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Trade dependence, liberalization and exports diversification in developing countries

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Abstract

This paper explores the relationship between trade liberalization and exports diversification in developing and Sub-Saharan African (SSA) countries. The non-parametric analyses indicate that developing countries that are more open to trade (based on trade intensity) tend to have more diversified exports structures than those that are classified as less open. However, for SSA the non-parametric test shows that countries that are more open to trade have less diversified exports structures. Regarding the parametric analysis, the findings provide further evidence that trade liberalization, in the form of lower tariffs, contributes to exports diversification in developing countries, and the results for the long term are even stronger for SSA countries. With regards to trade intensity, the parametric estimations also confirm the results that trade is associated with diversification in developing countries and in SSA countries in the short term; however, for SSA it actually leads to concentration in the long term, consistent with the non-parametric results. The empirical analyses also show that human capital, GDP per capita and institutions, play important roles in exports diversification.

Key words: Exports diversification; trade policy; trade openness; structural economic transformation; SSA

JEL classification numbers: C33, F63, O19, O55



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Contents

| | |
|---|----|
| 1. Introduction | 3 |
| 2. What does the literature say about trade and diversification in developing countries? | 4 |
| 3. Trade and diversification trends in developing countries: An overview .. | 5 |
| 4. Some facts on trade and exports diversification within countries : Non- parametric analysis | 7 |
| 5. Cross -country and panel data estimations | 10 |
| 6. Conclusion | 16 |
| References | 17 |
| Appendix | 19 |

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1. Introduction

Sub-Saharan African (SSA) countries have traditionally depended on a narrow range of primary products and a relatively small number of markets for their exports. The development implications of exports concentration in products, sectors, and markets are potentially significant, not only for SSA but for developing countries generally. Concentration in sectors with a limited scope to ignite productivity and product quality could result in low growth and may preclude the possibilities of achieving employment creation and income upgrading (Imbs and Wacziarg 2003, Hausmann et al 2007). Furthermore, a lack of diversification may increase vulnerability to adverse external shocks, and hence affect exports earnings and macroeconomic stability. Thus, for vulnerable countries such as those of SSA, diversification into manufacturing and more technology intensive sectors, including agroindustry, has the potential to promote economic growth, create jobs and reduce dependence on primary commodities.

This paper examines the role of trade and trade policy in the diversification process in developing countries. It employs both parametric and nonparametric techniques to shed light on the relationship between trade, trade policy and diversification in a sample of developing countries over the period 1970-2010. It also incorporates the roles of other structural and policy variables that may affect exports diversification, control for the direct impact of the studied relationship. Sub-Saharan Africa (SSA) study is important in at least two respects. The first is that although the role of trade and trade policy in the development process is well documented, there is less empirical research on their roles in fostering export diversification or structural transformation, particularly in Africa and the Least Developed Countries (LDCs). Over the past three decades African countries and LDCs have increased their dependence on trade and have also adopted more liberal trade regimes. Yet, they have not made significant progress in terms of diversifying their export structure, suggesting that the realization of any potential benefits of trade for diversification is not necessarily automatic and may depend on domestic policies and the macroeconomic facing a country. In this context, there is the need to provide empirical evidence on the role of trade in the diversification process in Africa and LDCs. The second reason why this study is important is that unlike existing studies, this paper employs nonparametric and parametric techniques to examine the nexus between trade and diversification.

Theoretically, the relationship between trade and diversification depends on the model or framework considered. Traditional trade models suggest that trade specialization via efficient reallocation of employment, capital and resources across sectors, in line with a country's comparative advantage. But more recent theoretical models suggest that trade can facilitate diversification. For example, Tesign (2018) shows that changes in productivity and reductions in trade barriers affect sectoral reallocation and hence growth and transformation. Using a general equilibrium framework, Dessy et. al. (2010) also demonstrate that trade promotes diversification and transformation in developing countries.

