

# Global Economic Diversification Index 2023



Global  
**Economic  
Diversification  
Index**

**WORLD  
GOVERNMENT  
SUMMIT 2023**

in partnership with

كلية محمد بن راشد  
للإدارة الحكومية  
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# Executive Summary

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Economic diversification has gained traction in major commodity producing nations given its multiple benefits including to macroeconomic stability, economic growth, job creation and development alongside promoting greater private sector activity, more sustainable public finances as well as greater skill diversity in the labour force. However, despite policy interest in economic diversification, there is no uniformly agreed or available measure or index of economic diversification. The first edition of the Global Economic Diversification Index (EDI) was published in 2022, specifically aiming to fill this gap in terms of data, thought-leadership and the availability of data-driven policy instruments to track economic diversification. The first edition of the EDI measured and ranked 89 countries on the extent of their economic diversification from a multi-dimensional angle, exploring diversification of economic activity, international trade as well as of government revenues (away from a dependence on natural resource or commodity revenue).

This edition of the EDI extends the coverage to a total of 105 countries, for a period of 22 years, between the year 2000 and to the Covid19-affected years of 2020 and 2021, allowing an international, cross-country, regional comparison and ranking of commodity dependent countries.





The United States, China and Germany hold on to their top three positions in this edition of the EDI. Nations that rank 4th to 10th have only a 6-point difference between them, highlighting the strength of diversification among the highly ranked countries. For example, while China's overall standing in the EDI continued to improve over time, it became the top ranked in the trade diversification sub-index in the pandemic-affected year 2021 (displacing the US). The results also show that size need not be an impediment to economic diversification as several of the top 10 countries are relatively small economies that were able to diversify their economic output base and trade. Furthermore, innovation and adoption of new technologies are an essential ingredient for greater diversification, with many top-ranked nations also noticeable innovators/ early adaptors of technology.

## Overall, regional rankings held steady even during the pandemic years though the scores were much lower:

North America topped the list while Sub-Saharan Africa remained a laggard. The analysis highlights that while commodity dependent nations have made gains in both output and trade diversification sub-indices over time, revenue diversification has been holding back overall advances for many. For example, tax revenue as a percentage of GDP in Norway, highly ranked in the revenue sub-index, stands at a high 30%+ and compares to single digit readings in Bahrain, Iran or Kuwait, to name a few countries. Three oil producing nations continuously remain in the bottom 10 nations across the period. Meanwhile, the MENA region has recorded an improvement towards the latter part of last decade, supported by the acceleration of many oil producers' diversification plans. In terms of diversification scores by income class, the results are unsurprising, with the top 25 highly diversified nations mostly high-income economies, except for China (ranked 2nd in 2021) and Mexico (ranked 25th) both of whom fall in the upper middle-income group. The low-income nations group have the lowest scores across all components of the index.

## How did the COVID-19 pandemic impact economic diversification?

The EDI data provides important insights on the impact of the COVID-19 economic shocks. The pandemic adversely affected nearly every sector of the economy, but the growth recovery paths are now diverging:

low-income developing nations are taking longer to recover from the impact of the pandemic, remaining more vulnerable to external shocks (vis-à-vis other developed nations).

**Both agriculture and services sectors** suffered from the initial strict lockdowns when face-to-face activity came to a halt, but the rebound in agriculture was faster thanks to government support in addition to increased global production of major commodities as well as trade recovery and higher food prices.

**Manufacturing** was more resilient than services, and countries with stronger manufacturing systems were in general associated with lower projected output losses.

**The trade in goods** recovered to almost pre-crisis levels one year after the pandemic hit, suggesting some resilience in global value chains, meanwhile services trade continues to be sluggish.

While the pandemic also affected small and medium sized enterprises (SMEs) more than large firms, there has been significant pandemic-induced scarring that could lead to further divergence in economic development (both across countries, and within). The pandemic has underscored the need for trade diversification (both products and partners) and the enhancement of supply chains. It also highlighted that a country needs a broader tax base to have the necessary fiscal space to rollout emergency assistance.





The EDI findings also show that commodity dependent nations are present across all regions: Sub-Saharan African nations dominate (almost a 3rd of the total number of nations covered), followed by the Middle East and Latin America; among commodities, fuels remain the group of most-exported commodities. More than one-third of those classified as commodity dependent nations in the EDI fall under the high-income economies and, interestingly, most of these are dependent on fuel exports. Tracking the progress of diversification in commodity dependent nations, the report finds that while the MENA region has a relatively low score, it has recorded the fastest pace of increase in EDI score. Furthermore, within MENA, the GCC region has seen a significant improvement in its EDI scores over the 2000-2019 period, supported by its diversification efforts. Effectively, a conscious effort has been placed on increasing private sector non-oil share in GDP, in addition to introducing revenue enhancing measures like VAT and excise taxes. Another key finding is that the higher the resource rents as a percentage of GDP, the lower the EDI score- a premise that holds true in both 2000 and 2021. While many countries have improved on their EDI scores, this improvement was not to levels proportionate to the fall in resource rents.

## **Globally, economic diversification may have taken a hit during the COVID-19 pandemic affected years, but the pandemic has also shown how economies and sectors can adapt to shocks.**

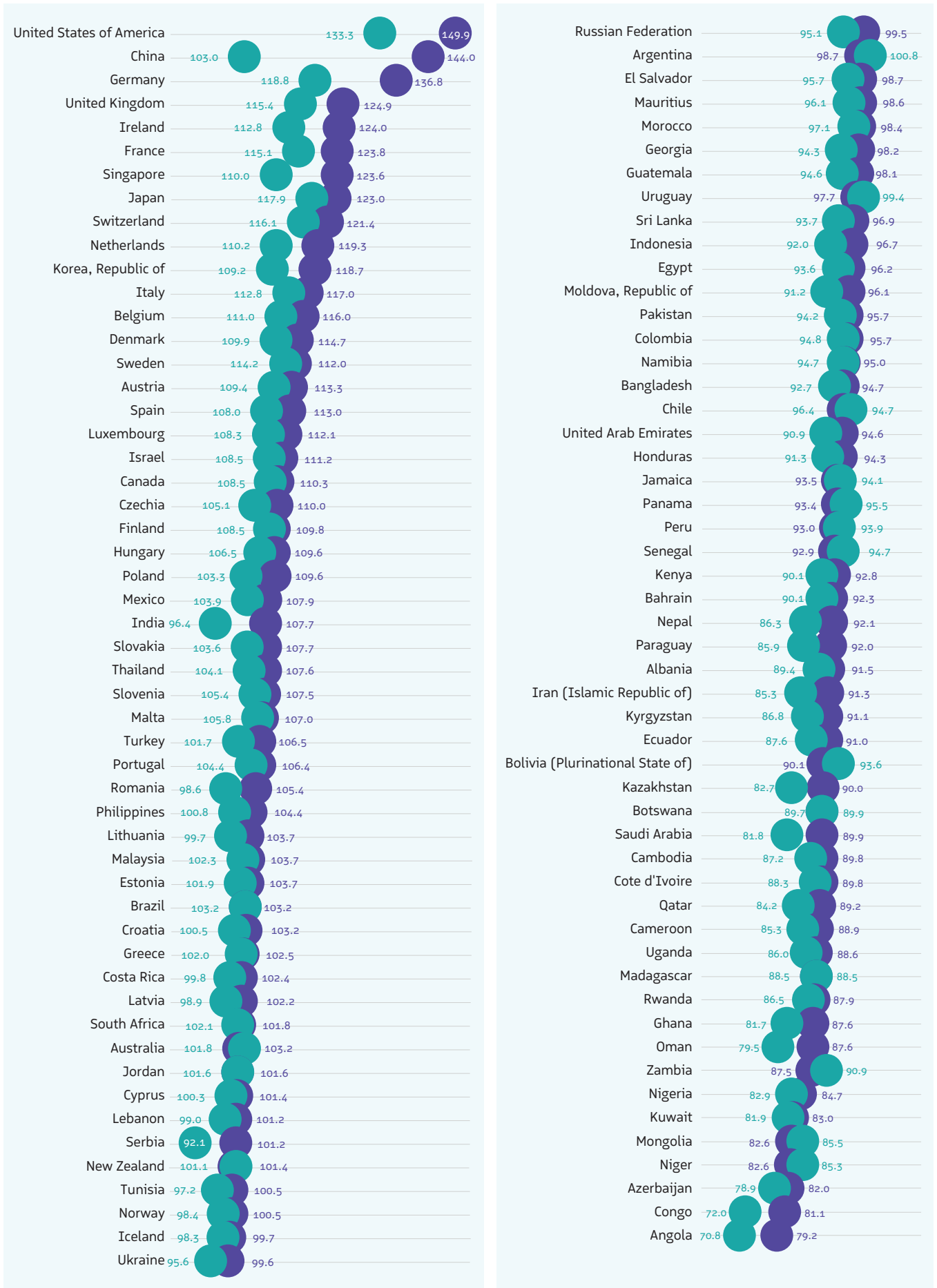
With the digital economy an integral part of day-to-day life now, digital infrastructure and connectivity indicators could provide an insight into future diversification paths. Lastly, for the lower ranked regions like MENA and Sub-Saharan Africa, regional integration of energy and transport/logistics infrastructure would allow countries to become more integrated not only among themselves but also with the global economy, thereby supporting diversification.

With its aim as a data-driven policymaking instrument, the MBRSG's Global Economic Diversification Index will continue to track and assess economic diversification globally, expanding in scope and coverage. The key objective of the pioneering index is to equip policy makers around the world, with a robust measure to assess progress towards economic diversification and identify areas for policy reform and interventions. In doing so, it also aims to provide the global research community with datasets that inform policy research and scholarly discourses. Collectively, the philosophy of the EDI is to enable access to overtime data and analysis that contributes to better economic policy on national, regional and global levels.



## EDI Scores 2000 vs 2021

● 2000 ● 2021



# Chapter 1

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## Economic Diversification Index 2023



What are its components?  
Why is it important?  
What are the main findings?

Economic diversification has gained traction in major commodity producing nations given its multiple benefits including to macroeconomic stability, economic growth, job creation and development alongside the promotion of greater private sector activity, more sustainable public finances as well as greater skill diversity in the labour force. All the while research about economic diversification centers around the determinants of economic diversification and the impact of policies on economic development, with country specific studies undertaken to understand growth trajectories and explore drivers of diversification.

However, despite policy interest in economic diversification, there is no uniformly agreed upon or available measure or index of economic diversification. Identifying this gap in the literature, **the first edition of the Global Economic Diversification Index** was published in 2022. It measured and ranked countries on the extent of their economic diversification from a multi-dimensional angle, exploring diversification of economic activity, international trade as well as diversification of government revenues (away from a dependence on natural resource or commodity revenue) for a total of 90 nations across the 2000-2019 period.

This report examines a wide spectrum of commodity dependent nations, in addition to the subset of oil and gas resource-based economies. Commodity dependent nations have been identified using **two common measurements:**

**a country is resource dependent if over 60%** of its total merchandise exports in value terms consist of natural resources<sup>1</sup> (UNCTAD; note that the IMF/ World Bank refer to a minimum threshold of 25%) and

The ratio of natural resources rents to GDP is **above 10%**<sup>2</sup>

**Furthermore, these nations' tax revenues as a percentage of GDP fall mostly below 20%.**

<sup>1</sup> Share of agricultural products or fuels (by SITC) in total merchandise

<sup>2</sup> The list of commodity dependent nations is specified in the Appendix.







**The EDI provides a basis for countries to compare themselves with their regional and local peers, with countries with similar resource endowments as well as internationally with more diversified countries.**

Given the importance of peer comparisons, the EDI is designed to allow countries to visualize their global ranking on each measure of diversification (production, government revenue, trade), across regional and income groups and within their natural resource grouping (e.g., OPEC). The EDI allows oil-exporting and other commodity exporting countries to measure their existing state of economic diversification and provide insight on the factors that can foster or, alternatively, impede diversification.

For the sake of transparency and for the EDI to be 'reproducible research' it is **solely based on publicly available indicators, data and information**. The set of indicators and sub-indicators of economic diversification has been defined based on research, analysis and the existing literature on economic diversification (detailed in the previous edition of the EDI). It should be noted that the EDI is based solely on **quantitative indicators**, with **no survey or perception indicators**, thereby providing a quantitative benchmark and ranking of the economic diversification of countries. The full list of indicators and its metadata is detailed in Appendix A<sup>3</sup>.

This year's report, the analysis extends to 2020-21, the Covid affected years, as countries adjusted to a new normal of supply constraints and lower output across most of the globe.

Furthermore, the coverage has been expanded to include more countries (105 in total, including more nations across country groupings).

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<sup>3</sup> Additional information on the metadata can be found on the EDI website: [www.EconomicDiversification.com](http://www.EconomicDiversification.com)

# Main results

Overall EDI rankings reveal that the top 10 nations have remained the same, despite economies being impacted by Covid19, though there have been some changes to the specific rankings. This result is intuitive: well diversified economies can weather shocks and tend to be more resilient to unexpected events such as pandemics.

**The United States, China and Germany** have held on to their top 3 positions. While in 2019 the US had a 21.6-point difference from the second ranked China, this gap has narrowed by 2021, when there is just a six point difference between the two nations.



**The US leads the overall index**, thanks to its strength in both the output and trade sub-indices.




**China managed to close the gap in 2021** supported by gains in the trade sub-index: China surpassed the US to become the top performer in the trade sub-index in 2021.



**Germany's strength comes from its performance in the trade sub-index foremost**, given its position as one of the largest global exporters.

The nations that rank 4th to 10th have only a six point difference between them, highlighting the strength of diversification among highly ranked countries (i.e., very slight difference in the underlying performance).



As seen in the previous edition of the EDI, all the top-ranked countries are developed and high-income nations, drawn mostly from Western Europe (other than the US) and three from East Asia (Japan, Korea and Singapore). A few outcomes stand out regarding the composition of the top-ranked nations:

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- **The emergence of China:** its entry to the WTO in 2000 meant that the nation's ranking within the trade sub-index continued to improve over time: though it appeared among the top-15 diversified nations in 2006 and top-10 in 2007, it had been among the top 10 ranked nations within the trade sub-index during the entire duration of 2000-21.

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- **The performance of services and financial services-led nations** like Singapore and Switzerland alongside the highly traditional industrialized nations, underscores the potential for nations to develop and increase output diversification beyond traditional activities, thereby enabling “catch up” with advanced nations.

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- **Innovation and adoption of new technologies** are an essential ingredient for greater diversification<sup>4</sup>. It is no surprise that many of the top ranked EDI nations also feature as top performers in the WIPO's Global Innovation Index 2022 (Switzerland tops the list, followed by the US, Sweden, UK and the Netherlands; China is near the top 10 in overall rankings, but has multiple entries in the selection of biggest science and technology innovation clusters in the world).

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- **Size need not be an impediment to economic diversification.** Several of the top 10 countries, Ireland, Netherlands, Singapore, Switzerland are relatively small economies that were able to diversify their economic output base and trade.

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<sup>4</sup> With the WEF's Future of Work 2020 report estimating that the 97mn new jobs created will require skills around machine interaction and algorithmic expertise, it is imperative for developing nations to include innovation and technology in their long-term strategic plans for the economy. Though many developing nations have national science, technology and innovation strategies on paper, this needs to be translated into reality through effective implementation and good governance. Else, the gap between advanced and developing nations will continue to widen.

Table 1.1. Top 10 nations, EDI

	2000	2004	2008	2012	2016	2019	2021
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

United States	United Kingdom	Ireland	South Korea
Germany	France	Sweden	Belgium
Japan	Singapore	Netherlands	
Switzerland	Italy	China	

Table 1.2. Bottom 10 nations, EDI



The lowest EDI ranked countries are all highly commodity or natural resource-dependent countries. Three oil producing nations continuously remain in the bottom 10 nations across the period.

It needs to be pointed out that though Saudi Arabia and Qatar were in the bottom 10 in the 2000s, policy reforms have led to significant improvements across the trade and revenue components, with Saudi Arabia exiting from the lowest 10 ranked nations in the past decade.

However, these nations continue to be in the bottom 25th percentile as of 2021. Furthermore, other than GCC nations, Azerbaijan and Kazakhstan (which was in the bottom 10 ranking in 2000), all other nations belong to the lower middle income economies category or lower (and have remained there).

In 2021, the average score of the (unweighted) Economic Diversification Index (EDI) stood at 101.3 compared to that of the highest performance, United States, at 149.9. This compares to an average score of 97.5 and a top score of 133.3 in 2000.

Overtime, the gap between the most and least diversified nations have mostly widened, though in the Covid-affected 2020-2021, the gap narrowed.

The EDI evidence does not suggest that there is no convergence in economic diversification over time, with the least diversified countries undertaking limited diversification efforts, while the high diversifiers continuing with diversification, particularly through output diversification.

Table 1.3. Top 10 average & lowest 10 average EDI scores

	2000	2004	2008	2012	2016	2019	2020-21
Top 10 average	116.5	119	123.3	125.2	126.6	129.7	128.8
Lowest 10 average	79.6	80.9	80	81.2	86.1	83.6	84.1

Table 1.4 EDI scores, by region, 2000 to 2021

	2000	2004	2008	2012	2016	2019	2020-21
North America	120.9	121.7	126.9	129.8	131.9	134.3	130.5
Western Europe	108.9	110.3	112.3	111.8	113.3	114.2	113.9
East Asia Pacific	101.4	103.2	104.1	106	107.2	108.2	107.9
Eastern Europe and Central Asia	96.3	97.8	99.1	99.9	101.2	101.2	101
South Asia	92.7	94.6	95	95.8	96.9	97.4	97.4
Latin America	95.7	95.3	95.6	96.2	97.4	97	96.8
MENA	92.3	92.7	92.8	94	97.9	97.5	97.4
Sub-Saharan Africa	87.4	88.5	88.3	88.9	90.9	89.5	89.4

Least Improvement  Most Improvement

Table 1.4 highlights the impact Covid19 across the globe, with the scores lower across all regional groupings.

Many nations attempting to move away from dependence on commodities had diversified into services-based sectors like tourism, trade, logistics, transportation and the like which were more severely hit in the past three years, thereby placing temporary brakes on diversification efforts

(this will be discussed in detail in Chapter 3, which focuses on commodity dependent nations).

An average of scores for 2020-2021 has been used instead of considering just 2021, when many countries were undergoing phases of recovery, albeit at different speeds.

# Output, Trade and Revenue Rankings

The EDI comprises three sub-components: output, trade, and revenue. Table 1.5 lists the top 10 nations for the year 2021 – ranked for overall EDI and by sub-index.

