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Emerging economies in Global Value Chains. Insights from the 7th OEET workshop

In the last decades, with the emergence of Global Value Chains (GVCs), the tasks and functions for the production of goods and services have become increasingly specialized and fragmented accross different countries. On the one hand, this phenomenon, as well as macro-regional networks, has played a role in boosting growth in many developing and emerging economies. Indeed, while building whole industries from scratch can be hardly achieved by developing countries, entering in specific phases of production is much easier. On the other hand, GVCs can trigger unbalances, inequality, marginalization of the working class (particularly in high income countries) and environmental degradation, creating a context more vulnerable to climate crisis and shocks in international prices and logistics. Moreover, the integration of developing countries in GVCs is often limited and, when it occurs, reserves the larger share of value added to high-income countries.

The importance of GVCs poses new challenges also for the academic research, both at theoretical and empirical level. The understanding about whether and how participating in GVCs can promote economic development is crucial for emerging economies. But the micro-level data on firms' international operations along the value chain remains largely beyond the reach of national accounts and statistics which are not designed to capture this kind on information. Analysis relies on data on trade and foreign direct investments' flows, input-output datasets, or on micro level data, but in all cases, scholars dealing with GVC, have to address important methodological issues in their analyses.

The role that GVCs can play in the process of economic development was at the core of the recent 7th OEET workshop on **Emerging economies in Global Value Chains: impacts and policy issues**. The three articles collected in this newsletter are based on works illustrated during the 7th workshop. Through different methodologies and datasets, they suggest novel perspective to measure the relation between economic development and participation in GVCs.

The first article, by Andrea Coveri and Antonello Zanfei, is: **Functional specialization in FDI and Value Capture in GVCs**. This article tests empirically the smile curve hypothesis, which assumes that the activities with higher share of value added occur in the intangible-intensive stages (during the pre- and post-production phases), rather than in the production operations. This division of labour has asymmetric implications for the high-income and developing economies, as the former are specialized in intangible-intensive activities, and the latter in production operations. By analysing data on foreign direct investments, the authors provide a picture of the new international division of labour and its evolution over the years. Then, considering the domestic value-added content of exports, they investigate the distribution of value added along the GVCs.

The second article, by Ivan Savin, is: **Measuring market selection: state of the art and ways forward**. This article suggests examining the GVCs by applying the model of replicator dynamics. This perspective adopts an evolutionary approach -as opposed to the neoclassical one- and explains the market selection of firms (i.e. the market share they acquire over time) with their "fitness", which can be further conceived in terms of labour productivity or product quality. The differences and complementarities among different ways of analysing market selection are described, highlighting their strengths and drawbacks.

The third article, by Nora Aboushady and Chahir Zaki, is: **Firms' Political Connections and Global Value Chains: Evidence from Egypt**. This article is a case study that investigates which factors limit the integration of Egypt in GVCs. The Middle East and North Africa region, and especially Egypt, is an area whose linkages with GVCs are relatively weak. By adopting data from the World Bank Enterprise Surveys for Egypt, the authors examine in depth the role of political connections and non-tariff measures in preventing deeper and more fruitful participation of the county in GVCs.

Functional specialization in FDI and Value Capture in GVCs*

by Andrea Coveri† and Antonello Zanfei‡

The rise of global value chains (GVCs) prompted firms to increasingly specialize in specific value chain functions, the latter being conceived as the full set of business activities – from those concerning the conception of goods to the ones relating to their fabrication and commercialization – carried out to develop and bring a product to market (Feenstra, 1998; Sturgeon and Gereffi, 2009). The result has been the emergence of an ever finer international division of labour that occurs mainly at the level of individual production stages within sectors, also called "tasks" (Grossman and Rossi-Hansberg, 2008).

This transformation, together with the increasingly uneven distribution of value across actors performing different business activities, has been often associated with the "smile curve" hypothesis (Shih, 1996; Mudambi, 2008).

However, well-suited empirical analyses on the modern functional specialization of economies and tests of the predictions deriving from the smile curve are still limited in extant literature. The present work takes a step forward in this direction. By focusing on the functional specialization in terms of inward FDIs of more than 100 countries from 2003 to 2018, we provide a novel and systematic test of the "smile curve" on a global scale. Our findings shed new light on global economic asymmetries and the development prospects of emerging and developing economies in the era of GVCs.

The smile curve: conceptual aspects and empirical evidence

The concept of 'smile curve' (Shih, 1996) has obtained a wide consideration in the GVC literature, providing a sort of "working assumption" (Baldwin and Evenett, 2015) upon which key concepts have been developed, especially the one of upgrading (Gereffi, 1999; Humphrey and Schmitz, 2002). Arguably, the reason of its success is that it seems to neatly summarize the most salient features of the modern economic reality. In fact, two relatively straightforward predictions can be derived from the smile curve hypothesis. The *first prediction* is that developed economies will specialize in the most intangible-intensive functions at the higher ends of the value chain, while emerging and developing regions will specialize in performing production operations. The *second prediction* is that a higher specialization in the most intangible-intensive stages of the value chain compared to production functions is positively related with the amount of value the economies can seize domestically from participating in GVCs.

From a theoretical point of view, the uneven distribution of value (and hence the steepness of the smile curve) is largely determined by two major drivers which insist respectively on the central part and on the higher ends of the curve (Durand and Milberg, 2020). The first driver is the high and increasing global competition among actors performing fabrication activities (Baldwin and Evenett, 2015). The second driver is the increasing role played by intangibles in GVCs and especially the strategic control that lead firms – largely based in high-income countries – maintain on functions at the higher ends of the value

* This contribution summarizes the conceptual framework adopted and the main findings of a research contribution presented at the 7th OEET Workshop (2-3 December, Collegio Carlo Alberto, Turin).

