INDPOL
INDUSTRIAL POLICY

A Scientific journal dedicated to economic development and industrial policy

Open Access

DergiPark
AKADEMİK

OJS
OPEN
JOURNAL
SYSTEMS

The journal covers a wide range of topics relating to the manufacturing industry and industrial policy including the industrialization process; industrial development, institutions and structural policies that support economic development including the political economy aspects; tools (such as economic planning) and market structures (including monopolistically competitive markets that have a bearing on manufacturing value added and overall economic productivity) and their impact on economic development and industrialization; low and middle income traps; productivity; mechanism design and incentive structures that hinder or foster industrial and economic development; science, technology and innovation strategies and polices (at corporate and national levels) and their impact on economic development; individual and institutional learning processes, education systems, financial institutions, markets and policy, vocational training, third generation, entrepreneurial and industrial universities and their impact on economic development and industrialization; and historical and contemporaneous case studies relating to industrial development.

Contents

Transforming Southern Africa?

A comparison of structural change experiences in the region[1]

Piergiuseppe Fortunato[a], Francesca Guadagno[b], Rohit Ticku[c]

[a] UNCTAD, Division on Globalization and Development Strategies, Geneva, Country One, Switzerland,

[b] United Nation University, MERIT, Maastricht, Netherlands.

[c] Chapman University, California, USA

Abstract

This paper examines the process of structural change and export diversification that took place in five selected Southern African economies since the early 1970s. Making use of several complementary data sources, the paper highlights the important differences that characterized the experiences of different countries and discusses the main challenges and opportunities that these countries, and the region as a whole, will face in the years to come.

1. Introduction

What determines economic disparities among countries and how can we move forward to reduce these income gaps? The development economics literature has studied how countries get rich since the seminal work of Arthur Lewis (1954). This literature primarily attributes economic development to the process of structural transformation – economies grow as resources shift towards progressively more productive sectors. The speed at which this transformation occurs, in turn, determines why some countries get rich faster than others.

The forces of structural transformation operate at two levels. At the aggregate level, the transformation occurs as resources are reallocated from low-productivity agriculture to high-productivity industry, and eventually from industry to services after a certain income threshold is achieved (Kuznets,

1973).[2] In the early phase of development, manufacturing plays a particularly important role in fostering those linkages through which the nexus between growth and structural transformation is sustained (UNCTAD, 2016a). At the microeconomic level, significant productivity differences exist within each of the three broad sectors. Whether the economy transitions to producing more dynamic activities within a sector is conditional on the institutional environment and the know-how that is accumulated through comparative advantage in the production of similar goods.

This suggests that development is a path-dependent process that requires deliberate policy choices to usher in economic transformation. And it is this inherent path-dependence, along with unfortunate policy decisions, that explains (at least in part) why many developing countries either have failed to diversify and deepen their production structure or experienced

CONTACT Piergiuseppe Fortunato ✉ piergiuseppe.fortunato@unctad.org

premature deindustrialization, as has been the case of Latin American countries (UNCTAD, 2016a).

This paper analyses the structural transformation and export structures of five Southern African economies – Mauritius, Mozambique, South Africa, the United Republic of Tanzania and Zambia. Economic transformation is assessed in terms of both domestic output and international export composition. The focus on export structures is motivated by three factors. First, recent literature on structural transformation has shown export structure to be a good predictor of economic growth and therefore one of the possible explanations of cross-country income disparities (Hausmann et al., 2007; Hausmann et al., 2011). Second, countries generally export those goods where they have a comparative advantage, hence examining the export structure can help to understand the underlying knowledge or institutional advantages that make a country competitive (Hausmann and Klinger, 2007; Hidalgo et al., 2007). Finally, in the absence of disaggregated, cross-country production data, export data provide a useful approximation of the productive structures in an economy.

The rest of the paper is structured as follows: Section 2 summarizes the structural transformation literature. Section 3 gives an overview of the economic and export trends of the five economies under scrutiny. Section 4 analyses in detail the structural change and export dynamics experienced by each of them since the early 1970s. In section 5, we propose an experiment of regional integration, which aims at understanding how export diversification opportunities would change if the five countries would act as a single economy. Section 6 concludes.

2. Related literature

The first generation of growth models used two distinct approaches to explain the growth phenomena (McMillan and Rodrik, 2016). The first approach has its roots in development economics and focused on the dual characteristic of the economy (Lewis, 1954; Ranis and Fei, 1961). According to these models, the economy comprises traditional (agriculture) and modern (industry) sectors. The traditional sector employs primitive technology and remains backward. The modern sector, on the other hand, is characterized by capital accumulation, innovation and productivity growth. Economic growth therefore depends on the rate at which labour and other productive resources are shifted from the traditional and low-productivity sector to the modern one – a process of "structural transformation". Structural transformation is particularly beneficial for developing countries because their structural heterogeneity – that is, the combination of significant intersectoral productivity gaps in which high-productivity

activities are few and isolated from the rest of the economy – slows their development. Economic activities also differ in terms of the strength of their linkages with the rest of the economy. In developing economies, the weak linkages between high- and low-productivity activities that make up the bulk of the economy reduce the chances of structural transformation and technological change.

In this framework, structural transformation can generate both static and dynamic gains. The static gain is the rise in economy-wide labour productivity, as workers are employed in more productive sectors. Dynamic gains, which follow over time, are due to skill upgrading and positive externalities that result from workers having access to better technologies and accumulating capabilities.

The second approach to economic growth is founded in the neoclassical growth models of Solow and its later variants (Solow, 1956; Grossman and Helpman, 1991). According to these models, various economic activities are structurally similar and can be aggregated into a single representative sector. In their set-up, growth depends on the incentives to save, capital accumulation (both physical and human) and innovation by developing new products or processes and economic growth is seen as essentially a process of "within-sector transformation".

Empirical literature focused mainly on the long-term growth trends in the developed countries. Herrendorf et al. (2013), for example, use data on 5 non-European Union and 15 European Union countries from 1970 to 2007, and establishes the typical pattern of structural transformation. The share of the agricultural sector decreases with the level of development, while the share of the services sector increases at all levels of development. The share of the manufacturing sector, on the other hand, follows a hump-shaped pattern. The manufacturing share increases until a certain level of development is achieved and decreases thereafter. In the same period, Total Factor Productivity growth is observed in all three broad sectors of the economy, suggesting a contemporaneous transformation that occurs within each sector. In particular, it is the agriculture sector that experiences the largest productivity growth, which frees up resources for the manufacturing and services sectors.

More recently, the structural transformation literature has abstracted from the broad sectoral dichotomies, concentrating on the complexity of productive structures that are embedded in an economy (Hausmann and Klinger, 2007; Hausmann et al., 2007; Hidalgo et al., 2007). The intuition is that countries cannot produce goods for which they do not possess the underlying knowledge or capabilities. This puts learning, capabilities and technological change at the centre of the structural transformation processes. This literature sees

production possibilities as a space in which economies move. More specifically, the "product space" is an illustration of all goods exported in the world, where the distance between two goods is defined by the probability of producing one of the goods if an economy already produces the other. In this framework, structural transformation entails moving from a good that countries already produce to another one that is close enough to it, where "close enough" is defined based on the knowledge and capabilities needed to produce a certain good. Hence, in the product space, goods are close if the knowledge used to produce them is similar, and goods are far away if producing them requires completely new sets of skills. This ultimately configures a network of goods, a sort of map in which economies move from one point to another, leading to diversification and production of increasingly complex goods.

In the remainder of this paper we will examine structural transformation in the five economies under exam employing both traditional data on productivity changes and value added distribution and more recent product space analysis.

3. Trends of economic and export growth in the region

The economies under assessment have some common attributes. Except for Mauritius, they are rich in natural resources, particularly in extractive resources. Their workforces are predominantly employed in agriculture, although they have been evolving into service-led economies. Their export basket is dependent on few commodities and, generally, manufacturing growth has been difficult to achieve. Mauritius and South Africa are the two exceptions, having developed a stronger manufacturing sector and more diversified export basket. Mauritius in particular is an anomaly. Scarce in natural resources, it has followed the trajectory of East Asian economies in industrializing rapidly. Its manufacturing sector has generated considerable employment, while industrial policies have created new exporting opportunities (see box).

Significant per capita income variation exists among these five economies (figure 1). Due to rapid economic growth, Mauritius overtook South Africa in the late 2000s and became the richest economy of the group. South Africa has witnessed periods of economic growth, but did not experience the same catch-up industrialization process that has been observed in Mauritius. In contrast, Zambia, the United Republic of Tanzania and Mozambique have achieved limited economic growth, with per capita income stagnating at low levels.

Figure 1: Incomes per capita, 1966–2015
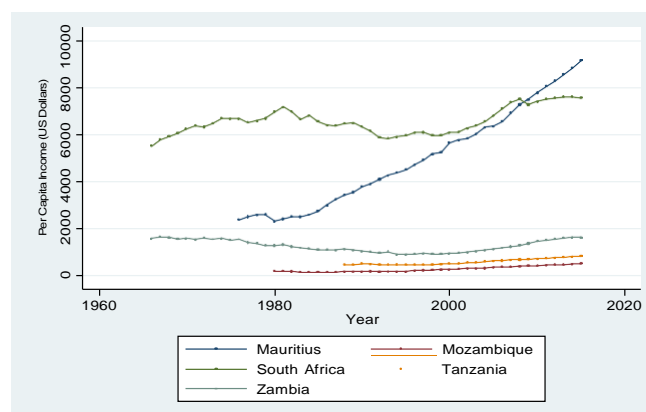
Source: Authors' elaboration based on World Development Indicators.
Note: Gross domestic product (GDP) per capita at constant 2010 United States dollars.

The Mauritian structural transformation process has been accompanied by export growth, with exports having reached 65 per cent of the country's GDP in 1990. The role of exports in the other four economies has been more limited (figure 2). In South Africa and Zambia, export share has hovered around 30 per cent of GDP, while in the United Republic of Tanzania it reached a peak of only around 20 per cent in 2012. Mozambique has experienced a rapid increase in its export share since the 1990s, perhaps driven by the surge in the international demand for commodities.

Figure 2. Exports, as a share of GDP, 1976–2015
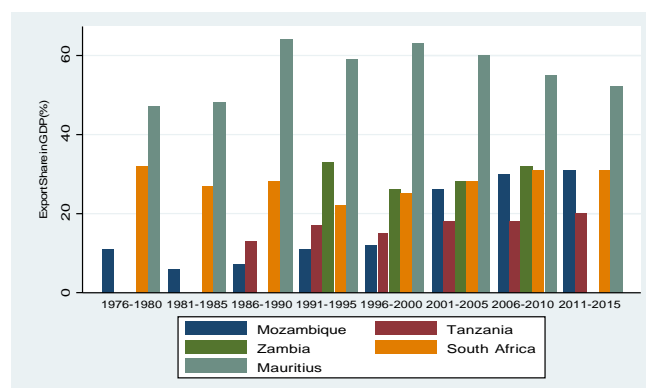
Source: Authors' elaboration based on World Development Indicators.

To better understand how structural transformation has affected export growth in these economies, figure 3 depicts manufacturing exports as a share of total merchandise exports. Mauritius and South Africa stand out from the rest of the group. In Mauritius, the share of manufactured goods in total exports increased from 5 per cent in the 1970s to 74 per cent in the early 2000s. In contrast, South Africa has maintained a high share of manufacturing exports since the 1970s. The remaining three economies started off from low

manufacturing exports bases and have not been able to achieve significant growth.

Figure 3. Manufacturing exports, as a share of merchandise exports, 1970–2015
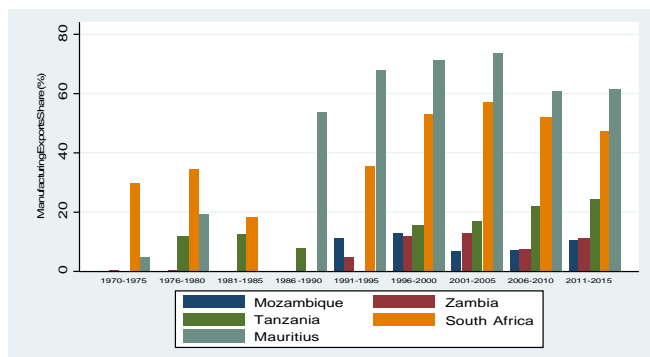
Source: Authors' elaboration based on World Development Indicators.

4. Structural transformation and export diversification opportunities

This section analyses the structural change and export diversification opportunities of Mauritius (section 4.1), Mozambique (section 4.2), South Africa (section 4.3), the United Republic of Tanzania (section 4.4) and Zambia (section 3.5).

4.1 Mauritius

Mauritius has undergone a successful process of structural transformation over the last five decades; the productive resources were first reallocated from agriculture to manufacturing, and then from manufacturing to services after reaching a relatively high per capita income level (UNCTAD, 2016a).

Figure 4 illustrates the structural transformation process in Mauritius for the period from 1970 to 2012. The decline in agricultural value added from 20 per cent in the mid-1970s to 5 per cent in 2012 benefited manufacturing first, and later services (especially financial services). A similar trend is observed in the labour dynamics. The employment share in agriculture contracted from 37 per cent of the workforce in 1970 to 7 per cent in 2011. Labour moved to manufacturing, whose employment peaked at 32 per cent in 1990. Manufacturing output grew at an average of 3 per cent per annum from the late 1970s until the early 1990s.

This rapid industrialization was accompanied by fast productivity growth. Figure 5 presents the disaggregated sectoral productivity trend for the 1970–2011 period. Two stylized facts are noteworthy: the structural transformation was accompanied by labour productivity growth in all sectors of the economy, and the initial spurt in agricultural

productivity growth was key for freeing up resources for the manufacturing sector.

Figure 4. Mauritius: Value added and employment shares by sector, 1970–2012

Source: Authors' elaboration based on the Groningen Growth and Development Centre (GGDC) 10-sector database.
Note: Value added in constant 2005 national prices.

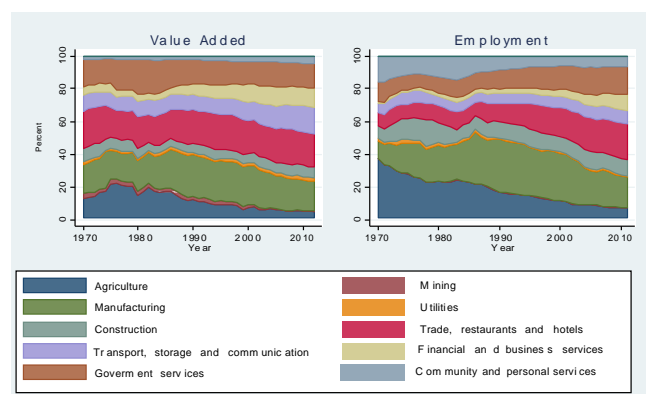**Figure 5**. **Mauritius: Labour productivity by sector, 1970–2011**
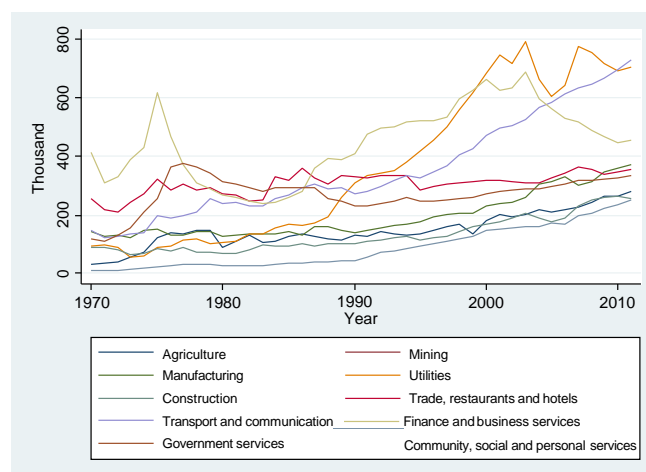
Source: Authors' elaboration based on the GGDC 10-sector database and World Development Indicators.
Note: GDP per capita in constant 2010 United States dollars.

Figure 6 depicts the hump-shaped pattern of manufacturing growth in Mauritius, which mirrors the long-term structural transformation of the early industrializing countries (Herrendorf et al., 2013). During the first phase of development, from 1970 to 1990, labour-augmenting technical progress in the agricultural sector freed excess labour to act as a catalyst for the manufacturing industry. Manufacturing employment peaked at roughly 30 per cent of GDP at a per capita income of $4,500 in the early 1990s. The expansion of the manufacturing sector was accompanied by rapid productivity growth, which freed up the resources for expansion of other high-productivity sectors. For example, the

employment in financial and business services registered a five-fold growth from 1990 to 2011. This transition from manufacturing to other high-productivity services from the 1990s onwards explains the deindustrialization trend in figure 6.

Figure 6. Mauritius: The deindustrialization process, 1976-2011
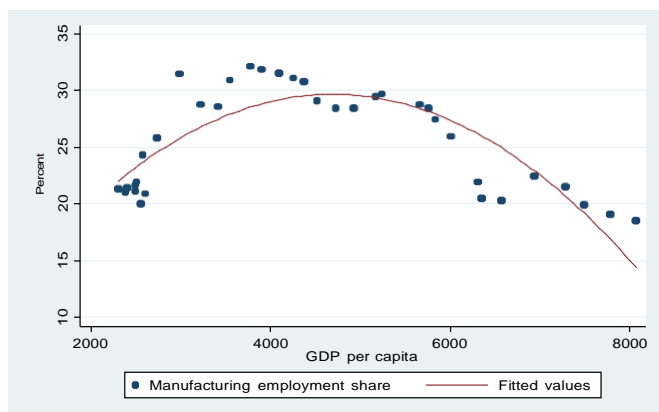
Source: Authors' elaboration based on the GGDC 10-sector database and World Development Indicators.
Note: GDP per capita in constant 2010 United States dollars.

Next, we decompose aggregate labour productivity growth from 1991 to 2010 into its underlying "direct productivity" and "structural change" effect components. Direct productivity effect measures the change in labour productivity that is determined by productivity gains within a sector, due, for example, to technological advancement. The structural change effect captures the impact of labour movements across sectors on the overall labour productivity (see annex I for a detailed explanation of these two effects). Results show that 37 per cent of labour productivity growth from 1991 to 2010 was due to the structural transformation in the economy.

Figure 7 shows how individual sectors contributed to these two effects. First, direct productivity effects are positive for all industries, with manufacturing being the largest contributor. At the same time, the reallocation effect for manufacturing was negative, suggesting that, due to its sustained productivity growth, the sector shrank in terms of employment share. This is in line with the deindustrialization trend described above. Despite structural change away from manufacturing, the aggregate reallocation effect on productivity was still positive, as the structural shift occurred towards other productive industries such as modern services.

Figure 7. Mauritius: Direct productivity and structural change effects by sector, 1991–2010
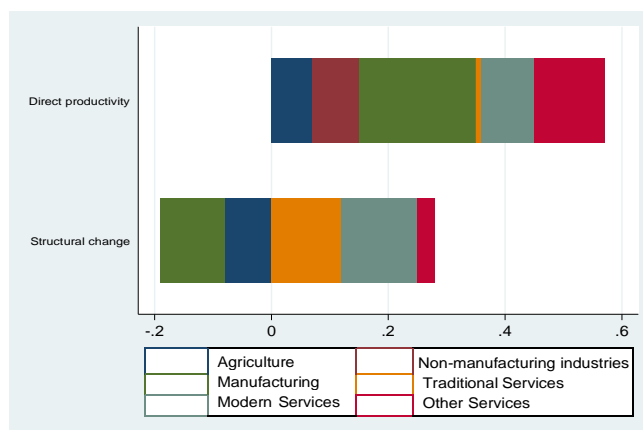
Source: Authors' computations based on the GGDC 10-sector database.

Notes: For brevity, we aggregate the 10 sectors into 6 broadly defined sectors: agriculture, non-manufacturing industries, manufacturing, and traditional, modern and other services. "Non-manufacturing industries" include mining, utilities and construction. "Traditional services" refer to retail trade, restaurants and hotels. "Modern services" refer to finance, insurance, real estate and business services and transport, storage and communication. "Other services" include government services and community, social and personal services.

We now turn our attention to Mauritian export structure to understand the underlying knowledge or capabilities that are embedded in the economy. This also allows us to scope the future production possibilities. We first present the current export basket in figure 8. The country's total exports were worth $2.14 billion in 2016, and its main exports included primary products and textiles. The export structure can be summed up in two stylized facts: the export basket is quite diverse and is dominated by goods that can be produced with simple know-how.

Figure 8. Mauritius: Export basket in 2016

Source: Atlas of Economic Complexity, Harvard University.

Next, we map the Mauritian exports for the products where the country has a revealed comparative advantage (RCA), as a subset of all the products that are exported in the world (figure 9). The coloured circles in figure 9 denote products for

which Mauritius's RCA is greater than or equal to 1.[3] These are the products where Mauritius enjoys a relative advantage in the global economy, as measured by the trade flows.

The network representation of globally exported goods that is shown in figure 9 suggests that product space is highly heterogeneous. Products at the periphery of the network tend to be weakly connected with the rest of the products in terms of the common capability requirements. The periphery products typically include products such as petroleum, seafood and raw materials (Abdon and Jesus, 2011).

On the other hand, products at the core of the network are closely related to each other. These mainly include machinery, chemicals and metal products (Abdon and Jesus, 2011). There are also some clusters where the products are closely related to each other within the cluster, but not to the rest of the product space. These clusters typically include garments and electronic products (Abdon and Jesus, 2011).

Figure 9 depicts the evolution of Mauritius' product space from 1970 to 2014. The country had a more diversified product space in 2014, compared with 1970. The number of products with RCA increased from about 20 products in 1970 to almost 150 in 2014. The diversification of the product space has mainly taken place in the peripheral products, particularly in the closely knitted garments sector(depicted by green circles). The country has not been able to make significant leaps in the more sophisticated and intricately linked core products. This suggests that Mauritius' transformation in the future will not be seamless, as the set of acquired productive capacities cannot be easily redeployed into producing other goods.

Figure 9. Mauritius: Product space in 1970 and 2014

Panel a: Product space 1970   Panel b: Product space 2014

Source: Atlas of Economic Complexity, Harvard University.

How is Mauritius's export structure likely to evolve in the future? The feasibility chart depicted in figure 10 displays the complexity of the products that the country is most likely to produce in future. The vertical axis shows the product complexity and is calculated as the function of how many countries export the given product and how diversified those exporters are (Hausmann et al., 2011).[4] In other words, a product is likely to score high on complexity on the vertical axis if it is exported by very few countries, and each of those countries exports large number of other products.

The horizontal axis shows the likelihood of a country producing a given product and is determined by how far that product is from the country's existing productive capabilities (Hausmann et al., 2011)[5]. The distance measure on the horizontal axis is the weighted proportion of products connected to a given product that are currently not produced by the country.[6] If Mauritius exports most of the products that are connected to a given product, then it would be located closer to 0 on the horizontal axis. However, if Mauritius only exports a small share of goods that are related to a given product, it would be located closer to 1 on the horizontal axis.

The upward slope of the product distribution on the complexity-distance axis suggests that Mauritius' existing productive capabilities are less likely to support the production of more complex products.[7] Focusing on the products that lie above the horizontal line, i.e. products that are more complex than the average complexity of the goods currently produced in Mauritius, suggests that the country can feasibly develop capacities to export more complex agro-based manufacturing products, textiles and furniture and chemicals and plastics.

---

[3] Country i having an RCA ≥ 1 in product k means that product k's share in country i's exports is larger than the share of product i in rest of the world's exports (Balassa, 1965).
[4] Diversification measures the number of products that are produced by a given country.

[5] A country is less likely to produce a given product the further that product is placed on the horizontal axis.

[6] The weights are the proximity of each product that the country is not exporting to the given product. Proximity is defined as the minimum of the share of countries that specialize in both products

[7] The size of the bubble is proportional to the share of global trade accounted by each product.

Figure 10. Mauritius: Feasible products in 2014
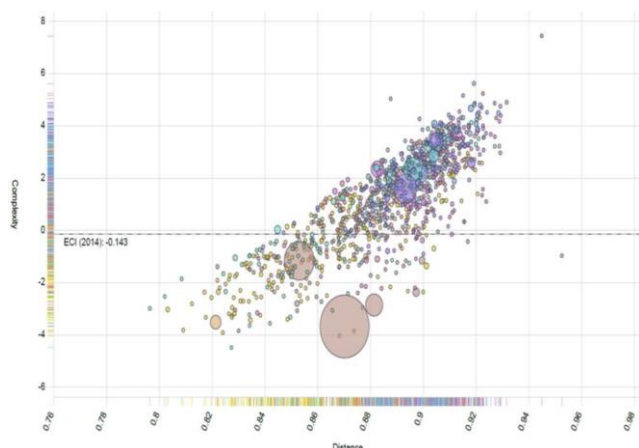
Source: Atlas of Economic Complexity, Harvard University.

In conclusion, Mauritius underwent a successful structural transformation, accompanied by fast productivity growth, particularly in agriculture. Today, the economy is internationally competitive in several products, although most of them are primary products, agro-based manufactures and textiles. Going forward, the economy is likely to specialize in some other industries, particularly chemicals and plastics. Diversifying towards a more complex economy will not be without its challenges, as most complex not-exported products seem far from the current export basket of Mauritius.

4.2 Mozambique

Subject to significant political turmoil, Mozambique has encountered considerable difficulty in kicking off a structural transformation[8]. Agriculture continues to be the mainstay of the economy, employing 77 per cent of the workforce in 2012 (figure 11). The small decline in the agricultural value added and labour share has been compensated by the gains in the transport, storage and communication sector. The share of manufacturing sector has remained low, both in terms of value added and employment. The sectoral output peaked at 17 per cent in 2004 and has been on a decline since, reverting to its 1990s values.

Figure 11. Mozambique: Value added and employment shares by sector, 1991–2012
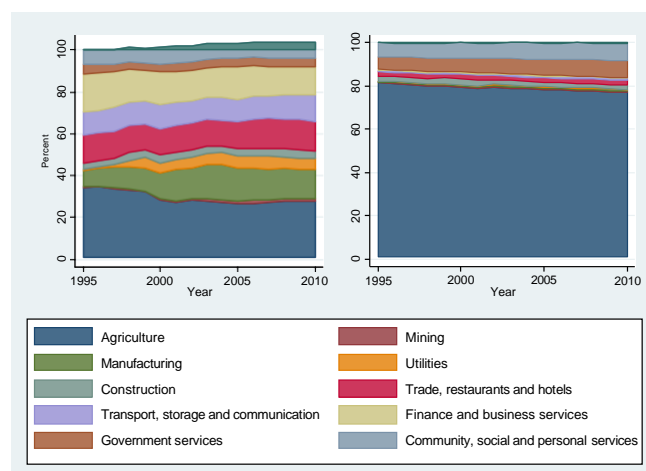
Source: Authors' elaboration based on United Nations Statistics Division (UNSD) National Accounts and the International Labour Organization's (ILO's) World Employment and Social Outlook.
Note: Value added in constant (2003) national prices (metical).

Limited productivity growth has been responsible for the weak structural transformation (figure 12). Finance and business services and utilities industries have been the most productive sectors, the latter experiencing rapid productivity growth since 1995. However, these industries only employ a small share of the workforce and tend to be isolated from the rest of the economy, therefore reducing spillover possibilities from productivity enhancements and technological change. Manufacturing has experienced some productivity growth, although the gains are not as significant as in the utilities sector. The rest of the sectors have experienced limited or no labour productivity growth, contributing to the stalled industrialization described above.

---

[8] "Mozambique country profile", BBC News (2 November 2017).

Figure 12. Mozambique: Labour productivity by sector, 1991–2012
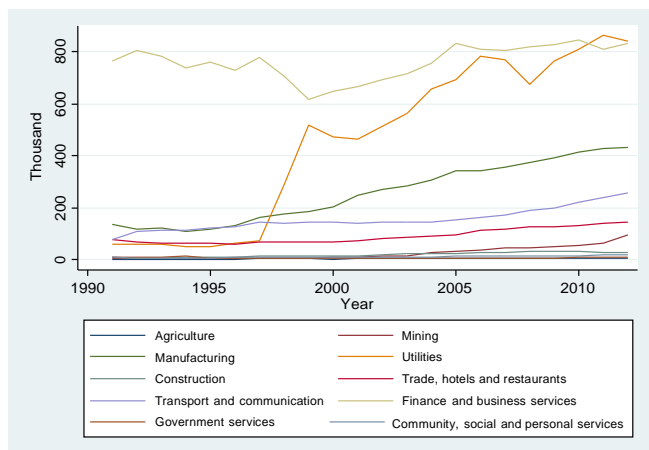
Source: Authors' elaboration based on UNSD National Accounts and ILO's World Employment and Social Outlook.
Note: Productivity in constant (2003) national prices (metical).

