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Promoting structural transformation: Strategic diversification vs laissez-faire approach

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Promoting Structural Transformation: Strategic Diversification vs Laissez-faire approach

Clovis Freire[1]

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Abstract

Economic development is associated with structural transformation and the increase of complexity of production and exports. This paper examines whether strategic diversification is required to increase economic complexity or whether market incentives would be sufficient to drive this process of catching-up. The paper applies empirical methods of the strand of the literature on economic complexity to examine how path dependency and the demand for potential new products affect economic diversification. It argues that strategic diversification is required in cases when demand factors are very likely to create incentives for diversification towards less complex products, which hinders the increase of productive capacities of countries. The paper presents the results of analysis considering 221 economies and shows that less diversified economies would not be able to rely on market incentives alone. They have to strategically diversify towards more complex products, which require the selective promotion of economic activities through the use of targeted industrial, infrastructure, trade, investment and private sector development policies.

Keywords: Diversification, Structural Transformation, Productive Capacities, Industrial Policy, Economic Development

JEL: *O11, O14, O33, O38, O53, O57.*

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Promoting Structural Transformation:
Strategic Diversification vs Laissez-faire approach

1. INTRODUCTION

Economic development is associated with diversification and the structural transformation of the economy at the product level, beyond the level of main sectors (i.e. agriculture, industry and services). The literature on economic complexity (e.g. Anand et al., 2012, Felipe et al., 2012) has found that diversification towards more complex products can be an important contributor to economic development (these more complex products are defined as those that are exported by fewer countries that have a more diversified production base). This has stimulated several country-studies that identify potential new economic sectors for diversification that can contribute to economic development (Hausmann and Klinger, 2008; Vitola and Davidsons, 2008; De La Cruz and Riker, 2012; Neves, 2012; Hausmann and Hidalgo, 2013; Freitas et al., 2013; Felipe and Hidalgo, 2015).

Such an approach of selecting economic activities is seen as a primary role of governments (Johnson, 1982; Amsden, 1989; Wade, 2003). On the other hand, the rent-seeking view of the selection process argues that governments cannot and should not pick winners, because this process is full of self-fulfilling incompetence and corruption (Pack, 2000; Noland and Pack, 2003; Krueger, 2011). This paper contributes to this debate by examining whether the active role of the government is required to increase the complexity of the economy or whether markets incentives would be sufficient to drive this process of catching-up.

The paper applies the same methodology used in Freire (2013) to assess the probability that more complex economic activities would emerge in a country given the existing technologies and market incentives. It identifies possible technological trajectories by constructing product space maps (Hidalgo et al., 2007) and applies the method of reflections proposed by Hidalgo and Hausmann (2009) to quantify the set of productive capacities required for their production. The paper then considers the effect of export and import replacement opportunities in creating incentives for diversification towards more complex products. However, while the analysis in Freire (2013) focuses on countries in the South-Asian region, this paper extends the application of the method to 221 economies.

The main finding of this paper is that, when considering product emulation, while more developed countries could rely on market incentives, less diversified countries need to adopt a strategic diversification approach to drive the process of increasing economic complexity, given that demand factors are very likely to prevent these economies to diversify towards more complex products.

The paper is structured as follows. The next section presents a review of the literature. Section 3 presents the analytical approach used in the paper, and section 4 presents the methodology applied. The results of the analysis are presented and discussed in section 5. The final section concludes.

2. LITERATURE REVIEW

The diversification of goods and services that comprise an economy is associated with increases in productive capacities and job opportunities, and is a quintessential characteristic of economic development (Imbs and Wacziarg, 2003; Saviotti and Pyka, 2004a, 2004b, 2004c). In the context of developing countries, economic diversification is usually associated with the emulation of more

productive industries that were the result of previous innovation in developed countries (Akamatsu, 1962; Reinert, 2007; Lin, 2012). This process is path-dependent (Gerschenkron, 1962; Dosi, 1982, 1988), and the industries that are more likely to be emulated are those that require a set of productive capacities that largely overlaps with the set required by the existing industries in the economy (Hausmann and Rodrik, 2006; Arthur, 2009). Moreover, the incentives for the creation and combination of productive capacities are shaped by economic institutions and the expected demand for the new products (Lall, 1992; Acemoglu and Robinson, 2012; Bresser-Perreira, 2012).

Therefore, the question for policymakers in developing countries is how to foster the emergence of more productive industries given the technological level of the current production base and the domestic and global demand for potential new products.

In that regard, Lall (2005) lists two approaches: the neoliberal and the structuralist approaches. The neoliberal approach advocates integration in the global economy and resource allocation by free markets, while the structuralist approach advocates government interventions with selective policies that support particular activities, firms or technologies (e.g. Prebisch, 1962, Furtado, 1974, Pérez Caldentey, 2015). The main instrument for the latter is industrial policy, which has usually been associated with targeted government interventions that foster specific manufacturing sectors aimed at accelerating structural transformation by promoting industrialization (Lall, 2005; Shapiro, 2007; Chang, 2009).

A set of arguments in favour of selective policies are related to transaction costs and failures of coordination (Kosacoff and Ramos, 1999). Hausmann and Rodrik (2006) suggest that, in general, market failures that affect structural transformation are related to coordination failures and information spillovers. Coordination failures arise when the decision to invest depend on whether another investment by another actor is made. Information spillovers reduce the incentives of first entrants to take risks because they would bear all the costs of failures, but would provide valuable information to others if they succeed. Hausmann, Hwang and Rodrik (2007) suggest that the cost of discovery of how to produce a new product is a binding constraint, because firms may not innovate to the socially desirable level given that they are not able to fully internalize the costs of discovering how to adapt the production of goods that already exist in other countries. They also note the body of literature that emphasize other binding constraints such as limited access to credit for investment (e.g. Banerjee and Munshi, 2004), weak institutions that are challenged by corruption and do not enforce contracts and property rights (e.g. Fisman, 2001; Svensson, 2003), and barriers to competition and entry of firms in new sectors (e.g. Djankov et al., 2002; Aghion et al., 2005).

