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Can Developing Countries Gain from Defying Comparative Advantage? Distance to Comparative Advantage, Export Diversification and Sophistication, and the Dynamics of Specialization

Pauline Lectard [a], Eric Rougier [b]

[a] ART-Dev, CNRS 5281 and Montpellier University Site Richter Avenue Raymond Dugrand CS 79606, 34960 Montpellier Cedex 2, France
[b] GREThA CNRS 5113 and Bordeaux University Avenue Léon Duguit, Pessac Cedex, France

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SUMMARY

Since the 1990's, developing countries have tried to promote export diversification and sophistication, notably by attracting vertical FDI and by supporting the emergence of new industries whose factor content is distant from the country's endowment. We investigate whether defying comparative advantage has prompted a more sophisticated and diversified export basket in a large panel of countries over the period 1992–2012. We find that developing countries that defy their comparative advantage tend to export more manufactured items and manufacturing goods that are more sophisticated. As for export diversification, the impact is heterogeneous across development levels: although defying comparative advantage seems to help diversify the export baskets of middle-income and resource-rich countries, it tends to concentrate those of lower-income economies. Moreover, we find that the impact of the distance to comparative advantage on productive transformation is strongly conditioned by the size of FDI stocks and by the country's specialization in the lower added-value productive tasks of global value chains (GVCs). More specifically, our results suggest that defying comparative advantage by attracting FDI may be a dangerous strategy in the long-term since it tends to bring only partial and *artefact* industrialization, with manufacturing exports increasing while the manufacturing value-added actually decreases.

1. Introduction

Export diversification and sophistication, i.e. the export of new products and of higher quality varieties of existing or new products, are now considered as the most relevant markers of developing economies' productive transformation (Gutiérrez de Piñeres & Ferrantino, 1997; Klinger & Lederman, 2004; Hidalgo et al., 2007; IMF, 2014). They signal the emergence of new and more capital-intensive industries that are sufficiently competitive to become exporters (Melitz, 2003). The most recent literature has provided evidence that they also bring substantial advantage to developing countries in terms of economic growth (Hausmann, Hwang, and Rodrik, 2007; Anand, Mishra, & N. Spatafora, 2012; Hesse, 2008; IMF, 2014; Jarreau & Poncet, 2012; Mau, 2016), output stability (Koren & Tenreyro, 2007; Mobarak, 2005; Malik & Temple, 2009; Camhano da Costa Neto and Romeu, 2011) and democracy (Cuberes & Jerzmanowski, 2009; Kolstad & Wiig, 2014).

Although the drivers of export diversification and sophistication have also been investigated, the evidence remains thin and disappointing, notably regarding the policy determinants of productive change. Early studies (Cadot, Carrere, & Strauss-Khan, 2011a; Chandra, Boccardo, & Osorio, 2007; De Benedictis, Gallegati, & Tamberi, 2009; De Ferranti, Perri, Lederman, & Malloney, 2002; Klinger & Lederman, 2004; Parteka & Tamberi, 2013b) merely focused their attention on income per capita in order to check whether the inverted U-shaped pattern of productive diversification that was first evidenced for output and employment by Imbs and Wacziarg (2003) also holds for export diversification. Subsequent studies did find evidence of the impact of structural determinants—e.g., country size and location and degree of trade openness—on export diversification (Agosin, Alvarez, & Bravo-Ortega,

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2012; Parteka & Tamberi, 2013a; Mau, 2016) and export sophistication (Weldemicael, 2012; Zhu & Fu, 2013), but could not identify significant policy determinants[1].

Thus, existing empirical evidence about the drivers of export diversification and sophistication gives little information about which policies best promote productive transformation in developing countries[2]. Although they have taken heterogeneous forms across developed and developing countries over the last three decades[3], these policies can be divided into two main options with radically contradictory consequences in terms of distance to comparative advantage (Lin, 2009, 2012). The first option, that of following comparative advantage, is based on the assumption of standard trade theory that export diversification and sophistication result from the joint dynamics of capital accumulation and comparative advantage in competitive goods and factor markets (Schott, 2003). Consequently, in order to promote productive transformation and the diversification of their exports, developing countries should not try to defy their comparative advantage and should design policies facilitating the alignment of the factor content of exports with the country's factor endowment. The alternative option, that of defying comparative advantage, is consistent with the second-best theory of economic policy arguing that factor price equalization and market incentives might be unable to promote productive transformation in case of information and coordination failures (Hausmann & Rodrik, 2003) or of imperfect goods and factor markets (Harrison & Rodríguez-Clare, 2010). Governments in developing countries should thus use sectoral subsidies or attract vertical FDI to promote export diversification and sophistication—and consequently transform domestic productive structures—by means of reducing the cost of capital, with the consequence that the export capital content will exceed the country's capital endowment.

