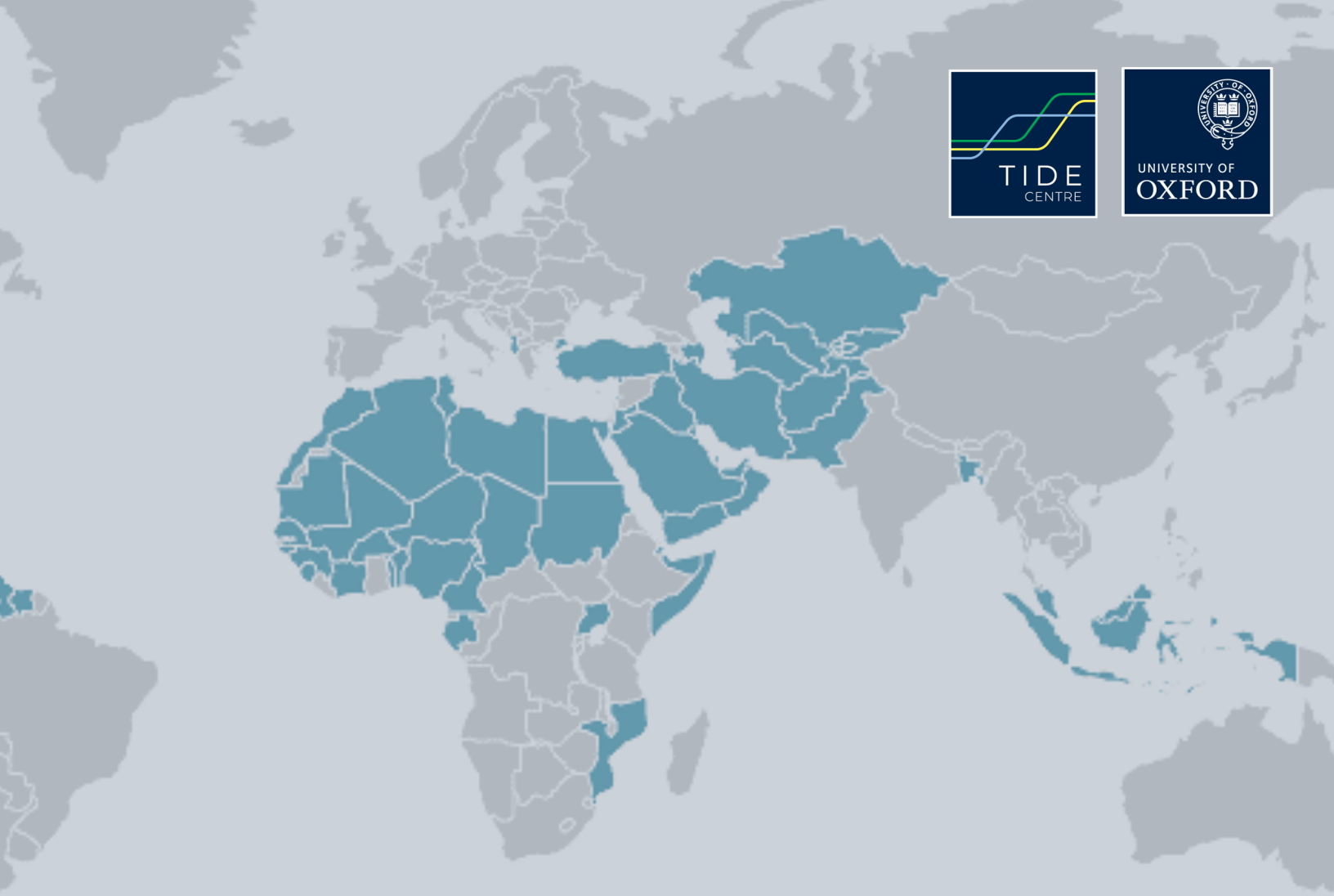


FOR AN INDUSTRIAL POLICY RENAISSANCE IN THE ORGANIZATION OF ISLAMIC COOPERATION COUNTRIES

Reda Cherif, Fuad Hasanov, and Yixuan Li

TECHNOLOGY AND INDUSTRIALISATION FOR DEVELOPMENT (TIDE) CENTRE

WORKING PAPER 99
JUNE 2026

ABOUT THE TIDE CENTRE

The Technology and Industrialisation for Development Centre is as a multidisciplinary research hub within the University of Oxford's Department of International Development. Founded in 2008 and bringing together scholars and practitioners who view technology and industrialisation as essential drivers of sustainable development, the centre explores the complex relationships between trade, investment, technology, innovation and inclusive prosperity.

The Centre (formerly known as TMCD) has built on the pioneering work since the 1970s by Oxford's influential development economists — Frances Stewart, Sanjaya Lall, Barbara Harriss-White, Adrian Wood, and Valpy FitzGerald. In an era when the development agenda was dominated by concerns around food security, poverty reduction, and aid, these thoughts leaders have championed the transformative power of technology and industrialisation as key levers for progress.

Today, the centre's mission is more crucial than ever. With increasing disparities in technological capabilities and a renewed global industrialization race, especially in the transition to a low-carbon economy, it is imperative to push the knowledge frontiers on innovation and industrial policy for local prosperity and true sustainability for all.

Find more about us at oxford-tide.org

ABSTRACT

We study the long-run growth outcomes of the diverse group of the Organization of Islamic Cooperation countries and argue that to achieve high sustained growth, the standard growth recipe is not sufficient. This recipe largely fails to tackle pervasive market failures such as coordination failures and information asymmetries, stifling export diversification, innovation, and growth. We argue for the adoption of a National Diversification System, akin to a National Innovation System, built around three key themes: how to select sectors and which economic activities to focus on; the approach to selecting the tools for firm support and accountability; and the adequate institutional setup to drive the implementation effort.

TABLE OF CONTENTS

For an Industrial Policy Renaissance in the Organization of Islamic Cooperation Countries

Reda Cherif, Fuad Hasanov, and Yixuan Li[1]

1. Introduction: Lessons for Growth from the Asian Miracles

Policymakers in developing economies, including resource-rich ones, face a common grand challenge of economic diversification. That is, the countries need to implement policies to diversify their economies away from the dependence on commodity exports or low-skill industries such as tourism or textiles. The pressure to diversify their economies stems from the need to escape various development traps: low- or middle-income traps or resource curse, including the risks associated with a dependence on different types of commodities. Policymakers understand that the growth model pursued so far has not, by and large, delivered substantial gains in income. For instance, growth was not sufficient to alleviate poverty sufficiently or reduce dependence on commodity exports, exposing countries to the vagaries of international commodity markets and volatile commodity prices. The engine of a growth model relies on the vitality of the export industry, which for a large majority of developing economies remains limited to a few low-skill sectors or commodities. In other words, there is a need to move away from these activities toward new ones. The main issue then is which sectors to diversify into and how to do it.

We argue that to achieve "true" diversification, a radical change of the growth model is needed, with an emphasis on developing dynamic export industries and going beyond the standard growth prescription, which has been pursued for several decades by most countries (Cherif, Engher, and Hasanov 2024). The latter consists in the provision of what can be described as an enabling business environment, that is, investing in public infrastructure, education, and providing an adequate regulatory framework, generally suggested by the economics profession. However, we argue that despite consistent progress along those dimensions, most developing economies have not achieved high and sustained growth. We also use the experience of the Gulf Cooperation Council (GCC) countries such as Saudi Arabia and United Arab Emirates (UAE) as a quasi-natural experiment that standard growth prescription is not sufficient for long-run productivity gains and growth. Indeed, over the last four decades, these economies have

[1] Cherif: International Monetary Fund, Bennett School for Public Policy at the University of Cambridge, and the Technology and Industrialization for Development Centre at the University of Oxford. Hasanov: International Monetary Fund, Georgetown University, Bennett School for Public Policy at the University of Cambridge, and Technology and Industrialization for Development Centre at the University of Oxford (corresponding author). Li: Georgetown University. The views expressed in this paper are those of the authors and do not necessarily represent the views of the IMF, its Executive Board, or IMF management. All errors are our own.

achieved levels of macroeconomic stability and institutions comparable to many advanced economies in terms of the quality of infrastructure, competitiveness, and governance. Moreover, the labor market of these economies has been much more open than that of any advanced economy, where large numbers of foreign workers could be hired, from the lowest to the highest skillset. They also had low levels of taxation and regulation. Yet, they have been losing ground in terms of productivity and relative income per capita. In other words, no dynamic non-oil export sector has emerged despite the success in implementing a standard growth recipe.

The standard growth recipe is not sufficient because it only addresses how to provide an enabling business environment and largely fails to tackle market failures, stifling diversification, innovation, and growth. Developing economies suffer from many market failures such as coordination failures, information asymmetries, the prevailing externalities like knowledge spillovers, and high risk and long return endeavors. These market failures prevent the emergence of sophisticated dynamic export industries. For example, entry in this activity would be too risky for entrepreneurs or banks, precluding high returns and spillovers to the whole economy. These market failures are not a theoretical possibility; rather, they are empirically consistent with the development evidence of the past one-half century.

To remedy this suboptimal outcome, state intervention is needed. Directing resources to the right industries with the right incentives for the support given and a focus on exports, is key. This is a "true" industrial policy (Cherif and Hasanov 2019a, 2019b). In contrast, the adoption of a laissez-faire approach would be more conducive to less risky, mostly non-tradable, activities, while import substitution industrialization creates misaligned incentives and unsustainable industries in the long run (Cherif and Hasanov 2019a, 2024).

The economies known as the Asian miracles (e.g., Korea and Singapore) managed to grow from low income to high income within a couple of generations with the use of a "true" industrial policy. Cherif and Hasanov (2019a, 2019b) distill the main principles of their industrial policy, distinguishing them from the failed industrial policies of the past (see also Cherif and Hasanov 2024): (i) direction of resources toward sophisticated tradable sectors (see also Lee 2019 and Fu 2015); (ii) a focus on export orientation; and (iii) strong competition and accountability for the support received.

We show the overall picture of the Organization of Islamic Cooperation (OIC) countries in terms of the standard growth recipe, illustrating the great diversity of progress along these dimensions. We also show their performance in terms of relative income, export sophistication, and investment. We find that all countries suffer from a low level of investment in research and development (R&D) and innovation, even after controlling for their relative income level.