Lin and Monga (2010) argue that a key problem in the implementation of selective policies is the difficulty in identifying the potential new sectors that are suitable based on the existing production structure of the country. They, for example, propose a method to identify these products by looking at the past comparative advantage of counties with GDP per capita that are twice the level of the GDP per capita of the country in consideration.

Another method has been proposed in the strand of literature on economic complexity, consisting of pathways of diversification towards more complex products that require productive capacities similar to those that already exist in the country. For example, Hausmann and Klinger (2008) use the product space to identify the potential new products for diversification in Colombia. They identify the potential new products that are close in the product space to existing exports of that country and further identify those that are more sophisticated. The same approach is used by Freitas and Salvado (2008) and Freitas et al. (2013) in the analysis of diversification in Portugal, Neves (2012) in the cases of China and India, and Felipe and Hidalgo (2015) in the analysis of opportunities for diversification in Kazakhstan.

However, the discussion of markets incentives in terms of how entrepreneurs would respond to potential demand has been less explored in the literature. It is possible that even when the government provides the required inputs to solve coordination problems and facilitate the move to activities that are better positioned in the product space, market incentives would push entrepreneurs towards other activities (those not as well positioned but with perceived higher demand).

In fact, most studies in the strand of literature on economic complexity (that use the product space to identify opportunities for diversification) only cover the supply side and disregard the demand for products. Potential new products for diversification identified only by using the product space may not offer demand incentives for entrepreneurs to take the required risks to invest.

In this paper, we follow Freire (2013) and add the analysis of the potential demand to account for the incentives faced by entrepreneurs. The paper explores the hypothesis that strategic diversification is needed in cases when demand factors are very likely to prevent an economy to build productive capacities. The hypothesis proposed here suggests a binding constraint on catching up, additional to those usually considered in the literature on economic development. In the framework described here, the elimination of the binding constraints listed in the paragraphs above would not contribute to moving the production of a country towards more complex products; it would only facilitate the discovery of new products. If the majority of those new products have below average complexity, the country would remain producing low complexity products.

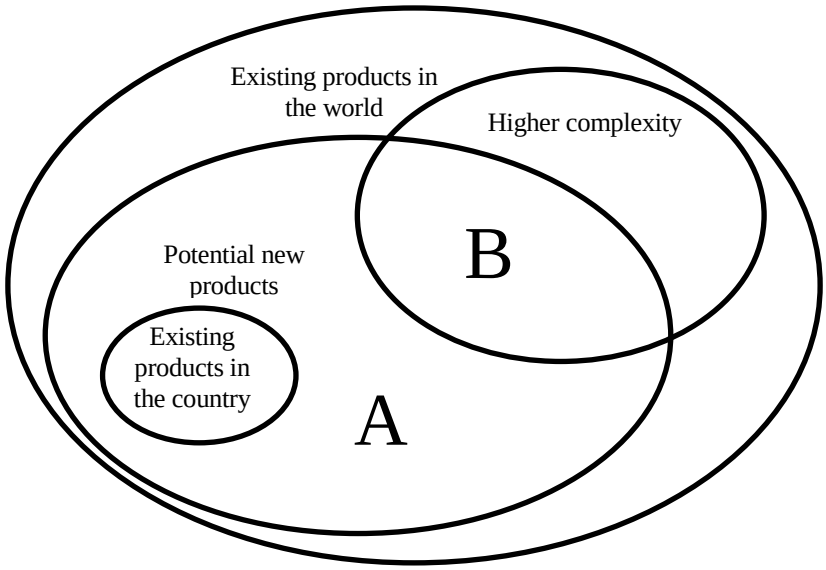
3. ANALITICAL APPROACH

This paper examines the probability of socially desirable economic activities to emerge. Figure 1 describes an approach to assess such a probability. It illustrates that the possible economic activities for diversification that would result in the socially desirable outcome of higher complexity (B) is a sub-set of the possible new economic activities in the country (A). For economic agents to move to the sub-set B of potential new products, there should be incentives for the creation or adoption and combination of the required technologies. These incentives are shaped by economic institutions and the expected demand for the new products. Economic institutions define and enforce the "rules of the game", the set of incentives and constraints that economic agents face for acquisition and combination of technologies. Expected demand for new products, both domestic and foreign, also shape incentives that economic agents face while choosing between possible economic activities to invest in.

The analytical approach adopted in this paper is to assess the probability (P) that more complex economic activities would emerge given the existing technologies and market incentives. Considering $d(x)$ as the sum of the expected demand levels for the products in the set x, the share of the expected demand for the potential new products that result in socially desirable outcomes in the total demand for all potentially new products is given by $P = d(B)/d(A)$.

If P is higher than 0.5, higher than average complexity sectors are more likely to emerge and a laissez-faire approach may be sufficient. On the other hand, if P is lower than 0.5, a strategic approach is required to create incentives for the private sector to discover and invest in the socially desirable sub-set of potentially new economic activities.

Figure 1. The sub-set of desirable economic activities for diversification.



4. METHODOLOGY AND DATA

The methodology used to assess the probability that more complex economic activities would emerge given the existing technologies and market incentives is the following:

1) Identify the products that are more likely to emerge given the existing set of technologies that comprise the economy

To identify those sectors, we use the product space (Hidalgo et al., 2007) and the measure of proximity between products *A* and *B* (Φ_{AB}) in the product space. The proximity is calculated as the minimum value between the conditional probability P(*A*|*B*) of a country exporting *A* given that it exports *B* and the conditional probability P(*B*|*A*) of a country exporting *B* given that it exports *A*:

$$\Phi_{AB} = \Phi_{BA} = min(\mathrm{P}(A|B), \mathrm{P}(B|A)) \quad (1)$$

The proximity between two products, therefore, ranges from 0%, in the case in which no country exports both products, to 100% in the case in which all countries that export one good also exports the other.

To identify the products that are located nearby in the product space of each country, a value must be chosen for the threshold of proximity between products that correspond to a "usual" distance covered during the diversification process. I estimate such threshold by analysing the proximity between *existing* and *new* products, where existing products are those products that were part of the exports of countries in 2009 and new products are those that were not part of the exports of countries in 2009 but were part in 2010.[2] That analysis has focused on the less diversified countries to provide information on the distribution of proximity between existing and new products of the majority of developing countries. For most countries, the median of the distribution of proximities

[2] The timeframe of two years for the analysis was chosen because this is the minimum interval based on the trade data (there is no data with a higher frequency). Future research could replicate the analysis with different timeframes to verify how they affect the results.

is above 80%. Therefore, this paper adopts 80% as the threshold to identify products that are nearby in the product space.