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chain through the ownership of these peculiar assets (Chen, Los and Timmer, 2018; Jaax and Miroudot, 2021).

However, the lack of data at functional level has prevented systematic empirical tests of the smile curve. As a matter of fact, several works relied either upon case studies on GVCs of individual products (see Sturgeon et al. (2013) and UNCTAD (2015) for reviews), or on sectoral measures of trade in intermediate goods and services to detect changes in international production and value capture (e.g., Rungi and Del Prete, 2018; Meng, Ye and Wei, 2020). Yet, while case studies can hardly provide general results, sectoral measures based on input-output statistics disregard the business activities undertaken for the realization of products and services, thus failing to provide a proper test of the value distribution across GVC functions (Sturgeon and Gereffi, 2009).

An important advancement was recently provided by Timmer, Miroudot and de Vries (2019), who computed a measure of 'functional specialization in trade' based on the value added which can be traced back to workers employed in different functions for the production of exported goods and services. Consistently with the smile curve, they find that a positive correlation exists between the GDP per capita of economies and their specialization in R&D functions, while a negative relationship emerges between the former and the specialization of countries in fabrication activities. In a subsequent work, Buckley et al. (2020) show that in the last decades the value captured by both pre- and post-production functions has increased faster than that accruing to fabrication activities, hence providing evidence on the "deepening" of the smile curve. Finally, Stöllinger (2021) performed a cross-sectional analysis on the specialization of manufacturing industries in terms of FDIs related to different business activities and the value added to gross output ratio, finding a negative relationship between the relative specialization of industries in production activities and the latter ratio.

The work presented at the 7th OEET Workshop (2-3 December 2021), which we summarize here, takes another step forward in the empirical assessment of the smile curve at macro level by exploiting high-quality proprietary data on inward FDIs distinguished according to the GVC function they are aimed to perform. By building up a database with a remarkably broad geographical coverage (over 100 countries), our investigation aims to provide the first systematic test of the smile curve predictions on a global scale.

Empirical strategy: a two-step procedure

In this work we use data on inward FDIs to proxy the specialization of the economies across value chain functions. To this aim, we exploit the fDi Markets database, i.e., an online database provided by fDi Intelligence that collects detailed information on announced cross-border greenfield investments covering all sectors and countries worldwide from 2003 onwards. A distinctive feature of fDi Markets consists in reporting the value chain function – e.g., R&D, design and development, manufacturing, sales, marketing and support, etc. – each FDI project is aimed to perform. This is the key information we use to compute our indicator of functional specialization of the economies, which is found by computing the Balassa's (1965) index of revealed comparative advantage based on inward FDIs in different value adding functions. We call this 'functional specialization in FDI' (*FS*). This indicator is therefore an inward FDI-based specialization index which captures for the i-th country in a given year the relative attractiveness of investments in the a-th value chain function. In formal terms, it is calculated as follows:

$$FS_i^a = \frac{\frac{FDI_i^a}{\sum_a FDI_i^a}}{\frac{\sum_i FDI_i^a}{\sum_i \sum_a FDI_i^a}}$$

where the share of inward FDIs related to a given function over total inward FDIs received by a given economy (the numerator) is normalized according to the share of inward FDIs in the same function over total inward FDIs for the world as a whole, namely the global average (the denominator).

Our empirical strategy unfolds in two steps. The first step consists in measuring the functional specialization of economies in terms of FDIs and assess whether the resulting functional division of labour at global scale reflects the one predicted by the smile curve. This complements previous research based on functional specialization based on trade data and provides novel evidence on patterns of captive offshoring of world areas according to their degree of development. In addition, we pay attention to the dynamic dimension and illustrate the evolution of functional specialization in FDI of world macro-areas over time. The second step consists in investigating the links between the functional specialization of the economies and their capability to capture value in GVCs.

Results of the first step

The first step of our empirical analysis is aimed to test the first prediction of the smile curve, namely the one concerning the international division of labour. To this scope, we investigate the relationship between the FDI-based specialization of countries across GVC functions and their development level (proxied by GDP per capita). The functions we focus on are the following: Headquarters (HQ), Research and Development (R&D), Design, Development and Testing (DDT), Manufacturing (Man), Logistics, Distribution and Transportation (LDT), and Sales, Marketing and Support (SMS). A battery of panel between-effects model at country-year level are estimated for this purpose.

Our results largely confirm the "prediction" of the smile curve with regards to the functions most performed by countries at different stages of development. In particular, we find the highest positive and significant coefficients for GDP per capita when the dependent variable is the inward FDI-based specialization in the most upstream functions, i.e., HQ and R&D. Moving to the right along the smile curve, the coefficient of GDP per capita initially remains positive and significant but decreases its magnitude, and turns negative when the dependent variable is the specialization of economies in drawing FDIs in manufacturing functions. Finally, GDP per capita again report positive and significant coefficients when the dependent variables are the functional specialization of countries in LDT and SMS functions respectively, with the magnitude of the former coefficient being slightly lower than the latter.

Moreover, we provide an overview on the evolution of the functional specialization of macro-regions by computing on a year-per-year basis our indicator of functional specialization for the whole group of advanced economies, the whole group of developing economies, as well as for China and India alone. To this aim, we classify value adding functions in the three canonical stages of the value chain, i.e., the upstream, production and downstream segment (Mudambi, 2008; Baldwin and Evenett, 2015) and compute the functional specialization in FDI of macro-regions across these three GVC stages.

Our findings show that advanced countries have proceeded to de-specialize in production activities, with an acceleration in the years of deep crisis. This pattern corresponds quite symmetrically to a higher involvement of low-income world areas as fabrication hubs. Even in the case of the most dynamic emerging countries in Asia, i.e., China and India, what is remarkably increasing is only the specialization in production operations. In particular, China confirms and consolidates its profile as the largest attractor of FDIs in production; nonetheless, since 2006 this country also reports a value of the specialization index in upstream functions which fluctuates around one. In the midst of the great financial crisis, India

appears to have significantly reduced its once remarkable capability to attract FDIs in upstream activities, although in 2018 this country still reports a specialization in these high value-added functions greater than in production ones.

