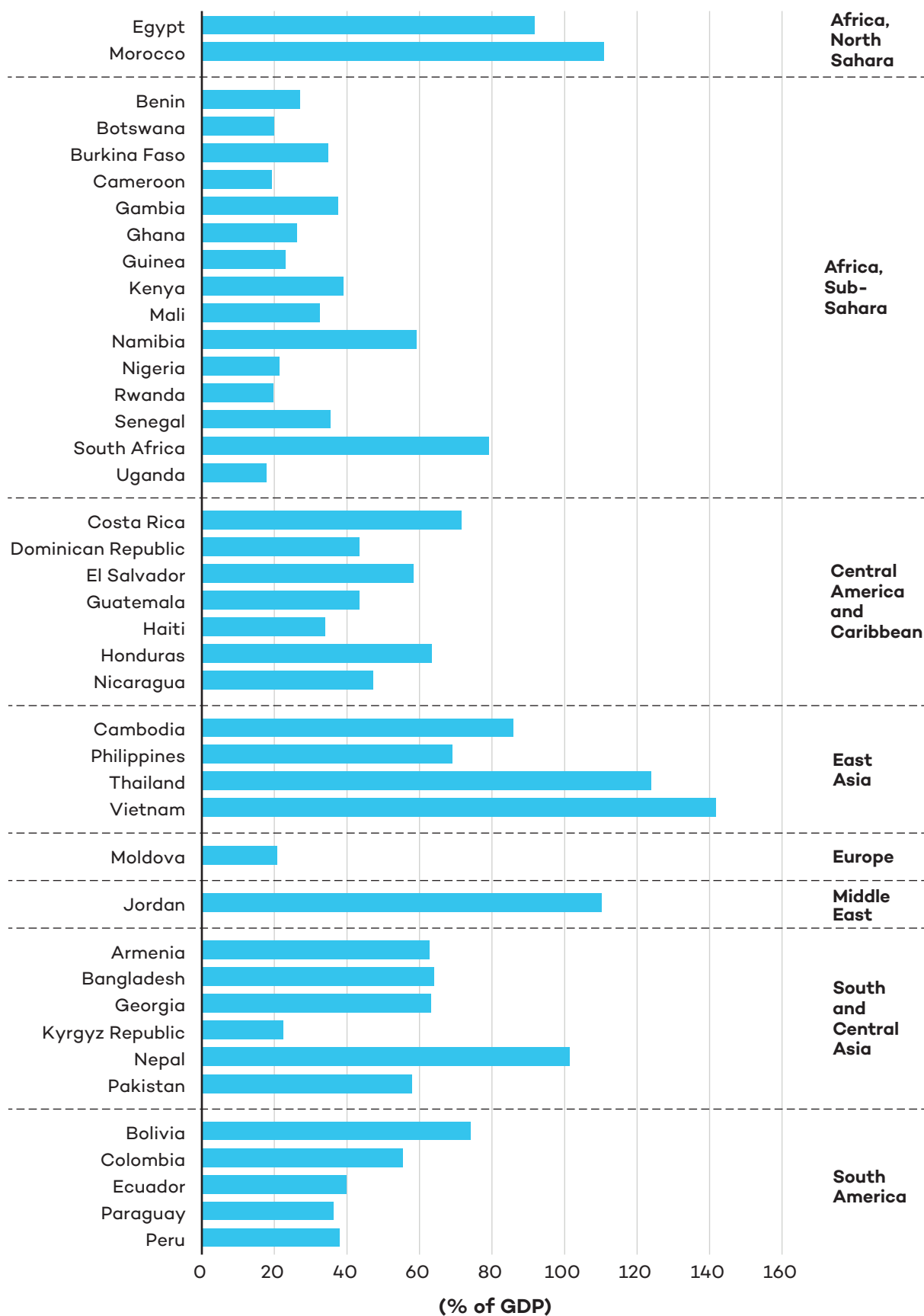


Finally, Figure 11 also shows depreciation. Effectively, this is the rate at which capital goods become obsolete, require maintenance, or wear out through use. Even if a country has exceptionally high savings and investment rates, if depreciation is high, there is potential that the production process will become more labour intensive over time as the capital stock declines. In economic theory, depreciation has a special role in the standard neoclassical growth model: the ideal savings rate for a society, or “golden rule,” occurs where the depreciation rate equals the marginal productivity of capital along the balanced growth path. Effectively, this means that higher depreciation rates result in lower long-term capital-to-labour ratios. This is because there is less of an incentive to save to create machines and tools when those machines and tools will break down more quickly. Thus, countries with higher depreciation will potentially have more labour-intensive production processes even in the long term, making it less likely they will catch up with richer economies. Luckily, the countries in our sample set have a relatively low depreciation rate compared with the world average of 16.9%. Only 13 countries (highlighted in red) have a depreciation rate above this world average.

Another key source of income for potential capital formation in developing countries is overseas aid, either through governments or from personal transfers from nationals abroad. The former is captured through “official development assistance” (ODA) and the latter is captured through “personal remittances.” In some countries, these receipts comprise a significant portion of income, making them particularly vulnerable to potential reversals from economic shocks overseas. Haiti, in particular, receives an amount equal to 44% of its total GDP in ODA and remittances, with the vast majority coming from the United States. This leaves the country particularly vulnerable to economic shocks in the United States.



Figure 13. Domestic credit provided by the financial sector



Source: International Monetary Fund, n.d.e.



Finally, after considering the sources of income for the purpose of capital formation, we can discuss the overall level of credit issued within a country. The causality for this indicator works both ways—highly developed capital markets are often a strong indicator that necessary institutions have been developed and the provision of credit also allows the investment necessary to create firms and projects for future development. Capital markets play a key role in the process of development: they allow savings from individuals and businesses to be used for productive purposes, and they reinforce the dynamic commitment that investing will yield a return. Furthermore, there is some evidence to show that restricted access to financial markets can increase cyclical fluctuations in developing countries, as consumers make up for the lack of investment by timing their purchase of durable goods (Neumeyer & Perri, 2005). High levels of domestic credit thus signify that enough banks and financial institutions have been developed to serve the community’s need for savings and that people are comfortable lending money in the current environment for potentially long-term projects. We expect such countries to weather a trade shock from COVID-19 relatively better than countries that have low levels of domestic credit, as they have developed the institutions that will allow investment and longer-term financial decisions during a crisis.

In the context of the potential for sudden stops, domestic credit is also very important, as it will allow private savings to somewhat offset the change in overseas investment. Furthermore, as sudden stops are often associated with banking crises, a robust banking sector prior to the FDI reversal can prevent the increase in lending costs from creating solvency issues for banks.

Thus, when considering potential negative demand shocks from COVID-19, decreases in investment have significant risks to international markets. Sudden decreases in ODA and remittance payments can lead to humanitarian crises in already vulnerable countries, but these sources of income also contribute to capital formation, so such countries will also need longer-term structural support in dealing with potential decreases in production capacity. Sudden decreases in FDI can lead to sudden stops, in which domestic business investment and capital formation are also severely negatively impacted, leading to a collapse of export markets. In addition, high depreciation rates and weak banking sectors can leave countries vulnerable to long-term decline without overseas finance.

In light of these risks, policy-makers should be highly sensitive to the fact that this crisis will have lasting effects on investment channels, even in best-case scenarios. Investment decisions have long-lasting impacts on labour productivity, overall production capacity, and economic development indicators. The negative shock to international demand from COVID-19 will necessarily propagate through time as a result of this channel.

Furthermore, larger and more developed economies should be aware that focusing on domestic investments and capital markets during this crisis will displace volatility and shocks in global markets in ways that harm producers and consumers in the most vulnerable economies. With globalized markets and integrated value chains, this focus on domestic investment markets is also short-sighted, as the resulting decrease in growth in smaller economies will prolong the global crisis and leave the international community weaker for the next one.



8.0 Currency Markets

Foreign exchange markets are significantly larger and more liquid than capital markets, meaning far greater volumes of assets are traded each day, and the prices of these assets are more volatile. As a result, currency markets are often the first to respond to overseas economic shocks, and they are often subject to crises themselves through a variety of mechanisms. Furthermore, shifts in this market, either through crises or the normal workings of currency market mechanisms, can have large impacts on individual economies, either by requiring much higher interest rates on sovereign debt, large restrictions on capital flows, or decreased demand for international trade from currency volatility or appreciation. For this reason, countries often try to intervene in currency markets, manipulating their exchange rate to reduce volatility at the cost of potentially large capital flows from the government's reserves. Since the government can increase its reserves through selling bonds, the monetary policy for a government is central to its activity in the currency market.

Essentially, foreign exchange markets are highly reliant on sovereign debt. If a country is highly indebted, then it will likely require large amounts of debt in international foreign exchange (forex) markets. It could borrow entirely in domestic markets, but the limited amount of capital in a small economy might require interest rates high enough to crowd out private sector investments. Allowing private international foreign exchange market investments limits this effect. The traditional way of investing in the foreign exchange market is to buy a sovereign bond in the denomination of the country issuing the bond. The potential returns from this bond are therefore the interest paid plus the appreciation on the exchange rate over the period of the bond.

**Table 3.** Exchange rate regimes

Fixed Exchange Rates	Debt Rating	Mixed Regime	Debt Rating	Floating Exchange Rates	Debt Rating
Benin	CC	Algeria	n/a	Albania	B+
Bosnia and Herzegovina	B	Bangladesh	BB-	Armenia	BB-
Botswana	A-	Bolivia	B+	Colombia	BBB
Burkina Faso	B	Costa Rica	B+	Georgia	BB
Cambodia	B	Dominican Republic	BB-	Ghana	B
Côte d'Ivoire	B+	Ethiopia	B	Moldova	B-
Ecuador	CC	The Gambia	CCC	Mongolia	B
El Salvador	B-	Guatemala	BB	Paraguay	BB+
Honduras	BB-	Guinea	n/a	Peru	A-
Jordan	BB-	Haiti	n/a	Philippines	BBB+
Lebanon	CC	Kenya	B+	South Africa	BB
Lesotho	B	Kyrgyz Republic	n/a	Thailand	BBB+
Libya	B	Mauritania	n/a	Uganda	B+
Mali	B-	Nigeria	B	Zambia	CCC-
Morocco	BBB-	Pakistan	B-		
Namibia	BB	Rwanda	B+		
Nepal	n/a	Serbia	BB+		
Nicaragua	B-	Sri Lanka	B		
North Macedonia	BB	Tunisia	B		
Senegal	BB-				
Vietnam	n/a				
Zimbabwe	n/a				

Source: Author's own calculations.