To follow in the footsteps of the Asian miracles, the OIC countries need to put export diversification as the key objective of their industrial policy by setting up a National Diversification System (NDS), similar to a National Innovation System (Nelson 1993), but focused

not only on innovation but also on economic diversification. This entails the implementation of the three key principles of the 'true' industrial policy such as selecting sectors, building capabilities, coordinating all the policy tools, and enforcing accountability and competition (Cherif, Hasanov, and Sarsenbayev 2024).

The NDS framework needs to specify the right institutional setup that will devise a strategy for sector selection and then implement it. The key institution or agency needs to drive the agenda and coordinate across public agencies and private enterprises. It is key to the successful implementation of industrial policy. In addition, the sector selection strategy needs to be based on a mix of three types of sectors, distinguished between two dimensions and associated with varying degrees of risk and timeframe. These two dimensions are the distance to the current level of capabilities and the extent of domestic ownership. Snail-crawl sectors, that is, short-term "quick wins," are mostly close to existing activities; leapfrog sectors, somewhat further away from the existing capabilities, should bear results in the medium run; and "moonshot sectors" are sophisticated and long-term transformative sectors for the long run. The key takeaway is that a strategy that focuses only on snail-crawl sectors such as tourism and low-skill manufacturing, will only yield snail-crawl growth at best, suggesting that for such sectors the extent of state intervention should be minimal.

The literature on development largely stresses governance in state-business relations. In the Middle East, the constraints of rentier-state dynamics, oil dependence, and weak bureaucratic coherence limited effective industrial policy (Malik 2014; Hertog 2010; Richards and Waterbury 2008; Cammett et al. 2015). Resource rents reduced the pressure to diversify, while weak governance fueled rent-seeking. Unlike East Asia's performance-based state-business bargains, industrial policies in the Middle East, mostly import-substitution industrialization, resulted in inefficiency and uncompetitive industries. Similarly, India in South Asia initially pursued heavy state intervention and import-substitution policies, but weak state-business relations and protectionism limited the coherence of industrial policy (Chibber 2003 and Kohli 2004). Subsequent liberalization in the 1980s-90s shifted growth toward services and selective manufacturing, with less emphasis on state-led industrial upgrading compared to East Asia (Nayar 2001, Rodrik and Subramanian 2004, and Panagariya 2008). The lessons from these countries highlight the importance of institutional capacity, political coalitions, and competition in shaping industrial outcomes.In contrast, in East Asia, the strong state-business relations focused on exports and growth of domestic industries while emphasizing innovation and technological development. The East Asian "developmental states" such as Japan and South Korea used targeted interventions, including directed credit, technology transfer, export promotion, and performance monitoring, to foster globally competitive industries. In building these industries, they emphasized creating homegrown technology by combining strong bureaucratic capacity with the ability to discipline capital and firm support and using exports as a market signal (Johnson 1982, Amsden 1989, Wade 1990, and Chang 2002).

In the next sections, we discuss the growth outcomes of the OIC countries, describe a "true" industrial policy, which is essentially a technology and innovation policy, summarize an NDS framework, and conclude.

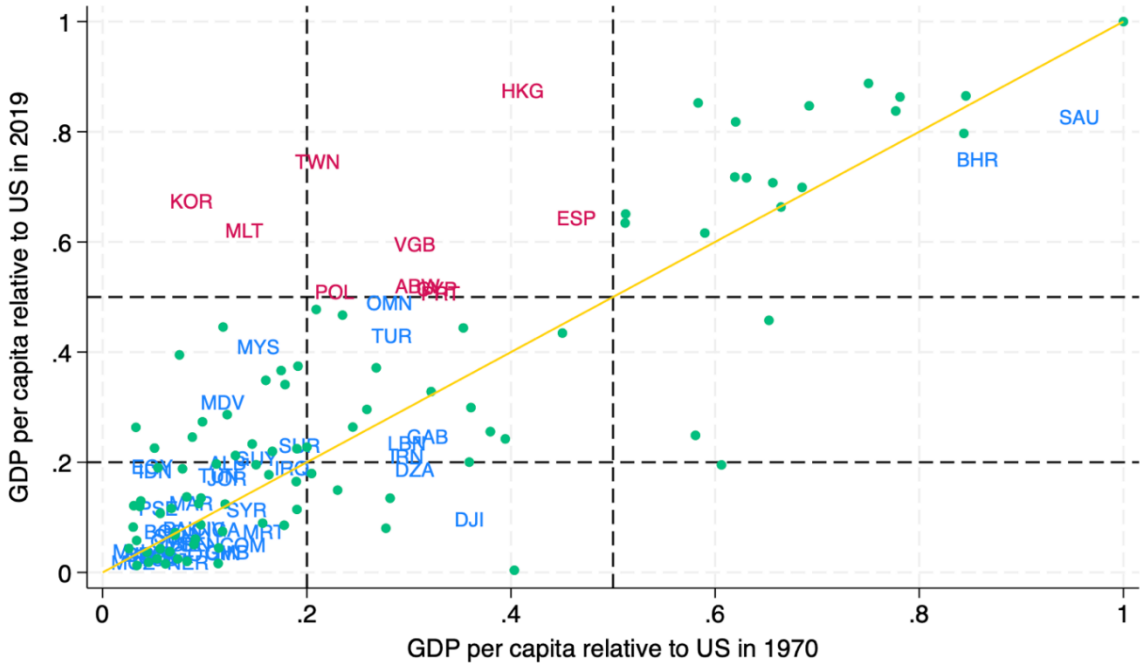
2. Long-Run Growth Outcomes in the OIC: An Enabling Business Environment and Market Failures

One of the most striking stylized facts about economic development over the past 50 years can be summarized in one sentence—most countries have not gained much on advanced countries (Figure 1). In terms of relative income per capita vis-à-vis the U.S., most countries, including OIC members, either have stagnated or fallen back. Only a few economies made it from low- or middle-income (below 50 percent of the relative U.S. income) to high-income status (over 50 percent of the relative U.S. income) over 1970-2019 (Figure 1). None of them is an OIC member. Excluding relatively large commodity (to population) endowment economies, or countries that benefitted from joining the European Union (EU), only the Asian miracles such as Korea, Taiwan, and Singapore, remain.

Interpreting this growth outcome depends on what one "knows" about economic growth. In this regard, there are broadly two schools. One school, which we describe as the standard growth recipe, posits that to increase long-run growth countries have to prioritize macroeconomic stability, the provision of public goods such as infrastructure and education, minimize "distortions," namely, avoiding state intervention in markets, and the provision of an enabling business environment.[2] Providing an "enabling business environment"—structural reforms—is what the state should do. The institutions enabling the standard growth recipe are broadly considered as "good" institutions. This approach to growth policy implies that most countries of the world have failed to build good institutions over the last 50 years, while the Asian miracles were the only few lucky ones achieving this feat.

[2] See for example Williamson (1990) and Birdsall (2025).

Figure 1. Development at a Glance: Real GDP per Capita Relative to that of the U.S.



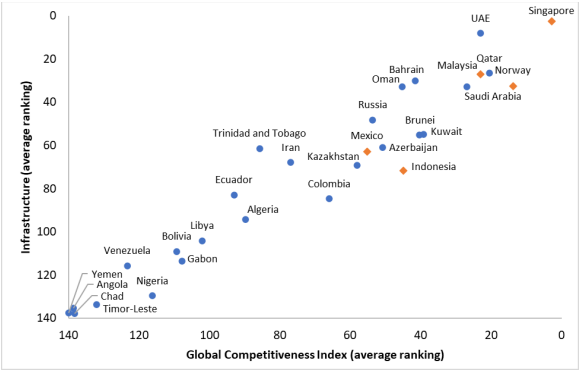
There is another school challenging this view, mostly based on the existence of market failures, justifying state intervention in the markets for development and growth, namely, industrial policy. Indeed, in a world riddled with market failures such as positive externalities (e.g., knowledge spillovers), coordination failures, increasing returns to scale, and network effects, the provision of public goods and an enabling environment is not sufficient and would still lead to suboptimal outcomes. For example, certain sectors such as manufacturing industries have extensive learning-by-doing and positive spillovers, while there is not much in low-skill services such as tourism. However, entrepreneurs would generally decide to invest in less risky and higher return endeavors because firms cannot appropriate the economy-wide benefits of manufacturing (e.g., Chang 2002, Wade 1990, Amsden 1989, Stiglitz and Greenwald 2014, and Rodrik 2009, among others). Market failures are especially widespread in sophisticated industries, requiring state intervention to correct them.

Moreover, as noted in this literature, the few successes at achieving high-income status within a couple of generations were far from only implementing the standard growth recipe. In other words, there is a case of misdiagnosis of the sources of their growth over the first two decades of their fast development. If indicators of the business environment existed in the 1970s and 1980s, Korea would have certainly received a relatively low score given the extent of state intervention, multiple exchange rate regimes, segmented credit markets, and other types of market "distortions." It was the focus on resolving market failures in key sophisticated industries that was important to generate high sustained growth over decades.

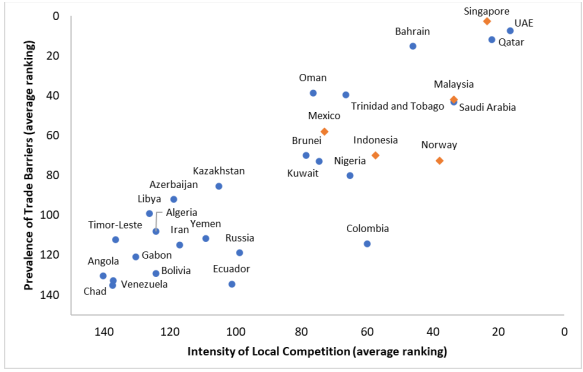
As argued by Cherif and Hasanov (2016), the countries of the GCC could be considered as a quasi-natural experiment in assessing the importance of providing an enabling business environment vs. tackling market failures. As shown in Figure 2, the GCC countries made striking progress in terms of the main dimensions of the standard growth recipe, providing an enabling business environment, including the quality of infrastructure, business environment, taxes, and tariffs. In fact, some of them have better scores than many advanced economies. Moreover, the GCC countries certainly score much better than the Asian miracles in the 1970s and 1980s or other oil exporters of the past like Malaysia and Indonesia that have generated relatively high growth over the past few decades. However, studying their performance in terms of real GDP per capita relative to that of the U.S., one discovers a secular decline in relative income and productivity. Their total non-oil exports did not grow or expand much except for petrochemicals, while their export sophistication stagnated (Cherif, Hasanov, and Sarsenbayev 2024). Although the GCC countries have largely managed to provide an enabling business environment, they have not tackled market failures, resulting in subpar growth and productivity outcomes observed.

