

Premature deindustrialization and development without factories. Are services sectors a new path for the development of sub-Saharan African countries?

Dalila Chenaf-Nicet (✉ dalila.chenaf-nicet@u-bordeaux.fr)

University of Bordeaux: Universite de Bordeaux

Betty Asse

University of Bordeaux: Universite de Bordeaux

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ABSTRACT

For some authors (Rodrik, 2015 and 2017) deindustrialization process is premature in sub-Saharan countries. This means that the period of industrialization has been too short, with too little job creation and growth to guarantee a development trajectory. For these authors, the consequences for development are necessarily negative. However, in this work, the economic causes are: the global demand for services is growing faster than the demand for manufactured goods. This growth would leave too few development opportunities for industries in these countries that suffer from narrow domestic markets. Global demand for services and weak domestic demand are the causes of this deindustrialization. However, according to other authors (Loungani et al. 2017), if sub-Saharan African countries (SSA) deindustrialize, they should still be able to benefit from development opportunities through the services sector, which will be a new development path without factories (Ghani and O'Connell, 2014; Dihel and Grover, 2016). This article is part of the controversy. It tests the impacts of different sectors on growth, for a sample of 57 developing countries (Asia, SSA, and Latin America) in a panel data model over the period from 1984 to 2017. Our work shows that the services sector generates few spill-over effects on the income of SSA, which remains highly specialized in low-knowledge-intensive services.

1. Introduction

According to Rodrik (2013, 2015 and 2017) or Subramanian (2014), for developing countries and within the framework of the three-sector hypothesis, structural change (SC) must lead as a priority to a process of industrialization. However, the latter must last long enough to allow for a modernization of the productive structure, access to advanced technologies and the realization of learning effects, create income and employment growth and enable countries to emerge from underdevelopment (Goh and Olivier, 2002). The share of industry in total value-added therefore needs to grow over a long period and also reach high levels before declining to make way for an economy more driven by the services sector. The industrialization process thus follows a bell curve (or inverted U) trajectory with a turning point that must occur at a high rate and occur as late as possible in the development process before the economy moves to a service society (Gemmell, 1982). Rodrik (2013) gives several examples taken from the history of the Former Industrialized Countries (FICs) of this bell curve phenomenon. First, there is Great Britain, which, starting with the first industrial revolution underwent industrialization that allowed manufacturing employment to reach a maximum of 45% before the First World War before declining. This industrialization process, therefore, lasted approximately 160 years before this country entered the service era. Then, we find the United States, where industrial employment peaked at 27% in the mid-twentieth century before declining. Finally, there is Germany, where manufacturing employment reached 40% of total employment in the 1970s before declining. All these nations have thus become economic powers that have now entered the tertiary and quaternary eras.

However, Rodrik (2013) notes that for emerging and developing economies, this phenomenon offers little opportunity for dynamic long-term growth when it occurs over a short period (the turning point occurs in a few decades) and at low rates of industrialization. He then speaks of "premature" deindustrialization.

For all the countries in the World Bank database and more recent periods (1988, 2000 and 2010), Subramanian (2014) shows that the inverted U-curve phenomenon is observed when the level of development (measured by GDP per capita) and the level of industrialization (measured by the share of employment in industries) are linked. This relationship is characterized by two trends. First, the curves linking GDP per capita and

industrialization tend to move downwards over time. This first point can be interpreted as the fact that for each stage of development, countries tend to specialize less and less in the industry as the decades go by. Second, the curves move to the left over the three periods, indicating that countries are reaching their peak of industrialization increasingly rapidly.

At present, it is mainly the countries of sub-Saharan Africa (SSA) that are experiencing this phenomenon of premature deindustrialization; for these countries, the turnarounds are occurring at low rates, and the industrialization process takes little time. In particular, the bell curve phenomena can be observed in Ghana, Kenya, Mauritius, Nigeria, Senegal, South Africa, and Zimbabwe¹. Several explanations for this phenomenon can be found in the literature, in particular the observation that the rise in commodity prices over the last few decades has led countries to a reprimarization (Chenaf-Nicet, 2019). Countries are trapped by their comparative advantages and their strong specialization in the resource sector (Hausmann and Rodrik, 2003; Kangning and Jian, 2006; Dasgupta et al. 2008 and MacMillan and Rodrik, 2011.)