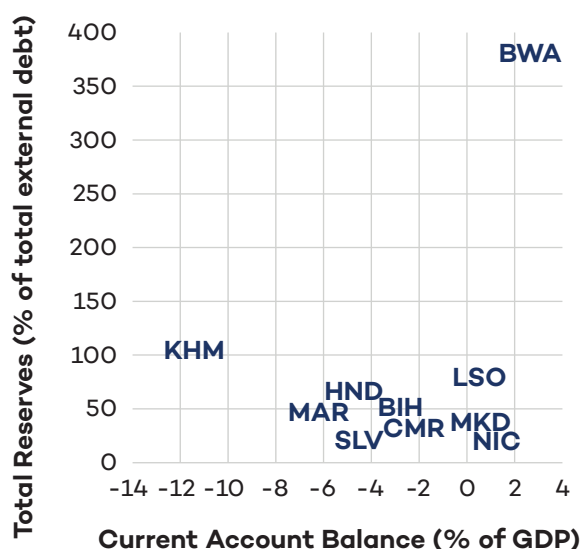
Traditionally, there are three basic forms of currency regime or policy framework. These are represented via the “monetary policy trilemma,” which states that one cannot have free movement of capital, fixed exchange rates, and independent monetary policy all at the same time. Continuing with our example above, if a government wants to borrow from international markets, then it has to accept either the resulting inflation or depreciation from the inward



capital flow. Countries either have to give up their monetary policy independence, have a free-floating exchange rate, or impose severe controls of capital overseas. In reality, there are a variety of hybrid models in which countries can attempt to stabilize foreign exchange market fluctuations while retaining some degree of monetary policy independence and imposing a variety of limited capital controls.

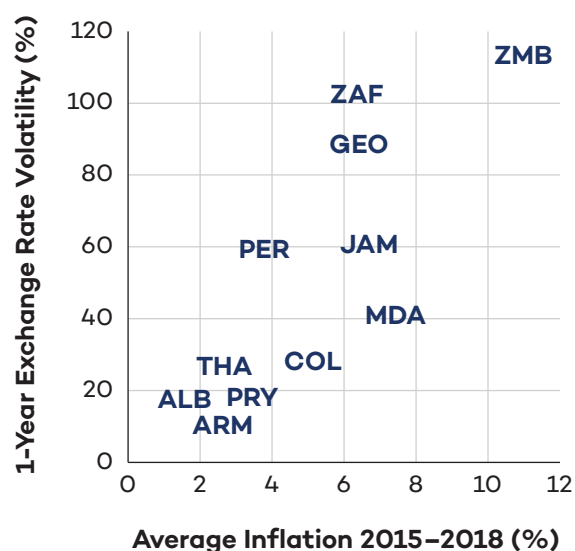
Table 3 gives an overview of the exchange rate regimes for the countries in our sample. We divide them into fixed exchange rate regimes, floating exchange rate regimes, and mixed regimes. The mixed regimes include a variety of policies aimed at stabilizing exchange rates while trying to optimize the domestic trade-off between inflation and short-term output fluctuations through monetary policy. This often includes restrictions in capital flows and active management of currency reserves. We have also included each country's average debt rating. For this, we converted the debt ratings of the Fitch, Moody's, and S&P into numerical values, where available. We then average those numerical values and convert them back into a debt rating using the S&P terminology.

Figure 14. Fixed exchange rate regime



Sources: World Bank, n.d.d; International Monetary Fund, n.d.b; International Monetary Fund, n.d.a.

Figure 15. Flexible exchange rate regime



Sources: Author's own calculations based on IFS data; International Monetary Fund, n.d.a.

The risks a country faces in the currency markets are dependent on what policy regime it enacts. If it attempts to intervene in currency markets to limit the effect of exchange rate depreciation, then it must use its own assets of commodities or other countries' currencies to make currency purchases, leading to the risk that it may run out of reserves of these assets with which to intervene. In this case, investors may fear that a country might abandon its commitment to stabilizing the currency, potentially leading to a sudden and large depreciation. This, in turn, can lead to investors selling their assets, further reducing the reserves of the stressed country. In these cases, the stressed countries often have to pay huge risk premiums on the interest on sovereign debt, stressing the budgets of often poor and unstable governments. Furthermore, the fear of such currency crises leads to a sudden shortfall in private investment, as well, since a sudden decrease in the value of a currency will affect all investments.



Thus, for a fixed exchange rate regime, the important questions are how strong are the reserve holdings and what are the pressures on those reserves? The long-term stress on exchange markets is often represented through balance of payments. This is an economic term that combines the balance of trade with net transfers (such as remittances and ODA), net income (the profits and interest payments from investments overseas), and the capital account (net changes in investment and lending overseas). Effectively, a balance of payments surplus (values greater than zero) indicates a country is sending more goods, services, and investments overseas than it is receiving, and a deficit implies the opposite. This is important for the currency market, as a balance of trade deficit implies that a currency is overvalued, placing pressure on the exchange rate to depreciate. For countries managing their exchange rate, it also means their reserves are likely to be decreasing, as they are providing the foreign currency to pay for the deficit of goods and assets coming from overseas. Of the 50 countries for which we have data, 43 were running a balance of payments deficit at the end of 2018, and only seven were running a surplus. Luckily, most countries with the biggest deficits do not seem to have an exchange rate anchor, and the few that do seem to have large reserves.

Figure 14 shows the state of countries in our sample that are on a fixed currency regime. The horizontal axis shows the “current account,” the largest aspect of the balance of payments, comprising the balance of trade, net transfers, and net overseas income. A large deficit indicates a negative flow of reserves. The vertical axis represents the amount of foreign exchange reserves in each country. We see that Lebanon, Cambodia, and Nepal had large current account deficits in 2018. Lebanon seems a particular cause for concern, however, as its foreign exchange reserves are low for such a high current account deficit.

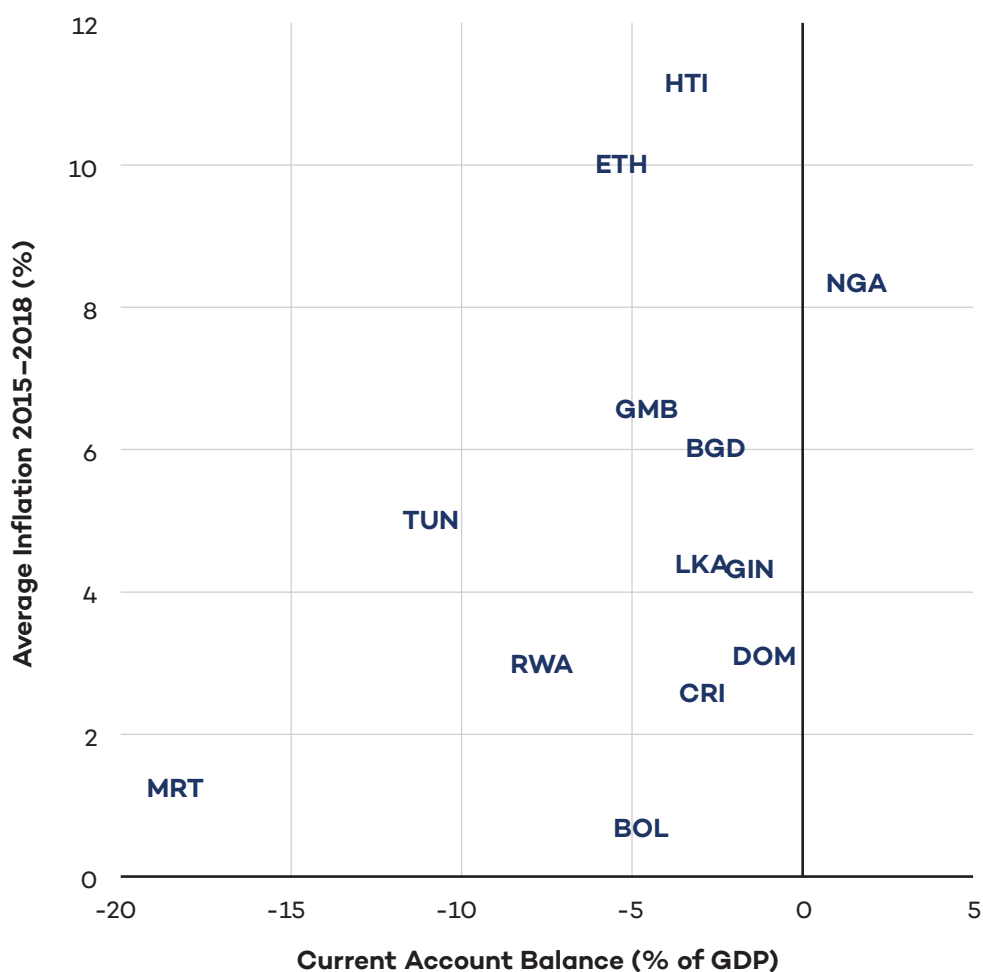
If a country does not attempt to intervene in foreign exchange markets, then there is a different risk: inflation. Inflation makes a country’s currency less valuable in terms of goods and services within a country, and it makes those goods less competitive on the international market. If the overall demand for the country’s goods is relatively fixed (for example, if the goods a country exports are all in competitive industries, and the price increase is relatively uniform), then consumers on international markets won’t want to buy the products at the higher price, and they won’t exchange their currency. As a result, the demand for that country’s currency will decrease to the point that the currency depreciation offsets the fall in demand. However, currency markets are full of speculators trying to anticipate these movements, so a shift in economic policy allowing for inflation can lead the depreciation to “overshoot” the long-term equilibrium, depreciating even more than required and appreciating back over time. Thus, in a floating exchange rate regime, long-term inflation can lead to depreciation of a currency, and changes in inflation prospects can lead to large fluctuations in exchange rate markets. To make matters worse, some evidence points to standard monetary policy correlations (such as increased money supply and higher output) not applying in low- and middle-income countries (Agénor et al., 2000).

Given the risks facing fixed and floating exchange rate regimes, many countries have opted for some sort of hybrid exchange rate, in which they intervene in currency markets in the short term to minimize fluctuations but still allow some lower-frequency movement. These types of interventions are often accompanied by controls on capital movement, in order to limit the potential scope for a currency crisis-type of panic-induced selloff in the short run. In some ways, these types of arrangements allow for the benefits of both fixed and flexible exchange



rates, reducing the potential for a currency crisis while keeping exchange rates relatively stable for investors and international trade. However, while a hybrid regime shares in the benefits from both fixed and floating exchange rates, it also has exposure to both sets of risks. Long-term inflation can drive market-based depreciation, causing foreign goods and liabilities to become more expensive while domestic investments become less desirable in foreign markets. Similarly, sustained current account deficits can lead to a drain on government reserves, placing undue stress on fiscal policy. We therefore have presented countries with mixed exchange rate regimes' exposure to both inflation and current account deficits in Figure 16.

