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Services diversification and economic growth*

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Abstract

The present article investigates the effect of services export diversification on economic growth by relying on a sample of 131 countries over the period 1985-2014. The empirical results, based on the two-step system Generalized Methods of Moments (GMM), have suggested that services export diversification enhances economic growth in developing countries, whereas in High Income Countries (HICs), services export specialization promotes economic growth. Furthermore, services export diversification influences positively economic growth in countries that experience a higher services exports growth, with the magnitude of this positive effect increasing as the growth rate of services exports rises. Finally, services export diversification tends to be positively associated with economic growth for lower levels of trade openness. However, as countries enjoy greater trade openness, they tend to enhance their services export specialization so as to promote economic growth. One key message conveyed by the analysis is the importance of services export diversification (or concentration) for economic growth, including when countries further open up to international trade.

JEL classification : F14, O4

Keywords: Services export diversification, Services export growth, Trade openness

1. Introduction

For a long time, the services sector has been considered as a small (if not no) contributor to economic growth and development. This is because this sector has been associated with low productivity and low wage compared to the manufacturing sector (e.g., Baumol, 1967; Kaldor, 1966). Nowadays, the tradability and contestability[1] of services markets is now well established, particularly in light of the rapid technological changes and the globalization in various services sectors[2], notably through global value chains (e.g., Cali et al., 2008; Hoekman and Shepherd, 2017; Schettkat and Yocarini, 2006; Riddle, 1986). The growing importance of the services sector in the economy has been emphasized recently by UNCTAD (2016), which has noted that the services sector

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[1] The contestability of services markets refers to the feature of services markets, whereby firms can enter and leave freely the services market with low sunk costs. The latter are the huge fixed costs associated with the entry into an industry, and involve for example, the costs related to the purchase of a manufacturing plant or equipment.

[2] Roy (2019) has provided a detailed analysis of the role of the services sector on economic development and trade integration.

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represents now the main destination of foreign direct investment (FDI) flows, as FDI flows to services sectors stand for about two-thirds of the global FDI stock, whereas it amounted to less than 50 per cent in 1990 and 25 per cent in 1970.

The significant renewed interest in services trade is exemplified by the topic addressed in the 2019 World Trade Organization (WTO) report: the report issued in October 2019 is titled "The future of services trade" (WTO, 2019). The main objective of this report is to help the international community, in particular the trade community better understand the issue of trade in services (as part of global trade). In that respect, it has provided a detailed analysis on today's landscape of trade in services, and has also considered how services trade might evolve in the coming years, particularly as new technologies make some services increasingly tradeable (see WTO, 2019: page 4). Among the key messages conveyed by the report are: the fact that services trade has become the most dynamic component of international trade and will continue to expand in the coming decades, in particular in the context of enhanced cooperation; trade in services ranging from distribution to financial services can contribute to boosting economic growth, enhancing firms' competitiveness and inclusiveness; the share of services in global trade would likely rise by 50 per cent by 2040, thanks to lower trade costs, increasing digitalization that would reduce the need for face-to-face interaction, and lower barriers to services trade; and finally that developing countries[3] could particularly experience a rise in their world trade in services share by about 15 per cent by 2040 if they adopted digital technologies.

The role of services for economic growth, poverty reduction and development is also exemplified by its increasing role in global and regional value chains as intermediate inputs to manufacturing (phenomenon known as 'servicification' whereby the development of manufacturing activities and competitiveness is increasingly depending on services) (e.g., Adlung, 2007; Balchin et al., 2016; Baldwin et al. 2015; Bas, 2014; Daude and de la Maisonneuve, 2018; Fiorini, and Hoekman, 2018; François and Hoekman, 2010; Heuser and Mattoo, 2017; Hoekman, 2017; Hoekman and Shepherd,

[3] Anand et al. (2012) and Mishra et al. (2011) have discussed how countries, including developing ones are increasingly moving towards modern services. The distinction between modern and traditional services is blurred in the literature. For example, according to Anand et al. (2012), modern services include finance; computer & information; royalties and license fees; and other business services. Traditional services encompass communications; insurance; transportation; travel; construction; and personal, cultural and recreational services.

2017; Hoekman and Mattoo, 2008; Lanz and Maurer, 2015; Lodefalk, 2012; 2013; 2014; McGuire, 2002; Su et al., 2019; WTO, 2019).

The few existing studies on the effect of trade in services on economic growth have reported a positive effect on economic growth[4] on services exports (e.g., Alege and Ogundipe, 2015; Dash and Parida, 2013; El Khoury and Savvides, 2006; Gabrielle, 2004; 2006; Hoekman and Mattoo, 2008; Lorde et al. 2011; Thomas, 2019). Other studies on the relationship between services exports and economic growth have rather looked at the effect of services export sophistication on economic growth (Anand et al., 2012; Mishra et al., 2011; Stojkoski et al., 2016). These studies are close in spirit to the topic on the impact of services export diversification on economic growth. Anand et al. (2012) have examined empirically both the determinants and growth impact of services sophistication as well as goods sophistication. As far as services exports are concerned, the authors have shown empirically the importance of modern services, and the sophistication of service exports for economic growth in countries, notably developing countries (and low-income countries among them). Mishra et al. (2011) have found empirical evidence that services export sophistication is positively associated with economic growth, and consequently suggested that growth in services exports and services export sophistication may be alternative ways for spurring economic growth in the context where there exist some limits of the traditional industrialization to ignite global growth. Stojkoski et al. (2016) have obtained a positive effect of growth in service exports, and services export sophistication on economic growth. They have concluded that both services exports and services export sophistication represent an additional avenue for economic growth in both developing and developed countries.

To the best of our knowledge, there is no published study on the economic growth effect of services export diversification. The current article aims to fill this void in the literature by investigating how services export diversification affects economic growth. The analysis has used a set of 131 countries, including both developed and developing countries over the period 1985-2014, and shown that services export diversification promotes economic growth in developing countries, whereas in high-income countries, it is rather services export concentration (specialization) that fosters

[4] Other studies such as Alege and Ogundipe (2015) and Li et al. (2003) have also considered the effect of services imports on economic growth.

economic growth. Additionally, services export diversification always promotes economic growth when countries experience an increase in the services export growth. Finally, countries with a low degree of trade openness experience higher economic growth if they diversify their services export items, whereas countries with a high degree of trade openness benefit from higher economic growth by enhancing their services export specialization.

The rest of the article contains five sections. Section 2 elaborates on how services export diversification (or concentration) could affect economic growth. Section 3 presents the model specification and the econometric methodology that helps address empirically the issue at hand. Section 4 discusses empirical results, and Section 5 provides a robustness check analysis. Section 6 concludes.

2. Literature review and theoretical discussion

In this section, we discuss how services export diversification (or specialization) could affect economic growth. Thus, in the first sub-section (sub-section 1), we first provide a brief literature review on the importance of services activities for economic growth. In sub-section 2, we then discuss how services export diversification (or concentration) can affect economic growth.

2.1. How are services activities linked with economic growth?

According to the economic theory, the quantity and productivity of capital and labour inputs are critical for aggregate economic growth, with technological progress playing an essential role in promoting long-run (steady) economic growth. In contrast, little attention has been paid by the growth theory to the role of services activities, except from the work by Goldsmith (1969) who has shown that financial services contribute to enhancing output and incomes growth by helping to channel investment funds towards their most productive uses. Other studies (e.g., Bernier and Plouffe, 2019; Levine, 1992; Marchiori and Pierrard, 2017; Wilson and Smith, 1996; Zhu et al., 2020) have demonstrated that financial services can affect economic growth through enhanced capital accumulation and/or technical innovation. Several other works have emphasized the role of other services activities in spurring economic growth. For example, Li et al. (2003) have noted the important role of services trade in technological diffusion, given

the knowledge intensive feature of services sectors such as financial services, computing and information processing, or management consultancy. Mattoo et al. (2006) and Hoekman and Mattoo (2008) have argued that low cost and high-quality telecommunications generate economy-wide benefits, because communication networks allow channelling information services and other digitizable products, including through the Internet. The benefits of transport services, especially for economic growth has also been highlighted in the literature (e.g., Hoekman and Mattoo, 2008; Li et al. 2003). For example, transport services facilitate the efficient distribution of goods, and the movement of workers within and between countries. Likewise, business services (e.g., accounting, engineering, consulting services and legal services) help to reduce the transaction costs related to the operation of financial markets, and ensure the respect of contracts. As a result, they act as a crucial conduit of business process innovations across firms in an industry or across industries (see Hoekman and Mattoo, 2008). Along the same lines, software development is the backbone of the information-based economy (see Li et al., 2003). Finally, firms' competitiveness in the domestic and international markets can be significantly improved thanks to the margins that apply to the provision of retail and wholesale distribution of services.