2) Identify the products with higher complexity

To identify those products, we apply the method of reflections proposed by Hidalgo and Hausmann (2009). The method constructs a bipartite network of countries and products that they produce and iteratively calculates measures of diversification and ubiquity that are generalized as follows:

$$k_{c,N} = \frac{1}{K_{c,0}} \sum_p M_{cp} k_{p,N-1} \quad (2)$$

$$k_{p,N} = \frac{1}{K_{p,0}} \sum_c M_{cp} k_{c,N-1} \quad (3)$$

Where M_{cp} is 1 if country c makes product p and 0 otherwise, $k_{c,0}$ is the number of products produced by country c and $k_{p,0}$ is the number of countries that make product p.

The measure of product complexity (*PCOMP*) is taken as the normalized value of the k_p value of the 5th iteration of the method of reflections:

$$PCOMP = \frac{k_{p,5} - \overline{k_{p,5}}}{\sigma} \quad (4)$$

Where $\overline{k_{p,5}}$ is the mean and σ is the standard deviation of the distribution of $k_{p,5}$.

3) What is the probability of those activities that are more complex to emerge, given market incentives?

Here we assume that entrepreneurs face demand incentives when choosing between different potential new economic activities. New products with higher demand potential are more likely to be selected, other things being equal.

To estimate the export potential of a product, we use the index proposed in Freire (2013). This measure is a monetised type of overlap index designed to measure the degree to which the potential new exports of one country match the expanding import markets of another. Higher export opportunity for potential new products indicates more favourable prospects for trade expansion towards the new products given the past rate of growth of their import markets. This does not mean that the firms in the exporting country would necessarily be able to take full advantage of this market growth, because they would compete with existing exporters and other potential newcomers. Nevertheless, higher export opportunity for potential new products indicates more favourable prospects for trade expansion.

The index of export opportunity of product i for country c (XOP_{ci}) is here defined as:

$$XOP_{ci} = \sum_d \sum_i \left(\frac{m_{id}^{t1}}{M^{t1}} - \frac{m_{id}^{t0}}{M^{t0}} \right) \times M^{t1} \quad (5)$$

Where M is the total imports by all countries in all products, m_{id} represents imports of product i in country d, $t0$ is year 2009 and $t1$ is 2010.[3] Therefore, the index represents the change in the import

[3] The period selected match the years used to construct the product space. Future research could expand the timeframe of the analysis to assess the robustness of the results as well as to track the evolution of demand incentives.

market of a product *i* between two periods.

Only the sectors *i* that meet the following criteria are included: 1) the share of the sectoral imports in total world imports has increased between the two periods ($\frac{m_{id}^{t1}}{M^{t1}} > \frac{m_{id}^{t0}}{M^{t0}}$), and 2) the sector represents a potential new product for the country *c* in consideration (Φ_{ij} > 80% for at least one product *j* in the existing product mix of country *c*).

The selection of new products for diversification may also be affected by their potential for import replacement. The import replacement opportunity (*MOP*) for country *c* of a potential new product *i* is defined in this paper as the value of total imports of that product by country in 2010 (M_{ci}^{2010}).

$$MOP_{ci} = M_{ci}^{2010} \quad (6)$$

4) Data

This paper uses the disaggregated trade data from UN Comtrade using the Harmonized System code (HS 2002) at 6-digit level, which covers 221 economies in 2009 and 2010. This dataset is used to apply the method of reflections, to calculate the proximity between products in the product space, and to calculate the export and import replacement opportunities. The data is further disaggregated by quantity unit code and by unit value range using the methodology described in Freire (2013) to capture differences in product quality of products under the same 6-digit HS classification.

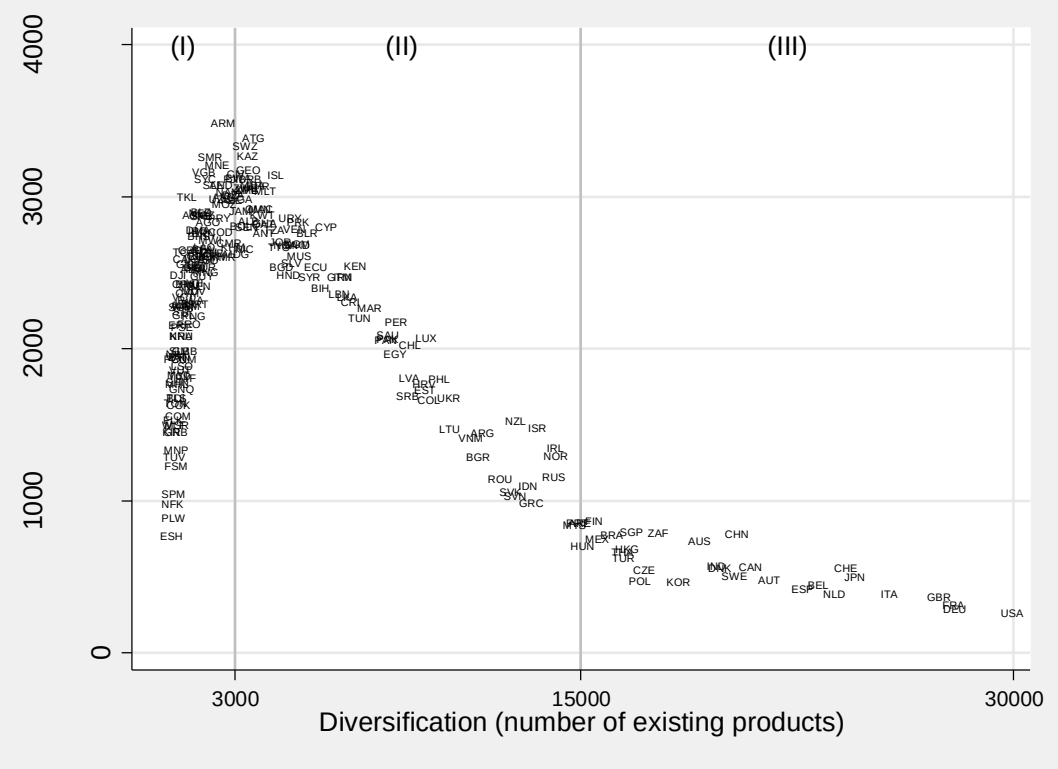
5. RESULTS AND DISCUSSION

We use the method described in the previous section to assess the probability that more complex new products emerge in 221 economies, using trade data for 2010. The result of the first step of the methodology (identification of products that are more likely to emerge) is illustrated in Figure 2, which shows the relation between the existing level of diversification of the economy and the number of potential new products for emulation (the proximity to the existing products in the product space of which is at least 80%).