Results of the second step

The second step of our empirical investigation is aimed to test the second prediction stemming from the smile curve hypothesis, namely that higher specialization of countries in most intangible-intensive segments of the value chain is associated with higher value capture in GVCs.

We estimate a fixed-effects model – which also includes a number of control variables on the level of economic development, technology, industrial structure, quality of institutions and GVC participation and position of the economies – on a balanced panel dataset of 102 countries over the period 2003-2018. The dependent variable in our model is the domestic value added embodied in exports (DVA) per capita (data on DVA are drawn by the UNCTAD-Eora GVC Database; see Casella et al., 2019). This indicator provides a measure of the gains that a country captures domestically from trade in a GVC context, as it computes the value added captured by domestic actors participating to the country's export chains.[§] As data on the domestic value-added content of exports are available for a wide range of developed and developing countries, this indicator perfectly fits our objective of studying value capture in GVCs in a truly global perspective. Our key regressor is what we call the Relative Functional Specialization (*RFS*) index, namely a country-year level indicator computed as the functional specialization of the economies in production functions over the sum of their functional specialization in both upstream and downstream stages of the value chain.

Our estimate results can be summarized as follows. First, all estimates show a negative and statistically significant coefficient of the *RFS index*, confirming that a higher specialization in production compared to upstream and downstream functions is associated to a lower amount of value captured domestically in export chains. Notably, the total number of FDIs always reports a negative and significant coefficient, revealing that it is not inward FDIs *per se*, i.e., regardless of their composition, that increases value capture capabilities.

Second, when we control for structural characteristics of countries, including *inter alia* lagged measures of the forward and backward GVC participation of economies, as well as proxies of their GVC position based on the ratio between these indicators, our main findings are largely confirmed.

Conclusions

The global unbundling of production and the subsequent "slicing up" of value chains across countries have given rise to a finer international division of labour which increasingly occurs at the level of individual value-adding functions (Sturgeon, 2008; Sturgeon and Gereffi, 2009; Timmer et al., 2014). A major driver of this process has been the massive growth of cross-border investment flows, which has contributed to the growing involvement of low- and middle-income countries in GVCs. In this context, the 'smile curve' has gained increasing attention as a sort of stylized fact able to summarize the most

[§] However, no guarantees exist that gross profits are retained domestically. In fact, the capital income seized by local affiliates of MNCs headquartered abroad can be easily moved away from the local economy and transferred to the residence of MNCs' shareholders. It follows that the asymmetries in the distribution of value along GVCs are likely to be even more unequal than what may appear from our investigation.

salient features of the modern international division of labour and the associated distribution of value along GVCs.

However, evidence provided by previous research on the smile curve is largely scattered and empirical analyses on the association between the functional specialization of economies and value capture in GVCs are still limited in extant literature. To fill this gap, in this work we provided the first systematic empirical assessment on a global scale of the main predictions deriving from the smile curve hypothesis by focusing on the functional specialization in FDIs for a large sample of world economies.

Three main findings emerge from our empirical investigation. First, as predicted by the smile curve, the most upstream and downstream value chain functions are mainly performed by the most developed countries, while production operations at the lower end of the value chain are mainly the prerogative of less developed world macro-regions. Second, the observed specialization patterns largely consolidated over the period under investigation. Third, and consistently with the predictions deriving from the smile curve, higher specialization in the intangible-intensive segments of the value chain is associated with greater value capture in GVCs.

In this scenario, fast-growing emerging countries such as China and India seem to represent more of an exception than a rule and the (heretic) developmental policies they have put in place should gather major attention.

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Measuring market selection: state of the art and ways forward*

by Ivan Savin†

The model of replicator dynamics as an evolutionary theory of competition between firms in economics is widely used. I describe how to test this model based on empirical data, as well as the advantages and disadvantages of these tests. Furthermore, I describe ways on how to improve the model of replicator dynamics taking into account global value chains and using the world input-output database, which helps to obtain more thorough and accurate results.

The world we live in is constantly evolving - sometimes smoothly, and sometimes very abruptly. Just recall several industrial revolutions our society has experienced over the past three centuries, and how much people's lifestyle has changed during this time. New ideas, often not only of a technological nature, and related innovations are the main driving force of these changes. Analysing these changes is a difficult task, since we are trying to understand both short-term and long-term patterns and causes of emerging changes, the nature of those participants who create, implement, disseminate knowledge, and compete with each other. To address these issues, a conceptual framework is needed.

The economic literature offers two alternative approaches to understanding the dynamics described. The first one proposes a rather complex system based on understanding (at times, unlimitedly) rational agents and determining the equilibrium states between them. Within this framework, the economy develops on the basis of clear laws (similar to physics) and almost always is in an "equilibrium" state, where economic agents act in an optimal way to achieve the best result for themselves, taking into account the response of their competitors and making an accurate forecast of future events. This approach is often referred to as *neoclassical*, and dynamic stochastic general equilibrium models are its good example. The second concept presents the economy as an ecosystem that does not always act and react in a predictable way; economic dynamics is the result of activities devoted to experimentation in a poorly understood environment, often faced with uncertainty. This approach is called *evolutionary* in the economic literature, and one of the fundamental works on this topic is the book written by Nelson and Winter (1982).