Above these potential effects of services activities on economic growth, many services (including as inputs into production) could also exert a powerful effect on economic growth (e.g., Baldwin et al., 2015; Bas, 2014; Daude and de la Maisonneuve, 2018; Heuser and Mattoo, 2017; Hoekman and Mattoo, 2008; Hoekman and Shepherd, 2017; Lanz and Maurer, 2015; Li et al. 2003; Lodefalk, 2012; 2013; 2014; Su et al., 2019; WTO, 2019). Hoekman and Mattoo (2008) have underlined two aspects of the "input into production" role of services: the first aspect relates to the fact that services help to ease transactions through space (e.g., through transport and telecommunication services) or time (through financial services) (see Melvin, 1989). The second aspect refers to the frequent use of services as inputs into economic activities, which influences the productivity of fundamental factors of production (capital and labor) that generate knowledge, goods and services. In that respect, Burgess and Venables (2004) have underlined the importance of variety of services "inputs" that support specialization, creation, and diffusion of knowledge and exchange. According to François (1990), the growth of intermediation services contributes significantly to specialization, and hence

plays a critical role in economic growth and development. Li et al. (2003) have noted that restrictions on services trade can lead to a welfare loss by driving a wedge between domestic and foreign prices of services. According to Ghani and O'Connell (2014), services can promote growth and create jobs in countries that have different development levels. Similarly, Rodrik (2018) and Diao et al. (2017) have underlined that movement of labour from traditional agriculture to services in urban centres that exhibit higher labour productivity, improves economy-wide productivity, which has been critical in a number of low-income countries in recent years. Long the same lines, the phenomenon of distress migration witnessed in many low-income countries can force people to move out of agriculture in rural areas to informal service activities in urban areas. This migration from rural to urban areas may not always result in higher labour productivity.

2.2. Services export diversification (concentration) and economic growth

During the last few decades, in particular since the work by Goldstein and Khan (1978, 1985), the literature has largely explored the factors underpinning export behaviour in small economies. For example, using imperfect substitutes for export and import demand functions, Goldstein and Khan (1985) have argued that robust estimates of the price elasticities of export demand and supply are essential to determine welfare enhancing policy change in an open economy.

The literature on the determinants of services trade has discussed whether the international trade theory that applies to trade in goods is suitable for analyses concerning trade in services. Studies such as Hill (1977) and Morgan and Snowden (2007) have pointed out that there exist some differences between goods and services, but other works such as Hindley and Smith (1984) have emphasized that these differences do not necessarily apply to trade. This is because thanks to the development of ICT, services have become tradable, and now shared many of the goods characteristics (Ghani and Kharas, 2010; Leamer and Storper, 2001). Recent works such as Kimura and Lee (2006), van der Marel (2012) and Nyahoho (2010) have shown that many of the same basic determinants of goods trade apply also to services trade. In general, studies on the determinants of trade in services have relied on the classical international trade theory, especially the Heckscher-Ohlin trade theory as well as the

new trade theory as framework for analysis. Against this background, we draw from the literature on the effects of export product diversification on economic growth to discuss how services export diversification could influence economic growth.

Following Agosin (2009) for the case of export products, we argue for the case of services exports that volatility of services export revenue may undermine the efforts by trading firms - in particular risk-adverse ones - for planning investments in the services export sectors, and hence supplying investments in these sectors. These would not only discourage firms' efforts of diversifying their services exports, but also adversely affect prospects of the countries' economic growth. For products, these arguments are rooted in the neoclassical trade theory, whereby the expansion of export products portfolio induces lower variability of export earnings and results in terms of trade gains. While this theory is not strictly relevant to long-run economic growth, Herzer and Nowak-Lehmann (2006) have argued that it is possible to draw some insights from another theory, i.e., the endogenous growth theory - which emphasizes the role of increasing returns to scale and dynamic spillover effects - to explain how export product diversification affects economic growth. Based on Herzer and Nowak-Lehmann (2006), we hypothesize that services export diversification could positively affect economic growth through possible dynamic spillover effects. For example, some services sectors in the economy that were initially oriented towards the domestic market for production and sales could now export to the international market thanks to the introduction of one or several services items in the international market, and this would open-up export possibilities for existing services firms. In particular, this effect could take place through the network established by new exporting firms in the international trade markets, and that would benefit to other domestic firms in the services sectors.

Agosin (2009) has argued that the production of goods that represent a set-up of technology ladder for a country could contribute to the emergence of other new sectors (thanks to new production ideas generated by trained workers in the new sectors), and hence to higher economic growth. Along the same lines, we argue that in light of the inter-connections between different types of services activities, the introduction of new services export items in one or two services sectors could facilitate the emergence of other services items in other services sectors. For example, the discovery of new exportable financial services, and computer-related services could facilitate the

expansion of retail and wholesale distribution services exports. Similarly, we argue that a new service item initially sold in the domestic market and newly introduced in the international trade markets, could trigger a demand for this particular service item in the international trade markets (see Agosin, 2009 for a similar argument for the case of products). This could translate into a higher level of services export diversification, and enhance economic growth.

On another note, as services producers do not always have the full information about the existing comparative advantages in the domestic economy, they could discover some elements of comparative advantage in the process of introducing a new exportable services item. Other producers would benefit from this externality because the underlying cost structure of the economy would become lower. In this situation, specialization in export of services items in which the country has a comparative advantage would likely promote economic growth. In other words, in this scenario, services export concentration could be associated with higher economic growth. Nevertheless, as noted by Agosin (2009), this hypothesis might not be valid in developing countries where possibilities of copying easily the newly introduced services item would prevent leading firms from fully enjoying the benefits related to their initial investments.

Another argument that could be used to explain an eventual positive effect of services export diversification on economic growth is the resilience of the services trade, in particular services exports to shocks. Services trade have been found to be more resilient than trade in goods to shocks and financial crises. The resilience of services exports to shocks is particularly higher in developing countries than in advanced economies (see Anand et al. 2012). For example, Arin (2016) has shown that modern business services have been much more resilient than traditional services to shocks. More generally, the resilience of trade in services than trade in goods to shocks and financial crises is explained, on the one hand, by the lesser cyclical nature of trade in services compared to trade in goods, and on the other hand, by the lower dependence of services production and trade on external finance (Borchert and Mattoo, 2010; Arin, 2016). In this context, we could expect services export diversification to reduce output volatility (even more so than export product diversification) and to indirectly contribute positively to economic growth, given that higher output volatility hurts economic

growth (e.g., Acemoglu et al. 2003; Antonakakis and Badinger, 2016; Badinger, 2010; Berument et al. 2012; Fata, 2002; Hnatkovska and Loayza, 2005; Ramey and Ramey, 1995).

Hoekman and Mattoo (2008) have argued that the impact of services trade (including services exports) on firms' productivity and on the welfare of households that buy services, increases as the variety of services improves and as the reduction in (real) prices associated with greater services specialization (outsourcing) becomes larger. This implies that services export diversification could be positively associated with economic growth. Finally, Hausman et al. (2007) have demonstrated that diversification into new production and export activities, and improvement of the quality (and sophistication) of export baskets significantly enhance economic growth. While Hausman et al. (2007)'s demonstration applies to goods, some recent studies cited above (Anand et al., 2012; Mishra et al., 2011; Stojkoski et al., 2016) have, along the same lines, shown that services export sophistication promotes economic growth. Export sophistication does not necessarily entail export diversification but at least some significant improvement in value addition (quality) of services exports. Thus, we could also expect that greater services export diversification would be positively associated with economic growth, notably in developing countries At the same time, higher services export concentration, including on higher value-added services exports may be growth-enhancing notably in high-income countries.