The figure shows that the number of potential new products increases sharply with the number of existing products in the country's product-mix, but up to a point of about 3,000 products. About 57% of the 221 economies are within this range of diversification. Beyond this point, the number of potential new products decreases with the increase of products in the product-mix. For the most diversified countries – those with numbers of existing products around 15,000 products – the number of potential new products diminishes more gradually with the increase in the level of diversification.

We can use the product space to better understand the pattern shown in Figure 2. Countries that are less diversified have few "existing" products and, therefore, a relatively low number of potential new products that are nearby in the product space. Thus, they have very few opportunities for diversification. However, those products that they can "discover" also open up new products, and that process happens very quickly (which results in the steep curve in the left side of the graph). That pattern quickly reaches a maximum, after which the newly discovered products no longer open up too many new possibilities. That happens because the product space is finite in the short run (although it expands in the long run); after a certain number of products in the export base of a country is reached, the potential new products to be discovered starts to decrease. As a result, the number of potential new products declines.

Figure 2. Relationship between the level of diversification and the number of potential new products



Source: Author's computations based on UN Comtrade data.

Note: Opportunities for emulation: I – increasing (promote emulation); II – decreasing (shift from emulation to product innovations); III - decreasing and marginal (promote product innovations).

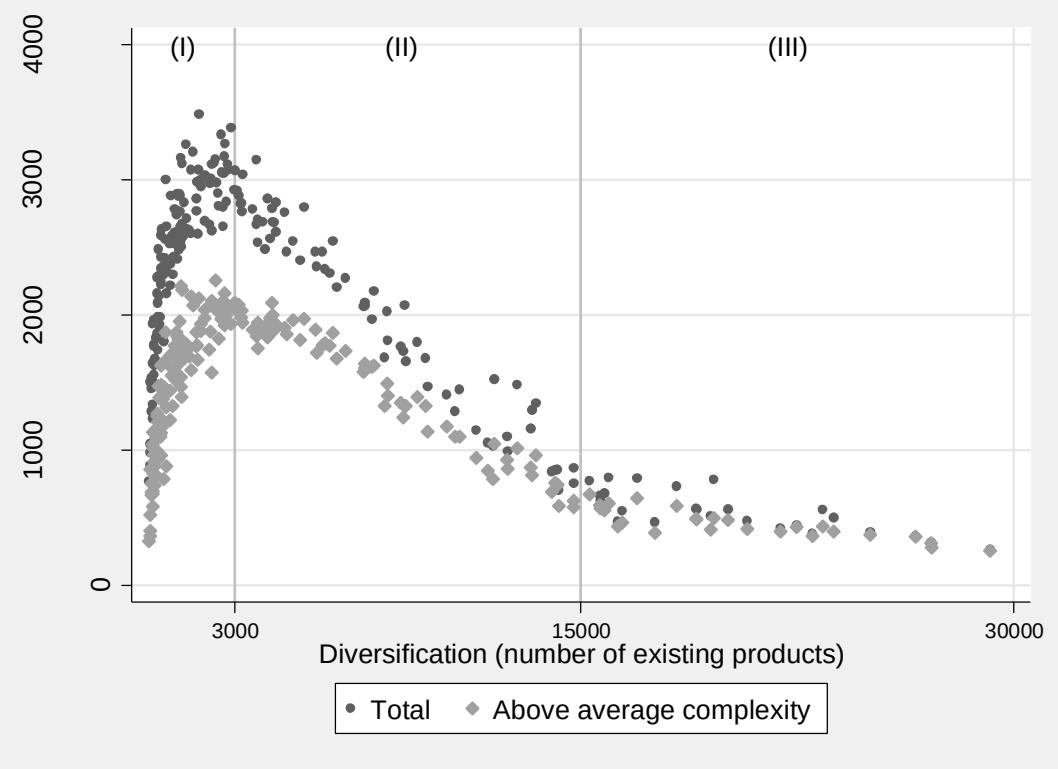
There are basically two stages in this process: the initial stage of low diversification and increasing opportunities for diversification, and the stage of relatively higher diversification and decreasing opportunities. However, in terms of policy, this result suggests the possibility of three well defined strategies for innovation dependent on the level of diversification, which are represented by the Roman letters in Figure 2. Countries with less diversified product mix have many opportunities to diversify by emulating developed countries (I). As countries diversify, such strategy results in gradually fewer potential new products and, to continue to diversify, the country should start to combine emulation with product innovation (II). For the more diversified countries, product innovation seems to be the main strategy, given the relatively low number of potential new products for diversification through emulation (III).

Of course, less diversified countries could also engage in product innovation and find new products that are relevant to their own context. However, there may be few possibilities for product innovation that are new to the world in less diversified countries because the ones that existed were already produced by more diversified countries.

As discussed in previous sections, not all potential new products would push the complexity of the economy's product mix to a higher level. The opportunities for countries to diversify and promote structural transformation are in products that are more complex. The identification of these potential new products that are more complex is the second step of the methodology, and its result in illustrated in Figure 3.

The black dots in Figure 3 represent the total number of potential new products in each economy and the grey diamonds represent the number of potential new products with above average complexity. The figure shows a sizeable difference in the number of potential new products represented by dots and diamonds for economies that have lower levels of diversification, while the difference is much smaller for higher levels of diversification.