The decomposition of the overall productivity growth in its underlying components, direct productivity and structural change, is shown in figure 13. Expectedly, within sector productivity growth has contributed considerably more than employment shifts from less to more productive industries. Specifically, the direct productivity effect accounted for 63 per cent of aggregate labour productivity growth, while structural change accounted for the remaining 37 per cent increase from 1991 to 2010.

Given the disparity in productivity growth across sectors, we also expect heterogeneous sectoral contributions to these two effects. Figure 13 depicts this phenomenon. All industries contributed positively to direct productivity growth, the gains within the agricultural sector being the most significant. In principal, this should be a good sign, as fast agricultural productivity growth is a powerful catalyst of the industrialization process. This is also evident in the negative structural change effect, which suggests a shift in labour from agriculture to other industries.

However, as highlighted in figure 11, the movement in labour away from agriculture has been modest. Moreover, figure 13 depicts a negative structural change component for the manufacturing sector, indicating an employment shift away from manufacturing. Indeed, modern and other services have expanded the most, contributing positively to aggregate productivity growth. Furthermore, this effect is big enough to offset the negative structural change effect for the manufacturing sector.

Figure 13. Mozambique: Direct productivity and structural change effects by sector, 1991–2010
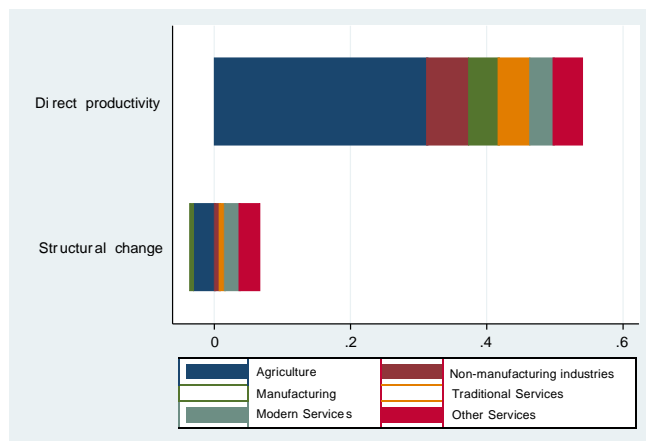
Source: Authors' computations based on UNSD National Accounts and ILO's World Employment and Social Outlook.
Note: For the sake of simplicity, we aggregated the 10 sectors into 6 broadly defined sectors: agriculture, non-manufacturing industries, manufacturing, and traditional, modern and other services. "Non-manufacturing industries" include mining, utilities and construction. "Traditional services" refer to retail trade, restaurants and hotels. "Modern services" refer to finance, insurance, real estate and business services and transport, storage and communication. "Other services" include government services and community, social and personal services.

Finally, we assess the export structure and diversification opportunities for Mozambique. The product tree map shows the export structure in 2016 (figure 14). The total exports were worth $3.91 billion in 2016. The export basket is based on both agricultural and extractive products. In addition, electrical energy constitutes a key component of the export structure.

Figure 14. Mozambique: Export basket in 2016
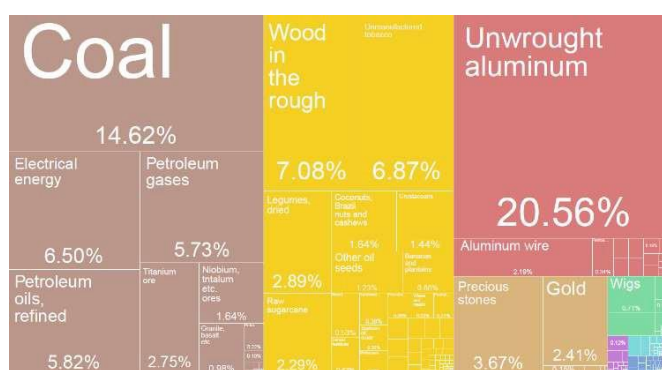
Source: Atlas of Economic Complexity, Harvard University.

Comparing the product space in 1970 and 2014 shows barely any diversification in Mozambique's export structure (figure 15). This further attests to the limited structural transformation Mozambique has achieved in the past decades.

Figure 15. Mozambique: Product space in 1970 and 2014

Panel a: Product space 1970   Panel b: Product space 2014
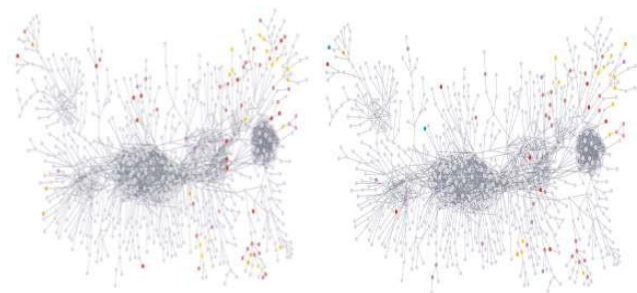
Source: Atlas of Economic Complexity, Harvard University.

Next, we assess the feasibility of productive transformation in Mozambique. The feasibility chart (figure 16) suggests that the capacities required for most of the complex products that are not yet produced are not available in the economy. Focusing on the distribution of the yet-exported goods that are above the average economic complexity indicate that the country is likely to develop capacities for producing mainly in more complex agro-based manufacturing. Furthermore, opportunities for developing transport and vehicles related products can also be leveraged in the future.

Figure 16. Mozambique: Feasibility chart in 2014
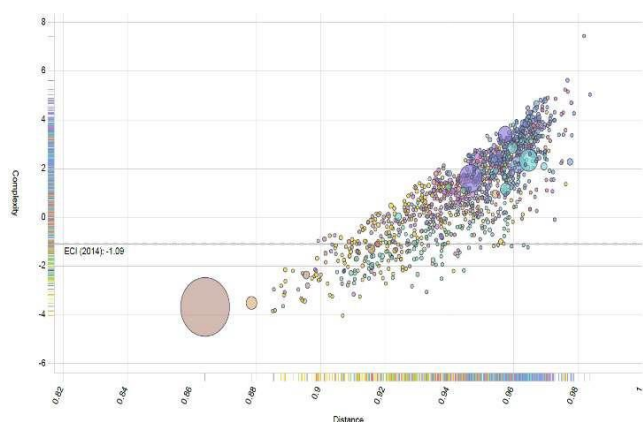
Source: Atlas of Economic Complexity, Harvard University.

Stalled industrialization with limited manufacturing productivity growth is transforming Mozambique from an agrarian to a service-led economy. Apart from services, the mining sector continues to play a big role, especially in exports; as a matter of fact, the Mozambican export basket continues to be dominated by primary products and resource-based manufactures. The country is therefore currently facing the challenge to diversify towards simple manufacturing goods such as textiles or other low-tech manufactures.

4.3 South Africa

South Africa underwent a structural transformation that curtailed reliance on its natural resources, both agricultural and extractive output. Figure 17 illustrates the sectoral value added and employment share trends from 1960 to 2011. Most notably, over this period, the share of mining value added decreased from 28 to 6 per cent, while the share of agricultural employment declined from 50 to 17 per cent.

The shift away from the primary sector has mainly benefited the services industry. Financial and business services experienced an almost five-fold increase in their value added and employment shares during this period. Trade, restaurants and hotels doubled their employment share. In contrast, manufacturing employment increased initially from 15 per cent in 1960 to 25 per cent in 1981, but it has contracted since then, falling to 18 per cent in 2011. Similarly, manufacturing value added, which peaked at 25 per cent in 1981, has returned to its 1960s' values.

Figure 17. South Africa: Value added and employment shares by sector, 1960-2011
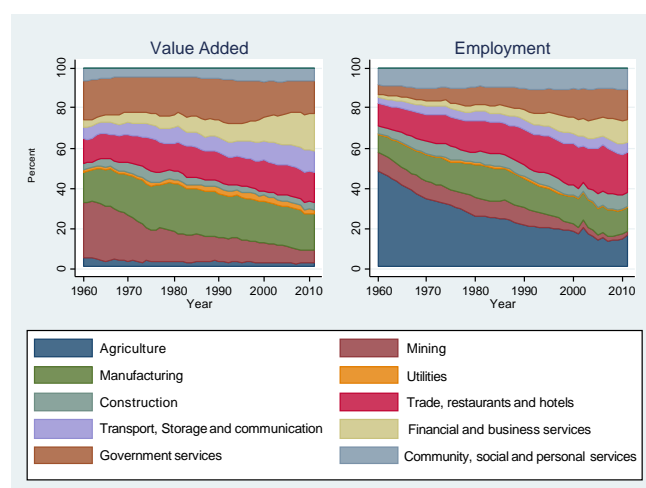
Source: Authors' elaboration based on the GGDC 10-sector database.
Note: Value added in constant 2005 national prices.

Rapid productivity growth is essential for sustained structural transformation, as the case of Mauritius has shown. Figure 18 shows the evolution of labour productivity across sectors from 1960 to 2011. Average productivity growth remained stagnant in the last five decades, except for the mining and utilities sectors, which enjoyed a productivity surge starting in the late 1990s. Since the 2000s, productivity in the modern services has been on the rise, outperforming that of the manufacturing sector. The manufacturing productivity level has typically been higher than average productivity levels, and in some periods higher than the modern service industry. However, for the largest sectors in the economy – agriculture, retail, restaurants and hotels – labour productivity has remained low over the entire period.

Figure 18. South Africa: Labour productivity by sector, 1960–2011
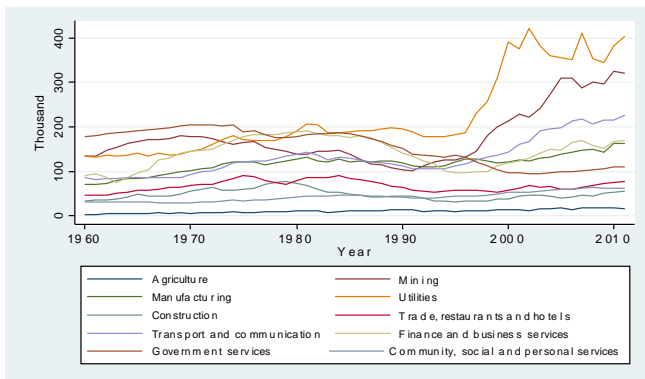
Source: Authors' elaboration based on the GGDC 10-sector database.
Note: Value added figures are in national currency (constant 2005 prices).

Figure 19 depicts the deindustrialization pattern in South Africa. Manufacturing employment peaked at only about 15 per cent of GDP at a per capita income of $6,500 in the early 1980s, and declined thereafter. In the case of South Africa, the manufacturing sector was unable to develop a large base, before ceding space to the services sector.

Figure 19. South Africa: The premature deindustrialization process, 1966–2011
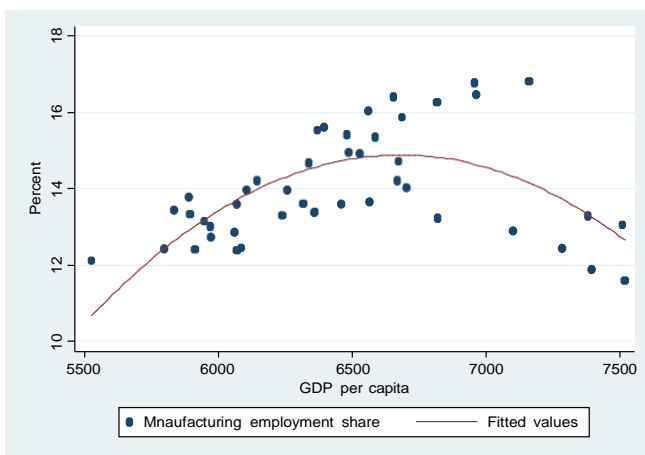
Source: Authors' elaboration based on the GGDC 10-sector database and World Development Indicators.
Note: GDP per capita in constant 2010 United States dollars.

We now quantify the precise role of structural transformation in overall productivity growth in South Africa. Decomposition of labour productivity growth shows that the structural change effect was responsible for 45 per cent of the productivity gains between 1991 and 2010 (figure 20). Based on sectoral productivity trends presented in figure 18 that show sustained productivity gains in only some selected industries, it is reasonable to expect that productivity growth in certain sectors had a bigger contribution to the overall productivity growth. Figure 20 shows that within-sector

productivity gains were the largest for modern services and manufacturing, although these industries could not expand enough to stimulate deeper structural transformation. Labour moved to modern services, while employment in the manufacturing sector shrank.

Figure 20. South Africa: Direct productivity and structural change effects by sector, 1991–2010
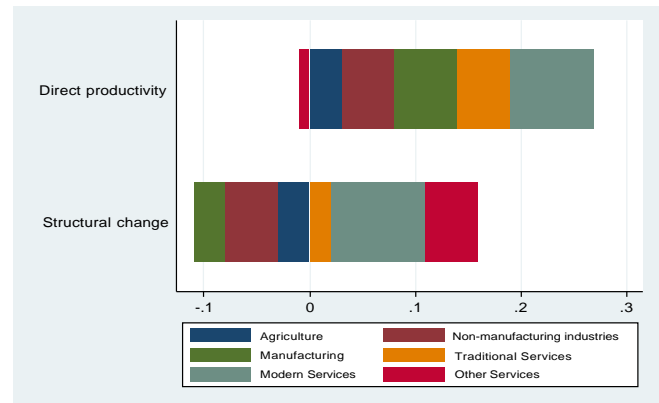
Source: Authors' computations based on the GGDC 10-sector database.
Notes: For brevity, we aggregate the 10 sectors into 6 broadly defined sectors: agriculture, non-manufacturing industries, manufacturing, and traditional, modern and other services. "Non-manufacturing industries" include mining, utilities and construction. "Traditional services" refer to retail trade, restaurants and hotels. "Modern services" refer to finance, insurance, real estate and business services and transport, storage and communication. "Other services" include government services and community, social and personal services.

We now turn our attention to the current export basket and product diversification opportunities for South Africa. The country exported goods worth a total of $96.6 billion in 2016. Four of the top five exports belonged to the mining industry (figure 21). Motor vehicle manufacturing was another important constituent in the export basket.

Figure 21. South Africa: Export basket in 2016
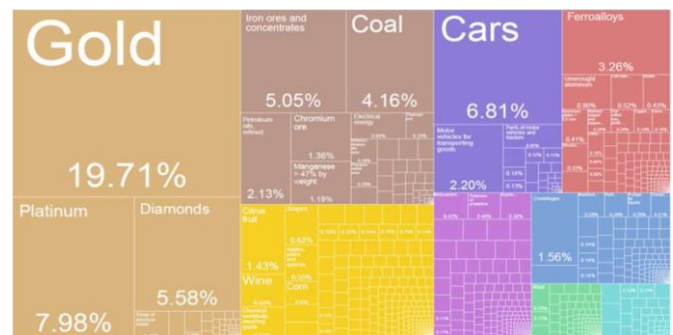
Source: Atlas of Economic Complexity, Harvard University.

Figure 22 shows how South Africa's product space evolved from 1970 to 2014. The country's product space in 2014 looks similar to that in 1970. The country, however, managed to develop new competencies in a few core products related to machinery and transport and manufactured goods.

**Figure 22. South Africa: Product space in 1970 and 2014**

Panel a: Product space 1970   Panel b: Product space 2014
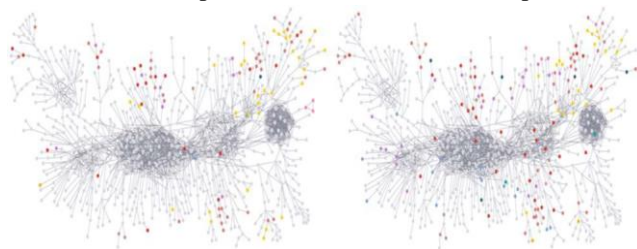
Source: Atlas of Economic Complexity, Harvard University.

Figure 23 shows the future transformative capacity for South Africa. The distribution of the yet-exported goods, which are above the average economic complexity, suggest that it is likely to develop capacities for producing more complex agro-processing manufacturing, chemicals and plastics, and transport- and vehicles-related products in the years ahead.

Figure 23. South Africa: Feasible products in 2014
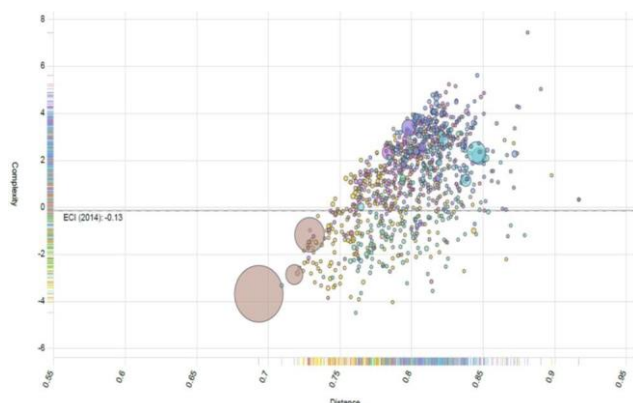
Source: Atlas of Economic Complexity, Harvard University.

To sum up, South Africa is an emblematic case of premature deindustrialization, where services grew in terms of value added and employment, spurred on by rapid productivity growth. Despite having been halted, industrialization has left some legacy. Today, the South African export basket is rather diversified. Raw materials and primary products coexist with manufactured products, including automotive, chemical and pharmaceutical products. Despite a relatively diversified export basket, South Africa faces a challenge to strengthen its international competitiveness in products where it does not have one already, as its knowledge and capabilities are not close enough to those required to master production in those areas.

4.3 United Republic of Tanzania

The United Republic of Tanzania has been a least developed economy since 1971. The country is predominantly an agrarian economy, with over 70 per cent of the workforce employed in agriculture (figure 24). Agricultural value added, which had been declining until the 1980s, had reverted to the 1960s values by the mid-1990s. On the other hand, the manufacturing value added grew in the 1960s and the 1970s, and peaked at 13 per cent in 1978. Since then, the sectoral value added began to decrease, and this trend was not reverted until the mid-1990s. Services – especially trade, restaurants and hotels – absorbed the small number of workers that left agriculture. Manufacturing employment remained very low throughout the period, employing only 3 per cent of the workforce in 2011.

Figure 24. The United Republic of Tanzania: Value added and employment shares by sector, 1960–2011
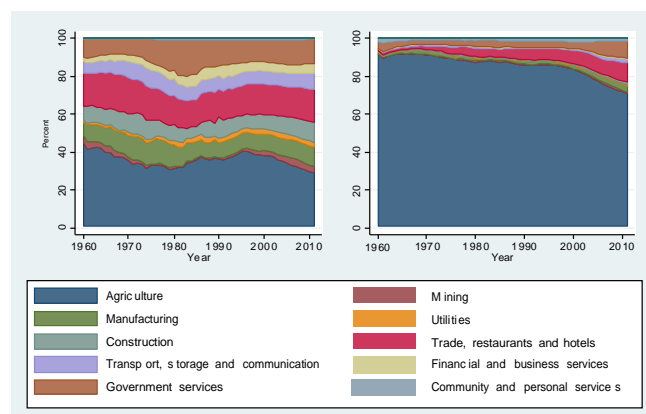
Source: Authors' elaboration based on the GGDC 10-sector database.
Note: Value added in constant 2005 national prices.

Structural transformation requires rapid productivity growth to be ignited and sustained. However, in the case of the United Republic of Tanzania, the only period with sustained employment and productivity growth was from 1960 to 1980. From 1980 to 1994, employment growth slowed down, with negative productivity growth rates. After the mid-1990s, productivity and employment growth recovered, but productivity continued to grow more slowly in comparison to employment.

Mirroring this hesitant structural transformation, aggregate labour productivity remained low over the entire period (figure 25). Most industries suffered from limited, or no, productivity growth, with utilities, financial and business services sectors being the only exceptions.

**Figure 25. The United Republic of Tanzania: Labour productivity by sector, 1960-2011**

Source: Authors' elaboration based on the GGDC 10-sector database.
Note: Productivity levels in constant 2005 national prices.

Decomposing aggregate labour productivity growth from 1991 to 2010 shows that structural change contributed as much as direct productivity gains to labour productivity growth. Figure 32 showcases how individual sectors contributed to these two effects. Due to productivity gains in agriculture (the large direct productivity effect of agriculture), the economy was able to shift away from agriculture (hence, the negative contribution of agriculture to the structural change effect). This is in accordance with the structural growth theory, which suggests that productivity growth in agriculture is the first trigger of industrialization, as mechanization frees labour, which can then move to more productive industries (Herrendorf et al., 2015). However, unlike the experience of early industrializing economies, the services industry benefited considerably more than manufacturing did from the productivity growth in agriculture. This is also evident in figure 26, where services expansion contributes predominantly to the structural change.

Figure 26. The United Republic of Tanzania: Direct productivity and structural change effects by sector, 1991–2010
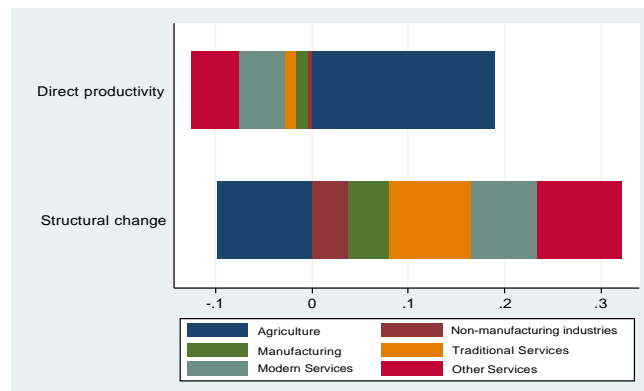
Source: Authors' computations based on the GGDC 10-sector database.
Notes: For the sake of simplicity, we aggregated the 10 sectors into 6 broadly defined sectors: agriculture, non-manufacturing industries, manufacturing, and traditional, modern and other services. "Non-manufacturing industries" include mining, utilities and construction. "Traditional services" refer to retail trade, restaurants and hotels. "Modern services" refer to finance, insurance, real estate and business services and transport, storage and communication. "Other services" include government services and community, social and personal services.

Next, we assess the export structure and diversification opportunities for the United Republic of Tanzania. The product tree map in figure 27 shows the export basket in 2016. The country's total exports were worth $5.24 billion. The export structure can be summed up in two stylized facts: the export basket is relatively diverse and is dominated by primary products, both agricultural and extractives.

Figure 27. The United Republic of Tanzania: Export basket in 2016
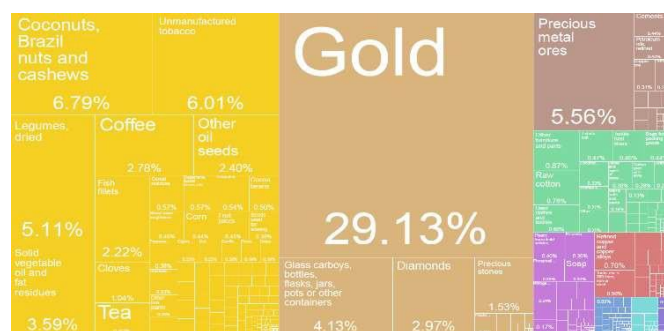
Source: Atlas of Economic Complexity, Harvard University.

Figure 28 shows the evolution of the United Republic of Tanzania's productive structure from 1970 to 2014. The following stylized facts emerge. Enjoying RCA in a handful of products in 1970, the product structure had become more diversified in 2014. The diversification has mainly taken place in the peripheral products, particularly in agriculture-based products and precious metals.

Figure 28. The United Republic of Tanzania: Product space in 1970 and 2014

Panel a: Product space 1970   Panel b: Product space 2014
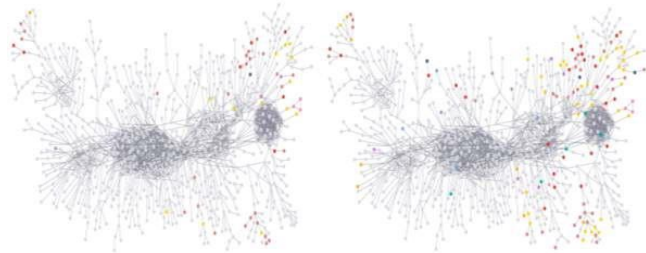
Source: Atlas of Economic Complexity, Harvard University.

What does the product space network for the United Republic of Tanzania suggest about its future transformation capacities? The feasibility chart (figure 29) shows the products that the country is likely to export based on its export structure in 2014. The upward slope of the product distribution suggests that Mauritius's existing productive structures are insufficiently capable of supporting the production of more complex products.

Focusing on the distribution of the yet-exported goods that are above the average economic complexity suggests that the country is likely to develop capacities in more complex agro-based manufacturing. Additionally, opportunities to develop transport and vehicles-related products may be leveraged in the years ahead.

Figure 29. The United Republic of Tanzania: Feasibility chart in 2014
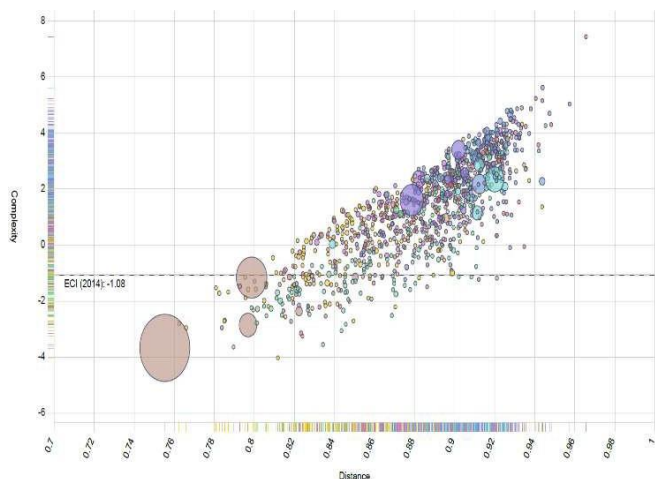
Source: Atlas of Economic Complexity, Harvard University.

In summary, the United Republic of Tanzania experienced weak structural transformation; its industrialization stalled and left the economy as predominantly agrarian. This is reflected in the composition of its export basket, dominated by a handful of raw materials and primary products. While some advancement in textile-related products is expected, the

manufacturing component of exports from the United Republic of Tanzania is still small, and more shall be done to diversify the economy.

4.3 Zambia

Zambia has achieved limited economic and export growth in the last five decades. Income per capita has stagnated at $1,500–1,600. The country's structural change dynamics look rather peculiar: the economy experienced some structural change away from mining, but not from agriculture (figure 30). Mining value added decreased from 40 to 14 per cent between 1965 and 2010. Meanwhile, employment in agriculture increased from 63 per cent to 72 per cent over the same period.

The trade, restaurants and hotels industry was the biggest beneficiary of the limited structural transformation, with its output growing from 8 to 22 per cent. Importantly, the manufacturing sectordid not grow substantially: its value added share increased from 7 per cent in 1965 to 15 per cent in 1990. Since then, its output share has been contracting, falling to 9 per cent in 2010. Meanwhile, the manufacturing employment share remained negligible, 2–4 per cent, during the entire period.

Figure 30. Zambia: Value added and employment shares by sector, 1965–2010
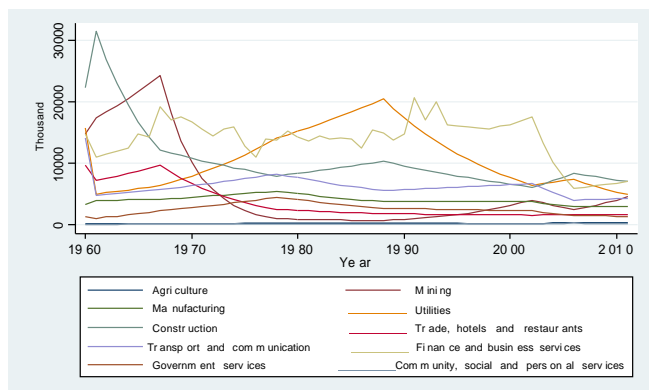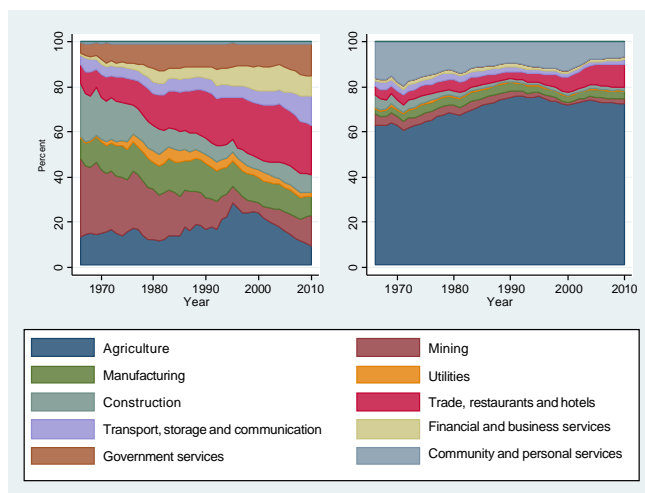

Source: Authors' elaboration based on the GGDC 10-sector database.
Note: Value added in constant 2005 national prices.