The idea of comparing the evolutionary development of the economy with the evolutionary development of living organisms on earth is far from new. Some people argue that Charles Darwin borrowed some ideas from Adam Smith when he formulated the theory of natural selection. "Darwin's theory does not defend any higher principles, except for the pursuit by individuals of their own interests, i.e. passing on your own genes to future generations. The problem is similar to the one faced by Adam Smith when he advocated laissez faire as the surest path to a harmonious economy. Smith argued that an ideal economy may appear orderly and well-balanced, but it will arise "naturally" from the interaction of people who follow no path other than pursuing their own interests" (Gould, 1975, pp. 99-100).

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Drawing analogy between nature and economics, random variation at the gene level can be represented as inventions and innovations that create companies, while natural selection - as competitive market selection. The selection units are not different species, but firms or even entire industries. The key model within this approach was the model of replicator dynamics, first formalized by Taylor and Jonker (1978) as a model for selecting the best behaviour strategies, and later used as a model of competition between economic actors (Metcalfe, 1994) or between alternative views in public opinion (van den Bergh et al., 2019). The replicator dynamics model is represented in the following equation:

$$\Delta s_{i,t} = s_{i,t-1}\left(f_{i,t} - \overline{f}_t\right) \quad (1)$$

where Δ is the difference between two years; $s_{i,t}$ is the share of firm i in the time period t on the market; $f_{i,t}$ is the form of measuring ("fitness" of the company i in the period t to the given market (this can be the cost per unit of production, product quality, labour productivity of the company, etc.); $\overline{f}_t$ - weighted average (relative to the company's market share) "fitness" of firms on the market. According to equation (1), firms with above average fitness should increase their market share and vice versa. This model quickly gained widespread popularity and is used as an integral part of many studies (Mazzucato, 1998; Foramitti et al., 2021).

The logical question is how to test the seemingly logical economic law on the basis of real data. There are several ways. The first and most common of them is to take a certain market and decompose the change in aggregated "fitness" into two components:

– change in "fitness" at the level of individual firms (*within-effect*), when firms increase quality and reduce costs through innovation, which leads to an increase in "fitness" at the level of the entire industry;

– redistribution of market shares among its participants (*between-effect*), when without any growth of "fitness" at the level of firms it is possible to achieve an increase in the aggregate indicator. The between-effect indicates the presence of market competition in the economy.

For ease of interpretation, these two effects are normalized to their sum to unity. Thus, the magnitude of each effect reflects their proportional contribution to the growth of fitness at the industry level. This approach has been applied to different countries, time periods and sectors of the economy and showed a very heterogeneous picture, where competition could be present (to a small extent) in some sectors and completely absent in others (see Cantner et al., 2019). Most often, the estimate of the normalized between-effect fluctuated around zero on average and, with rare exceptions, did not exceed 10% for a particular period or sector of the economy.

In addition to a number of shortcomings that are valid not only for this method, which I will describe in detail below, an obvious drawback of the decomposition method is the fact that market shares here are traditionally expressed not through the sales of firms, but through the amount of labour employed. Since sales growth today does not have to lead to an increase in the number of employees, this limitation raised many questions. The answer to this criticism was a direct econometric estimation of equation (1), where sales of firms are on the left side of the equation, and the level and dynamics of "fitness" of these companies are taken as explanatory variables on the right, as well as fixed effects at the level of both companies and the time periods over which the estimate is made. Since such a regression model is estimated for each industry separately, the effect of competition on firm growth, taking into account fixed time variables, is equivalent to estimating their deviation from the industry average for each year, which in turn is equivalent to equation (1). The key parameter for evaluating here is the proportion of the

variance in sales growth that can be explained using the fitness variables, i.e. how well do these variables explain the dynamics of a company's sales. This approach was first applied by Bottazzi et al. (2010) to data for France and Italy, followed by Dosi et al. (2015) - to data for the USA, Germany, France and the United Kingdom. Here, the assessment of the contribution of competition to sales growth fluctuated on average within 10–20%, which is higher than the estimates obtained on the basis of the decomposition method, but still very modest.

A third way to assess the role of competition in the economy, which complements rather than replaces the first two, is to assess the heterogeneity of companies in terms of their fitness in each industry and examine how this value changes over time. The idea is that if there is a healthy economic competition, the difference in productivity between firms should remain small and not increase over time. Otherwise, the data indicate that a significant part of companies can maintain a market niche, even being many times less productive than their competitors. In the literature, such companies are sometimes called "zombie companies" (McGowan, Andrews, Millot, 2017; Savin, 2020). Note that presence of "zombies" inhibits economic growth, since these firms divert to themselves a significant share of demand, as well as resources, which could be more effectively used in the economy. For example, Dosi et al. (2015) showed that in the United States, a company with one standard deviation below the industry average is 3 times less productive than a company that is one standard deviation above this average. For developing economies (such as India and China), this difference reaches factor 7 (Dosi et al., 2017). In Russia, the spread in labour productivity between companies is of factor 30. This spread increased continuously from 2006 to 2015, and only in 2016–2017 dropped slightly (Savin et al. 2020).

When using and interpreting the methods for measuring competitive selection described above, it is important to remember that they all have a number of common drawbacks, which I would like to address in more detail.

First, the replicator dynamics model indicates competition for the same consumer who chooses among all the sellers represented. However, with the exception of rare cases where it is possible to manually identify all manufacturers on a separate market, there is no real opportunity to divide all companies according to the markets in which they actually compete with each other. The sectoral division (e.g. NACE) is very imprecise. However, even increasing its detail from two-digit to four-digit does not help to solve the problem (see examples presented in Savin et al., 2019).

The second problem arises from the uncertainty of what to accept as the "fitness" of the company. The literature knows examples of the use of revenue and profitability per employee, labour productivity and total factor productivity (TFP), and this list is not yet complete. Mariev et al. (2020) compared the above indicators in relation to Russian data and concluded that they all demonstrate fairly similar results, at least for the decomposition method of the industry aggregated at the "fitness" level. Lately, the indicator of labour productivity has been used somewhat more often. Unlike revenue, it takes into account the heterogeneity of production costs, but in contrast to TFP does not imply the strong assumption that firms using different technologies experience the same synergies between factors of production.