Table 1.5. Performance by sub-index - top 10 nations, by overall EDI and output, trade, and revenue sub-indices (2021)

	Output Sub-index	Trade Sub-index	Revenue Sub-index	EDI (Avg of the 3 sub-indices)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

United States	Denmark	China	New Zealand
Ireland	France	Italy	South Africa
Switzerland	United Kingdom	South Korea	Luxembourg
Singapore	Netherlands	Finland	Croatia
Japan	Norway	Iceland	Hungary
Germany	Sweden	Belgium	

### **THE OUTPUT SUB-INDEX :**

Though the services sector was the most affected by the Covid19 pandemic, the impact on financial services was relatively muted given the substantial monetary policy support (via expanded lending operations, asset purchase programmes etc). This has enabled financial hubs like Switzerland and Singapore, where services as a percentage of GDP stood between 65-75%, to remain among the top ranked even in 2021; high loadings in the principal components analysis for the services indicator within the output sub-index support this finding. Even when comparing the Covid-affected 2021 results to the initial year, just under 80% of the countries tracked have improved their output score.

### **IN THE TRADE SUB-INDEX:**

In the trade sub-index, the leading exporting nations stand among the top 10, with the top 3 the largest exporters globally. Given the initial months of lockdown in 2020, there was a drop in overall trade across all nations in the top 10 in 2020; however, global trade recovered in 2021, with some nations crossing their pre-pandemic readings. China, for example, reported a 30% yoy increase in overall goods trade (sum of exports and imports) and was the third largest services exporter during 2021, supporting its rise to the top-spot in the trade sub-index, displacing the US. Several non-oil exporting nations in the Middle East have performed better than the GCC within the trade sub-index – notably Morocco, Tunisia and Jordan which have a relatively more diversified export basket and diverse set of trade partners. Within the trade sub-component, around four-fifth of the nations made significant improvements over the entire period. When comparing 2021 with 2000, the improved scores of major service exporting nations is evident. In addition to developed nations like the United States and Germany, significant improvements have been made across India, Singapore, and the UAE (these 3 nations have together accounted for close to 10% of global services exports in 2021). From the Middle East, both UAE and Saudi Arabia have seen a significant jump within the trade component (unsurprising, given the change in policy direction to support non-oil sectors).







**THE REVENUE SUB-INDEX** Over the 2000-2021 horizon, the revenue sub-index has been dominated by Nordic countries, given their high levels and diversity of taxation which then translate into their public funding of essential sectors like healthcare, education, child and elderly care and so on. At the other end of the spectrum are many of the oil producing nations (be it from the GCC or Africa), or other commodity dependent nations (like Côte d'Ivoire) that have seen the least diversification in terms of sources of revenue. Not only has the dispersion of scores been the lowest among the sub-components, but the gap between the highest and lowest scores have also declined as the lowest ranked countries undertake fiscal and tax reforms.

**Prior to Covid, there was a clear divergence pattern in diversification paths:**

North America, Western Europe and East Asia Pacific countries were much ahead of their peers, with the former progressing at a much faster pace than the rest.

The MENA region had seen an improvement towards the latter part of the 2010s decade as many oil exporters began to accelerate their diversification plans.

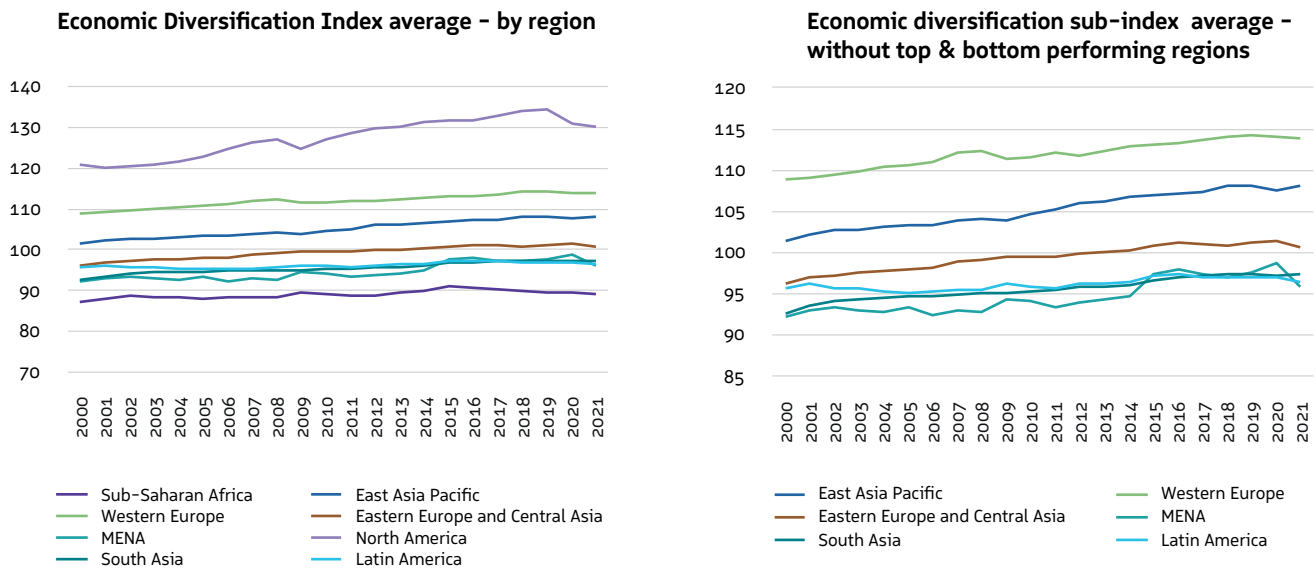
The overall scores and rankings of the regions held steady even after the impact of Covid19:

**North America topped the list,** despite being the most affected during 2020-21 (score declines by 3.8 points in 2020-21)

**Sub-Saharan Africa stagnates at the bottom of the stack** (though the score declined by just 0.1 points).

# Regional Performance Over Time

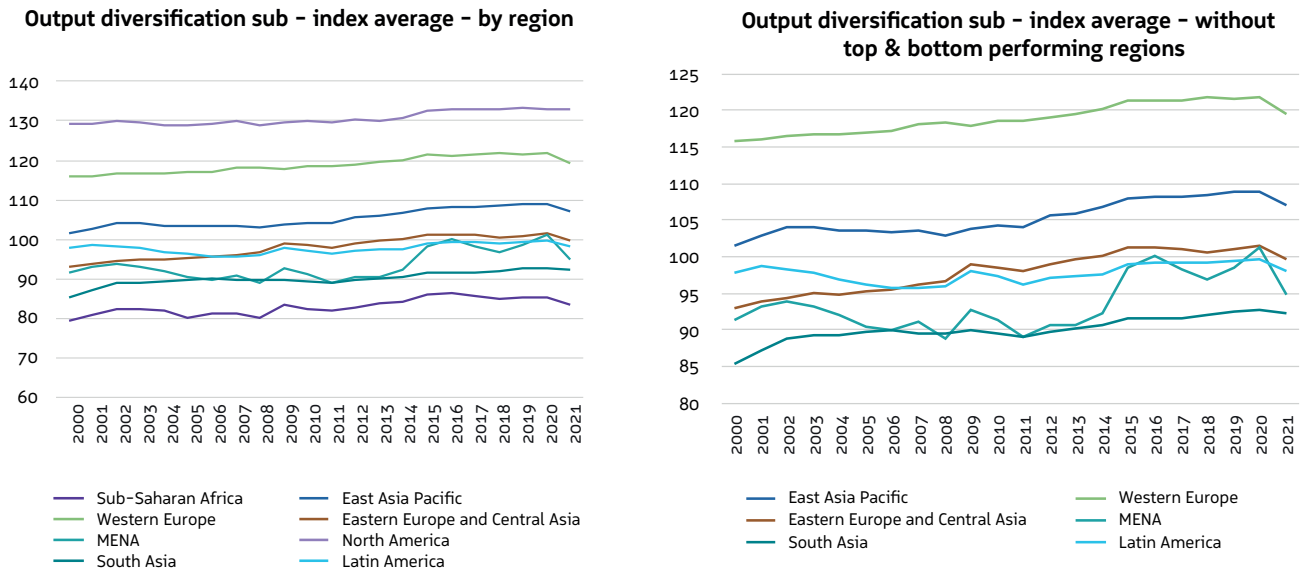
Chart 1.1. Performance of the Economic Diversification Index across regions, 2000–2021



The overall picture of regional performance results has not changed much from the previous edition. Across overall EDI (and most sub-components), the main finding is that North America is the best-performer (unsurprising considering the top ranking of the US across all years), outranking Western Europe.

Chart 1.1 shows that Sub-Saharan Africa region remains the worst performer across the 2000–2021 period: though the region’s average scores mostly improved over time, **COVID-19 negatively affected the 2020–2021 scores**. South Asia’s performance has improved steadily over time, while the MENA region has seen more volatility in overall performance, with COVID-19 leading to a sharp drop in both output and trade sub-indices (however, overall scores have shown a reasonable improvement compared to the year 2000).

Chart 1.2. Performance of the output diversification sub-index across regions, 2000-2021



The global impact of COVID-19 is quite visible in the output sub-index in Chart 1.2, with a drop in 2020-2021. Excluding the best and worst performing regions, **South Asia's performance shows slow progress over time**. Considering the PCA loadings, while South Asia's growth in services as a percentage of GDP has been impressive

**52%**  
over 2016-2019



**53%**  
in 2020-2021

the region scores very poorly in the other two indicators which are positively correlated with the output sub-index:

it shows a **declining trend** over time for the indicator of Medium and High Technology Manufacturing as a Percentage of GDP, while the Manufacturing Value Added per Capita average in the past 5 years is **over 1/8** of the reading for North America in the same period.

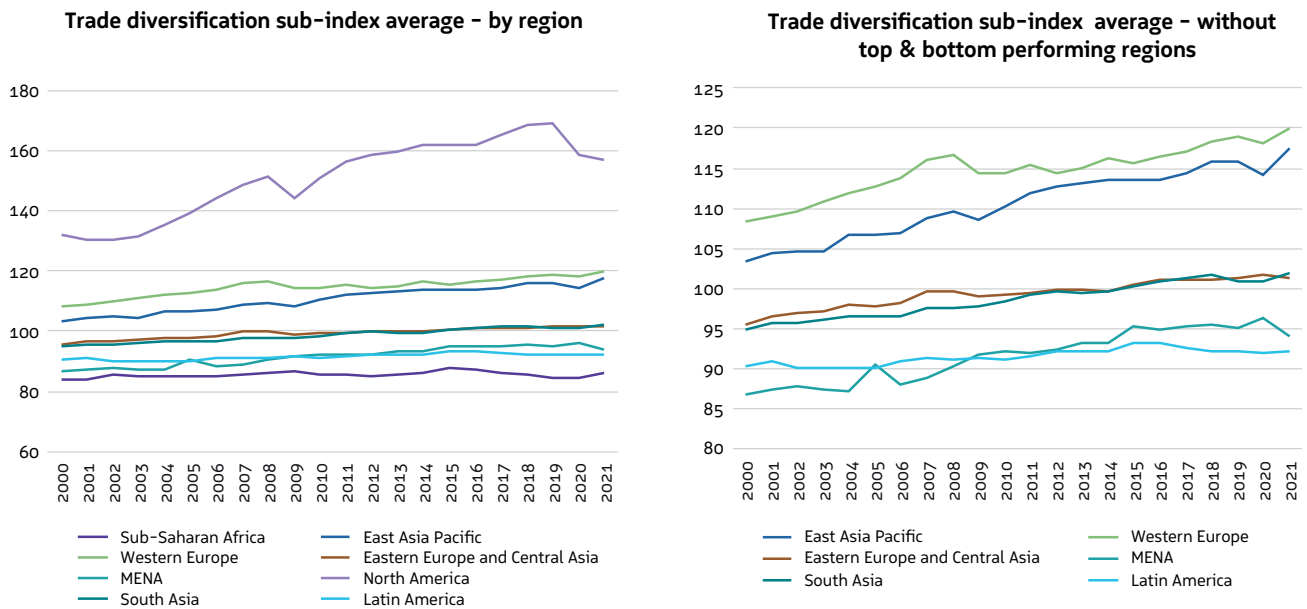
The MENA region has also been a laggard, with its performance highly volatile, reflecting fluctuations in oil prices: Resource Rents as a share of GDP remains the highest globally, even though it has inched down from

**19.3%**  
in 2000



**13%**  
in 2020-2021

Chart 1.3. Trade diversification sub-index across regions, 2000-2021



The performance of North America is leaps and bounds ahead of its regional counterparts in the trade sub-index (Chart 1.3). The East Asia Pacific region has seen a significant improvement in the trade sub-component (supported by its move to the production of high-technology export products), in tandem with Western Europe.

Eastern Europe's scores have inched up from an average of

**96.5** in 2000-2003  **101.2** in 2016-2019  
(remaining steady at **101.5** in 2020-2021).

The MENA region has seen a steady increase in the trade sub-index over time, driven by multiple factors, including:

drop in its fuel exports as a share of merchandise exports

**43%**  
2000 - 2003



**32.7%**  
2020 - 2021

medium and high technology manufactured exports as a percentage of manufactured exports

**25%**  
2000 - 2003



**36.9%**  
2020 - 2021

an increase in manufactured exports as a percentage of total merchandise exports

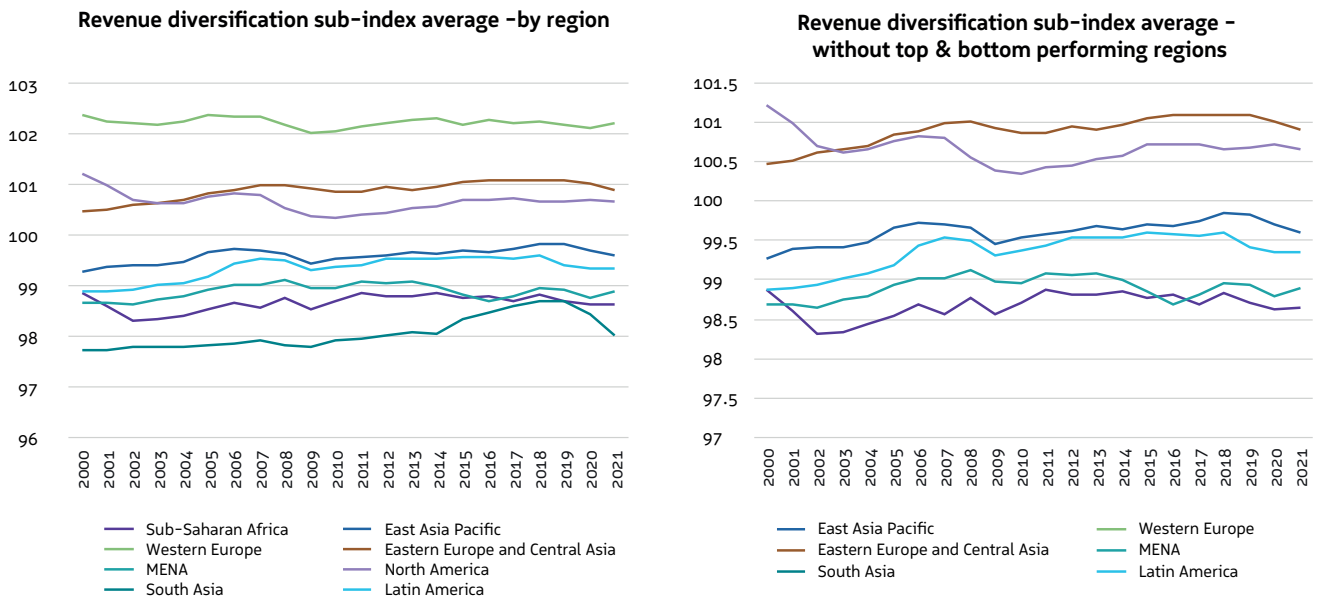
**37.6%**  
2000 - 2003



**42%**  
2020 - 2021

<sup>5</sup> The former loading negatively and latter two loadings positively correlated with the trade sub-index. More details about factor loadings are in Appendix A.

Chart 1.4. Revenue diversification sub-index across regions, 2000–2021



Western Europe is the leading region for the revenue sub-index, with North America only in the third spot behind Eastern Europe and Central Asia (Chart 1.4).

The sub-index has registered very marginal increases across most regions except during the most recent Covid-affected 2020 when all regions posted a decline.

**South Asia, the worst performing region,** maintained its position over time despite some improvements in recent years: for example, total revenue as a % of GDP is the lowest among all regions but has improved from

**13%** in 2000-03  **16%** in 2016-19  **15%** in 2020-21

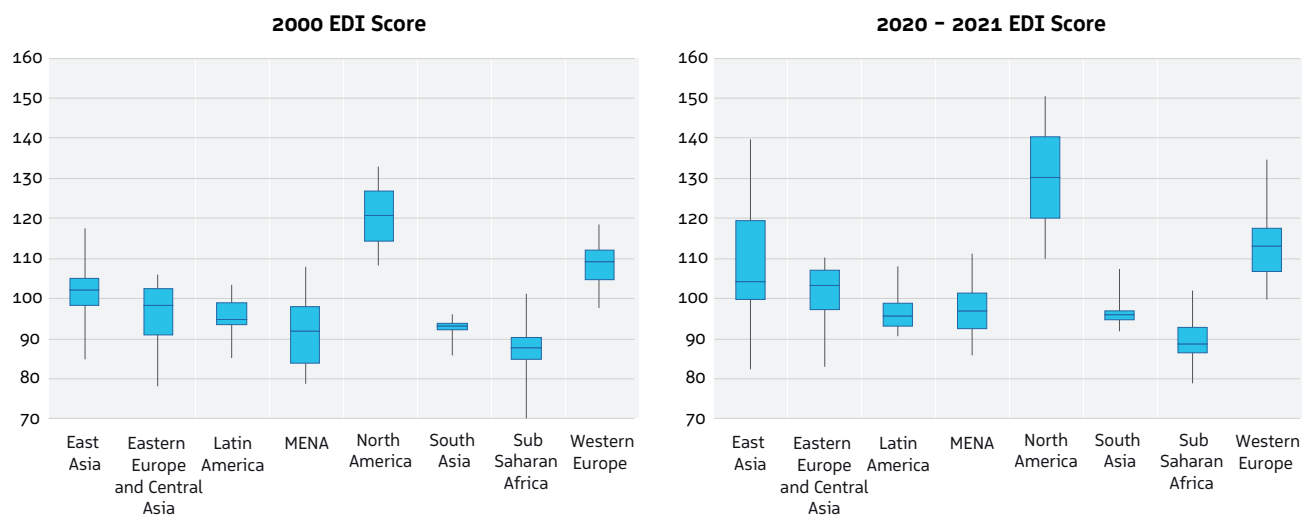
It also has the lowest share of income tax as a percentage of revenue (4.3% in 2020-21, around one-third of that of Western Europe during the same period).