Overall, while we expect services export diversification to be positively associated with economic growth, we cannot rule out the case where services export concentration - including on sectors of comparative advantage in the country - would be associated with higher economic growth, notably if this involves high quality services.

3. Model specification and econometric strategy

We estimate the effect of services export diversification on economic growth by considering a model specification, which contains the standard determinants of economic growth along with the services export diversification indicator. Standard determinants[5] of economic growth (e.g., Aditya and Acharyya, 2013; Chang et al. 2009;

[5] A survey of the vast literature on the various microeconomic and macroeconomic factors that could affect countries' economic growth or per capita income could be found in a survey on this literature is provided by Chirwa and Odhiambo (2016).

Christiansen et al. 2013; Gnangnon, 2018; Hesse, 2008; Huchet-Bourdon et al. 2018) considered here include: the degree of openness to international trade, denoted "OPEN"; the ratio of government consumption to gross domestic product (GDP), denoted "GOVCONS"; the gross fixed capital formation as a share of GDP (which measures the level of domestic investment), denoted "GFCF"; the human capital accumulation (proxied by the average education level), denoted "EDU"; the inflation rate, denoted "INFL"; the financial development depth, denoted "FINDEV"; the institutional quality, denoted "POLITY2" and the total population size, denoted "POP".

The model postulated is as follows:

$$GROWTH_{it} = \alpha_0 + \alpha_1 GROWTH_{it-1} + \alpha_2 HHI_{it} + \alpha_3 OPEN_{it} + \alpha_4 GOVCONS_{it} + \alpha_5 GFCF_{it} + \alpha_6 EDU_{it} + \alpha_7 INFL_{it} + \alpha_8 FINDEV_{it} + \alpha_9 POLITY2_{it} + \alpha_{10} Log(POP)_{it} + \mu_i + \gamma_t + \omega_{it} \quad (1)$$

The subscripts i and t refer respectively to a given country and the time-period. Model (1) is estimated using a panel dataset of 131 countries, of which 38 High Income Countries (HICs) - according to the World Bank classification of countries - and 93 NonHICs (i.e., countries not classified as HICs), i.e., developing countries over the period 1985-2014. The choice of the dataset is dictated by data availability. Following the empirical literature, we use non-overlapping sub-periods of 5-year average data to mitigate the effect of business cycles on variables. The sub-periods used include 1985-1989; 1990-1994; 1995-1999; 2000-2004; 2005-2009 and 2010-2014. α_0 to α_{10} are parameters to be estimated. μ_i are countries' time invariant specific effects; γ_t are time dummies capturing shocks that affect together all countries' economic growth patterns. ω_{it} is a well-behaving error term.

The dependent variable "GROWTH" is the real economic growth rate (constant 2010 US$ prices). Following the empirical literature on the determinants of economic growth, we have introduced the one-period lag of the dependent variable as a right-hand side regressor in order to capture the state-dependence nature of economic growth (i.e., the persistence of this variable over time). The introduction of the lagged dependent variable in the model also helps to control for omitted variables in the model specification.

The first variable of interest "HHI" is the measure of services export concentration index. Following the literature on the determinants of export product diversification (e.g., Agosin et al., 2012; Cadot et al., 2011), it has been computed as the Herfindahl index of export concentration (also referred sometimes to the Hirschman-Herfindahl index), which is the most commonly used indicator for measuring concentration in the empirical literature. The HHI indicator has been computed as the sum of the squared shares of each export line k (with amount exported) in total services exports, using the formula: $HHI = \frac{\sum_k s_k^2 - 1/n}{1/n}$ where $s_k = x_k / \sum_{k=1}^{n} x_k$ represents the share of export line k (with amount exported x_k) in total services exports. x_k stands for the amount of services exports associated with the services line "k"; n represents the total number of the services export lines (k) and $n = \sum_{k=1}^{n} k$. The indicator HHI has been normalized so that its values range between 0 and 1. We have multiplied the index obtained by 100 so that values of HHI ultimately range between 0 and 100. Higher values of HHI reflect greater services export concentration, while lower values indicate a rise in the level of services export diversification. To compute this indicator, we have used the database developed by the International Monetary Fund (IMF) (see Loungani et al. 2017) on 11 major sectors of services (categories of services). Specifically, we have utilized disaggregated data on services exports at the 2-digit level to compute HHI (see Appendix 1 for further details). Note that the analysis has considered only commercial services exports, and has thus excluded government goods and services exports. The definition and source of all variables are presented in Appendix 1. Appendix 2 reports the descriptive statistics on these variables, while Appendix 3 shows the list of countries used in the analysis.

The second variable of interest is the level of trade openness, denoted "OPEN". The effect of trade openness on economic growth has been largely debated in the economic literature (e.g., Camarero et al., 2015; Chang et al. 2009; Christiansen et al. 2013; Falvey et al. 2012; Panagariya, 2004; a literature review on this matter could be found in Singh, 2010). From a theoretical perspective, the neoclassical approach provides that countries' comparative advantage determines their trade patterns: to maximize its welfare, each country should produce and export the goods in which it has lower relative unitary costs compared to its competitors. This means that the country should concentrate on exports activities in which it is most economically efficient (i.e.,

that involve lower costs, while generating higher returns). The gains from trade may be either static (i.e., when they arise from better efficiency in allocation of resources) or dynamic through imported technology or learning-by-doing. According to the neoclassical theory, greater trade openness does not result in a long-run increase in the economic growth rate, but only to a rise in the income level (see Camarero et al., 2015). On the other hand, the endogenous growth theory has posited that trade openness could affect both the level of income and the long-run economic growth through scale, allocation, spillover and redundancy effects. Scale effects arise from the closer integration of an economy to the world market. Allocation effects come from the accumulation of production factors, including human or physical capital or Research and Development, which benefit to those sectors that intensively use these factors. Spillover effects are explained by the diffusion of new knowledge effects of trade openness: for example, higher access to imported capital goods that embody technology could facilitate the diffusion of knowledge and strongly influence economic growth. Finally, even not explicitly incorporated into the economic growth theory, the role of institutions for making trade openness conducive to economic growth has been emphasized by another strand of the literature. Here, it is argued that trade openness would not promote economic growth in the absence of basic institutions such as law and order, appropriately defined property rights, and impartially enforced contracts. Trade openness could ultimately enhance economic growth if it resulted in higher growth productivity, and this productivity effect could take place through increased competition on domestic markets (e.g., Melitz, 2003), the diffusion of knowledge (e.g., Grossman and Helpman, 2015) and the expansion of market size, which provides opportunities for economies of scale (e.g., Alesina et al., 2005).

We present in Figure 1 the correlation pattern (cross-plot) between export product concentration and economic growth over the full sample as well as the sub-samples of HICs and developing countries (denoted "DEVELOPING"). The three graphs in this Figure do not show a clear-cut correlation pattern between services export concentration and economic growth.