Insufficient structural transformation was accompanied by limited productivity growth. These two processes in tandem, however, are necessary to generate virtuous cycles that lead to economic development. Figure 31 shows the sector-wise labour productivity trends in the period between 1965 and 2010. Overall, labour productivity remained stagnant in most industries. Agriculture and traditional services, the largest sectors in the economy, experienced virtually no productivity

growth. The most productive industries – mining, construction and utilities – were negligible in terms of employment generation. Since the 1990s, productivity in the financial and business services sector has grown substantially, making it the most productive industry in the economy.

Figure 31. Zambia: Labour productivity by sector, 1965–2010
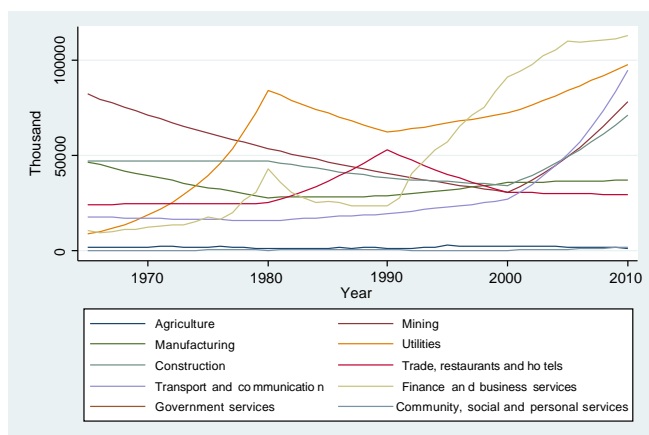
Source: Authors' elaboration based on the GGDC 10-sector database.

Note: Productivity levels in constant 2005 national prices.

Decomposition of the labour productivity growth reveals that structural change accounted for 41 per cent of the total productivity growth in the economy. Figure 32 breaks down how various sectors contributed to direct productivity and structural change effects. The labour productivity growth was most pronounced within modern services, other services and non-manufacturing industries. The structural change effects were negative for all industries except traditional services and non-manufacturing industries. These were also the only two industries that expanded their employment shares from 1991 to 2010. Overall, these findings confirm that structural transformation has not been pervasive and has primarily benefited the services industry.

Figure 32. Zambia: Direct productivity and structural change effects by sector, 1991–2010
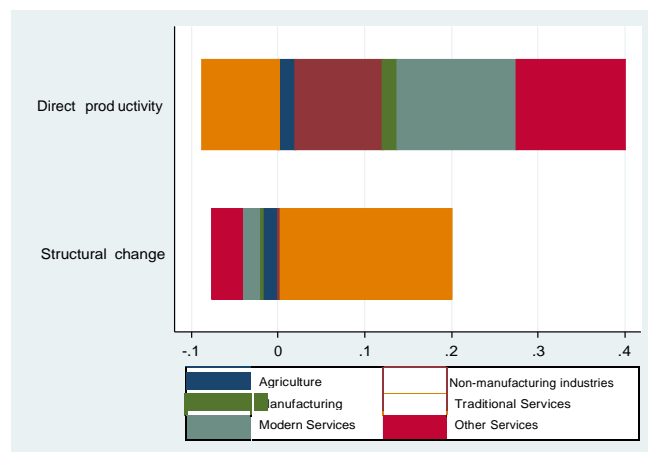
Source: Authors' computations based on GGDC 10-sector database.

Notes: For the sake of simplicity, we aggregated the 10 sectors into 6 broadly defined sectors: agriculture, non-manufacturing industries, manufacturing, and traditional, modern and other services. "Non-manufacturing industries" include mining, utilities and construction. "Traditional services" refer to retail trade, restaurants and hotels. "Modern services" refer to finance, insurance, real estate and business services and transport, storage and communication. "Other services" include government services and community, social and personal services.

We now assess the export structure and diversification opportunities for Zambia. Figure 33 shows the export structure in 2016. The country's total exports were worth $5.13 billion. Copper mining and related industries accounted for 88 per cent of the country's entire export basket. The export structure reaffirms the economy's overwhelming reliance on the mining industry which, due to the capital intensiveness, tends to be limited in its employment generation capacity.

Figure 33. Zambia: Export basket in 2016
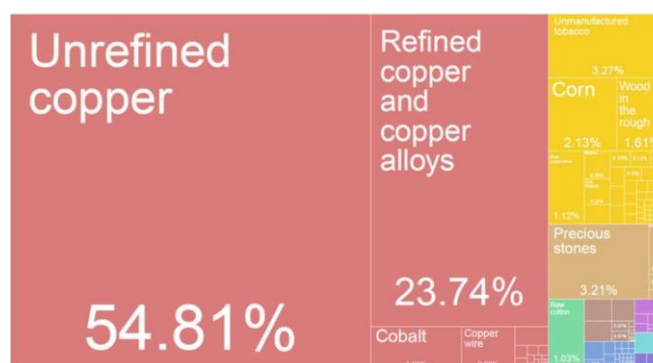
Source: Atlas of Economic Complexity, Harvard University.

Figure 34 visualizes the evolution of Zambia's productive structure from 1970 to 2014. The following stylized facts emerge: the country enjoyed revealed comparative advantage in a handful of products in 1970. In comparison, the product structure had become more diversified in 2014. The diversification, however, has mainly taken place in the

peripheral products, particularly in metals and related manufacturing.

Figure 34. Zambia: Product space in 1970 and 2014

Panel a: Product space 1970   Panel b: Product space 2014
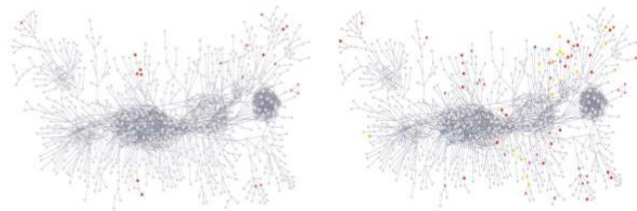
Source: Atlas of Economic Complexity, Harvard University.

Figure 35 shows the transformative wherewithal for Zambia in 2014. The distribution of the yet-to-be exported goods suggests that most complex products are beyond the existing productive capacities in Zambia. Focusing on the distribution products above the average economic complexity suggests that the country is likely to develop capacities for producing mainly more complex agro-based manufacturing and chemicals and plastics products. Furthermore, opportunities to develop transport and vehicles related products can also be leveraged in the years ahead.

Figure 35. Zambia: Feasible products in 2014
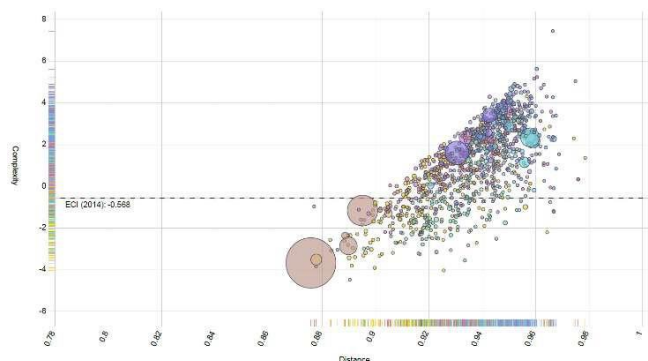
Source: Atlas of Economic Complexity, Harvard University.

To sum up, Zambia has undergone a limited structural transformation, with agriculture continuing to employ a large proportion of the workforce. Spurred by rapid productivity growth, services became an important employment source, while manufacturing could not develop a more solid foothold. These structural transformation dynamics have also affected the Zambian export structure, which is heavily driven by a single commodity. Even simple manufacturing goods such as textiles would be difficult to add to the export basket. Because of these factors, an active industrial policy will be of critical importance to sustain industrialization, export diversification and upgrading in Zambia.

5. An experiment of regional integration

As a final exercise, this section attempts the following thought experiment: What would the export diversification opportunities look like if the five countries were to act as a single economy? Following Hidalgo (2011), figure 36 displays not-exported products and products exported with RCA below 1 for the five economies under analysis and for a hypothetical country, resulting from the combination of the five economies. This combination is obtained from a simple "best case scenario" in which the RCA for each commodity is equal to the maximum RCA among the five countries.

On the vertical axis, we use another proxy of product complexity (PRODY), which is the income level associated with a given product. It is calculated as the weighted per capita income of the countries that export the given product. The horizontal axis uses another proxy for the likelihood of a given product being exported, density, which is estimated by the proportion of its neighbouring products that are already being produced in the economy.

The combined country would export 674 products with RCA below 1 and would not export 18 products. Moreover, it would be much better positioned to exploit existing opportunities for export diversification. The large increase in the density of products outside the export basket suggests complementarities between the productive structures of the five economies. Such complementarities would create a larger and more diverse pool of resources and capabilities. This, in turn, would make products relatively closer, thus facilitating export diversification.

Figure 36. An experiment of regional integration: Export opportunities for the combined countries
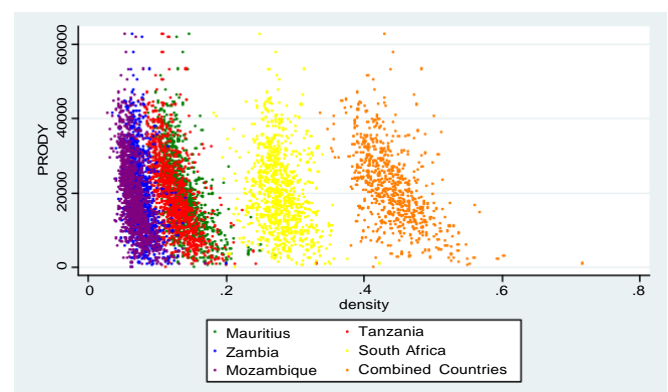
Source: Authors' elaboration based on United Nations Comtrade Database, 2014.

6. Conclusions

This paper analysed the structural transformation dynamics of five Southern African economies: Mauritius, Mozambique, South Africa, the United Republic of Tanzania and Zambia. Most of these economies underwent limited structural transformation, with sluggish productivity growth. The

primary sector dominates their production structure, accounting for large shares of output and exports, and it is therefore a major source of economic growth and foreign exchange. This leaves the Southern African economies vulnerable to the volatilities typical of commodities and to the "Dutch Disease" effects. In this context, the design of effective industrial policies can play a critical role to limit dependence on a few commodities and foster diversification and technological upgrading.

Mauritius and South Africa are different in several respects. They underwent structural transformation away from the primary sector, even though South Africa has deindustrialized prematurely. Primary products and resource-based manufactures are important sources of foreign exchange, but their export baskets are relatively diversified, with some products well integrated in production structures and global value chains. Notwithstanding the differences between these countries, regional integration could prove beneficial. Our quantification exercise suggests that, by aligning their strengths, knowledge and capabilities, these five economies could enhance their export capacities, making export diversification and industrial upgrading relatively easier.

Annex I

Productivity and structural transformation

Labour productivity growth can be decomposed in two main components: direct productivity growth (or within effect) and structural change (or reallocation effect). Whether labour productivity growth comes from within sectors of productivity growth or structural change – or both – matters a great deal. Sustained economic growth is therefore inextricably linked to productivity growth within sectors and to structural transformation. Economic growth can only be sustainable, and lead to socio-economic development, if these two mechanisms work simultaneously.

Formally, productivity growth can be composed following this formula:

$$\Delta Y_t = \sum_{i=n} \theta_{i,t-k}\, \Delta y_{i,t} + \sum_{i=n} y_{i,t}\, \Delta \theta_{i,t}$$

where Y_t and $y_{i,t}$ refer to economy-wide and sectoral labour productivity and $\theta_{i,t}$ captures the share of employment in sector *i* at time *t*. Δ denotes changes in productivity ($\Delta y_{i,t}$) or employment shares ($\Delta \theta_{i,t}$). The first component (the within component) is the sum of productivity growth within each sector weighted by the employment share of each sector at the beginning of the period. It captures the idea that the larger the sector with higher-than-average productivity growth in the economy, the larger the aggregate labour productivity growth

of that economy. The second component (the structural change, or reallocation, or between component) captures the impact of labour movements across sectors along the period. It accounts for the fact that when labour moves from a lower-productivity sector to a higher-productivity sector, the employment share of the former decreases and the employment share of the latter increases, thus increasing aggregate labour productivity. In this study, the method used to decompose aggregate labour productivity into sectoral contribution effects is based on the Divisia index (UNCTAD, 2016b).

Annex II

The product space literature

The product space literature (Hausmann and Klinger, 2007; Hausmann et al., 2007; 2011; Hidalgo et al., 2007) relies on the idea that what economies produce and export matters for their economic growth and development, and provides a framework to identify avenues for export diversification strategies. According to this framework, countries cannot produce a good for which they have no knowledge. This puts learning, capabilities, and technological change at the centre of structural transformation processes.

This literature sees production possibilities as a space in which economies move. More specifically, the product space is an illustration of all goods exported in the world, where the distance between two goods is defined by the probability of producing one of the goods if an economy already produces the other. In this framework, structural transformation entails moving from a good that countries already produce to another one that is close enough to it, where "close enough" is defined based on the knowledge and capabilities needed to produce a certain good. Hence, in the product space, goods are close if the knowledge used to produce them is similar, and goods are far away if producing them requires completely new sets of skills. This ultimately configures a network of goods, a sort of map in which economies move from one point to another, leading to diversification and production of increasingly sophisticated goods.

We structure our product space analysis around two key questions:

(a)   What are these countries good at exporting?

(b)   In which directions could these countries diversify their export basket?

To tackle the first question, we use the concept of revealed comparative advantage (RCA). This is an index commonly used to assess the relative importance of a country as an exporter of a certain class of goods or services. We use the

notion of RCA introduced by Balassa (1977), according to which a country j has a revealed comparative advantage in product k if the share of this product within the country's export basket is larger than the share of this product in the global market (RCA > 1). Therefore, the RCA of a certain product k for a certain country j is computed as:

$$RCA_{jk} = \frac{X_{jk} / \sum_{jk} X_{jk}}{\sum_j X_{jk} / \sum_j \sum_k X_{jk}}$$

Based on the concept of RCA, the literature has developed a measure of distance between the products of the product space, proximity. Given two products, proximity is defined as the minimum of the proportion of countries that specialize in both products (i.e. whose RCAs are greater than 1 for both products). By saying how many countries specialized in both products, proximity gives an indication of how close or distant is each pair of products. In more technical terms, proximity is defined as:

$$\varphi_{kh} = min\{P(RCA_k > 1|RCA_h > 1), P(RCA_h > 1|RCA_k > 1)\}$$

where φ_{kh} is defined as the probability that a country exports good k with RCA > 1, given that it also exports good h with RCA > 1. More specifically, proximity is calculated by comparing how many countries that export product *k* with RCA > 1 also export product *h* with RCA > 1. For example, if 10 countries export product *k* with RCA > 1, and 5 of those 10 countries also export product *h* with RCA > 1, then the proximity (or the general probability to export) for product *k* in relation to product *h* is 0.5.

This is a crucial concept if we are interested in understanding the diversification opportunities of an economy, because how close products are depends on the extent to which products share the same knowledge and capabilities requirements, and therefore how easy it could be to move from one product to another. In a nutshell, the higher the proximity between two products, the closer the products and the easier the diversification from one product to the other.

To tackle the second question, we use the concept of density. Density captures how distant are products to the export basket of the country. Countries will have low densities around faraway products and high density around close products. Density contains, and depends on, two elements: proximity and composition of the export basket of a given economy. In more formal terms, density is defined as:

$$W_{kj} = \frac{\sum_i D_i \, \varphi_{ki}}{\sum_i \varphi_{ki}}$$

where $D_i = 1$ if $RCA_i > 1$ and 0 otherwise. A value of W_{kj} equal to 0.5 for a given product/country means that in country *j*, from the perspective product *k*, 50 per cent of the neighbouring space seems to be developed.

Another important concept that guides this analysis is the concept of export sophistication, intended as the level of complexity of products as different as potato chips and microchips, for example. Hausmann et al. (2007) introduced one of the key indicators of export sophistication, PRODY, which can be thought of as the income level associated with each commodity. It aims at reflecting the idea that richer countries export more sophisticated products. This is computed as the average of the incomes of the countries exporting each traded commodity, weighted by the revealed comparative advantage of each country in that commodity, i.e. by the degree to which a country specializes in that product.[9] Formally:

$$PRODY_k = \sum_j \frac{\frac{X_{kj}}{X_j}}{\sum_j \left(\frac{X_{kj}}{X_j}\right)} Y_j$$

where represents the value of product k exported by country j; the total value of exports of country j; and its GNI per capita.

References

Abdon A and Felipe J (2011). The Product Space: What Does It Say About the Opportunities for Growth and Structural Transformation of Sub-Saharan Africa? Levy Economics Institute.

Balassa B (1965). Trade liberalisation and "revealed" comparative advantage. The Manchester School of Economic and Social Studies. 33(2):99–123.

Balassa B (1977). "Revealed" comparative advantage revisited: An analysis of relative export shares of the industrial countries, 1953–1971. The Manchester School of Economic and Social Studies. 45(4):327–344.

Grossman G and Helpman E (1991). Trade, knowledge spillovers, and growth. European Economic Review. 35(2-3):517-526.

Hausmann R and Klinger B (2007). The structure of the product space and the evolution of comparative advantage. CID Working Paper No. 146.

Hausmann R, Hidalgo CA, Bustos S, Coscia M, Simoes A and Yildirim MA (2011). The Atlas of Economic Complexity. The MIT Press. Cambridge and London.

---

[9] These are normalized so that the weights sum up to 1.

Hausmann R, Hwang J and Rodrik D (2007). What you export matters. Journal of Economic Growth. 12(1):1–25.

Herrendorf B, Herrington C and Valentinyi A (2015). Sectoral technology and structural transformation. American Economic Journal: Macroeconomics. 7(4):104–133.

Herrendorf B, Rogerson R and Valentinyi A (2013). Growth and structural transformation. No. w18996. National Bureau of Economic Research.

Hidalgo C (2011). Discovering East Africa's industrial opportunities. The German Marshall Fund of the United States Economic Policy Paper Series 2011. Washington, D.C.

Hidalgo C, Klinger B, Barabási AL and Hausmann R (2007). The product space conditions the development of nations. Science. 317(5837):482–487.

Kuznets S (1973). Modern Economic Growth: Findings and Reflections. American Economic Review. 63(3):247–258.

Lewis A (1954). Economic Development with Unlimited Supplies of Labour. The Manchester School of Economic and Social Studies. 22(2):139–191.

McMillan M and Rodrik D (2011). Globalization, Structural Change and Productivity Growth. In: Bacchetta M and Jansen M, eds. Making Globalization Socially Sustainable. International Labour Organization. Geneva.

Ranis G and Fei CH (1961). A Theory of Economic Development. American Economic Review. 51(4):533-565.

Solow, Robert M (1956). A contribution to the theory of economic growth. The Quarterly Journal of Economics. 70(1):65–94.

UNCTAD (2016a). Trade and Development Report 2016: Structural transformation for inclusive and sustained growth. United Nations publication. Sales No: E.16.II.D.5. New York and Geneva.

UNCTAD (2016b). Virtual Institute Teaching Material on Structural Transformation and Industrial Policy. United Nations. New York and Geneva.

United Nations Economic and Social Council (2017). Progress Towards the Sustainable Development Goals: Report of the Secretary-General. E/2017/66. 11 May.

Industrial Policy and Economic Planning: The Case Of Development-Based Public Procurement and National Champions In Supporting Local Manufacturing Base?

Serkan Bürken[a], Murat Yülek[b], Emrah Öngüt[c],

[a] OSTIM Technical University, Economics, Ankara, Turkey
[b] OSTIM Technical University, Economics, Ankara, Turkey
[c] Predency of Turkish Repuclic Strategy and Budget Office, Ankara, Turkey

Abstract

Economic planning is still conducted in many countries de jure in some and de facto in others. On the other hand, industrial policy is coming back to stage globally in both developed (e.g. USA, Germany and the UK) and developing countries (e.g. China and Turkey). Both economic planning and industrial policy have different disguises in different countries, but it can be said that the two are in a process of convergence as developing countries intensify their catch-up efforts. One of the differences among country practices of industrial policy is the policy tools. In this paper we look at various country cases to distinguish new trends in economic planning and industrial policy. In particular, we review the employment of development-based public policies and national champions-based policies.

1. Introduction

Economy history has witnessed different cases of disputes about catching up of nations in industrial development and one of the fundamental question of economics is why some nations are poor and some nations are rich. Economic planning and industrial policy have been two major areas of research in this respect. Despite the fact that neo-liberal agendas have been powered after 1980s particularly by free-market scholars; with the 2008 financial crisis of Western capitalism, economic planning and industrial policy are coming back to stage globally in both developed (e.g. USA, Germany and the UK) and developing countries (e.g. China and Turkey). Both economic planning and industrial policy have different disguises in different countries, but it can be said that the two

are in a process of convergence as developing countries intensify their catch-up efforts.

One of the differences among country practices of industrial policy is the policy tools. In this paper we look at various country cases to distinguish new trends in economic planning and industrial policy. In particular, we review the employment of development-based public policies and national champions-based policies. To achieve this aim, in the next section, we begin by explaining the term of economic catch-up by utilizing the concepts referred in the literature; namely industrial policy, development-based public procurement and economic planning. We will benefit from the South Korean example to put forward how those policies could transform a resource-based economy into a technologically intensive one. Then in the third section, we

will introduce the concept of national champions and the political economy debates over it. We will discuss how national champions might be utilized to transform a catching-up economy and to what extent it distorts competitive policy and free-market liberalism. Finally, we assert that supporting national champions is still in the agenda of all countries, involving even free-market economies. In the fourth section, we will give a current example involving Turkish 11th Development Plan which posits manufacturing as the core and designates development-based public procurement and supporting national champions policies in order to pace its catching-up process. In the last section, we are coming up with conclusions and recommendations for further research.

2. Economic Catch-up: Industrial Policy, Development-Based Public Procurement and Economic Planning

Development economists have been studying the reasons of what can be called a "development gap"; that is, significant differences in economic development levels among countries. In order to close the development gap, developing countries are supposed to implement policies. This so-called catch-up process reveals itself as a quest for higher per capita GDP with a view to reach the levels in developed economies.

Yülek (2018) underlines that as the root cause of underdevelopment is structural, policy response should also be structural in nature. To achieve that, developing countries have used different tools and policy sets. Industrial policy, economic planning and development-based public procurement (Yülek, 2015) are among them.

Industrial policy is defined as a set of structural policies that aim at changing the producti on pattern in a country (Yülek, 2018). That change covers, among others, the set of industrial products that are manufactured in the country. Industrial policies also cover openness and export orientation of the country. The recent success stories of industrial policy have concentrated in Asia. As an example, South Korea's industrial policies that led the country become a high-income country has changed the pattern of export products significantly over the course of five decades (Table 1) from mostly raw materials to higher value-added industrial products.

In fact, similar change has been witnessed in different countries during the first, second and third industrialization waves. The first wave comprised the first industrial revolution that started in Britain starting roughly by mid-18th century. Some European countries such as France followed suit. The second wave can be timed to start around a century later – mid-19th century. This time over, countries such as the USA, Germany and Japan started their industrialization process. The third wave came in mid-20th century and covered East Asian

countries; particularly, the "Asian tigers" of South Korea, Taiwan, Singapore and Hong Kong.

As the case of South Korea, among others such as Taiwan or Singapore, has demonstrated, industrial policies are among the key determinants of economic catch-up (Westphal, 1990; Yulek, 2016). The key components of South Korea's industrial policy consisted of:

1. Sectoral focus: South Korea's industrial policies were directed towards the development of selected sectors such as steel, shipbuilding, automobiles, electronics. These targeted sectors changed over time in response to the development of manufacturing in the country and the global market place.

2. Export – orientation: In the earlier times export orientation and import substitution co-existed. After 1990s, import substitution was dropped. Import substitution was not always open and simple such as erecting import duties. Even domestic tax measures were employed to protect domestic industry.

Table 1. The change in South Korea's production pattern: top ten exports over

	1960	1970	1980	1990	2000
1	Iron ore	Textiles	Textiles	Electronics	Semiconductors
2	Tungsten ore	Plywood	Electronics	Textiles	Computers
3	Raw silk	Wigs	Iron and steel products	Footwear	Automobiles
4	Anthracite	Iron ore	Footwear	Iron and steel products	Petrochemical products
5	Cuttlefish	Electronics	Ships	Ships	Ships
6	Live fish	Fruits and vegetables	Synthetic fibres	Automobiles	Wireless telecommunication equipment
7	Natural graphite	Footwear	Metal products	Chemicals	Iron and steel products
8	Plywood	Tobacco	Plywood	General machines	Textile products
9	Rice	Iron and steel products	Fish	Plastic products	Textile fabrics
10	Bristles	Metal products	Electrical goods	Containers	Electronics home appliances

Source: Ahn, S. (2013)

3. Development-based public procurement: In South Korea, 'set asides' from the procurement budget is utilized to provide procurement support to SMEs. Forward procurement or planned procurement is a technique to alert businesses to make preparations for future procurement plans.

4. Technological and education policies

Economic planning has accompanied industrial policy in South Korea's economic transformation. The country practiced economic planning officially until 1992. However, even after planning was officially abandoned, the government has continued to employ strategic plans at the sectoral and even product level (Yülek and Han, 2017).

The integration of industrial policy and economic planning is not a peculiarity of South Korea. In many countries, economic planning and industrial policy went hand in hand

(Yulek, 2015). Some countries officially conduct economic planning such as Turkey, China and India while others, as in the case of South Korea or the USA unofficially conduct different types of planning and strategy development practices.

As in the case of South Korea and the USA, many countries conduct industrial policies de facto not de jure. Further, in different countries, industrial policies come in disguise. For example, in the USA, defense and space policy mostly constitutes industrial policy directed towards certain manufacturing sub-sectors and technologies.

Nevertheless, recent years have witnessed a comeback of interest in industrial policy in a quite open manner especially in Europe (Mosconi, 2015a and 2015b; Bofinger, 2019; Zettelmeyer, 2019; Federal Ministry of Economic Affairs and Energy, Germany, 2019; HM Government, 2017) and in the USA.

2.1 Development-based Public Procurement

Industrial policy is implemented with a number of key tools. Among them, development based public procurement is an important one (Kattel and Lember 2010; Yülek, 2011; Rothwell, 1984; Tiryakioglu and Yulek, 2015; Yulek and Tiryakioglu, 2014). Above all, size of public procurement in developing countries are generally comparable, if not larger than exports. However, many local manufacturing firms have difficulty in accessing the public procurement market. This hinders the learning-by-doing induced benefits to local companies and makes it difficult for them to build up scale. By increasing the market access of local manufacturing firms, the policy maker fosters industrial and technological development:

"In developing economies local technological capacity can be enhanced by technology and skill transfer through, among others, well designed public procurement policies that can act as a type of industrial policy. Public procurement may be more effective in fostering technological and industrial development than access to markets. Likewise, in developed economies, public procurement policies aimed at supporting innovation processes programs, simply because introducing an incentive to sell can trigger a stronger public procurement is a good complement to industrial and technological development." (Yulek and Tiryakioğlu, 2013; p.32)

Thus, public procurement can be a significant industrial policy tool that enhances national technological capability contributing to economic development (Figure 1). Correspondingly, Yülek (2011) has underlined the role of "development-based public procurement" policies in economic development. There are a number of different public procurement policies (Table 2) that cater to different circumstances

Figure 1. The role of public procurement in the process of economic development in developing countries
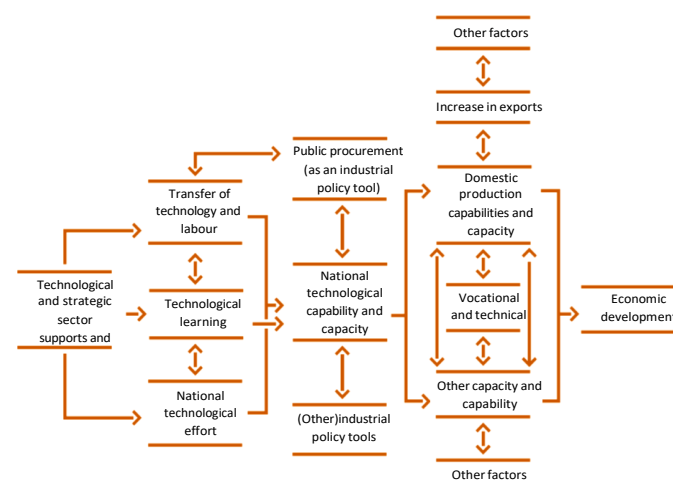
Source: Yulek and Tiryakioglu (2013)

In developing countries where manufacturing capabilities are not adequately developed, tools such as offset/countertrade (applied in many countries) and local content rules (such as the "New Industrial Policy" in South Africa) are applicable. Set-asides for SMEs (procurement budgets allocated to smaller companies) have been used in developed (such as the USA) and developing countries (such as India) alike. Forward public procurement (or planned procurement) have been used in the defense industry in the USA. Locality rules proposed by Yulek and Tiryakioglu (2014) have not been utilized until now.