Furthermore, it continues to be reliant on trade revenue (negatively correlated to the revenue diversification sub-index): as % of GDP, trade revenue stands at

**1.3%** in 2020-21 below only **Sub-Saharan Africa's 2.6%**

The wide disparities are striking when regional disparities are analyzed, as can be seen in Chart 1.5.

Chart 1.5. Regional disparities in EDI scores (2000 vs 2020-21)



Across all regions, the median score is the **lowest in Sub-Saharan Africa** for both 2000 and 2020-21. When comparing these years, while all regions have seen an increase in median scores, the least improvement was recorded in Sub-Saharan Africa.

In 2000, the gap between the maximum and minimum score was the **highest in East Asia** (Japan's highest score was **32.4** points ahead of the lowest scorer in the region Mongolia).

In 2020-21, while East Asia's gap has widened further (**China is the highest ranked in 2020-21 and its gap with low ranked Mongolia widened to 57.4 points**), a similar picture is also evident in North America (given the top score of the US) and Western Europe. Interestingly, the gap has narrowed the most in Sub-Saharan Africa.

By comparing the inter-quartile range (height of the blue box), least variability is seen in South Asia and Latin America in 2000, and the most in MENA. The variation in scores has reduced only in 2 of the 8 regions: MENA (most, by 5 points) and Eastern Europe and Central Asia (by 1.4 points).

While the variation has increased the most in East Asia (evident from the chart), it is interesting to note that the distribution for East Asia is skewed to the right in 2020-21 (i.e. higher EDI scores are more spread out).

In this regional grouping, **the lower-income and commodity producing nations score lower than the median value; Mongolia the lowest at 82.5 and the highest score is 139.9 for China.**

Mongolia the lowest at **82.5**      China the highest at **139.9**

In Western Europe, there are 4 nations that score higher than 120 in 2019 (top performer being Germany), while the commodity producing nations (Norway, Iceland) were the lowest scorers within this grouping.

Chart 1.6. EDI performance by income class (& by sub-index) over time



The results are unsurprising when it comes to diversification scores by income class (Chart 1.6).

**The top 25 highly diversified nations are high-income economies, except for**

China ranked **2nd** in 2021      Mexico ranked **25th** in 2021

both of whom fall in the upper middle-income group.

The low-income nations group have the lowest scores across all components of the index: their lack of improvement even in the trade sub-index stems from being less integrated into the global economy. A few high and upper middle-income nations often feature in the bottom 25% of the index.

For example, in year 2021, the 10 lowest-ranked nations were all commodity producing nations (except one):

**that included both high-income oil exporting nations** (like Oman and Kuwait) and

**upper-middle income nations** (like Azerbaijan),

as well as other **non-oil commodity producing nations** like Zambia and Niger (low-income).

A scatterplot of EDI and income level (measured by GDP per capita, PPP basis and transformed into log) for 2021 offers some interesting insights (Chart 1.7).

In the chart, it can be seen clearly that there is a positive correlation between EDI and GDP per capita. However,

being a high-income country does not imply a high economic diversification score.

A below-average EDI score is prominent among many high-income oil exporting nations (bottom right quadrant of the chart).

**Mexico and Malaysia** are examples of previously oil-export dependent nations that have successfully diversified (and now in the top-right quadrant of the chart) while **UAE and Norway** are nations in the process of increasing diversification, moving closer to the mean EDI score in 2021.

Similarly, the lowest ranked high-income country (Kuwait in 2021) is around 60 and 25 points away from China (ranked 2nd) and Mexico (ranked 25th) respectively.

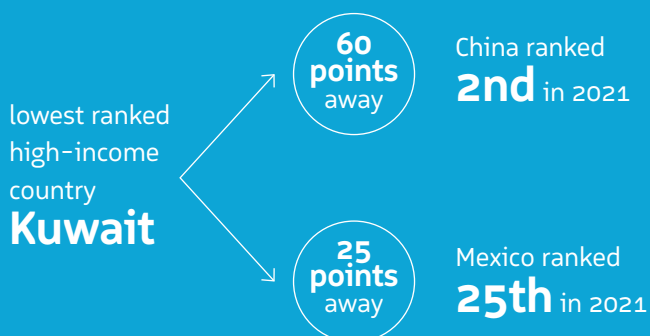
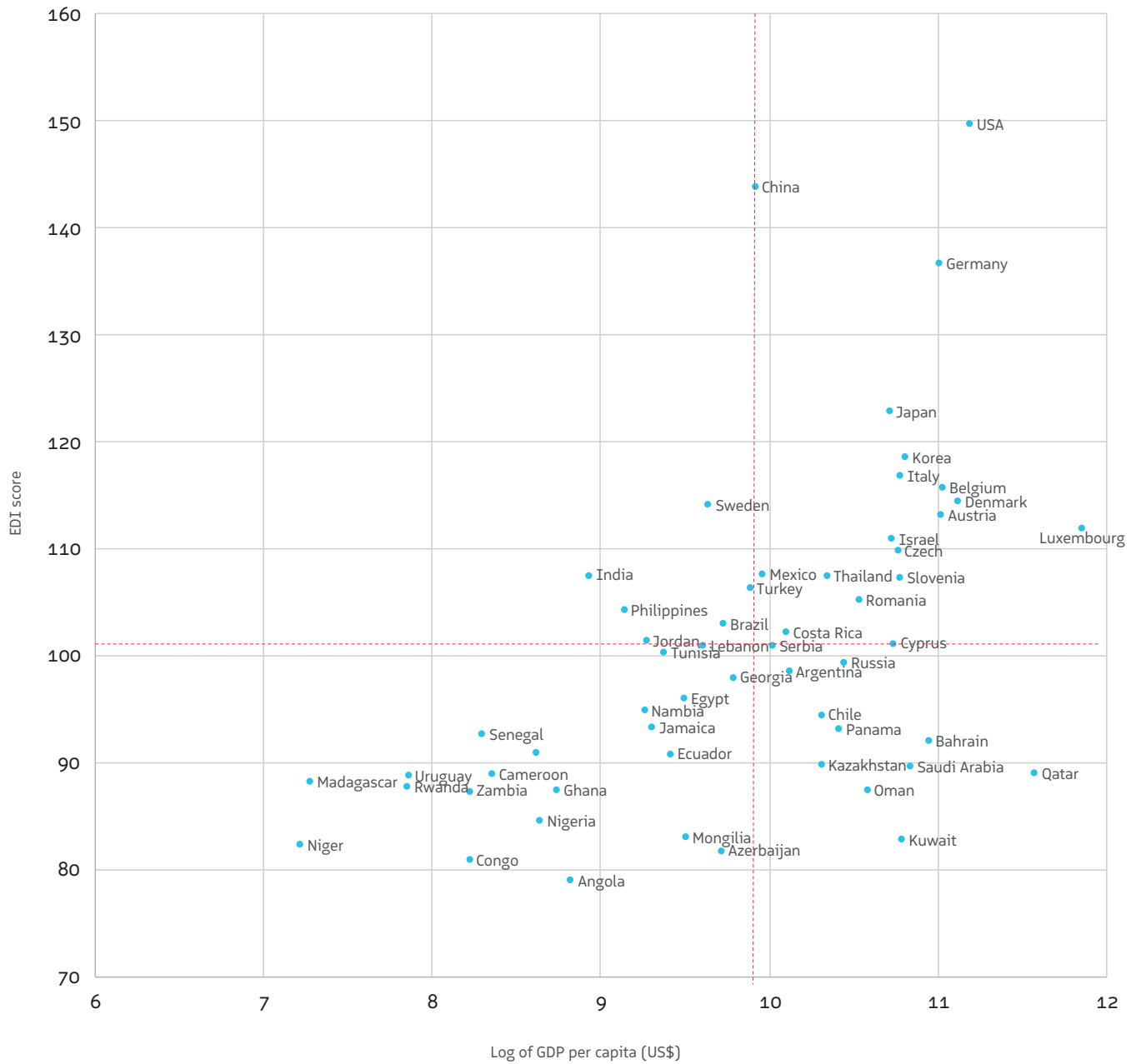




Chart 1.7. EDI performance in 2021, relative to GDP per capita



## Chapter 2

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# Impact of Covid19 on Economic Diversification

The world has borne the weight of three major shocks during the past three years:



**the Covid19 health pandemic,**

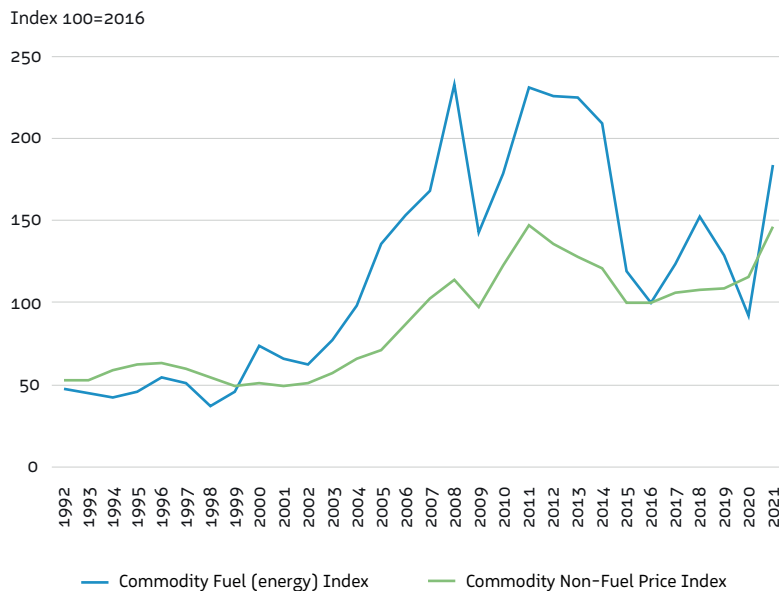


**volatile commodity prices**



**and the ongoing Russia-Ukraine war** (in 2022, raising food security concerns amid rising costs of living globally).

Chart 2.1: The surge in both fuel and non-fuel indices during 2020-2021



Source: IMF World Economic Outlook database, Oct 2022

Chart 2.1 highlights the surge across both fuel and non-fuel indices: oil prices collapsed by 31.7% in 2020, with weak oil demand and large inventories major concerns for oil exporting nations, but then surged by 66% in 2021. Meanwhile, non-fuel commodity prices ticked up by 6.5% and 26.3% in 2020 and 2021 respectively. The Covid19 crisis, unlike previous instances of crises, generated both a supply and demand shock. The supply shock resulted from output cuts, factory closures, supply chain, trade and transport disruptions, resulting in higher prices for disrupted material supplies, along with a tightening of credit. The demand shock resulted from lower consumer spending (from quarantines and ‘social distancing’, and lower incomes resulting from workplace job losses, disruption & closures), along with delayed investment spending, both generating a slowdown in aggregate demand.

Even though Covid cases have declined substantially compared to 2020-21, its effects are still evident: widespread, temporary lockdowns were common in China during 2022, which led to weakened domestic demand and spillover effects as fewer exports for foreign nations. While supply chain pressures have declined from Covid-peaks, it remains relatively elevated. The disparity in global vaccination rates (about 26% in Africa versus about 66% in other regions) still threaten the resurgence of virus variants and potential economic recovery.

# Covid19 and impact on output

The IMF, in its latest World Economic Outlook (issued in October 2022), forecasts global growth to slow to 3.2% in 2022 and further lower to 2.7% in 2023<sup>6</sup>, below average growth of 3.6% during 2000-21. The year 2020 saw global output decline by 3.1% (visible across all regional groupings) while 2021 was characterized by a bounce back in growth (+6%, the fastest pace in nearly 50 years) alongside rising (and persistent) inflation driven by food and fuel. Part of the economic recovery can be traced back to trade recovery in H2 2020. Also evident in 2021 was the divergent growth recovery paths:

Advanced nations growing at **5.2%**

Middle East and North Africa at **4.2%**

Sub-Saharan Africa at **4.6%**.

The low-income developing nations were taking longer to recover from the impact of the pandemic, remaining more vulnerable to external shocks (vis-à-vis other developed nations). Furceri et.al (2021) find that output losses were larger in countries with lower GDP per capita, more stringent containment, higher deaths per capita, a larger tourism share, more liberalized credit markets, higher pre-crisis growth, and more democratic regimes.

The divergence in recovery stemmed, largely, from the policy capacity of nations, many of which had limited fiscal space and small tax revenue bases to roll out spending measures, healthcare quality (and preparedness) as well as the pace of vaccination.

The pandemic lowered revenues from taxes and fees while raising spending, leading to a substantial deterioration in the fiscal deficit across the globe and growing levels of debt.

While advanced economies deployed fiscal and monetary support equivalent to about 25% of their GDP since the beginning of 2020, in emerging market economies and low-income countries the equivalent figure is around 10% and 4% respectively of much lower GDP readings<sup>7</sup>.

## The COVID-19 crisis adversely affected nearly every sector of the economy.

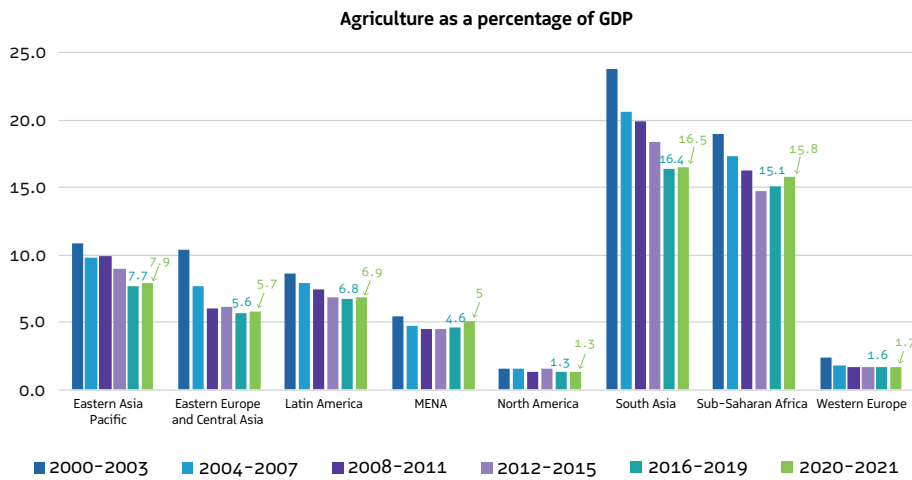
Both agriculture and services sector suffered from the initial strict lockdowns when face-to-face activity came to a halt. The crisis disproportionately affected the poorest and the most vulnerable, youth and women, who were larger part of the workforce in these sectors (sometimes as informal labour, making their re-entry into the workforce a big question mark). Household income plummeted as labour force participation fell, also affecting consumer demand.

<sup>6</sup> The IMF estimates a global output loss of about USD 4trn between end-2022 and 2026, the size of the German economy, because of the Covid19 pandemic and the war on Ukraine alongside a cost-of-living crisis (given high food and energy prices).

<sup>7</sup> Data from the IMF's Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic

# Pandemic effects on Agriculture

Chart 2.2. Agriculture sector rebounds post-Covid



While the agriculture sector was initially adversely affected by the absence of seasonal labour (migrants unable to travel) and disruptions in food supply chains, the sector rebounded thanks to increased global production of major commodities as well as trade recovery and higher food prices. Government support played a strong role in the sector's recovery: the OECD found that at least USD 157 billion was earmarked to the agriculture sector in 54 developed and emerging countries to support close to 800 measures undertaken by governments, with a large part of it going to food assistance. The study also found that gross farm receipts grew by 5% in the year 2020, with gains higher in emerging nations than OECD. As can be seen from the Chart, the sector's recovery was evident across all regions.

# Covid effects on industry and manufacturing

Painto (2021) finds that manufacturing showed greater resilience than services with respect to the pandemic, both in terms of production and exports, with high-tech industries more resilient than medium & low-tech industries<sup>8</sup>. UNIDO's Industrial Development Report 2022 further finds that **countries with stronger manufacturing systems are associated with lower projected output losses**. Overall, developing, and emerging industrial nations declined more strongly than industrialised economies, but divergence within the former was also more pronounced: least developed countries in Africa showing very little impact while India recorded a decline of more than 40% in industrial production after the initial pandemic shock.

**Essential goods producers (food, chemicals) and industries that witnessed high demand during the pandemic (pharma, computers, medical equipment) remained robust alongside capital-intensive high-tech firms that have bounced back from the initial impact (machinery, electrical equipment). Vulnerable industries are more labour-intensive (textiles, furniture, leather) and those capital-intensive firms affected by cross-border restrictions (motor vehicles, transport equipment).**

While onshoring of value chains was a topic of much debate during the initial days of the pandemic, OECD (2021) finds that

## the firms and economies that

## displayed the highest levels of resilience to shocks through international connectedness are those with agile and diverse links.

McKinsey Global Institute (2022) finds that Asian supply chains were able to bridge the drop in output of Western supply chains in 2020. However, no region is self-sufficient and the pandemic affected all regions both directly, and spillover and feedback effects: resource-rich nations are net importers of manufactured goods and services (roughly importing equally from Asia Pacific and Europe). Energy-rich MENA is dependent on other regions for 60% of crops needed for food consumption; Brazil and Argentina, that are two largest grain exporters, rely on fertilizer imports (almost 50% of potash imports from Russia and Belarus).

<sup>8</sup> Industries at both ends of the spectrum recorded severe declines i.e. low-tech industries like textiles, apparel, leather, wood products and printing (more integrated in the low value added activities of global value chains), as well as other high-tech industries like motor vehicles and other transport equipment (that require high-tech intermediate imports which was affected by the supply chain disruption). Both other low-tech industries (food and beverages) and high-tech industries (pharmaceuticals, computers) have performed well given the changes in consumer demand/ preferences.

# Covid affected MSMEs more than large firms

In terms of impact on businesses, micro, small and medium-sized enterprises suffered more than larger firms from the effects of the pandemic, owing to their limited access to finance, physical and digital infrastructure and to information on risk management.

A survey of **100 000 businesses across 51 low- and middle-income nations (during April-August 2020) found that Covid19 shock resulted in a negative impact on sales employment adjustments (mostly leave of absence, reduction in hours and not laying off workers), greater constraints for smaller firms and rising reliance on digital solutions<sup>9</sup>**

Aga and Maemir (2020) focused on firms in Sub-Saharan Africa, finding that while the impact of the pandemic was more pronounced in the region (compared to other regions), these firms were more likely to adapt to the shock, either by adjusting their operations or products and services. Fairlie et al (2022) find that firm closure rates for small businesses were higher than for large businesses in the first two quarters of the pandemic (using firm-level panel data from the California Department of Tax and Fee Administration), thereby leading to a sharp increase in the concentration of market share by large firms.