Figure 2. Providing an Enabling Business Environment

A. Global Competitiveness Index vs. Infrastructure, Average Rankings over 2007-2019

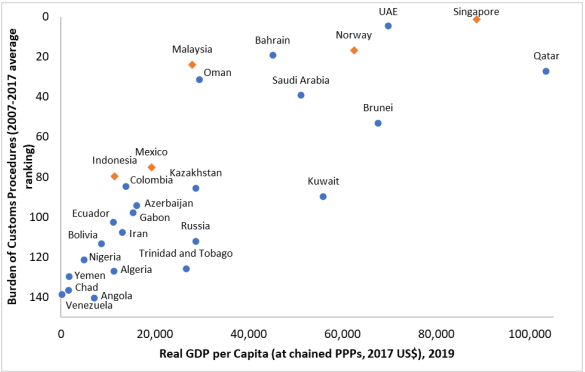


B. Monopoly Related Indicators, Average Rankings over 2007-2017



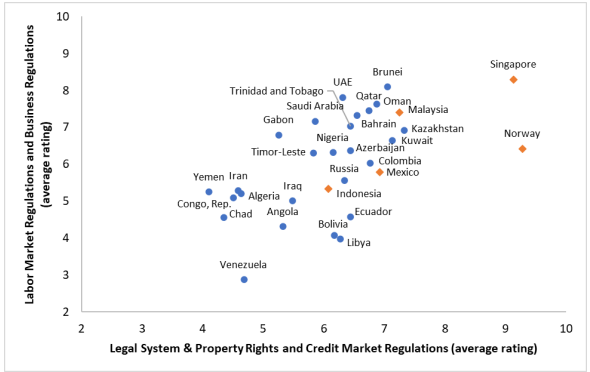
Source: World Economic Forum (Global Competitiveness Index rankings for various years, data downloaded via World Bank).

C. Burden of Customs Procedures, Average Rankings over 2007-2017



Sources: World Economic Forum (Global Competitiveness Index rankings for various years, data downloaded via World Bank), and Penn World Table, version 10.01 (Feenstra et al. 2015).

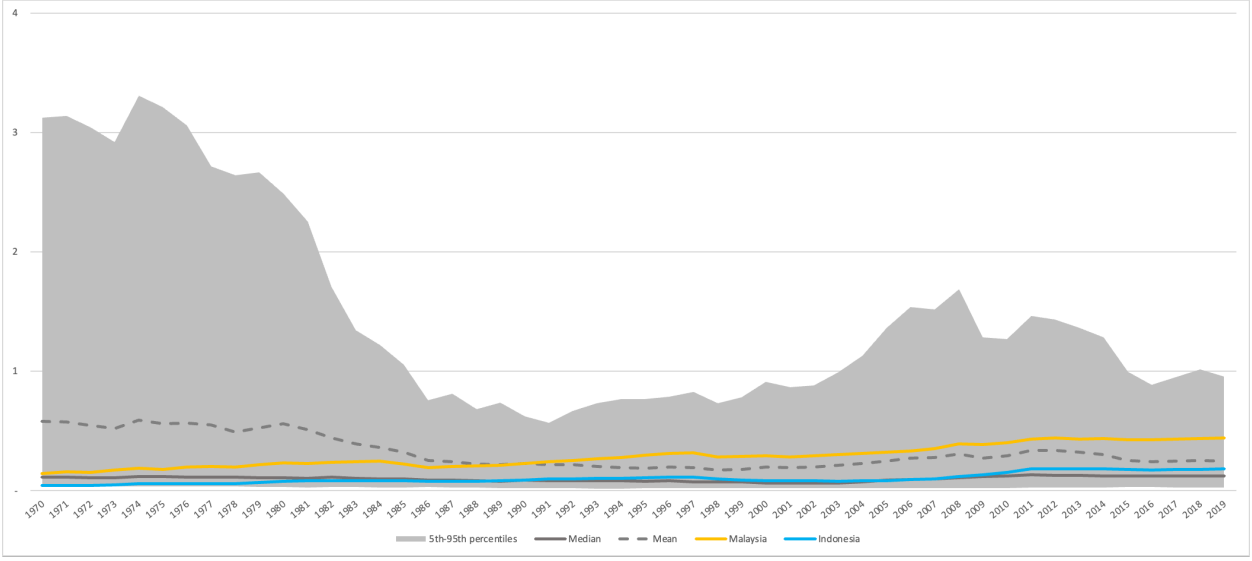
D. Governance Indicators, Average Ratings over 2000-2020



Note: Ratings are out of 10. Ratings are averaged both over indicators and years.
Source : Fraser Institute (Gwartney et al. 2022).

The growth experience of the OIC countries shows a similar outcome as in many other developing countries, and out of 57 members, only a few have been growing relatively well. Low- and low-middle income countries (below 20 percent of the U.S. real GDP per capita) have mostly fallen behind with a few countries such as Indonesia and Albania reaching the threshold of high-middle income by 2019. Only two countries, Maldives (island) and Malaysia, grew beyond the threshold into the high-middle income category. From high-middle income countries in 1970 (between 20 and 50 percent of the U.S. real GDP per capita) only Turkey and Oman (oil exporter) have increased their relative income closer to the high-income threshold of the 50 percent of the U.S. real GDP per capita. Many rich oil exporters like the GCC countries (Bahrain and Saudi Arabia in Figure 1) have been losing ground in relative income terms, and on average the OIC countries have not reduced the gap with the U.S. real GDP per capita (Figure 3).

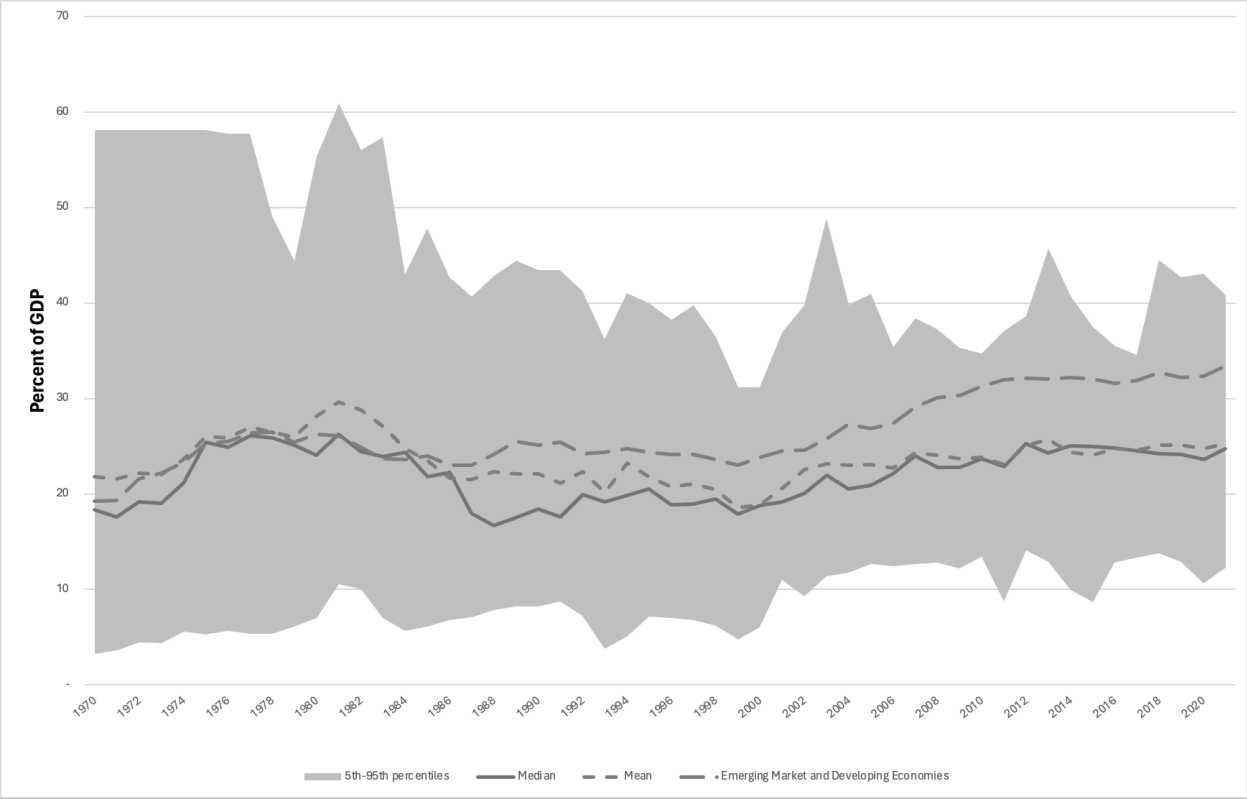
Figure 3. Real GDP per Capita Relative to that of the U.S., 1970-2019



Source: Penn World Table, version 10.01 (Feenstra et al. 2015).