Figure 16. Mixed exchange rate regime

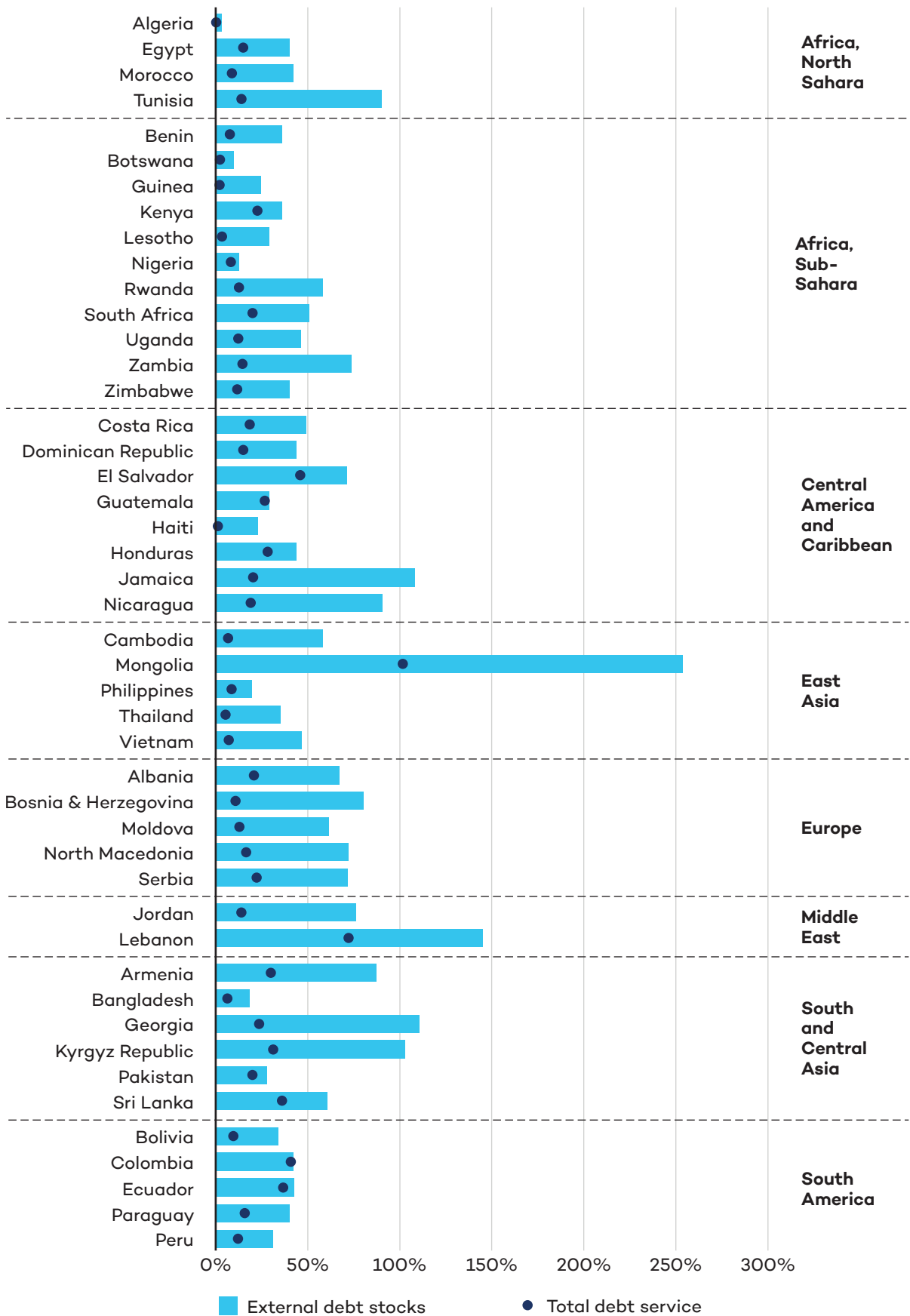


Sources: International Monetary Fund, n.d.b; International Monetary Fund, n.d.a.

One can see a clear negative correlation between the current account balance and average inflation from 2015 to 2018 in Figure 16. This is a visualization of the effect of the “Hume price-specie flow mechanism,” or a natural market mechanism that allows for current account deficits to be naturally corrected in a mixed or fixed exchange rate regime. This is a mechanism through which a large current account deficit is deflationary due to the resulting decrease in money in the economy through the act of buying from overseas. It is convenient for the management of fixed and managed exchange rates in the medium term, but it does not diminish the potential for currency crises. For this, the fiscal stability of a country is more relevant.



Figure 17. Debt outlook



Source: World Bank, n.d.d.



In all types of currency regime, the fiscal budget of a country is crucial. As mentioned earlier, the foreign exchange market is essentially a market for government debt, as that is how currency speculators invest in a particular currency. In all exchange rate regimes, higher government debt will likely lead to a higher interest rate on long-term bonds (central banks usually intervene in short-term bond markets to manage the money supply and inflation, leaving longer-term rates to adjust naturally based on short-term rates and demand for government debt). This has the potential effect of crowding out domestic private sector investment. In addition, debt also has key roles in the workings of each currency regime.

In a fixed exchange rate, the short-term risk to investors from currency depreciation is low, so they can invest in government bonds without the risk of their investment being undercut by currency fluctuations. However, this lack of fluctuation in the short term comes at the cost of potential large deviations in the medium term. If the currency is undervalued, maintaining this exchange rate becomes a large fiscal burden on the government, since it has committed to buying foreign currency at a high rate. How long it can maintain this burden depends on its overall fiscal health, and if investors fear government debts are too high, they will expect an abandonment of the exchange rate, causing the costs of borrowing to spike.

Likewise, in a flexible exchange rate, a country's debt burden can limit the ability for government to provide basic services and investments to increase long-term productivity. The crowding out of domestic private sector investments mentioned above also limits long-term productivity. Such low expectations of long-term productivity can decrease the demand for a country's currency, leading to further depreciation, discouraging foreign investors from engaging in FDI, as well (Dabla-Norris et al., 2010).

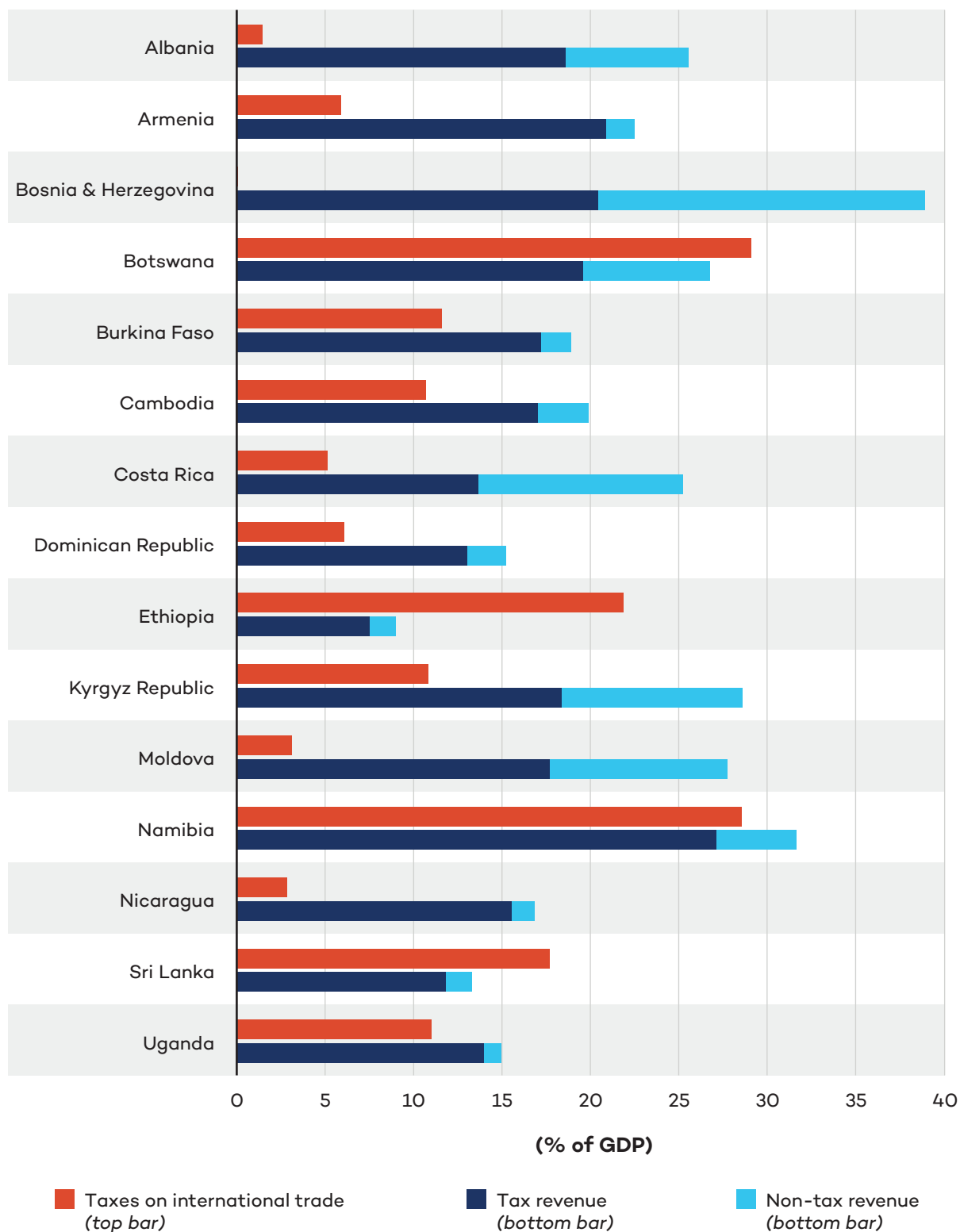
Figure 17 gives an overview of the debt burden of our selected countries. The bars represent the overall level of debt that a country faces,¹³ and the line represents the annual payments a country must make to service that debt, as a percentage of overall exports. Some countries with comparable levels of debt have higher annual contributions to servicing that debt.¹⁴

¹³ The level of debt is expressed as a percentage of GNI (gross national income), which is a concept very similar to GDP, only it includes income received by nationals of a country living in another country.

¹⁴ This could be due to a few factors: the country faces higher market interest rates based on perceived risk, the country is actively trying to pay off that debt, or the size of exports (the measure against which the debt payments are measured) is relatively low for that country.



Figure 18. Fiscal revenue



Source: International Monetary Fund, n.d.d.