Empirical research shows that diversification in exports and in domestic production is directly related to economic growth, although a vast heterogeneity is observed amongst developing groups and regions. Increased diversification is also associated with lower output volatility and greater macroeconomic stability (e.g. Agosin et al, 2012). Therefore, trade can potentially play a central role in developing countries' development prospects. But whether trade fosters or hinders diversification in developing countries is a question that has not been answered at the empirical level. To this end, this paper attempts to shed new light on the question using a variety of econometric techniques. The paper proceeds as follows. Section 2 provides a brief survey of the literature. Section 3 examines the trends in trade and exports diversification in the sample. Sections 4 and 5 present the empirical analyses. Section 6 concludes.

¹ In the LDCs for example, total trade as a percentage of GDP increased from an average of about 61 percent in the period 1970-74 to 83 percent in the period 2006-2010. However, the diversification of their exports (measured by the Theil index) changed marginally from 4.6 to 4.4 over the same period.

2. What does the literature say about trade and diversification in developing countries?

Concerns about the harmful effects of high dependence on primary commodity exports are founded on the assumption that primary commodity exporters are affected by the secular deterioration of the and primary exports may be characterized by high price volatility and low productivity growth (Prebisch, 1959; Singer, 1950). Sachs and Warner (2001) argue that the Dutch disease leads to concentration in resource export implying fewer possibilities for productivity growth, hence representing a transfer of income from developing to developed countries. In this setting, import substitution and export promotion policies have been adopted by governments of developing countries, with varying degrees of success, as strategies to reduce exports concentration and promote manufacturing sector development.

The literature shows that exports diversification has the potential to positively contribute to growth and development through several channels. First, increased investment in non-commodity sectors enhance the sources of income and contribute to mitigate the adverse effects of export instability and fluctuations in the terms of trade, particularly in Africa and the LDCs (Edwards, 2009). Second, it can serve as a distributional instrument to channel revenues from mineral and resource sectors to other sectors of the economy, thus laying the foundation for a stable inflow of resources within for intergenerational equity (Page, 2008). Third, diversification of exports is also associated with reduced fluctuations in foreign exchange earnings, increases employment and higher value addition and improvements in the quality of manufactured products (Hausmann et al 2006; Osakwe, 2007; Hiraika and Mbate, 2014).

Empirical research confirms the theoretical prediction that trade in goods and factor services is explained by differences in comparative advantages across countries. But, some argue that a minimum level of development, the benefits of exports and diversification will not be realized (e.g. Edwards, 1993, Imbs and Wacziarg, 2003).

Exports diversification entails not only increasing the range of goods exported but also moving into goods of higher quality and new markets (Bertsch et al, 2004; Hausmann et al, 2007; Brenton and Newfarmer, 2009). More sophisticated exports baskets and higher technology intensity are more likely to act as catalysts for broad-based economic growth. Sectors with high sophistication and technology intensity are likely to act as an engine of growth and promote intersectoral and export sector linkages rather than isolated enclaves, provided the right macroeconomic conditions and structural factors are in place (Anand et al, 2012; Hausmann, Hwang, and Rodrik 2007). However, linkages are complex, particularly in low-income countries, where challenges such as a low skilled labour force, poor macroeconomic management and institutional constraints persist (Santo Paulino, 2017).

Some studies suggest that the higher positive externalities associated with the manufacturing sector when compared with other sectors (e.g., Greenaway, Morgan, 1999; Levine and Renelt, 1997). For instance, Fosu (1990) provides evidence of the positive effect of manufacturing exports on growth for developing countries as compared to primary sector exports. But exports industries in low-income countries tend to be small in scale and relatively sophisticated, and they often specialize in products that cannot be produced easily or competitively in the developed world (Nicita and Rodrik, 2015). The importance of diversifying and upgrading their export baskets.

Hausmann et al (2007) show that diversification into new production and export activities is as important as the quality (and sophistication) of exported goods. In Africa, Osakwe (2007) finds that aid, the quality of infrastructure, resource endowments, and in some cases

² The Dutch disease refers to the negative impact the expanding primary-commodity sector may have on other tradable sectors. It also might lead to deindustrialization as industries other than commodities or resources exploitation transfer to cheaper locations due to higher costs from inflation and currency appreciation.

institutional factors, determine diversification in the region. Contrary to existing evidence, however, that study does not find a significant impact of geography on diversification. The paper also highlights the role of regional integration and cooperation particularly for infrastructure development, which in turn could be conducive to diversification. Elhiraika and Mbate (2014) empirically explored the determinants of export diversification for a sample of 53 African countries for 1995–2011. System GMM panel estimates provide evidence supporting the importance of per capita income, infrastructure, public investment, human capital and the institutional framework as significant drivers of export diversification and transformation.