Most nations offered support for businesses, especially SMEs, which ranged from cash support/ grants to deferring loan payments and tax reliefs/ extensions among others. Most forms of government assistance provided tended to reduce firms' operating costs. However, borrowing increased and the resulting debt overhang could result in scarring effects becoming a drag on economic recovery. On the monetary side, policy support ranged from asset purchases (most used in advanced nations) and lending operations to central bank swap lines and lower bank reserve requirements in addition to lower interest rates (more common among emerging markets), which indirectly supported businesses and households.

While output has recovered, there has been significant pandemic-induced scarring: slowing human capital build-up<sup>10</sup>, rise in debt, poverty and inequality levels (wiping out previous gains over several decades) among others. **The COVID-19 pandemic exacerbated existing gender inequalities in employment rates and hours worked due to women's greater responsibility for child and elder care.** Not only have a higher share of women dropped out of the workforce at the start of Covid, but the ILO (2022) also estimates that in Q3 2022, global hours worked were 1.5% below pre-pandemic levels, equivalent to a deficit of 40 million full-time jobs (only in the US has hours worked exceeded the pre-crisis level since Q2 2022).

**Covid19 caused the first increase in global poverty since 1990:**

**in 2020 alone, the number of people living below the extreme poverty line rose by over 70 million<sup>11</sup> the largest increase at least since 1990. (i.e. less than USD 2.15 per day).**

Furthermore, the World Bank (2022) estimates that global income inequality has increased, with weak economic recovery in emerging markets resulting in between-country inequality returning to the levels of early 2010s; within-country income equality is also rising in emerging nations, especially given job and income losses among lower-income groups.

<sup>9</sup> See Apedo-Amah et al (2020)

<sup>10</sup> About 70% of children in low and middle-income countries are in learning poverty: i.e. at the age of 10, they are unable to read or understand a basic text (from a rate of 57% pre-pandemic). This generation of students hence risk losing USD 21trn in potential lifetime earnings in present value. (The State of Global Learning Poverty: 2022 Update, World Bank, Jun 2022)

<sup>11</sup> <https://www.worldbank.org/en/publication/poverty-and-shared-prosperity>





# Covid19 and impact on trade

Covid-19 led supply and demand shocks – weak demand alongside strict lockdowns<sup>12</sup>, cross-border restrictions, port closures and other logistical disruptions – caused international spillovers and led to a sharp collapse in trade in the early months of the pandemic. While trade in goods recovered to almost pre-crisis levels one year after the pandemic hit (WTO), suggesting some resilience in global value chains, services trade continues to be sluggish. According to UNCTAD (2022),

↘ **global trade declined** by about  
**USD 2.5 trillion**  
in 2020 (or by close to 9% yoy)

↗ the value of **global trade rebounded**  
**strongly to a record high of**  
**USD 28.5 trillion**  
in 2021 (+13% compared  
to pre-pandemic levels).

The pandemic also weighed heavily on international maritime trade, disrupting operations, and causing supply chain pressures. As a result, the volume of maritime trade slumped by 3.8% in 2020.

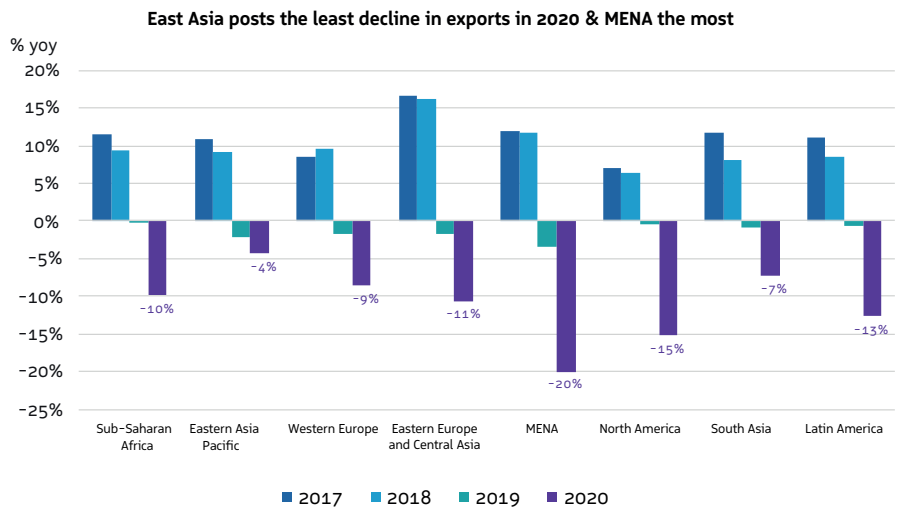
<sup>12</sup> The IMF World Economic Outlook report published in April 2022 finds that lockdowns in a country's trade partners on average accounted for up to 60 percent of the observed decline in imports in the first half of 2020.

# Trends by region

Data of the 105 countries in our analysis shows the varied impact across regions: in general, **economies in East Asia were the first to experience declines in trade and the first to recover**

(Chart 2.3 on the right), enabling them to post the lowest decline in 2020.

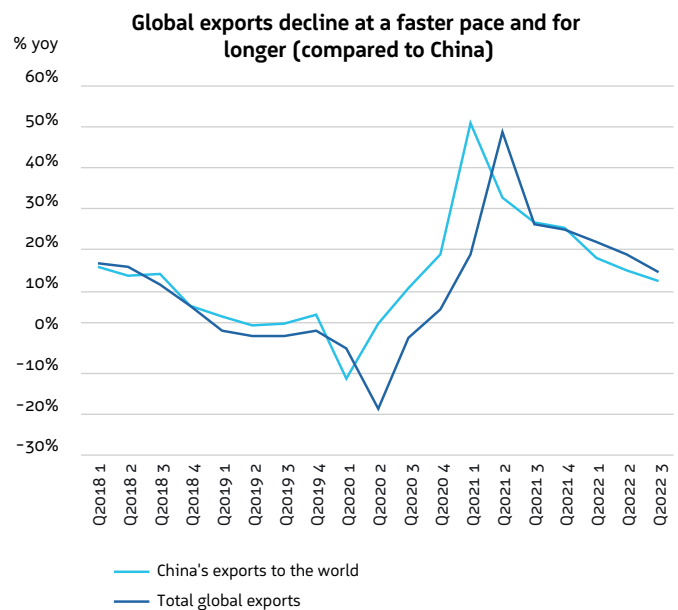
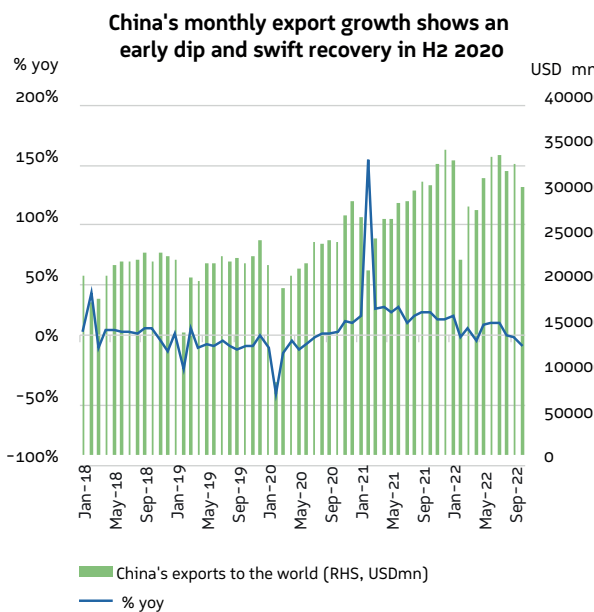
Chart 2.3. East Asia were the first to experience declines in trade and the first to recover



Like East Asian nations, China witnessed a quicker recovery than most countries (Chart 2.4 below: by mid-2020, exports from China were already above pre-pandemic levels), enabling it to clinch the position of a leader in global manufacturing exports. In contrast, developing economies in the rest of Asia witnessed a larger decline in the value of exports in 2020. As can be seen from the chart, pandemic-related disruptions also resulted in a sharp decline in exports from Africa

and Latin America in 2020, further heightened given the drop in commodity prices. While export levels fell in most countries in 2020 (also regardless of GDP per capita), interestingly, exports from the poorest nations rebounded the least in 2021: this may be due to a decline in the export competitiveness of the poorest countries during the pandemic<sup>13</sup>.

Chart 2.4. China's export performance in 2020-21 in relation to global exports



Source: WTO database

<sup>13</sup> This warrants further study; UNCTAD's Nicita, Peters and Razo (2021) have initiated a detailed analysis at the global level.

**Trade in agriculture** dropped during the initial lockdown in 2020 given the disruptions to supply chains and logistics; however, recovery progressed afterwards as the demand for food continued to rise.

**The manufacturing sector** witnessed both gains and losses depending on sub-sectors: sectors that supported work from home (like computers, electronics) picked up thanks to increased demand, as did trade in medical goods (such as PPE kits);

trade in **consumption goods** (luxury goods, footwear etc.) waned

while the **automotive sector** has still not fully recovered from the interruptions due to partial lockdowns, semi-conductor and chips availability and other factors. In general, exporting nations where the share of occupations that can be done remotely was lower experienced a more severe drop in trade flows (Espitia et al., 2021).

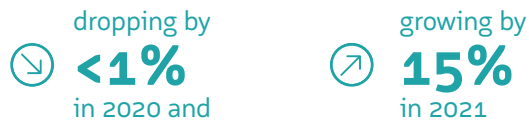
**Trade in manufactured goods** reached a record high in 2021 despite new disruptions to supply chains even as growing consumer spending placed more demands on them.

Declines in services trade was most evident across the globe as lockdowns were introduced.

**Tourism services was most visibly affected in Q2 2020, when it plunged by 81% yoy** (versus other services which dropped by just 8% during the period).

**Transport services also declined by 30%** in Q2 2020 thanks to restrictions to passenger travel, while commercial services sector was unevenly affected (financial, insurance and computer services remained almost unchanged while construction and recreational services posted double-digit declines).

**UNCTAD found that flows of services** (other than travel and transportation services) experienced limited impact during the 2020s,



By Q4 2021, total services trade was back at pre-pandemic levels.

Abiad et al (2020) find that more open economies experience larger spill overs from weak external demand<sup>14</sup>. Though there had been calls for export restrictions, increase in self-sufficiency and policies of reshoring production<sup>15</sup>, the resilience of global goods trade post-initial lockdown was quite evident. Merchandise trade recovered more quickly than GDP after the initial shock of COVID-19 (WTO). Multiple factors supported this trade resilience:

**Though supply chain worries prompted countries to introduce export restrictions to preserve supplies**, eventually countries opened up – the WTO reported that a majority of COVID-19-related trade measures recorded since the outbreak of the pandemic were trade-facilitating;

**Sectors adjusted and adapted to meet the needs of the pandemic** – be it textiles and clothing manufacturers making PPE kits, masks and gloves or airlines converting passenger flights as cargo delivery planes<sup>16</sup> (especially during times of shipping delays).

Overall, not only have nations' manufacturers diversified and adapted into new activities, but also remained resilient by expanding and facilitating trade in the later phases of the pandemic peaks.

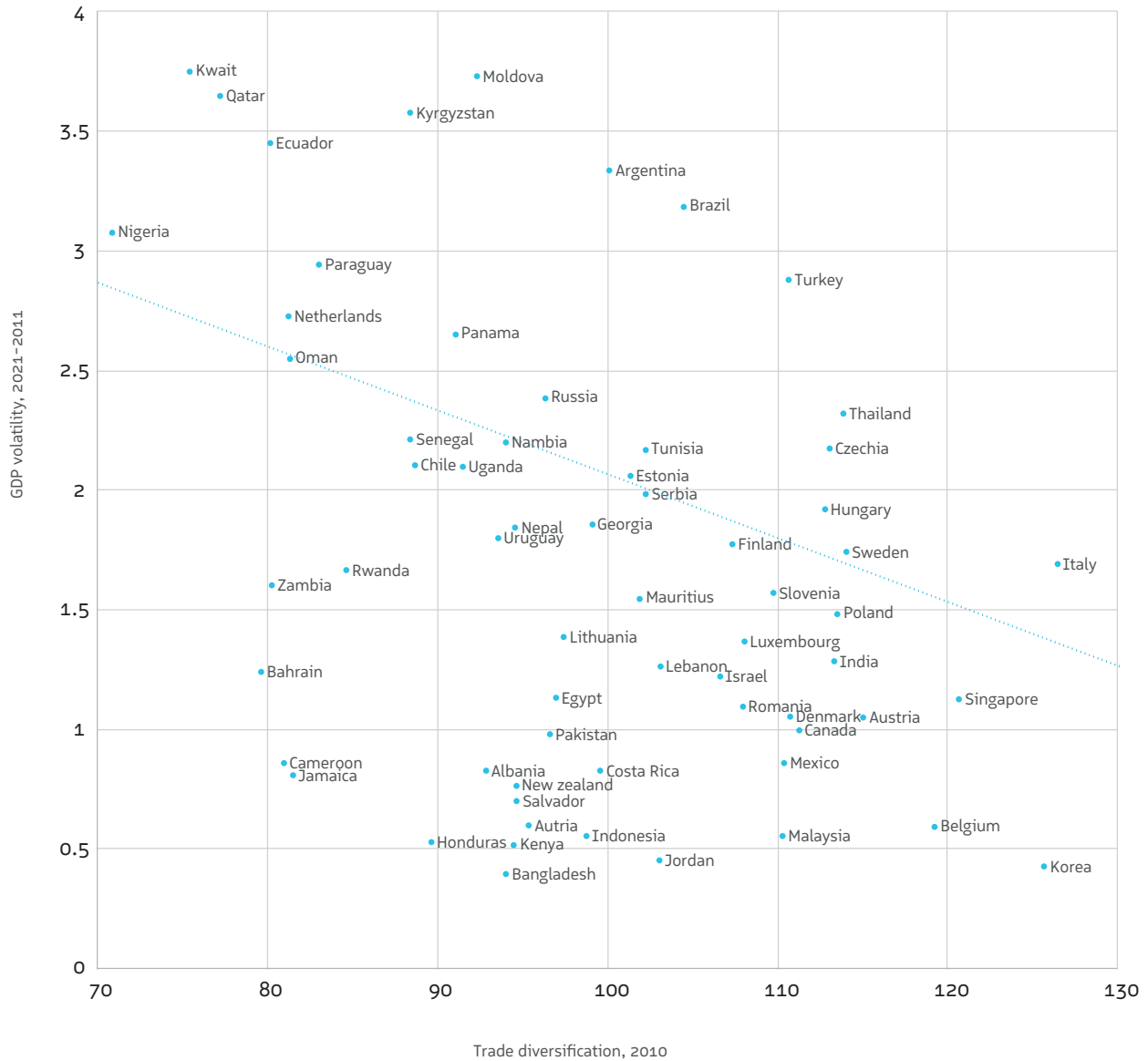
<sup>14</sup> A regression of global spillovers on country openness finds a statistically significant relationship, with about 68% of the variation in the magnitude of global spillovers accounted for by variation in openness.

<sup>15</sup> The WTO's Trade Monitoring Report (Dec 2022) showed that from mid-October 2021 to mid-October 2022, WTO members introduced more trade-facilitating (376) than trade-restrictive (214) measures on goods (unrelated to the pandemic), with the average number of trade-facilitating measures per month at its highest since 2012. For the first time since the beginning of the monitoring exercise in 2009, the number of export restrictions outpaced that of import restrictions. Increases in trade restrictiveness are detrimental to diversification efforts: not only that, IMF also estimates that the cost of trade fragmentation alone can range from 0.2% to almost 7% of global output. <https://www.imf.org/en/Blogs/Articles/2023/01/16/Confronting-fragmentation-where-it-matters-most-trade-debt-and-climate-action>

<sup>16</sup> According to the IATA's Global Outlook for Air Transport report (Dec 2022), the price of air cargo has been relatively more competitive than the price of maritime cargo for many months since 2021.

From the chart 2.5 below, it can be noticed that trade diversification reduces macroeconomic volatility. The x-axis is trade diversification scores in 2010 while the y-axis tracks GDP volatility in the period from 2011-2021

Chart 2.5. Trade diversification reduces macroeconomic volatility



Note: Trade diversification refers to the calculated sub-index for the year 2010. GDP volatility is the standard deviation of the yearly GDP growth rates in the period 2011-2021

If anything, the pandemic has underscored the need for trade diversification (both products and partners) and enhancing supply chains. Diversification of trade partners (including suppliers of intermediate inputs) implies that disruptions specific to one partner (e.g. war in Ukraine or flooding in Pakistan) can be met by another unaffected trade partner. In this regard, improving supply chain resilience also becomes paramount – as seen during the pandemic and the more recently the war in Ukraine. Additionally, concentration of exports in too few products makes a country more vulnerable to shocks, so

product diversification into more sophisticated products helps reduce volatility.

Governments can also mitigate transmission of shocks by investing in trade and digital infrastructure, reducing trade costs and non-trade barriers, filling information gaps in supply chains<sup>17</sup>, and minimizing policy uncertainty. This also ties into the next section: a country also needs a broader tax base to have the necessary fiscal space to rollout emergency assistance.

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<sup>17</sup> Advancing digitalization of firms' document filings, such as tax returns, can help generate more information on interfirm transactions and supply chain networks.

# Covid19 and impact on revenue collection

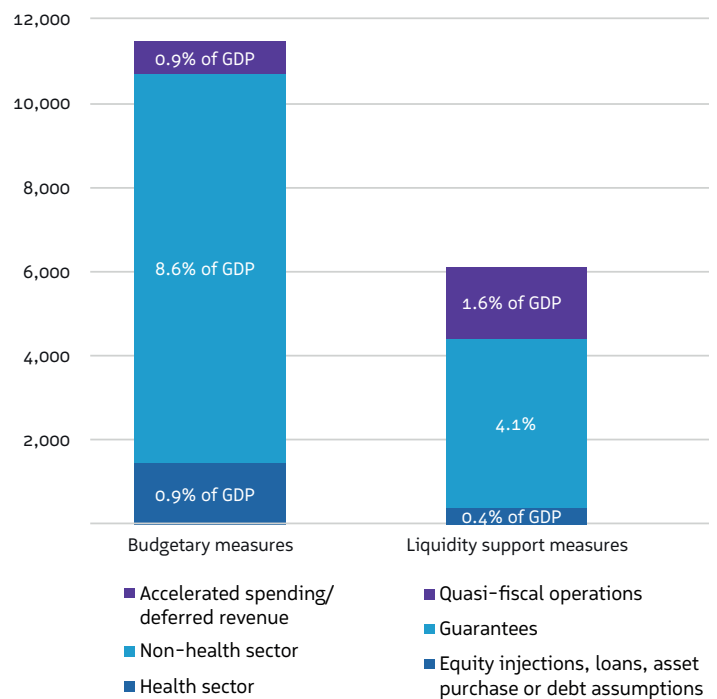
After the pandemic hit, countries reacted by rolling out fiscal measures to mitigate the negative effects of the pandemic - providing financial support to businesses and households, as well as improving the capacity of the health sector to respond to the pandemic.