Following studies such as Aditya and Acharyya (2013), Christiansen et al. (2013); Gnangnon, 2018; Hesse, 2008; Huchet-Bourdon et al. (2018), we estimate model (1) using the two-step system Generalized Methods of Moments (GMM) developed by

Arellano and Bover (1995) and Blundell and Bond (1998). This estimator helps address several endogeneity concerns, including the simultaneity bias (associated with the bi-directional causality between the dependent variables and regressors), omitted variable biases, as well as possible biases associated with the correlation between the lagged dependent variable and countries' time-invariant specific effects (in the context of estimation of model (1) using the fixed effects estimator). This estimator combines the first-difference equations with suitably lagged levels as instruments, and levels equations with suitably lagged first-differences as instruments. It is more efficient than the first-differenced GMM estimator of Arellano and Bond (1991) in the presence of persistent data and weak instruments for first-difference variables. Furthermore, authors such as Roodman (2009) have recommended the use of the two-step system GMM estimator in the presence of unbalanced dataset, as the difference GMM estimator has a weakness of magnifying gaps. We assess the validity of the two-step system GMM estimator through three tests, including the Arellano-Bond (AB) test of presence of first-order serial correlation in the error term (denoted AR(1)) and no second-order autocorrelation in the residuals (denoted AR(2)), and the Sargan test of over-identifying restrictions (OID). We additionally present the outcomes of the test of absence of third-order serial correlation in the error term (denoted AR(3)) even though this test has not been explicitly recommended by Arellano and Bover (1995) and Blundell and Bond (1998). The acceptance of the null hypothesis could be a way of ensuring that the model does not suffer from omitted variables bias. Finally, we report the number of instruments used in the regressions as a higher number of instruments than the number of countries may render the diagnostic tests less powerful (e.g., Bowsher, 2002; Roodman, 2009). In the regressions based on the two-step system GMM estimator, the variables "HHI", "GOVCONS", GFCF", "EDU", "OPEN", "FINDEV", "INFL", "POLITY2" have been considered as endogenous, in light of the possible reverse causality between the dependent variable and each of these regressors. The variable "POP" has been considered as exogenous. The regressions have used 3 lags of the dependent variables as instruments and 3 lags of endogenous variables as instruments.

For the empirical analysis based on the two-step system GMM method, we proceed as follows. Column [1] of Table 1 presents the outcomes of the estimation of model (1). In column [2] of the same Table, we report the estimation's outcomes that

help examine the effect of services export diversification on economic growth in HICs and developing countries. These results are obtained by estimating a specification of model (1) in which we include a dummy variable, denoted "HIC", which captures countries in the full sample that are classified as HICs, and the interaction between this dummy and the variable "HHI". In column [3] of Table 1, we assess how services export diversification influences economic growth in the context of services export growth. To perform this analysis, we estimate another variant of model (1) that includes the interaction variable between the variable "HHI" and a variable denoted "GRSERVEXP", which measures the services exports growth rate (%). In light of the finding by some studies that services exports positively affect economic growth (e.g., Alege and Ogundipe, 2015; Dash and Parida, 2013; El Khoury and Savvides, 2006; Gabrielle, 2004; 2006; Hoekman and Mattoo, 2008; Lorde et al. 2011; Thomas, 2019), we expect export product diversification to promote economic growth in the context of higher growth of services exports.

Table 2 reports the estimations' outcomes that allow investigating how services export diversification influences economic growth when countries further open-up to international trade. To address empirically this issue, we estimate another specification of model (1) in which we include the interaction variable between the variables "HHI" and "OPEN". Results of this estimation are provided in column [1] of Table 2. For robustness check of these results, we use an alternative measure of trade openness, including by replacing the variable "OPEN" with the variable "OPENSW", which is a trade openness measure proposed by Squalli and Wilson (2011). This indicator is calculated as a composite measure of the traditional indicator of trade openness (i.e., the sum of exports and imports of goods and services as a share of GDP, denoted "OPEN") adjusted by the proportion of a country's trade level relative to the average world trade (see Wilson, 2011: p1758). This variable reflects the level of countries' participation in global trade, i.e., their degree of integration into the international trade market. In light of the discussion laid out in section 3 concerning the economic growth effect of trade openness, we could expect that as they further open-up their economies to international trade and enjoy its related benefits (increased competition, diffusion of knowledge, technology transfer, greater economies of scale and the resulting productivity enhancement), countries might be willing to strengthen their specialization

in services export items in which they have a comparative advantage, in particular if those services items are of high quality. Meanwhile, as developing countries rely on a few numbers of services items, they might need to expand the range of services export items, including through greater services export diversification in order to achieve sustained economic growth. Overall, we could expect greater services export concentration to promote economic growth as countries enjoy greater trade openness, but some developing countries might need to expand the range of their services exports so as to benefit from higher economic growth in the ling-run.

4. Empirical results

We start the interpretation of empirical results by considering the outcomes of the diagnostic tests that allow assessing the validity of the two-step system GMM estimator. These results are presented at the bottom of columns of Tables 1 and 2. As expected, the p-values related to the AR(1) test are lower than 0, while the p-values associated with the AR(2) and AR(3) tests are all higher than 10%. In addition, the p-values related to the Sargan statistics are always higher than 10%, and the number of instruments is always lower than the number of countries. It is also important to emphasize that the one-period lag of the dependent variable is always positive and significant at the 1% level. This clearly shows the state-dependence nature (i.e., persistence over time) of economic growth, and hence the relevance of considering a dynamic specification of model (1) in the analysis. All in all, the two-step system GMM estimator is well appropriate for the empirical analysis.

Let us consider now the estimates provided in column [1] of Table 1. Results indicate a negative and significant coefficient (at the 1% level) of the variable "HHI", which signifies that over the full sample, on average, services export product concentration is negatively associated with economic growth. In other words, services export diversification influences positively economic growth. A 1-point decrease in the index of services export diversification is associated with a 0.01 percentage point increase in the economic growth rate. A better economic interpretation of this result could be that a decrease in the services export concentration index by a 1 standard deviation (which amounts to 28.959 - see Appendix 2) is associated with a 0.3 [= 0.00989*28.959] percentage point increase in the economic growth rate. Estimates

associated with control variables suggest no significant effect (at the conventional levels) of trade openness on economic growth. This may indicate that the economic growth effect of services export diversification may have translated through the trade openness variable. This highlights the relevance of examining how services export diversification influences economic growth rates for varying degrees of trade openness. With regard to other variables, we observe a negative and significant effect of government consumption and inflation on economic growth. Financial development appears to be negatively associated with economic growth. This result may suggest that financial development hurts economic growth once it exceeds a certain threshold, in line with the 'too-much-finance-is-bad hypothesis' (e.g., Arcand et al., 2015; Cecchetti and Kharroubi, 2012; Law and Singh, 2014; Samargandi et al. 2015). However, we do not further investigate this matter here as it is not the main purpose of the present study. A rise in the education level, domestic investment, population size and an improvement in the institutional quality are positively related to economic growth, although the coefficient of the institutional quality variable is statistically significant only at the 10% level.

Results in column [2] of Table 1 suggest a positive and significant interaction term related to the interaction variable ["HHI*HIC"], thereby indicating that services export concentration exerts a higher effect on economic growth in HICs than in developing countries. At the same time, the coefficient of "HHI" is negative and statistically significant at the 1% level. By combining these two results, we can compute the net effects of services export concentration on economic growth in HICs and developing countries. These effects amount to -0.022 and 0.016 (= -0.0219 + 0.0381) respectively for developing countries and HICs. Thus, for developing countries, it is services export diversification that influences positively economic growth, while for HICs, it is rather services export concentration that is positively associated with economic growth. The result concerning HICs probably indicates that the concentration in high quality of services exports (i.e., with high value added) induces a rise in economic growth. In terms of the magnitude of these impacts, a decrease in the services export concentration index by a 1 standard deviation is associated with a 0.63 [= 0.0219*28.959] percentage point increase in the economic growth rate in developing countries. Likewise, a rise in the services export concentration index by a 1 standard deviation is associated with a 0.46 [= 0.016*28.959] percentage point increase in the economic growth rate in HICs.

Results in column [3] of Table 1 indicate a non-statistically significant coefficient of "HHI" (at the conventional levels), but a negative and significant interaction term related to the interaction variable ["HHI*GRSERVEXP"]. Taking together, these two outcomes convey the message that for any rate of the services export growth, services export diversification is always positively associated with economic growth, and the higher the services export growth rate, the greater is the positive effect of services export diversification on economic growth. Incidentally, we note the positive and significant effect (at the 1% level) of services export growth on economic growth. While interesting, these findings concern 'average' effects across countries in the full sample. To get a better picture on the extent to which services export concentration (or diversification) influences economic growth for varying services export growth rates, we provide in Figure 2, at the 95 per cent confidence intervals, the developments of the marginal impact of services export concentration on the economic growth rate for varying services export growth rates. The marginal impacts that are statistically significant at the 95 per cent confidence intervals are those encompassing only the upper and lower bounds of the confidence interval that are either above or below the zero line. This Figure shows that the marginal impact of services export concentration on economic growth decreases as the services export growth rate increases. Furthermore, it almost always takes negative values, and in the few cases where it takes positive values, the latter are not statistically significant. In particular, this marginal impact is statistically significant when the growth rate of services exports is strictly higher than 0.18%. In other words, for values of services export growth rates lower than 0.18%, services export concentration exerts no significant effect on economic growth rate. However, for services export growth rates higher than 0.18%, services export concentration is negatively associated with economic growth, that is, services export diversification leads to higher economic growth. Additionally, the higher the rate of services export growth, the greater is the magnitude of the positive effect of services export diversification on economic growth.