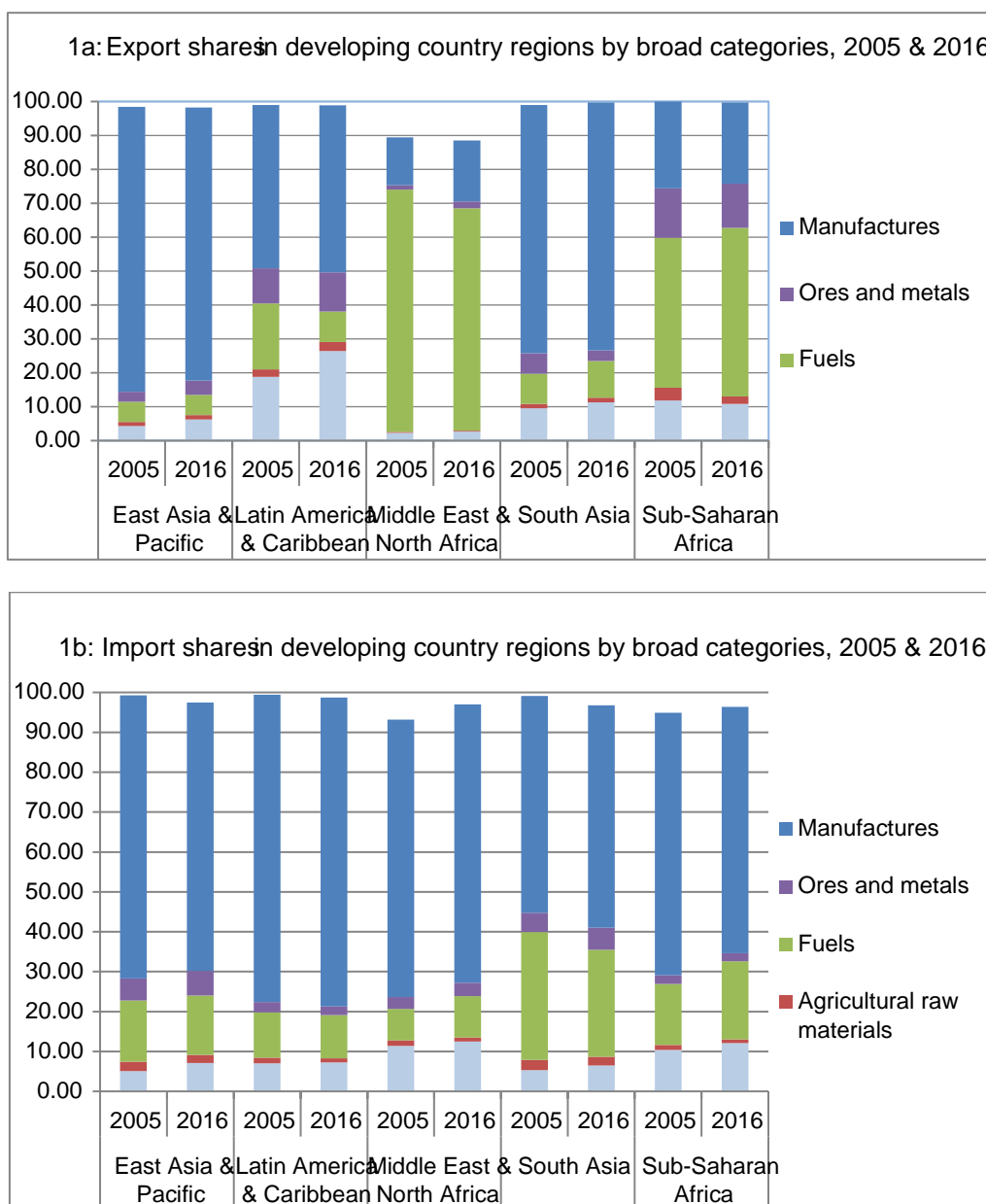
Finally, Fochamnyo and Akame (2017) assess the impact of trade openness and trade policy on exports diversification in SSA. The paper finds that export diversification is determined by trade openness, value added in agriculture and manufacturing and FDI. Also, foreign aid, official exchange rates and gross domestic investment promoted export diversification in selected economies.