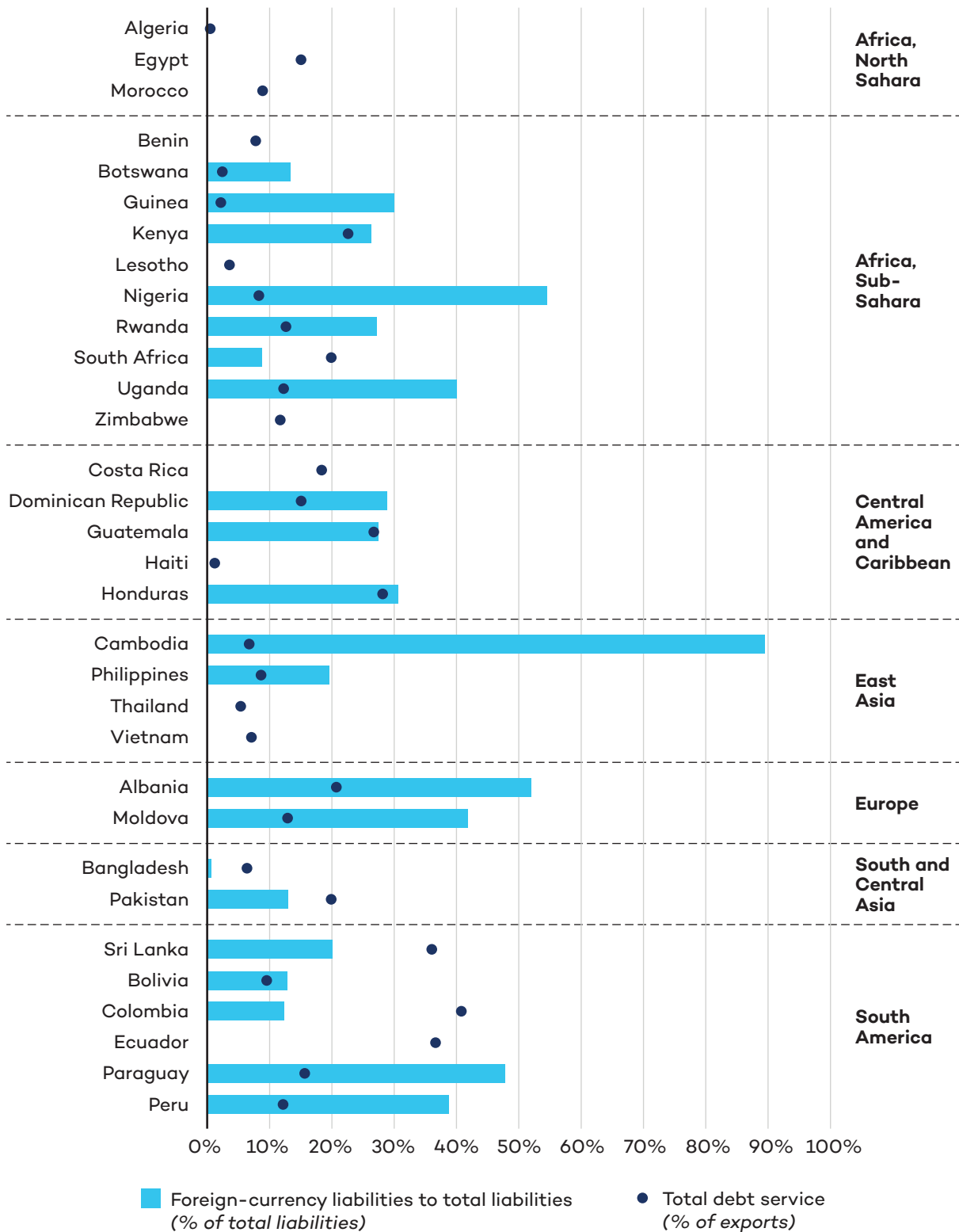
Of course, debt is only one aspect of a country's fiscal outlook. Revenue is crucial to the long-term viability of a country's debt, as it is the means by which a government can pay its debt in the long run. An investment project that yields more tax receipts than it costs in debt payments each year is theoretically a good idea, even though it increases a country's debt burden.¹⁵ We therefore present our best understanding of fiscal revenues in Figure 18. While data in this area is relatively limited for our selected countries, it is nonetheless informative in providing insight into different strategies for raising revenue. While tax revenue is the main source of revenue for most countries, many countries rely more on taxes on international trade than on income tax or other domestic sources. This type of protectionism could potentially limit their private sector exposure to trade shifts from COVID-19 while leaving the public sector dangerously exposed.

We also see some countries' revenue streams include large portions of non-tax revenues. The majority of this is through revenues from government-run companies and government-owned assets (such as mining and mineral deposits). This is another source of exposure to the COVID-19 crisis in a government's fiscal outlook that could increase the risk of problems in the currency markets.

¹⁵ This is a conservative measure, actually. One could claim that the cost-benefit analysis should be more focused on public good rather than tax revenue, meaning a project is worthwhile if it improves people's lives (or increases overall GDP) more than the cost.



Figure 19. Foreign currency liabilities



Source: International Monetary Fund, n.d.c.



Another risk surrounding currency markets is foreign-denominated liabilities. If people and institutions inside a country borrow money in foreign currencies, they face the risk that a depreciation in their own currency might make the overall cost of the loan higher. Foreign-denominated government debt was a main cause for hyperinflation in Europe in the 1920s, as the heavily indebted governments attempted to increase the money supply to meet domestic obligations, making their international obligations more expensive. Private agents do not have the same power to dilute the money supply to meet domestic liabilities, but severe exposure to foreign currency-denominated liabilities can exacerbate any sudden depreciation in a currency, leading to large numbers of defaults and putting stress on the financial system. Such stress also carries the risk of further exacerbating the initial depreciation shock.

Figure 19 presents the exposure to this type of situation by comparing foreign currency liabilities with the total debt obligations. The bars represent foreign currency liabilities to total liabilities represents the proportion of overall debt in an economy (not just sovereign debt) that is denominated in foreign currency. Of course, this is only a high-level understanding of this issue. There are several potential mitigating factors, such as the owner of such liabilities (loans provided by international agencies and other governments are more likely to be partially forgiven in a crisis) or potential assets against which a country can weigh those liabilities (a loan attached to a specific drilling operation, for example). The data availability for this set of data is also limited, but the information provided is nonetheless useful.

In light of trade shocks from the pandemic, currency market considerations are central to understanding how a country responds. Appreciation in a country's exchange rate makes exports less attractive to international buyers, while exchange rate depreciation dilutes international investors' returns. If a country has strong exposure to specific industries or value chains affected by the COVID-19 pandemic, then the demand shock can lead to exchange rate depreciation and a disproportionate decrease of foreign investment. From here, the scenarios only get worse: currency crises, sudden stop, banking crises, runaway government debt, and hyperinflation.

Policy-makers should have at least a basic understanding of currency markets and their states in order to make informed decisions about trade, production, and capital markets. For one, it is the main mechanism through which government finances affect international trade, and currency markets overshadow capital markets in terms of assets held and traded daily. There is some evidence that monetary shocks in developing countries have stronger effects on developing countries than demand or supply shocks, so understanding currency and money markets is crucial (Canova, 2005).

Debt will only be more important moving forward as the COVID-19 pandemic will likely stress government budgets in developed and developing countries alike, making currency considerations more pressing for international trade. It is for this reason that the UN trade and development report in April 2020 focused on public debt in developing nations (UN 2020). In addition to raising the alarm on debt and trying to aid troubled countries, experts across government need to familiarize themselves with the potential scenarios arising from such debt. Rather than any particular fact from this section, policy-makers should try to familiarize themselves with the basic causality of the risks described, as this will affect their understanding of each of the other sections, compounding all other types of risk in this document.



Finally, through currency markets, we see one of the main mechanisms through which import markets play a key role. In the previous two sections, export markets played a larger role, but currency markets are very sensitive to price shocks and inflation levels. Currency markets reflect the vulnerability of countries to import shocks through their effect on inflation, exposing countries to shortages of critical supplies and potential currency crises. The effect of such inflationary shocks is also central to our next section: labour markets.



9.0 Labour Markets

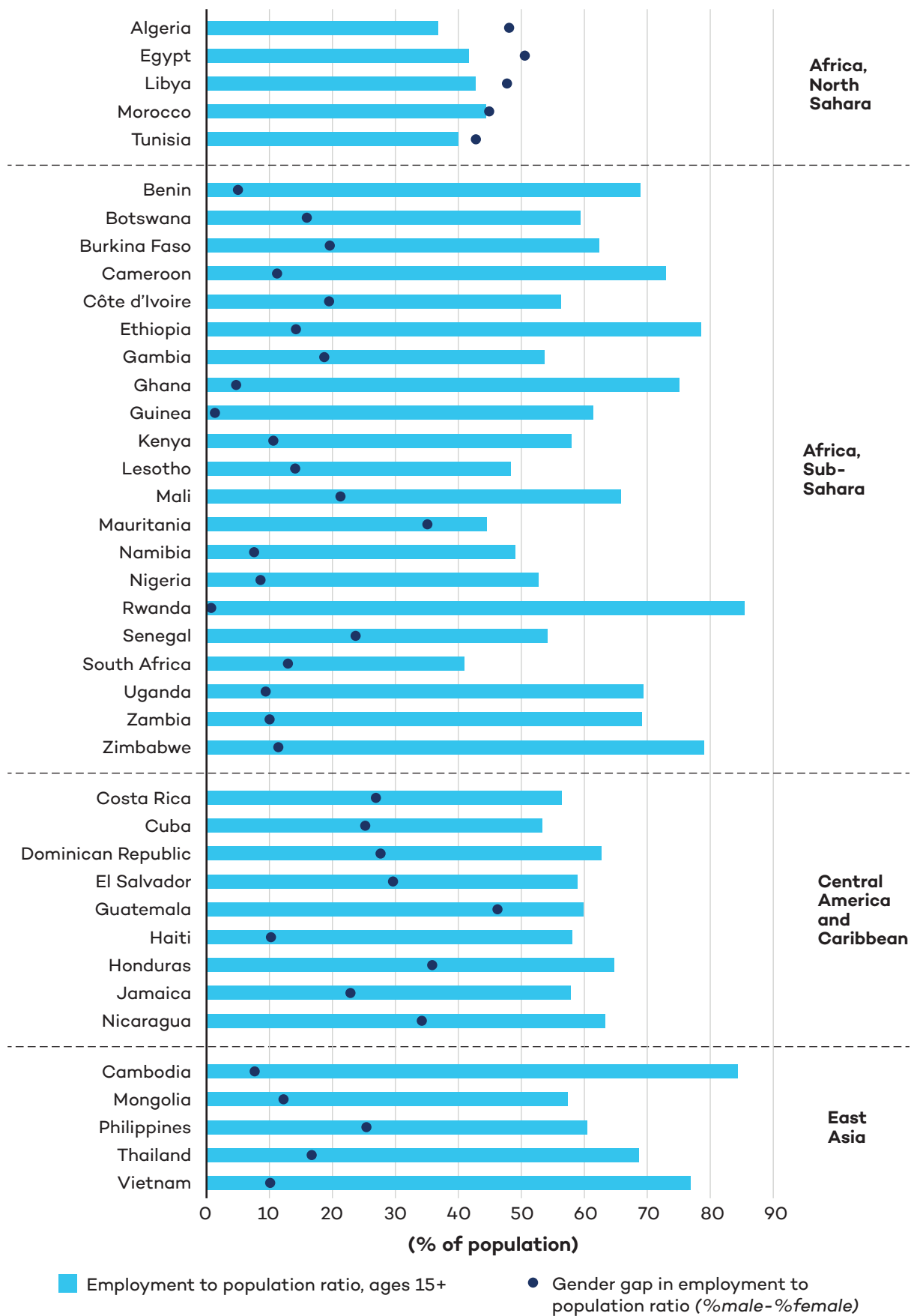
The final market we address is the labour market. There are two issues that are particularly important in the context of potential vulnerabilities to negative shocks from international trade demand from the COVID-19 pandemic. First, we have the resilience of the labour force to economic shocks. This includes labour force and employment levels, but also gender inequalities within these measures, as households in which two adults have access to labour markets are more able to absorb a shock to the employment status of one individual. Closely related to this concept is the political stability and absence of violence index, as this represents the resilience of institutions to sudden shifts in labour markets.