Fiscal measures as of Oct 2021 were estimated at USD 16.79 trillion globally (Chart 2.6 on the right),

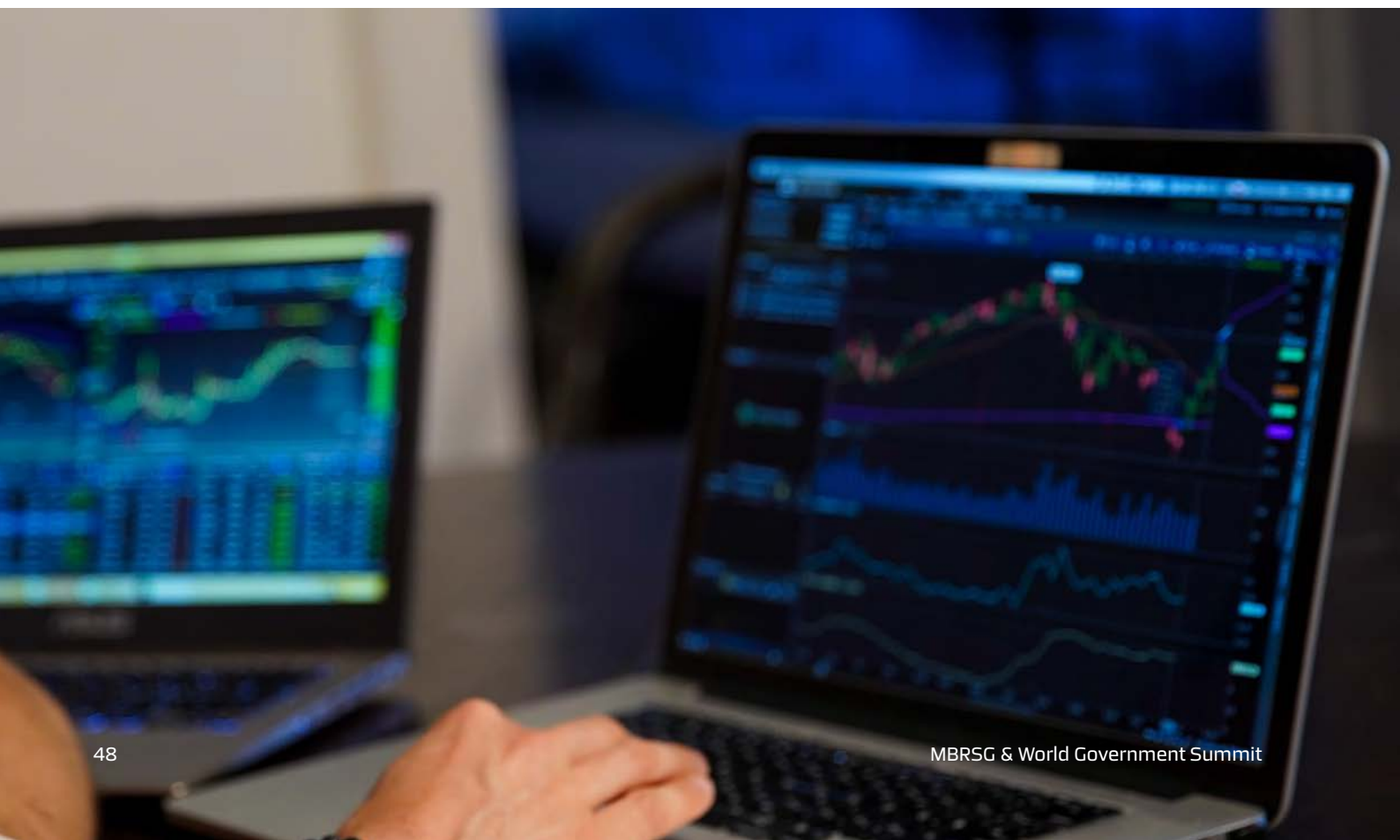
or around **16.4%** of global GDP in 2021 in contrast the fiscal support provided was equivalent to around **2%** of global GDP in 2009 during the global financial crisis

Around 16% of these measures consisted of additional spending or forgone revenue, including temporary tax cuts, and the rest being liquidity support, including loans, guarantees, and equity injections by the public sector.

Chart 2.6. Fiscal measures in response to Covid19 pandemic since Jan 2020 (USD bn)



Source: Database of Fiscal Policy Responses to Covid19, IMF





Unsurprisingly, the sum spent by advanced nations outpaced emerging and low-income nations have varied in size. On-budget fiscal stimulus amounted to 10.2% of GDP (simple average), with the largest expansions in emerging Asia and Latin America (Chart 2.7 below). Credit guarantees, including fiscal backing for central bank programmes, were highest in Eastern and central Europe, as well as in Peru and Turkey.

Asymmetries are even greater in per capita terms. For instance, in 2020

**African countries spent only USD 28**

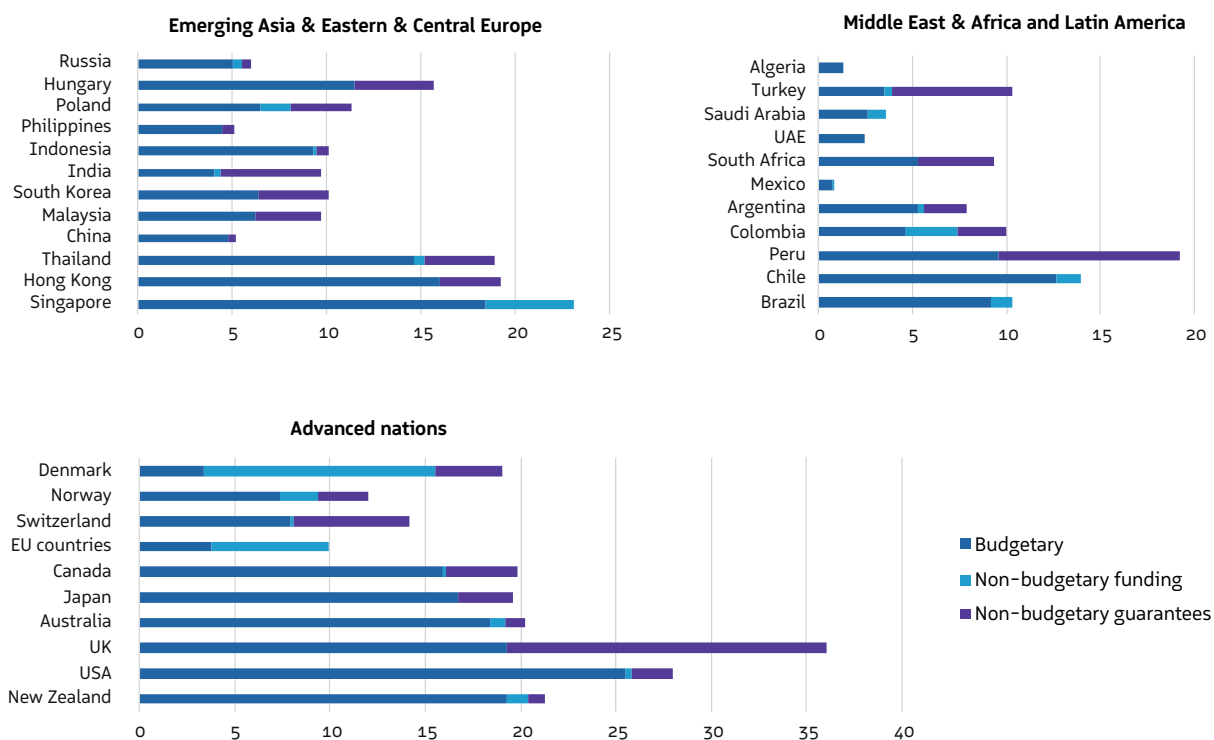
per capita on fiscal stimulus measures, **compared to**

**USD 629 in Europe**

**USD 4,253 in North America**

(Economic Commission for Africa, 2022).

Chart 2.7. Fiscal response to Covid19 in emerging market economies is sizeable, but smaller than in advanced nations



Source: Database of Fiscal Policy Responses to Covid19, IMF

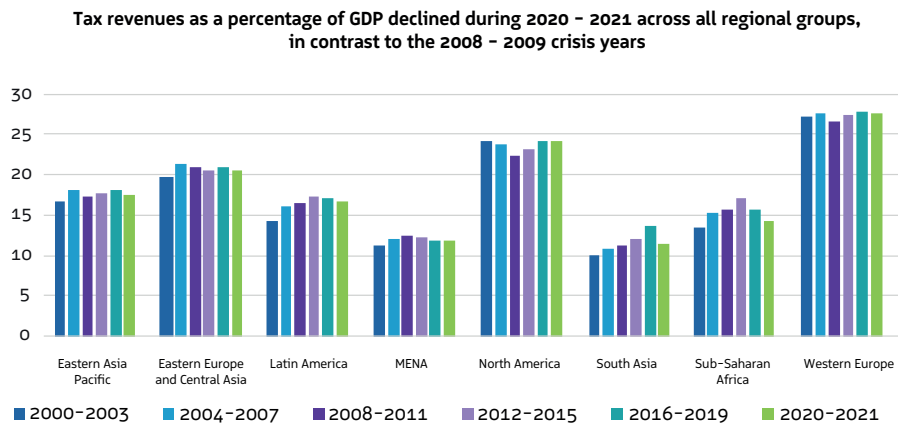
On the other hand, Covid19 meant that businesses were closed during lockdowns and countries resulting in a significant decline in their average tax to GDP ratio: World Bank<sup>18</sup> estimates that tax revenues in 2020 declined by

⬇️ **12%**  
in real terms globally

⬇️ **15%**  
in low- and lower-middle-income countries.

This will have lasting implications unless effective policies are rolled out to counteract the impact. After the 2008-09 global financial crisis, it took an average of eight years for revenues to recover to their pre-crisis level. Though tax revenues as a % of GDP are still lower in 2020-21 compared to the pre-Covid 2016-19 period (Chart 2.8), there are signs of a rebound post the 2020-drop. While many tax relief measures were introduced at the onset of the pandemic – tax deferrals, filing extensions, temporary rate reductions/ waivers, some countries have introduced tax increases towards end-2020 and in 2021. This includes increases in the top tiers of personal income tax, health-related excise taxes (for example on tobacco, soft drinks) and environmental taxes among others.

Chart 2.8. Signs of a rebound post 2020-drop in tax revenues as a % of GDP



<sup>18</sup> As mentioned in the blogpost by Fan and Estevão (2022) <https://blogs.worldbank.org/voices/raising-fiscal-revenue-times-crisis>





Tax revenues increased by 12.8% in nominal terms on average across the OECD between 2020 and 2021 as economies rebounded from the pandemic, exceeding nominal post-pandemic GDP growth (10.5%):

## corporate income tax and VAT drove the recovery in tax revenues<sup>19</sup>.

This is evident in this study's dataset as well, with VAT as a % of GDP rising within the high-income group of nations and within the MENA region. The latter may be due to consumption being pushed back into the formal sector vs informal sector previously – lack of mobility constrained informal activity. In H2 2020 and early 2021, some OECD and G20 countries introduced tax increases on high-income earners, reflected in the rise in income tax as a share of GDP in the upper-middle income group of countries. It can also be noted that excise taxes recovered in the Sub-Saharan Africa regional grouping in 2021: this is likely due to the increase in domestic excise taxes versus excise on imports (like luxury goods and petroleum), as cited in Aslam (2022).

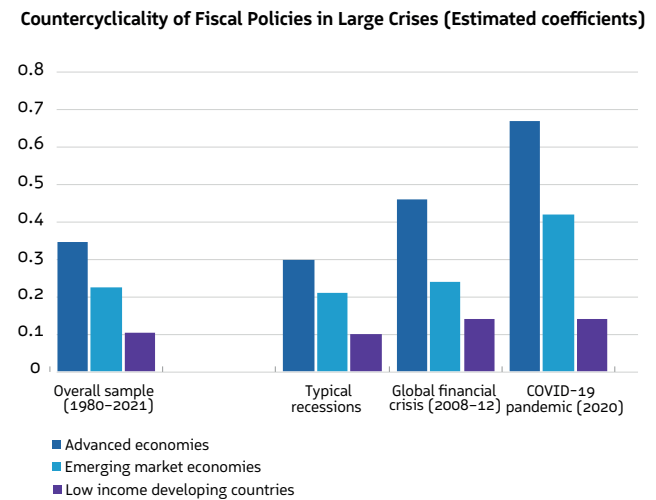
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<sup>19</sup> OECD's Revenue Statistics 2022.

Understandably, countries with limited fiscal space pre-crisis will be hit harder than others with greater flexibility on both the fiscal and monetary sides.

The IMF finds that the increase in deficits (as a fraction of GDP) for each percentage point drop in real GDP growth was bigger during the global financial crisis and the COVID-19 pandemic than during typical recessions (Chart 2.9).

Chart 2.9. Countries with limited fiscal space pre-crisis will be hit harder others



Source: Online Annex, IMF Fiscal Monitor, Oct 2022  
 Note: The figure shows the average of time-varying coefficients by country income groups, estimated based on a panel regression on the sensitivity to GDP growth of the deficit to GDP ratio from 1980 to 2021. Typical recessions are defined as periods when individual country's growth rates are below their own average levels over the previous three years.

Furthermore, in the backdrop of higher spending and lower tax revenues during the pandemic (together with the economic recession), many countries now have much higher debt ratios than prior to the crisis.

Total world debt (public plus non-financial private debt stocks)

**declined 10%**

points to 247% of GDP in 2021 (USD 235trn, IMF Global Debt Monitor, Dec 2022).

This follows the largest one-year increase in global debt in 2020, when it

**rose by 29%**

points of GDP (which was the largest 1-year debt surge since World War II).

The fall in debt in 2021 accounted for one third of the increase in 2020.

Large debts and government financing needs are major sources of vulnerability, especially in the backdrop of rising borrowing costs across the globe.

# What next?

Djankov et al (2020) find that fiscal crises cause statistically significant reforms (that eases burden on businesses) in protecting investors, resolving bankruptcy, registering property and trading across borders; the evidence also finds that such behaviour is especially the case in countries whose neighbours also reform. **Going forward, it is pertinent that tax policy be designed such that there is a balance of equity, inclusiveness, growth, and sustainability.** This implies greater investment in physical capital, education, and social safety nets, as well as more support for retraining and reallocating workers to new and better jobs.

Amaglobeli et al (2022) finds that base broadening changes in personal income tax, corporate income tax, excise, and property tax have on average a more significant and long-lasting impact on tax collection than rate changes. At the same time, rate hikes have relatively more significant effects on taxes in the case of VAT and social security contributions measures. This calls for an opportunity to shift to a greener economy and/ or contemplate innovative taxes (digital services tax, property taxes, wealth taxes, etc) as well as broaden tax base via taxation of the digital economy; potentially informal trade could be formalised, to capture actors left outside the tax pool currently. Lastly, Covid-19 has reaffirmed the need for better domestic resource mobilisation via stronger tax administration and better enforcement of tax laws.

The impact of the pandemic was evident across the globe: while the overall economic diversification index score declined, it was most visible in both output and revenue diversification sub-indices. With a recovery in trade visible earlier than anticipated, many nations have gained in the trade diversification sub-index during the 2020-21: **China was a clear winner in 2021**, having been able to bounce back faster than others, and climbing to the top of the leader board in this sub-index. This may not be the case in a later edition of the EDI as China was one of the last nations to reopen (in Dec 2022) and continuing to face a surge in Covid cases currently (alongside factory shutdowns and supply constraints) while other regions and nations rebounded.

Though many commodity-dependent nations have benefitted from the recent increase in commodity prices,

## the pandemic has reinforced efforts to diversify into new sectors

(especially in the GCC nations): this has ranged from moving up the manufacturing production chain (into more high-tech products) or moving into new sectors (FinTech/ AI, virtual assets) or opening up markets to new investors and investments (recent spate of IPOs in the GCC - both oil and non-oil sectors); efforts are also underway to introduce new taxes to diversify existing tax base.

## Chapter 3

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# Commodity producers' Economic Diversification





## Economic diversification has been a recurring policy theme for commodity producing nations for macroeconomic stability and reducing volatility of income, investment, and consumption.

If a country's production is unbalanced in favour of certain resources (e.g. oil and gas, minerals, metals, agricultural commodities, etc.), growth tends to fluctuate along with the price of these commodities. Conversely, the more diversified a nation, the less vulnerable it will be to swings in commodity or natural resource prices. Similarly, countries that are highly dependent on the export of one or a set of commodities or have a limited number of trading partners, makes them relatively more vulnerable to external shocks.

Table 3.1 shows a heatmap of the EDI scores of the commodity dependent nations<sup>20</sup> tracked in the report, along with Mexico<sup>21</sup>, an OPEC+ member and a highly-ranked “diversified” nation. The commodity exporters are present across all regions: Sub-Saharan African nations dominate (almost 1/3-rd of the total), followed by the Middle East and Latin America, while Western Europe has the least representation (just Norway and Iceland). Among commodities, fuels remain the group of most-exported commodities accounting for more than 50% of total commodity exports (and around 13% of merchandise exports pre-Covid)<sup>22</sup>. This is true of the nations’ coverage in our sample as well: more than 50% of the commodity dependent nations are reliant on fuels. Within these nations, Norway is the better ranked nation while UAE and Bahrain stand out from among the Middle East nations.

## Many commodity-dependent nations are among the richest in the world,

be it Norway or GCC nations with high levels of national income per capita. More than one-third of those classified as commodity dependent nations in the EDI fall under the high-income economies grouping by the World Bank. And interestingly, most of these high-income countries are mainly dependent on fuel exports.

