

Services Export 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), has 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 enhances 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. Finally, services export diversification tends to be positively associated with economic growth, but as countries enjoy greater trade openness, they tend to enhance their services export specialization so as to enjoy higher economic growth. Interestingly, it is services export specialization that promotes economic growth as countries better integrate into the international trade market. 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.

1. Introduction

For a long time, the services sector has been considered as small (if not no) contributor to economic growth and development because it 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 of services markets is now well established, particularly in light of the rapid technological changes and the globalization in various services sectors^[1], 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 while the services sector represents now the main destination of foreign direct investment (FDI) flows, as FDI flows to services sectors represent now 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; developing countries[2] 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 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, 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[3] 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 closely related 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 of 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, and 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 gap in the literature by investigating how services export diversification affects economic growth. The analysis has used 131 countries, including both developed and developing countries, and shows that services export diversification promotes economic growth in developing countries, whereas in high-income countries, it is rather services export concentration that fosters 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, 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.

Footnotes

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

[2] 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.

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

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 studies 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 generates economy-wide benefits

as communications networks allow channelling information services and other digitizable products, including through the Internet. The benefits of transport services, including 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 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 could be significantly improved due 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 could also have a powerful effect on economic growth, including as inputs into production (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 overall 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 at 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.

2.2. Services export diversification (concentration) and economic growth

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 for trading firms- in particular risk-adverse ones - of planning investments in the services export sectors, and hence their supply of investment 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 that opens-up the export possibilities for existing services firms. This effect could particularly take place through the network that new exporting firms would establish 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 because of the new production ideas that could be generated by trained workers in the new sectors, and this could be conducive 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 exports 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 as well as computer-related services could facilitate the expansion of retail and wholesale distribution services exports. Similarly, following the argument by Agosin (2009) for products, we postulate 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. This could translate into a higher level of services export diversification, which would 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 as 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 case, 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 new services item introduced 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, 2000; 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, as 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 improve 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 expect on the other hand that greater services export diversification would be positively associated with economic growth, notably in developing countries, but higher services export concentration, including on higher value-added services exports may be growth-enhancing including in high-income countries.

Overall, while we expect services export diversification to be positively associated with economic growth, we can not 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

3.1 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^[1] of economic growth (e.g., Aditya and Acharyya, 2013; Chang et al. 2009; Christiansen et al. 2013; Gnanngnon, 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 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 fixed 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. 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 used 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 – which means that the country should concentrate on exports activities in which it is most economically efficient. 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 effects. 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 results 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); Gngangnon, 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. 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 differences. 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). The regressions have used a maximum of 5 lags of the dependent variable as instruments and 2 lags of the endogenous variables as instruments. 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. The variable "POP" has been considered as exogenous, in light of the possible reverse causality between the

dependent variable and each of these regressors. 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, including their 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 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 their 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 long-run.

[1] 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).

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 all columns of Tables 1 and 2. As expected, we obtain that the p-values related to the AR(1) test are lower than 0, while as also expected, the p-values associated with the AR(2) and AR(3) tests are all higher than 10%. In addition, the p-values associated with 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 underline 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 of economic growth, and hence the relevance of considering a dynamic specification of model (1) in the analysis. All in all, we conclude that 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, that is, services export diversification is positively associated with economic growth. A 1-point decrease in the index of services export diversification is associated with a 0.00989 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 0.286 [= 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 suggest that the economic growth effect of services export diversification may have passed 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 indicate that financial development depth hurts economic growth once this depth 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, the rise in the population size and better 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 0.06 (= 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 it is the concentration in high services export quality with high value added that 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 1.74 [= 0.06*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 view on the extent to which services export concentration (or diversification) influences economic growth for varying levels of 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 rates of services export growth. 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 the 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, it is statistically non-significant. In particular, it is statistically significant when the growth rate of services exports values 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 the consideration of 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"], with both coefficients being statistically significant at the 1% level. These two outcomes combined, 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 whose level of trade openness is lower than 106.67% experience a negative effect of services export concentration on economic growth, i.e., for these countries, it is export diversification that is positively associated with 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 their economies 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 rise in their economic growth, while countries with a high degree of trade openness tend to specialize on a relative few number of services 'products' (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 the 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%. For degrees 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 increases as countries further increase their degree of trade openness. This signifies that as countries further open-up their economies to international trade, they enjoy a higher economic growth rate when they enhance services export specialization. Otherwise, countries that reduce their trade openness level 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 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 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 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, but 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 this 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 note 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 into 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 are in line 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 indicate 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 and how 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' participation in 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 could conclude that the magnitude of the positive economic growth effect services export concentration rises as countries enjoy greater participation in international trade. 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, whereas 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 exports so as to enjoy higher economic growth. In contrast, countries with a high degree of trade openness enjoy higher economic growth when they increase the level of services export specialization. At the same time, it is services export specialization that 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