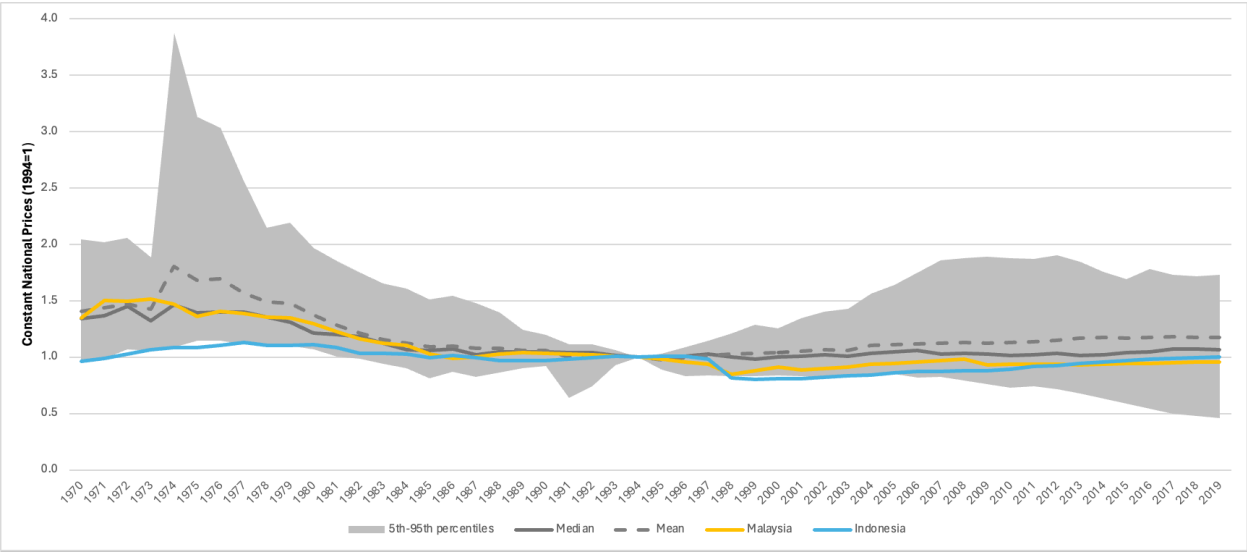
Some key indicators for high sustained growth show that many OIC countries have not performed well. Although the average or median total investment (as percent of GDP) has increased from below 20 percent since the 1990s to about 25 percent for the past decade, it is still below the mean rate for emerging and developing countries, which in 2021 reached about 33 percent of GDP (Figure 4). Moreover, this investment has not translated much into total factor productivity (TFP) growth (Figure 5) with the average TFP growth of about 0.6 percent per year in the past three decades (1991-2019). Even high growth countries like Indonesia and Malaysia have witnessed productivity stagnation since the mid-90s. High productivity growth countries in the OIC tend to be low-income countries and a few high-middle income former Soviet Union republics like Kazakhstan (Figure 6).

Figure 4. Total Investment (percent of GDP, 1970-2021)



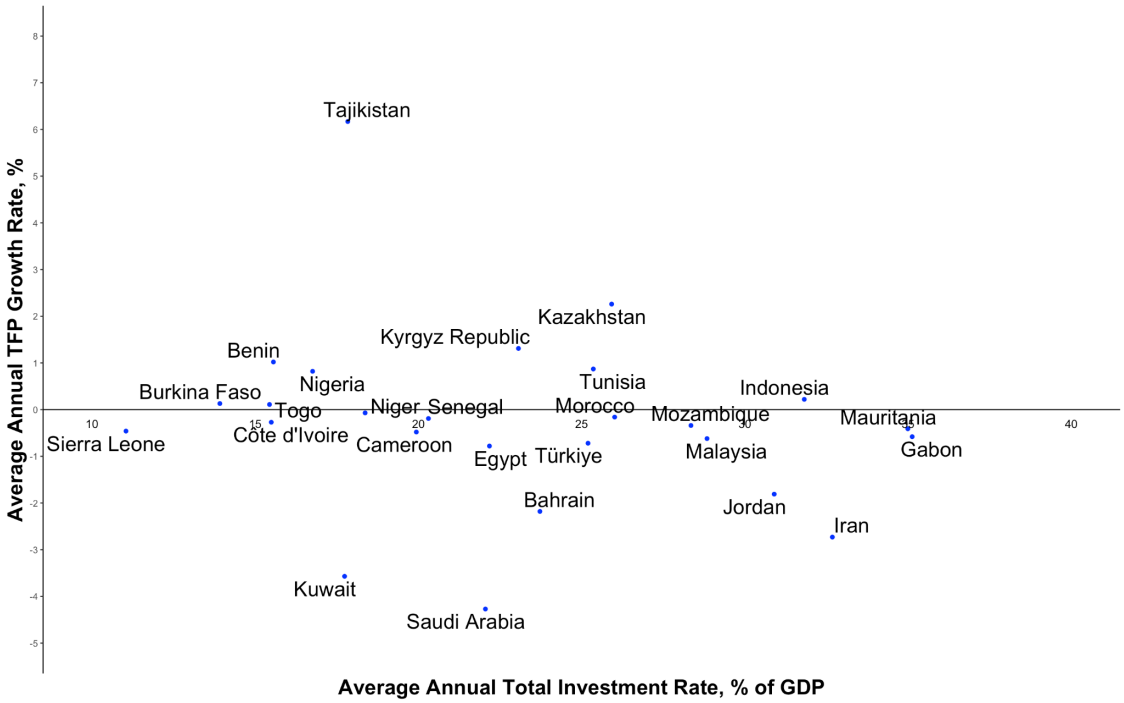
Source: IMF's World Economic Outlook database, April 2023

Figure 5. TFP Growth (Constant National Prices, 1994=1, 1970-2019)



Source: Penn World Table, version 10.01 (Feenstra et al. 2015).

Figure 6. TFP Growth vs. Investment Rate (1970-2019)



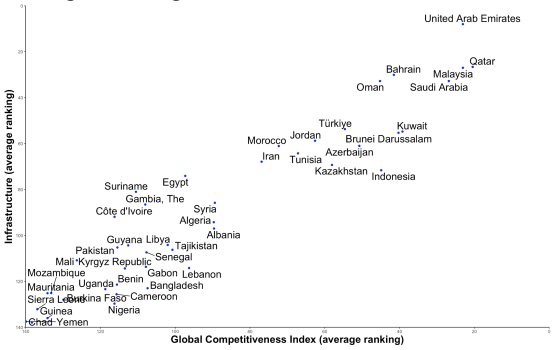
Source: Penn World Table, version 10.01 (Feenstra et al. 2015), and IMF's World Economic Outlook database, April 2023.

Many indicators of the quality of "business environment" for many low-income and low-middle income OIC countries suggest room for improvement. Such indicators as competitiveness and trade barriers, competition intensity and infrastructure, and labor, business, and credit regulations show that there is a large diversity across the OIC countries (Figure 7). Some countries like the GCC and Malaysia are doing relatively well on many of these indicators, but others are underperforming. In addition, fiscal space as indicated by public debt as a percent of GDP for many countries is constrained (Figure 8). Although the public debt ratios fell from 2000 to 2022 for many countries, they are still relatively elevated.

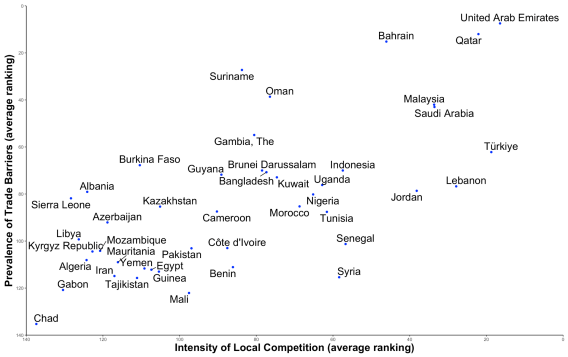
For the OIC oil exporters, non-oil exports per capita have not grown substantially to start replacing oil exports as the energy transition looms. High investment rates have not supported the growth of the non-oil sector (Figure 9), going largely to infrastructure for non-tradable sectors, although high investment is optimal when productivity of the sector is high (Cherif and Hasanov 2013). Interpreting non-oil exports as the return on investment, large returns from relatively high investments are generated in Bahrain and the UAE, about 6.5 percent while that in Malaysia is above 10 percent (Figure 10, panels A and C). Other oil exporters invested much less in per capita terms, and for some of them, returns have been closer to 10 percent (45-degree line in Figure 10), but non-oil exports per capita are quite small. The same outcome for total exports per capita is observed for the OIC non-oil exporters (Figure 10, panels B and D). The returns are less than 10 percent for most countries and for those closer to 10 percent, exports per capita are relatively small (less than $1000 per capita per year).

Figure 7. Providing an Enabling Business Environment in the OIC

A. Global Competitiveness Index vs. Infrastructure, Average Rankings over 2007-2019

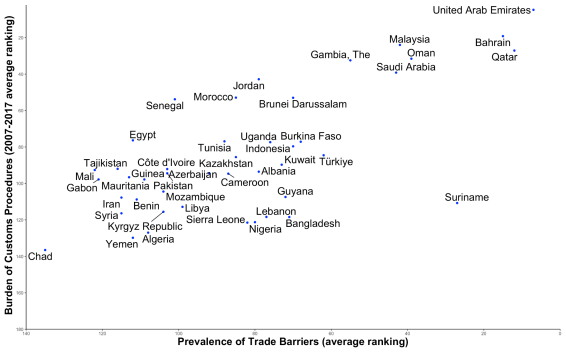


B. Monopoly Related Indicators, Average Rankings over 2007-2017



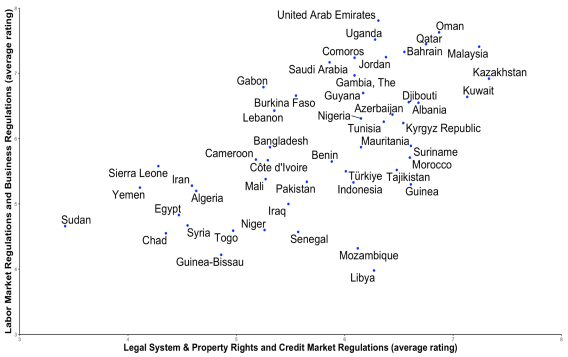
Source: World Economic Forum (Global Competitiveness Index rankings for various years, data downloaded via World Bank).

C. Burden of Customs Procedures, Average Rankings over 2007-2017



Sources: World Economic Forum (Global Competitiveness Index rankings for various years, data downloaded via World Bank), and Penn World Table, version 10.01 (Feenstra et al. 2015).