Other than procuring services at good prices for public use and supporting manufacturing sector, public procurement can also be perceived as a tertiary policy instrument rendering different kind of innovation. Public procurement of innovation consists of purchasing activities carried out by public agencies that lead to innovation in the country (Kattel and Lember, 2010; Rolfstam, 2013, 2014). Forward procurement (Table 1) may trigger R&D and innovation as well and hence can be considered as procurement of innovation.

Edler (2010, 2013) refers to procurement as a "demand-side policy" which is defined as "a set of public measures to increase the demand for innovations, to improve the conditions for the uptake of innovations and/or to improve the articulation of demand in order to spur innovation and the diffusion of innovations". He underlines that:

"Procurement for innovation was an element of the European Commission's Action Plan to raise R&D expenditure to the 3 per cent Barcelona target. Subsequent programmatic European innovation policy papers (Kok et al. 2004; Aho et al. 2006) emphasized a need to promote policies driving demand for innovation, including public procurement. Consequently, the EU Commission set up the European Lead

Market Initiative (EU COM 2007a; CSES and Oxford Research 2011), focused largely on sectors in which the state is an important purchaser, and considered public procurement to be one of the key instruments for the creation of 'lead markets' in Europe." (Edler, 2010)

Further, Rolfstam (2014; pp. 23-24) argues that:

"Evidence also suggests that public procurement can play a significant role in stimulating innovation. In the past, public agencies in the United States promoted the initial development of the computer, civilian aircraft and semiconductor industries. Drawing on innovation surveys and patent data from Canada, the importance innovation has been established. More recent quantitative studies drawing on German data have compared different innovation effects, suggesting public procurement and university spillovers can be more important than other measures such as regulation and results have been found by drawing on data collected from European Union (EU) member states as well as Norway and Switzerland. Leading experts have found that the biggest impact is achieved with policies considering the simultaneous application of research and development subsidies and public procurement. There is also a range of case studies reporting on how public procurement has helped to stimulate innovation."

Table 2. Development-based Public Procurement Policy Tools

DbPP Tool	Remarks
Countertrade/offset	Used primarily in the defense industry. Characterized by a contract between a nation-state and a foreign supplier, where the supplier is asked to generate primary capabilities (that is, the capabilities gained by the direct local partner) in addition to selling their base goods and services. There are also secondary capabilities (direct local partner) that could be developed via proper policies. Procurement-induced countertrade can foster technology transfer, conservation of foreign exchange, market penetration and foreign investment.
Local content requirements	Require international exporters to the host country to identify local manufacturing partners and outsource part of the manufacturing to them. The ensuing industrial participation process can help build local industrial capacity.
Set asides and price preferences for SMEs	Set asides comprise minimum public procurement budgets allocated to SMEs, while price preferences represent a positive price margin when supply comes from SMEs.
Forward public procurement commitments	The public authority makes a credible commitment to future procurement. The credibility of the commitment is critical as this will be the primary driver of preparation and pre-investment by private companies. Forward public procurement commitments can be an especially convenient tool for a government in triggering innovation and R&D without spending a single penny.
Locality rules	Procurement directed to manufacturing made in priority regions. Not used for the time being. Has a large potential to develop industry in selected regions. Can be linked to regional development policy.
Procurement of Innovation	In developed economies that possess sophisticated industrial structures and technological capabilities, growth accounting studies show that economic growth is driven by the growth of total factor productivity rather than factor accumulation. In these countries, public procurement could be primarily used to support innovation.

Source: Authors; Yülek and Tiryakioğlu (2014); Rolfstram (2014); Yülek and Taylor (2011); Taylor (2011).

3. Economic Catch-up: National Champions

The term of "National Champions" has been an ongoing debate on both policy arena and economic literature. It is located under the debates of industrial policy and competition policy. The main problem is that a consolidated definition of the concept is absent. Of course, there are wide array of definitions for both industrial policy and national champions within it. However, the definitions are changing according to the circumstances and discussions we face in different literatures (OECD, 2009; Falck and Heblich, 2007; Ravenhill, 2001; Sorgard, 2007).

National champions can be defined as corporates that have enough capabilities, resources, know-how with the addition of economies of scale and scope advantages to compete in global

markets. They are derived from the idea of economic nationalism and admitted as contrary to the market competition and laissez-faire approaches of modern capitalism despite the fact that more or less the flagship countries of free market capitalism have tried to generate their national champions during certain period in the history. Freeman (1997) and Mazzucato (2013) subsequently asserted that technological developments spreading from companies in flagship liberal economies were explicitly supported by governments. According to Mazzucato (2013), states have played an entrepreneurial role in the development of flagship companies all around the world.

The main idea of generating national champions comes from the argument that corporates and big conglomerates have some advantages in global competition that can be helpful in creating national welfare. First, they have more power and they are resilient to the economic turbulences they face in a volatile environment of global economy. In addition to that, it is generally admitted that performing R&D requires human and capital assets in higher volumes that only big firms could compensate. Of course, it does not necessarily mean that R&D and innovation could only be performed by big firms. Small firms have certain advantages over big firms in order to innovate (Saxenian, 1994). However, breakthrough innovations which requires more complicated know-how base, capabilities and resources could only be compensated by big firms or corporates. If we accept this as the fact for the beginning, nations seem to have right to intervene the markets to generate their national champions. For this reason, national champions cannot be excluded from the side of the politics since it contains some ideological purposes concurrent to economic nationalism. So, when we mention about national champions, the politics is inside the discussion to a considerable extent.

With the abovementioned fact, the definition of the term "national champion" is enlarged with the interest of the nation it belongs. National champions can be composed of several domestic firms merging together or they might be the single firm that is expanded by government support mechanisms as well. Most of the time, during mergers, the merging operation is ignited by the government or they are not blocked by the competition law with the indirect support of the government as well (Galloway, 2007). So, they are mostly oligopolistic – if not monopolistic. The expectation from them is to create national welfare by competing effectively in global markets. Absolutely, this kind of view is highly debatable as we see in the following.

To run into this debate, we will firstly describe the perspective of national champions in context of neo-classical understanding of national champions in which competition is introduced and admitted as the supreme aim of the economies. In this debate, there is a strong emphasis and bias towards competition policy which, according to our understanding, underemphasize the importance of industrial policy for a nation. To further enlarge our understanding of national champions, we give some examples of them especially in catching up countries as successful cases as well as advanced economies. With the help of those examples, we turn into a long-standing debate in the perspective of political economy and argue that, despite the neo-liberal argumentation, not only the government interventions on the market but also the neo-classical argumentation is ideological in terms of the industrial policy. Therefore, we come to the conclusion that implementing policies to create national champions is a political choice which is capable of supporting the efforts towards catching up and economic development.

3.1 National Champions in Industrial Policy vs. Competition Law

There has been an ongoing debate about the relationship between industrial policy and competition policy. As the neoliberal agenda develops, the free market capitalism has ruled over the government intervention. However, at the very beginning, the situation was not similar.

After the Great Depression in 1929 and World War II between 1939 and 1945, the capitalist system recovered itself by implementing Keynesian policies with extensive government intervention. With the rising tension at the beginning of the Cold War, countries in Western Capitalism put forward the understanding of planned economy which triggered the Welfare State and it was named as the "Golden Age of Capitalism" (Clift, 2014). In this period, more or less advanced economies implemented the planning perspective including the government intervention on markets. This had also triggered the economic planning initiatives in developing countries such as Turkey, South Korea, Pakistan and so on (Yülek et al., 2015).

However, the emerging conditions towards the formation of neoliberalism by the year of 1978 with Washington Consensus has cleared away this trend. As laissez-faire approaches question the validity of government intervention on economy, the importance of the concept of industrial policy has been weakened. Industrial policy and economic planning had been reduced to the state of "bulk of advices" offering not so much real term regulation and the planning perspectives on industrial development that had been about to disappear. Of course, this trend was shocked by the 2008 financial crisis and the government interventions of western countries with the help of extensive quantitative easing policies has terminated the hey-days of neoliberalism (Clift, 2014; Yülek 2015).

The mainstream economics argue that industrial policy is only valuable and valid under the condition that it does not rule over competition policy (OECD, 2009; Sorgard, 2007).

The common consolidation of competition policy in open market economies claims that the customer welfare is the most significant aim as the others are only secondary concerns. The main reason behind this is the belief of mainstream economics only perfect competition could sustain lower prices and higher benefits for customers. However, this understanding might be problematic when it comes to national welfare.

In contrary, there are other perspectives against this understanding of market liberalism. In the scope of economic patriotism, generating national welfare is at least as important as generating and sustaining competitive markets (List, 1909; Clift, 2014). The main argument behind this is to provide national competitiveness around the globe. It is assumed that this can be realized by developing national champions - the firms that are competitive enough and have some advantages coming from economies of scale. Furthermore, these initiatives are prone to create a skill base, knowledge pool and absorptive capacity to realize technology transfer and development within the given country and has some other positive spillover effects and externalities in national economy. In the next subsection, we will outline some of the successful examples of this kind.

3.2 Utilization of National Champions in Catching Up

Catching up is the general concept that is trying to explain how lagged nations are able to develop faster and sustain an economic growth to reach to the level of wealth that the advanced economies have. Though, there are many debates over this topic, the number of nations that have been able to achieve this are present in a limited number.

Within the historical perspective, the first nation that had managed to catch up could be counted as Germany. In the 19th century, the United Kingdom had supreme advantages over other countries and was admitted as the only industrialized nation in the world. They were obtaining resource-based materials and producing manufactured goods within that period of time (List, 1909). The East India Company which was established at the end of the 16th century; was compensating resource and supply requirements of the country by colonizing India and Far Eastern countries (Clift, 2014). This company might be counted as the first national champion all over the world. The supplies provided by it was being used in UK to produce manufactured goods and the textile and steel industry was built up with the help of this massive supply of goods. On behalf of Germany, in his seminal book, List (1909) was the first scholar who questions the roots of the superiority of UK. He claimed that UK was attaining its power by supplying resource-based and primitive goods and then they turned it into complete products that were including supreme value-added. The answer was simple for gaining national prosperity: buy unmanufactured good from outside; manufacture and produce products with technical know-how and sell them abroad with high value-added. List (1909) argued that nations should track the same path with UK by establishing and developing its productive forces including transportation infrastructure, human resource development, technological knowledge base etc. Germany tracked this path, especially by the second half of the 19th century, and paced its development. At the end of the 19th century and with the early 20th century, Germany had established its industrial base and spreading the usage of electricity, it had an advantage of generating big companies and corporates such as Siemens, Thyssen Krup etc. These companies were utilized as national champions and fostered the industrial in their host nation.

For the 20th century, it should be also noted that Japan was a significant example for catching up. By their defeat in the World War II, Japan had showed an amazing performance in development. By its state-led strategies implemented upon industrial policy, Japan had narrowed the gap and became an industrialized nation by 1980s. The main unit behind this success was MITI, Ministry of Industry and Technology in Japan, which implemented government intervention strategies, particularly on industrial policy. For example, during 1960s, MITI directed its automobile manufacturers like Toyota, Honda, Nissan and so on into different segments of the automobile industry in order to boost cooperation and complementarities rather than competition. Toyota was appointed as the mass producer for global markets. By its superior performance in quality, manufacturing, zero defects, supplier relations based on trust rather than competition and methods like just-in time to reduce inventory costs, Toyota has surpassed its American and German rivals and have become the largest manufacturer of the global automotive industry. Toyota had been producing only about two thousand of vehicles in 1930s but it has managed to produce over ten million cars annually in the last two decades. The main reason behind the success of Japanese industrial development was state-led growth and development-based public procurement policies accompanying with Japanese human resources skill pool, absorptive capacity and technology development capabilities (Womach et al., 2007).

A similar approach has been followed by some other Far-Eastern countries. Maybe, one of the most striking examples is South Korea. The resource-based and agrarian composition of exports were similar with many other developing or lagged nations of the same period. However, South Korean industrial policy was composed of state-led driven initiatives and development policies. Economic planning and government intervention on markets were present. National resources allocated to cheabols – big corporate like organizations that have industrial development goals operating in many industrial sectors. The government directed and monitored them in order to enhance the skill pool, knowledge base, absorptive capacity and technological capabilities of the

nation. Several public procurement and development policy measures were implemented upon those cheabols to make them compete globally. By the beginning of 1980s, those cheabols began to compete globally and for example, Hyundai entered into the United States market. The first decade of the presence of Hyundai on US market was not a success. The loss of the company in profits margins was compensated by the Korean government. However, with the rising technological learning and development of the local capabilities of Hyundai in US, the company began to increase its presence. After a successful two-decade period, Hyundai held on safely with its increasing quality and affordable cars. Design capabilities and technological intensity of the company also developed and as a result, in 2012 Hyundai Elantra took "The Car of the Year" award in US automobile market.[1]

We should emphasize one further country, which is currently a hot debate within economics literature. China has paced its development, particularly after 1980s. Its communist model led by Chinese Communist Party has transformed itself into a state-led development model. The focal point of this model has been to create national champions – the companies such as Huawei that competes globally. China first started its development model with imitation of technology and industrial goods and then transform its industry to technology intensive model with its rising national champions. The model contains government intervention and economic planning in all its phases. The Chinese champions are also comprised of military representatives and government bureaucrats in the board of Chinese companies. Public procurement is also a commonly utilized way of enhancing and supporting these state-led national champions. Generally, these kinds of intervention have also triggered many disputes in international organizations such World Trade Organization, UNDP, World Bank and others. As known widely, there is also overwhelming disputes on behalf of international trade participated by Chinese firms. However, with its rising power of an industrial production base, China has become the world's second largest economy.

To conclude, one of characteristics of catching up nations are their government initiatives towards creating national champions. Public procurement is a flourishing tool when they are supporting their globally competitive firms. Though, we should state that national champions are not limited to catching up nations and also in modern and unionized Europe, it is also a dispute especially on mergers and acquisitions issues in an open and integrated market.

3.3 National Champions In Advanced Economies

Though we have just figured out national champions as a catching up tool, the discussion cannot be excluded from discussions of advanced market economies. Advanced economies of the west comprised of Europe and North America are also examples of nations that try to foster their competitiveness with their national champions.

In Europe, there is an ongoing debate about the tension among national champions, competition policy and integrated European market (Galloway, 2007). Some of the member countries requests or blocks mergers and acquisitions to enhance their national security. One common example is Endesa – the Spanish energy company. Once it was requested and offered by an Italian company, Spain blocked the sellout of the company due to national security reasons concerning energy – even though the stakeholders of Endesa had approved it. This case, along with other similar cases of course, has opened up the discussion in the EU regarding blurred borders of national interests and union integration.

Furthermore, the discussion of national champions cannot be limited to the European Union with the aim of open markets. For example, the former President of France, Nicolas Sarkozy worked as a business development expert when French national champions came into the fore. In Alstom-Bombardier dispute with Canada, Sarkozy favored its national company and announced that Bombardier could only participate the tenders of French Government of the time if Canadian government accepted Alstom as a tenderer in Canadian tenders.[2] In addition to that, Sarkozy also carried out the deals with Algerian government for Gaz de France to supply gas to Algeria until 2019.[3]

In addition, Germany, with its high technological capabilities, knowledge and skill base as well as their national champions in machine, electronics and automotive industry such as Bosch, Siemens, Daimler Benz, Volkswagen Group etc. has intended to foster their national champions to adopt the new Industry 4.0 technologies. The policy document issued by German government has given important clues about this target by implementing effective public procurement measures (Federal Ministry of Economic Affairs and Energy, Germany, 2019).

Abovementioned examples might be extended but one can deduce that national champions has taken a great attention not only in catching up nations but also in advanced economies to sustain national competence and welfare. To conclude, we see the discussion of national champions at the intersection of industrial policy, public procurement as well as politics.

---

[1] International Business Times, 2012.

[2] Reuters, 2008.

[3] Financial Times, 2007.

4. Case Study: Turkey's 11th Economic Development Plan

4.1 Economic Planning in Turkey

Economic planning is a systematic method of resource allocation to accelerate development process. Development by its nature is multi-dimensional and necessitates several economic and non-economic actors' coordination. At the one extreme point, it is expected that market mechanism coordinates actors' behaviors and the invisible hand allocate scarce resources efficiently. At the other extreme point, the government steps in and coordinate actors' behaviors by using its coercive power. After the Cold War all economies in the world started to lean towards the first extreme point. In practical reality however, the first theoretical extreme point is never being the case. The government which is by far the largest actor in the economy, by its actions greatly influences other actors' decisions. Besides, several market failures have to be corrected and requires government action. As a consequence, economic planning is a tool that ought to be mastered by the governments.

Development process in a developing country context poses several distinctive features that has to be taken into account for proper economic planning. Resource constraints such as finance, knowledge and coordination problems are much more severe. Vulnerabilities related to basic needs are more pressing. Besides, global economic fluctuations affect more severely the developing countries and can halt the development process at all. International economic crisis such as the great depression may even have devastating consequences such as famine on developing countries.

Turkey as a developing country has all these problems which hinders its catching up with the developed countries. Planning hence as the main development tool being adopted in Turkey even after the proclamation of the Republic. First Planning attempt was more of a nature of a list of projects to be implemented rather than a comprehensive economic development model. Second Plan was bettered in project planning and design but never implemented due to the Second World War. After an interim period planning fully institutionalized and had a place in the Constitution in 1960. 1980 is the breaking point in terms of economic planning and after this year Plans are prepared for much more indicative and guiding purposes.

4.2 11th Development Plan of Turkey[4]

Main features and important differences from earlier Plans

11th Development Plan of Turkey had prepared in a time of increased global economic competition and rising protectionist measures, China's unprecedented economic growth, juxtaposing of several technological developments which enables a new revolution in industry, rising concerns about climate change, ageing population, differentiated consumer preferences and a demand for uniqueness and personalization and increased uncertainties about global economic governance. Starting by the millennia Turkey has witnesses one of the most striking economic developments of its history, and became a good example for other developing countries mainly due to the abundance of international capital and its liberal and supporting economic policy. Favorable international economic conditions however started to fade away and necessitated a new policy framework in order to proceed the economic development. Besides, fluctuations of international capital flows have thought a lesson that relying on international savings to finance economic growth has a great problem of unsustainability and lacks necessary job creation. 11th Development Plan has thus the main feature of emphasis on manufacturing industry which undoubtedly has the unique characteristics of high potential for foreign currency earning, source of stable growth, sustainable and high paid job creation, productivity led development. All other plan practices of Turkey have given priority to the manufacturing industry. What is substantially different from previous plans is that, 11th Development Plan put the manufacturing industry at the core of all policy areas, thus all other policy areas have the main goal of increasing the competitive production and productivity of manufacturing industry.

Despite high level of international competition, starting from the millennia Turkey has successfully increased its manufacturing industry base. Share of manufacturing industry in GDP rose from 14,1 % in year 2002 to 16,3 % in year 2019 in real terms and 16,9 % to 19 % respectively in nominal terms. Turkey's share in global manufacturing value added rose from 0,69 % in year 2002 to 1,13 % in year 2017. Share of Turkey's manufacturing industry exports in world manufacturing exports increased from 0,54% in year 2002 to 0,91% in year 2017, export unit value rose form 0,87 US dollars per kg to 1,74 US dollars per kg in these years respectively.

Besides, Turkey has better diversified its manufacturing industry. Increase in manufacturing share in GDP both in real and nominal terms is an indication of high value-added

---

[4] This part of the study is reviewed from 11th Development Plan of Turkey available at: http://www.sbb.gov.tr/wp-content/uploads/2019/07/OnbirinciKalkinmaPlani.pdf

structural transformation. In year 2003 only one out of 24 manufacturing sectors has a value-added greater than 5 billion US dollars, and in year 2002 none of the manufacturing sectors has exports value greater than 5 billion US dollars. In 2017 number of sectors which has value-added greater than 5 billion US dollars reached to 10, exports greater than 5 billion US Dollars reached to 11.

Turkey put great effort in transforming technological structure of its manufacturing industry and made some progress. However, it stayed the Achilles' heels. Manufacturing corporate sector R&D expenditure to its turnover in year 2003 rose from 0,19 % to 0,59 % in year 2017. The number of resident manufacturing patent applications filed in year 2018 reached to 8.215 from 1.279 in year 2003. Despite these developments share of high-tech sectors' share in total manufacturing exports is 3,6 % and in imports is 15,3 % in year 2019. Medium high-tech sectors share in exports is 36% and in imports is 40,6 %.

Turkish government has initiated several measures to support industrial development, however market forces mostly shaped the structure of the manufacturing industry. Extensive knowledge of feedback from several measures enabled the design of the 11th Development Plan. 11th Development Plan is therefore demonstrating a gradual shift of policy from the previous Plans rather than a substantial policy change.

As mentioned earlier the 11th Development Plan puts the manufacturing core. The first and the most important policy intervention is the establishment of the Industrialization Board, a high-level decision-making and coordination mechanism. The multidimensional and dynamic structure of the industrial policy and budget constraints require the highest level of ownership, strong institutional structures, inter-institutional coordination, flexible resource allocation, effective monitoring and strong cooperation with the private sector. Establishment of the Board signals the implementation of the more interventionist type of industrial policy than before.

Second, 11th Plan had prepared in order to effectively institutionalize the plan and budget coordination. Significant changes have been made in the institutional structure after the transition to the Presidential Government System in Turkey. In this new institutional context, the task of preparing the plan as well as the budget incorporated and assigned to the newly established Strategy and Budget Office of the Presidency. Therefore, the 11th Development Plan has the main aim of fully instrumentalize budget as a plan implementing tool. 11th Plan prepared at the meso level of policy interventions with budget estimates for each policy intervention which was different from 10th Plan with micro level action plans or 9th Plan with macro level policy choices. Micro level action plans

were ineffective in monitoring due to high number of actions and macro level planning lacks proper targeting and resource allocations.

Third, as the most important factor for productivity increase the 11th Plan gives great importance to technology development similar to prior Plans. However, what is different from prior Plans is that it specifies priority manufacturing sectors following the OECD definition of high and medium high technology sectors. Namely, chemicals, pharmaceuticals and medical devices, electronics, machinery and electrical equipment, automotive and rail system vehicles. As these sectors also have a share at around 60% of international trade and Turkey's imports, growth in these sectors has the greatest potential to the current account balance.

4.3 National Champion Aspects of the Plan

11th development Plan still maintains the grand strategy of "competitive free market economy" while trying fully instrumentalize effective policy tools in order to accelerate industrial development. Competitive free market economy without proper government intervention may not fully create the desired results. However, the government itself lacks the motivation for profits which ultimately results in ineffectiveness. Proper risk sharing and coordination mechanism is needed in order to overcome several market failures associated with pure market economy and accelerate growth and investment. National champion firms may help overcome coordination problems and helps dissemination of information about market which serves as an interface between market forces and government and fully capture the benefits of economy of scale.

Turkey has started to implement project-based investment incentive system which allows flexible incentive design based on specific needs of the private investment projects during 10th Plan period. This incentive scheme will continue to be the main instrument to support large scale investments in the 11th Plan period. The 11th Plan however puts the scheme in a different context and sets a priority list for type of investors to benefit from the scheme. Priority will be given to first time investors and production of strategic products, global value chain integration, high technology level and export capacity enhancing investments.

Turkey has also established the Wealth Fund during the 10th Plan period. The Fund however never was operationalized before the official approval of the 11th Plan. It is foreseen in the 11th Plan that Turkey Wealth Fund will support large-scale investments, particularly in priority sectors, by financing or becoming a shareholder. If can be implemented properly Wealth Fund can be the most effective tool in designing and supporting national champions.

Certain breakthrough projects may serve as a basis for creation of national champions and coordinate the eco-system. First and foremost of these projects is development of the first indigenous car of Turkey. To implement this project a Joint Venture established by 5 largest corporations of Turkey. The project will be finalized during the Plan period.

4.3 Development-based Public Procurement Aspects of the Plan

Demand in many cases is the most important factor in determining a business project. However, in many cases especially for high tech entrepreneurs and SMEs, understanding demand and crafting the project according to the wants and needs of the consumers is cumbersome. As the two main problems of Turkish industry is technology and scale, demand factor becomes much more important for Turkey. Besides understanding demand and crafting projects accordingly is an area generally left to the private sector in a market economy and public support is generally designed towards supply side.

11th Development Plan gives great importance to demand factor. Demand may come from private or public. Most of the demand comes from private sector. Shaping private demand is therefore important to increase the competitiveness. However, the main focus of policy in shaping private demand is to prevent unfair competition and levelling the playing field. 11th Plan gives great importance to shape private demand and, in this respect, introduces the concept of quality infrastructure and several measures designed to improve the quality infrastructure.

Even though public sector demand constitutes the smaller part of the total demand, its certain qualities make it an excellent policy tool in implementing a more interventionist and results oriented industrial policy. The government itself can set the quality specs, technology and price of the product and it can monitor, evaluate and give firsthand feedback. This ability to see each and every aspect of the product and firm, can lift the information asymmetry which is generally the main cause of market failure in industrial policy design and implementation.

On the other hand, there are several drawbacks of public procurement as an industrial policy tool. First and foremost, the risk averse public servants naturally do prefer goods and services with the highest reliability and public institutions hesitate to pay extra in order to source domestically.

To overcome this problem 11th Plan envisages a strong institutional structure. Industrial Board will serve to ensure that public administrations to implement joint procurement. The Ministry of Industry and Technology which will be responsible for secretariat services to the Board, will conduct medium and long-term needs analyses in public procurement,

identify critical technologies and products that can be produced in Turkey, create a specification pool and competency inventory, cooperate with companies to improve product quality and prepare technology roadmaps.

4.4 Conclusions

In this paper, we assert that the concepts of economic planning and industrial policy are still in the agenda of policy makers and in the last decade, it has steadily gained prominence. The major factors behind this argument is the decreasing validation of neo-liberal policies and indigenous manufacturing is still important since poorer countries is still in need for convergence and catching-up with the advanced free-market economies. For this reason, it is far more imperative to implement industrial policies to enhance nations' technological capabilities and skill bases to participate in global value chains and global competition.

In this respect, development-based public procurement policies are put forward as a favorable option to enhance innovative manufacturing capabilities of poorer nations. The effective utilization of those kind of policy tools is capable of generating advanced skill and manufacturing base for a given nation. South Korea has been given as a milestone of this kind of achievement. Furthermore, in contrary to the debates for effective competition policy, supporting national champions is standing as a vital tool for increasing national welfare not only for developing nations but also for developed nations. Some examples have been introduced about this argument which clearly depicts that even policy-makers of advanced economies is still associated with the policies supporting national champions of their own countries.

Finally, an actual development planning effort which has addressed to increase national competitiveness by focusing on manufacturing as a core and planning to utilize public procurement and national champions as effective policy tools has been exemplified by using Turkish 11th Development Plan. To conclude, we foresee that policies towards development-based public procurement and national champions will be a flourishing debate in economic policy arena in the following decades. For further research, we claim that it is vital to draw the borders for the interplay between free market economies and government intervention during the utilization of abovementioned policies towards industrial development.

References

Ahn, S. (2013). "Evolution of Industrial Policy and Green Growth in Korea." Presentation of future in the World Trading System: Asian Perspectives Seminar.

Bofinger, P. (2019). Industrial policy: is there a paradigm shift in Germany and what does this imply for Europe. Social Europe, 27.

Clift, B., (2014). Comparative Political Economy: States, Markets and Global Capitalism, Palgrave MacMillan.

Edler, J., & Uyarra, E. (2013). Public procurement of innovation. In Handbook of innovation in public services. Edward Elgar Publishing.