Similarly, work, mainly empirical, shows that in resource-rentier countries, industrialization may not take place because there is too great a demand for non-durable goods and services. Thus, in the case of resource-producing and resource-exporting countries, this is partly explained by the development of what Gollin et al., (2016) refer to as "consumer cities". Indeed, in theory, industrialization should be accompanied by greater urbanization because workers leave unproductive agricultural activities for new industrial activities located in cities. This process is accompanied by an increase in income that allows households to consume more tradable industrial goods. Urbanization and industrialization go hand in hand, and cities that follow this pattern of development are called "production cities" (Gollin et al., 2016). However, some empirical studies (Gollin et al., 2016; Chenaf-Nicet, 2019) show that in resource-producing countries, this link does not always exist. Urbanization is explained by a growing proportion of the population not seeking urban

¹ Manufacturing output as a percentage of GDP for the period 1960 - 2011 was in Ghana at its highest level at 19%, versus its lowest level of 8%. These percentages are from 13% to 6.5% for Kenya, from 25% to 16% for Mauritius, from 5.5% to 1.3% for Nigeria, from 17% to 14% for Senegal, from 24% to 15% for South Africa, and from 15% to 7% for Zimbabwe. Data source: UNSD.

employment but purchasing non-tradable goods and services, which are mainly found in cities. In some resource-producing countries, large urban areas are becoming “consumer cities” in which some households can spend their rent from primary resources.

Concerning the future of developing countries, this point of analysis remains crucial, as many studies argue that dynamic growth remains strongly associated with the development of the manufacturing sector and not that of the agricultural or services sectors (Kaldor, 1966; Ghani and O’Connell, 2014; Enache et al., 2016; Baumol, 1967; UNIDO, 2009 and 2018; Winters, 2010; MacMillan and Rodrik, 2011; Vries et al., 2013; Gelb et al., 2014 and Dercon and Gollin, 2014, Cadot et al., 2016). For these many authors, these are the industries that allow rapid convergence towards developed countries because services generate few productivity gains (Baumol, 1967). Similarly, manufactured goods can be standardized and traded easily via international trade, which itself generates growth. Services are little affected by these phenomena because they are often non-tradable, with low productivity and low technology (Ghani and O’Connell, 2014; Enache et al., 2016 and McCredie and Bubner, 2010). However, on this point, a controversy exists, since according to Loungani et al. (2014) and Dihel and Grover (2016), the service sector is increasingly remunerative for the various providers, particularly because today many services are knowledge-intensive (KIS). Services would be, to paraphrase the title of the Loungani et al.’s work (2014), *the new path of development*.

Our work is therefore part of this controversy. Does a more service-oriented productive structure hinder the development of these countries?

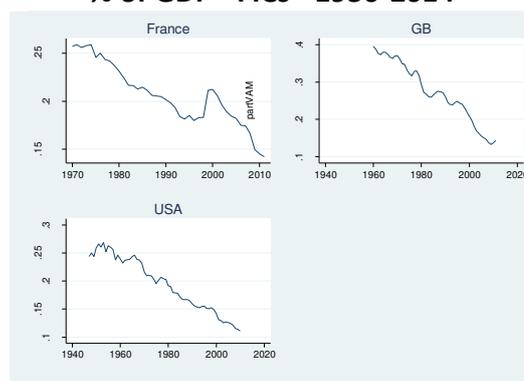
In the context of developing countries and more particularly SSA, we study the respective role of different sectors (agricultural, industrial and services sectors) and the role of foreign services demands on growth of a panel of countries. We use a sample of 57 developing countries (Asia, SSA, and Latin America) in a panel data model over the period from 1984 to 2017. Using a growth model, we show that not only do sub-Saharan African countries fail to capitalise on the drivers of growth due to high resource dependence, but also that the services sector is not a growth sector.

The remainder of the paper is organized into 3 sections. In the next section we present some stylized facts regarding the evolution of the SC in the panel countries as well as the evolution of global demand. We will then present the variables, the data, the analysis model and the results. Finally, we will conclude.

2. Structural change and Global demand: stylized facts.

UNSD data show that the evolution of the productive structure of FICs indicates longstanding deindustrialization that dates back mainly to the post-war period. Figure 1, which shows the evolution of the share of manufacturing value-added in the total, indicates that FIC (France, the United Kingdom and, the United States) have indeed been on the downward slope of the bell curve for several decades.