D. Governance Indicators, Average Ratings over 2000-2020



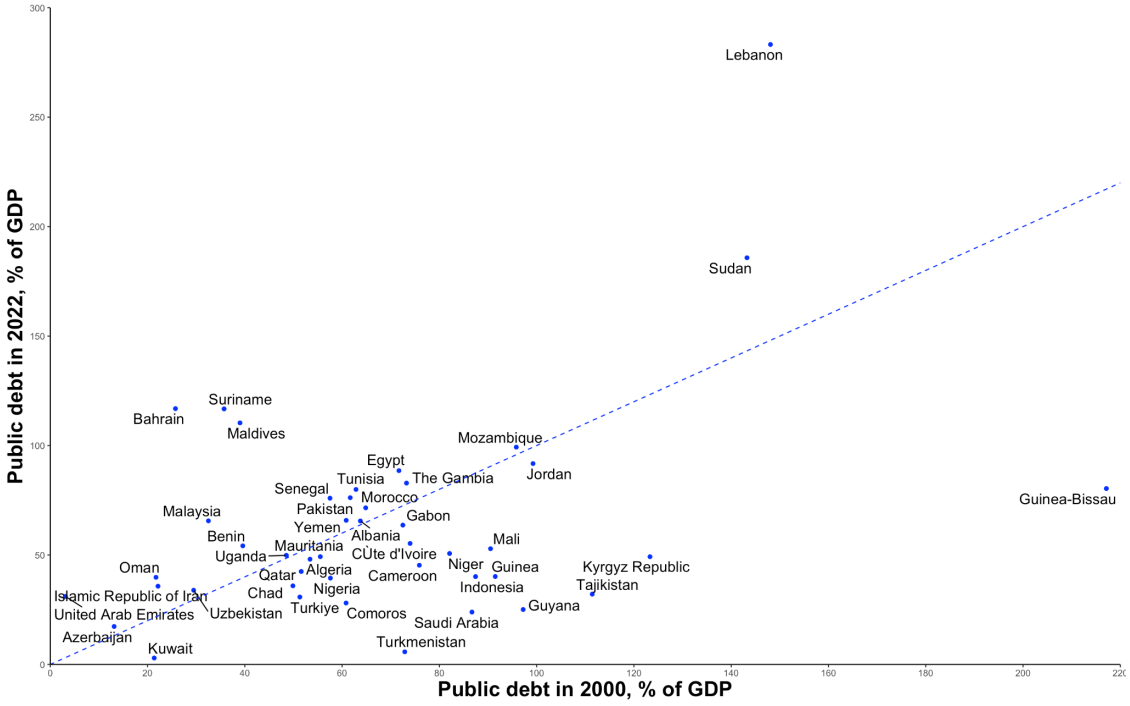
Note: Ratings are out of 10. Ratings are averaged both over indicators and years.

Source : Fraser Institute (Gwartney et al. 2022).

The export sophistication and manufacturing exports for many OIC countries have lagged behind the better-performing countries like Malaysia, generating less favorable growth outcomes. Although structural export sophistication (Cherif, Hasanov, and Wang 2018) has increased over time, another key indicator of export sophistication—real manufacturing exports per capita—has not improved much for many OIC economies (Figures 11 and 12).[3]

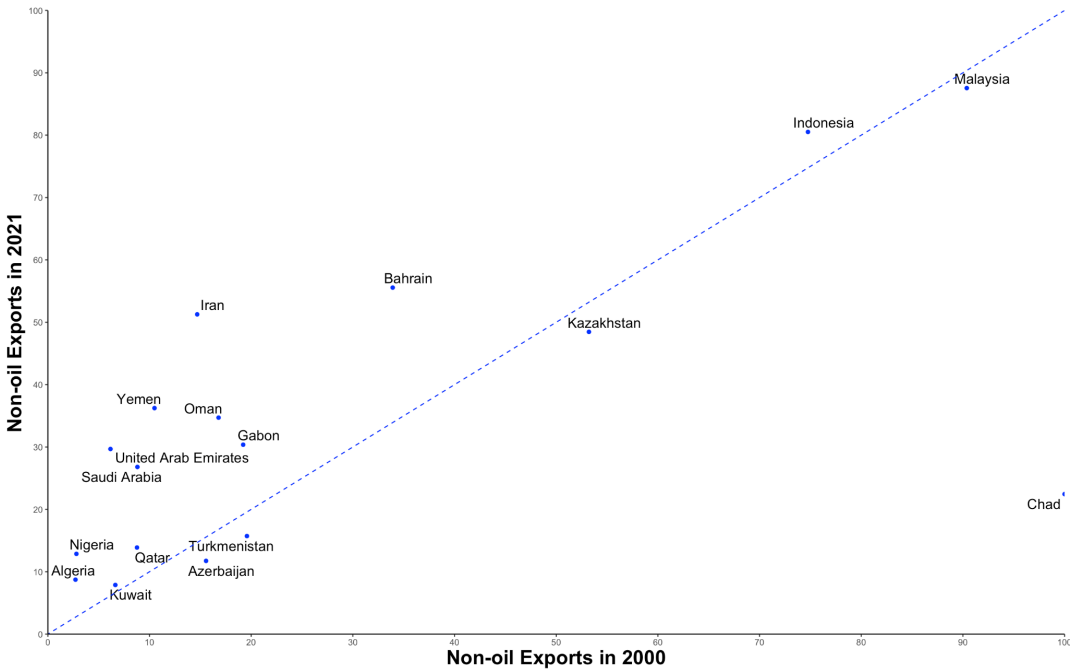
[3] The export sophistication measure of Hausmann, Hwang, and Rodrik (2007) relates the sophistication of a product to the average income of economies exporting this product. It artificially inflates the relative value of the export sophistication of oil exporters given that there are many high-income (and small population) oil rich economies. Cherif, Hasanov, and Wang (2018) discount the high share of commodity exports of high-income commodity exporters, correcting this bias.

Figure 8. Public Debt (percent of GDP, 2000 vs. 2022)



Note: The dotted line is a 45-degree line.
Source: IMF's World Economic Outlook database, April 2024.

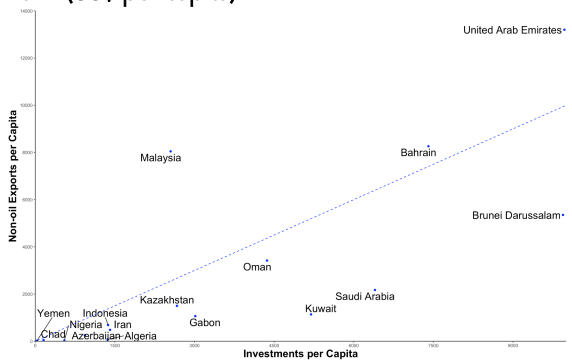
Figure 9. Non-oil Exports (percent of total exports, OIC oil exporters, 2000 vs. 2021)



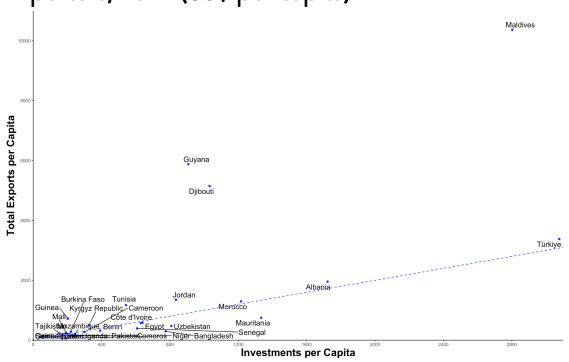
Source: IMF's World Economic Outlook database, April 2023.
Note: The dotted line is a 45-degree line.

Figure 10. Exports per Capita vs. Investment (Oil and Non-Oil OIC Exporters, 2021 US$)

A. Non-oil Exports vs. Investment for OIC Oil Exporters, 2021 (US$ per capita)

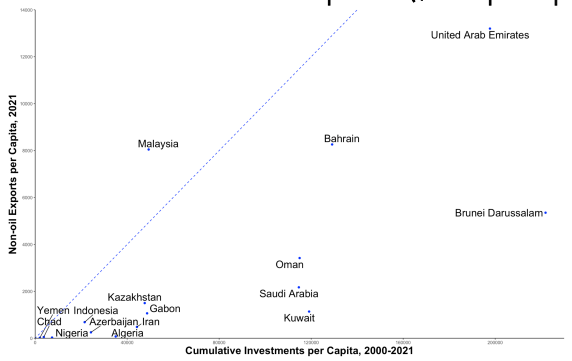


B. Total Exports vs. Investment for OIC Non-Oil Exporters, 2021 (US$ per capita)



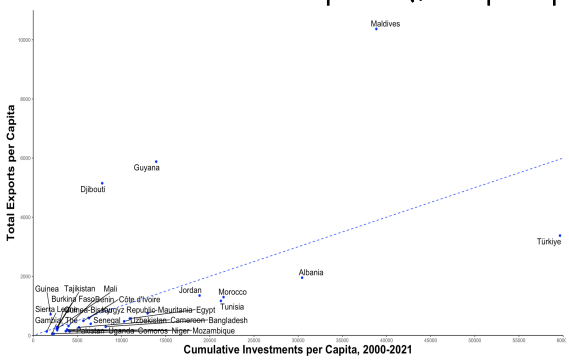
Source: IMF's World Economic Outlook database, April 2023, and World Bank's World Development Indicators database. Note: The dotted line is a 45-degree line.

C. Non-oil Exports in 2021 vs. Cumulative Investment over 2000-2021 for OIC Oil Exporters ($2021 per capita)



Sources: IMF's World Economic Outlook database, April 2023, and World Bank's World Development Indicators database.