Third, the replicator dynamics model assumes that firm's success is determined by the difference between its "fitness" and the "fitness" of its competitors. But today, economic agents rarely independently carry out the entire cycle of production of goods or services. Companies are embedded in complex value chains, and while in reality consumers choose between products, equation (1) assumes that the choice is made between companies. Cantner et al. (2019) proposed expanding the replicator dynamics model to include all of its suppliers in the firm's fitness calculation. We analysed a simplified case when value chains

have the same number of vertically integrated markets (i.e., the number of links in the value chain is strictly the same), and only one company operates in each market in the value chain, while the fitness of companies is heterogeneous and they cannot change one supplier for another (for example, due to the presence of long-term contracts). Using this example, we have shown that the proposed model is able to explain the puzzling empirical evidence even when there is competition between companies in the end-user market. The reason for this lies in firm dependence on their suppliers. In other words, firm A will lose the competition to firm B, being more productive itself, but having less competitive suppliers.

Failing to find sufficiently detailed firm-level data to empirically validate the extended model of replicator dynamics, Mundt et al. (2021) conducted recently a study based on World Input-Output Data (WIOD). According to these data, in each specific sector of the economy, countries compete for global market share. We can calculate the added value and labour costs associated with its creation, which from a particular industry of one country come in the form of goods and services to a certain industry of another country. The estimates we obtained show a significant increase both in the value of the between effect and the proportion of the variance in sales growth explained by labour productivity factors. This indicates that the previously presented estimates of competitive selection must have been underestimated. In other words, the value of the "between" effect obtained for Italy earlier and fluctuating around zero, as well as the explanatory ability of the factors of "fitness" in the regression model at the level of 10% is lower than if we estimate the model of replicative dynamics taking into account global value chains. The extended replicator dynamics model taking value chain linkages into account presents an important step forward in measuring market selection and also an innovative way of using the WIOD data on global value chains.

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Firms' Political Connections and Global Value Chains: Evidence from Egypt

by Nora Aboushady [*] and Chahir Zaki[†]

An increasing part of today's international trade takes the form of Global Value Chains (GVCs). According to the estimations of the OECD, about 70% of international trade involves GVCs, as raw materials, intermediate goods, and services cross the borders several times to be incorporated into the final product.[1] GVC activities are also affected by the firm's decision to outsource parts of the production process or invest in other countries where there is a comparative advantage related to costs or factor endowments. GVCs represent therefore a promising opportunity for developing countries to find a place in the international market by producing and exporting along these chains, to attract foreign investments if their markets are competitive, and to harmonize production standards and acquire international certifications. This will help them increase and diversify their exports and export destinations.

The determinants of one country's participation in GVCs is therefore not only related to its production and export structure, but also to its overall investment climate and trade policy in place (Dovis and Zaki, 2020). The quality of institutions and the prevalence of informal practices and corruption also affect the overall transparency and competitiveness of markets and firms' potential engagement in GVCs.

The Egyptian case is of particular interest. In fact, the country's integration in GVCs remains relatively limited. Despite serious investment and trade policy reforms, Egypt -as the rest of the MENA region- continues to perform weakly in international trade. Compared to other regions, the MENA region has a modest share of firms that are large and/or productive enough to engage in GVCs. In this article, we explore the reasons behind Egypt's weak GVC integration by focusing on trade policy and political connections and propose policy recommendations to overcome these obstacles.

Egypt's poor integration in Global Value Chains

In order to examine the extent of GVC, we rely on the definitions proposed by Dovis and Zaki (2020). The least restrictive form of GVC participation is firms' exports and imports activity (GVC1). The second indicator of GVC participation adds international certification (often necessary in vertically fragmented production processes) to exports and imports by a firm (GVC2). The third indicator adds foreign ownership to exports and imports, as foreign-owned firms often serve as export platforms (GVC3). The fourth indicator (GVC4) takes into account all four activities (exports, imports, international certification, and foreign ownership) and illustrates deepest form of GVC integration.

Egypt's GVC participation remains low across the four definitions. Using the simplest definition of GVC participation (exports and imports), only 11.1% of Egyptian firms are found to be engaged in GVC. This ratio is lower than the average of MENA countries (13%). When the indicator is augmented by international certification, only 7.5% of firms are effectively engaged in GVC. The share drops to 2.2%

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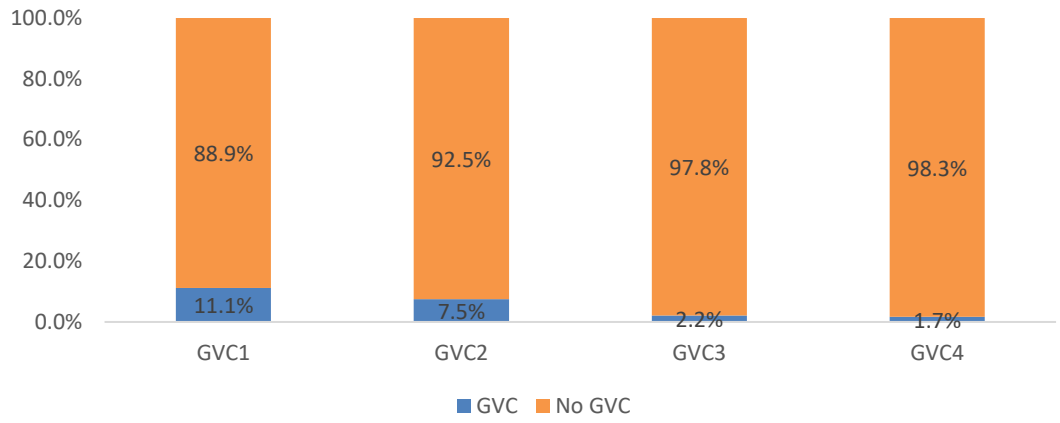
[1] https://www.oecd.org/trade/topics/global-value-chains-and-trade/

for the third definition, meaning that such modest share of firms are exporters and importers, and have a share of foreign capital. Finally, only 1.7% of Egyptian firms are exporters, importers, have international certification and a share of foreign capital simultaneously. While Egypt's GVC participation does not deviate significantly from the MENA region's average, the country as well as the region's performance is generally lower than other regions like Sub-Saharan Africa.