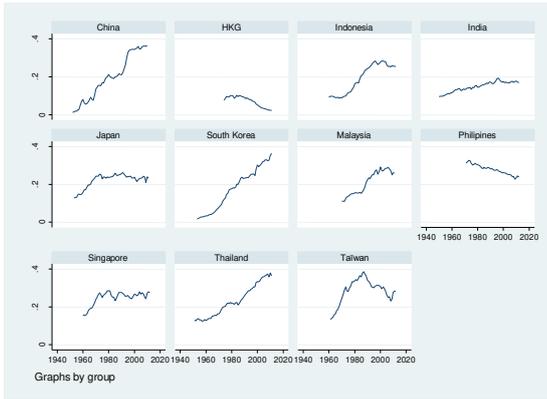
Figure 1 - Manufacturing value-added share as % of GDP - FICs - 1950-2014



Source: UNSD data

If we examine the productive structure evolution of some Asian countries (China, Hong Kong, India, Indonesia, Malaysia, Japan, South Korea), a bell-shaped evolution can also be observed, markedly so for Indonesia, Malaysia and Taiwan, while China or South Korea still appear in an ascending phase (Figure 2).

Figure 2 - Manufacturing value-added share as % of GDP. Asian countries - 1950-2014

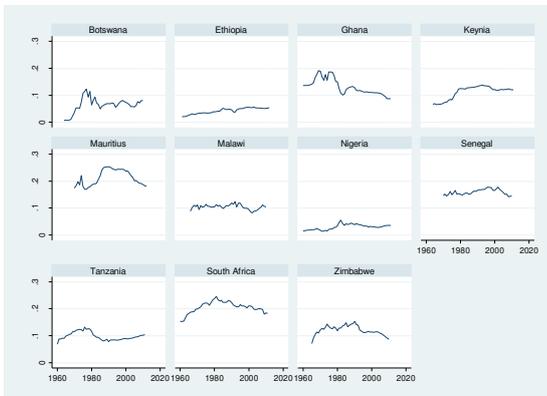


Source: UNSD data

For SSA while deindustrialization is indeed taking place, we note that the turnaround point (excluding South Africa) is at a relatively low rate (between 10 and 20%), while the industrialization process lasts, for these lagging countries, just 10 to 15 years in some cases (Figure 3)².

The deindustrialization phenomenon appears to be common to a large number of countries, both developing and non-developing.

Figure 3 - Manufacturing value-added share as % of GDP. SSA countries - 1950-2014



Source: UNSD data

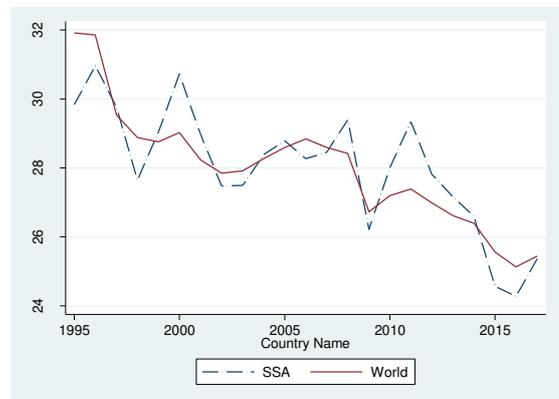
However, in the case of developing countries, deindustrialization may lead to re-primarization or tertiarization, as appropriate. Chenaf-Nicet's work (2019) shows that over the period from 1984-2013 countries such as Angola, Congo, Guinea-Bissau, Liberia and Sierra Leone experienced an episode of re-primarization that can be explained by the rise in commodity prices in the 1990s. Favourable terms of trade for resource-producing countries have encouraged

² For Botswana, the peak was reached in about a dozen years, with a turning point in the late 1970s. The phenomenon is identical for Tanzania and Ghana.

them to maintain their primary specializations. However, these same studies show that countries such as Ghana, Mozambique, Nigeria, Senegal, South Africa, Zambia and Zimbabwe have experienced growth in the services sector in parallel with a deindustrialization process. However, the services concerned create low-skilled, low-value-added jobs, such as the retail sector.