Labour markets are the mechanism through which we are most likely to see the economic impact of the pandemic directly affecting vulnerable populations. The effects of the virus on poverty are potentially very significant.¹⁶ This should be particularly concerning to the international community, especially since low and middle-income countries' budgets will already be stressed by virus relief.

¹⁶ See Glover et al. (2020), Mahler et al. (2020), Nonvide (2020), and Vos et al. (2020).



Figure 20. Employment participation





Source: International Labor Organization, n.d.

The second important issue regarding labour markets is access to an adequate supply of food. With the pandemic’s disruption to supply lines, access to nutrition has become a significant risk for many countries. While this issue deserves closer attention in studies focused specifically on access to food, it is also an important international trade issue. Trade networks fundamentally rely on the provision of local labour for the creation of internationally traded goods, often encouraging domestic populations to shift labour to manufacturing sectors while importing food items. Similarly, even within the agricultural sector, integrating into global food markets may allow concentration in a few agricultural items for trade, while relying on imports for a large portion of domestic consumption.

Figure 20 provides an initial overview of the labour markets in individual countries. The bars represent the employment-to-population ratio, which is the proportion of population listed as employed or self-employed in the official labour market statistics. This is effectively the portion of the labour force that is employed, excluding those looking for work. By focusing on this indicator, we effectively combine two concepts of labour force participation and unemployment in order to give an overview of the percentage of population actively working. Although this figure includes self-employed people, it often neglects informal labour markets, such as local childcare networks.



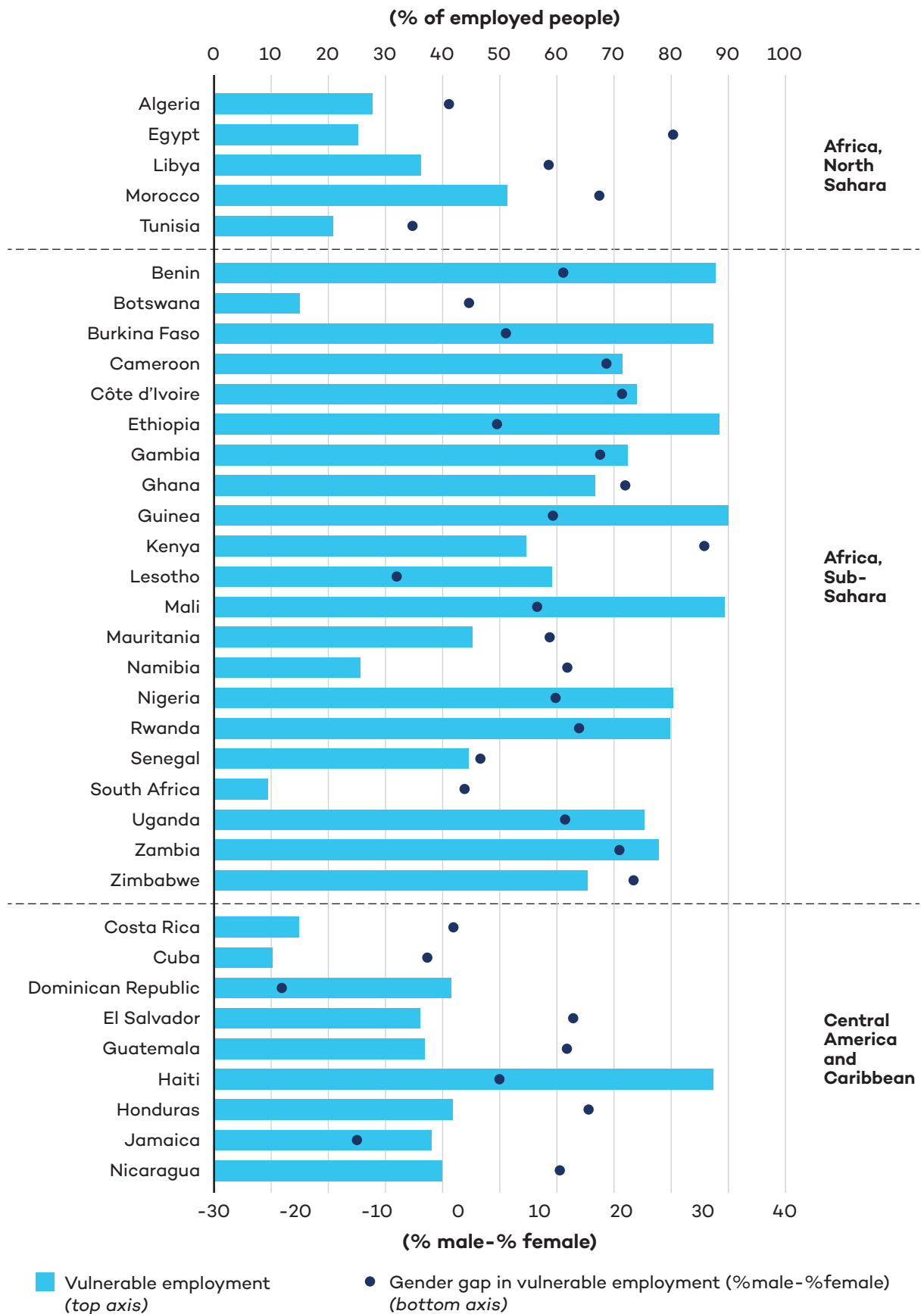
Low participation rates have many potential causes, and some may be reasons for concern. Demographic issues, such as a large proportion of very old, very young, or disabled people, are often reflected in low participation rates. Households in which women have been prevented from seeking employment can also be revealed by low participation rates, as can unemployed people who have stopped actively looking for work. A high proportion of people seeking education is also a cause for low labour force participation rates.

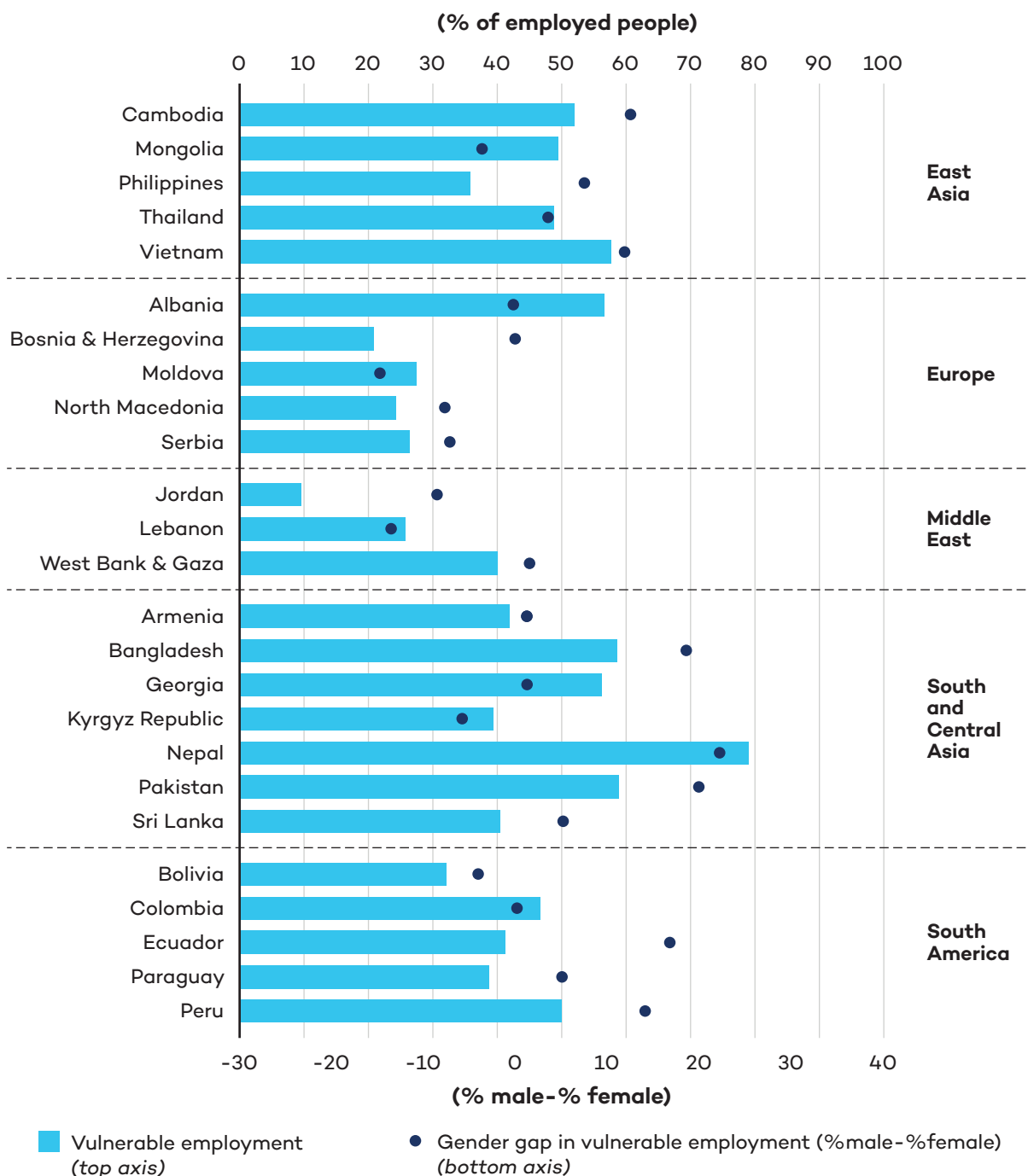
In our selection of countries, 18 have an employment-to-population ratio below 50%. These countries are particularly concerning, as less than half of the population is recorded as being part of the labour force, placing a large burden on government budgets and any welfare provisions for people who are working. It also suggests that a large portion of the economy is engaged in activity that provides informal sources of income that is not part of the tax base, making effective tax policy difficult.