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*** (0.00924)	0.0369*** (0.00649)	0.0752*** (0.0127)
HHI	-0.00989*** (0.00284)	-0.0219*** (0.00288)	-0.00287 (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 (0.00231)	-0.00230 (0.00155)	-0.00557** (0.00233)
GOVCONS	-0.230*** (0.0258)	-0.143*** (0.0212)	-0.118*** (0.0292)
GFCF	0.104*** (0.0162)	0.115*** (0.0127)	0.112*** (0.0159)
EDU	0.00973*** (0.00118)	0.00954*** (0.00103)	0.00566*** (0.00206)
INFL	-1.478*** (0.268)	-1.798*** (0.248)	-0.326 (0.283)
FINDEV	-0.0423*** (0.00237)	-0.0383*** (0.00137)	-0.0270*** (0.00273)
POLITY2	0.0322* (0.0189)	0.0631*** (0.0136)	0.0579*** (0.0167)
Log(POP)	0.437*** (0.115)	0.198** (0.0838)	0.578*** (0.121)
Constant	5.587** (2.238)	9.769*** (2.023)	-5.331* (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.

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)
GROWTH _{t-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.*

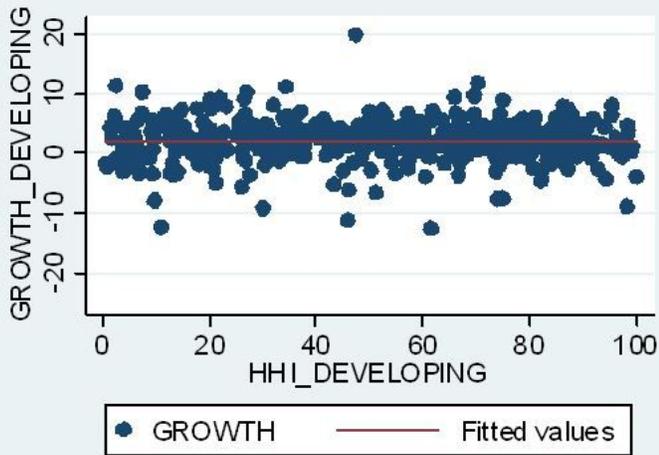
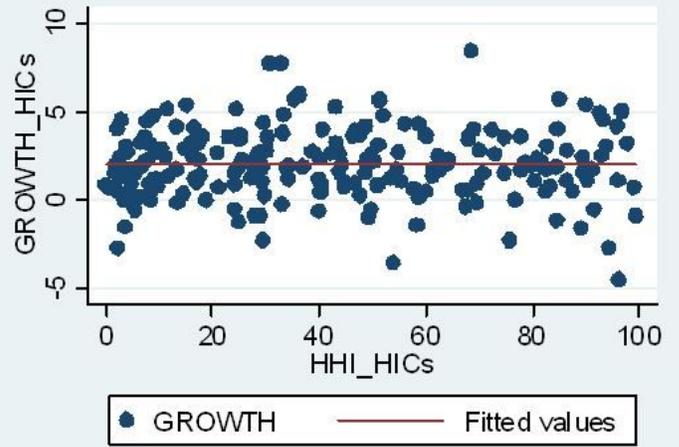
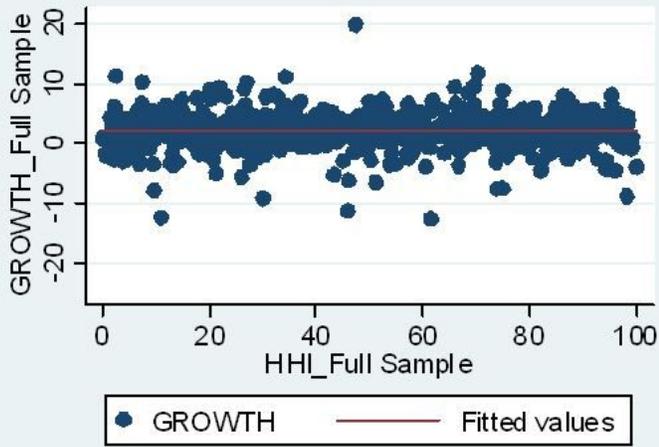
Table 3: Robustness check analysis - Effect of services export concentration on economic growth