Falck, O., & Heblich, S., (2007). "Do we need national champions? If so, do we need a champions-related industrial policy? An Evolutionary Perspective", Jena Economic Research Papers, 2007-088.

Federal Ministry of Economic Affairs and Energy, Germany (2019) National Industrial Strategy 2030.

Freeman, C., (1997). The Economics of Industrial Innovation, MIT Press, 3rd edition.

Galloway, J., (2007). The pursuit of national champions: the intersection of competition law and industrial policy, University of Newcastle. (available at: http://ssrn.com/abstract=1767865)

HM Government (2017). Industrial Strategy - Building a Britain fit for the Future.

Hommen, L., & Rolfstam, M. (2008). Public procurement and innovation: towards a taxonomy. Journal of public procurement.

Kattel, R., & Lember, V. (2010). Public procurement as an industrial policy tool: an option for developing countries. Journal of public procurement, 10(3), 368-404.

List, F., (1909). The National System of Political Economy by Friedrich List, trans. Sampson S. Lloyd, with an Introduction by J. Shield Nicholson (London: Longmans, Green and Co., 1909). (Available at: https://oll.libertyfund.org/titles/list-the-national-system-of-political-economy)

Mazzucato, M., (2013). The Entrepreneurial State: Debunking Public vs. Private Sector Myths, Anthem Press.

Mosconi, F. (2015a). The new European industrial policy: Global competitiveness and the manufacturing renaissance. Routledge.

Mosconi, F. (2015b). The new industrial policy in Europe a decade after (2002–2012). In Economic planning and industrial policy in the globalizing economy (pp. 207-238). Springer.

OECD (2009). Competition Policy, Industrial Policy and National Champions, Policy Roundtables. (Available at: www.oecd.org/competition)

Ravenhill, J., (2001). "From national champions to global partnerships: The Korean Auto Industry, Financial Crisis and Globalization", MIT Japan Program, Working Paper 01.04.

Rolfstam, M. (2013). Public Procurement and Innovation- The Role of Institutions. Edward Elgar Publishing

Rolfstam, M. (2014). "Public Procurement and Innovation- Some Initial Assertions", Supplement to the 2013 Annual Statistical Report on United Nations Procurement: Procurement for Innovation, Copenhagen: UNOPS.

Rothwell, R. (1984). Technology-based small firms and regional innovation potential: the role of public procurement. Journal of Public Policy, 4(4), 307-332.

Saxenian, A., (1994). Régional Advantage: Culture and Competition in Silicon Valley and Route 128, Harvard University Press, 1994.

SBB (2019). 11th Development Plan, Turkish Presidency Strategy and Budget Office, Ankara. (Available at: http://www.sbb.gov.tr/wp-content/uploads/2019/07/OnbirinciKalkinmaPlani.pdf)

Sørgard, L., (2007). "The Economics of National Champions", European Competition Journal, 3:1, 49-64, DOI: 10.1080/17441056.2007.11428450

Womack, J. P., Jones, D. T., Roos, D., (2007). The Machine That Changed the World: The Story of Lean Production-- Toyota's Secret Weapon in the Global Car Wars That Is Now Revolutionizing World Industry, Free Press; Reprint Edition

Yülek, Murat (2015). "Revisiting national economic planning and industrial policy: Concepts, experiences and the ecosystem." Economic planning and industrial policy in the globalizing economy. Springer, Cham, 2015. 3-27.

Yülek, M., Hongyul Han (2017) Science, Technology, Innovation and Industrial Policies in Korea and Japan, Frankfurt: Peter Lang

Yülek, M. (2016) "Industrial Policies and Outcomes: A Comparison of Pre-liberalized Korean and Turkish Economies," Journal of Comparative Asian Development, Vol. 15/1 (DOI:10.1080/15339114.2015.1128843).

Yülek, M. A. (2018). How Nations Succeed. Palgrave Macmillan US.Westphal, L. E. (1990). Industrial policy in an export-propelled economy: lessons from South Korea's experience. Journal of Economic perspectives, 4(3), 41-59.

Tiryakioğlu, M., & Yülek, M. A. (2015). Development-based public procurement policies: a selective survey of literature, cross-country policy experience and the Turkish experience. Innovation: The European Journal of Social Science Research, 28(3), 344-359.

Yülek, Murat A., and Travis K. Taylor, eds. Designing public procurement policy in developing countries: How to foster technology transfer and industrialization in the global economy. Springer Science & Business Media, 2011.

Yülek, M. ve Tiryakioğlu, M. (2014) Development-based Public Procurement Policies: A Selective Survey of Policy Experience, Supplement to the 2013 Annual Statistical Report on United Nations Procurement: Procurement for Innovation, Copenhagen: UNOPS.

Zettelmeyer, J. (2019). The Return of Economic Nationalism in Germany (No. PB19-4).

Book Review:

Franco Mosconi. The New European Industrial Policy: Global Competitiveness and the Manufacturing Renaissance.[1]

Betül Gür[a]

[a] Istanbul Commerce University, Department of Economics, Istanbul, Turkey

Abstract

This article provides a review of the book The New European Industrial Policy: Global Competitiveness and the Manufacturing Renaissance by Franco Mosconi. In this book, the author attempts to shed light on the future of the European Union (EU), which is one of the leading actors of the world economy and politics; in this context, he focuses on developing a new industrial policy for Europe and he makes observations and gives suggestions to create this new industrial policy.

1. Introduction

This book, titled The New European Industrial Policy: Global Competitiveness and the Manufacturing Renaissance, was written by Franco Mosconi, one of the leading names in his field, and published by Routledge in New York in 2015. European industrial policy, SMEs, industrial districts and clusters, and the Emilian Model are the areas of expertise of Prof. Mosconi, who is an applied economist.

It is seen that many civilizations were established throughout history. Many factors played a role both in the foundations and advancements of these civilizations, in their changes and transformations. The geography where civilizations were established, the opportunities and limitations of that geography, infectious diseases, mankind's curiosity to explore and desire to gain power, technological changes, and countless factors (Diamond, 2005; Acemoğlu and Robinson, 2019) have profoundly affected economic, political, and social structures. Collapsing systems have been replaced by newly emerging economic, political, and social structures. Right now, we are witnessing the formation of a brand new order through the new technological revolution.

This book, consisting of five chapters, emphasizes that, in the face of the change and transformation mentioned above, Europe needs a new industrial policy in order not to lag behind its competitors in the future world economy and politics.

2. Technological Progress, Industrial Policies, and the EU's Potential

The first chapter of the book titled "The new European industrial policy: an overview" presents the readers with an

CONTACT Betul Gur ✉ betulgupse@yahoo.com

outline of the "new" European industrial policy. The basic structure of the European industrial policy is explained utilizing various documents and records concerning the period 2002-2012, that is, the first decade of the 21st century. A theoretical background is established for the subject of the book by including the opinions of many prominent academicians, especially Alexis Jacquemin and Dani Rodrik. Within this context, this chapter discusses the reconstruction of the new industrial policy by the European Commission and the sources of this policy, the concept of manufacturing renaissance and concordantly the innovation landscape and technology policy in Europe; and presents a preliminary assessment for the detailed analyses, inferences, and suggestions made in other parts of the book. The European industrial policy is similar to a triangle. The two sides of this triangle are trade policy and competition policy, and the third side is technology policy. In the last decade of the 20th century, financial markets, liberalization, and privatization tendencies prevailed. Historically, competition policy and industrial policy developed together, but after the 1980s, competition policy was generally accepted as an integration tool. With the author's own words, in the same period, industrial policy was 'suspended'. Thanks to the two strong sides of the triangle, i.e. trade policy and competition policy, there were also substantial accomplishments by the EU in this period. These are the Single Market, the convergence to Maastricht Treaty and the birth of the Euro, and the enlargement towards the East. Although technological innovation is the driving force of industrial policy, industrial policies remained in the background compared to the other two sides of the triangle, as they were seen as passé. The solution to the problem of growth was sought within the market forces. In the new century started, there is a consensus across the Union on a "new" and "strategic" interaction between the state and the market. This can be expressed as the rebirth of the manufacturing industry and industrial policy. The author defines this process, which is going on, as 'manufacturing renaissance'. The time is ripe for the reevaluation and reinforcement of this double-concept binomial. While creating a new European industry policy, the three main achievements of the EU, thanks to trade policy and competition policy, should not be put at risk. Here, due attention should be paid to reinforce also the third side, i.e. the technological policy, without weakening the other two sides that were already reinforced. Today's changing circumstances, the EU-equivalent global economies, and the competition created by the other new emerging economies impose this requirement. In the changing and increasingly competitive new global conjuncture, the EU cannot content itself only with its competition policy. Competition policy alone is not sufficient for development. The EU must achieve the ability to speak with 'one voice' which it managed to form on the other two sides of the triangle, for the third side. In this sense, the

third side must be developed at the pan-European level. In this respect, it is at the core of the new industrial policy that the EU should attach importance not only to competition policy and trade policy but also to technology policy based on R&D, innovation, human capital, and knowledge-based technology.

The second chapter of the book is presented under the title The new European oligopoly: the role of the 'European Champions'. This chapter describes the European big players and the vital role they play in the future of the EU in the face of the technological revolution that has occurred since the early 21st century, and the changing global balance. In this regard, primarily, the change and transformation are discussed, which is currently happening on the playing field of these big European players and will continue in the future. Finally, a new taxonomy developed by the author regarding European companies in this global change and transformation environment is described. Within the framework of this taxonomy, success stories of some important companies are told as case studies. European integration process began in three main steps: the European Coal and Steel Community in 1951, the Single Market in 1986 and the Maastricht Treaty in 1992, and the Eastern Enlargement in 2004 after the fall of the Berlin Wall. The last step enabled the Single Market to expand further. In addition to these developments experienced by the EU in itself, new changes and transformations started to occur in the global system as well. In addition to the EU's equal competitors such as the USA, Japan, and G7, some emerging or developing countries generally located in Asia, such as Russia and China, started to create new competition for the EU. That being the case, the EU faced two main problems. One of them was the gap arising between the USA and the EU in terms of GDP depending upon efficiency, and the other one was that emerging economies substantially exceeded the economic performance of the euro area. Not all member states of the EU (the Eurozone) are at the same level. As well as in their macroeconomic management, there are differences in the countries' microeconomic aspects such as their industrial structures and the firms' behavior. However, even though the role of SMEs is not denied in terms of all the European economies, the emphasis is placed on major European enterprises in this part of the book. Certain factors have been influential in changing the 'level playing field' for European companies for more than the last decade of the new century: which are the increased pressure on profit margins brought by the Eastern Enlargement of the EU along with the opportunities and challenges; globalization and revolutionary developments in the ICT (information and communication technologies); and finally, global competitive pressure created by new emerging economies. The impacts of these three developments on the European industry are enormous and multifaceted. These changes created the 'pro-competitive effect' in the EU and boosted the mergers and acquisitions (M&A) trends of European companies, inciting the necessity

for industrial restructuring. Although the 2008 economic crisis slowed down these changes, globalization and technological progress did not pause, but on the contrary, with the crisis in question, it raised new awareness about how important manufacturing is for real economic growth in the Western world. All these developments reduced the importance of national champions and national economic performance, initiating the age of the 'European Champions'. This situation is expressed as the trend towards 'the Europeanization' of Europe's largest companies. According to the taxonomy developed by the author, European companies are divided into two groups: The large companies called 'Type I' European Champions had the opportunity to spread to the Central and Eastern European countries by benefiting from the Single Market provided by the European Union thanks to the monetary union and subsequent Eastern Enlargement. Given the technological inadequacy of the EU versus the USA, the European Champions should be involved in the 'New' European Industrial Policy with public and private sector cooperation, at the supranational level. Shaped by The Single Market and particularly mergers and acquisitions (M&A), 'Type II' Champions that will create the future European Champions operate on a wide spectrum. As a result of the cross-border M&A waves powerfully experienced in the last decade of the new century, these companies demonstrated high performance in the ICT and health-related industries characterized by high R&D intensity. In the new industrial policy of Europe, the role of these large enterprises should be investing more in technology and innovation-based manufacturing in particular. The EU is still far behind the USA in these areas. The 'New' European Industrial Policy is an integrated approach that incorporates both horizontal integration and vertical applications. Another issue that should not be neglected in this new policy is SMEs. SMEs are the backbone of the European industry and have a close relationship with these big European players. SMEs can easily use many innovations that emerged with the technology revolution, in the production. In this regard, SMEs will be able to get significant opportunities from the new industrial revolution. Thus, SMEs can be considered as an important element of the 'New' European Industrial Policy.

The third chapter of the book entitled Industrial policy and 'models of capitalism' attempts to make an in-depth analysis of the EU's industrial specializations. Within this context, different models of capitalism observed in continental Europe are discussed. It is examined whether a separation or a convergence occurs among these different models over time. Ultimately, there is an attempt to reveal the path "towards a genuinely 'European' model of capitalism". Before the fall of the Berlin Wall, there were two different economic structures based on capitalism and socialism: free-market economies and planned economies. The years 1989-1990 represent a real milestone from this perspective; and capitalism remained as the sole system at that time. There were two basic models of capitalism in the Union: In Germany, the Rhine Model, which was based on establishing a robust industrial base; and in Great Britain, the Anglo-Saxon Model, which was based on the financial sector. In the late 20th century and early 21st century, the Anglo-Saxon model dominated with the influence of the New Economy. However, developments at the beginning of the new century led to changes in both capitalism models. Nowadays, industrial policies have started to be added to the agenda again in both developed and developing countries (Yülek, 2018). Corporate scandals in 2001-2002 and the 2008 economic crisis deeply unsettled the Anglo-Saxon Model. Developments in the past few decades have reincreased the interest in the revival of manufacturing and a new industrial policy, on both sides of the Atlantic. Within this context, when looking at the models of capitalism in Europe, the Rhine model is based on a large industrial capacity and an aggressive marketing approach. This size means both quantitative and qualitative features and manifests itself in every branch of the manufacturing industry, at all levels of technology. The factors that lie behind this dynamism are the production techniques focused on quality production, training activities (especially the vocational education), and the active role the Rhine governments play in advancing civil R&D projects. Notwithstanding, the Rhine economies still lag behind the USA. The performance of the EU sectors, when compared with the same sectors in the world, is slightly better in many sectors. However, it is below the world average in some R&D-intensive sectors. This situation does not have to be continuous. The author explains the industrial specialization tendency of countries through the concept of 'comparative institutional advantage'. In the context of industrial specialization, the institutional framework of liberal market economies supports radical innovation (e.g. in the USA, medical engineering, biotechnology, semiconductors, telecommunication, etc.), and the institutional framework of coordinated market economies supports incremental innovation (e.g. in Germany, transport, consumer durables, machine tools, etc.). The competitiveness of Europe's manufacturing industry on the international level is particularly due to Germany and the Rhine Model. The state-market-civil society relationship is the same in all types of the capitalist system. It can only differentiate historically and geographically. The government ideologies might alternate, or doctrines might evolve. According to the author, "the idea of a self-adjusting market is a utopia". In the period between the fall of the Berlin Wall and the 2008 economic crisis, the main economic actor was the market. In the 1990s, industrial policy remained in the background. The state and the market have become dominant actors today. Civil Society has attained a place as an important non-profit actor in recent years; due to the fact that the classic State-Market binomial has failed to solve the economic problems. Therefore, there have been

comprehensive debates over the convergence of different models of capitalism in Europe. According to the author, on the path "towards a genuinely 'European' model of capitalism", the technology policy must be supported and strengthened at the pan-European level in terms of responsibility. A consolidation of public-private cooperation must be provided for the development of 'general-purpose technologies'. SMEs, gathered in the industrial districts or clusters, will have a major complementary contribution to the development of this "New" European Industrial Policy. The author proposes a policy that is similar to 'selective industrial policy'. Accordingly, particular industries that can be called 'selective' are R&D-intensive, knowledge-based sectors today; because in today's world, the emphasis on the technology policy side of 'the triangle' is gradually increasing.

The fourth chapter of the book entitled Drawing the third side of the triangle: reshaping EU 'technology policy' focuses on the third side of the 'Triangle of Industrial Policy'. The emphasis is placed on the establishment of a complete and contemporary industrial policy for Europe. There are numerous studies and various reports prepared at the Union level towards the improvement of research and innovation. The main ones are the Delors White Paper of 1993 and the program named 'Horizon 2020: The EU Framework Programme for Research and Innovation' included within the European Commission report (2010). When concentrating on the third side of the triangle of European industrial policy, it is comprehended that Horizon 2020 is the largest EU research and innovation program ever. The 7 priority areas of the program that aims to protect and secure Europe's global competitiveness are as follows: health and well-being; food security; secure, clean, and efficient energy; smart, green and integrated transport; climate action; Europe in a changing world; secure societies. New technologies within the scope of this program can be listed as; frontier research; future and emerging technologies; World-class infrastructures (high-powered lasers, high-tech airplanes); key enabling and industrial technologies (ICT, advanced materials, biotechnology, and nanotechnologies). As stated by the author, the sources for growth for the EU economy are the key sectors based on research and innovation as health, food, renewable energies, environmental technologies, and transport. Again, according to the author, these priority areas undoubtedly make sense. However, within this framework, the budget of Horizon 2020 must be reorganized more effectively for success in these sectors. The funds in other budget items can be transferred to the Horizon 2020 budget. Considering that 40% of the Union's budget is still reserved for the Common Agricultural Policy, and an extremely small share of 4% is booked for R&D, the reallocation of the resources must not be neglected. European manufacturing has two primary characteristics. One of them is the high level of difference (fragmentation) among the member states, and the other is that national manufacturing systems are in good condition and large, though not on a global scale. Thus, European manufacturing has the opportunity to benefit from research and innovation at the pan-European level. It is observed that the EU industry, especially Germany, has a strong productive structure in terms of three indicators: the 'Global Competitiveness Index', 'Doing Business' and 'Foreign Direct Investment flows'. However, the indicators show that this size and soundness does not have to be limited to Germany. Europe's manufacturing infrastructure remained robust even after the 2008 crisis. According to the author, looking at the history of the European industry and industrial policy, the EU's manufacturing deserves "a genuinely European policy" at the supranational level, based on research and innovation; and it has the background and infrastructure to achieve this. The author thinks that what the EU's industrial policy needs most is the configuration of responsibilities and resources at the supranational level.

The fifth and final chapter of the book, titled State and market in today's Europe: a journey across the EU and nation-states, discusses the following topics: the basic ideas behind the success story of Europe; the Union's response to the 2008 crisis; and whether the EU can adapt to this change and transformation since something has truly changed in the world of economics. Looking from a European perspective, four cohesive but different actors can be identified: State, Market, Member States, and Supranational Government. It is "an arduous task" to achieve balance among these actors, "but one that is indispensable for Europe" today. The Single Market, the Monetary Union and the Euro, and Eastern Enlargement are the three major European success stories. The author's answer to the question of 'whether the EU should give up the status quo' that made these success stories possible 'or is it doomed to stay in the status quo' is revealed in some determinations put forward by the author. According to the author, despite all these achievements, the EU still does not have a common economic policy and an integrated and consistent foreign economic policy. Looking at the allocation of the EU budget, it can be said that it does not actually focus on growth. It cannot take a common stance on issues such as the constant extension of the domestic market, the technological processes, energy, and the environment. For a stronger Single Market, the EU must establish a new policy. A supranationally-active new industrial policy, which is supported by the government, robust, competitive, and focused on the R&D-intensive strategic sectors, must be adopted. The author states that it is not possible to give a single definitive answer to the question of whether a strong nation-state as before or supranational organizations across the EU. With the author's expression, now that "something has truly changed in the world of economics", then, "the spirit of the times must be taken into account". To throw off the chains of the status quo, the EU must show a determined political will,

attach importance not only to macroeconomic but also to microeconomic policies. In this regard, it must introduce broader structural reforms for the 'New' European Industrial Policy. According to the author, the EU's policy at this point must not be a shift to 'protectionism' corresponding to 'Colbertism'. Unless it risks the achievements Europe acquired over many years, the author stands close to the idea of smart interventions; which are compatible with the competition policy; intended for supranational-level and 'knowledge-based' investments; supportive of the integrated horizontal-vertical approach with structural arrangements; and in favor of the private sector. The author argues that the rebirth of manufacturing and the new industrial policy prove his thesis that "something has truly changed in the world of economics".

In the Epilogue section, in addition to the brief summary about the whole book, a final observation is made by referring to the Prologue. Changes are occurring depending on the 'rebirth of manufacturing' and a new industrial policy, which are the main sources of real economic growth. Furthermore, although important politicians and prominent economists, who the author encountered during his journey throughout the book, defended essentially different views, today, they are all aware of the change and are working in the same direction. Therefore, as the author calls, a 'Time of Coincidence' is being experienced.

3. From Industrial Policy to Integrated Policies

With his book The New European Industrial Policy: Global Competitiveness and the Manufacturing Renaissance, the author has noticed the changes that occurred in the global economic policy along with the ongoing technological revolution, in the context of industrial policy; and he has enabled the reader to notice as well. In this regard, explaining the industrial policies of the EU comprehensively, he has put forward his findings and suggestions concerning the future of the EU in the new world order being established, before it is too late. The book approaches the subject matter from different perspectives with a comprehensive and holistic perspective; it is written with complete clarity of mind using plain language.

On the other hand, in the book, it is emphasized that technology policy should be brought to the fore to create a new European Industrial Policy. However, it should not be thought that industrial policy consists only of technology policy. In today's world of Industry 4.0, rapidly changing technology and industrial production methods will cause various problems. One of these problems that have begun to be discussed at the political and academic level is economic, and the other is social. Therefore, along with technology policies, policies towards these problems should also be included as an integral part of industrial policy. Here, what is meant by the economic problem is unemployment, which is already a serious issue of the EU. New ways should be sought for how

technology and industrial policies can be a solution to the unemployment problem instead of deepening it. In terms of the social problem, certain policies should be established for psychological problems that rapid technological change will create on individuals and society, as stated by Alvin Toffler (1970) in his book Future Shock. Policies for these two problems should now be addressed together with industry and technology policies.

4. Conclusion

The book is a product of the author's long-term academic background. It is seen that the author's previous studies carried out on the subject of the book were supported and rewarded by various high-level institutions and organizations. Therefore, the book itself has a story just like the story it tries to convey to the reader. The book contains a rich theoretical background on the subject and numerous examples of real-world applications. The same rich content manifests itself also in the documents and data used by the author. For this reason, it is a highly reliable scientific work with the evidence it provides. The author presents remarkably clear hypotheses and proves his hypotheses with tangible data. With this book, the author adds a new taxonomy and new concepts to the economic literature. The author's suggestions have a solid and consistent theory and philosophy. In terms of these characteristics, the book makes original contributions in its field, in many respects. Considering all of these, the book has attained its place in the economic literature as an important source that researchers and students working on this subject and anyone interested in this topic will refer to.

References

Acemoğlu, D. and Robinson, J. A. (2019). The Narrow Corridor, States, Societies and the Fate of Liberty. New York: Penguin Press.

Diamond, J. (2005). Guns, Germs and Steel: The Fates of Human Societies. New York, London: W.W. Norton & Company.

Toffler, A. (1970). Future Shock. New York: Random House.

Yülek, M. (2018). How Nations Succeed: Manufacturing, Trade, Industrial Policy, and Economic Development. Palgrave Macmillan.

Differences in the Vision of State Leaders and Their Role in the Outcome of Industrialization: A Comparison of Meiji Japan and Post-Colonial Africa

Kuniaki Amatsu[a]

[a] Faculty of Economics, Yamaguchi University, Yamaguchi, Japan[1]

Abstract

Industrialization is important for structural change because it promotes economic growth and development. However, not all economies have been able to achieve industrialization. This paper adds a new interpretation of this difference through a comparison between East and Southeast Asia, in particular Meiji Japan, and the Sub-Saharan African economies. A key to understanding differences in the level of industrialization between these countries is the industrialization vision of state leaders and the Ministry of Industry. These visions tend to be formulated unrealistically in the early stages of industrialization because they are not usually based on the reality of the industrial sector. How smoothly the country would be able to fill in any gaps between the formulated vision and reality is critical and classified as a problem of state learning. Supposedly, the economies that can manage this gap reduction as smoothly as possible in early stages would be able to achieve industrialization in a shorter period of time while the economies that cannot do so would need to spend a longer time to achieve full industrialization. The experience of Meiji Japan can shed light on this learning process for further consideration.

1. Introduction

Industrialization, in particular manufacturing, matters to the structural changes associated with development, and eventually economic growth. Almost all advanced economies have experienced industrialization, through a structural transformation from an economy that is dominated by the primary sector to a one where the dominant sector is manufacturing. Hence, industrialization has attracted the interest of many researchers, policymakers of developing economies and practitioners of development cooperation agencies (Kaldor 1966; Kaldor 1967; Peneder 2002; Felipe, Leon-Ledesma, Lanzafame, and Estrada 2007; Szirmai 2012; Buera and Laboski 2012; Pacheco-Lopez and Thirlwall 2013; UNIDO 2013; Felipe, Mehta, and Rhee 2014; Szirmai and Verspagen 2015; Cantore, Clara, Lavopa, Soare 2017; Romano and Trau 2017; Haraguchi, Cheng, and Smeets 2017; Felipe 2018; ADB 2020).

CONTACT Kuniaki Amatsu ✉ amatsu.kuniaki@jica.go.jp

Meanwhile, developing countries exhibit considerable differences in their industrialization processes. Some economies in the Asia Pacific, such as Indonesia, Malaysia, Singapore, South Korea, Thailand, and Taiwan, have succeeded industrialization. On the other hand, there are economies that have failed to industrialize or have been struggling to industrialize despite large sums of resources devoted for this purpose. Therefore, industrialization remains one of the core issues for developing economies.

Gap between industrialization of many Sub-Saharan African economies and South Asian countries is particularly significant. When one compares the ratio of manufacturing value-added (MVA) to Gross Domestic Product (GDP), differences between industrialization of East Asia, Southeast Asia, and Sub-Saharan African economies become more vivid (Figure 1).

Figure 1. Comparison of the percentage of manufacturing value-added to Gross Domestic Product among selected Asian and Sub-Saharan African economies from 1960 to 2019
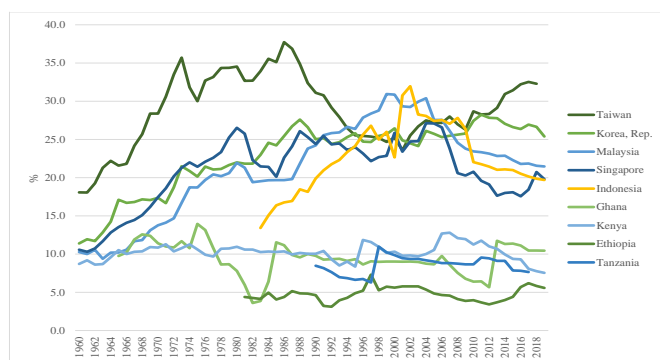
Source: Author processed data from the World Development Indicator and from National Statistics in the case of Taiwan.

Setting a threshold for success, failure and stagnation of industrialization is not straightforward. Nevertheless, 20% MVA ratio to GDP could be considered as a good indication based on the data in Table 1. The countries listed here are categorized as High Performing Asian Economies (HPAEs) as in the World Bank's East Asian Miracle (1993) report and selected Sub-Saharan African countries. According to Table 1, the average MVA/GDP ratio of HPAEs from the 1960s to 2010s are 28.9% (Taiwan), 23.4% (Thailand), 22.8% (South Korea), 21.1% (Malaysia), 22.2% (Indonesia) and 20.8% (Singapore) respectively. The lowest ratio is the 20.8% of Singapore, used as the threshold tentatively in this paper. The successful Asian economies have experienced reaching more than 20% in the MVA/GDP ratio in their history of economic development.

Table 1. Comparison of the percentage of manufacturing value-added to Gross Domestic Product among the selected HPAEs and Sub-Saharan African economies from 1960 to 2019

	Average MVA/GDP ratio in each decade						Average
	1960s	1970s	1980s	1990s	2000s	2010s	
Taiwan*	22.0	32.5	34.6	27.2	26.4	30.4	28.9
Thailand*	14.2	19.0	23.3	26.9	29.4	27.7	23.4
South Korea*	14.7	20.1	24.4	25.1	25.4	27.0	22.8
Malaysia*	10.8	17.8	20.7	27.0	27.9	22.5	21.1
Indonesia*			16.5	23.6	27.8	20.9	22.2
Singapore*	12.9	21.4	23.6	23.7	24.4	19.0	20.8
Ghana	11.4	11.1	8.0	9.2	8.6	9.5	9.6
Kenya	9.7	10.6	10.4	10.0	11.0	9.7	10.2
Tanzania				7.9	9.1	8.7	8.6
Ethiopia			4.6	4.8	5.0	4.6	4.7

NOTE: The countries marked * are HPAEs

Source: Author processed data from the World Development Indicator and from National Statistics in the case of Taiwan. Japan and Hong Kong are excluded from this table although these two economies are categorized as HPAEs by the World Bank (1993). Japan is an OECD economy and Hong Kong is a service-sector dominant economy with a very low ratio of MVA/GDP.