In some countries, the gender gap in employment-to-population ratio is greater than 50%, suggesting these populations have a majority of households in which the female does not work. This suggests a high prevalence of single-earner households, which are less likely to be resilient to changes in the employment status of the main earner. Furthermore, the populations with the lowest employment-to-population ratios also have the highest gender gap in this indicator. To some extent, this is to be expected, as the overall employment-to-population ratio will be smaller if a large portion of working-age women is not part of the workforce. However, if this low participation rate is also due to a large number of dependents per worker, then the potential risk from a change in employment status is heightened even further. Of particular concern are the West Bank, Jordan, Algeria, Tunisia, and Egypt, all of which have very low employment-to-population ratios and a gender gap of above 40%.



Figure 21. Vulnerable employment





Source: World Bank, n.d.f.

Figure 21 shows the proportion of population considered to be “vulnerable workers,” or self-employed and contributing family members. These workers are less likely to have formal work arrangements, decent working conditions, or adequate social security. They are also more likely to have lower earnings. In 14 of our sample countries, the proportion of vulnerable workers is above 70% of employed people, which is an extremely high amount. Of these, 11 are located on the African continent.



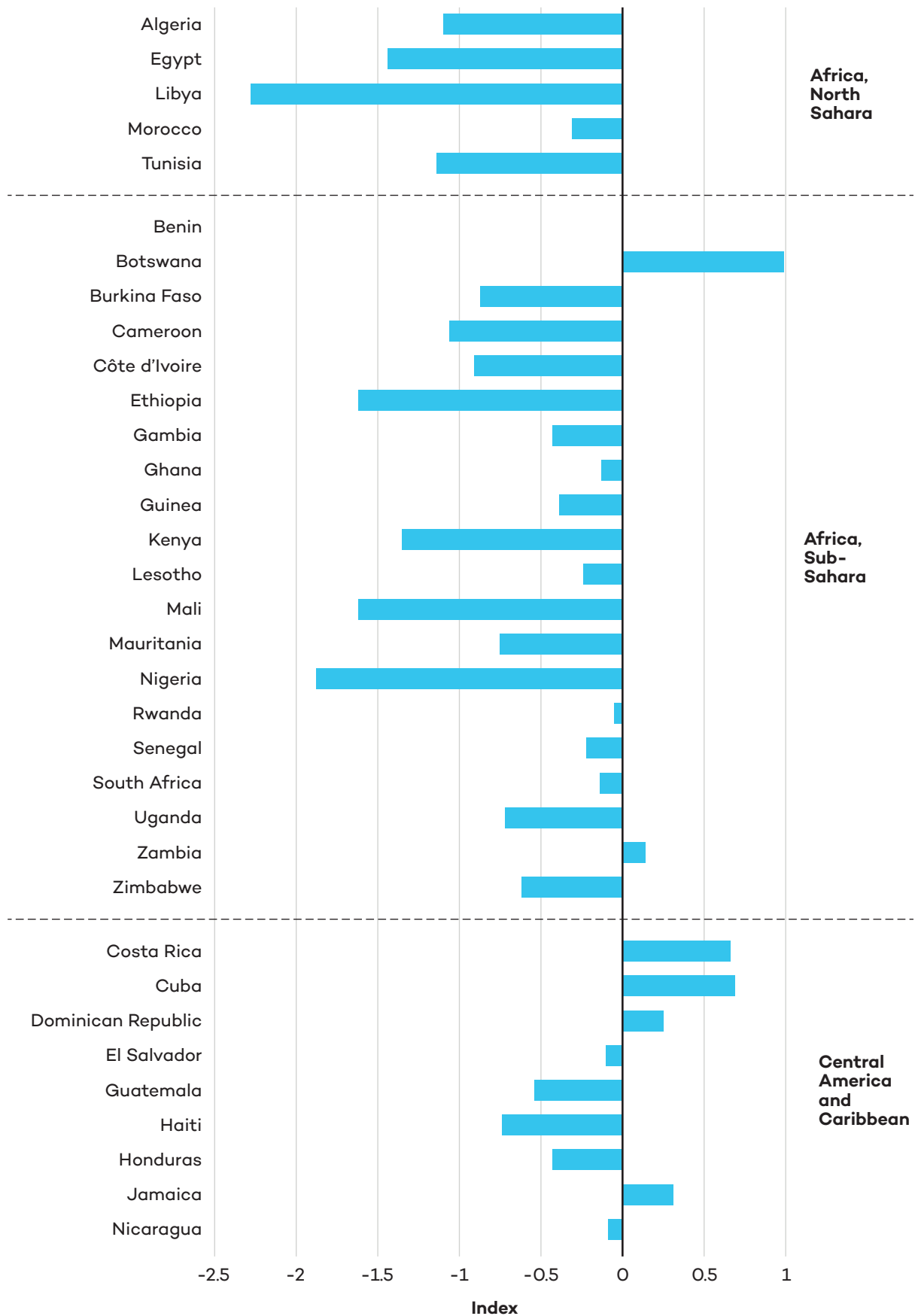
As with the employment-to-population ratio, we have also provided the gender gap between men and women for these figures. We also see large gender gaps in the composition of vulnerable employment for many of our sample countries. In 17 of our countries, the gap is negative, indicating more men have vulnerable employment than women. This is probably due to the fact that the overall employment for women is low in those countries. Indeed, we see a correlation factor of 0.33 between the female employment-to-population ratio and the gender gap in vulnerable employment, suggesting a relatively strong correlation between the two.

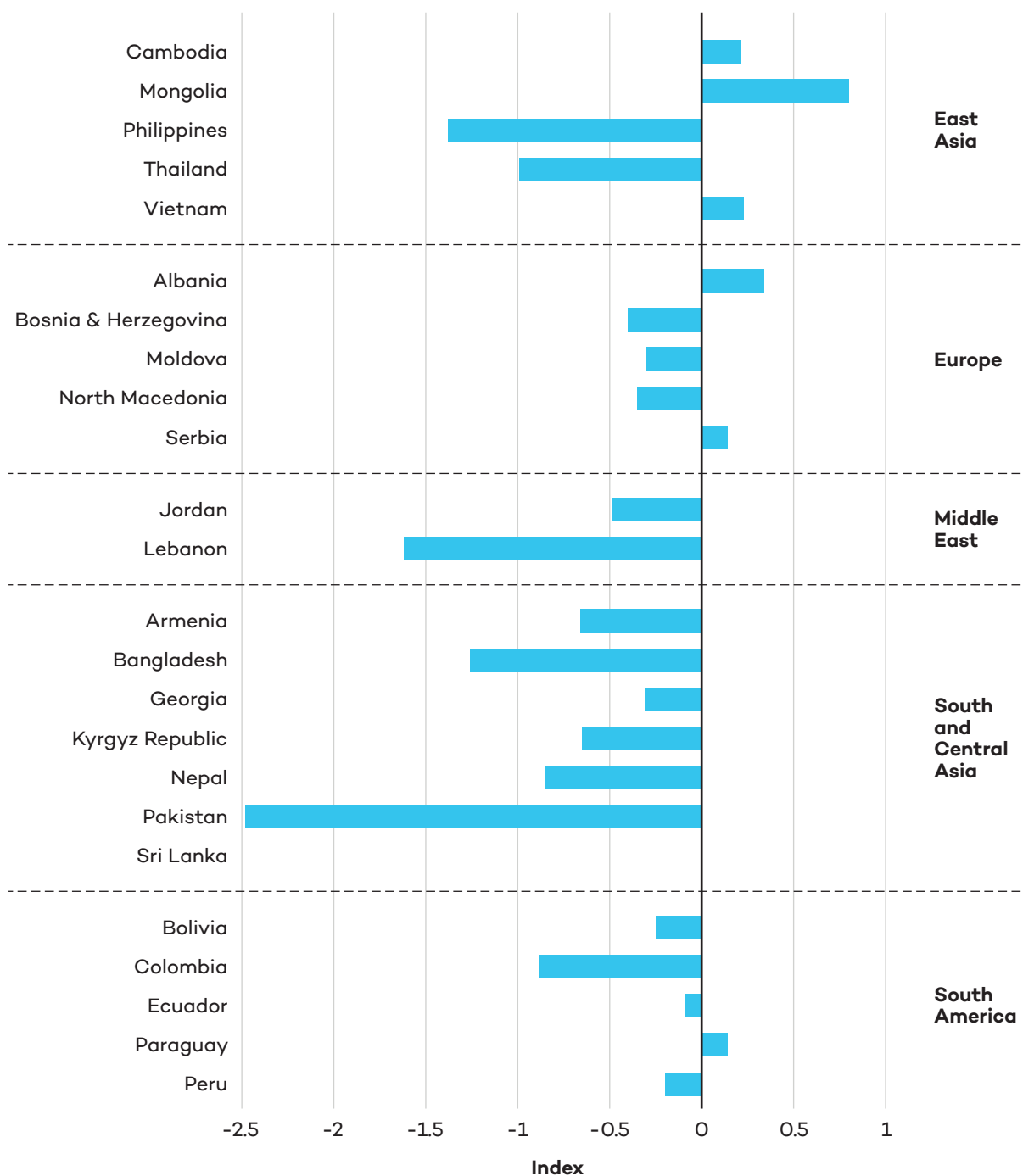
In recent years, there have been significant advances in economic circles in understanding how intra-household allocation can strongly affect the process of economic development. If women are empowered more in household management and finances, there are measurable benefits in areas such as capital formation, sanitary conditions, food security, and human capital formation. High percentages of women who are either not part of the workforce or in vulnerable employment therefore could lead to a variety of risk factors, especially when the macroeconomic environment deteriorates. The gender gap in vulnerable employment is especially troubling, as this type of employment often has less access to social services in the case of economic downturn. Such a high gender gap in vulnerable employment suggests that an already potentially vulnerable population will have less access to services in the event of an economic downturn.