Figure 3. Potential new products with above average complexity



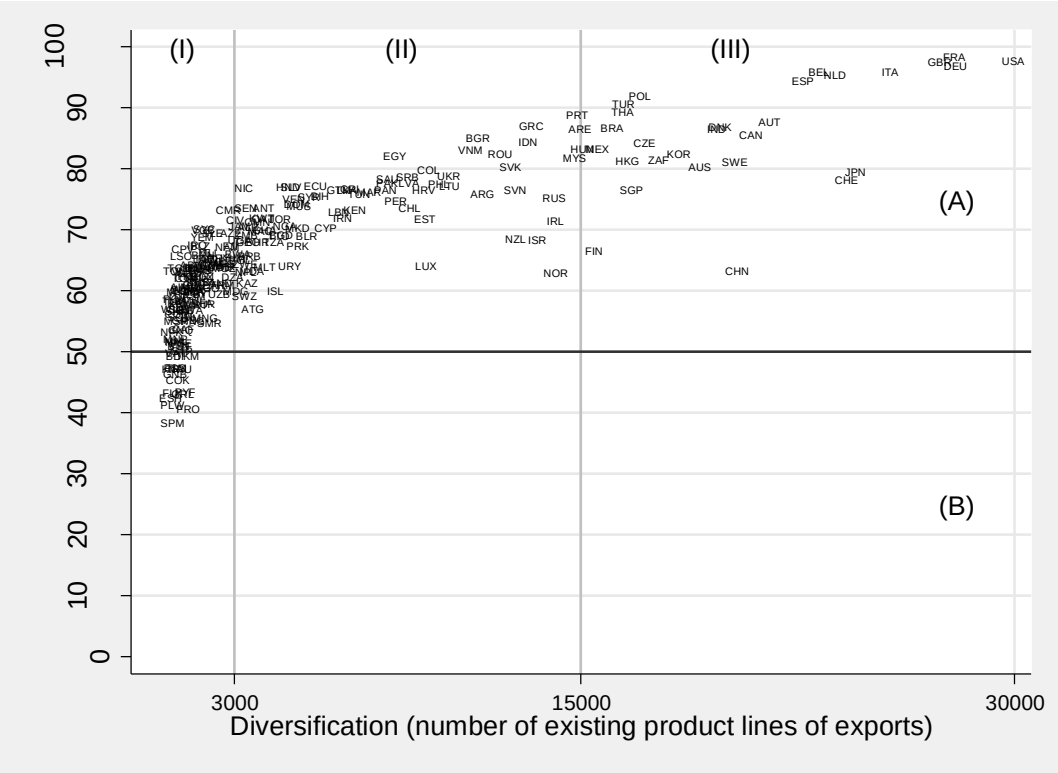
Source: Author's computations based on UN Comtrade data.

Note: Opportunities for emulation: I – increasing (promote emulation); II – decreasing (shift from emulation to new innovations); III - decreasing & marginal (promote new innovations).

Figure 4 shows the association between the level of diversification of each economy and the share of the potential new products that are also more complex. The figure is divided in two sections by the line that represents a 50% share of potential new products with above average complexity. In section (A) are the economies for which more than half of the potential new products are products with above average complexity, while economies with less than half of such share are in section (B).

The figure shows that the proportion of potential new products with above country's average complexity increases with the level of diversification of the country (A). However, for some less diversified economies, such share represents less than 50% of potential new products (B). This suggests that the countries that have lower share of potential new products with above country's average complexity, and therefore with lower opportunity to move up in the complexity ladder, are exactly the less diversified economies that in principle could benefit more from an emulation strategy. These countries would require government to actively promote the discovery process of the private sector towards the potential new products with above average complexity.

Figure 4. Share of the potential new products that are also more complex



Source: Author's computations based on data from UN Comtrade.

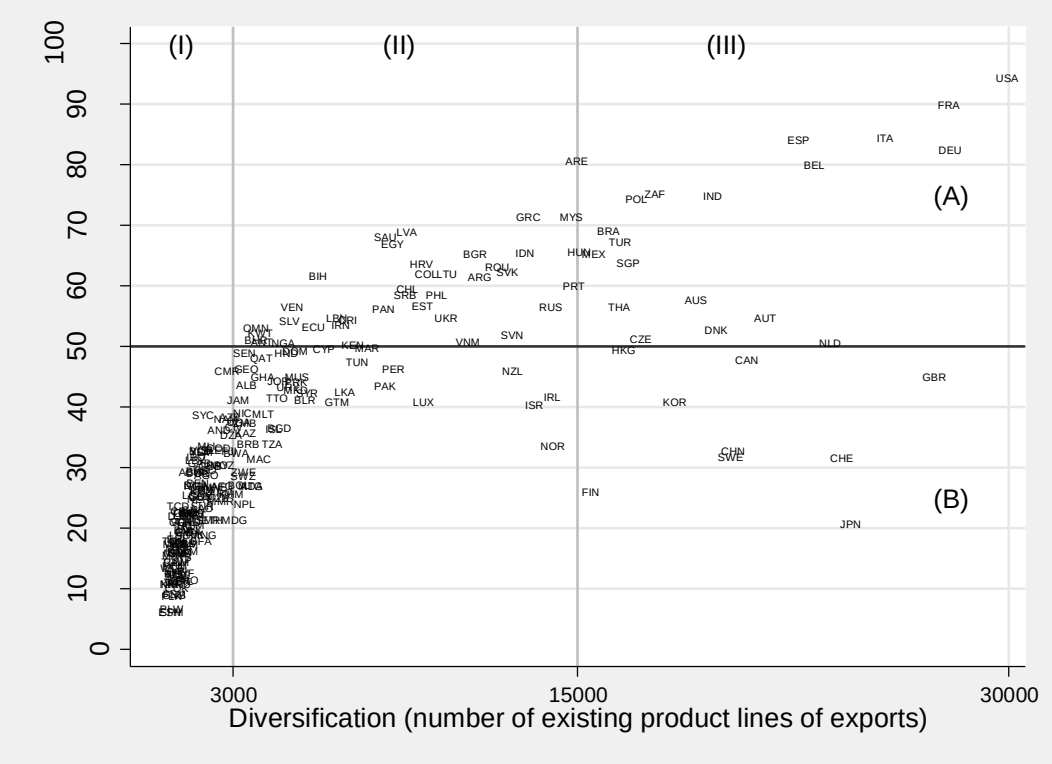
Note: Opportunities for emulation: I – increasing (promote emulation); II – decreasing (shift from emulation to product innovations); III - decreasing & marginal (promote product innovations); Selective policies for emulation: A – Not Required; B – Required.