3. Trade and diversification trends in developing countries: An overview

The link between diversification and trade is not clear. There is significant heterogeneity across developing countries in terms of trade and exports specialization patterns. Despite significant openness to trade and ongoing liberalization efforts, a number of developing countries, notably African countries and LDCs, have not succeeded in diversifying production and exports, and in transforming their economies (UNCTAD, 2004). This contrasts with the situation of emerging economies in Latin America where higher trade has been associated with higher export diversification. Apart from the emerging economies, the export structures of most developing countries have remained largely unchanged, and highly concentrated on primary commodities. For example, Figure 1a shows that the exports of Sub-Saharan African countries consist mostly of fuels, ores and metals. In addition to concentration, there are concerns about the deindustrialization trend in some developing countries where the share of manufacturing value added in GDP is declining, a negative impact on the potential for structural transformation (see Soderbum, 2017). In contrast to their export patterns, developing countries tend to import larger shares of manufacturing goods, which have the potential to contribute to enhancing productivity, and serve as means of technology and knowledge transfer (Figure 1b).

³ We also used the share of manufactures value added to GDP as an alternative proxy for diversification.

Figure 1. Export and import shares in developing country regions by broad categories, 2005 and 2016



Source: Authors' elaboration based on UNCTAD Comtrade data (2017).

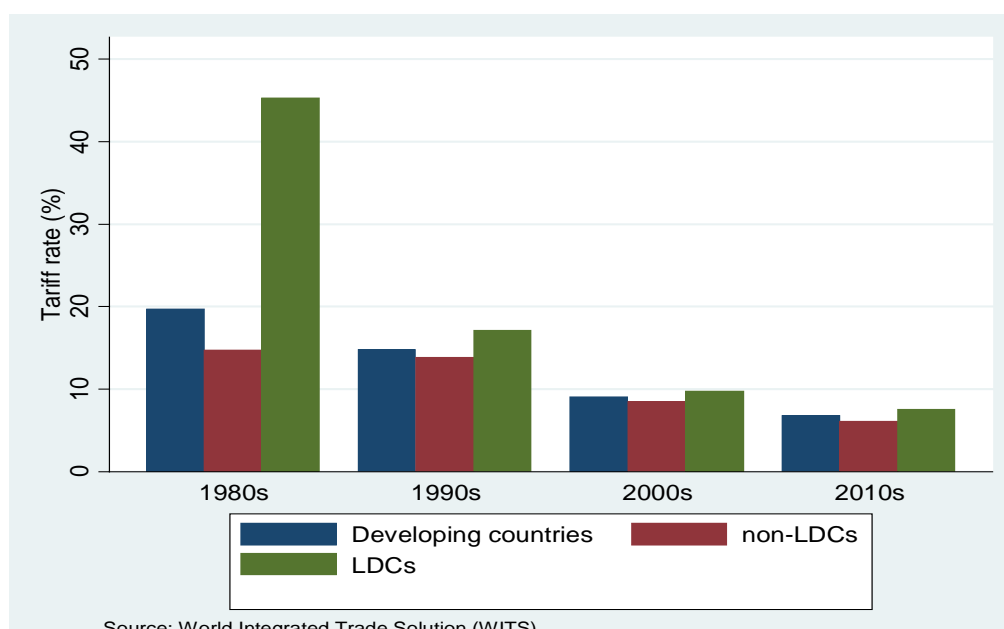
In this study, we cover a large group of developing economies, comprising a total of 144 countries. The sample displays significant differences in levels of development during the 2005-2016 period as well as important structural variances in terms of trade and production. The differences in the mean values of trade specialization, growth, and other key economic variables, are noticeable in the descriptive statistics presented in Table A2 and A3 in the Appendix.