To our knowledge, no empirical study has so far investigated which of these two policy options—following or defying comparative advantage—is the most effective in triggering productive transformation and supporting it over the long term. The stakes are high since, over the last three decades, most developing economies have put considerable efforts into defying their comparative advantage by attracting vertical foreign direct investment (FDI) in targeted manufacturing and processing activities (Harding & Javorcik, 2012). As a result of these efforts, a number of them have been able to enter global value chains (GVCs) managed by the transnational corporations (TNCs) from advanced economies (OECD, 2015; UNCTAD, 2013). They have subsequently experienced a surge of processed exports leading to a rapid diversification and sophistication of their export structure (Freund and Moran, 2017). Although positive in many ways, this recent trend nonetheless exposes an apparently paradoxical pattern of specialization whereby, through the implementation of industrial or FDI policies explicitly aimed at defying their comparative advantage, capital-poor countries succeed in exporting capital-intensive goods. This paradox raises the crucial issues of the authenticity and sustainability of the productive transformation.

The present paper's main contribution is to shed light on this paradoxical pattern by testing whether defying comparative advantage, notably by hosting large stocks of FDI, has supported export diversification and sophistication in a large panel of developing and developed countries over the period 1992–2012. The extent to which a country defies its comparative advantage is indirectly measured by the distance between its export factor content and its comparative advantage. Since the policies supporting productive transformation are, by their very nature, selective on sectors or on firms, measuring them at country level proves problematic and might be misleading. Measuring their effect, *i.e.*, the distance between the export factor content and the country's factor endowment, may provide a relevant indirect assessment of these policies. A typical developing country is more abundant in (unskilled) labor than in capital. Hence, governmental interventions that support the expansion of specific sectors or the entry of foreign firms through vertical FDI will promote the emergence of capital-intensive exports by removing the constraint imposed by unfavorable domestic relative factor prices. A surge of capital-intensive exports might therefore be detected in trade data, even though the factor endowment and relative factor price measured at country level remain globally unfavorable to this category of product.

By extending and computing the Technological Complexity Index proposed by Lin (2009) to assess the distance to comparative advantage, we find that developing countries which defy their comparative advantage tend to diversify and increase the sophistication of their exports more than countries following their comparative advantage, sophistication being mainly based on the rise of manufacturing exports. The impact on export diversification is not linear across development levels as defying comparative advantage helps to diversify the exports of middle-income countries, while it tends to concentrate those of lower-income economies. Importantly, our estimations also indicate that the impact of distance to comparative advantage on productive transformation is strongly conditioned by FDI stocks, which we interpret as a proxy for the degree of integration into GVCs. More specifically, we find that the association of large FDI stocks and a sizeable distance to comparative advantage can lead to a persistent concentration of the most sophisticated exports, those typically involved in assembly activities, that could hinder structural change in the longer term by promoting the formation of a specialization lock-in for the less developed countries.

The present paper relates to several recent strands of literature which it either supports, contradicts or qualifies.

The literature on export survival has shown that export diversification is not a linear process in developing countries, with new export lines emerging and disappearing rapidly (Besedes & Prusa, 2006, 2007; Brenton, Saborowski, & von Uexküll 2010; Carrère and Strauss-Khan, 2012). Our paper is close to that of Nicita, Shirotori, and Klok (2013), who use the Euclidian distance between export factor content and the country's factor endowment to explain the survival of exports for a sample of 17 developing countries during the period 1993–2007. Their central finding is that export survival provides information about the underlying path of productive transformation since only the export lines supported by a true comparative advantage, i.e., featuring a minimum

[1] Starting with an extensive menu of 33 alternative explanatory variables and instrumenting development level by its lagged value, Parteka and Tamberi (2013a) use a stepwise procedure of variable selection, ending up with a parsimonious specification including development level, country size and remoteness, and trade openness. Agosin *et al.* (2012) add the terms of trade, human capital, domestic credit and exchange rate volatility and overvaluation and find significant GMM-system coefficients only for trade openness and remoteness. Mau (2016) also implements GMM-system estimations on a set of diversification determinants restricted to development levels and country size and remoteness. Measuring export sophistication by the estimated export unit value adjusted for differences in production costs and for the selection bias stemming from relative distance, the IMF (2014) provides non-causal evidence that export quality increases with improvements in secondary and tertiary education, institutional quality, trade openness, agricultural policy, and the existence of a domestic financial system.

[2] The debate about the best policies to promote industrial development is not new since it originated with development economics (Hirschman, 1958) and was successively reactivated after the success of rapidly industrializing east-Asian countries from the late 1980s onwards (Amsden, 1989; Aoki, Kim, & Okuno-Fujiwara, 1998; Wade, 1990) and the rise of global value chains (Lin and Chang, 2009; Lin, 2011; Rodrik, 2011; Singh, 2011; Fine & Van Waeyenberge, 2013).

[3] See Cimoli, Dosi, and Stiglitz (2009), Altenburg (2011) or Naudé, Szirmai, and Haraguchi (2015) for case studies of industrial or productive transformation policies in developing countries, and Schmitz (2007) for a synthesis of industrial policies in developing countries. For a systematic and comprehensive account of the theoretical and empirical literature on industrial policy and economic development, see Harrison and Rodríguez-Clare (2010).