Estimator: Two-step system GMM

Variables	GROWTH (1)	GROWTH (2)	GROWTH (3)
GROWTH _{t-1}	0.0951*** (0.0133)	0.0508*** (0.0154)	0.0795*** (0.0168)
THEIL	0.0137*** (0.00456)	0.0228*** (0.00510)	0.0625*** (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 (0.00210)	0.0132*** (0.00411)	
Log(OPENSW)			-1.059*** (0.169)
GOVCONS	-0.172*** (0.0253)	-0.219*** (0.0336)	-0.0671* (0.0369)
GFCF	0.0796*** (0.0142)	0.103*** (0.0219)	0.132*** (0.0240)
EDU	0.00954*** (0.00181)	0.0101*** (0.00233)	0.0220*** (0.00246)
INFL	-0.699* (0.369)	-0.811 (0.494)	-0.748 (0.462)
FINDEV	-0.0271*** (0.00301)	-0.0405*** (0.00389)	-0.0304*** (0.00374)
POLITY2	0.0426*** (0.0157)	0.0295 (0.0235)	0.0656** (0.0293)
Log(POP)	0.294*** (0.0896)	0.216 (0.142)	0.621*** (0.145)
Constant	0.268 (2.738)	3.312 (3.594)	-16.82*** (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
Sargan (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.