<sup>20</sup> Commodity dependent nations have been identified using two common measurements: a country is resource dependent if over 60% of its total merchandise exports in value terms consist of natural resources (UNCTAD; note that the IMF/ World Bank refer to a minimum threshold of 25%) and the ratio of natural resources rents to GDP is above 10%. Furthermore, these nations’ tax revenues as a percentage of GDP fall mostly below 20%. The list of commodity dependent nations, and by major product group, is specified in the Appendix.

<sup>21</sup> Mexico, which followed import substitution policies in late 70s/ early 80s was also helped by multiple factors including investments in high-productivity manufacturing clusters (especially the automobile sector – accession to NAFTA played an important role in attracting FDI into this sector), investments into human capital for high-skilled workforce among others and its proximity to the US among others.

<sup>22</sup> Some commodity-exporting nations including Algeria, Brunei, Chad, Equatorial Guinea, Iraq, Gabon, Libya, Venezuela and Yemen among others are not part of the overall list due to insufficient data in one or more of the sub-components.



Table 3.1 Commodity dependent nations (+Mexico), EDI scores heatmap

	2000	2004	2008	2012	2016	2019	2021
Mexico	27	30	33	29	25	25	25
Australia	30	33	41	40	44	49	44
New Zealand	39	35	40	44	50	51	49
Norway	50	49	50	50	41	50	51
Iceland	51	46	48	54	51	52	52
Russian Federation	60	63	59	57	58	57	54
Argentina	41	53	54	45	52	54	55
Uruguay	46	59	57	61	60	60	61
Colombia	61	65	68	76	68	69	67
Namibia	62	66	72	72	73	71	68
Chile	54	60	69	70	72	68	70
United Arab Emirates	77	76	78	75	55	59	71
Jamaica	67	72	71	69	78	81	73
Peru	68	74	76	77	79	77	75
Kenya	79	78	75	73	75	76	77
Bahrain	80	80	83	84	69	74	78
Paraguay	91	92	81	78	83	75	80
Iran	95	93	96	85	81	83	82
Ecuador	85	88	93	93	86	88	84
Bolivia	70	81	94	94	90	89	85
Kazakhstan	98	91	91	87	85	87	86
Saudi Arabia	100	97	100	98	80	78	88
Cote d'Ivoire	84	79	88	90	92	93	90
Qatar	96	98	98	95	77	80	91
Cameroon	93	90	85	91	89	95	92
Uganda	90	82	86	82	95	97	93
Rwanda	88	100	89	92	98	98	95
Oman	102	102	102	99	97	91	97
Zambia	78	83	90	89	94	94	98
Nigeria	97	96	95	97	100	96	99
Kuwait	99	99	99	102	99	100	100
Mongolia	92	95	101	101	102	102	101
Niger	94	94	97	100	103	101	102
Azerbaijan	103	103	104	104	104	103	103
Congo	104	104	103	103	93	105	104
Angola	105	105	105	105	105	104	105

Least Improvement  Most Improvement

# Have commodity dependent nations diversified?

The global economic diversification index tracks the progress commodity producing nations have made over time. **Overall EDI has been lowest among the commodity dependent nations within the Sub-Saharan Africa region** (Chart 3.1): on average, these countries have remained stagnant during the period 2000-21, with some deterioration in the Covid-affected years. The MENA region has a relatively low score as well but recorded the fastest pace of increase in EDI - followed by the Eastern European & Central Asia region. **Gains registered in Western Europe have been slow and steady over time while in the MENA region, the uptick has picked up pace in the last few years (2016-19)** - not surprising since a conscious effort has been placed on increasing private sector non-oil share in GDP (plus the introduction of revenue enhancing measures like the introduction of VAT and excise taxes).

Chart 3.1 EDI across commodity producers, by region

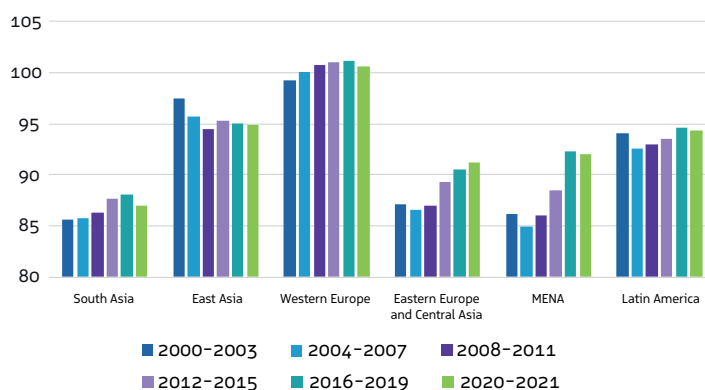
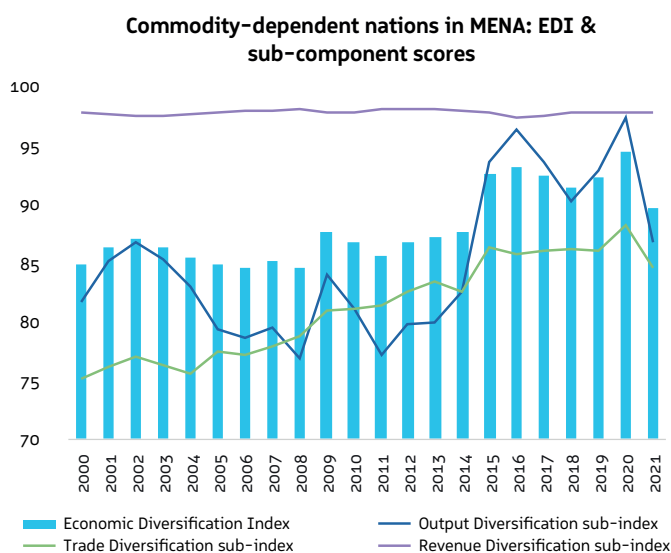
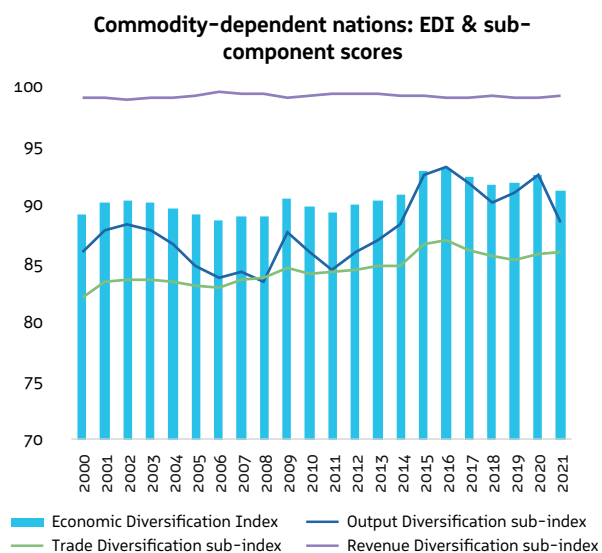


Chart 3.2 Commodity dependent nations' overall EDI performance (& by sub-index)



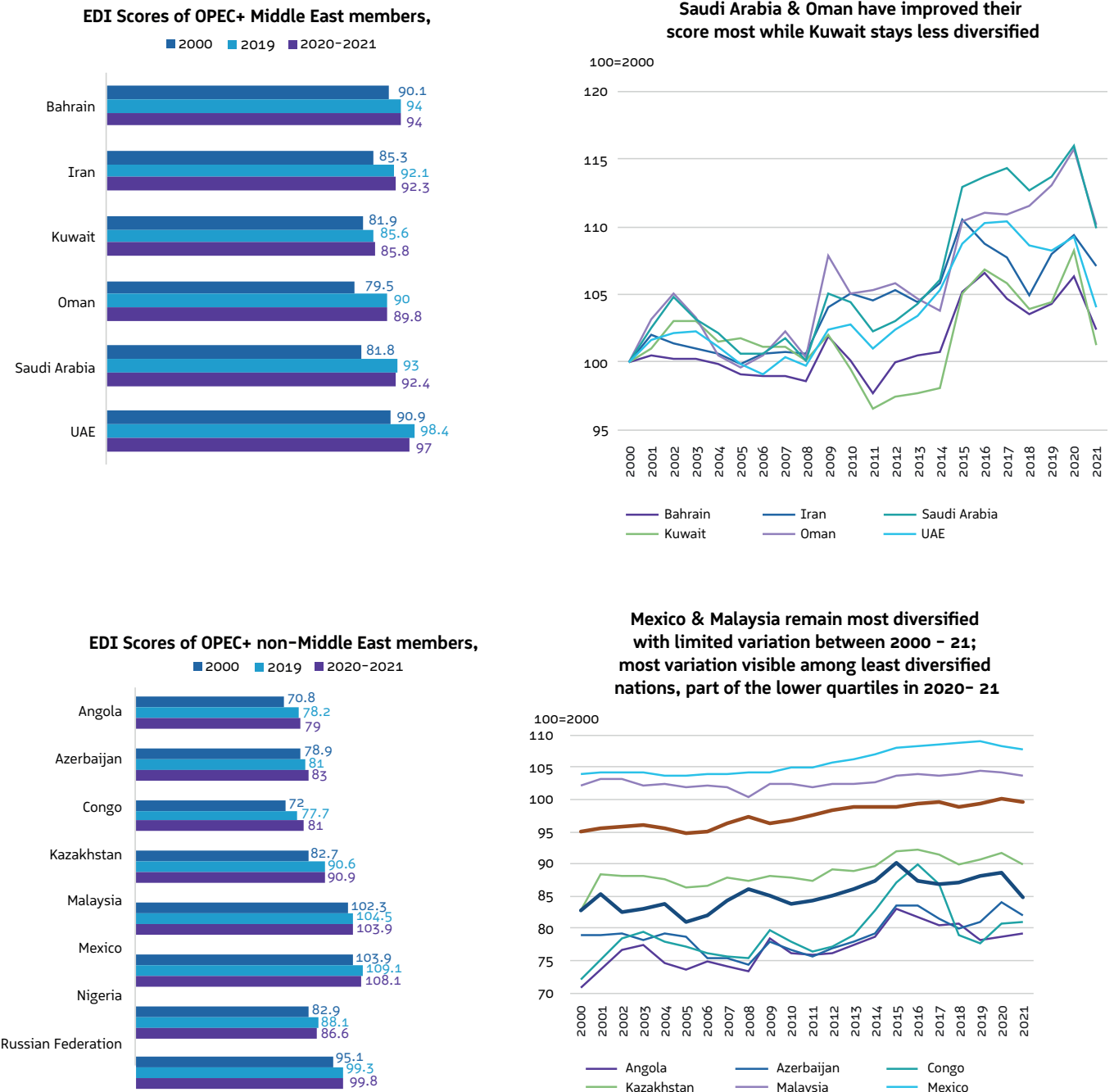
As can be gauged from the chart 3.2, for the commodity producers' group, there has been an increase in their overall score (from 89.8 in 2000-03 to around the 92-mark in the 2016-19 and 2020-21 periods). While gains were recorded in both output and trade diversification sub-indices - volatile in the former -

revenue diversification has been holding back overall diversification gains. If the analysis is restricted to MENA region's commodity exporters, the average EDI score shows a significant gain (from 86.1 in 2000-03 to 92.0 in the 2020-21 period), once again supported by in (highly volatile) output and (steady) trade gains.

Limiting the analysis to oil producers in OPEC+ (Chart 3.3 below), it is seen that low-income nations constantly remain in their lower rankings (a few that are also characterized as more corrupt and/ or politically unstable). Malaysia for example is ranked relatively high in the EDI, even in the early 2000s, given efforts to move into higher value-added products – this resulted in a sharp decline in resource rents as a percentage of GDP to 10% by 1997 from about 37% in 1980. Among

the GCC nations, Bahrain’s diversification efforts have stagnated, allowing others to catch up like the UAE and Saudi Arabia. Oman and Kuwait still feature among the lowest ranked, but the former has initiated reforms to support diversification (translated into an improvement in scores overtime: 90 pre-Covid from 80 in 2000) while the latter has seen a few internal impediments to economic reforms (for example, lack of consensus in the parliament).

Chart 3.3 Economic Diversification Index Scores across OPEC+ members



Tables 3.2 to 3.4 show the changes in scores by sub-indices for the commodity producers.

# Commodity producers

## Output Diversification

Australia and New Zealand were way ahead of their counterparts and continue to dominate the rankings in the output diversification sub-index, though relative to 2000, their advantage has narrowed with the pace of diversification slowing.

Iceland and Norway had successfully narrowed the gap: one of common factors that has supported this increase is the high share of services to GDP (rising to 60% in Norway from less than 50% in 2000 and by around 10% to 66% pre-Covid).

### Countries that are the lowest ranked have also improved their score over time

Angola, for example, moved from a score of 44.7 in 2000 to near 70 in recent years thanks to higher contributions of its agriculture and services sector, amid lower oil production levels – however, the pace at which they are catching up is not sufficient, leaving them in the lowest quartiles.



Table 3.2 Commodity producers, EDI output sub-index scores, heatmap

	2000	2004	2008	2012	2016	2019	2021
Australia	109.6	109.1	106.4	107.8	109.6	107	108
New Zealand	105.7	109.4	107.5	107.4	108.5	108.5	108
Iceland	102.8	106.3	106.2	107.3	109.9	109.5	106.8
Norway	103.6	105.9	104.7	106.7	110.8	106.7	105.7
Uruguay	103.5	97.1	99.2	99.6	103.8	104.4	101.8
Argentina	107.8	97.7	99.6	102.8	104.3	103.2	101.4
Jamaica	100.1	100.0	101.7	101.8	98.9	98.1	99
Colombia	97.4	95.1	93.3	93.2	98.2	98	97.6
Bahrain	91.9	93.8	89.6	91.7	105.2	99.7	96.6
Russia	92.6	93.4	93.5	96.4	100.1	97	95.7
Chile	100.1	99.6	92.5	93.8	96.4	98.1	94.6
Namibia	92.9	93.7	87.5	91.2	94	95.6	94.4
UAE	95.4	94.5	84.8	83.3	101.1	98.4	93
Paraguay	87.6	85.2	90.2	93.8	93.7	95.4	92.8
Peru	94.6	92.5	88.4	89.5	94.2	94.2	91.7
Ecuador	84.2	88.4	82.8	83.6	91.4	90.9	90.4
Iran	86.3	86.2	83.4	90.2	95.4	89.8	88.6
Qatar	81.3	79.2	73.3	81.8	100.3	98.7	87.9
Kazakhstan	80.7	82.1	80.6	85.3	93.4	89.9	86.7
Cameroon	80.7	85.9	84.1	85.9	86.4	86.3	86.7
Kenya	83.7	85	85.2	90	90.1	89.2	86.7
Bolivia	88.4	85.7	81.3	81	88.6	88.6	86.6
Saudi Arabia	73.1	75.3	66.9	70.8	96	90.7	85
Cote d'Ivoire	83.5	84.2	82.9	83.5	85.1	83.9	82.7
Nigeria	78.2	78.3	81.9	84.7	96.0	87.4	82
Zambia	87.5	81.6	80.3	85	84.6	86	81.1
Oman	65	70	65.6	74	85.6	88.1	79.5
Uganda	75.5	80.2	76.5	78.6	79.4	80	78
Kuwait	78.5	81.7	74.9	66.7	90.2	84.3	76.5
Azerbaijan	64.6	63.2	55.5	62.5	78.5	70.8	72.6
Mongolia	72.4	70.6	65.2	74.3	79.5	73	72
Angola	44.7	62.4	53.4	63.5	77.8	70.3	71.1
Niger	83	75.3	69.8	67.6	70.4	70.4	71
Congo	46.6	56.7	49.2	51.6	73.9	62.6	57.3

Least Improvement  Most Improvement

# Commodity producers

## Trade Diversification

With respect to the trade sub-index, **nations that have the most improved scores over time** have either:

**reduced dependence on fuel exports**  
(like Saudi Arabia and the UAE)

or **reduced exports concentration**  
(Kazakhstan, Paraguay and the UAE)

or **witnessed a massive change in the composition of exports**  
(e.g. Saudi Arabia's share of medium and high-tech exports in overall manufacturing exports, rising close to 60% pre-Covid from under 20% in 2000).



Table 3.3 Commodity producers, EDI trade sub-index scores, heatmap

	2000	2004	2008	2012	2016	2019	2021
Russia	92.3	93.3	98.6	99.5	98.1	100.5	103
Australia	98	98.2	96.4	97.6	96.5	95.9	96
Argentina	95.8	95.3	98.7	100.3	98.8	97.1	94.8
Kenya	89	89.5	93.1	93.6	93.3	93.2	93.2
New Zealand	95.9	96.5	94.8	94.1	94	92.8	93.1
Norway	87.6	89.4	92.4	91.8	96	94.4	92.2
Uruguay	95.3	91.7	92.6	92.6	92.3	91	91.6
Namibia	90.5	92	93.4	92.2	90	89	91.4
UAE	77.7	82.3	85.9	95	101.8	97.6	91.2
Colombia	88.5	92.2	90.9	84.2	90.5	88.7	90
Uganda	85.3	90	90.7	95.3	91.7	84.3	89.8
Chile	89.6	89.2	90	89.6	89.9	88.9	89.5
Cote d'Ivoire	84.5	90.1	82.9	84.1	88.1	86.9	89.5
Iceland	88.8	90.6	92.5	89.6	89.9	90.5	89.1
Peru	88.3	88	88	88	87.8	87.5	88.4
Iran	72.1	74.5	77	82.1	85.4	89.2	88.3
Saudi Arabia	75	77.8	80.7	84.2	86.1	90.5	87.1
Congo	70.8	78	76.2	79.6	96.9	73.2	86.7
Oman	75.9	72.3	76.2	80.8	82.1	84.2	85.8
Paraguay	72	77.9	81	83.4	85.7	88	85.2
Kazakhstan	68	81.2	82.3	83	85.4	83.5	84.3
Ecuador	80.5	77.7	77.5	79.3	83.8	81.8	84
Bahrain	81.3	79.2	80.1	81.7	86.6	85.1	83.4
Bolivia	92.4	82.9	75.9	77.8	82.5	82.1	82.7
Zambia	85.3	87.1	83	82.1	86.3	82.7	82.4
Qatar	74.4	73.4	78.2	79.3	83.5	81.3	82
Cameroon	77.2	79.6	83	80.6	87.4	80.7	81.6
Jamaica	81.8	79.9	79.1	82.4	81	79.4	80.9
Niger	75.9	84.5	81.8	79.6	83.5	80.8	79.1
Mongolia	84.7	83	76.2	70.1	75.2	70.3	75.8
Nigeria	72.5	76.0	78.7	73.4	69.6	80	75.1
Kuwait	69	70.0	73.2	74.4	74.6	74.6	74.3
Azerbaijan	74.2	75.9	67.4	68.9	72.4	72.8	74
Angola	65.9	61.4	64.4	64.4	69.8	65.7	66.3

Least Improvement  Most Improvement

# Commodity producers Government Revenue Diversification

Reaching the level of revenue diversification already achieved in the Nordic nations will be a tough ask: Iceland and Norway are already highest among commodity producers (they ranked 3rd and 5th globally in this sub-index in 2021). There has been very limited variation in this sub-index among the commodity exporters, with many Middle East's oil exporters' lack of tax structures holding back gains.