Figure 1. Share of Egyptian firms engaged in GVC



Source: Authors' own elaboration using the WBES.

What is at Stake?

Political connections

There is growing evidence on the nexus between politically connected firms, their influence on trade policy and their performance in the global market. In the MENA region, research suggests that tariff liberalization and increasing competition pushed politically connected firms to lobby for increased "*hidden protectionism*" in the form of non-tariff measures (NTMs) and other behind-the-border policies. For example, positive links were found between politically connected firms and the number of NTMs in sectors with low tariffs in Tunisia.[2] Politically connected firms were also found to be more likely to operate in sectors with higher FDI restrictions.[3] In the case of Egypt, political connections or "crony capitalism" could partially explain the rise in standards in the market: in sectors populated by politically connected firms, a higher share of products subject to NTMs and a higher number of NTMs were observed.[4]

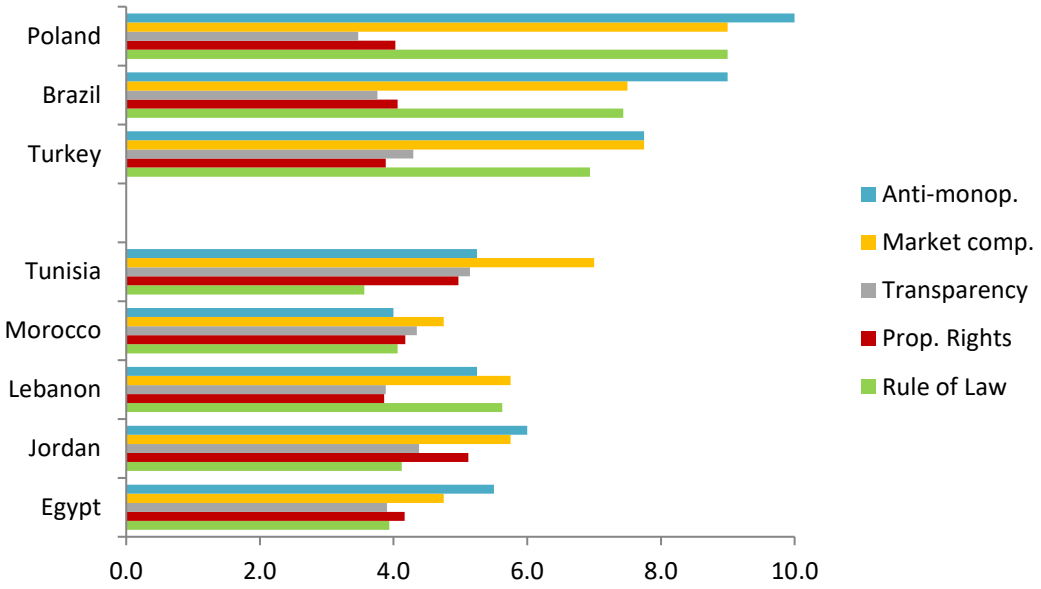
The influence politically connected firms could have on the country's trade and investment policy is likely to undermine the economy's competitiveness and its potential to integrate in GVCs. With more severe restrictions on trade and foreign investment, politically connected firms are protected from foreign competition, and other non-connected firms suffer additional barriers to integrate into the global market. Connected firms are also more likely to overcome barriers to entry, operation, and international trade and are more likely to enjoy an easier access to government resources and information, receive special

[2] Kruse et al. (2021).
[3] Rijkers et al. (2017).
[4] Eibl and Malik (2016).

treatment in matters related to investment or trade across borders (for example, inspections and administrative procedures may be overcome more easily by firms with connections).[5] Some studies suggest that politically connected firms are mostly large in size[6], and that State-owned enterprises are more likely to enter the exports market than private sector firms, due to privileged connections and access to information.[7]

Obviously, such political connectedness is associated to deficient institutions. When Egypt is compared to other economies in the region (Tunisia or Morocco) or outside (Brazil, Turkey or Poland), one can see that it is doing worse in terms of rule of law; anti-monopoly policy and market-based competition (see Figure 2). This confirms how political connections undermine the contestability of the market at both the internal and the external levels.