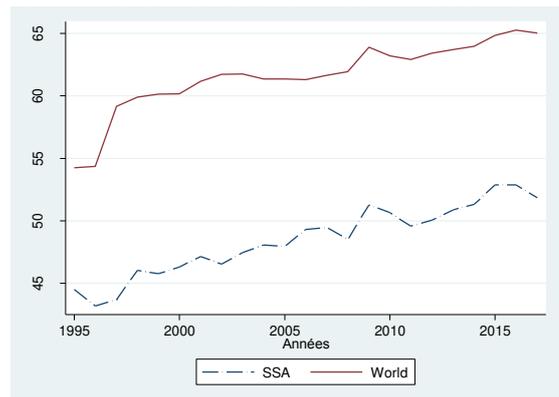
Overall, it can be observed that the productive structure of the SSA countries is indeed moving in the direction of deindustrialization and in a manner similar to the global trend. Figure 4 thus shows that the share of industry's value added as a percentage of GDP in this region and in the world has been steadily declining since the 1990s (Figure 4), while the share of services has been growing (Figure 5).

Figure 4 – Industrial value-added share as % of GDP in the world and in SSA – 1995-2014



Source: World Bank database

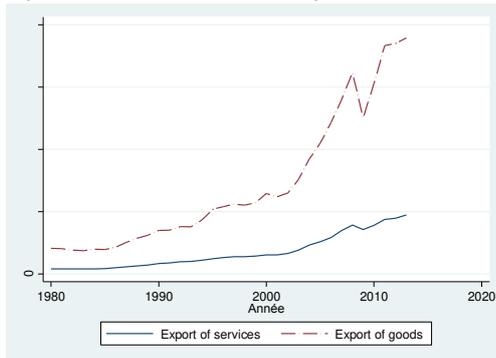
Figure 5 - Service value-added share as % of GDP in the world and in SSA - 1995-2014



Source: World Bank database

When we observe the global services exports evolution (Figure 6), we can see that the growth of services exports is indeed sustained. It grew by 210% from 2000 to 2014, while merchandise exports grew by 193% over the same period (UNCTAD data).

Figure 6 - World exports of services and goods (millions of US dollars) - 1980-2014



Source: Unctad database

Thus, as shown in Figure 6, even if world exports of merchandises remain 4 times higher than exports of services in 2014, services represented 64% of world value-added, while industry represented only 26% (Figure 5).

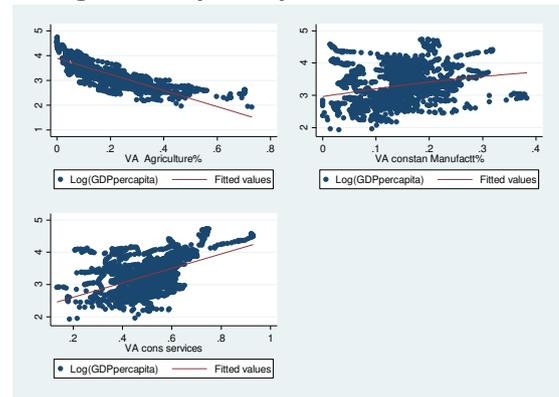
On these points, the SSA countries are also following this trend, since their services exports increased by 120% over the period from 2005-2018, while those of goods increased by only 76%, the share of services in total value-added being higher than that of industry (Figure 5).

SSA countries therefore have national production structures that are increasingly oriented towards the services sector, while strong global demand for services is directing a growing share of their exports towards this sector

The question is: does premature deindustrialisation hinder long-term growth? Similarly, do SSA countries find real growth opportunities by orienting their exports towards this new demand for services?

When we look at the relationship between GDP per capita (expressed as a logarithm) and the share of the agricultural sector in total value added for SSA countries, we see that there is an inverse relationship (Figure 7). This indicates that the process of development and growth is accompanied, for these countries, by a decline in primary activities. For the other sectors of activity, the direction of the relationship is less clear. However, the adjustment lines suggest the existence of positive relationships between the level of industrialisation or tertiarization and growth.

Figure 7 - Value added of sectors as % of GDP and log of GDP per capita in SSA - 1984-2017



Source: World Bank database

Econometric work is needed to establish whether these relationships are significant.