Estimates related to control variables in columns [2] and [3] are, with a few exceptions, similar to those presented in column [1] of the same Table.

We now turn to estimates displayed in Table 2. As noted above, we are interested here in addressing the question as to how services export concentration influences

economic growth for varying degrees of trade openness. Results in column [1] of Table 2 indicate a negative coefficient of "HHI" and a positive interaction term of the variable ["HHI*OPEN"], both coefficients being statistically significant at the 1% level. These two outcomes suggest that services export concentration and trade openness are complementary in promoting economic growth, including when the degree of trade openness exceeds a certain threshold. On average, across the full sample, this threshold amounts to 106.67% [= 0.0304/0.000285)] (it is worth recalling that values of the variable "OPEN" range between 0.218% and 344.7%). Thus, countries with levels of trade openness lower than 106.67% experience a negative effect of services export concentration on economic growth. Thus, for these countries, it is export diversification that influences positively economic growth, and the lower the degree of trade openness (as far as it is lower than 106.67%), the higher is the magnitude of the positive effect of services export diversification on economic growth. In contrast, countries whose level of trade openness is higher than 106.67% experience a positive effect of services export concentration on economic growth. For these countries, the magnitude of the positive effect of services export concentration on economic growth increases as they further open-up to international trade. Overall, the key message of these two outcomes is that countries with a low degree of trade openness tend to diversify their services exports so as to enjoy a higher economic growth, while countries with a high degree of trade openness tend to specialize on a relatively few number of services items (probably those of high quality in which they have a comparative advantage) so as to enjoy higher economic growth.

To get a better picture on this impact, we display in Figure 3, at the 95 per cent confidence intervals, the development of the marginal impact of services export concentration on the economic growth rate for varying levels of trade openness, measured by the variable "OPEN". It could be observed in this graph that the marginal impact of services export concentration on economic growth increases as countries experience greater trade openness. This marginal impact takes either negative or positive values, but is not always statistically significant. Specifically, it is not statistically significant for values of trade openness ranging between 89.8% and 138%[6]. For degrees

[6] Note that the numbers 89.8% and 138% are extracted from the software STATA when constructing Figure 3.

of trade openness lower than 89.8%, services export concentration is negatively and significantly associated with economic growth, i.e., services export diversification promotes economic growth. For values of trade openness higher than 138%, services export concentration is positively associated with economic growth, and the greater the degree of trade openness, the higher is the magnitude of the positive impact of services export specialization on economic growth. Overall, this Figure confirms previous findings that as countries further open up to international trade, they enjoy higher economic growth by increasing their services export specialization.

Results in column [2] suggest positive and significant coefficients (at the 1% level) for both "HHI" and the interaction variable "HHI*OPENSW". These indicate that services export concentration always induces higher economic growth, irrespective of the degree of trade openness (which, to recall, reflects here the level of integration into the international trade market). Furthermore, the magnitude of the positive effect of services export concentration on economic growth rises as countries further increase their degree of trade openness. This signifies that as countries further open-up to international trade, they enjoy a higher economic growth rate when they enhance their services export specialization. Otherwise, countries that reduce their trade openness levels tend to diversify their services exports so as to enjoy a higher economic growth. These findings are consistent with those obtained in column [1] of Table 2. Figure 4 displays, at the 95 per cent confidence intervals, the developments of the marginal impact of services export concentration on the economic growth rate for varying levels of trade openness, measured by the variable "OPENSW". The pattern observed in this Figure is similar to the one in Figure 3, with the exception here being that it is only for very high values of trade openness that services export concentration becomes positively associated with economic growth. In fact, the marginal impact of services export concentration on economic growth is not statistically significant for values[7] of the indicator "OPENSW" ranging between 0.00076 [= exponential (-7.177405)] and 0.0057 [= exponential (-5.168368)]. For values of "OPENSW" lower than 0.00076, services export diversification is positively associated with economic growth, and the lower the values of "OPENSW", the higher is the magnitude of the positive effect of

[7] Note that the numbers -7.177405 and -5.168368 are extracted from the software STATA when constructing Figure 4.

services export concentration on economic growth. In contrast, for values of "OPENSW" higher than 0.0057, services export concentration exerts a positive and significant impact on economic growth, with the magnitude of this impact increasing as the degree of trade openness rises. Overall, once again, this Figure shows that countries with a low degree of trade openness experience a higher economic growth if they diversify their services export items. However, as they enjoy greater trade openness, their economic growth improves when they enhance services export specialization.

Finally, estimates associated with control variables are consistent with those obtained in column [1] of Table 1.

5. Robustness check analysis

In this section, we test the robustness of previous findings, notably the outcomes of results presented in column [3] of Table 1 (i.e., the extent to which the effect of services export diversification on economic growth depends on the growth rate of services exports) as well as results in Table 2 (i.e., whether the effect of services export diversification on economic growth depends on countries' level of trade openness). We perform this robustness check analysis by using the Theil index of services export concentration (denoted "THEIL") as the measure of services export concentration (this index replaces "HHI" in model (1)) (see Appendix 1 for details on the computation of this index). Values of "THEIL" range between 0 and 100, with higher values reflecting greater services export concentration, and lower values indicating greater services export diversification.

We provide in column [1] of Table 3, the outcomes of the estimation of a variant of model (1) that contains the variable "GRSERVEXP" (services exports growth rate, in per cent) as well as its interaction with the "THEIL" variable. Column [2] indicates the outcome of the estimation of the specification of model (1) that contains the interaction between "THEIL" and "OPEN". Finally, in column [3] of the same Table, we present the estimates arising from the estimation of another variant of model (1) that includes the interaction between "OPENSW" (in Logs) and "THEIL" (note that here, "OPEN" has been replaced with "OPENSW").

We find across the three columns of this Table that the requirements of the two-step system GMM approach are fully met (see the bottom of the column).

Turning to the interpretation of these results, we note from column [1] that services export diversification promotes economic growth in the context of higher growth rates of services exports, and the magnitude of this positive impact increases as the services export growth rate rises. This is exemplified by the positive coefficient of the variable "THEIL" combined with the negative coefficient of the interaction variable "THEIL*GRSERVEXP", both coefficients being significant at the 1% level. These results confirm the findings in column [3] of Table 1. Results in columns [2] and [3] of Table 3 line up with those in columns [1] and [2] of Table 2. Specially, the estimates displayed in column [2] of Table 3 show a positive and significant (at the 1% level) coefficient of "THEIL" and a negative and significant interaction term of the variable "THEIL*OPEN". Taken together, these two estimates show that economic growth is positively driven by services export product concentration when the level of trade openness ("OPEN") is lower than 118.14% (= 0.0228/0.000193). However, when trade openness degree is higher than this threshold, it is rather services export diversification that promotes economic growth. These findings are not fully consistent with the ones observed in column [1] of Table 2. The differences in the results may be due to the measurement of services export diversification itself, as the "THEIL" and "HHI" indices are different in nature, and have their own advantages and weaknesses. Interestingly, results in column [3] of Table 3 are consistent with those in column [3] of Table 2, i.e., services export product concentration exerts a positive effect on economic growth as countries experience greater trade openness (i.e., genuinely a greater participation in the world trade). This is because here both "THEIL" and the interaction variable "THEIL*OPENSW" exhibit positive and significant coefficients at the 1% level. It is important to emphasize that results in columns [2] and [3] of Table 3 do not show similar patterns because "OPEN" and "OPENSW" do not reflect the same realities even though both are used here as measure of trade openness: "OPEN" represent the trade share, while "OPENSW" reflects the level of countries' integration into the international trade market. Hence, based on our theoretical analysis, if we were to consider how the economic growth effect of services export diversification depends on the degree of trade openness, the indicator "OPENSW" could reflect what we genuinely intend to capture. Overall, we can conclude that services export concentration exerts a greater positive effect on economic growth as countries enjoy greater

participation in international trade, that is, as they experience greater trade openness. The estimates relating to control variables are largely consistent with those in previous Tables.