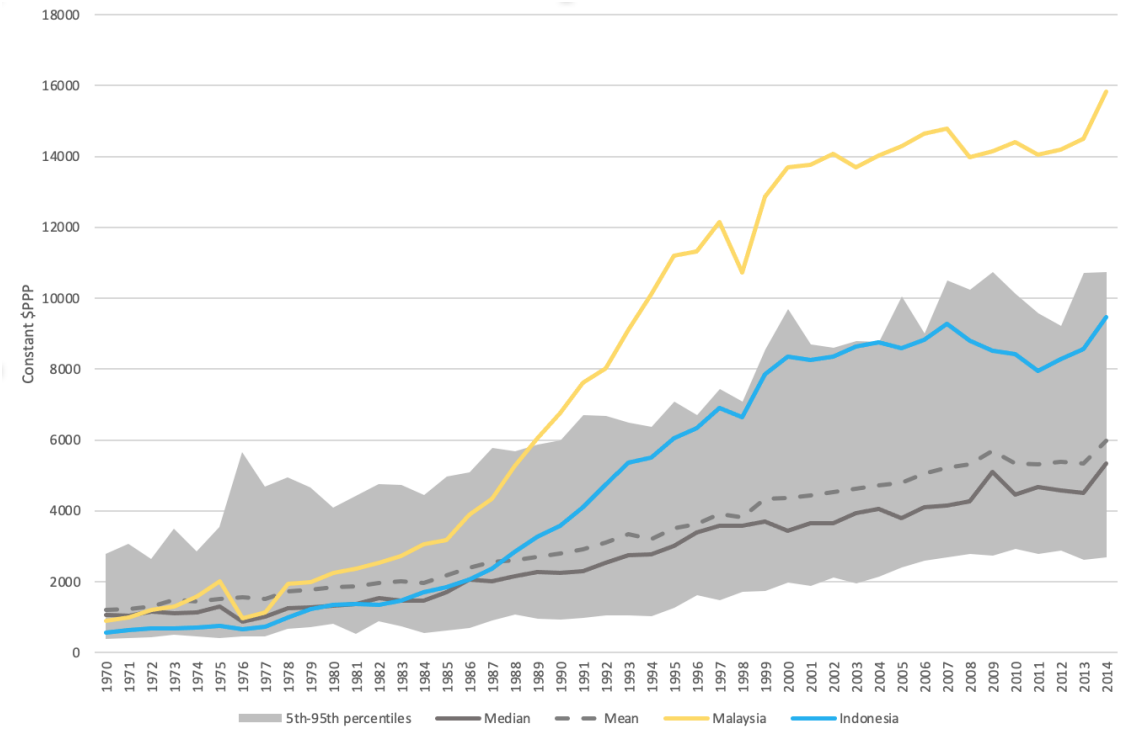
D. Total Exports in 2021 vs. Cumulative Investment over 2000-2021 for OIC Non-Oil Exporters ($2021 per capita)



Note: Cumulative investments per capita are calculated by dividing the sum of real investments (in $2021) over 2000-2021 by population in 2021. The dotted line is a 45-degree line with a y to x axis scale of 1x10 (equivalent to a return of 10 percent).

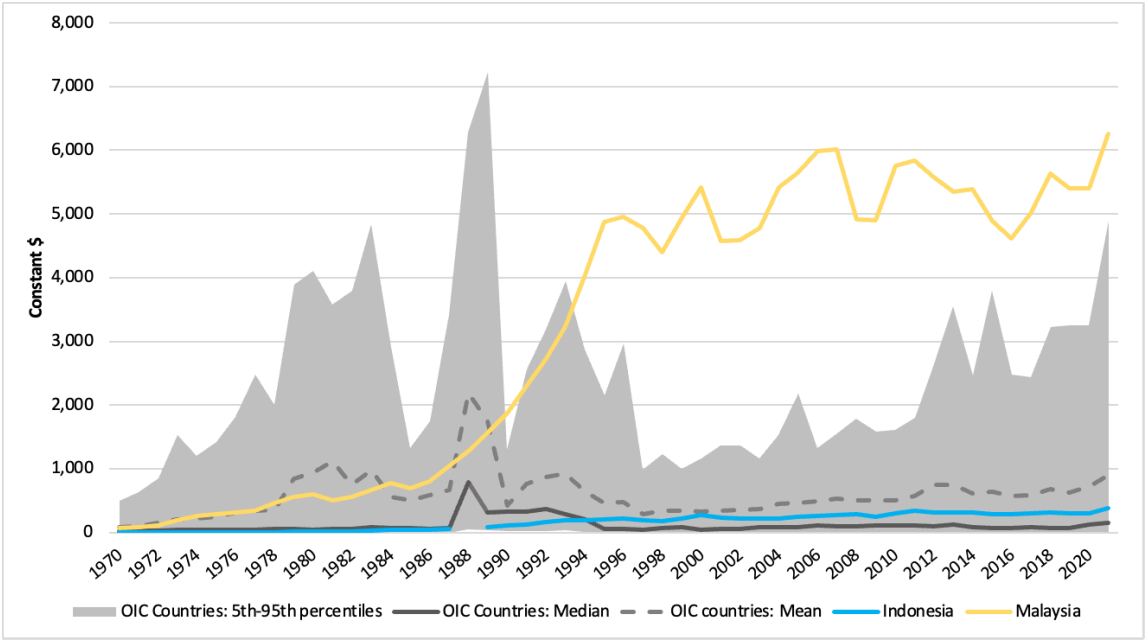
More important, especially for middle-income countries, innovation measures such as R&D spending and patents filed are very low (Figures 13 and 14). The levels of R&D expenditure to GDP are low compared to the best performers such as Korea, but more important they are low even when controlling for relative income. In contrast, countries such as Korea were outperforming most countries in terms of R&D expenditure throughout their high-growth period, even when they were relatively poor. The technology creation as indicated by high spending on R&D and the resulting patents catapulted Korea to high-income status within a couple of generations. Technology and innovation spending is especially paramount for middle-income countries that are attempting to escape the middle-income trap fast (Cherif and Hasanov 2019c).

Figure 11. Structural Export Sophistication (Constant $PPP, 1970-2014)



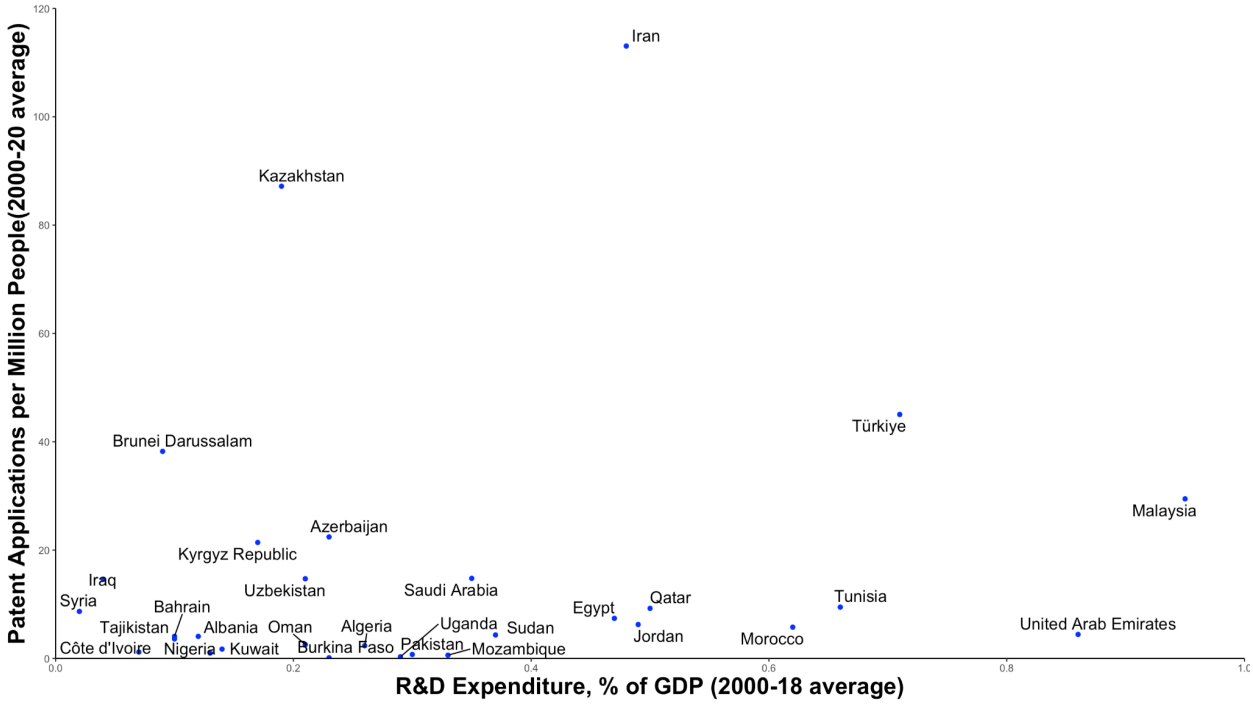
Source: Cherif, Hasanov, and Wang (2018).

Figure 12. Real Manufacturing Exports per Capita (constant $2021, 1970-2021)



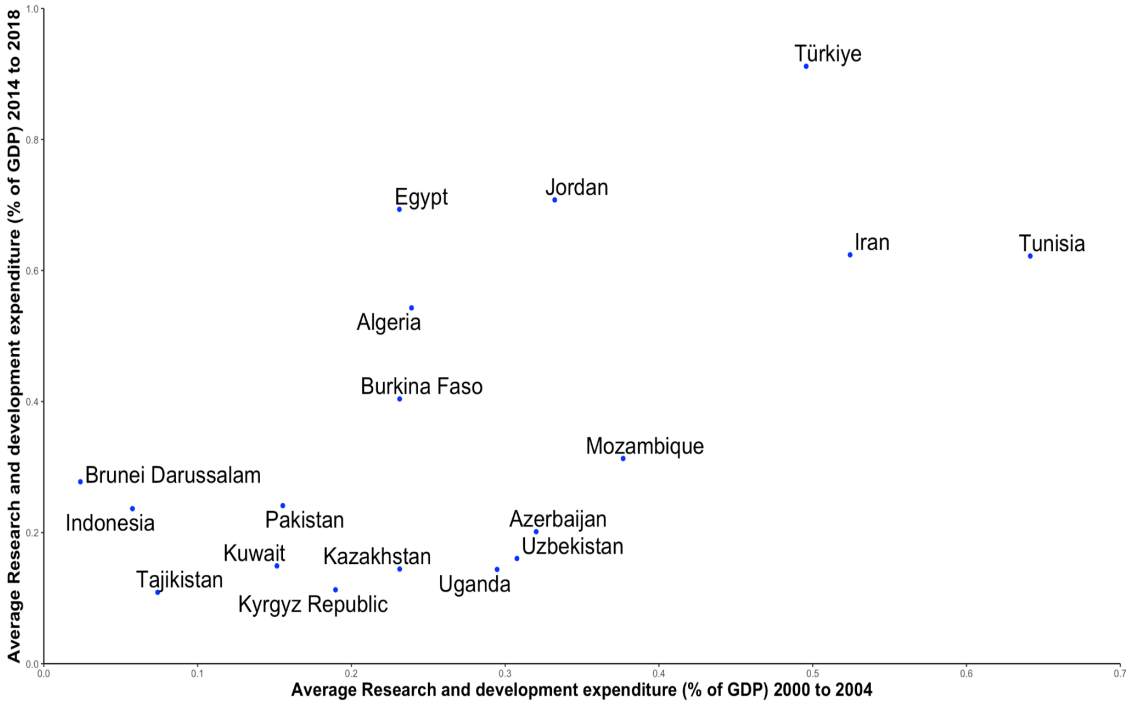
Source: World Bank's World Development Indicators database.