These differences reflect the progress of structural change in the East Asia, Southeast Asia, and Sub-Saharan African regions. According to Figure 2, Taiwan, South Korea, Malaysia, and Indonesia experienced this structural change in the mid-1960s, mid-1970s, mid-1980s and the early 1990s, respectively. Meanwhile, Kenya, Ethiopia and Ghana have not yet achieved it although these economies have pursued industrialization seriously in the 1960s and onwards. The level of MVA/GDP ratio in the African economies is much lower than that of the East and the Southeast Asian economies. The Sub-Saharan African economies have been hovering around or below 10% in the MVA/GDP ratio.

Figure 2. Comparisons of structural change among selected Asian and Sub-Saharan African economies from 1960 to 2019 (%)
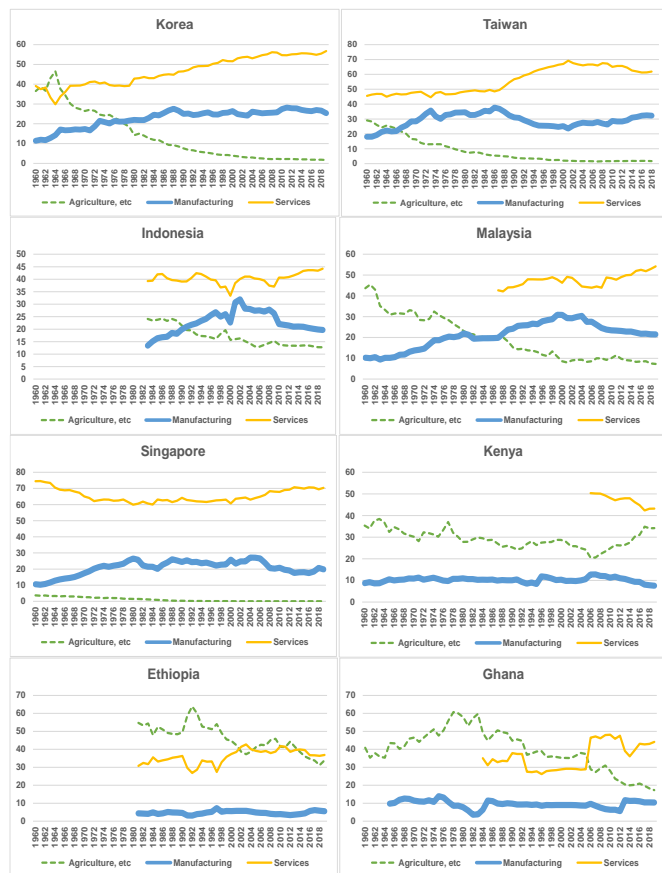
Source: World Development Indicators and National Statistics of Taiwan processed by the Author

How should we consider industrialization in the Sub-Sharan African economies? Some would consider that the comparison between the successfully industrialized East and Southeast Asian and the Sub-Sharan African economies, as illustrated above, is slightly extreme and neither relevant nor fair because the geographical location, historical background, the degree of political stability and security situation, and human resources endowments are so different, and the disadvantages of the African economies are large. That might be true to some extent. Nevertheless, a sharp contrast would sometimes be useful for identifying differences between the two types of the economies, i.e. what worked and what did not. Moreover, it should be reminded that these Asian countries were in a dismal economic situation immediately after World War II and the situation of their development was not so much different from those Sub-Saharan African economies according to the Maddison Project Database. It should also be reminded that these Sub-Saharan African

economies were countries that pursued industrialization seriously after independence.

This paper attempts to add a new interpretation to the differences in the track records of industrialization between the successfully industrialized and the failed economies. When we analyze the causes of the failures in some African economies, we see the problems of ambitious and unrealistic plans for industrialization, including errors in the selection of priority industries and technologies to be transplanted, strong expectations as to the state-owned enterprises (SOEs), and adoption of import substitution industrialization (ISI) in the past.

In this paper, it is assumed that a real problem deeply rooted in those failures would be the industrialization vision of state leaders and their Ministries of Industry. These visions tend to be formulated unrealistically in the early stages of industrialization and they are not based on the current nature of the industrial sector. Thus, there exists a gap between vision and reality. It is hypothesized that the degree of reality of the formulated visions and the pace of their modification to reality would affect the progress of industrialization in the country in later stages. How smoothly a country is able to fill in such gaps is very critical. This could be regarded as a state capability problem because while some economies could formulate realistic visions, others could not. This could also be regarded as a state learning problem because the current successfully industrialized economies were also not able to do so at the beginning of their development. Therefore, in this paper, this vision issue is argued from the perspective of learning by state leaders and the Ministry of Industry (MoI)[2].

The discussion proceeds as follows: In Section 2, the experiences of industrialization in the successfully industrialized and the failed economies are compared. We observe the cases of the Sub-Saharan African countries, especially Ghana and Meiji Japan on a trial basis. In Section 3, the causes of failed or stagnant industrialization and the nature of its problems are considered based on the findings of the previous section from the learning perspective. Section 4 considers what the learning process for the state leaders and the MoI looks like in the early stage of industrialization. Again, the cases of Ghana in the 20th Century and Meiji Japan in the late 19th Century are argued, followed by preliminary thoughts on that learning. In Section 5, the arguments are concluded together with suggestions on topics for future research.

---

[2] The Ministry of Industry is defined here as the central ministry mainly in charge of planning and implementation of the strategies and plans of industrialization. It could include not only industry but also trade and investment issues in a narrow meaning. But the Ministry could also include the relevant ministries and organizations in the areas of taxation and tariff policy in a wider meaning. However, the Ministry of Industry in this paper indicates the narrow definition

2. Comparisons between the successfully industrialized and the failed economies

What happened in the economies with experience of success, failure or stagnant industrialization? The cases of the Sub-Saharan African countries, especially Ghana in the Nkrumah era (1957-1966), and Meiji Japan (1868-1912), from the perspective of the orientation towards industrialization are interesting examples. These two cases are commonly characterized by intensive efforts of industrialization in the situation where almost no modern industry had existed before the start of the industrialization process. The industrialization efforts in Ghana in the era immediately after its political independence were led by a visionary leader. The Meiji period in Japan is a good example of an earlier but relatively clear story that was subsequently followed by some neighboring economies. It was a similar process driven by a new government's passion for state building, even though it occurred around 150 years ago. The need to get the basics right, which the state needs to do to achieve industrialization is not so different in either era. Thus, the case of Meiji Japan is relevant. Also, there is an accumulation of research, including the United Nations University (UNU) Project "Technology Transfer, Transformation and Development: The Japanese Experience" implemented by the Institute of Developing Economies (IDE) from 1978 to 1982 that can provide the necessary data for this comparison.

2.1 Sub-Saharan Africa

Some Sub-Sharan African economies started industrialization efforts seriously in the 1960s and 1970s after independence and experienced the policy changes of industrialization as the swing of the pendulum. Typically, they pursued state-led industrialization combined with nationalism in the first phase, influenced by the Soviet Union's experience of achieving industrialization in the short term. They developed medium-term industrialization strategies and set the targets of for industrialization. In one country, those strategies aimed of pushing industrialization in a wide range of industries. Others adopted industrial targeting. However, those efforts did not reflect the reality of the industrial sector at the time and became too ambitious. To implement them, the involved governments set up SOEs and increased public investment in industrial activities. They adopted ISI strategies. Initially they achieved a higher rate of economic growth.

The orientation of those industrialization efforts was forced to change in the second phase because of fiscal problems, trade deficits and shortfalls in foreign reserves. Some of the economies tried to enhance their protection policies against those disturbances while others tried to partially liberalize their economies. However, a soft landing was not easy for many African economies because of the deeply rooted serious damage caused by too ambitious efforts of industrialization in the first phase. As a result, they could not resist the deterioration of their macroeconomic environment and were forced to move toward a market-oriented industrialization in the third phase in line with the recommendation of the International Monetary Fund and the World Bank. And, many African economies also experienced the swing of the pendulum of expected leading actors in the industrialization between the state and the private sectors (Ndulu, et al. 2015).

2.2 The Example of Ghana

This country started its industrialization in the Nkrumah era by pursuing nationalism and African socialism. It pushed state-led industrialization and placed its hope in that industrialization to SOEs because it was thought that there were no entrepreneurs that they could entrust their hopes of industrialization in the private sector to. The new government distrusted the private sector and relied on the state sector, and an ISI policy was adopted. However, those efforts just produced poor performance (Asante, Nixson, and Tsikata 2000).

Ghana in this era was relatively favored with endowments of natural resources and human capital and had inherited a relatively better administrative system and foreign reserves as a legacy of the British Colonial era, compared with other West African economies. However, those advantages had not been used productively for accumulating know-how about industrial activities and inherently the country could not meet the requirements of running modern industries. And on priority industries: "Ghana didn't take advantage of its comparative advantage. Its comparative advantage was lots of fairly cheap labor, but most of the industries that the state went into were very capital-intensive, so it was very dependent on capital equipment imports, and there was no comparative advantage there. While there were really good provisions for screening investments by the Ministry of Finance in terms of viability, they were totally ignored and most of the projects weren't actually screened at all" (Omtzigt 2008).

In addition, there was the fundamental mismatch between demand and supply in the domestic market, over-specification of those modern factories that were established, and lack of experienced civil service personnel and entrepreneurs with a strong background of firm management and engineering. They relied on western engineering firms in conducting feasibility studies prior to the establishment of modern factories but could not judge the relevance of the results of those studies properly (Aryeetey 2008; Killick 2010; Aryeetey, and Fosu 2008). Furthermore, it is not sure the extent to what Nkrumah was strongly interested in industry in a real sense although he pushed industrialization and set its ambitious goals. Finally, the country's efforts to industrialize became stuck, and Nkrumah was forced to step down from the presidency in 1966 during his trip to China.

2.3 Meiji Japan

By contrast, what happened in a successfully industrialized country? Here, we can use the experience of Meiji-era Japan. Meiji Japan adopted a "enrich the country, and strengthen the military" policy, the so-called *fukoku-kyouhei*, struggled to install modern industries, and finally achieved the First and Second Industrial Revolution around 1894 and 1904 respectively. As its first step, Meiji Japan dispatched the Iwakura Mission consisting of around fifty top political leaders and central ministry officials to the United States and Europe for one year and nine months from 1871 to 1873 to study the reasons behind the strength of the western powers such as modern political and administrative systems and society. This was four year after the Meiji era started. Observing industrialization in the western economies was one of the top priorities of the mission. The observations made by the mission affected the formulation of the industrialization vision by state leaders after this trip.

The formulated vision was too simple initially, that is, it was about building modern industries in Japan through simply copying of western industries and technologies (Kume 1878; Nakamura 1983; Nakaoka 2006). By contrast, the major export items in the early Meiji era were silk yarn, marine products, tea, ceramics, and copper products, not the manufactured products of more modern industries. This meant that Meiji Japan had almost no modern industries in the beginning although some efforts to introduce modern factories had already started before the Meiji era. However, there were few private industrial entrepreneurs who could take the risks aggressively and start up un-experienced businesses. Against this situation, Meiji Japan decided to establish many state-run model factories in the areas of silk yarn, machines tools and equipment, cement, glass, and so on, and invited many foreign advisors to advise the government with higher salaries than the high-ranked political leaders. These factories showed demonstration effects of western industrial technologies to private sector industrial entrepreneurs and contributed to technological transformation across the nation. However, almost all the operations failed financially. Finally, those factories were disposed of by the state to the private sector after 1880 (Nakaoka 2006).

Meiji Japan also attempted to launch a modern steel mill in 1874. But they were forced to repeat many trials and errors and failed, to give the task up in 1882 and finally to hand it over to private industrial entrepreneurs in 1885. The successful operation of a steel works run by the state had to wait until the Yahata Steel Works started its operation in 1901 (MITI 1954; Suzuki 2002).

In sum, we need to say that the initial version of the vision was formulated based on the passions, expectation, and desires of the state leaders, not based on the reality of the industrial sector at the time. However, not all the state-led industrialization efforts failed. For example, the effective naval arsenal was developed for military industry related purposes but was outside the industrialization efforts of *shokusan kougyou* (MITI 1954). So it is necessary to ask how did the state leaders and the MoI[3] react to the existence of this gap. It is supposed that Meiji Japan succeeded in filling the gap in the early stage of its industrialization. The reduction of this gap in the short term led to the achievements of the First and the Second Industrial Revolution during the Meiji era. It is said that a basic orientation on what kinds of the key industries they wanted to have was maintained on circumstantial evidence. But the orientation and style of the modernization of the domestic industry were adjusted as follows within the state leaders and the government officials as industrialization progressed.

First, they put a higher priority additionally on the support of light industries such as the cotton spinning and woolen cloth industries, which contributed to a decrease in the imports and an increase in exports (Ando 1999a; 1999b). In this context, Meiji Japan initiated the establishment of state-run model factories for cotton spinning, the purchase of cotton spinning equipment with 2000 spindles (the so-called 2000 Spindle Plan), and thereafter disposed of that equipment to private industrial entrepreneurs around 1877 for purpose of import substitution. However, many of operations failed because of a lack of the basic knowledge of the requirements of modern industries and of human resources with a strong background of engineering (Kinugawa 1937; Takamura 1971a). They also came to recognize the importance of indigenous industries which had been ignored during early industrialization.

Second, they changed the government's stance toward industrialization from a direct to an in-direct intervention. They came to rely upon private industrial entrepreneurs more, and to support them. Third, Meiji Japan reconsidered the relevance of the style of a simple copy and paste of western industrial technologies to Japan, but kept a strong interest in learning about western industrial technologies. They woke up after the failures of the state-run model factories and the fiscal difficulties of the state budget had been revealed and came to consider the path towards industrialization more realistically, one not based on passion and desires.

Other factors outside of the government were also essential parts of the story such as the emergence of entrepreneurship in the private sector as an expected leading actor of industrialization. Without this factor, the government would

---

[3] There were various ministries in Japan in this era that were engaged in the initial industrialization efforts such as the Ministry of Finance, the Ministry of Engineering (*koubu-shou*), and the Ministry of Interior. The Ministry of Agriculture and Commerce was established in 1881, and was the origin of the current Ministry of Economy, Trade, and Industry (METI). Therefore, this paper uses MOI simply as the MoI in the Meiji era.

not have considered private sector entrepreneurs. After the 2000 Spindle Plan failed in the cotton spinning industry, the Osaka Cotton Spinning Company (Osaka Boseki) was established by private industrial entrepreneurs in 1882 and achieved success in its operation based on lessons learnt from the failure of that plan. Many entrepreneurs followed this success afterward and Meiji Japan came to move to the First Industrial Revolution around 1894 (MITI 1954; Kinugawa 1937; Nakaoka 1986; Nakaoka 2006; Takamura 1971b). Though, this paper does not cover these issues due to limitations of space.

3. Preliminary analysis of the fundamental causes and the nature of the failures

What was the crossroad of these success and failures of industrialization in these economies? In general, many people would tend to raise three points on the reasons of the failures in African countries. The arguments here are made on a trial basis based on these limited cases. Additional arguments would be expected in future research.

First, if we follow the neo-classical economists, the failures of African economies after independence can be explained by the poor functioning of a market mechanism caused by excessive government intervention and ineffective ISI strategies which hampered the functioning market mechanism (Chen 1979; Balassa 1981; Krueger 1978). Second, if we follow Lin (2012) and Lin and Monga (2013), it could be concluded that goal setting including industrial targeting failed in those African countries because the government tried to push industries defying comparative advantage instead of promoting those with latent comparative advantage. It would suggest that priority industries could have been identified technically based on the identification of existing tradable goods, the existence of domestic private firms, the new entrance of domestic firms, and the potential opportunities if they follow the Growth Identification and Facilitation Framework (Monga 2012). Third, the impacts of nationalism and socialism, the swing of policies from left to right and vice versa between market-oriented and state-led industrialization, in other words the roller coasters of economic management and political instability in African countries should be discussed.

These analyses would be true to a large extent. However, the failures would not be explained fully by these three causes only. Those arguments seem to overlook the existence of state leaders and MOI and the industrialization visions formulated by them. It is the state leaders and MoI who are responsible for industrial targeting and the choice of strategies on import-substitution vs. export-oriented industrialization. It is the vision of industrialization that guided the state leaders and MoI in their consideration of the policy and strategy choices, although the winds of the nationalism and socialism did affect the direction of industrialization.

A more important point is what kinds of vision did they formulate upstream that underly the orientation induced by nationalism and socialism. If this view were to be correct, the things we need to shed light on would be: first, the vision of industrialization formulated by the state leaders and the MoI; second, the width of the gap between the formulated vision and the reality of the industrial sector; and third, the timing and pace of the reduction of this gap. However, if we attributed the failures to nationalism and socialism, the failed and stagnant stories would finish as just an old story that had occurred once upon a time and would never happen in African economies in the future.

When it comes to the impacts of political instability and insecurity, their serious damage to industrialization in the past in Africa cannot be denied. However, it should be remembered that state-led industrialization with ambitious targeting combined with nationalism and socialism and ISI had been initiated in many African economies before political instability occurred. Thus, it would not be realistic to attribute all the failures to political instability and insecurity.

Therefore, in this paper, the real problems deeply rooted in the failures are considered to be the reality of the industrialization vision and the timing and the pace of the reduction of the expectation-performance gap. Ambitious and unrealistic industrialization in the early period after independence created serious damage to those African economies and made them suffer during the long-lasting economic and political instability observed from the 1970s to 1990s, thereby making them spend a longer period to achieve industrialization than the successfully industrialized economies. However, it is a fact that there are still many developing countries that tend to develop their national and sectoral development plans from a description on the goals and targets of industrial development. Therefore, this issue is still relevant in today's context.

To explain these failures, at first, we consider the flows from vision formulation to policy implementation as follows (see Diagram 1).

Diagram 1. Flows from the vision to policy making and implementation
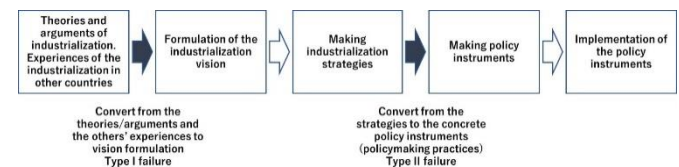
Source: Author

The government in any economy usually develops an industrialization strategy describing the targets of industrial development, the priority industries, the types of technologies and production stages to be installed in the key industries (e.g. blast furnaces in the steel industry and engine production in the automotive industry), the expected main actors to lead

development of the priority industries, and the basic direction of strategies such as import-substitution vs. export-led industrialization. Subsequently, the government would design and implement concrete policy instruments.

In this paper it is considered that two more steps should be added to allow for the proper interpretation of the failures that have occurred in the history of the developing economies. The first is the formulation of the industrialization vision. State leaders and MOI usually formulate the industrialization vision prior to the development of strategy. The vision is usually expressed in a written document and the transcript of the budget speech on the one hand, and in an oral format such as a presidential address on the other. In general, the vison is composed of four parts: what kinds of industries they want to have in their country in the future; what kinds of technologies they want to have out of the various options; whom they want to place their hopes for the development of the priority industries in the country on, such as domestic firms vs. foreign firms, or private firms vs. state-owned enterprises; and which market they want to target (domestic or external).

The second is building on the theories of economic and industrial development and the experience of other economies' industrialization. The industrialization vision is usually not formulated by the state leaders and the MoI from scratch. They are influenced by theories and arguments about economic and industrial development policy and the experiences of other economies. For example, in Ghana, Nkrumah adopted a kind of Big Push strategy and made massive investments in a wide range of industries (Killick 2010). Many African economies including Ghana were influenced by the Soviet experiences of industrialization. In East Asia and Southeast Asia, South Korea, Taiwan, and Singapore, which are categorized as successful industrialized economies, learned from the Japanese experience. South Korea and Taiwan also learned from their experiences of each other.

Where were the failures in this flow? The first possible pattern of failure occurred in the connection between the influence of actual economic and industrial development, the experience of other economies and the formulation of the industrialization vision. The state leaders and the MoI may make a mistake in the conversion process from the theories and the other economies' experiences to their vision of industrialization. This is called the conversion failure of the vision formulation, or simply a Type I failure in this paper. Ideally, the vision would be formulated, reflecting the reality of the industrial sector in the country at the time. The priority industries also need to be set realistically. However, the vision is often formulated in the country in the early stages based on the expectations, desires and illusions of the state leaders and MOI, not based on the realities of the industrial sector. As a result, the formulated vision tends to be unrealistic and ambitious, and sometimes a huge gap between vision and reality is be created. If the upstream vison is not realistic, the downstream such as strategy development and its implementation will inevitably fail.

The second possible pattern of failures can occur in the process between the development of the industrialization strategy and the design of concrete policy instruments. This is called the conversion failure of the policymaking practices, or simply a Type II failure. In this paper, the policymaking practices are defined as a series of observations on how the state leaders and MoI understand the situation of the industrial entrepreneurs. Ideally, concrete policy instruments need to be designed and implemented that reflect the actual situation of the entrepreneurs who are likely to play a leading role in industrialization. Moreover, these policymaking practices need to be understood from the views of the entrepreneurs engaged in industrial activities. However, in the early stage concrete policy instruments would often be designed and implemented far from the real situation of the industrial entrepreneurs and be based on the expectation, desires, and illusions of the state leaders and MoI from the state view. Inevitably, these policy instruments would tend to be uncertain, unpredictable, and inconsistent. Finally, they often do not meet the expectation of the industrial entrepreneurs and are not welcomed by them as a result. Rather they are seen to hamper their activities. However, Type II failure is not dealt with in this paper due to limitations of space.

Type I failure is very critical in the early stages of industrialization. Based on the comparison between Ghana and Meiji Japan, it can be hypothesized that the economies that can manage this conversion process in the early stage of their industrialization will succeed and upgrade their income classification from a low-income economy to a lower middle-income economy and from a lower middle-income economy to a upper middle-income economy in a short time.

On the other hand, those economies that could not handle this conversion process smoothly in the early stage would experience failures or stagnation of industrialization in the longer period, for example, several or more decades if those economies tried to push industrialization in a coercive manner. These can be observed from the evidence of the history of industrialization as shown in Table 2. The years spent by the economies whose ratio of MVA/GDP has not yet reached 20% are much longer (46 years in Ethiopia, 56 years in Kenya, 57 years in Ghana and Tanzania, 59 years in Uganda, and 60 years in Senegal) than those economies achieving industrialization (such as 11 years in Taiwan, 12 years in South Korea, 14 years in Singapore, 26 years in Indonesia, and 31 years in Malaysia). The longer period in the Sub-Saharan

African economies resulted from inappropriate efforts to achieve industrialization based on unrealistic visions. This caused deep damage to those failed or stagnant economies and made them suffer damage for a longer period even after policy orientations may have changed.

The nature of these failures should be considered as a state capability problem, considering that there are some economies formulating realistic industrialization vision while other economies are not. Furthermore, this would be considered as a learning problem of the state, for those successful economies that were not able to practice vision formulation properly in

the beginning of industrialization compared with what they are doing today. The current industrialized economies would have acquired know-how as time passed and finally could become what they look like today.

4. The learning process in early industrialization and the case of Meiji Japan

The learning process is the process of filling the gap between the formulated vision and the reality of the industrial sector. As stated repeatedly, a gap usually exists and can be large in the very early stage of industrialization in any economy. In the case of a smooth learning process, as industrialization progresses the vision would come to be adjusted towards a more realistic one. The gap between the ideal and actual situations would be reduced as shown by the solid line in Diagram 2. On the other hand, in the case of a failed or stagnant economy, the gap would be reduced more slowly as shown by the dotted line.

Table 2. Comparison of the structural change among the selected Asian and Sub-Saharan African economies

Economies	Start year of industrialization (a)	More than 20% of MVA/GDP		Years spent (b-a)
		First Year reaching (b)	MVA/GDP (%) of that year	
East and Southeast Asia				
Indonesia	1966	1991	21.0	26
Malaysia	1958	1988	21.8	31
Singapore	1959	1972	20.2	14
South Korea	1962	1973	21.5	12
Taiwan	1953	1963	21.3	11
Sub-Saharan Africa				
Ethiopia	1974	-	5.6	46
Ghana	1963	-	10.4	57
Kenya	1964	-	7.5	56
Mauritius	1960	-	11.0	60
Senegal	1960	-	15.7	60
Tanzania	1961	-	7.7	57
Uganda	1961	-	15.5	59

NOTES:

a. Statistic data source: The World Development Indicator (WDI) was basically used. Data from Taiwan was downloaded from the website of the National Statistics of Taiwan organization (https://eng.stat.gov.tw/ct.asp?xItem=37408&CtNode=5347&mp=5)

b. The start year of industrialization indicates the year of the first administration after the independence and the symbolic events in the case of Indonesia, Kenya, Singapore (the status of full internal self-government and joining the Malaya Federation), Ethiopia (the Derg), Senegal and Tanzania and the first year of the first multi-year national development plan in South Korea, Taiwan, Ghana, Mauritius, and Uganda, and the year of the symbolic concrete policy measures for the industrialization such as the Pioneer Ordinance in Malaysia.

c. The First Year and the ratio of MVA/GDP: In the case of African economies, the latest figures available on WDI are used;

d. The year spent is calculated from the start year to the present in the case of the African economies which have not yet reached 20% of MVA/GDP ratio. The yea of 2019 is used except for Tanzania, which is calculated as of 2017; and
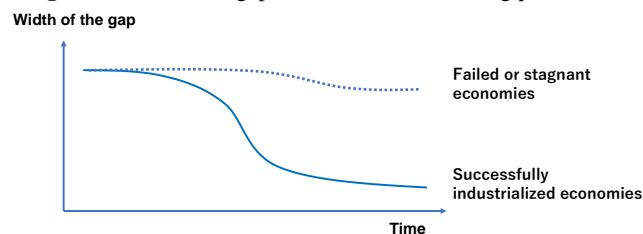
e. If we apply the threshold of 20% mentioned already, Mauritius has not reached 20% of MVA/GDP ratio while the successfully industrialized and industrializing East and Southeast Asian economies have experienced reaching around 20% of MVA/GDP as shown. Mauritius achieved the structural change in 1980, when its MVA/GDP exceeded the agricultural sector value-added to GDP, according to WDI. Therefore, Mauritius can be categorized as a successful case in the context of this paper.

Diagram 2. Process of gap reduction in the learning process

Source: Author

What kinds of learning factors are necessary in the early stage of industrialization? The cases of Meiji Japan and Ghana can give us a clue to our consideration of the possible factors. That is, what did Ghana not have but Meiji Japan did when they started their industrialization process? These factors can be considered to have three components; the initial conditions determining the initial level of the learning when the two countries started industrialization and the pace of their learning afterward; the learning factors determining how smoothly the two countries progress their learning; and the triggers accelerating or decelerating their learning processes.

4.1 Learning process: The Case of Meiji Japan

Meiji Japan was favored in having better initial conditions, for example, the legacies from the Edo era (1603-1868) such as: (i) human resources with a high literacy rate and strong ability in arithmetic as a potential source of government officials; (ii) stability and continuity of the public administration system; (iii) the bureaucratic system, the quality of the bureaucrats; (iv) the existing foundation of *mono-zukuri* (manufacturing); and (v) the experience of a market economy matured in the Edo era. With these

advantageous initial conditions, Meiji Japan made learning factors functioned well.

First, the state leaders were interested in modern industries in general and specific industries very much, and were eager to learn from the experience of the western economies with an aggressive appetite for learning. Second, they could build a consensus on the basic direction of industrialization among the state leaders and the MOI in the early stage through visits aboard including the Iwakura Mission. Third, they recognized the importance of accumulation of the industrial knowledge and skills within the government including the creation of a pool of engineering technocrats. To this end, Meiji Japan took the necessary actions promptly with a self-help spirit. They dispatched young Japanese to study abroad and established the Imperial College of Engineering in Tokyo in 1877 and many professional schools at the local level. In addition, they put a high priority on their hands-on experience of various on-site industrial activities. Engineering technocrats were deeply involved in the start-up, operation and maintenance of the modern industrial factories, for example, Ishikawa Seiryu (1826-1895) in the cotton spinning mills and Oshima Takato (1826-1901) and Noro Kageyoshi (1854-1923) in the steel works. By so doing, these people experienced manufacturing and contributed to the accumulation of industrial knowledge and skills within the government and technological formation in those infant industries.