Figure 2. Institutional barriers

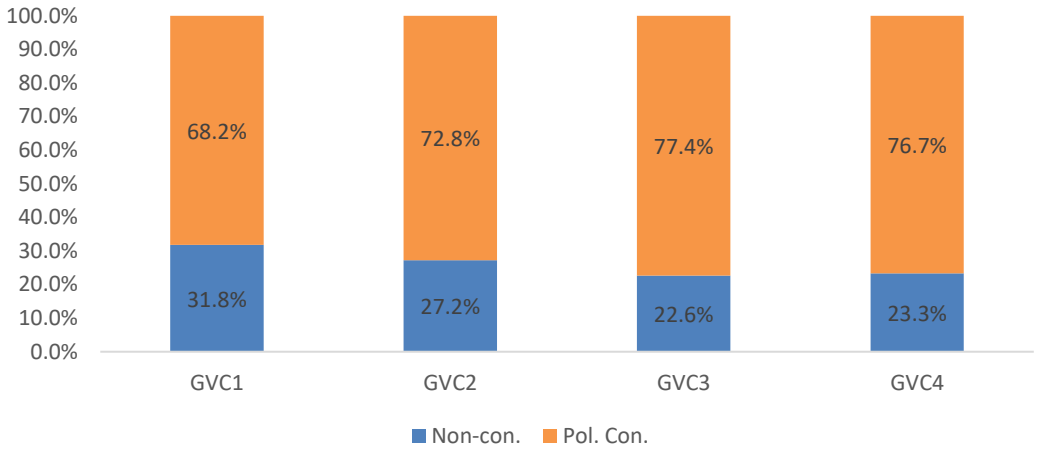


Source: Rule of Law, Market-based competition and Anti-monopoly policy indices come from Bertelsmann Transformation Index. A greater value of the index shows a better performance of the country (from 1 to 10). Property rights and Transparency of government policymaking come from the Global Competitiveness Index. A greater value of the index shows a better performance of the country (from 1 to 10).

To estimate political connectedness of firms in Egypt, we rely on data from the World Bank Enterprise Surveys for Egypt (2020). A politically connected firm is one where the owner/ CEO/top manager/board member was appointed to a political position. Figure 3 illustrates the share of politically connected firms that engage in GVCs across the four definitions. Among all firms exporting and importing, 68.2% are politically connected. This share increases for the more complex definitions of GVC integration, where 72.8% of firms that export, import, and have international certifications are politically connected. This share increases to 77.4% for firms that have a share of foreign capital, and 76.7% for firms who have the four characteristics of GVC participation.

[5] Eissa and Eliwa (2021).
[6] Abdel Latif and Aly (2019)
[7] Aboushady and Zaki (2019).

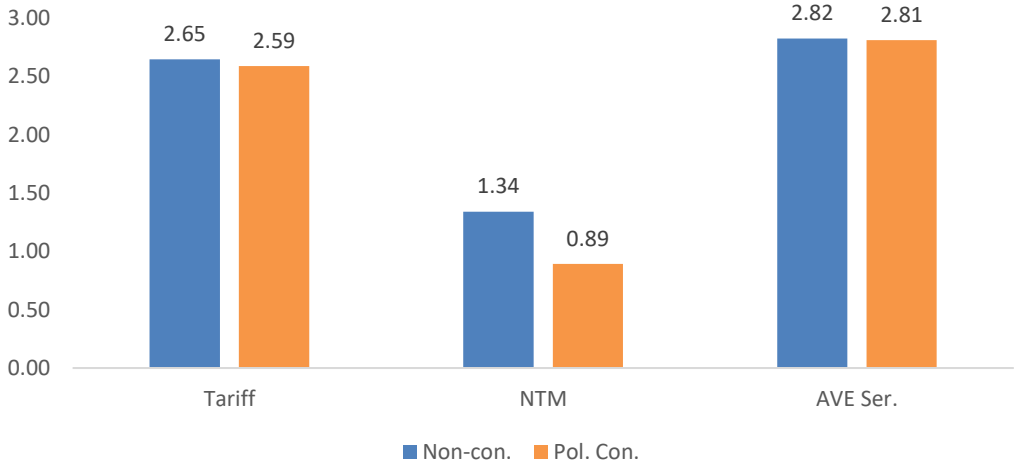
Figure 3. Political connections and GVC participation



Source: Authors' own elaboration using the WBES.

Figure 4 depicts political connectedness and the incidence of trade policy on firms in Egypt. While is it difficult to conclude differentials in the impact of tariffs and services restrictions between politically connected and non-connected firms, the difference is observable for non-tariff measures. In fact, many NTMs could be applied in unequal and non-transparent ways according to the political connectedness the firm enjoys (for example, inspections, licensing, and administrative procedures).

Figure 4. Political connections and trade policy



Source: Authors' own elaboration using the WBES.

We also run a set of regressions to estimate the impact of the investment climate, the different trade policy measures, and political connections on firms' GVC participation in Egypt.[8] Our results suggest that political connectedness matters for firms' integration in GVCs. In fact, the appointment of an owner/ CEO/top manager/board member of the firm to a political position is found to have a positive and significant effect on the firm's GVC participation across the four definitions discussed earlier in this article. The results from the regressions also suggest that political connections reduce the negative impact

[8] Aboushady and Zaki (*forthcoming).*

of inefficient and restrictive investment- and business regulations. Additionally, trade policy measures in the form of tariff and non-tariff measures reduce the likelihood of firms engaging in GVCs across its four definitions. The next section will analyze more thoroughly these dimensions, namely: investment climate and trade policy.