Figure 13. Average R&D Spending (percent of GDP) vs. Average Patents per Million People



Source: Ritchie et al (2023).

Figure 14. R&D Spending (percent of GDP, Early 2000s vs. Late 2010s)



Source: Ritchie et al (2023)

3. A TIP, or Technology and Innovation Policy, for Growth

The current growth model of the OIC countries needs to achieve a structural transformation to generate high sustained growth. Cherif and Hasanov (2019a, 2019b) distill the lessons from the experience of the Asian miracles that generated high sustained growth for decades, a "true" industrial policy, which in its core amounts to a technology and innovation policy (TIP). In doing so, they contrast industrial policy of the Asian miracles with the one pursued by other developing countries in the 1970s. They emphasize that the key missing ingredient is the lack of export orientation (see also Cherif and Hasanov 2024). They also argue that there are strong commonalities among the Asian miracles in terms of policies pursued. They conclude that the successful industrial policy they pursued relied on three principles:

- Move to sophistication: The state intervened to direct resources toward tradable sophisticated industries, including beyond current comparative advantage.

- Export, export, export: The highest priority was given to developing exporting industries with firms focusing on international markets from the onset.

- Compete and be accountable: The state support provided was accompanied by strict accountability, letting firms fold when necessary, and intense domestic competition.

As argued above, the existence of market failures justifies state intervention, especially in sophisticated industries. While the state in many developing economies, including in OIC, do intervene, one sharp distinction with the Asian miracles is the set of targeted sectors. While in the former, the typical industry being supported consists in tourism, finance, and real estate, the Asian miracles focused their efforts on sophisticated industries, mostly manufacturing. These are industries characterized by high levels of R&D relative to sales, i.e., electronics, precision machinery, automotive, and pharmaceuticals. This logic can be explained by economic theory: if productivity gains quickly plateau after entering a new task, the only way to maintain high productivity growth is to continuously enter new tasks (Lucas 1993). Traditionally targeted industries like tourism represent a limited set of tasks, frozen in time. A country may gain in terms of employment and revenues for a time if it focuses its efforts on tourism, but its medium to long run growth prospects would be doomed. In contrast, sophisticated industries are more conducive to productivity gains and spillovers to the rest of the economy through domestic suppliers and industry clusters.

Another important component of the first principle is a focus on tradable sectors. As mentioned above, tradable industries like tourism do not have many market failures and thus do not require much state intervention. In fact, providing an "enabling business environment" such as security, regulations, and infrastructure are largely sufficient to encourage private enterprise in these sectors. However, other tradable sophisticated industries require much more than just providing an enabling business environment; rather, market failures of coordination, financing, high risk

and long-term returns, require state support. This approach also rules out much state intervention into nontradable sectors like services, including entertainment, hospitality, and retail. Like tourism, these sectors, once provided with an enabling business environment, would be advanced by private firms without state intervention.

The second principle consists in export orientation from the onset. This strategy was rarely pursued among OIC members. We define "manufacturing export intensity" as the global export share of a country normalized by its population size relative to global population. This change over time of this variable reflects the export orientation of an economy. According to this measure, while most OIC members stagnated, Korea and other good performers in terms of growth increase their manufacturing export intensity to a large extent (Cherif and Hasanov 2019a, 2024). As shown earlier, even real manufacturing exports per capita on average have stagnated in the OIC countries (Figure 12).

There are several reasons explaining the importance of export orientation. Orientation toward international markets gives an incentive to attain sufficient economies of scale and innovate while providing a reliable market signal. This is particularly true for smaller economies, the size of which would not justify investing in many industries. Alternatively, these investments could take place behind tariff protections, but we argue that the industry would not be sustainable in the medium to long run (Cherif and Hasanov 2024). Indeed, exporting forces firms to compete internationally and catch up with the technological frontier. It also induces firms to continually adjust their production methods and management to attain an internationally competitive cost structure. In contrast, protected firms could continue for decades behind the protective shield of tariffs and generate profits. In contrast, exporting such as global market shares would have given the state a reliable market signal to assess the firms' progress. However, an external shock such as a currency crisis or a terms of trade shock could trigger a sudden exposure of the country's uncompetitive model. This was the case in many industries in developing economies in the 1980s developed in 1960s and 1970s during the golden age of import substitution industrialization.

The third principle of "true" industrial policy consists in enforcing accountability and competition. This implies avoiding perpetual state support while creating a system where inefficient firms can be restructured or merged.[4] Korea's large firms, chaebols, all entered in the automotive industry at some point, but only Hyundai (merged with KIA) survived the intense competition after decades of competing among each other. Moreover, the support given to firms was accompanied by strict accountability with a focus on objective and measurable goals such as developing homegrown technology and gaining global market shares. This approach helped avoid cronyism and inefficiencies.

[4] Firms that need to be restructured are not necessarily inefficient but can also be victims of "bad luck" in the sense of picking the wrong technology or being subject to an external shock.

4. The Way Forward: Toward a National System of Diversification

Based on the lessons of the Asian miracles, we provide a system of applying these three principles of "true" industrial policy. This system is built around three key themes: how to select sectors and which economic activities to focus on; the approach to selecting the tools for support and accountability; and the adequate institutional setup to drive the implementation effort. These elements form what we call a National System of Diversification (Cherif, Hasanov, and Sarsenbayev 2024). It is related to Friedrich List's concept of the National System of Political Economy (and later the National System of Innovation, see Nelson 1993). The NSD describes the full spectrum of tools and strategies used by the state to spur diversification into sophisticated industries and foster domestic innovation. For instance, it was specifically used by Germany to catch up with Great Britain, including through active state policies to encourage technology transfers and local diffusion of key technologies.

A strategy for export diversification begins with establishing clear objectives, primarily focusing on the development of non-oil exports to ensure productivity growth and creation of high-paying jobs. While GDP growth is also a goal, it might be secondary, as the initial phase may witness low growth due to resource reallocation from non-tradable to tradable sectors. Key metrics to track include export volumes, global market shares, innovation indicators such as R&D spending and patents, high-skill job creation, and growth measures such as labor productivity and total factor productivity (TFP).

Selecting Sectors and Activities

The core of the strategy involves selecting sectors in three categories: existing, emerging, and potential. The selection approach combines simultaneously three strategies—snail crawl, leapfrogging, and moonshots—to balance immediate gains and long-term transformation.

- Snail Crawl Strategy: Focuses on sectors close to the current production structure, leveraging existing capabilities for quick wins. This method ensures minimal risk but may not lead to substantial long-term growth.

- Leapfrogging Strategy: Involves entering more sophisticated sectors, often with foreign direct investment (FDI) and partnerships, to enhance domestic capabilities progressively. This method lies between snail crawl and moonshot strategies in terms of risk and potential gains (see also Lee 2019).

- Moonshot Strategy: Targets highly sophisticated sectors far beyond current capabilities, requiring significant investment and time. This approach aims for transformative long-term gains but involves higher risks.

Combining these strategies helps achieve balanced growth, with some sectors providing quick wins while others laying the groundwork for long-term transformation. In other words, the snail crawl and to some extent leapfrog industries are leveraged to ensure macroeconomic stability and employment while providing the means to invest in more transformative industries for the longer run.

Snail crawl industries (those with limited learning potential such as tourism and/or limited domestic ownership such as mining), would help in the transition but they are not conducive to the creation of the type of firms leading to a high innovation or R&D economy. A focus on SMEs, or on attracting FDI, often concentrated in nontradable industries such as real estate or services, may also be a sub-optimal strategy in the medium to long run. Indeed, while using tools such as SME funds, or tax breaks to encourage FDI, would yield GDP growth in the short to medium run, it may not be sustainable in the absence of sustained productivity gains.

One important fact is that in the most innovative economies, R&D as a share of GDP is high (e.g., around 4 percent in Japan and Korea), but it is also mostly consisting in business R&D. In other words, while public R&D is sizable, it is the private sector that is leading the effort. Moreover, R&D is granular in most of these economies. It is concentrated in a limited number of firms, that is, large domestic firms focused on manufacturing. It is also concentrated in a handful of sectors, which are the high R&D intensity ones (e.g., electronics, chemicals, pharmaceuticals, and automotive).

Identifying Constraints and Applying Tools for Industry Support

The overall strategy also involves identifying and addressing constraints that hinder industry development. These constraints may include infrastructure, skills, legal and regulatory frameworks, and access to finance. Policymakers need to deploy specific tools to alleviate these constraints, ensuring that industries can grow and innovate effectively (see the example in Cherif et al 2022).

A comprehensive dashboard of data should be developed to monitor and assess progress towards the clear and measurable objectives. This includes tracking exports, innovation indicators, job creation, productivity, and other relevant metrics. Granular data on firms, production, and supply chains would aid in fine-tuning policies and strategies over time.

Meanwhile, policies should encourage competition and make sure reliable market signals are used in the assessment. Although profits alone cannot be a reliable metric in the short run, there is a need for a measure of progress (e.g., growth, patents, and market shares). Moreover, while sectors can and should be "picked," the state cannot decide *a priori* which firm would succeed as the key is the survival of the industry rather than of a particular firm. Policies should include a framework for restructuring failing firms, whether the failure is mismanagement, wrong technological bets, or simply bad luck.

Providing an Institutional Setup

To drive the implementation effort, an adequate institutional setup is needed. This institution, similar to Ministry of International Trade and Industry (MITI) in Japan, or Economic Development Board (EDB) in Singapore, would oversee coordinating all the tools and policies around the targeted sectors. In particular, the institution in charge, or development agency, would align priorities and coordinate trade, industrial development, infrastructure, and education, and whatever else is needed for the growth of the industry. This would ensure that limited resources are invested in a purpose-specific fashion (Chang 2002). Different industries require different types of infrastructure, skills, regulation, and finance. Meanwhile, most economies have all the tools required such as development funds, export promotion agencies, and public research institutes. One key area the agency would track is finance. Indeed, as shown by Studwell (2013), the Asian miracles intervened heavily to direct resources toward their targeted industries. Meanwhile, the lack of financing is one of the main market failures facing the development of sophisticated tradable industries. The emphasis of the development agency should be on developing domestic capabilities while ensuring the industries are progressing toward competing internationally.