As discussed in the previous section, we assume that entrepreneurs take into consideration the potential demand of new products when deciding between potential new economic activities. We also assume that new exports with high export opportunity have higher chances of success. Therefore, the assessment of the share of export and import substitution opportunities with above country's average complexity adds another layer to the analysis (third step of the methodology).

Figure 5 shows the number of existing products in the country's product mix along the horizontal axis and the share in percentage of the export opportunities of potential new products with above complexity along the vertical axis.

Comparing Figure 4 and Figure 5 reveals that the effect of demand incentives in terms of exports is to push the number of potential new products with above average complexity down. For the economies whose shares are lower than 50% (groups I-B, II-B and III-B), it is reasonable to suppose that a higher proportion of new economic activities that emulate more diversified country's production would have below average complexity. Although this outcome makes perfect sense in the short-term as the one that maximizes the efficient use of the limited resources, it poses a severe impediment for the catching-up strategy of the group of less diversified economies (I-B). In the long-run, it perpetuates the relative lower level of productive capacities and opportunities of productive employment in these economies.

Figure 5. Effect of export opportunities on the incentives for innovation

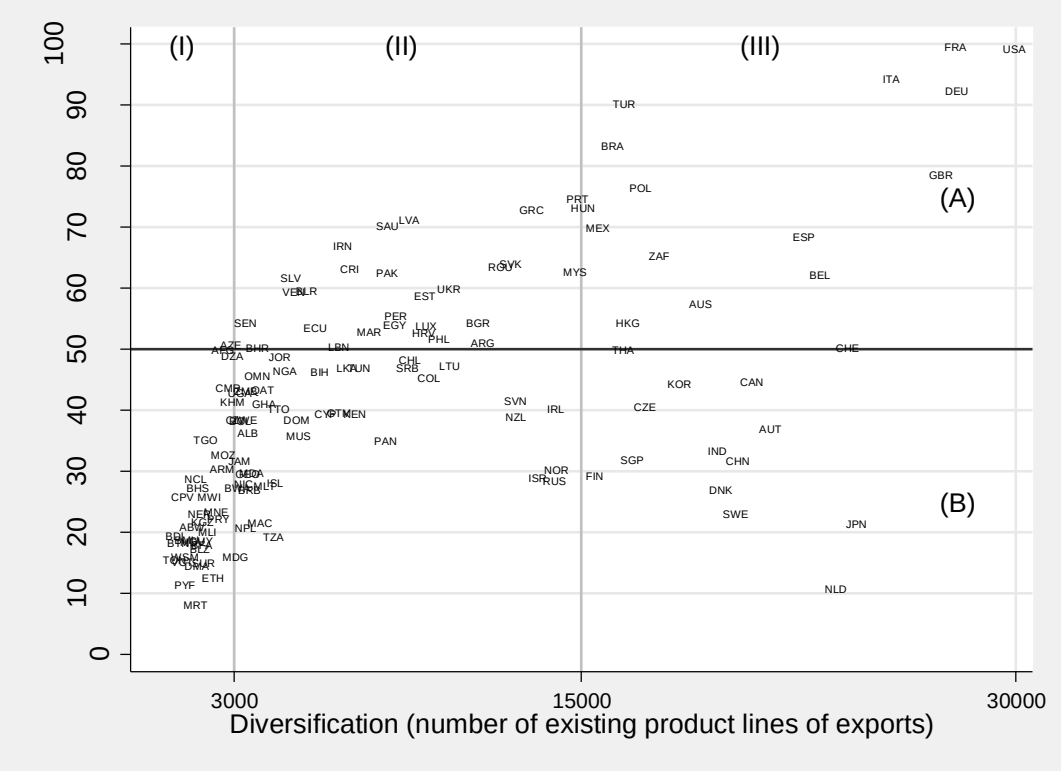


Source: Author's computations based on data from UN Comtrade.

Note: Opportunities for emulation: I – increasing (promote emulation); II – decreasing (shift from emulation to product innovations); III - decreasing & marginal (promote product innovations); Selective policies for emulation: A – Not Required; B – Required.

Similarly, opportunities for import replacement also create the incentives either for increasing or for reducing the average complexity of a country's product mix. Figure 6 illustrates this effect by showing the level of diversification along the horizontal axis, and along the vertical axis the share of the import replacement opportunities of potential new products with above average product complexity. The figure shows that a minority of economies are likely to benefit from a non-selective approach to import replacement. The governments of other economies have to strategically create targeted incentives to push entrepreneurs in import replacement economic activities towards the potential new products with above average complexity.

Figure 6. Effect of import replacement opportunities



Source: Author's computations based on data from the UN Comtrade.