The export diversification index represents the sum of measures of diversity across the sectorial diversity or extensive margin (i.e., newly exported products or new export destinations) and diversity within

sectors (horizontal diversification), intensive margin, meaning a larger volume of exports of old products. In the sample, the exports diversification index ranges between 1.53 and 6.44 across developing countries, with a median value of 4. In SSA, the range of the export diversification index, on average, is similar to that of other developing countries, although it has a higher mean value (3.79) and a higher lower bound (1.78 versus 1.53), suggesting a lower level of diversification in SSA. There are also discernible differences in the mean values of other specialization indicators such as manufacturing exports shares and total trade as a share of GDP as seen in Figure 1 and Tables A2 and A3.

The data shows a significant increase in trade liberalization over the sample period. It is worth noting that an important driver of trade liberalization has been the significant tariff rate reductions, particularly in LDCs, driven by autonomous trade reforms as well as by bilateral and multilateral commitments (see Figure 2). The following sections provide a systematic empirical analysis of the relationship between exports diversification and key trade, trade policy and structural indicators.

Figure 2. Changes in tariff rates across developing countries



4. Some facts on trade and exports diversification within countries: Non-parametric analysis

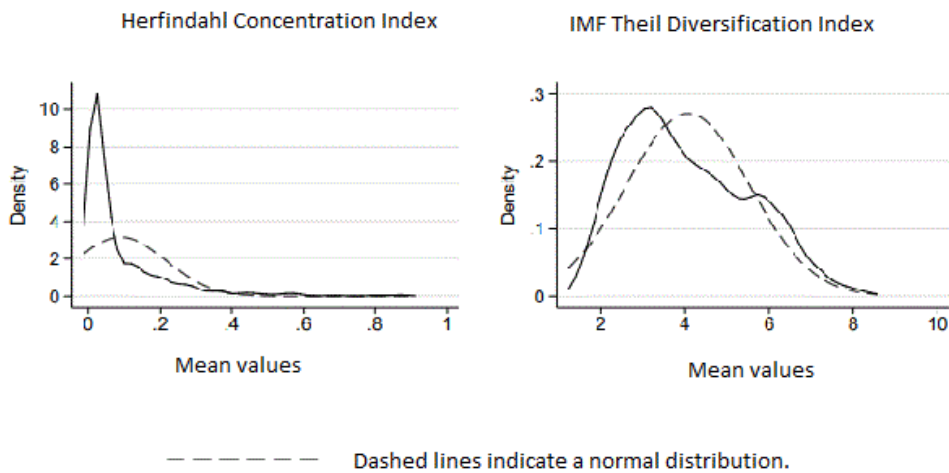
This section uses non-parametric tests to analyse the patterns and the links between trade, trade policy and the diversification of exports. Parametric tests often assume that the statistic under consideration is approximately normally distributed. This assumption makes sense when the sample size is large. However, for

⁴ Note that a higher value of the index represents a lower level of export diversification.

smaller samples it may or may not hold, so it is useful, for robustness, to complement the regression analysis with non-distribution-free tests, to complement the regression analysis.

Figure 3 depicts the distributional patterns of the exports concentration and export specialization indices. The first panel showing the Herfindahl Concentration Index indicates that many developing countries observe concentrations of exports, particularly those at the bottom of the per capita income bundle. The second panel shows the IMF Theil index exports diversification, which displays a pattern closer to a normal distribution. Therefore, they provide some justification for using the Theil index, rather than the Herfindahl index, for statistical purposes in the remaining empirical part of the paper.

Figure 3. Distribution of concentration and diversification measures 1995-2010



Estimated based on UNCTAD Comtrade (HHI) and the IMF Theil index.

To better tease out the connection between trade and diversification using tests, developing countries in the sample are classified as “more open to trade” and “less open to trade” depending on their trade to GDP ratio compared to the sample mean. Then we compute the median export diversification indices for both groups and ask whether there are any significant differences in export diversification between groups. Over the period 2006-2010, the median trade openness ratio for the countries more open to trade is 80 percent and for those less open to trade is 29 percent. Regarding exports diversification, the median Theil index for the countries more open to trade is 3.8 while for those countries less open to trade is about 4.0. This suggests that countries more open to trade are marginally more diversified than those less open to trade.

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