The discussion is usually biased by the fact that tourism or services and FDI can contribute to development. But the issue is one of a strategy, where the state only counts on these sectors, dedicating all its efforts to it. Indeed, the issue is not whether these sectors can help in the short run but what else should be done and where resources should be allocated to, especially in the context of limited resources. In other words, the institutional apparatus built to drive the development effort should be cognizant of the long run priority, which is to develop sophisticated export industries where domestic firms contribute to the creation of new technologies.

Lastly, this development institution should enjoy what Evans (1995) describes as "embedded autonomy." That is, the agency should be shielded from political meddling or from the influence of the private sector. At the same time, as shown in Evans (1995), the agency would rely on a highly knowledgeable staff in terms of the technologies and industries they cover, while being in constant contact with the firms in the industry, to analyze trends, collect information, and support the industries with hands-on knowledge and practical experience.

5. Conclusion

The development experience of the recent past suggests that relying on the standard growth recipe of providing an enabling business environment is not sufficient and tackling market failures is a must. The growth outcomes of the OIC countries, with only a few countries generating sustained but not stellar growth, suggests that the reliance on commodities or low-skill production is not creating future growth opportunities and increasing standards of living for many

in a short period of time. A new growth model is needed with a focus on dynamic export industries.

An export diversification strategy must be comprehensive, addressing immediate needs while laying the groundwork for future growth. We argue that such a strategy would be implemented through a National System of Diversification articulated around three axes: (i) Combining snail-crawl, leapfrogging, and moonshot strategies to select sectors, countries can achieve balanced development, ensuring both quick wins and long-term transformative gains; (ii) Conducting detailed industry and market analyses, addressing constraints, and continuous monitoring are critical to the strategy's success; (iii) Setting up the adequate institutional architecture to conduct industrial policy, to ensure coordination among stakeholders and receiving feedback from the market. This approach will help countries transition from dependency on commodity exports to a diversified and robust economic and production structure.

With an objective of developing dynamic and sophisticated export industries, the OIC members must focus all their efforts to increase "R&D" in its *broad meaning*. This is not a long-run goal but an objective that can be started immediately and at any level of development by both the private and public sectors. Indeed, R&D is understood as the continuous process of experimentation, knowledge transfer, and international benchmarking that can be applied in all parts of the economy. However, this requires a change of mindset, especially at the policymaking level, where experimentation in a limited context can be safely attempted and failure can be tolerated. These experiments should help extract lessons, and when successful, they can be scaled up. The relationship between the public sector and private sector would also need to be revised, from a relationship of pure regulation to collaboration along the lines of Evans (1995) "embedded autonomy." In fact, a "true" industrial policy of the Asian miracles was driven by the symbiosis of the public and private sectors.

The OIC members should prioritize the use of resources, especially in the context of limited resources. Once the sector selection strategy is in place, the tools and policies should be focused on making the sectors succeed. The purpose-specific policies and investments, alleviating relevant bottlenecks, fixing constraints, and filling up missing ingredients to make the sector grow, are what is needed. These could involve developing relevant infrastructure or needed skills. All-in-all, this focus and coordination would direct limited resources toward building dynamic sophisticated export industries to generate high sustained and inclusive growth.

Finally, setting up a regional cooperation forum to coordinate and cooperate on policies, build supply chain networks, and create knowledge exchanges and technology transfer mechanisms would be instrumental for sustained growth. Emphasizing issue-based cooperation and institutional development, mutual gains from cooperation, and learning from each other would also support implementation of national policies. Using the Association of Southeast Asian Nations (ASEAN) as a case study, Albertone, Lebdioui, and Yean (2025) provide key insights into effective cooperation on green industrial policy.

References

Albertone, Baptiste, Amir Lebdioui, and Tham Siew Yean. 2025. "Regional Coordination of Green Industrial Policies: What can we learn from the ASEAN Experience?" Working paper.

Amsden, Alice H. 1989. *Asia's Next Giant: South Korea and Late Industrialization*. Oxford University Press.

Birdsall, Nancy. 2025. "The World Bank's East Asian Miracle: Too Much a Product of Its Time?" Journal of Economic Perspectives 39 (4): 127–48.

Cammett, Melani, Ishac Diwan, Alan Richards and John Waterbury. 2015. *A Political Economy of the Middle East*, 3rd ed. Westview Press.

Chang, Ha-Joon. 2002. *Kicking Away the Ladder: Development Strategy in Historical Perspective*. London: Anthem Press.

Cherif, Reda, Marc Engher, and Fuad Hasanov. 2024. Crouching Beliefs, Hidden Biases: The Rise and Fall of Growth Narratives. *World Development* 173, January. Available: https://doi.org/10.1016/j.worlddev.2023.106246.

Cherif, Reda and Fuad Hasanov. 2024. The Pitfalls of Protectionism: Import Substitution vs. Export-Oriented Industrial Policy. *Journal of Industry, Competition and Trade*, forthcoming.

Cherif, Reda and Fuad Hasanov. 2019a. Return of the Policy That Shall Not Be Named: Principles of Industrial Policy. IMF Working Paper 19/74.

Cherif, Reda and Fuad Hasanov. 2019b. Principles of True Industrial Policy. *Journal of Globalization and Development* 10(1), June: 1–22.

Cherif, Reda and Fuad Hasanov. 2019c. "The Leap of the Tiger: Escaping the Middle-income Trap to the Technological Frontier." *Global Policy* 10(4), November: 497–511.

Cherif, Reda and Fuad Hasanov. 2016. Soaring of the Gulf Falcons: Diversification in the GCC Oil Exporters in Seven Propositions. In *Breaking the Oil Spell: The Gulf Falcons' Path to Diversification*, R. Cherif, F. Hasanov, and M. Zhu (eds). Washington, DC: International Monetary Fund.

Cherif, Reda and Fuad Hasanov. 2013. Oil Exporters' Dilemma: How Much to Save and How Much to Invest. *World Development* 52(C): 120-131.

Cherif, Reda, Fuad Hasanov, and Madi Sarsenbayev. 2024. Call of Duty: Industrial Policy for Post-Oil Era. IMF Working Paper 24/74.

Cherif, Reda, Fuad Hasanov, Nikola Spatafora, Rahul Giri, Dimitre Milkov, Saad Quayyum, Gonzalo Salinas, and Andrew Warner. 2022. Industrial Policy for Growth and Diversification: A Conceptual Framework. IMF Departmental Paper 22/17.

Cherif, Reda, Fuad Hasanov, and Lichen Wang. 2018. Sharp Instrument: A Stab at Identifying the Causes of Economic Growth. IMF Working Paper 18/117.

Chibber, Vivek. 2003. *Locked in Place: State-Building and Late Industrialization in India*. Princeton University Press.

Evans, Peter. 1995. *Embedded Autonomy: States and Industrial Transformation*. Princeton, NJ: Princeton University Press.

Feenstra, R. C., R. Inklaar, and M. P. Timmer. 2015. The Next Generation of the Penn World Table. *American Economic Review* 105(10): 3150-3182. Available: www.ggdc.net/pwt.

Fu, Xiaolan. 2015. *China's Path to Innovation*. Cambridge, UK: Cambridge University Press.

Gwartney, J., R. Lawson, J. Hall, and R. Murphy. 2022. Economic Freedom Dataset, *Economic Freedom of the World: 2022 Annual Report*. Fraser Institute. Available: https://www.fraserinstitute.org/studies/economic-freedom-of-the-world-2022-annual-report

Hausmann, Ricardo, Jason Hwang, and Dani Rodrik. 2007. What You Export Matters. *Journal of Economic Growth* 12(1): 1-25.

Hertog, Steffen. 2010. *Princes, Brokers, and Bureaucrats: Oil and the State in Saudi Arabia*. Cornell University Press.

Johnson, Chalmers. 1982. *MITI and the Japanese Miracle*. Stanford University Press.

Kohli, Atul. 2004. *State-Directed Development: Political Power and Industrialization in the Global Periphery*. Cambridge University Press.

Lee, Keun. 2019. *The Art of Economic Catch-Up: Barriers, Detours and Leapfrogging in Innovation Systems*. Cambridge, UK: Cambridge University Press.

Lucas, R. E. 1993. Making a Miracle. *Econometrica* 61(2): 251–272.

Malik, Adeel. 2014. "The Political Economy of Industrial Policy in the Middle East and North Africa." In *The Oxford Handbook of Industrial Policy*.

Nayar, Baldev Raj. 2001. *Globalization and Nationalism: The Changing Balance in India's Economic Policy, 1950–2000*. Sage.

Nelson, Richard R. (ed.). 1993. *National Innovation Systems: A Comparative Analysis*. New York: Oxford University Press.

Panagariya, Arvind. 2008. *India: The Emerging Giant*. Oxford University Press.

Richards, Alan and John Waterbury. 2008. *A Political Economy of the Middle East*. Westview Press.

Ritchie, H., E. Mathieu, and M. Roser. 2023. Research and Development. Published online at OurWorldInData.org. Available: https://ourworldindata.org/research-and-development (Original Sources: World Bank's World Development Indicators; United Nations, Department of Economic and Social Affairs, Population Division. 2022. World Population Prospects 2022, Online Edition; and UNESCO Institute for Statistics).

Rodrik, Dani. 2009. "Industrial Policy: Don't Ask Why, Ask How." *Middle East Development Journal* 1 (1): 1–29.

Rodrik, Dani and Arvind Subramanian. 2004. "From 'Hindu Growth' to Productivity Surge: The Mystery of the Indian Growth Transition." IMF WP/04/77.

Stiglitz, Joseph E., and Bruce Greenwald. 2014. *Creating a Learning Society: A New Approach to Growth, Development, and Social Progress*. Columbia University Press.

Studwell, Joe. 2013. *How Asia Works: Success and Failure in the World's Most Dynamic Region*. Grove Press: New York, NY.

Wade, Robert. 1990. *Governing the Market*. Princeton University Press.

Williamson, John. 1990. "What Washington Means by Policy Reform" in Latin American Adjustment: How Much Has Happened. John Williamson (ed.). Washington: Institute for International Economics.