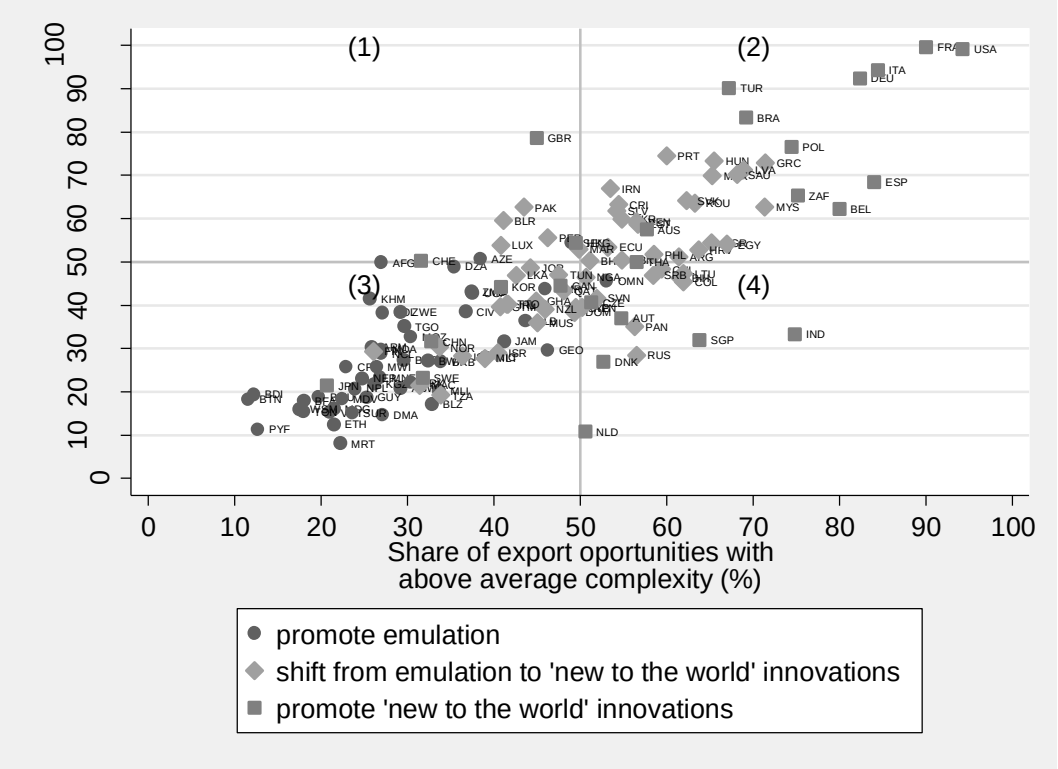
Note: Opportunities for emulation: I – increasing (promote emulation); II – decreasing (shift from emulation to product innovations); III - decreasing & marginal (promote product innovations); Selective policies for emulation: A – Not Required; B – Required.

The joint analysis of export and import replacement incentives is illustrated in Figure 7, which shows the share of the import replacement opportunities of potential new products with above average complexity along the vertical axis and the similar share of exports along the horizontal axis. The graph is divided into four quadrants. The quadrants with just a few economies are (1) and (4). In quadrant (1) are the economies that could adopt a laissez-faire approach to import replacement but should adopt a strategic diversification approach towards new export opportunities.

In quadrant (4) are the economies the new exports of which are likely to have above average complexity. These economies could adopt a non-selective approach towards export diversification and let the market guide the identification of new export opportunities. On the other hand, import replacement is likely to result in new products that have below average complexity. Therefore, the state has a role to play in actively promoting the emulation of economic activities that result in higher long-term gains.

In quadrant (2) are the countries that do not require selective policies, neither for export nor for import replacement. Many of the developed countries are in this quadrant, but none of the countries with lower levels of diversification are there. Brazil, Mexico, South Africa and Turkey are examples of large emerging economies in this quadrant. These countries could benefit from general macroeconomic policies that promote exports and import replacement, for example through exchange rate policies (Rodrik, 2007; Bresser-Pereira, 2012).

Figure 7. Strategies for emulation



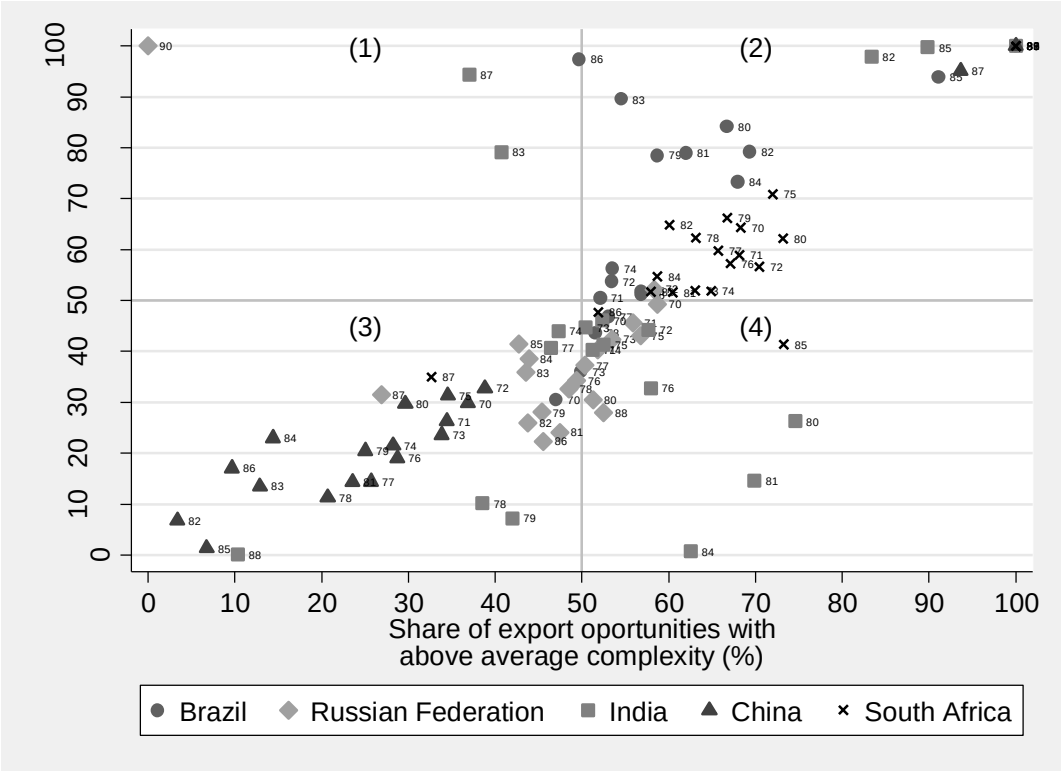
Source: Author's computations based on data from UN Comtrade.

Note: Strategies for emulation: (1) import replacement – non-selective, export – selective; (2) import replacement – non-selective, export – non-selective; (3) import replacement – selective, export –selective; and (4) import replacement – selective, export – non-selective.

The remaining countries and the majority of the economies with lower levels of diversification are located in quadrant (3). For these economies, new exports or import replacements are more likely to have below average complexity. They have to adopt an approach based on strategic diversification to create incentives towards economic activities with higher complexity. The implementation of such strategic diversification requires the selective promotion of new economic activities by targeted industrial policies, including infrastructure, trade, investment and private sector development policies.