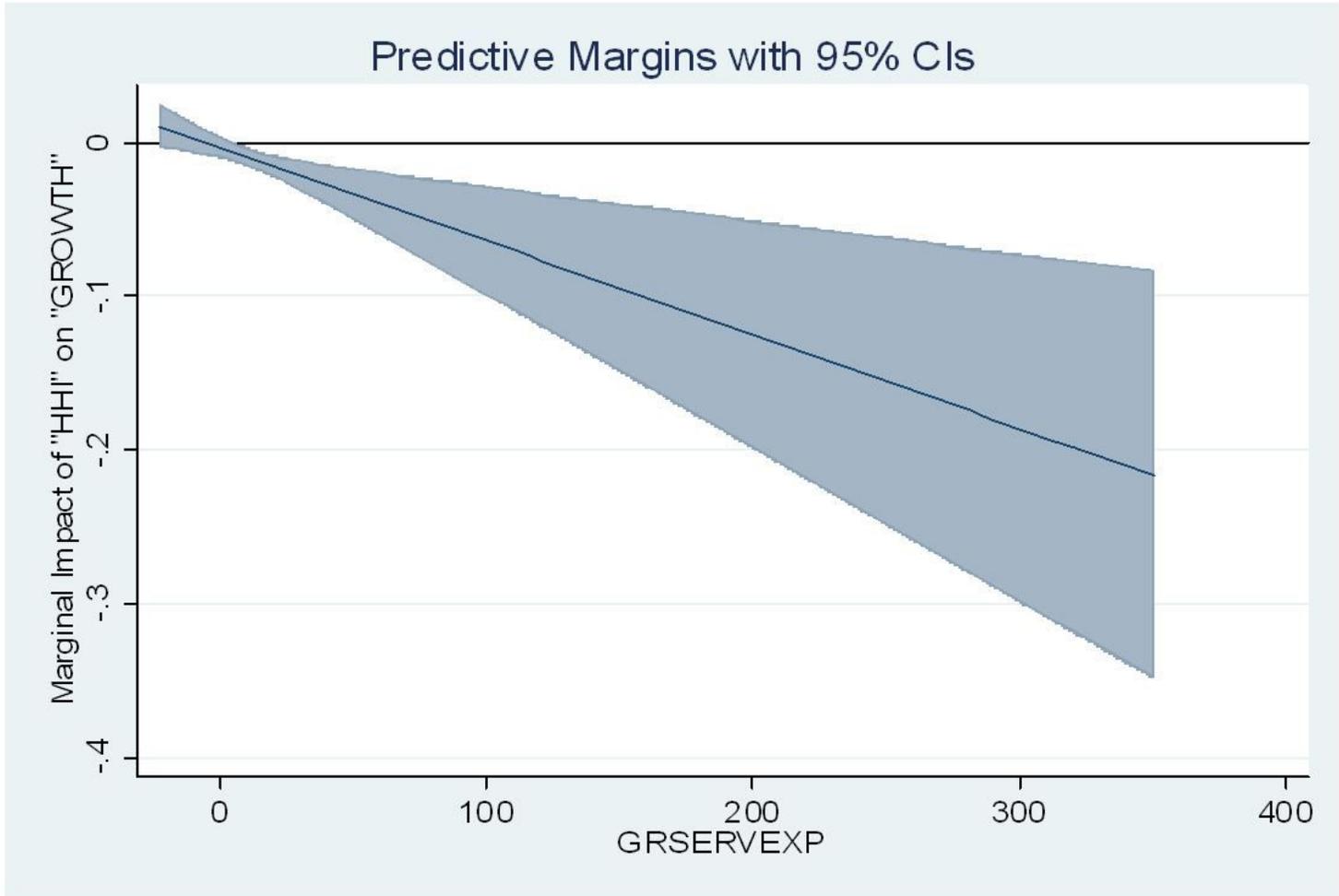
Figures



Source: Author

Figure 1

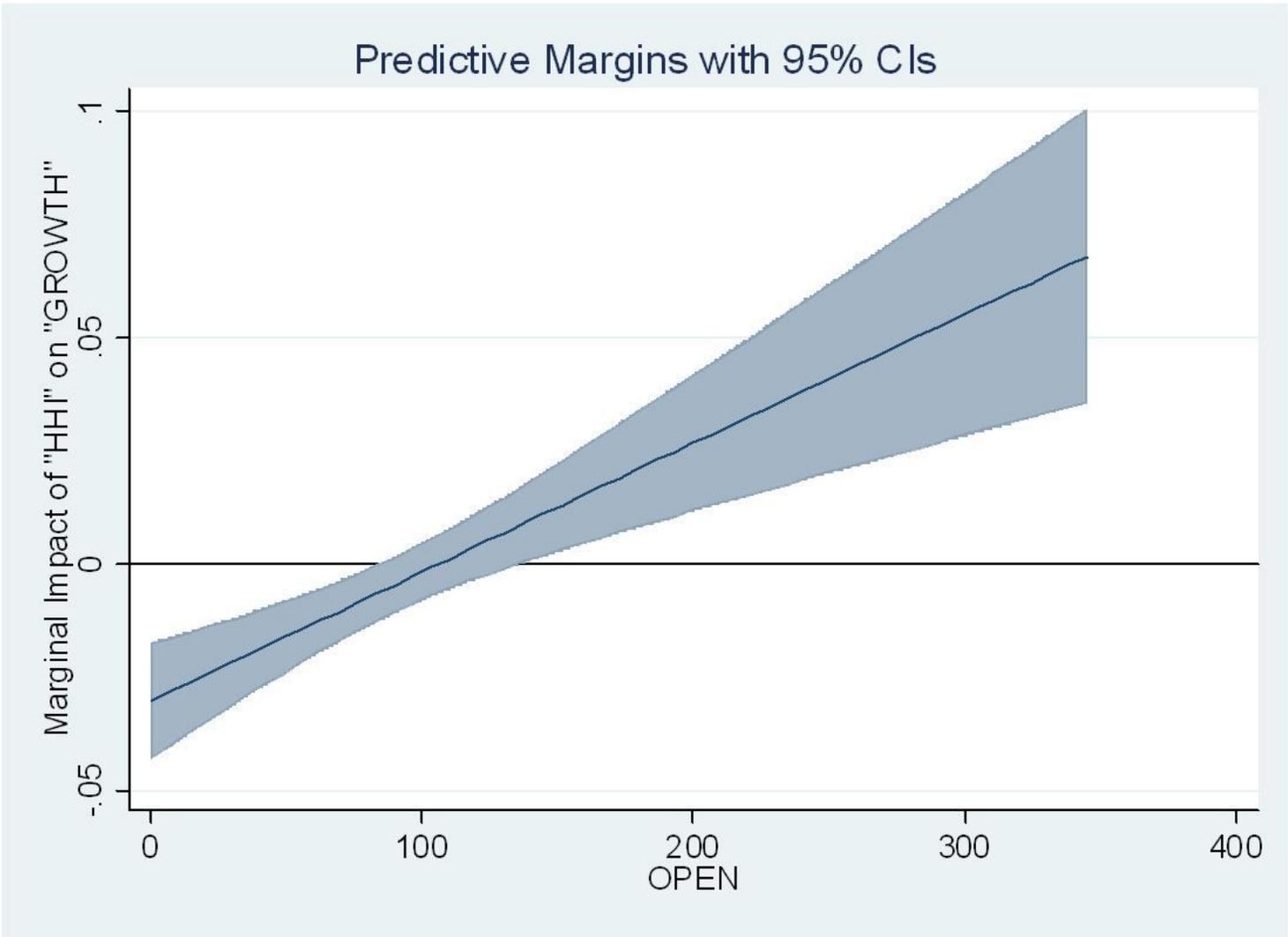
Correlation pattern between HHI and GROWTH