Fourth, they came to obtain a sense of economic rationality as a criterion in state decision making through trial-and-error processes such as experiencing failures of the initial industrialization policy from the top down. The state leaders were moved toward industrialization initially based on their passion. The thought of a simple copy and paste of the western industrial technologies to Japan in the very initial stage is a typical example. However, many arguments came to be gradually made based more on a sense of economic rationality. For example, several steps including a feasibility study were taken in the government and the Imperial Diet prior to the final decision about investment for the start of the Yahata Steel Works in 1901. This knowledge accumulation within government facilitated nurturing a sense of economic nationality.

Fifth, the state leaders and ministries concerned were very responsive to negative economic signals such as the condition of the macroeconomic environment and their market exposure. They were forced to correct their vision in response to the fiscal and trade deficit problem. They were exposed to the international market and competition though participation in various international exhibitions, the organization of exhibitions in Japan, the provision of various samples of Japanese products to foreign markets and the collection of reports from abroad by the commercial attaché of Japanese embassies. From this exposure, they could know the position of Japanese manufacturing in the international market objectively from various angles. In addition, within Japan, the

expression of different opinions in the government was allowed. For example, the record of those arguments on the relevance of the direct intervention of the state in the initial industrialization policy and the investment plan of the steel works are available. The functioning of these learning factors contributed to the adjustment of vision to reality in a shorter period than that of other countries.

Last, the functioning of the triggers needs to be emphasized. This urged the state leaders to learn lots of things aggressively. First, Meiji Japan confronted threats of colonialism by western military powers and state survival and was motivated strongly by the urgent need for state modernization. Second, there existed a national consensus on these urgent needs and the orientation of industrialization among the people to avoid threats of colonialism. Third, experienced private sector industrial entrepreneurs came to emerge. These played a critical role in technological formation thereby contributing to reducing the gap between the formulated vision and reality with support from the public-run experiment and inspection facilities at the central and local levels of government (MITI 1954; Nakaoka 1986; Uchida 1986).

4.2 Learning process: Case of Ghana

What did Ghana not have in its early industrialization stage compared with the case of Meiji Japan? In this part, preliminary thoughts are presented as hypotheses for further consideration.

First, it cannot be considered that Ghana was favored by good initial conditions although these were relatively better than those of other West African countries before political independence (Killick 2010; Tignor 2006). As Killick (2010) states, the educational level of Ghana in the late 1950s was double that of the next high-ranking country and three times the unweighted mean of the other countries. However, Ghana was not always endowed with a big enough pool of skilled human resources because of the long history of the colonial regime under the United Kingdom, while Meiji Japan could inherit the legacy of around 260 years of the Tokugawa Shogunate before the Meiji era - such as political stability, a relatively well-established administration system and the experiences of well-developed market economy and *mono-zukuri*. Under the colonial regime Ghana had been a basically mono-culture economy heavily reliant on natural resources. A solid foundation of *mono-zukuri* had thus not been built in Ghana by independence. The market economy had not been experienced by the Ghanaian people because the colonial economy had been subordinated to the British Imperial economy. This must be considered to have been a very big disadvantage for Ghana when starting industrialization.

Second, with respect to the learning factors, we are not convinced about the extent to which the state leaders of Ghana were strongly interested in industrialization and specific

Diagram 3. Preliminary thoughts on the initial conditions, learning factors and triggers in vision formulation
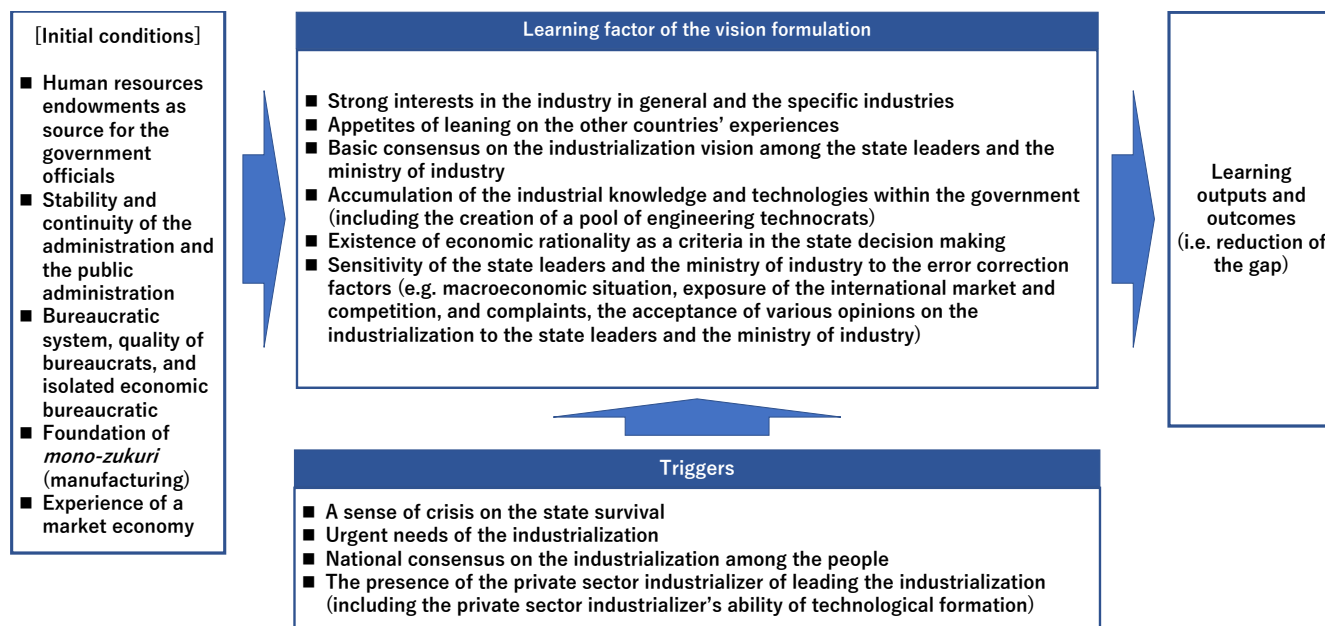
Source: Author.

industries and eager to learn about other countries' experiences in the context of enriching the nation as the ones in Meiji Japan were. Certainly, they pursued building a modern state to be economically independent. Here modernization implied industrialization. However, it might have been excessively politically motivated. Nkrumah would sometimes pursue industrialization to enhance his power and authority (Killick 2010).

There did exist a certain consensus on the necessity for industrialization in general. However, this may have been a consensus relying on the charisma of the one specific person whose policies were aprioristic rather than empirical (Killick 2010). And consensus was not formulated through watching-and-seeing experiences but was mainly based on desk thoughts envious of the Soviet achievements in industrialization.

Thus, the necessity for the accumulation of industrial knowledge and experiences may not have been recognized fully among the state leaders in Ghana. The shortages of technical and managerial staff became a bottleneck. And problematic investments in the productive sectors were caused partly by excessive outsourcing of related feasibility studies to foreign consultants during the intensive industrialization period. The on-site experience of manufacturing by the government engineering people was lower, compared with Meiji Japan.

A sense of economic rationality as the decision-making criterion within the government was not nurtured. The comparative advantage was not considered in relation to industrialization. A strong preference was shown toward the new establishment of factories rather than the use of existing factories. And unviable projects were often established

because of corruption (Killick 2010). Nevertheless, despite the mounting fiscal and trade deficits that acted as an error correction factor, state-led industrialization continued until Nkrumah's exile in 1966. Killick (2010) notes "the constraints on the development of the economy would have to be accepted as such and priority given to their removal" and mentioned that "Nkrumah's refusal to acknowledge the financial and foreign exchange constraints" was critical. Ghana reacted to this error correction factor after the industrialization efforts had collapsed, while the Meiji Japan made corrections in the direction of industrialization by reacting to fiscal and trade deficits and thus avoided the collapse of its industrialization policies.

Third, certain triggers did not function in Ghana, unlike in Meiji Japan. Ghana was not exposed to military threats relating to state survival after its independence. It obtained political independence and was thus free from colonialism. The motives of industrialization existed for obtaining economic independence, however, this was not backed by urgent needs that were directly linked with state survival as in Meiji-era Japan. The private sector which could have realized the technological formulation and reach the ambitious targets of the industrialization by themselves, while challenging the government was also not present. Rather, Nkrumah had a strong suspicion about private entrepreneurs, especially foreign investors while Meiji Japan recognized the role of the private sector in the long run.

Based on these cases, the initial conditions, learning factors, and triggers for the learning on the vision formulation and adjustment are shown in Diagram 3. If one country has good initial conditions, these would work on the learning process positively. If there were many functioning learning

factors, these would work on the reduction of any gaps in knowledge and performance. And if there were functioning triggers, those triggers would accelerate the learning process.

By the cumulative effects of those factors, the gap between vision and reality would be reduced in a shorter time. The smoother early industrialization stage resulting from this would be conducive to better performance of industrialization efforts in subsequent stages.

5. Conclusion

This paper attempts to explain why some economies have succeeded in industrialization, but others failed or have been struggling for a long time. Through a rough comparison between the East Asian, Southeast Asian, and the Sub-Saharan African economies on a trial basis, it can be observed that the issue of the formulation of the industrialization vision by state leaders and Ministries of Industry in the early stage of industrialization is a fundamental root cause in those failures.

Failure occurs because in general, the government tends to develop an industrialization strategy with ambitious and unrealistic targets of industrial development and of priority industries. However, in past arguments on industrialization the existence of the step of the formulation of the industrialization vision and its arguments seem to be overlooked, while arguments have been concentrated on industrialization strategy. As a result, arguments on the vision have been dropped. When the vision is initially formulated, a huge gap tends to be created between that vision and the reality of the industrial sector in the economy. In the successfully industrialized economies, this gap was reduced as industrialization progressed.

This situation should be regarded as a state capability problem because there are countries that can deal with this issue and others that cannot do so. In addition, this could also be regarded as a state learning problem because the industrialized countries in East and Southeast Asia could also not always do so from the beginning of their industrialization efforts. If economies can however manage the process of gap reduction in the early stages of industrialization, those economies would be able to achieve industrialization through structural change in a relatively short time. On the other hand, if economies cannot do so, they will not be able to achieve successful industrialization in the short term because the experience of an ambitious and realistic state-led industrialization would cause serious damage to the economy and make it suffer in the longer term.

The experience of Meiji Japan, in which the state leader vision was initially unrealistic but was adjusted to a more realistic one in a short period of time, gives us a clue on the learning mechanism needed to reduce these gaps. The learning mechanism consists of the following three components: the initial conditions such as the quality of human resources, the existence of experienced economic bureaucrats, and the

experience of the manufacturing and market economy; the learning factors such as a strong interest by the state leaders and the Ministry of Industry in industrialization in general and the specific industries, their aggressive appetite for learning and the accumulation of industrial knowledge and skill within the government; and the triggers accelerating the learning process such as an urgent need for industrialization for state survival and the presence of experienced private industrial entrepreneurs.

The experience of Ghana indicates that the country did not follow the learning process smoothly. Further studies may be necessary to conclude if there existed a gap between the formulated vision and reality and how this gap was or was not reduced smoothly, and for how many years. However, when we examine the available information on Nkrumah's industrialization efforts and the actual industrial development, the existence of this gap is obvious.

What were the things that the Ghana of the development period did not have while Meiji Japan did? This is an interesting question. The unfavorable initial conditions must be a crucial explanatory factor. In addition, some non-functioning factors affecting the learning process can be seen, such as the weak interest of the state leaders and the Ministry of Industry in industrialization and the key industries in a real sense; the weak appetite to learn from other countries' experiences, a less aggressive attitude toward the accumulation of industrial knowledge and skills within the government, the lack of a sense of economic rationality as a decision-making criterion, and less sensitivity to error correction factors such as macroeconomic variables. Also, the triggers did not function as facilitators for state learning.

However, we need to stress that these comments are merely preliminary observations based on a rough comparison on a trial basis. It is necessary to expand the numbers of case studies of industrialization efforts by various economies, and to conduct comparative analyses by adopting more elaborated methodologies, thereby to identify the initial conditions, learning factors and the triggers necessary for state learning. In addition, the learning issues relating to policymaking practices (Type II failures) need to be examined.

References

ADB (2020) Dynamics of Structural transformation. In: Asia's Journey to Prosperity: Policy, Market, and Technology over 50 Years. Asian Development Bank, Manila. http://dx.doi.org/10.22617/TCS190290

Ando S (1999a) Okubo Toshimichi to Naimu-sho kangyo seisaku. In: Ando S (ed) Okubo toshimichi to mingyo-shourei. Ochanomizu Shobou, Tokyo

Ando S (1999b) Okubo "mingyo" shuo-rei to fuken kangyo. In: Ando S (ed) Okubo toshimichi to mingyo-shourei. Ochanomizu Shobou, Tokyo

Aryeetey E (2008) Structures and Institutions in a Postcolonial Economy. In: Agyeman-Duah I (ed) An Economic History of Ghana: Reflections on a Half-Century of Challenges and Progress. Ayebia Clarke Publishing Limited, Oxford

Aryeetey E, Fosu A (2015) Economic growth in Ghana, 1960-2000. In: Ndulu BJ, O'Connell SA, Azam J-P, Bates R, Fosu AK, Gunning JW, Nijiinkeu D (eds) The Political Economy of Economic Growth in Africa 1960-2000, Volume 2: Country Case studies. Cambridge University Press, London, pp 289-324

Asante Y, Nixson F, Tsikata G (2000) The Industrial Sector and Economic Development. In: Aryeetey E, Harrigan J, Nissanke M et al (eds) Economic Reforms in Ghana: The Miracle and the Mirage. James Currey and Woeli Publishers, Oxford, pp 246-266

Balassa B (1981) The Newly Industrializing Countries in the World Economy. Pergamon Press, New York

Buera J, Kaboski P (2012) Scale and the Origins of Structural Change. Journal of Economic Theory 147(2):684-712.

https://ideas.repec.org/a/eee/jetheo/v147y2012i2p684-712.html

Cantore N, Clara M, Lavopa A, Soare C (2017) Manufacturing as an Engine of Growth: Which is the best fuel? Structural Change and Economic Dynamics 42(C):56-66. https://ideas.repec.org/a/eee/streco/v42y2017icp56-66.htm

Chen E (1979) Hyper-Growth in Asian Economies: Comparative Study of Hong Kong, Japan, Korea, Singapore, and Taiwan. Macmillan Press, London

Felipe J, León-Ledesma M, Lanzafame M, Estrada G (2007) Sectoral Engines of Growth in Developing Asia: Stylized Facts and Implications. Asian Development Bank, Manila. http://hdl.handle.net/11540/1871 License: CC BY 3.0 IGO

Felipe J, Mehta A, Rhee C (2014) Manufacturing Matters...but It's the Jobs That Count, ADB Economics Working Paper Series 420. Asian Development Bank, Manila.

https://www.adb.org/sites/default/files/publication/149984/ewp-420.pdf

Felipe J (2018) Asia's Industrial Transformation: The Role of Manufacturing and Global Value Chains (Part 1), ADB Economics Working Paper Series 549. Asian Development Bank, Manila. http://dx.doi.org/10.22617/WPS189457-2

Haraguchi N, Cheng C, Smeets E (2017) The Importance of Manufacturing in Economic Development: Has This Changed? World Development 93(C):293-315. https://ideas.repec.org/a/eee/wdevel/v93y2017icp293-315.html

Kaldor N (1966) Causes of the Slow Rate of Economic Growth of the United Kingdom: An Inaugural Lecture. Cambridge University Press, London

Kaldor N (1967) Strategic Factors in Economic Development, New York State School of Industrial and Labor Relations. Cornell University, New York

Killick T (2010) Development Economics in Action: A Study of Economic Policies in Ghana, Second edn. Routledge Studies in Development Economics, Abington

Kinugawa T (1937) Honpou menshi bouseki shi, Volume 2. Hara Shobo, Tokyo

Krueger A (1978) Liberalization Attempts and Consequences. National Bureau of Economic Research, New York

Kume K (1878) Tokumei zenken taishi bei-ou kairan jikki, translated by Mizusawa S (2008). Keio University Press, Tokyo

Lin J (2012) Introduction. In: Lin J (ed) New Structural Economics: A Framework for Rethinking Development and Policy. World Bank, Washington DC

Lin J, Monga C (2013) Comparative advantage: The Silver Bullet of Industrial Policy. In: Stiglitz J, Lin J (eds) The Industrial Policy Revolution, Volume I. Palgrave Macmillan, New York

Ministry of Trade and Industry of Japan (1954) Sho-kou gyou-sei shi, Volume I. Sho-kou gyou-sei shi kanko-kai, Tokyo

Monga C (2012) Growth Identification and Facilitation: The Role of the State in the Dynamics of Structural Change. In: Lin J (ed) New Structural Economics: A Framework for Rethinking Development and Policy. World Bank, Washington DC

Nakamura T (1983) Josho: Meiji ishin-ki zaisei kin-yu seisaku tenbou – Matsukata deflation zen-ki. In: Umemura M, Nakamura T (eds) Matsukata zaisei to shokusan kogyo seisaku. United Nations University, University of Tokyo Press, Tokyo

Nakaoka T (1986) Gijutsu-shi no siten kara mita nihon no keiken. In: Nakaoka T, Ishii T, Uchida H et. al (eds) Kindai-nihon no gijutsu to gijutsu seisaku. United Nations University, University of Tokyo Press, Tokyo,

Nakaoka T (2006) Nihon kindai gijutsu no keisei: dento to kindai no dynamism. Asahi Shinbunsha, Tokyo

Ndulu BJ, O'Connell SA, Azam J-P, Bates R, Fosu AK, Gunning JW, Nijiinkeu D (eds) (2015) The Political Economy of Economic Growth in Africa 1960-2000, Volume 2: Country Case studies. Cambridge University Press, London

Omtzigt Dirk-Jan (2008) Structures and Institutions in a Postcolonial Economy. In Agyeman-Duah I et al (eds) An Economic History of Ghana: Reflections on a Half-Century of Challenges and Progress. Ayebia Clarke Publishing Limited, Oxford

Pacheco-Lopez P, Thirlwall A (2013) A New Interpretation of Kaldor's First Growth Law for Open Developing Countries, Studies in Economics 1312. School of Economics, University of Kent, Canterbury. https://ideas.repec.org/p/ukc/ukcedp/1312.html

Peneder M (2003) Industrial Structure and Aggregate Growth. Structural Change and Economic Dynamics 14(4):427-448. https://doi.org/10.1016/S0954-349X(02)00052-8

Romano L, Traù F (2017) The Nature of Industrial Development and the Speed of Structural Change. Structural Change and Economic Dynamics 42(C):26-37. https://ideas.repec.org/a/eee/streco/v42y2017icp26-37.html

Stiglitz J, Lin J, Monga C (2013) Introduction: The Rejuvenation of Industrial Policy. In: Stiglitz J, Lin J (eds) The Industrial Policy Revolution Volume I. Palgrave Macmillan, New York

Suzuki J (2002) Seitetsu jigyo no zasetsu. In: Sjuzuki J et al (eds) Kobu-sho to sono jidai. Yamakawa Shuppan-sha, Tokyo

Szirmai A (2012) Industrialisation as an Engine of Growth in Developing Countries, 1950–2005. Structural Change and Economic Dynamics 23(4):406-420. https://ideas.repec.org/a/eee/streco/v23y2012i4p406-420.html

Szirmai A, Verspagen B (2015) Manufacturing and Economic Growth in Developing Countries, 1950–2005. Structural Change and Economic Dynamics 34(C):46-59. https://ideas.repec.org/a/eee/streco/v34y2015icp46-59.html

Takamura N (1971a) Josho: Bou-seki shihon keisei no zentei jouken. In: Takamura N (ed) Nihon bouseki-gyou shi josetsu, Volume I. Hanawa shobou, Tokyo

Takamura N (1971b) Boseki shihon no keisei to kouzou. In: Takamura N (ed) Nihon bouseki-gyou shi josetsu, Volume I. Hanawa shobou, Tokyo

Tignor R (2006) W. Arthur Lewis and the Birth of Development Economics. Princeton University Press, New Jersey

Uchida H (1986) Gijutsu seisaku no rekishi. In Nakaoka T, Ishii T, Uchida H et al (eds) Kindai-nihon no gijutsu to gijutsu seisaku. United Nations University, University of Tokyo Press, Tokyo

UNIDO (2013) Industrial Development Report 2013: Sustaining Employment Growth: The Role of Manufacturing and Structural Change.

https://www.unido.org/sites/default/files/2013-12/UNIDO_IDR_2013_main_report_0.pdf

UNU-IDE-JETRO (1982) Digital Archives of The United Nations University (UNU) Project "Technology Transfer, Transformation and Development: The Japanese Experience," implemented by the Institute of Developing Economies (IDE) from 1978 to 1982. https://d-arch.ide.go.jp/je_archive/english/index.html

World Bank (1993) The East Asian miracle: economic growth and public policy: Main report (in English). World Bank policy research report, World Bank Group, Washington, DC.

http://documents.worldbank.org/curated/en/975081468244550798/Main-report

The Impact of Covid -19 Pandemic on Supply Chain Trade[1]

Selahattin Armağan Vurdu[a]

[a]Institute of International Trade, Istanbul Commerce University, Istanbul, Turkey

Abstract

Global supply chains have gained importance in developing interlinkages among markets as outsourcing of production processes became widespread. Together with the unprecedented Covid-19 crisis, the highly integrated globe encountered demand and supply shocks. As a result of the supply chain disruptions and logistical constraints, the pandemic has revealed the vulnerabilities in industrial supply chains, and both governments and enterprises have started to search for ways to build resilience, regain and improve the competitiveness and prepare for future shocks. Recently, the over-integration of the global supply chains has already being questioned and discussion of a new structurization has grown with the pandemic. In this regard, this study examines the emergence of global value chains and the growth of interdependence of economies, exemplifies how any blockage in any economy can affect the other economies using the value-added trade calculations, and evaluates the expectations for the future evolution of supply chains in terms of industries and regions.

1. Introduction

In recent decades, production and distribution chains have grown in length and complexity in global means in pursuit of margin improvements. However, these operating model choices sometimes have led to risk exposure due to supply chain disruptions stemming from government acts and global impacts. Recently, as another risk aspect, Covid-19 pandemic has increased the global uncertainty and has driven enterprises to get into a search for resilience against the supply chain disruptions. This study firstly examines the concept of "global value chains" (GVCs), how GCVs are related with globalization and international trade, and how they contributed to the growth of interdependence among economies. Secondly, the study exemplifies how any

blockage in any economy can affect the other economies through GVC trade data using the value-added trade calculations. In the following chapter, since the calculation of the GVC trade needs input-output tables and cannot be directly reached through widely known international trade databases, the available sources are introduced. Subsequently, Turkey's increasing integration to GVCs is summarized by direction and industry. Lastly, considering that half of the global trade is GVC trade and GVCs encounter disruptions recently, the after-coronavirus trends and their effects on GVCs are discussed seeking particular industries and particular economies and whether opportunities may arise for Turkey.

---

[1] An earlier version of this paper was presented at the Smart Economic Planning and Industrial Policy (SEPIP) Conference held on 13-15 October, 2020 at OSTİM Technical University Ankara and online platform.

CONTACT Selahattin Armagan Vurdu ✉ armagan.vurdu@immib.org.tr

2. Global Value Chains

The global value chain concept represents the distribution of the production processes across countries, specialization of firms in specific tasks and benefiting economies of scales in the production cycle of a particular product. As globalisation increased, the production and trade inter-relations among economies have enlarged across the globe. GVCs have existed for many long time however, the growth and conceptualization has became significant since 1990s as technological developments in transportation, information, and communications, the easiness in doing business, and also lowering trade barriers induced manufacturers to extend production processes beyond national borders. The country borders and exportation of the raw materials, semi-finished goods and finished goods is displayed in a basic GVC scheme below:

**Figure 1.** What is a global value chain (GVC)?
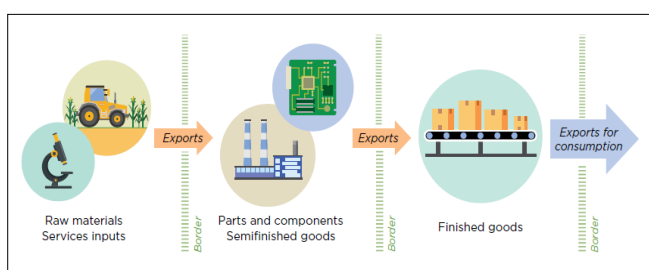
Source: World Bank

All countries have been engaging in GVCs but in different ways and to various extents. While most countries in East Asia, North America, and Western Europe have participated in complex GVCs, producing advanced and innovative manufactures and services, many countries in Africa, Latin America, and Central Asia still produce commodities that are to be processed in the developed and large emerging countries, or they engage in limited manufacturing. The industries GVC growth concentrated in have been machinery, electronics, and transportation. International trade and GVCs had been growing in line with each other and GVCs share of global trade has been approximately 50% until the growth pace declined recently due to the decline in overall economic growth and investment following the 2008 financial crisis, slowing pace and backset of trade reforms, the protectionist tendencies (World Bank, 2020).

**Figure 2.** Growth of GVC share in global trade
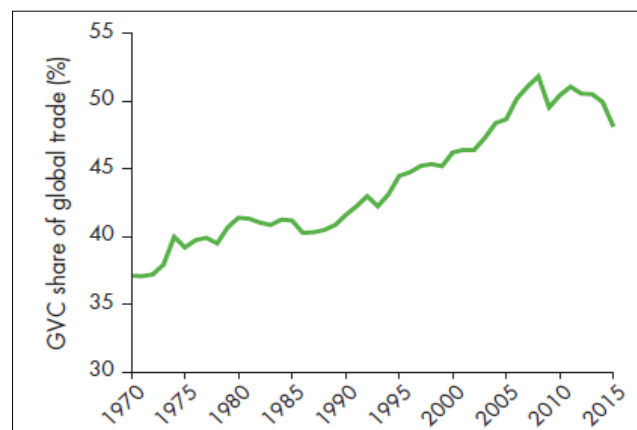
Source: World Bank's visualization via caluculations through Eura26 database (World Bank , 2020)

The World Development Report 2020 states that the rising protectionism could induce "reshoring" of existing GVCs or their shifts to new and closer locations, which is another global trend regarded as "nearshoring". When access to markets in the future is seen under uncertainty, companies are expected to delay investment plans until uncertainty is resolved. Such a delay results in any expansion of GVCs is likely to remain on hold (World Bank, 2020). Due to the US-China trade tensions, a new focus on network resilience and more of regional manufacturing had already emerged in 2018 and 2019. Companies that make technology hardware, one of the industries with most complex GVCs and where manufacturing has been most concentrated in China, have moved production of some products out of China over the past past 3 years as their customers in the US had concerns over security and some components were hit by US tariffs. For instance, Quanta Computer, the world's largest notebook contract manufacturer and a significant supplier of cloud hardware for Google, Amazon and Facebook, shifted production of servers out of China to Taiwan and to the home country, US (Hille, 2020). Exhibiting a slightly different approach, Foxconn, the largest Apple supplier and the world's largest electronic contract manufacturer with a workforce of one million in China, declared its expectation for global technology supply chains to split into two camps: "an for China and those associated with it, and another for the US and their friends" (Hille, 2020).

In the light of the information, warnings and recommendations about the current evolution and future threads related to the supply chains, it is clear that GVCs have been disrupted long before Covid-19 emerged due to the uncertainties across the globe. Worldwide Governance Indicators assessed by World Bank shows that the share of global trade conducted with countries ranked in the bottom half of the world for political stability has risen from 16% to 29 % in between 2000 and 2018. Therefore, almost 80% of

trade involves nations with declining political stability scores (McKinsey Global Institute, 2020). Several indicators of uncertainty have been shown to correlate with international trade and economic growth (World Trade Organization, 2020). Below is the figure regarding global uncertainty, measured by counting the frequency of words related to "uncertainty" in the Economist Intelligence Unit country reports (Ahir, Bloom, & Furceri, 2018) (World Uncertainty Index Data, 2020).