The analysis presented uses the threshold of 80% of proximity, but the effect of demand may change for different levels of proximity. To assess such relationships, Figure 8 and Figure 9 show the same analysis presented in Figure 7 but for different levels of proximity for selected group of countries. For each country and level of proximity, the figure shows the share in percentage of the import replacement opportunities of potential new products with above average complexity along the vertical axis and the corresponding share of exports along the horizontal axis. The labels of the markers are the proximity levels considered in the analysis. For example, a marker with label 83 would represent the result of the analysis considering only the potential new products that are within an 83% distance from the product-mix of the country.

Figure 8. Strategies for emulation at different levels of proximity, BRICS



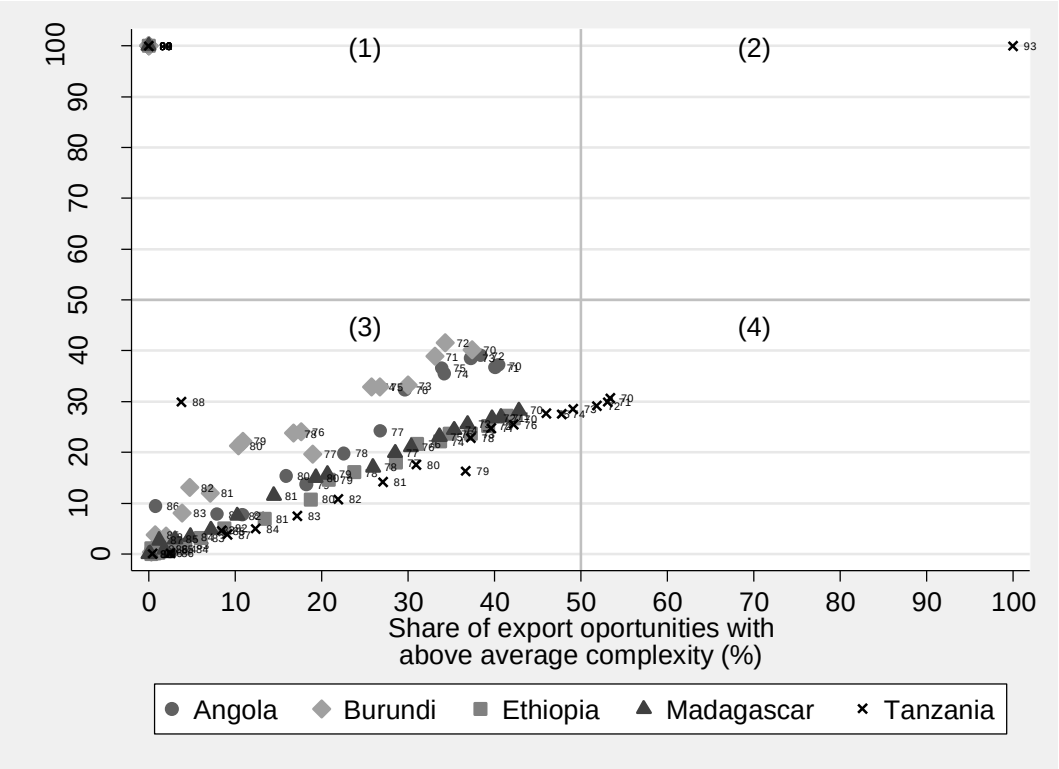
Source: Author's computations based on data from UN Comtrade.

Note: Strategies for emulation: (1) import replacement – non-selective, export – selective; (2) import replacement – non-selective, export – non-selective; (3) import replacement – selective, export –selective; and (4) import replacement – selective, export – non-selective.

Figure 8 shows the result for the group of the so-called BRICS. The result suggests that the opportunities for emulation in these countries are affected differently by demand. Brazil and South Africa are located in quadrant (2) for almost all levels of proximity, which suggests that these countries do not require selective policies. On the other hand China and the Russian Federation are located mainly in quadrant (3), which indicates the need for selective policies. India shows a very diverse pattern with opportunities for emulation at different levels of proximity scattered in all quadrants. That suggests the need for a careful identification of potential new products with above average complexity and the product-based analysis of targeted strategies for diversification to avoid the pitfalls of a "one size fits all" approach.

Figure 9 shows the result of the analysis for selected five African least developed countries. In all cases, the countries would be better off if they adopt a selective policy for the strategic diversification of their economies.

Figure 9. Strategies for emulation at different levels of proximity, selected African LDCs



Source: Author's computations based on UN Comtrade data.

Note: Strategies for emulation: (1) import replacement – non-selective, export – selective; (2) import replacement – non-selective, export – non-selective; (3) import replacement – selective, export –selective; and (4) import replacement – selective, export – non-selective.

6. CONCLUSION

This paper examines whether an active role of the government is required to foster structural transformation and increase economic complexity or whether markets incentives would be sufficient to drive this process of catching-up. It uses empirical methods to identify the potential new products for diversification given the current production base of a country and the demand incentives created by export and import replacement opportunities.

The results show that less diversified countries have many opportunities to diversify by emulating developed countries. As countries diversify, countries should start to combine emulation with product innovation because there are gradually fewer potential new products for emulation. Opportunities for emulation reach the lowest point for the most diversified countries, which would be better off by focusing on product innovation.

But the effect of demand in terms of exports and import replacement is to push the number of potential new products for diversification with above average complexity down. Given that fact, the majority of the economies with lower levels of diversification would not be able to rely on the market incentives to drive the economy towards increasing productive capacities. If left to the market alone, the new exports or import replacements that emulate the production of more

diversified countries are more likely to have below the average complexity. These countries have to strategically diversify by creating incentives towards economic activities with higher complexity. The implementation of such strategic diversification requires the selective promotion of new economic activities through the use of targeted industrial, infrastructure, trade, investment, and private sector development policies.

The analysis of empirical evidence, as presented in this paper, could be used in the process of identification of strategic direction of diversification. A list of potential products could serve as a public good that could be made available to governments and the private sector. It reduces the cost of discovery of potential successful new economic activities by informing entrepreneurs of the new products that require productive capacities similar to those already available in the country. It also allows governments to play a more active role in promoting that discovery process by the private sector through the use of industrial and investment policies.

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