Source: Author

Figure 2

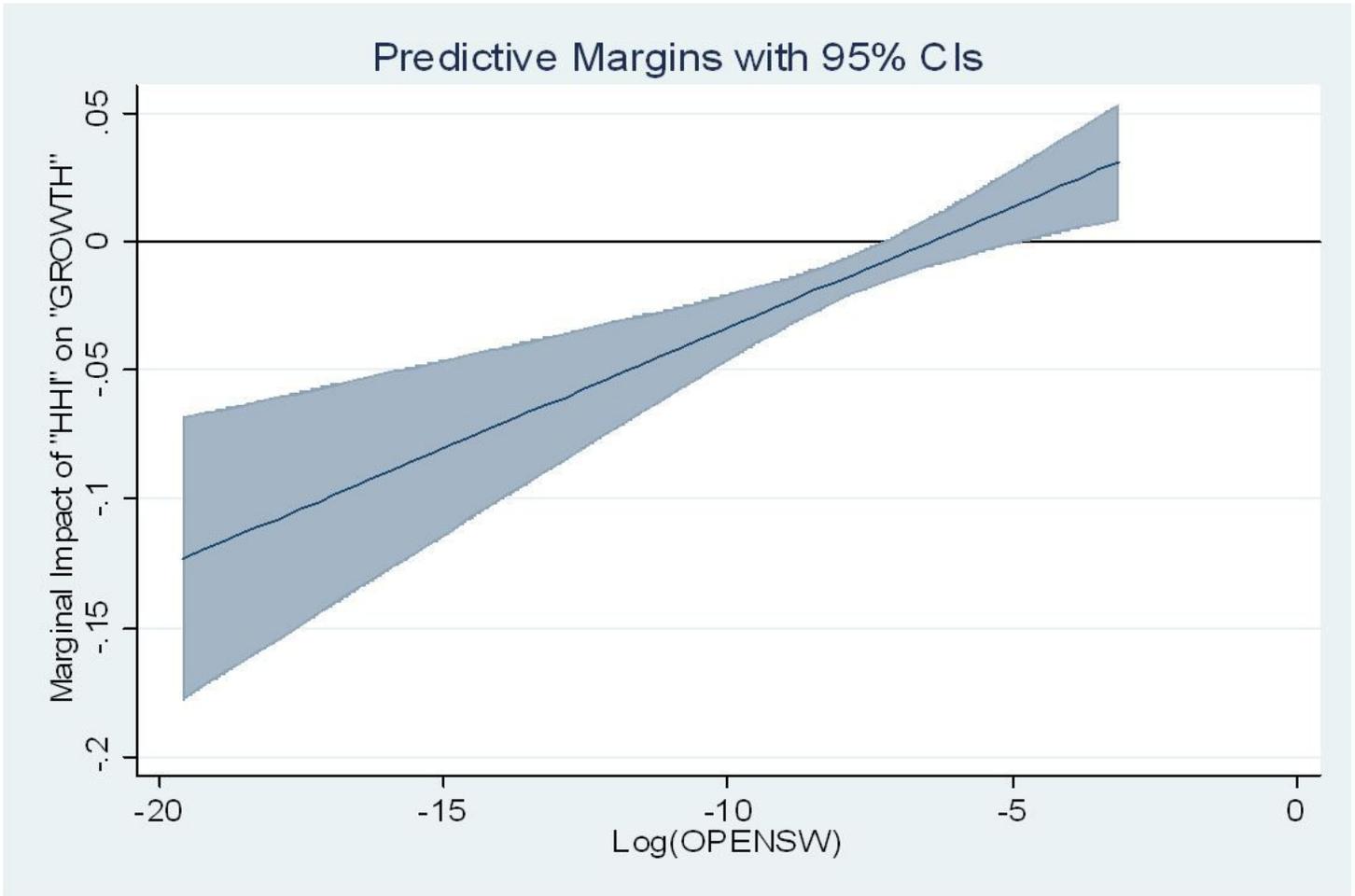
Marginal Impact of "HHI" on "GROWTH" for varying levels of growth in services exports



Source: Author

Figure 3

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")

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