While the labour markets provide a snapshot of the magnitude of potentially vulnerable populations, we also have figures that give a current state of the potential hazards facing people in an economic crisis. Specifically, the risks of conflict and food scarcity are especially pertinent during an economic crisis. We take these in turn.



Figure 22. Political stability and absence of violence index





Source: World Bank, n.d.g.

Figure 22 shows the political stability and absence of violence index compiled by Kaufmann and Kraay (2010) for the World Bank. The countries with the lowest values on our political stability and absence of violence indicator seem to match closely with countries with low employment-to-population ratios, notably Lebanon, Egypt, Tunisia, and Algeria. We also have a strong representation from countries with high levels of vulnerable employment, with Nigeria, Ethiopia, and Mali scoring low on the index. This suggests a potentially large impact from political displacement in these countries.

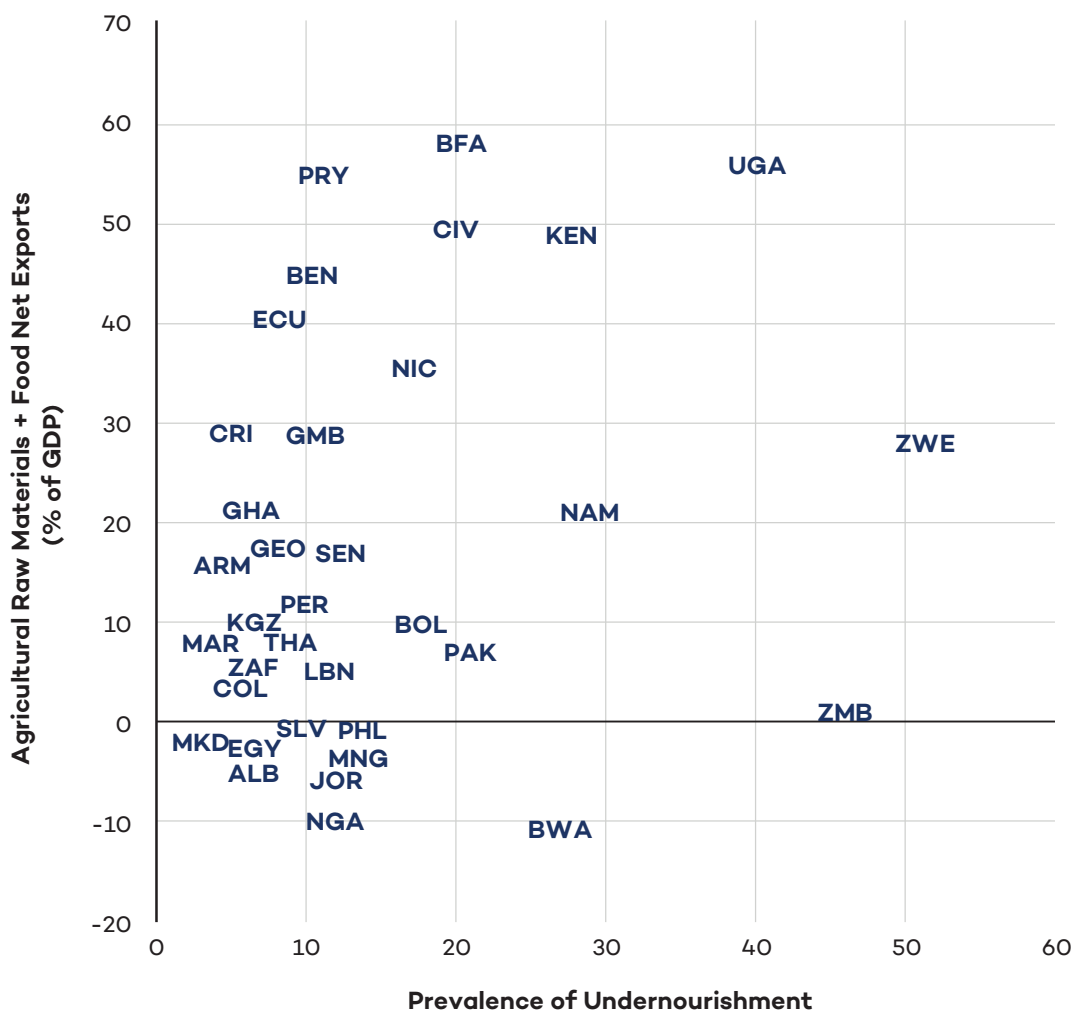
This is a significant risk in the light of COVID-19, as displaced people will be particularly vulnerable to shifts in international support and government aid. They will also potentially be



more reliant on international aid for the supply of their basic needs, making potential supply chain shortages in aid provision particularly problematic.

Food security is a particular concern. Figure 23 compares the prevalence of undernourishment to the net exports of food and agricultural raw materials in our selected countries. There are a variety of potential economic explanations for such undernourishment. One possibility could be globalization of agricultural markets leading to price convergence (price differences between countries decreasing), making crops more expensive for domestic consumers. In this case, a decrease in overseas demand could make food more affordable for the domestic market. However, we would caution against such an optimistic reading, as negative price shocks can aggregate rural poverty levels that may have contributed to the undernourishment in the first place, and this type of price volatility will make the type of investment needed for food security more difficult. It would be advisable for most governments to monitor food prices closely over the coming months, as the supply chain disruptions and large shifts in aggregate demand could lead to large price swings. This is especially problematic with food, in which stranded perishable assets could harm producers' viability, and the basic necessity of food can lead to wide price swings if supplies diminish even for a short time.

Figure 23. Food access indicators



Source: Food and Agriculture Organization of the United Nations, n.d.



In light of COVID-19, we see that living conditions in individual countries leave populations exposed to negative shocks in international demand. A lack of robust labour markets, vulnerable populations (including gender disparities), and a market disparity between access to food and supply of food on international markets make the human aspect of a negative trade shock particularly troublesome. In addition, people pushed out of a job or into poverty as a result of such a negative shock will represent a drain on productivity and fiscal resources within a country, prolonging and protracting the impact of the negative demand shock on the people most vulnerable.

Questions of poverty, access to labour markets, food scarcity, and gender relations are hardly new. However, policy-makers should be acutely aware that in addition to being a problem in themselves, each of these problems is a potential aggravating factor for any potential negative demand shock from trade. When considering the practical elements of international trade, the prevalence of informal labour markets, vulnerable populations, and undernourished populations pushes a country's comparable advantage further toward production sectors defined by low marginal productivity of labour, reinforcing trade patterns that can be harmful to long-term investment and capital development.

IISD is currently involved in a larger-scale project exploring trade patterns in agriculture, focusing explicitly on how countries deal with international trade shocks and how trade patterns interact with undernourishment in the presence of these shocks. This work is ongoing.



10.0 Conclusion

While the uncertainty around the COVID-19 pandemic makes structural modelling and forecasting of economic variables unreliable, insights from economic theory can help illuminate the implications for international trade. Available data provides high-level insights that are theoretically straightforward yet valuable. A variety of potential mechanisms can expose a country to shocks from the COVID-19 pandemic, and this analysis provides insights on the risk profile of each country in our selection. Indeed, for international trade to work properly, production markets, labour markets, capital markets, and currency markets *all* have to function well.

Rather than focusing on any particular policy recommendation, the intent here is to help the international community identify priorities for the near and long terms. It is clear that international support and cooperation will be required in addition to the structures currently in place. This analysis has focused on existing structures and frameworks for understanding growth and development; however, we do not advocate fixing the problem simply by reinforcing those structures or frameworks. For example, to say that a country is exposed to a crisis from a reversal in FDI does not imply that the answer is more FDI.

This analysis has focused mainly on each market in isolation, but it is worthwhile to note that the mechanisms described above can interact with each other. For example, currency market depreciation can make food imports more expensive in a country, exacerbating undernourishment issues, and sudden stops are known to coincide often with currency and banking crises. Indeed, the purpose of this paper was to consider how each market responded to a shock from trade markets, so the potential spillover between markets is a fundamental assumption.

For example, Mongolia has very high external debt stocks combined with high levels of trade and a considerable portion of exports in primary goods, including large shares of exports in coal (36%), copper (26%), and gold (11%). Such a composition of exports suggests strong integration with global value chains, and Mongolia relies heavily on a single trading partner, China. Furthermore, Mongolia's large current account deficit implies a reliance on imports from other countries to meet consumer demand, and its large amounts of government debt are likely to make foreign exchange markets more sensitive to shocks within the economy. As a result, a negative shock to trade could lead to large currency depreciation, causing the prices of many consumer goods to rise appreciably. This would be particularly difficult for Mongolia, which has worked hard to reduce inflation levels in recent years and whose growth level was promising before the crisis.

Another example is Jamaica, which has high external debt stocks, depends greatly on sectors hit by the pandemic—such as tourism, hospitality, and transportation—and relies heavily on the United States as a trading partner. In addition, FDI and personal remittances account for roughly 20% of Jamaican GDP, meaning that longer-term investments and capital formation will likely suffer greatly following the pandemic.



Similarly, while the vast majority of this paper has dealt with negative demand shocks from the COVID-19 pandemic, there is significant scope for negative supply shocks and, more dangerously, mechanisms that protract demand shocks through decreases in supply. Bankruptcy is a perfect example of a demand shock that then decreases supply. The discussion on global value chains had implications on both supply and demand shocks, as the value chains require both demand for final goods as well as supply of intermediate goods. A negative supply shock in a final goods production process would lead to a potential negative demand shock for intermediate goods, and a negative demand shock in a final goods sector might lead to a lower price in intermediate goods feeding that sector. This could be seen as a positive supply shock for other final goods sectors using those intermediate goods. In this sense, global value chains have a strong potential hazard for transgressing between supply and demand shocks.

Finally, developing economies are particularly vulnerable to repercussions from trade shocks due to the COVID-19 pandemic. Our focus has been entirely on the developing world, as the lower level of wealth and capital in these countries makes them vulnerable to investment and demand shifts from other countries. The overall lack of wealth also implies lower wealth within the government and fewer institutional tools to deal with a crisis. Furthermore, through their concentration on processes that have a lower marginal productivity of labour, workers in these countries already start from a position of vulnerability and poor negotiating stances, further exacerbating the potential human impact of any trade-related crisis.



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Appendix 1. Country-Level Data

Production

Annual GDP growth rates for the year 2018 are given in the first column of Table A1. Many of the economies in our sample exhibit strong economic growth well above 3%, indicating strong economic performance in that year. Our sample overall has an average growth of 4.2%, which was significantly higher than the worldwide average of 3.1% in that year. We see a particularly strong performance by Rwanda, Bangladesh, and Libya, which might reflect some of the convergence or post-crisis growth mentioned earlier. The economies with the lowest performance in GDP growth have been highlighted in the table. Among these, we only have negative GDP growth for two countries, Namibia and Nicaragua, while some of the lowest-performing economies in our dataset have GDP growth above 1%. This is a deliberate effect of our attempt to focus on economies that are vulnerable to crisis due to negative trade shocks rather than countries already experiencing economic decline at the onset of the pandemic.