3. Empirical analysis of the relationship between growth and productive sectors

To test the impact of the different on GDP per capita, we use a standard equation (1), in which the endogenous variable is estimated from the following expression:

$$GDP_{it} = \mu GDP_{it-1} + \alpha GFCF_{it} + \beta Labour_{it} + \varphi Open_{it} + \lambda FDI_{it} + \sigma Finance_{it} + \gamma Ressources_{it} + \theta Oil + \pi ln.profil_{it} + \zeta ADS + (u_i + \epsilon_{it})$$

with $t = 1984 \dots, 2017$ and $i = 1 \dots, 57$ and $j = 1, 2, 3$

This equation contains the basic variables of the growth models: labour, capital, and GDP per capita lagged one period ($GDPT1$).

Capital is measured by *GFCF* as a percentage of GDP. The population size of each country is used as a proxy for the labour force (*Labor*).

According to the literature on growth and international trade (Frankel and Romer; 1997, Dollar and Kraay, 2002; Costinot, 2009), international insertion variables are also used. These variables are the openness rate (*Open*) and inward Foreign Direct Investments (*FDI*).

To reflect the high specialization of some countries in the primary and raw material sectors, we also introduce for each country the share of profits from all natural resources (oil, natural gas, coal (anthracite and hard coal), minerals and forests) as a percentage of GDP (*Resources*). We also introduce a dummy variable that indicates whether the country is an oil producer (*Oil*).

According to Acemoglu, et al. (-2005) the quality of institutions is a determinant of long-term growth. So, we include a variable reflecting the quality of institutions (*Investment profiles*), which is representative of the business climate. It is a proxy for the state of market regulation (Chenaf-Nicet, 2019).

A financial development variable (*Finance*) is also used as in many endogenous growth models (La Porta et al., 1997 and 1998; Levine 1997 and 2001; Acemoglu and Zilibotti, 1997; Estrada et al., 2010).

Finally, we have successively introduced in this equation the share of each sector j in the total value added (ADS_j , with j =Agriculture, Manufacturing, Services sectors).

ϵ_{it} is the typical random-error term. Intercept β_t allows one to control temporal effects.

The variables are in logarithmic form.

All these variables are presented in Annex 1 with the signs of the expected coefficients.

The study covers 57 developing countries over the period of 1984-2017, including 27 SSA countries and 30 other countries called NSSAs (the countries are listed in Annex 2).

For a fixed effects (FE) model, u_i is an intercept, where individual heterogeneities between the country and unobserved variables are allowed to present any associations with the explanatory variables. For the random effects (RE) model, random individual differences are included by specifying that intercept parameters, u_i , consist of a fixed component that represents the population average, \hat{u} , and random individual differences, v_i ($u_i = \hat{u} + v_i$)³. v_i in the RE model has a zero mean and is uncorrelated across countries.

To test equation (1), it is possible to use ordinary least square (OLS), RE or FE models. However, when the Hausman tests confirm that it is more effective to use an FE model (which is the case for many of our estimates), this latter consistent estimator does not allow one to introduce time-invariant variables (dummy variables *Oil*). The same problem is encountered when using first difference models. However, when the RE estimator is used, correlation problems remain between certain explanatory variables and the error terms. In this case, Baltagi et al. (2005) recommend using the

Hausman-Taylor (H-T)⁴ estimator. This instrumental variable (IV) estimator, which is applied to random effects, addresses the inconsistencies caused by correlations between random effects and certain regressors. This then allows the coefficients of the time-invariant variable to be estimated. This method, which applies the generalized moment method (GMM), solves endogeneity problems and does not require that external instruments be found, as the variables are their own instruments. The H-T estimator allows us to distinguish between those explanatory variables uncorrelated with u_i and those potentially correlated with u_i , as well as between time-varying and time-invariant explanatory variables. The Sargan-Hansen test⁵ is used to confirm that all of the instruments are valid, and the canonical correlation is another useful test for comparing the different sets of instruments. Baltagi (2008) recommends using instruments with the highest geometric average canonical correlations with regressors.

We use the H-T estimator, and, to overcome serial autocorrelation and heteroscedasticity problems, the proposed estimations are robust (cluster-robust standard errors)⁶.

The model is first tested for the total sample (Table 1) and then we divided our sample of 57 countries into two groups: the group of SSA countries and the group of NSSA. We tested the model for each of the groups

For the whole sample, there is a positive and significant sign for GDP per capita lagged by one period, which reflects the dependence of countries on their growth path. We find investment as a growth factor and trade openness as a growth driver (the coefficient on the Open variable is significant and positive). Regarding the weights of sectors, only the primary sector (share of value-added in the agricultural sector) has a significant but negative impact.