**Norway's tax revenue** as a % of GDP stands at a high 30%+ and compares to single digit readings in countries like Bahrain, Iran or Kuwait, to name a few.

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**Saudi Arabia has seen a slight improvement** from 2018 with the introduction of VAT and excise taxes;

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the **UAE has been diversifying its tax structure**, but the impact is not as evident given its collection of various fees and charges pre-2018 that added to the tax component (the introduction of corporate taxes from 2023-24 should improve its score going forward).





Table 3.4 Commodity producers, EDI revenue sub-index scores, heatmap

	2000	2004	2008	2012	2016	2019	2021
Norway	103.9	103.8	103.7	103.4	102.8	102.9	103.4
Iceland	103.3	103.4	103	102.7	104.2	102.6	103.1
New Zealand	102.5	102.7	102.2	102	101.9	101.9	102.2
Australia	102.1	102	101.3	101.2	101.1	101.1	101.5
Bolivia	100.1	100.5	101.5	101.4	101	100.1	101.1
Jamaica	100.5	100.7	100.7	101	101.4	99.4	100.8
Angola	101.9	100.3	102.3	100.8	98.1	98.5	100.3
Mongolia	99.4	100.3	100.9	99.8	99.5	100.2	100.1
Chile	99.6	99.8	100.1	100.1	99.9	100.1	99.9
Argentina	98.8	99.7	99.9	100.3	100.6	100.2	99.9
Russia	100.3	100	99.6	99.4	99.8	100.3	99.9
Uruguay	99.4	99.9	100.3	99.6	99.7	99.8	99.8
UAE	99.6	99.0	101.4	100.8	98.1	99.3	99.7
Colombia	98.4	98.9	99.3	100	99.8	100.2	99.4
Congo	98.6	98.9	100.8	99.9	99.2	97.2	99.4
Azerbaijan	97.8	98.5	100.2	99.3	99.4	99.5	99.3
Namibia	100.8	98.4	99	99.3	99.8	99.6	99.3
Peru	98.8	99	99.3	99.4	98.8	99	99.1
Zambia	99.8	99.2	99	99.0	98.8	99.2	99
Kazakhstan	99.4	99.5	99.3	99.1	98.1	98.4	98.9
Ecuador	98.2	98.1	98.8	99.1	98.8	99	98.7
Kenya	97.7	97.9	98.5	98.8	99.5	99	98.5
Cameroon	98	97.8	98.3	98.3	98.4	98.5	98.3
Paraguay	98	98	97.9	98.2	98.3	98.3	98.2
Kuwait	98.2	97.8	98	98.3	97.8	97.8	98.1
Uganda	97.3	98.2	98	97.9	98.4	98.6	98
Qatar	97	97.7	97.5	98.3	97.6	97.7	97.7
Niger	97.1	97.5	97.6	97.9	97.8	97.8	97.6
Saudi Arabia	97.2	97.4	98	97.7	96.9	97.7	97.5
Oman	97.7	97.5	97.6	97.7	97.2	97.6	97.5
Iran	97.4	96.9	97.1	97.1	97.6	97.5	97.2
Cote d'Ivoire	96.9	96.7	97.1	97.1	97.8	97.7	97.1
Nigeria	97.9	97.2	97.4	97.4	96.5	96.7	97.1
Bahrain	97	96.9	96.8	96.7	96.4	97.2	96.8

Least Improvement  Most Improvement

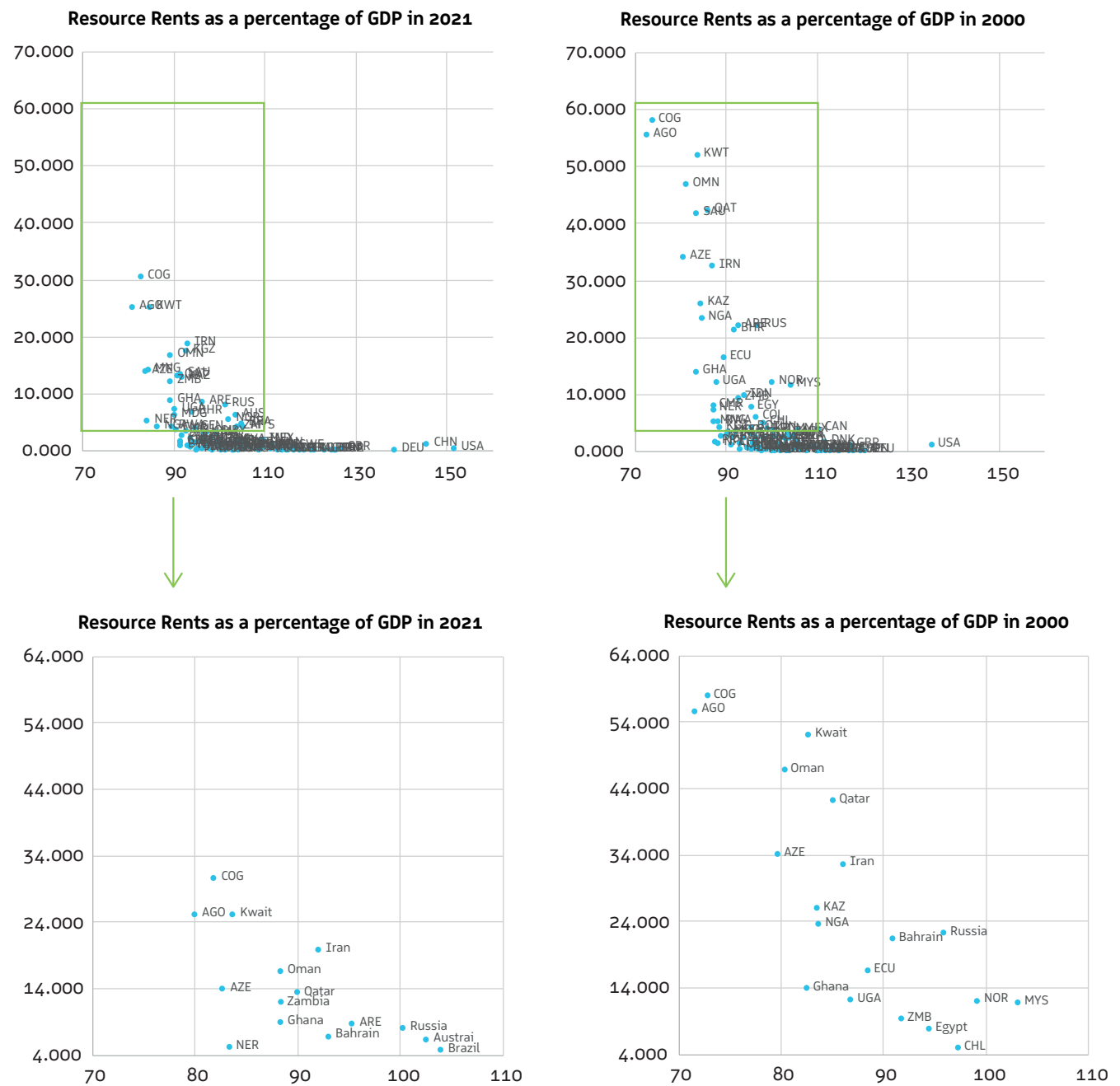
Chart 3.4 shows that

# The higher the resource rents as a % of GDP, the lower the score on the economic diversification index

- a premise that holds true in both 2000 and 2021.

The share of resource rents has declined significantly: **the highest share in 2021 is around 30% compared to near-60% for some countries in 2000.** This only signifies correlation and not causation: many have improved on their EDI scores, but not to levels proportionate to the fall in resource rents.

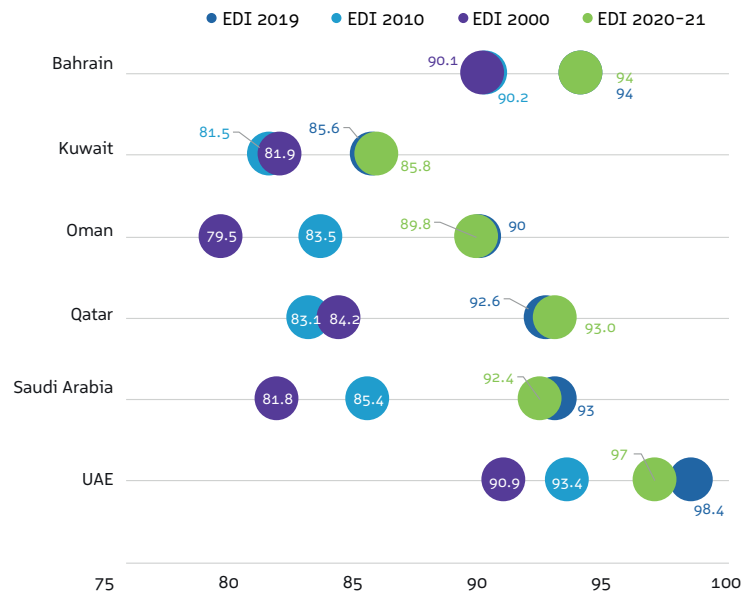
Chart 3.4 Scatter chart with EDI scores and resource rents as a % of GDP



# Economic Diversification in the GCC

As can be seen from the chart: **the GCC region has seen a significant improvement in its EDI scores over the 2000-2019 period, supported by its diversification plans.** Bahrain, with its very limited oil resources, was already diversified among its regional peers in early 2000; however, it has not seen much improvement in its score, as opposed to the UAE or Saudi Arabia both of which have moved up the EDI ladder. The gains for both UAE and Saudi Arabia have stemmed from policy measures to diversify into the non-oil sector (a relatively more recent policy in Saudi). UAE's diversification efforts have included structural change including the buildup of both hard and soft infrastructure alongside the creation and operation of multiple free zones (that allowed for 100% foreign ownership) amid expanding non-oil sectors covering trade, transport/ logistics, tourism and more recently, new tech sectors.

Chart 3.5 EDI performance across the GCC



Following the onset of Covid-19, which severely affected the non-oil sectors (like tourism, infrastructure and logistics), there has been an accelerated shift in policies rolled out to enable economic transformation. **Major policy shifts in the GCC have included:**

- **Embracing the digital economy:** from providing the enabling environment for fintech firms (e.g. regulations, sandboxes) to e-government or establishing virtual assets regulators, the direction is evident. Even the increased regional and domestic investments into new sectors (electric vehicle manufacturing in Saudi Arabia) is testament to the new diversification path being forged.
- **The UAE and Saudi Arabia are already undertaking a concerted push towards the privatisation of certain state-owned assets** and enterprises to de-risk fossil fuel assets, with the advantages of raising revenues, diversifying financial markets, and attracting foreign investment. Many other GCC nations are planning similar moves.
- **Structural reforms** include labour market reforms like long-term residency and providing remote visas to support increased mobility of labour and help attract a high-skilled workforce, while incentives to raise female workforce participation rates will support overall job creation and help to narrow existing gender gaps. Also introduced were digital residency services (Bahrain), abolishing the kafala system (Oman, Qatar) and introduced legislations to prohibit gender-based discrimination (Bahrain, Saudi, and the UAE).
- **Increasing non-oil revenues:** efforts to broaden the tax base has been visible in the GCC as Saudi Arabia's hike of VAT to 15% from July 2020 or plans to introduce corporate tax from this year in the UAE (Oman is studying the introduction of income taxation).

## Chapter 4

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# The future of Economic Diversification





Economic diversification may have taken a hit during the Covid19 affected years, but if the pandemic has taught anything, **it is how economies and sectors can adapt to shocks be it:**

- adjusting to supply chain constraints
- working from home and online education
- enabling access to vaccines
- offering cash transfers/ subsidies to most affected sectors/ persons.

However, the divergent recovery paths with developed nations recovering at a faster pace (in the backdrop of rising inflationary pressure and higher interest rates) will further

widen the gap between the rich and poorer nations, leading to a reversal of decades of progress in reducing inequality and poverty levels.

**The report already highlights the increasing importance of services in supporting nations diversification efforts.** In this context, government policies on services trade restrictiveness need to be tracked: overly restrictive policies will hamper the growth of the services economy, diffusion of new technologies and integration of the sector.

**Another strategy gaining ground is that of 'servicification'** - i.e. putting a premium on the role of trade in services to power national economies. In this context, it would be beneficial to develop new "deep trade agreements" including the broad category of services, and digital services (eservices, ecommerce etc.). Such services trade policies can lead to higher labour and overall productivity and increase diversification.

One of the main takeaways from the pandemic is that the digital economy has now become an integral part of day-to-day life.

**In this context, digital infrastructure and connectivity indicators could provide an insight into future diversification paths.** With the UN<sup>23</sup> estimating that nearly 37% of the world's population have never used the internet (96% of whom live in developing countries), it is important for policymakers to focus on the digital divide and work on narrowing the gap.

From the context of the EDI, we consider how digital transformations could affect each of the sub-indices.

**On the output side,** the accelerated digital transformation seen during the pandemic is likely to gain further importance - be it simple activities like teleworking or online shopping or the more complex adoption of blockchain/ AI/ FinTech to traditional paradigms. **Widespread usage of digital technologies also led to higher demand for related products** (for example, computers, smartphones, semiconductors). With technological advantages driving innovation and leading to new use cases in traditional areas (think e-mobility and electric vehicles, mobile payments or precision agriculture), future reports will include indicators and discussion on the speed of adoption and diffusion of digital technologies in various sectors.

**On the trade side,** UN ESCAP (2022) finds that that full digital trade facilitation implementation beyond the WTO Trade Facilitation Agreement (TFA) commitments could cut average trade costs by more than 13%, 6.7 percentage points more than that could be expected from meeting requirements of the WTO TFA: such lower trade costs able support resilience of international trade.

**Exports of “digitally deliverable services” and digital trade facilitation indicators could become key indicators to track going forward.**

**Digital transformations can also support in the collection of revenues:** using electronic platforms for tax purposes (e.g. filing and payments) will lower overall costs, increase efficiency in revenue collection and also enhance transparency and trust.

Lastly, for the lower ranked regions like MENA and Sub-Saharan Africa, regional integration of energy and transport/logistics infrastructure would allow countries to become more integrated not only among themselves but also with the global economy.

Investment in core infrastructure, telecommunications, transport, and logistics would support diversification into non-resource intensive activities, such as manufacturing and services, as well as cut delays and improve market access.

<sup>23</sup> The data is from the UN's specialised agency International Telecommunication Union, as part of its publication “Measuring digital development: Facts and figures 2021”, available at <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2021.pdf>



## Chapter 6

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## Appendix A

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# Why and How? Components, Methodology<sup>24</sup>

<sup>24</sup> The detailed version of this Appendix can be found in the Global Economic Diversification Index 2022 report, Chapters 1 to 3. Access the report online <https://economicdiversification.com>





Economic diversification is key to addressing these macroeconomic stability, economic growth, and development issues. To address these risks, oil & gas exporters and other commodity exporters have focused on economic diversification as a policy priority and objective of their economic strategies.

**Economic diversification leads to more balanced economies and is key to sustained economic growth and development.** For the GCC and other fossil fuel producers and exporters it would help reduce exposure to volatility and uncertainty in the global oil market and avoid the related boom–bust cycles. More diversified economies are less volatile in terms of outputs, while lower output volatility is associated with lower overall economic uncertainty for households, businesses and governments and higher economic growth prospects.

**Economic diversification can further support:**

- re-orienting economies towards more knowledge based and innovation-led activities;
- greater private sector activity, including in the tradables sector;
- lead to greater skill diversity in the labour force, facilitate mobility and lower transition costs, job creation, raise productivity growth and generate more sustainable growth;
- provide more sustainable public finances that are less dependent on revenues from natural resources;
- encourage private sector investment given more stable economic growth rates; and
- generate greater overall macroeconomic stability including of disposable income and consumption.

Economic diversification is a multi-dimensional, complex and dynamic phenomenon, involving the diversification of economic activity, the diversification of international trade (products, services and countries) as well as the diversification of government revenues away from a dependence on natural resource or commodity revenue: **the three components of the Economic Diversification Index.**

- A. COMPONENTS
- B. TRADE DIVERSIFICATION
- C. GOVERNMENT REVENUE DIVERSIFICATION

## A. COMPONENTS

The basis for the **output or activity diversification** stems from the fact that structural transformation from the natural resource sector to sectors that generate higher value added and higher productivity is considered imperative for a sustainable development path. To this end, such sectors can be a source of long-term growth only if these are able to generate a sustained increase in productivity over time. Identifying the sectors of economic activity – agriculture, industry/ manufacturing, and services – is the main set of indicators within this category. The share of each sector’s value added to GDP has been used, so that comparisons can be made across countries and time. Many oil-exporting nations group petroleum/ mining and quarrying under the broader industry category, so, additional indicators – manufacturing value added per capita and medium- and high-tech manufacturing value added in total manufacturing value added – are used to gauge industrialization intensity and a shift to high-tech manufacturing.

### Production/ Activity Diversification Indicators

- Real GDP
- Agriculture value added as a percentage of GDP
- Gross fixed capital formation as a percentage of GDP
- Industry value added as a percentage of GDP
- Manufacturing value added as a percentage of GDP
- Resource rents as a percentage of GDP
- Services value added as a percentage of GDP
- Medium- and high-technology manufacturing value added share in total manufacturing value added
- Manufacturing value added per capita

## B. Trade diversification

Trade diversification is intrinsically linked to output diversification. The combination of a high concentration of exports (by product, commodity, or country) and a large share of commodities in those exports has important implications for development.

**Trade diversification can occur via:**

- Growth in existing “traditional” export products accompanied by quality improvements and higher value-added transformations;
- Export of existing products to new markets; and
- Growth in exports of new products to new markets, or a combination.

Given that several energy exporters “diversified” their export baskets by building capacity and investing in the production of energy-intensive products that use crude petroleum or natural gas as inputs (e.g., petrochemicals, refined fuels, aluminium), the discussion of diversification needs to be expanded further than trade.