6. Conclusion

This paper has investigated the effect of services export concentration on economic growth, using a sample of 131 countries over the period 1985-2014. The analysis has suggested three pieces of evidence. First, in developing countries, services export diversification enhances economic growth, while in HICs, services export specialization (concentration) is positively associated with economic growth. Second, services export diversification spurs economic growth as countries experience a rise in their services exports growth, with the magnitude of this positive effect increasing as the growth rate of services exports rises. Third, countries with a low degree of trade openness tend to diversify their services export items so as to enjoy higher economic growth. In contrast, countries with a high degree of trade openness enjoy higher economic growth when they increase their services export specialization level. At the same time, services export specialization promotes economic growth when countries improve their integration into (or participation in) the international trade markets.

Overall, this study highlights empirically the importance of services export diversification (or concentration) for economic growth in developing countries and high-income countries, and points out that this effect depends on the growth rate of their services exports as well as their level of trade openness/degree of participation in (or integration into) the global trade market.

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TABLES and APPENDICES

Table 1: Effect of services export concentration on economic growth

Estimator: Two-step system GMM

Variables	GROWTH (1)	GROWTH (2)	GROWTH (3)
$GROWTH_{t-1}$	0.0523***	0.0369***	0.0752***
	(0.00924)	(0.00649)	(0.0127)
HHI	-0.00989***	-0.0219***	-0.00287
	(0.00284)	(0.00288)	(0.00371)
HHI*HIC		0.0381***	
		(0.00477)	
HHI*GRSERVEXP			-0.000610***
			(0.000200)
GRSERVEXP			0.0718***
			(0.0132)
HIC		-2.635***	
		(0.273)	
OPEN	-0.00379	-0.00230	-0.00557**
	(0.00231)	(0.00155)	(0.00233)
GOVCONS	-0.230***	-0.143***	-0.118***
	(0.0258)	(0.0212)	(0.0292)
GFCF	0.104***	0.115***	0.112***
	(0.0162)	(0.0127)	(0.0159)
EDU	0.00973***	0.00954***	0.00566***
	(0.00118)	(0.00103)	(0.00206)
INFL	-1.478***	-1.798***	-0.326
	(0.268)	(0.248)	(0.283)
FINDEV	-0.0423***	-0.0383***	-0.0270***
	(0.00237)	(0.00137)	(0.00273)
POLITY2	0.0322*	0.0631***	0.0579***
	(0.0189)	(0.0136)	(0.0167)
Log(POP)	0.437***	0.198**	0.578***
	(0.115)	(0.0838)	(0.121)
Constant	5.587**	9.769***	-5.331*
	(2.238)	(2.023)	(2.832)
Observations - Countries	471 - 131	471 - 131	467 - 131
Number of Instruments	107	118	99
AR1 (P-Value)	0.0010	0.0018	0.0024
AR2 (P-Value)	0.1322	0.2615	0.3030
AR3 (P-Value)	0.2652	0.3313	0.3896
OID (P-Value)	0.2844	0.3724	0.3399

*Note: *p-value<0.1; **p-value<0.05; ***p-value<0.01. Robust Standard Errors are in parenthesis. In the two-step system GMM estimations, the variables "HHI", "GOVCONS", GFCF", "EDU", "OPEN", "GRSERVEXP", "FINDEV", "INFL", "POLITY2" and the interaction variables have been considered as endogenous. The variable "POP" has been considered as exogenous. Time dummies have been included in the regressions, but related results have not been reported to save space.*

Table 2: Effect of services export concentration on economic growth for varying levels of trade openness

Estimator: Two-step system GMM

Variables	GROWTH (1)	GROWTH (2)
GROWTHt-1	0.0560*** (0.0153)	0.121*** (0.0191)
HHI	-0.0304*** (0.00654)	0.0610*** (0.0186)
HHI*OPEN	0.000285*** (6.37e-05)	
HHI*[Log(OPENSW)]		0.00941*** (0.00235)
OPEN	-0.0193*** (0.00449)	
Log(OPENSW)		-1.161*** (0.147)
GOVCONS	-0.173*** (0.0342)	-0.0590 (0.0391)
GFCF	0.134*** (0.0195)	0.0690*** (0.0224)
EDU	0.00979*** (0.00206)	0.0187*** (0.00214)
INFL	-0.765* (0.435)	-0.719* (0.408)
FINDEV	-0.0398*** (0.00395)	-0.0278*** (0.00394)
POLITY2	0.0342 (0.0226)	0.0952*** (0.0281)
Log(POP)	0.403*** (0.139)	0.718*** (0.153)
Constant	2.274 (3.767)	-16.65*** (4.180)
Observations - Countries	471 - 131	471 - 131
Number of Instruments	91	91
AR1 (P-Value)	0.0010	0.0030
AR2 (P-Value)	0.2887	0.8716
AR3 (P-Value)	0.3085	0.4847
OID(P-Value)	0.1581	0.1283

*Note: *p-value<0.1; **p-value<0.05; ***p-value<0.01. Robust Standard Errors are in parenthesis. In the two-step system GMM estimations, the variables "HHI", "GOVCONS", GFCF", "EDU", "OPEN", "GRSERVEXP", "FINDEV", "INFL", "POLITY2" and the interaction variables have been considered as endogenous. The variable "POP" has been considered as exogenous. Time dummies have been included in the regressions, but related results have not been reported to save space.*

Table 3: Robustness check analysis - Effect of services export concentration on economic growth