There are multiple ways to break GDP into components. In Table A1, we have focused on the sectoral composition of production. At the highest level, these are crudely broken down into agriculture, industry, and services, though there is often a significant portion of GDP that is unclassified. For some economies where services make up less than 40% (highlighted on the table), we might have cause to worry. We have highlighted 13 countries in which agriculture, forestry, and fishing account for more than 20% of GDP. Finally, for the purposes of the COVID-19 pandemic, industry is particularly vulnerable through the global value chain exposure in manufacturing. As such, we have included the subcategory of manufacturing to highlight this exposure, and the economies with the highest concentration in manufacturing and industry are highlighted.

Similar to manufacturing, we have also provided details on other sectors particularly affected by COVID-19. Specifically, we have combined the shares in production of “clothing and footwear,” “transportation,” “restaurants and hotels,” and “actual recreation and culture.” This combined share is given in the column labelled, “combined clothing, transportation, recreation, culture, and hospitality.” International tourism is reported separately, as that is considered part of export markets, and is therefore part of a different GDP decomposition. Including these indicators together would conflate different methods of decomposing GDP into component parts.

Finally, we have intensity of local competition, given as an index. The motivation for including this as an indicator for this analysis was as context for a starting point of considering the effects of competition on international trade, a potential route of exploration for future IISD projects. While intensity of local competition is not central to any of the mechanisms described in this paper, it is relevant, and worthy of further exploration.

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Trade

Data for international trade is given in Table A2. The 16 countries with deficits larger than 15% of GDP are highlighted in red. For these countries, a sharp decrease in international trade would imply a significant amount of demand for goods and services in the country could not be met, and prices would have to increase, or people would have to consume less.

From the 3rd column onwards, we focus on export markets, again starting with an indication of the size of the overall market. Here, we see a handful of countries with very large exposures to export markets, with Vietnam, Thailand, and Cambodia leading the pack.

In an attempt to focus on exposure to global value chains, we use two approaches. First, we use UN Comtrade data and group the merchandise exports statistics by BEC codes into the categories of consumption goods, intermediate goods, and capital goods, in accordance with other publications. The results for intermediate goods are given in the 4th column. There are 12 countries in our sample in which over 80% of merchandise trade can be classified as an intermediate good, implying high exposure to a potential drop in demand from countries that then use those intermediate goods for production. The BEC codes also allow us to distinguish which of these goods are primary goods, as opposed to processed goods. This allows us to identify economies whose export markets are still driven by natural resource extraction, a well-documented source of economic instability. The 5th column on the table provides the proportion of intermediate goods that are considered primary. Comparing this with data on exports of ores and metals (Column 6) starts to give an indication of which economies are particularly exposed to various primary goods sectors. For example, while Armenia and Peru have high exposure to the ores and minerals market, their overall exposure to the primary goods market isn't as high as Botswana, Columbia, Ecuador, or Nigeria, all of which have very low exposure to ores and minerals markets.

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Capital

Table A3 gives an overview of the state of capital formation in our sample countries. The first column in this table gives an overall indication of the level of capital formation, called “gross capital formation,” listed in relation to the size of GDP. This is the overall level of new capital goods, such as factories, tools, offices, and computers used in producing goods and services. The term is considered “gross” as it captures the new capital created in a country without deducting for the destruction from depreciation, also known as “consumption of fixed capital.” It is a particularly strong indicator for the process of capital deepening, in which the production process becomes more saturated with tools and equipment that increase the productivity of labour. We can see a handful of countries in our sample have a value higher than 30% (highlighted in blue), considered a strong level for fixed capital formation, implying the capital deepening process is progressing nicely. In contrast, we also have a handful of countries with values below 20%, which is historically low for this figure. Coupled with depreciation, this could imply the capital stock is actually decreasing.



In the first column of Table A3, we see that a handful of countries in our sample have negative gross domestic savings. This means that they are consuming more than they produce overall, so any new equipment or services needed for production would require some intervention from abroad.

Moving to the next column, we now have “consumption of fixed capital,” or depreciation. This is the rate at which capital falls apart, becomes obsolete, or requires maintenance. It is the difference between “gross capital formation” and “net capital formation,” with the latter representing the overall increase in the capital stock of a country, a key attribute of the process of development.

Now that we have discussed sources of capital formation within a country, we can consider the international sources of capital. Combining the two allows us to consider how reliant a country may be on international capital, either in the form of assistance or investment from overseas. The 5th column in Table A3 gives an indication of FDI, or the amount of investment in firms in a country from overseas investors. This is a particularly valuable indicator, as it represents private sector contributions to international development and capital formation. It is a mixed blessing for many countries, as foreign investment can allow for market mechanisms to allocate capital efficiently and help countries find a footing on international markets, but foreign investment can also be volatile and quickly diminish during political and economic crises. Furthermore, international firms that engage in FDI often do so under favourable conditions, allowing them to extract huge profits from the activity without necessarily circulating the returns from the activity within the community engaged in production.

Because this study has sought to consider the potential damage from trade shocks due to the COVID-19 pandemic, we are particularly concerned with the exposure of countries to sudden decreases in overseas investment. The 10 highest values of this indicator are therefore highlighted in red. In addition, countries with high FDI and low domestic savings, such as Albania or Honduras, are cause for particular concern.

Normally, combining gross capital formation with consumption of fixed capital would give us an indication of the net increases in the capital stock in a country from year to year. However, the World Bank has compiled an indicator that is more robust in representing the same concept, as it also includes losses in capital and resources through environmental degradation, including the effects of carbon dioxide and particulate emissions damage. This indicator is given in the 4th column of Table 3. It is worth noting that this indicator uses national savings rather than capital formation as the preferred indicator, meaning it does not include overseas capital sources (though it does include personal remittances received). 15 countries in our sample set have negative rates for this indicator. Interestingly, though, the countries with negative rates in the 4th column do not match up with the countries with low gross domestic savings nor with high consumption of fixed capital. Notably, Burkina Faso, Cameroon, Mongolia, and Uganda have relatively high gross domestic savings and negative adjusted net savings. Presumably, this is due to significant natural resource depletion and the effects of carbon and particulate emissions. Similarly, Haiti has a significantly negative gross domestic savings, yet its adjusted net savings are relatively high at 15%. This is probably due to the high number of remittances received.



Finally, after considering the sources of income for the purpose of capital formation, we can discuss the overall level of credit issued within a country. This is the final column in Table A3.

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Currency Market

The first two columns of Table A4 indicate the exchange rate volatility of our sample set countries over different timeframes compared with a representative bundle of foreign currencies. Overall, with the exception of Jordan, the volatility rates for these currencies are low, indicating relatively stable currencies. However, even volatility rates of around 1% can increase the cost of investment significantly within an economy. Countries with a volatility rate greater than 1 over a 5-year period (highlighted in red) are of particular concern. The 3rd and 4th columns of Table A4 report the currency regime of each country. With the variety of currency regimes in modern economies, the best distinction is found by considering the monetary policy of each country.

Balance of payments is an economic term that combines the balance of trade (seen in Table A2) with net transfers (such as remittances and ODA, seen in Table A3), net income (the profits and interest payments from investments overseas), and the capital account (investment and lending overseas). In the 5th column of Table A4, we see the balance of payments for our sample countries. Of the 50 countries for which we have data, 43 were running a balance of payments deficit at the end of 2018, and only seven were running a surplus. Luckily, most countries with the biggest deficits do not seem to have an exchange rate anchor, and the few that do seem to have large reserves (the 6th column).

In addition to debt levels, Table A4 also includes information about the debt itself. Finally, we have a few indicators on the sources of government revenue streams. This is useful to assess the long-term viability of the debt stock of an economy, as the eventual creditworthiness of a government arises from its ability to collect revenue. Unfortunately, the data is limited for these fields.

We can see that a handful of countries have given up their ability to form independent monetary policy through their adoption of an exchange rate anchor. However, even many countries that seem to have their own monetary policy also have some sort of intervention in foreign exchange markets. “Stabilized arrangements,” “crawl-like arrangements,” and “other managed arrangements” all require intervention into the market to at least temporarily offset some of the impacts of exchange market shocks.

Given the foreign exchange markets’ heavy reliance on sovereign debt, we have included a handful of indicators to provide insight into our sample countries’ sovereign debt, starting with the credit rating of each country’s government. This is an average of the three major credit ratings agencies (Moody’s, Fitch, and S&P), using the terminology that S&P gives to its ratings. We also have the overall amount of debt, given in proportion to GNI, and use of IMF credit, which is often provided to countries to stabilize exchange rate risks. High levels of IMF credit could imply that a country has previously had large drains on reserves or sudden shifts in exchange rates.

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Labour

Table A5 provides the indicators for labour markets in our sample countries. The first column provides the labour force participation rate, which is the proportion of the population that is either working or looking for work. Among our sample countries, we see 12 countries with labour force participation rates below 50% (highlighted in red). Likewise, we see 18 countries whose employment-to-population ratio (equivalent to labour force participation excluding the unemployed) is lower than 50%.

The 4th column gives an indicator for “vulnerable workers,” or self-employed and contributing family members. These workers are less likely to have formal work arrangements, decent working conditions, or adequate social security. They are also more likely to have lower earnings. In 14 of our sample countries, the proportion of vulnerable workers is above 70% of employed people, which is an extremely high amount. Of these 14 are located on the African continent.

The first two indicators deal with adequacy of food provisions within a country. The former deals with average food provision over the entire population, while the latter deals with the distribution of those provisions, explicitly counting the proportion of people who do not receive an adequate amount. While we would expect these indicators to be closely related, the relative quantities tell us how problematic the distribution of food resources is within a country. For example, Burkina Faso and Côte d’Ivoire have relatively high average dietary supply, but the high prevalence of undernourishment suggests that there are some issues of equitable distribution within those countries.

Finally, the last two columns in Table A5 provide net export data for agricultural raw materials and food, both processed and raw. We again expect these indicators to be related, as some agricultural raw materials exports will be included in food data. However, the relative amounts tell us the composition of a country’s relationship with international food networks. For example, Benin and Mongolia both have significant trade surpluses in agricultural raw materials but deficits in food exports. This suggests that their farming is primarily focused on cash crops for the international market, relying on food imports to compensate for domestic demand. Likewise, there are a handful of countries with significant presence of undernourishment with large export surpluses of either food or agricultural raw goods. Kenya, Uganda, and Burkina Faso are examples of this phenomenon.

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