Figure 3. Global Uncertainty, 1990-2020
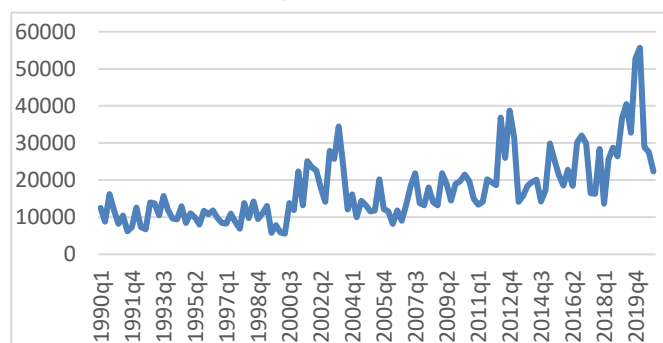
Source: Author's visualization using the data on https://worlduncertaintyindex.com/

Monitoring the global uncertainty index from the year 1990 to 2020, a monthly measure of uncertainty stemming from economic policy environment had been highest in 2002Q4, 2003Q1, 2003Q2 and 2003Q3 because of the US recession and September 11 Attacks, and Iraq war and the outbreak of SARS pandemic consecutively. The second peak has been experienced with US fiscal cliff and sovereign debt crisis in Europe in 2012-2013. The third peak has become in 2019 due to trade tensions between major economies and Brexit. While this level of uncertainty declined in January 2020 with resolution expectations for the economic policies, it has risen to the highest peak of all times in the first quarter of 2020 due to the Covid-19 pandemic. After the initial shocks with the pandemic, the index has decreased however it has still been high compared to the average of previous occasions and periods. The figure also reveals that the frequency and intensity of disruptive occurrences has risen. A recent McKinsey report indicates that companies can now expect supply chain disruptions lasting a month or longer to occur every 3,7 years (McKinsey Global Institute, 2020).

Proving the already existing tendency for change in global procurement and outsourcing and that it is triggered by the pandemic, A Gartner survey conducted with 260 global supply chain leaders in February and March 2020 indicates that 33% of the participants had moved sourcing and manufacturing activities out of China before the pandemic or they plan to do so in the next 2-3 years (Gartner, Inc., 2020). It should be highlighted that the survey respondents represents not only US

or particular industries but various regions due to being located in North & South America and the EMEA and APAC regions and various industries, including high-tech, industrial and food & beverage. The survey results show that the U.S.-China trade war made supply chain leaders aware of the weaknesses of their globalized supply chains and question the logic of over-integrated networks heavily depending on outsourcing as a way of doing business.

At the time when the Covid-19 was recognized as a pandemic by the World Health Organization in March 2020, a survey published by an Institute for Supply Management revealed that nearly 75% of companies had already seen capacity disruptions in their supply chains as a result of coronavirus-related transportation restrictions, lead times had doubled and that shortage is compounded by the shortage of air and ocean freight options (Lambert, 2020). The survey had been performed between February 22 to March 5 among more than 600 U.S companies, over 60% of which had reported delays in receiving orders from China, and 53% had reported having difficulty getting information from China (Lambert, 2020). Weaknesses of the globalized supply chains disclosed in an abrupt manner which have led to demand and supply shocks at the very beginning of the pandemic.

The need for business leaders and policy makers to fundamentally rethink the way they plan, invest and operate in the future is underlined in a recent survey of 699 global CEOs of private businesses and public companies from 67 countries/territories including Western Europe, North America and Middle East conducted in June and July 2020 (PwC, 2020). In a challenge to decades of increased globalisation, 39% of CEOs believe there will be a permanent shift towards reshoring and insourcing, and an enduring increase in nationalism is expected (PwC, 2020).

3. A Simulation of Shutdown of the Trade Hubs on GVCs

International Trade Center (ITC) has conducted a supply chain disruption scenario by assuming a two-month long complete shutdown of industrial production in China, the European Union (UK included) and the United States which are the world's three major supply chain trade hubs. These hubs, namely G3, represent 63% of supply chain imports and 64% of supply chain exports thus a two-month long complete shutdown of all manufacturing production in these hubs affect the trade all around the World. ITC's simulation includes only the industrial sector, that is, agriculture and services are not included. The objective is set to point out where the supply chain disruption can take place, setting aside sectors that are likely to benefit from the structural changes in demand during Covid-19 pandemic, such as increased purchases of personal protective equipment or the office equipment for teleworking. The focus is exclusively on the effect of factory lockdowns,

neglecting the effects of trade restrictions, demand reduction etc.

In the study, supply chain trade is defined as the flows of inputs used in production located in at least two countries, with produced goods consumed in a third country. As the result of the simulation, the dollar value of the supply chain disruption has been calculated as 17% (two months out of 12) of the supply chain imports and 17% of the supply chain exports (International Trade Centre, 2020). While this assessment is only relevant for 12% of all industrial trade, it is useful in demonstrating that economic developments in one country often depend on decisions made elsewhere even though the country does not have any direct trade relations with the decision maker.

Table 1. Projected reduction of trade within manufacturing supply chains ($ billion)

Exporter in the column and Importer in the row	China	EU	United States	G3
Africa	0,4	1,8	0,3	2,4
Americas	4,5	8,7	11,3	24,5
Asia	25,9	28,3	17,1	71,4
Europe	10,8	6,6	9,3	26,8
Oceania	0,4	0,2	0,2	0,8
Landlocked developing countries	0,2	0,4	0,1	0,6
Least developed countries	0,4	0,3	0,1	0,7
Small island developing states	1,3	0,6	0,7	2,6
World	41,9	46,1	38,2	126,3

Source: International Trade Centre (2020)

Table 2. Projected reduction of trade within manufacturing supply chains (%)

Exporter in the column and Importer in the row	China	EU	United States	G3
Africa	0,4%	1,2%	1,2%	0,9%
Americas	2,0%	2,0%	1,6%	1,8%
Asia	3,1%	2,5%	1,7%	2,4%
Europe	3,3%	1,5%	1,7%	2,0%
Oceania	0,4%	1,1%	2,3%	0,6%
Landlocked developing countries	0,6%	0,8%	3,2%	0,8%
Least developed countries	0,8%	0,5%	0,4%	0,6%
Small island developing states	2,7%	1,7%	1,8%	2,1%
World	2,7%	2,1%	1,7%	2,1%

Source: International Trade Centre (2020)

The simulation results in terms of dominance and interdependence in trade relations shows that:

• The reduction in international trade in manufacturing inputs due to the shutdown of the G3 supply chain hubs is expected to amount to $126,3 billion, or 2,1% of the total industrial imports by the G3.

• The factory shutdown in the European Union will have the greatest repercussions for supply chain exports elsewhere.

• The EU is the world's largest importer of industrial inputs, with China the largest exporter.

• The EU is also the biggest market for three of the world's five geographic regions.

• EU is the main importer of industrial inputs from both Africa and Asia and buys almost as many industrial inputs from Latin America as the United States.

• Shutdowns are expected to reduce imports of industrial inputs by $41,9 billion for China and $38,2 billion for the United States.

• Countries in the Americas will export $24,5 billion less industrial inputs, mostly caused by shutdowns in the US and EU.

• In Asia, exports of industrial inputs are expected to drop by $71,4 billion, with most of this loss stemming from the lockdowns in China and the EU. About 50% of Asia's exposure to the EU is linked to the trading relationship between the EU and China.

• The exposure of Asian countries to China centres on electronics supply chains (Malaysia, Philippines and Thailand).

• India's exposure mainly relates to trade with the EU in automobile components.

• Europe is heavily affected by the factory shutdowns in China and the United States, as more than 90% of the $10,8 billion and $9,3 billion losses in exports of industrial inputs are linked to EU-China and EU-US trade.

• Non-EU European countries mainly depend on the EU market.

• Exporters in Oceania are projected to lose $793 million in exports of industrial inputs due mainly to exposure in China.

• African exporters may lose more than $2,4 billion in global industrial supply chain exports in the G3. More than 70% of this decline is caused by the shutdowns in the EU. However, this reduction is driven by just a few product lines and countries. For instance, 15%–20% of the loss of African exports to the EU is Morocco's losses in exports of wiring sets for vehicles to the EU. Many other African countries are affected because of their exports to China of raw materials, such as copper for Benin, Mauritius, Namibia and Zambia, and cotton for Burkina Faso.

• Figures may not be high for the less exporting regions but the declines are still significant for individual countries.

2019 trade data of Turkey has been studied and below is shown Turkey's total industrial exports and imports, the value of its industrial exports and imports traded within international supply chains, and the share this value represents in the total trade.

Table 3. Turkey's Position in International Supply Chains, 2019 ($ million)

	Total trade value	Supply chain trade value	Share of supply chain trade in total
Industrial exports	166.353	20.588	12%
Industrial imports	191.857	25.059	13%

Source: International Trade Centre (2020)

Under the conditions assumed in the ITC's scenario of the two-month long complete shutdown of all manufacturing production in G3, Turkey's projected loss of trade in industrial inputs for the most affected sectors is provided for exports and imports below. The predicted reduction is displayed in relative terms as a share of the loss expected in 2020 in the total yearly exports and imports of the sector, and the value of the loss in absolute terms ($ million). Magnitude of the loss is visualized in line with the length of the bar. The biggest export losses are in motor vehicles and parts, machinery, plastics and rubber, ferrous metals, and metal products however the share of the loss stands at 2%. The biggest import losses are in motor vehicles and parts, machinery, apparel, plastics and rubber, and metal products. Those sectors represent about 70% imported inputs required by Turkey in 2019. The convergence between the industry groups in the export loss and import loss tables is significant. The finding can be assessed as that the industries Turkey is most globally interdependent are its leading exporting industries.

Table 4. The Way and Magnitude of Turkey's Supply Chain Trade Losses According to the ITC's Simulation of Supply Chain Desruptions

a) Projected supply chain export loss in $ million by sector

MOST AFFECTED SECTORS	2019 Export	EXPECTED LOSS: Exports of industrial inputs, 2020 Total export loss to the G3		to China	to the European Union	to the United States
Motor vehicles & parts	29 934	2%	495	2	477	16
Machinery	22 464	2%	349	13	316	20
Plastics & rubber	9 581	3%	277	6	244	27
Ferrous metals	11 613	2%	237	2	220	16
Metal products	7 366	3%	215	9	189	17
Other subsectors	85 395	1%	975	64	809	102
Total	**166 353**	**2%**	**2 548**	**96**	**2 255**	**197**

b) Projected supply chain import loss in $ million by sector

MOST AFFECTED SECTORS	2019 Required imported inputs	EXPECTED LOSS: Imports of industrial inputs, 2020 Total import loss from the G3		from China	from the European Union	from the United States
Motor vehicles & parts	6 908	12%	836	141	657	37
Machinery	4 787	13%	601	146	420	35
Apparel	2 267	11%	239	81	152	6
Plastics & rubber	2 002	11%	220	47	159	15
Metal products	955	11%	108	26	76	6
Other subsectors	7 422	11%	821	182	579	60
Total	**24 343**	**12%**	**2 824**	**623**	**2 043**	**159**

Source: International Trade Centre (2020)

4. Measuring Global Value Chains

Measurement of GVCs is a challenging course because customs data, which is the standard source for international trade flows, provide information on where the good was produced and where it is flowing to, but not on how it was produced and how it will be used. It is not recorded which countries contributed value to the good and whether it will be fully consumed in the importing country, or whether it will be re-exported after the importing country adds value to it. In order to trace value-added trade flows (GVC trade) across countries, it is required to combine information from customs offices with national input–output tables to construct global input–output tables in the end. The most widely known combination studies are cited below (World Bank, 2020):

• World Input–Output Database (WIOD), a collaborative project led by researchers at the University of Groningen;

• the Trade in Value Added (TiVA) database compiled by the Organisation for Economic Co-operation and Development (OECD);

• the Eora global supply chain database, constructed by a team of researchers at the University of Sydney.

Including the International Trade Center's simulation referred in previous chapter, the studies on value-added participation in trade use the input-output tables in their projections. "ITC Value Chain Indicator" has been utilized for vertical product diversification and regional value chain development.

Input-output theory was first developed by Wassily Leontief to analyze inter-industrial relations in an economy, and the economist was awarded the Nobel prize for his work in 1973 (Lindbeck, 1992). The idea is based on the fact that the sectors of an economy are in an input-output relationship. Matrice are constituted with industries' inputs and outputs in production and technical coefficients are used in the input-output tables to describe the strength of this relationship.

Global input–output tables can be used to analyze to which production processes have globalized in recent years and how countries and sectors participate in GVCs. Alternative ways of measuring the extent can be used by the researchers. A natural measure of the importance of GVC trade is the share of trade that flows through at least two borders. However, the direction of the participation to the trade in value adding process becomes a distinguisher. Two broad types of GVC trade are (World Bank, 2020):

• It is entitled "backward GVC participation", when a country's exports embody value added previously imported from abroad, which means the intermediates used in exports are from the previous stage.

• It is entitled "forward GVC participation", when a country's exports are embodied in the importing country's

exports to third countries, which means the exporter is at the early stage of production of a final good.

It should be noted that global input–output tables have limitations. One limitation is that because they rely on aggregated input–output data, the resulting sectoral disaggregation of GVC flows cannot be very detailed and fully in compliance with the broadly defined sectors. Another important limitation in constructing the global input–output tables is that because bilateral intermediate input trade flows cannot be readily read from customs data or national input–output tables, researchers have to make strong assumptions to back out them (World Bank, 2020). An other not limitation but obstacle is that to make up-to-date analysis on value-added trade may not be possible through the ready databases addressed above since they are not instantly updated. For this reason, the extent of Turkey's sectoral dependence on the GVCs will be examined via OECD's analysis. Additionally, it is important to mention that, for the same reason of the lack of instant data, analysis on the effect of Covid-19 pandemic on GVCs will not be applicable currently.

5. Turkey's Integration into GVCs

Turkey's integration into global value chains has increased in years. While this development was mostly through backward GVC participation until 2011, the change in forward GVC participation remained relatively flat over the years. In the period after 2011, the backward GVC participation rate decreased; it is seen that forward GVC participation has increased.

According to the OECD's TiVA database which covers 64 economies and 36 industrial sectors for the years 2005-2015, global GVC integration has steadily declined in recent years (OECD, 2018). As an indicator of GVC integration, the foreign content of Turkey's exports has declined to 16,5% in line with the global trends. However, this percentage is 1,1 points larger than the level in 2005. The OECD average and EU28 average is far above the Turkey. This percentage is generally higher in countries with relatively open and liberal trade regimes and high degrees of foreign investment (OECD, 2018).

As an indicator of the role of foreign final demand in domestic production, 20% of Turkey's domestic value added in 2015 was driven by consumption abroad. Motor vehicles (55,9%), basic metals (52,8%) are the industries with highest percentages. As an indicator of the importance of imports for exports, the foreign value-added content of gross exports are highest in electrical equipment (33,6%), coke and refined petroleum products (32,8%) and motor vehicles (27,4%). Approximately 29% of the total value of Turkey's imports of intermediate goods and services was embodied in exports subsequently, - this ratio is is 45,5% in OECD. By originating industries, the highest shares of intermediate imports used in exports are motor vehicle (46,5%), textiles and apparel (35,9%) and base metals (34%). When the main trade partners of Turkey are examined in gross terms including goods and services, it is seen that value-added content of Turkey's exports are lower than value-added content of Turkey's imports. China is Turkey's largest source of imports and it ranks seventh in Turkey's export markets in value added and in gross terms. Turkey has highly integrated with European countries.

6. After-COVID19 Trends Affecting GVCs and Countries Individually

With the supply shock encountered with the pandemic outbreak, companies get into search for ways to build resilience, regain and improve the competitiveness and prepare for future shocks. It needs both short and long term decisions and investments and the discussions include less GVC integration and more self sufficiency and regional integration. The following are the topics discussed often about the forming aspects of the new age supply organizations:

• Return to nationalism and protectionist policies that potentially reduce globality of supply chains,
• Multi-sourcing, as the ability for a supply planning system to intelligently choose between alternate sources of supply,
• Supply network restructuring, as the change and re-definition of the structure of supplier base by initiating new contracts and revising the existing ones,
• Near-shoring, as the outsourcing of business processes, to companies in a nearby country, often sharing a border or speaking the same mother tongue with the target country,
• Reshoring, as the process of returning the production and manufacturing of goods back to the company's original country.

The following steps are taken currently:
• Increasing domestic supply,
• Domestic supply for self-sufficiency in critical products,
• Keeping higher inventories against instant risks,
• Increasing the number of suppliers,
• Shortening of supply distances and times,
• Establishing new regional networks in supply chains,
• The relocation of some of the existing foreign capital investments from Asia into new supply chain networks,
• Reduction of new foreign capital investments, but investments are still made in regional supply chain networks,
• Focusing on players in new supply chain networks in the financing of trade and investments,

- Extending buyer-supplier relationships on the value chain beyond the sole production activities, making R&D and innovation collaboratively,
- Modular design and separation of production into modules instead of parts,
- Using safe and green production as the main criterion in establishing new supply chains,
- Negotiating to revize the existing trade agreements trade agreements and to sign new ones according to anew emerging value networks, creating new trade and customs union areas for new supply chain networks,
- More public-private cooperation,
- Development of automation and the use of digital technologies in all steps of the supply chains, adopting online B2B.

As the agenda of the business World shows, the Covid-19 pandemic puts the globalization process to a serious test. The crisis highlights some of the systemic issues related to the liberal economic order and rule-based trade order that have been questioned recently. World Trade Organization, which is the only body to provide a rule-based global trade environment, is regarded to have a weak enforcement power while the measures violating its rules are taken and/or are not notified as should be done by rule. Many countries have been taking trade restrictive measure in order to satisfy the domestic demand especially in personal protective equipment. Although most of the measures have gone unapplied at the end of the year 2020, it is important to foresee the possibility of the future interruption of the supply chain especially during pandemic periods when the need for medical equipment and drugs increases. In the event of countries' being in the search of different ways to satisfy the domestic demands, the countries which are highly integrated on GVCs and have high foreign trade / GDP ratios encounter the higher risks in terms of economic growth.

McKinsey's study on GVCs shows that whether that involves reverting to domestic production, nearshoring, or new rounds of offshoring to new locations, 16 to 26% of exports could be relocating with the shift of GVCs in the next five years, and the value chains with the largest share of total exports potentially in play are pharmaceuticals, apparel, and communication equipment (McKinsey Global Institute, 2020). The value chains with the largest potential- in dollar terms- to shift production to new places are petroleum, apparel, and pharmaceuticals. However, any mathematically profitable act may not be feasible in practise.

Resource-intensive value chains, like mining, agriculture, and energy, are generally constrained by the location of natural resources of crucial inputs. But policy considerations may enable new exploration and development moving value chains at the margins. For instance, the chance to move petroleum production is limited but if the price of oil rises

and/or new technologies makes it possible, exploration and extraction now considered uneconomic in some sites could become viable.

Labor-intensive value chains, like furniture, textiles, and apparel are more probable and easier to shift and they have already been experiencing shifts. In 2005, China exported 71% of the finished apparel goods it produced. However, that share dropped to 29% in 2018. But its wages have been rising, and Chinese producers have been focusing on domestic market rather than exporting. Turkey has competitive advantages in this industry such as its raw material resources, existing high export volume, "high-quality" market perception, about 1 million human resource employed in the industry.

The value chains in the global innovations category which incorporates semiconductors, automotive, aerospace, machinery, communication, and pharmaceuticals are seen to be subject to intervention from governments because of their high value, cutting-edge technologies, perceived traditional importance for national competitiveness, and the trade measures for the same reasons made during Covid-19 pandemic. Moving these value chains may need government level cooperation in decision making (McKinsey Global Institute, 2020). Turkey has competitive advantage in automotive as it is already the top industry in the country's exports.

The US-China trade wars were expected to slow down with the first phase trade agreement signed at the beginning of 2020. The changing trends after the pandemic and the disagreements between US and China that have come back to the agenda in the recent period cause question marks about the future of relations between the two countries, as well as China's role in global trade in general. Considering the possible effects of the trend changes on countries and regions, it is evaluated that Vietnam can gain an advantage as a result of shifting some of the production to other countries in Asia in order to reduce dependence on China, and so does and Mexico in North America in general means, disregard with specific sectoral shifts. Decreasing Chinese exports due to trade wars and Covid-19 crisis enables export opportunities for Turkish manufacturers, whose exports are much smaller compared to exports of Chinese and other Asian manufacturers.

India, which already provides advanced services in the field of information and communication technologies, is assessed as it will increase its share in the global market. In addition, countries with developed human capital will be able to gain an advantage in integrating into value chains for innovative goods and services and attracting investments in ICT.

Turkey's geographically proximity to Europe is a big opportunity to benefit from the nearshoring and multi-sourcing trends. Modernisation of the Customs Union, a trade

agreement with the UK would lower the trade costs and strengthen the commercial relations between EU+UK and Turkey taking into account that this region already constitutes about %50 of Turkey's exports, %32,8% of global imports, %21,8 of world GDP. Turkey's manufacturing footprint and competitive advantages may rise as an opportunity to benefit from the reshoring trends in USA which constitutes 12,8% of global imports and 23,8% of world GDP (The World Bank).

7. Conclusion

The global value chains (GVCs) explain the distribution of the production processes across countries, the value added by countries on goods and services before being consumed. GVCs has grown for years as globalization expanded. Consequently, international trade has increased in parallel to the GVCs growth. However, growth pace has decreased in the last years due to slowing pace of global economy in overall, backset of trade reforms, and the protectionist attitudes and the increasing uncertainty, which is in reciprocal relationship with openness to trade and investment flows. Several indicators of uncertainty have been shown to correlate with international trade and economic growth. Thus, before the supply chain disruptions caused by Covid-19 pandemic, GVCs have already being disrupted. The US-China trade tensions have been in interest of all commercial parties in the World, as they are the two trade hubs. Many surveys with the organization leaders reveals that sourcing and manufacturing activities were moved out of China to some extent before the pandemic and/or it is within the plans for next couple of years. After the Covid-19 pandemic outbroke, companies encountered capacity disruptions in their supply chains, doubling lead times and shortages due to the transportation restrictions. This reality has shown the vulnerabilities of integrated supply chain networks to the business leaders and policy makers and has made them rethink about the globalization and the way they plan, invest and operate.

The interdependencies among the economies have been discussed now more than before. Just a two-month long shutdown of industrial production in China, the European Union (UK included) and the United States may cause great import and export losses for all countries on the globe, a study by ITC shows. The study results point to the dominance of the G3 in international trade and width of domain of the G3. G3 represents 63% of supply chain imports and 64% of supply chain exports thus a two-month long complete shutdown of all manufacturing production in these hubs affect the trade all around the World. For Turkey, in such a manufacturing shutdown case of G3 for 2 months, export losses are expected to realize in motor vehicles and parts, machinery, plastics and rubber, ferrous metals, and metal products while import losses are in motor vehicles and parts, machinery, apparel, plastics and rubber, and metal products. The convergence between the industry groups in the export loss and import loss industry

groups of Turkey can be interpreted as that the industries Turkey is most globally interdependent are its leading exporting industries. However, it should be noted to keep in mind that the aggregated data in value-added trade calculations may mislead sectoral assessment.

Customs data which is the standard source for international trade flows, provide information on where the good was produced and where it is flowing to, but not on how it was produced and how it will be used, therefore, the added-value trade is not found in it directly. In order to trace value-added trade flows (GVC trade) across countries, it is required to combine information from customs offices with national input–output tables to construct global input–output tables. Studying Turkey's position on GVCs shows that:

• Turkey's integration into global value chains has increased in years.
• Turkey's GCV integration was mostly through backward GVC participation until 2011, the change in forward GVC participation remained relatively flat over the years. That is, the intermediates used in Turkey's exports were from the previous stage.
• In the period after 2011, the backward GVC participation rate decreased; it is seen that forward GVC participation has increased. That is, Turkey started to take place at the early stage of production of the final goods (and/or services) in its exports.
• As an indicator of GVC integration, the foreign content of exports is generally higher in countries with relatively open and liberal trade regimes and high degrees of foreign investment. Turkey is much less integrated to GCVs compared to EU and OECD averages.
• Approximately 29% of the total value of Turkey's imports of intermediate goods and services was embodied in exports subsequently, - this ratio is is 45,5% in OECD. By originating industries, the highest shares of intermediate imports used in exports are motor vehicle (46,5%), textiles and apparel (35,9%) and base metals (34%).
• Motor vehicles and basic metals are the top industries where role of foreign final demand in domestic production is observed.
• Electrical equipment, coke and refined petroleum products, and motor vehicles are the top industries where the importance of imports for exports is high.
• China is Turkey's largest source of imports and it ranks seventh in Turkey's export markets in value added and in gross terms.
• Turkey has highly integrated with European countries.

With the Covid-19's transition effects, several trends blossomed and/or were triggered and discussions include less GVC integration and more self sufficiency and regional integration Supply network restructuring is discussed and

acted towards as the change and re-definition of the structure of supplier base by initiating new contracts and revising the existing ones.

Near-shoring, as the outsourcing of business processes, to companies in a nearby country, often sharing a border or speaking the same mother tongue with the target country, and reshoring, as the process of returning the production and manufacturing of goods back to the home country, have been significant concepts of whom future and economic effects are tried to be measured. Return to nationalism and protectionist policies that potentially reduce globality of supply chains are expected by both many politicians and many economists. Multi-sourcing, as the ability for a supply planning system to intelligently choose between alternate sources of supply is on the table since depending on one major source caused disruptions on the supply chain when the pandemic first outbroke. McKinsey's study on GVCs shows that whether that involves reverting to domestic production, nearshoring, or new rounds of offshoring to new locations, 16 to 26% of exports worth $2.9 trillion to $4.6 trillion could be relocating with the shift of GVCs in the next five years, and the value chains with the largest share. Economic result for the countries – and also companies- which are highly integrated in the GCVs are discussed to be possibly fierce.

The need for business leaders and policy makers to fundamentally rethink the way they plan, invest and operate in the future is underlined and Turkey is expected to obtain opportunities to reposition itself in the global supply chain and expand its exports in many industries against loss in foreign trade and economic output. Turkey has the opportunity to benefit from its proximity to EU, to deliver additional exports to US due to trade wars and the attitude against China.

References

Ahir, H., Bloom, N., & Furceri, D. (2018, October 29). The World Uncertainty Index. doi: 10.2139/ssrn.3275033

Gartner, Inc. (2020, June 24). Gartner Survey Reveals 33% of Supply Chain Leaders Moved Business Out of China or Plan to by 2023. Press Release. Stamford, Conn. Gartner Geraint John | Kamala Raman. Retrieved from https://www.gartner.com/en/newsroom/press-releases/2020-06-24-gartner-survey-reveals-33-percent-of-supply-chain-leaders-moved-business-out-of-china-or-plan-to-by-2023

Hille, K. (2020, August 18). China's share of global exports falls in supply chains rethink. Financial Times. Retrieved from https://www.ft.com/content/bfef2854-f8f3-4ce6-a00f-3b11123b01e8/

International Trade Centre. (2020, June). SME Competitiveness Outlook 2020: COVID-19: The Great Lockdown and its Impact on Small Business. Geneva: ITC. Retrieved from https://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/ITCSMECO2020.pdf/

Lambert, L. (2020, March 11). 75% of companies report coronavirus has disrupted their supply chains. Fortune. Retrieved from https://fortune.com/2020/03/11/75-of-companies-report-coronavirus-has-disrupted-their-supply-chains/

Lindbeck, A. (Ed). (1992). Nobel lectures, economics 1969-1980. Singapore: World Scientific Publishing Co.

McKinsey Global Institute. (2020, August 6). Risk, resilience, and rebalancing in global value chains. Retrieved from https://www.mckinsey.com/business-functions/operations/our-insights/risk-resilience-and-rebalancing-in-global-value-chains/

OECD. (2018, December). Trade in value added. Retrieved from http://www.oecd.org/industry/ind/TIVA-2018-Turkey.pdf

OECD. (2018, December). Trade in value-added ındicators guide to country notes. Retrieved from http://www.oecd.org/sti/ind/tiva-2018-guide-to-country-notes.pdf

PwC. (2020, August 11). CEOs: Post-covid changes are permanent and there are more to come. Retried from https://www.pwc.com/gx/en/news-room/press-releases/2020/ceo-survey-covid-update.html

World Bank. (n.d). GDP (current US$) [Data file]. Retrieved from https://data.worldbank.org/

World Bank. (2020). World Development Report 2020: Trading for Development in the Age of Global Value Chains.

Washington, DC: World Bank. doi:10.1596/978-1-4648-1457-0

World Trade Organization. (2020, August 12). Trade Costs in the Time of Pandemic. Retrieved from https://www.wto.org/english/tratop_e/covid19_e/trade_costs _report_e.pdf

World Uncertainty Index Data. (2020, July 2020). Retrieved from https://worlduncertaintyindex.com/data/