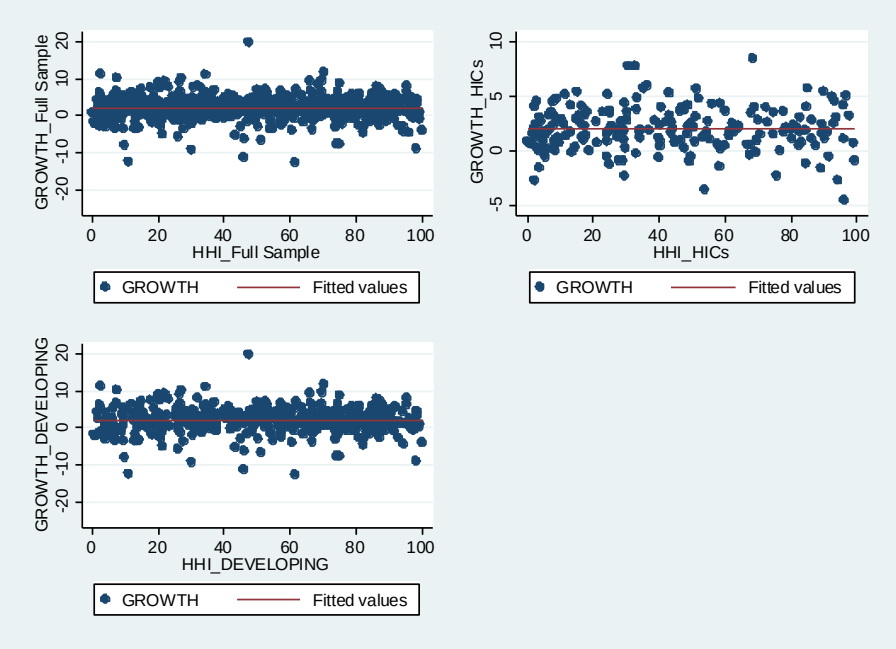
Estimator: Two-step system GMM

Variables	GROWTH (1)	GROWTH (2)	GROWTH (3)
$GROWTH_{t-1}$	0.0951***	0.0508***	0.0795***
	(0.0133)	(0.0154)	(0.0168)
THEIL	0.0137***	0.0228***	0.0625***
	(0.00456)	(0.00510)	(0.0172)
THEIL*GRSERVEXP	-0.000894***		
	(0.000249)		
THEIL*OPEN		-0.000193***	
		(4.61e-05)	
THEIL*OPENSW			0.00762***
			(0.00217)
GRSERVEXP	0.0937***		
	(0.0152)		
OPEN	0.000847	0.0132***	
	(0.00210)	(0.00411)	
Log(OPENSW)			-1.059***
			(0.169)
GOVCONS	-0.172***	-0.219***	-0.0671*
	(0.0253)	(0.0336)	(0.0369)
GFCF	0.0796***	0.103***	0.132***
	(0.0142)	(0.0219)	(0.0240)
EDU	0.00954***	0.0101***	0.0220***
	(0.00181)	(0.00233)	(0.00246)
INFL	-0.699*	-0.811	-0.748
	(0.369)	(0.494)	(0.462)
FINDEV	-0.0271***	-0.0405***	-0.0304***
	(0.00301)	(0.00389)	(0.00374)
POLITY2	0.0426***	0.0295	0.0656**
	(0.0157)	(0.0235)	(0.0293)
Log(POP)	0.294***	0.216	0.621***
	(0.0896)	(0.142)	(0.145)
Constant	0.268	3.312	-16.82***
	(2.738)	(3.594)	(4.131)
Observations - Countries	467 - 131	471 - 131	471 - 131
Number of Instruments	99	91	91
AR1 (P-Value)	0.0018	0.0003	0.0013
AR2 (P-Value)	0.1344	0.0695	0.6083
AR3 (P-Value)	0.3775	0.3586	0.5726
OID (P-Value)	0.2540	0.2409	0.1437

*Note: *p-value<0.1; **p-value<0.05; ***p-value<0.01. Robust Standard Errors are in parenthesis. In the two-step system GMM estimations, the variables "THEIL", "GOVCONS", GFCF", "EDU", "OPEN", "GRSERVEXP", "FINDEV", "INFL", "POLITY2" and the interaction variables have been considered as endogenous. The variable "POP" has been considered as exogenous. Time dummies have been included in the regressions, but related results have not been reported to save space.*

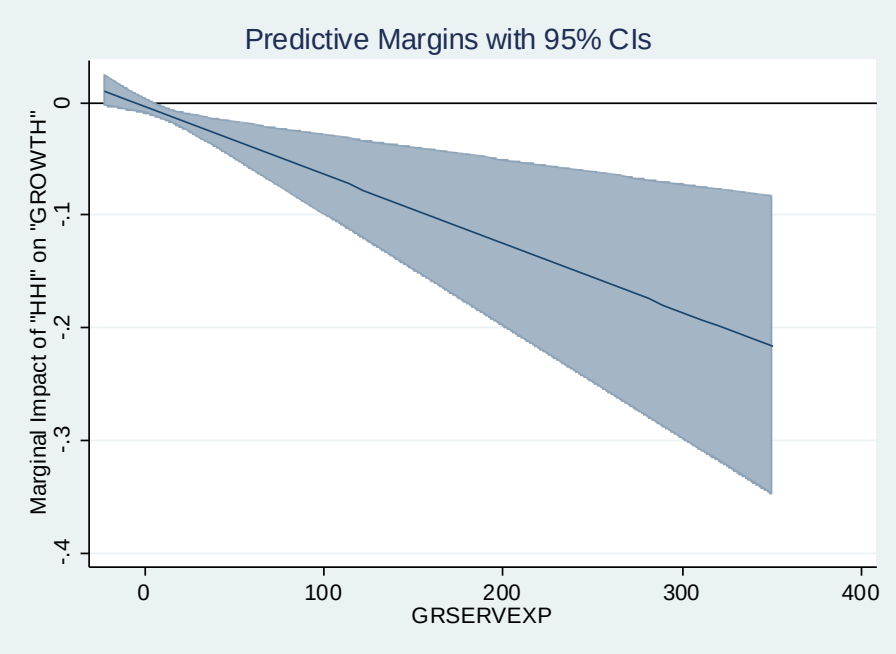
FIGURES

Figure 1: Correlation pattern between HHI and GROWTH



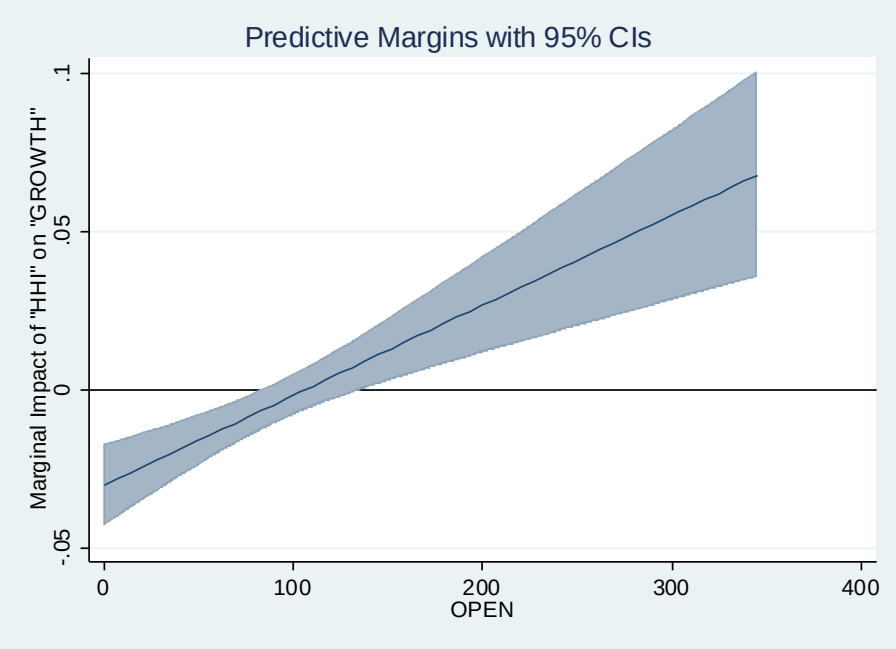
Source: Author

Figure 2: Marginal Impact of "HHI" on "GROWTH" for varying levels of growth in services exports



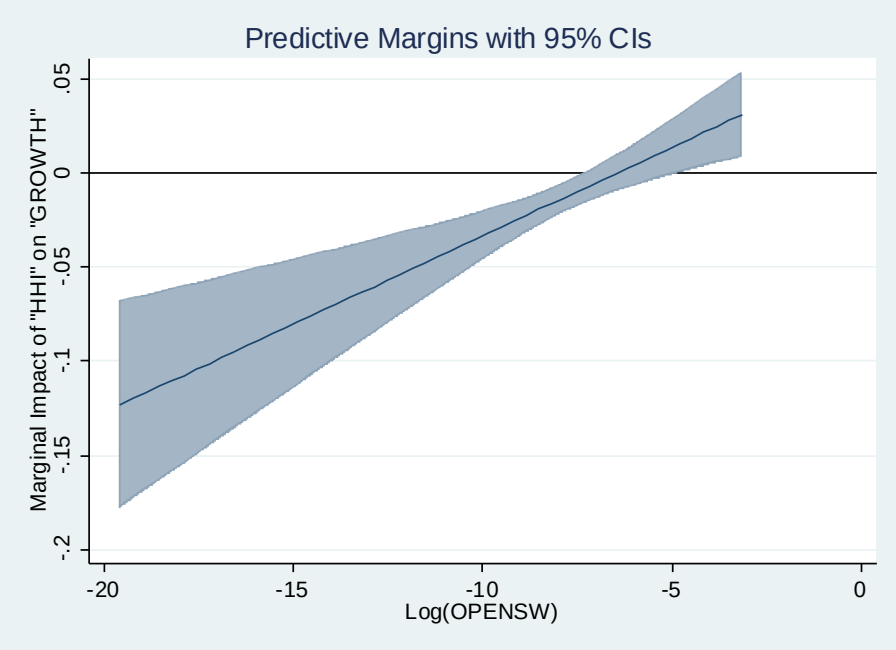
Source: Author

Figure 2: Marginal Impact of "HHI" on "GROWTH" for varying levels of trade openness ("OPEN")