### Trade Diversification Indicators

Total value of exports
Fuel exports as a percentage of merchandise exports
Export market concentration index (Hirschman–Herfindal Index, HHI)
Total value of imports
Manufactured exports as a percentage of total merchandise exports
Medium- and high-technology manufactured exports as a percentage of manufactured exports
Merchandise exports as a percentage of GDP
Total value of services exports
Export product concentration index
Import product concentration index

## C. GOVERNMENT REVENUE DIVERSIFICATION

Government revenue diversification is another dimension of a nation’s extent of diversification. Countries with limited economic diversification typically also have a highly concentrated government revenue (tax and non-tax) structures, with a high dependence on limited sources of revenue, such as trade and natural resource taxation. Governments with a highly concentrated tax/revenue base dependent on natural resource revenues become fiscally constrained, with limited fiscal space to address economic shocks or undertake investment. The literature on the procyclical nature of fiscal policy in commodity-producing nations is clear: public spending increases (declines) during periods of higher (lower) commodity prices leading to pro-cyclical fiscality; lack of automatic stabilizers and low non-oil tax bases add to the problem.

### Government Revenue Diversification Indicators

Excise tax revenue as a percentage of GDP
Income tax revenue as a percentage of GDP
Goods & services tax revenue as a percentage of GDP
Tax revenue as a percentage of GDP
Total revenue as a percentage of GDP
Trade revenue as a percentage of GDP

# Methodology

The econometric setting for the EDI is a panel with a significant number of cross-sections: this consists of a large number of indicator series and relatively short time series. The objective is to design a weighting scheme such that the large number of indicators can be reduced to a smaller number of diversification indices: **potentially three (output, trade, and government revenue), and/or one (diversification).**

In developing an index like the EDI, a key requirement is that scores be comparable across countries and through time. As such, each EDI observation must be based on the same underlying indicators. While many statistical techniques can deal easily with missing values for one of a set of indicators, the case of a multi-indicator index is different. To take a simple example, consider an index based on two indicators, A and B, which are aggregated by taking the arithmetic (simple) mean. If B is missing for one country, then the mean is simply A. If A is missing for another country, then the mean is simply B. If both series are observed for a third country, then the mean is  $(A+B)/2$ . So, the three index scores in this case are not comparable, even if all variables are measured on the same scale: each observation is based on different information sets.

In the context of the EDI, this requirement would mean that the index could only be calculated for those country and year pairs where all component indicators are observed. This constraint is a major one, which would significantly reduce coverage in both the country and time dimensions.

To ensure the broadest coverage of countries and years in this exercise, the dataset is pre-treated using linear interpolation and extrapolation to fill in missing observations to the extent possible.<sup>25</sup>

The output is hence a complete input dataset for 106 countries for the 2000–2021 period.

The Principal Components Analysis<sup>26</sup>, a standard dimensionality-reduction technique, was used to generate the results. The strategy for applying PCA to the detailed indicators relied on **two steps**.

- **The first was to use PCA to produce the three sub-indices: output, trade, and revenue.**<sup>27</sup>
- **The second was then to aggregate the three sub-indices into an overall EDI by taking the arithmetic (simple) mean.**

The rationale for using the simple mean in the second stage is that it is the simplest and most transparent approach, and there is no a priori reason for believing that any one of the three sub-indices is more important to the overall measurement of economic diversification than the others. The factor loadings produced by the PCA are shown below.

<sup>25</sup> Where linear interpolation and extrapolation could not provide appropriate readings, the series mean was used.

<sup>26</sup> An indicator produced using PCA is the linear combination of the indicators that accounts for the maximum possible proportion of the total variance in the set of underlying indicators.

<sup>27</sup> Indices are produced using the standard sum of squares approach, and are converted from variables with mean zero and unit standard deviation to variables with mean 100 and standard deviation 10.



The loadings in Table A.4 show that real GDP, manufacturing and services as a percentage of GDP, medium and high technology manufacturing as a percentage of GDP, and manufacturing value added per capita correlate positively with the EDI output sub-index, while the remaining variables correlate negatively. This finding is intuitive in most cases, but the contrast between industry and services shows that the data tend to support the importance of the services sector as a determinant of output diversification.

**Table A.4. PCA loadings for the EDI output sub-index**

Variable	Loading
Real GDP	0.236
Agriculture value added as a percentage of GDP.	-0.356
Gross fixed capital formation as a percentage of GDP.	-0.063
Industry value added as a percentage of GDP.	-0.230
Manufacturing value added as a percentage of GDP.	0.220
Resource rents as a percentage of GDP.	-0.353
Services value added as a percentage of GDP.	0.474
Medium and high technology manufacturing value added share in total manufacturing value added.	0.424
Manufacturing value added per capita.	0.428

The loadings in Table A.5 shows that **export market concentration, product concentration of exports and imports, and fuel exports are all negatively correlated with trade diversification**, but the remaining variables are positively correlated. This result is intuitive, as the positively correlated variables all capture aspects of country performance that suggest deeper integration into the global trade system. The case of fuel exports is important, as it suggests that countries with significant reliance on that sector tend to be less diversified from a trade point of view.

**Table A.5. PCA loadings for the EDI trade sub-index**

Variable	Loading
Fuel exports as a percentage of merchandise exports.	-0.246
Export market concentration index (Hirschman-Herfindahl Index, HHI).	-0.139
Total value of imports.	0.438
Manufactured exports as a percentage of total merchandise exports.	0.341
Medium and high technology manufactured exports as a percentage of manufactured exports.	0.349
Merchandise exports as a percentage of GDP.	0.033
Total value of services exports.	0.428
Export product concentration index.	-0.338
Import product concentration index.	-0.056

It therefore complements the **finding on revenue diversification** (in Table A.6), where resource rents (for instance, from extractive industries) are negatively correlated with revenue diversification.

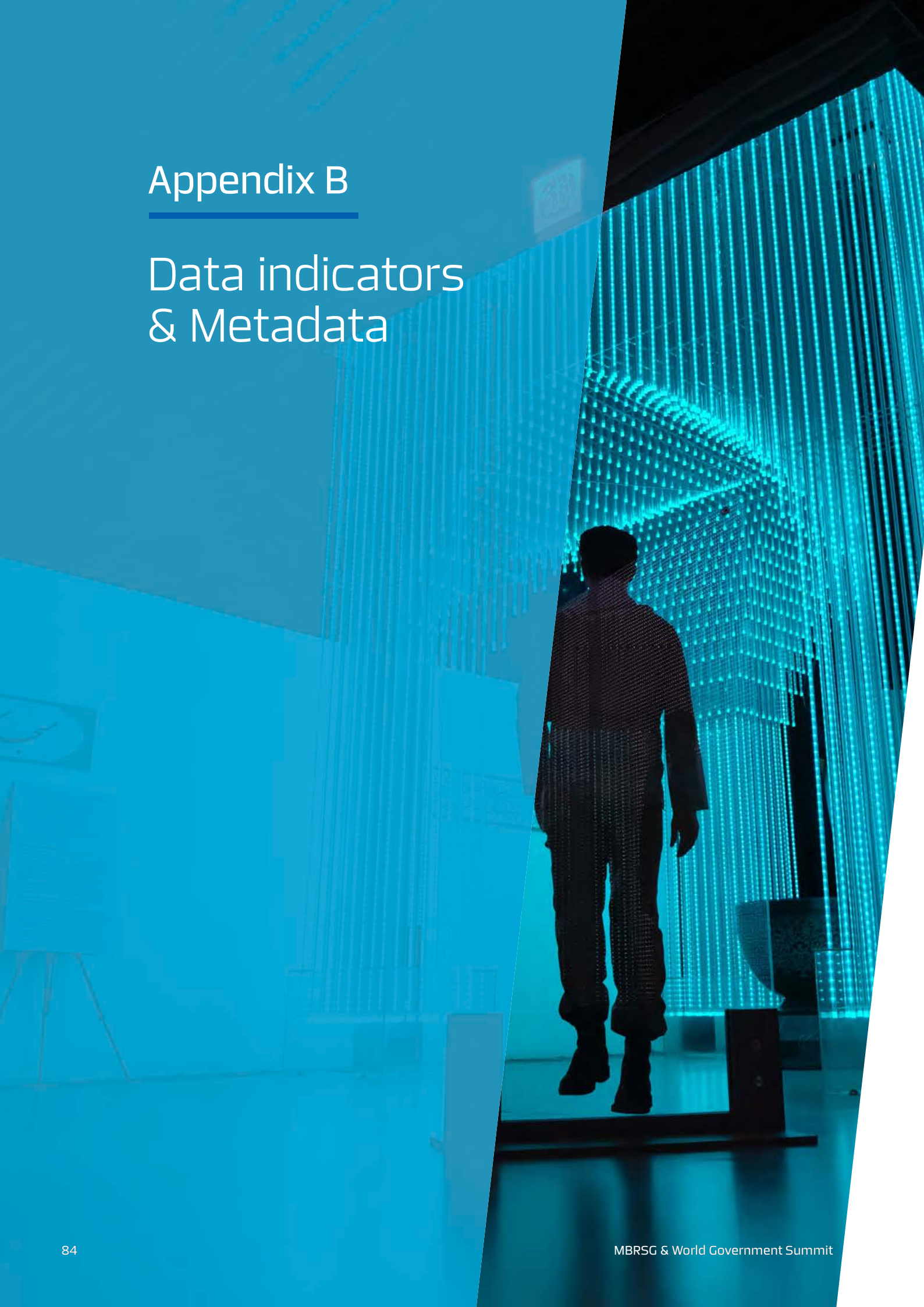
**Table A.6. PCA loadings for the EDI revenue sub-index**

Variable	Loading
Excise tax revenue as a percentage of GDP.	0.389
Income tax revenue as a percentage of GDP.	0.435
Goods and services tax revenue as a percentage of GDP.	0.446
Tax revenue as a percentage of GDP.	0.493
Total revenue as a percentage of GDP.	0.420
Trade revenue as a percentage of GDP.	-0.202



## Appendix B

# Data indicators & Metadata



Tables B.1. **EDI Sub Indicators**

Sub Index	Variables	Sources (latest available year)
<b>OUTPUT</b>	Real GDP	WDI (2021)
	Agriculture, value added, as a percentage of GDP	WDI (2021)
	Gross fixed capital formation as a percentage of GDP	WDI (2021)
	Industry as a percentage of GDP	WDI (2021)
	Manufacturing value added, as a percentage of GDP	WDI (2021)
	Total natural resource rents as a percentage of GDP	WDI (2020)
	Services value added, as a percentage of GDP	WDI (2021)
	Medium and high technology manufacturing value added share in total manufacturing value added	WDI (2020)
	Manufacturing value added per capita	UNIDO (2020)
<b>TRADE</b>	Total value of exports	WDI (2021)
	Fuel exports as percentage of merchandise exports	WDI (2021)
	Export market concentration index (Hirschman-Herfindahl Index, HHI)	WDI (2020)
	Total value of imports	WDI (2021)
	Manufactured exports as a percentage of total merchandise exports	WDI (2021)
	Medium and high technology manufactured exports as a percentage of total manufactured exports	UNIDO (2020)
	Merchandise trade as a percentage of GDP	WDI (2021)
	Total value of services exports	WDI (2021)
	Export product concentration index	UNCTAD (2021)
	Import product concentration index	UNCTAD (2021)
<b>REVENUE</b>	Excise tax revenue as a percentage of GDP	IMF (2020)
	Income tax revenue as a percentage of GDP	IMF (2020)
	Goods and services tax revenue as a percentage of GDP	IMF (2020)
	Tax revenue as a percentage of GDP	IMF (2020)
	Total revenue as a percentage of GDP	IMF (2020)
	Trade revenue as a percentage of GDP	IMF (2020)

## Appendix C

# Regional, Income & Commodity Producers groupings



Table C.1. **Regional Grouping\***

East Asia & the Pacific	Eastern Europe & Central Asia	Latam & Carribean	MENA	North America	South Asia	Sub-Saharan Africa	Western Europe
Australia	Albania	Argentina	Algeria	Canada	Bangladesh	Angola	Austria
Cambodia	Azerbaijan	Bolivia	Bahrain	United States of America	India	Botswana	Belgium
China	Croatia	Brazil	Egypt		Nepal	Cote d'Ivoire	Cyprus
Indonesia	Czechia	Chile	Iran		Pakistan	Cameroon	Denmark
Japan	Estonia	Colombia	Israel		Sri Lanka	Congo	Finland
Korea, Republic of	Georgia	Costa Rica	Jordan			Ghana	France
Malaysia	Hungary	Ecuador	Kuwait			Kenya	Germany
Mongolia	Kazakhstan	El Salvador	Lebanon			Madagascar	Greece
New Zealand	Kyrgyzstan	Guatemala	Morocco			Mauritius	Iceland
Philippines	Latvia	Honduras	Oman			Namibia	Ireland
Singapore	Lithuania	Jamaica	Qatar			Niger	Italy
Thailand	Moldova, Republic of	Mexico	Saudi Arabia			Nigeria	Luxembourg
	Poland	Panama	Turkey			Rwanda	Malta
	Romania	Paraguay	Tunisia			Senegal	Netherlands
	Russian Federation	Peru	United Arab Emirates			South Africa	Norway
	Serbia	Uruguay				Uganda	Portugal
	Slovakia					Zambia	Spain
	Slovenia						Sweden
	Ukraine						Switzerland
							United Kingdom

\* World Bank classifies Malta as part of MENA & Turkey as Europe

\* IMF classifies Malta as part of Euro area & Turkey as Emerging Europe

Table C.2. **Income Grouping** \*\*

High income	Low income	Lower middle income	Upper middle income
Australia	Madagascar	Angola	Albania
Austria	Niger	Bangladesh	Argentina
Bahrain	Rwanda	Bolivia	Azerbaijan
Belgium	Uganda	Cambodia	Botswana
Canada		Cameroon	Brazil
Chile		Congo, Rep.	China
Croatia		Côte d'Ivoire	Colombia
Cyprus		Egypt, Arab Rep.	Costa Rica
Czech Republic		El Salvador	Ecuador
Denmark		Ghana	Georgia
Estonia		Honduras	Guatemala
Finland		India	Jamaica
France		Indonesia	Jordan
Germany		Iran, Islamic Rep	Kazakhstan
Greece		Kenya	Malaysia
Hungary		Kyrgyz Republic	Mauritius
Iceland		Lebanon	Mexico
Ireland		Mongolia	Moldova
Israel		Morocco	Namibia
Italy		Nepal	Paraguay
Japan			Peru
Korea, Rep.			Russian Federation
Kuwait			Serbia
Latvia			South Africa
Lithuania			Thailand
Luxembourg			Turkey
Malta			
Netherlands			
New Zealand			
Norway			
Oman			
Panama			
Poland			
Portugal			
Qatar			
Romania			
Saudi Arabia			
Singapore			
Slovak Republic			
Slovenia			
Spain			
Sweden			
Switzerland			
United Arab Emirates			
United Kingdom			
United States			
Uruguay			

\*\* The regional groupings are based on the World Bank's country classifications by income level, the July 22 update using the GNI per capita, Atlas Method. Retrieved in Dec 2022 from: <https://data.worldbank.org/indicator/NY.GNP.PCAP.CD>



### C.3. Commodity-producer groupings

Given the 20-year time series, resource dependent nations have been classified as those where natural resource rents are, on average, at least 10 percent of their GDP throughout the years. Resource rents as % of GDP has been obtained from the World Bank (World Development Indicators). Additionally, the UNCTAD's definition has been used to define a country as dependent on commodities when these account for more than 60% of its total merchandise exports in value terms (on average for the full period). Share of commodities has been sourced from the WTO – using the merchandise exports by product group (SITC 3-digit) data.

**The report identifies all the below-mentioned nations as commodity dependent:**

either with resource rents greater than 10% of GDP OR share of commodities in exports greater than 60%.

The ones highlighted in bold are those that meet both criteria.

Country Name	Main Resource/ Commodity	Resource Rents (% of GDP)	% share of all commodities in total merchandise exports
<b>Angola</b>	<b>Fuel exports</b>	<b>33.22</b>	<b>96.90</b>
Argentina	Agricultural exports	3.35	65.48
Australia	Minerals, ore and metals exports	5.01	73.83
<b>Azerbaijan</b>	<b>Fuel exports</b>	<b>28.69</b>	<b>95.54</b>
<b>Bahrain</b>	<b>Fuel exports</b>	<b>18.37</b>	<b>82.27</b>
Bolivia	Minerals, ore and metals exports	7.73	85.31
Cameroon	Fuel exports	6.87	87.51
Chile	Minerals, ores and metals exports	7.97	84.63
Colombia	Fuel exports	5.69	69.35
Congo	Fuel exports	42.64	45.10
Côte d'Ivoire	Agricultural exports	3.96	76.74
<b>Ecuador</b>	<b>Agricultural exports</b>	<b>11.35</b>	<b>90.76</b>
Iceland	Agricultural exports	0.00	84.12
<b>Iran</b>	<b>Fuel exports</b>	<b>25.77</b>	<b>77.57</b>
Jamaica	Minerals, ore and metals exports	1.45	88.15
<b>Kazakhstan</b>	<b>Fuel exports</b>	<b>21.95</b>	<b>85.08</b>
Kenya	Agricultural exports	2.95	67.61
<b>Kuwait</b>	<b>Fuel exports</b>	<b>46.31</b>	<b>92.78</b>
<b>Mongolia</b>	<b>Minerals, ore and metals exports</b>	<b>18.33</b>	<b>77.31</b>
Namibia	Minerals, ore and metals exports	1.85	61.82
New Zealand	Agricultural exports	1.55	73.85
Niger	Minerals, ore and metals exports	8.36	67.50
<b>Nigeria</b>	<b>Fuel exports</b>	<b>13.62</b>	<b>92.65</b>
Norway	Fuel exports	8.81	77.47
<b>Oman</b>	<b>Fuel exports</b>	<b>36.65</b>	<b>80.11</b>
Paraguay	Agricultural exports	1.62	88.11
Peru	Minerals, ore and metals exports	6.93	68.93
<b>Qatar</b>	<b>Fuel exports</b>	<b>30.12</b>	<b>88.74</b>
<b>Russia</b>	<b>Fuel exports</b>	<b>15.44</b>	<b>70.33</b>
Rwanda	Minerals, ore and metals exports	6.10	69.14
<b>Saudi Arabia</b>	<b>Fuel exports</b>	<b>38.26</b>	<b>85.15</b>
<b>Uganda</b>	<b>Agricultural exports</b>	<b>11.95</b>	<b>64.59</b>
United Arab Emirates	Fuel exports	20.75	43.49
Uruguay	Agricultural exports	1.28	72.81
<b>Zambia</b>	<b>Minerals, ores and metals</b>	<b>13.45</b>	<b>82.98</b>

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