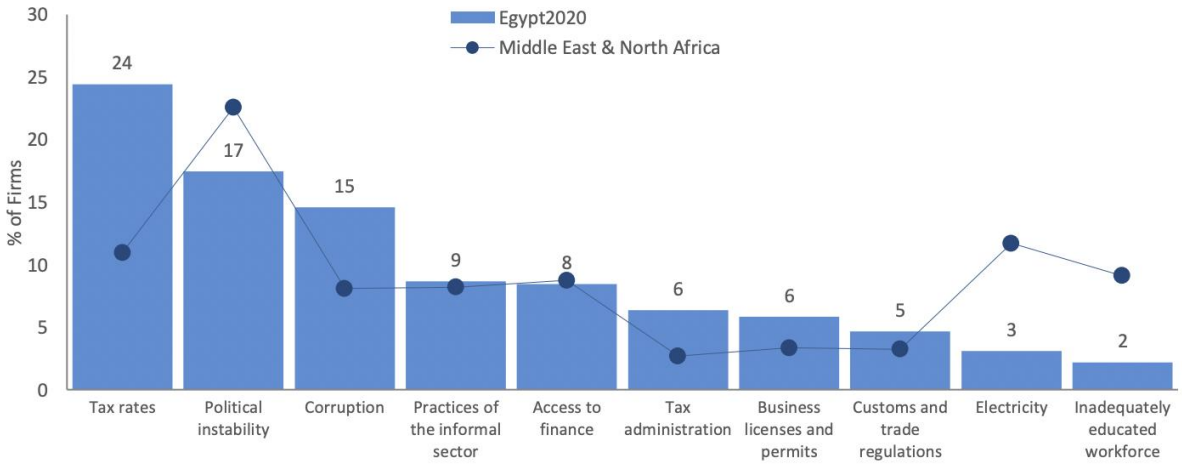
Further Explanations

At the level of investment climate, Egypt was listed as a top reformer in the MENA region during the period 2004-2008.[9] Along with trade liberalization, market deregulation and privatization, a series of investment-related reforms were carried out to attract foreign investments. The period 2014-2018 is marked by reforms in the investment-related regulations, including tax incentives and additional investment guarantees. Despite these reforms, foreign direct investment represents today less than 3% of GDP[10], a significantly low share as compared to FDI levels following the first reform period and the overall FDI share to GDP before the 2011 uprising. Moreover, only 5% of the country's total FDI is in the manufacturing sector, while the largest share is concentrated in the oil sector[11]. The concentration of FDI in the oil sector has adverse implications on the potential integration of Egyptian firms in GVCs and their eventual upgrade along the chain towards more value-added sectors.

As illustrated in Figure 5, the top three obstacles facing firms operating in Egypt are tax rates, political instability, and corruption. The severity of these obstacles differs by firm size. For example, small and medium firms perceive tax rates as the most severe constraint, while for large firms, the top constraint is corruption. Large firms also suffer from constraints related to access to finance. In fact, access to credit remains one of the major problems affecting investment in Egypt. The share of credit to the private sector in total credit dropped from 54% in 2010 to 30% in 2020.[12] In addition to relatively weak financial intermediation, the generous returns on government-issued bonds crowds-out private investors of the credit market.

[9] Doing Business Data.
[10] World Development Indicators.
[11] Central Bank of Egypt's Economic Review Reports.
[12] World Bank and IFC (2020)

Figure 5. Top 10 business environment constraints in Egypt



Source: WBES.

As per trade policy, while tariffs are low in industrialized countries and have largely deceased in developing countries, NTMs and behind-the-border restrictive services regulations impede firms' participation in the international market. In Egypt, the average tariff rate decreased from 40% in 2002 to 14.4% in 2019. Between 2002 and 2019, the average tariff rate on manufactured products also dropped from 44% to 5%,[13] reflecting the country's open trade policy and the conclusion of several regional trade agreements. Despite significant liberalization of the domestic market, tariff rates in Egypt remain higher than those in other MENA countries such as Jordan (4.8%).[14] Sectors with a comparative advantage also remain highly protected. For example, the applied tariff rates on food and beverages, apparel, and leather goods, range from 20% to 28%.[15] High tariffs limit the firms' incentive to increase their productivity and become internationally competitive.

A high number of NTMs also protects some of the potentially competitive sectors. For example, the food and beverages sector alone has over 30 NTMs. Since the gradual reduction in tariff rates, the number of NTMs has increased, suggesting hidden protectionism of domestic production in specific sectors where firms may be politically connected. In fact, Egypt has one of the highest frequency indices and coverage ratios of NTMs among developing countries and has been introducing NTMs faster than its peers.[16] While the use of NTMs could be justified by legitimate purposes related to consumer safety and production standards, NTMs are more often used as an alternative trade policy tool to protect the domestic market from foreign competition. Aside from the market distortions created by the heavy reliance on NTMs, these also affect firms engaged in international trade and GVCs. In fact, Egyptian firms rely heavily on the imported intermediate inputs and equipment. Thus, the impact of NTMs on the cost and availability of imports undermines Egyptian firms' competitiveness in the international market.

[13] World Development Indicators
[14] Aboushady et al. (2021).
[15] WITS
[16] World Bank and IFC (2020)

Firms in Egypt also suffer from ad-hoc export-related measures that often increase their costs of exports and weakens their position in the international market.

Another potential distortion to international trade is the degree of restrictiveness in the provision and trade of services. Egypt, as well as the MENA region, is among the countries with the highest restrictions on services like professional services, transport, and telecommunications. Despite the country's commitment to liberalize trade in services in line with it's the General Agreement on Trade in Services commitments, these liberalization efforts are often offset by burdensome and unnecessary behind-the-border policies. Liberalization of services that support production and exports is likely to generate positive outcomes for the country's overall competitiveness and can increase Egyptian firms' participation in GVCs given the servicification of the manufacturing sector.

The Way Forward

The article shows that political connectedness matters for GVC integration. Moreover, our empirical works indicates that the negative impact of investment-related obstacles is reduced for politically connected firms. Thus, in the context where Egypt is to attract investments and increase its share in global trade through better GVC participation, several reforms have to be taken into consideration.

First, increasing transparency and levelling the playing field for firms investing in Egypt is a precondition for better integration in the international market. Thus, there is a need to develop a more transparent state ownership policy and governance framework. Finally, it is important to implement effectively the principle of competitive neutrality to ensure that all actors operate under the same conditions as those governing private sector enterprises.

Second, in terms of trade policy, hidden protectionism from trade policy measures and political connections are likely to offset liberalization efforts and potential investment-related reforms. This is why making non-tariff measures more transparent and more evidence-based will make them more predictable and thus reduce the negative impact on GVC integration.

Finally, in order to attract FDI in the manufacturing and encourage Egyptian firms to integrate into GVC, deeper and more structural reforms are needed to improve the business environment, especially in terms of easiness of business permits, access to finance and tax policy.

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