Source: Author

Figure 4: Marginal Impact of "HHI" on "GROWTH" for varying levels of trade openness ("OPENSW")



Source: Author

APPENDICES

Appendix 1: Definition and Source of variables

Variables	Definition	Sources
GROWTH	GDP per capita growth (annual %), based on constant 2010 US$ prices.	World Development Indicators of the World Bank (WDI)
HHI	This is the Herfindahl index, which is also referred sometimes to as the Hirschman-Herfindahl index. It has been computed as follows: $HHI = \frac{\sum_k s_k^2 - 1/n}{1/n}$ where $s_k = x_k / \sum_{k=1}^{n} x_k$ represents the share of export line k (with amount exported x_k) in total exports: x_k stands for the amount of services exports associated with the services line "k"; n represents the total number of the services export lines (k) and $n = \sum_{k=1}^{n} k$. The computed indicator has been normalized so that its values range between 0 and 100. Higher values of this index indicate greater services export concentration, while lower values show greater services export diversification.	Author's calculation based on the same data from the database developed by the International Monetary Fund (IMF) on the international trade in services (see online at: https://data.imf.org/?sk=07109577-E65D-4CE1-BB21-0CB3098FC504) – See also Loungani et al. (2017). The data used to compute the HHI indicator are sectoral data on services exports at 2-digit level, which is the maximum digit-level of disaggregated data available on services exports. In particular, we have relied on 11 major sectors of services (categories of services) – at the 1-digit level - and used the disaggregated data on services exports for sub-sectors at the 2-digit level. See Loungani et al. (2017: page 20, Table 1) for the 11 major services sectors and the related sub-sectors covered in the analysis.
THEIL	This variable represents the Theil index of services export concentration. It has been calculated using the following formula (for example, see Agosin et al, 2012; Cadot et al., 2011): $THEIL = \frac{1}{n}\sum_{k=1}^{n} \frac{x_k}{\mu} \ln(\frac{x_k}{\mu})$, where $\mu = \frac{1}{n}\sum_{k=1}^{n} x_k$ n represents the total number of the (services) export lines (k) $n = \sum_{k=1}^{n} k$; x_k stands for the amount of services exports associated with the services line "k".	Author's calculation based on the same data (extracted from the IMF database on the international trade in services) used to compute the HHI indicator described above.
OPEN	This is the indicator of trade openness, measured by the share (%) of sum of exports and imports of goods and services in GDP.	WDI

Variables	Definition	Sources
OPENSW	Measure of trade openness suggested by Squalli and Wilson (2011). It is calculated as the measure of trade openness (the variable "OPEN" previously described) adjusted by the proportion of a country's trade level relative to the average world trade (see Wilson, 2011: p1758).	Authors' calculation based on data extracted from the WDI
EDU	This is the measure of the education level. It is calculated as the average of the gross primary school enrolment rate (in percentage), secondary school enrolment rate (in percentage) and tertiary school enrolment rate (in percentage).	WDI
GFCF	Gross fixed capital formation (% of GDP)	WDI
INFL	The variable "INFL" has been calculated as follows: INFL = Log(100+INFLATION) where "INFLATION" is the annual inflation rate (%). The annual inflation rate is based on Consumer Price Index -CPI- (annual percentage) where missing values has been replaced with values of the GDP Deflator (annual %).	Authors' calculation based on data from the WDI.
GRSERVEXP	This variable represents the growth rate (%) of total services exports.	Authors' calculation based on data extracted from the IMF's database on the international trade in services (see online at: https://data.imf.org/?sk=07109577-E65D-4CE1-BB21-0CB3098FC504) – See also Loungani et al. (2017).
GOVCONS	General government final consumption expenditure (% of GDP)	WDI

Variables	Definition	Sources
FINDEV	This is the indicator of financial. It is a composite index of four indicators of financial development, which are the liquid liabilities (% GDP); the private credit by deposit money banks and other financial institutions (% GDP); the bank deposits (% GDP); and the financial system deposit (% GDP). The "FINDEV" indicator has been computed by relying on the factor analysis approach, including the Principal Component Analysis that allows to extract a common factor from the above-mentioned four indicators of financial development. Higher values of "FD" reflect higher depth of financial development, and lower values indicate lower level of financial development.	Author's calculation based on data on the four indicators from the World Bank's Financial Structure dataset developed by Beck et al. (2000; 2009) and Čihák et al. (2012) and updated in June 2017.
POLITY2	This variable is an index extracted from Polity IV Database (Marshall et al., 2018). It represents the degree of democracy based on competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive. Its values range between -10 and +10, with lower values reflecting autocratic regimes, and greater values indicating democratic regimes. Specifically, the value +10 for this index represents a strong democratic regime, while the value -10 stands for strong autocratic regime.	Polity IV Database (Marshall et al., 2018)
POP	This is the measure of the total Population	WDI

Appendix 2: Descriptive statistics on variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
GROWTH	471	2.306	2.588	-12.389	11.273
HHI	471	48.970	29.153	0.484	100.000
THEIL	471	57.094	26.329	0.000	98.801
OPEN	471	79.217	41.632	15.566	344.704
OPENSW	471	0.004	0.008	0.000	0.059
GRSERVEXP	467	13.856	24.063	-12.523	357.653
GOVCONS	471	15.631	4.874	4.496	37.172
GFCF	471	22.023	5.403	5.700	46.775
EDU	471	202.841	59.783	33.967	332.421
INFLATION	471	21.893	137.179	-5.903	1943.500
FINDEV	471	51.205	36.225	0.000	100.000
POLITY2	471	4.593	5.918	-10.000	10.000
POP	471	38200000	118000000	419495	1270000000

Appendix 3: List of countries contained in the full Sample

Full Sample				**HICs**
Afghanistan	Estonia	Mali	Sudan	Australia
Albania	Finland	Mauritania	Swaziland	Austria
Algeria	France	Mauritius	Sweden	Bahrain
Angola	Gabon	Mexico	Switzerland	Belgium
Argentina	Gambia, The	Moldova	Syria	Canada
Armenia	Georgia	Mongolia	Tajikistan	Chile
Australia	Germany	Morocco	Tanzania	Croatia
Austria	Ghana	Mozambique	Thailand	Cyprus
Azerbaijan	Greece	Myanmar	Togo	Czech Republic
Bahrain	Guatemala	Namibia	Tunisia	Denmark
Bangladesh	Guinea	Nepal	Turkey	Estonia
Belarus	Guinea-Bissau	Netherlands	Uganda	Finland
Belgium	Guyana	New Zealand	Ukraine	France
Benin	Honduras	Nicaragua	United States	Germany
Botswana	Hungary	Niger	Uruguay	Greece
Brazil	India	Nigeria	Venezuela	Hungary
Bulgaria	Indonesia	Norway	Zimbabwe	Ireland
Burkina Faso	Iran	Oman		Israel
Burundi	Ireland	Pakistan		Italy
Cabo Verde	Israel	Panama		Japan
Cameroon	Italy	Papua New Guinea		Kuwait
Canada	Jamaica	Paraguay		Latvia
Central African Republic	Japan	Peru		Lithuania
Chile	Jordan	Philippines		Luxembourg
Colombia	Kazakhstan	Poland		Netherlands
Comoros	Kenya	Portugal		New Zealand
Congo, Democratic Republic of the	Kuwait	Romania		Norway
Congo, Republic of	Kyrgyz Republic	Russia		Oman
Costa Rica	Lao P.D.R.	Rwanda		Poland
Croatia	Latvia	Saudi Arabia		Portugal
Cyprus	Lesotho	Senegal		Saudi Arabia
Czech Republic	Liberia	Serbia		Slovak Republic
Côte d'Ivoire	Lithuania	Sierra Leone		Slovenia
Denmark	Luxembourg	Slovak Republic		Spain
Dominican Republic	Macedonia, FYR	Slovenia		Sweden
Ecuador	Madagascar	South Africa		Switzerland
Egypt	Malawi	Spain		United States
El Salvador	Malaysia	Sri Lanka		Uruguay