The labour force variable has a significant but negative coefficient only when considering the manufacturing sector (column 2). A negative impact of population growth is found in many growth models (Barro, 1997; Mankiw et al., 1992)⁷. Research shows that population growth

4 See Hausman and Taylor (1981) and Baltagi et al. (2005).

5 See Hansen (1982).

6 We use a Wooldridge test for autocorrelation and a Wald test for groupwise heteroscedasticity.

7 For a complete literature review, see Blanchet (2001).

3 See Hill et al. (2017).

has a negative impact on GDP per capita when technical progress is insufficient and when this growth leads to a dilution of both capital and research and development efforts (Aghion and Howitt, 1992; Young, 1995). It also has a negative impact when it does not lead to an improvement in human capital.

The coefficient on the investment profile variable (which measures investment risks such as contract viability, opportunities for profit repatriation or payment delays) is not significant. This variable, which can be described as pro-market and pro-business, has no impact on growth in our sample.

The variable Finance has a negative and significant coefficient. This result is because this variable traduces the monetary creation process and therefore inflation. By modifying price signals, inflation therefore has a negative effect on the development of new and risky activities, on structural change and finally on growth (Robinson 2010).

The rate of openness (*open*) has a positive and significant impact on the growth. International integration has a positive effect on the growth of the developing countries in the sample taken as a whole.

However, as in other works (Chenaf-Nicet, 2019), the coefficient of the *FDI* variable is not significant. We find here results consistent with the conclusions of Alaya et al. (2009). These authors indicate that there are a large number of conditions under which FDI has a positive impact. They thus identify all the empirical work that shows that only the high absorption capacities of the host country, measured by the level of education⁸ or by the technology gap with the countries of FDI origin⁹; a higher level of financial development¹⁰; a more open and export-oriented economy¹¹; greater macroeconomic stability¹² and better local infrastructure and institutions¹³ enable FDI to boost aggregate factor productivity and growth. These conditions are very rarely met in developing countries. This is also explained by the fact that FDI in the sample countries is often in the primary and hydrocarbon sectors, which locks the countries into this type of specialization.

Table 1: Equation 2 - H-T estimates for the whole sample (cluster Robust)

Variable :	(1)	(2)	(3)
GDP			
Obs : 1938			
Cluster : 57			
GDP _{t-1}	.912*** (15.23)	.918*** (17.71)	.917*** (11.82)
Labor	-.001 (-0.69)	-.007*** (-2.23)	-.006 (-1.68)
GFCF	.012*** (6.84)	.0132*** (6.67)	.013*** (6.92)
FDI	-.00006 (-0.09)	-.00008 (-0.10)	.0002 (0.24)
Open	.010*** (2.93)	.009*** (2.18)	.009*** (2.30)
In.profil	.0004 (0.09)	.0014 (0.26)	.0010 (0.19)
Resources	-.0001 (-.13)	.0009 (0.61)	.0012 (0.86)
Finance	-.005*** (-4.35)	-.005*** (-3.74)	-.0051*** (3.54)
Oil	.063 (1.63)	.071* (1.86)	.067 (1.66)
AD. Agri	-.010* (-1.80)	-	-
AD. Indu	-	-.0079 (-1.66)	-
AD. Serv.	-	-	.0080 (0.23)
Country effects vs Pooled	F= 5.32 ***	F= 5.25***	F= 5.12 ***
Time effects tested	Yes***	Yes***	Yes***
Hausman test (FE/RE)	$\chi^2=41.77***$	$\chi^2=140.42***$	$\chi^2=162.08***$
Hausman test (RE/H-T)	$\chi^2=164.17***$	$\chi^2= 143.3***$	$\chi^2=204.90***$
Breusch-Pagan Lagrange multiplier	$\chi^2=70.60***$	$\chi^2=65.91***$	$\chi^2=60.85***$
Sargan test(overid)	$\chi^2(3)=9.164***$ Prob> $\chi^2=16$	$\chi^2(1)=7.269$ Prob> $\chi^2=.29$	$\chi^2(1)=0.017$ Prob> $\chi^2=0.89$
Canonical corr.	0.97	0.78	0.80

Significant level: 1%: ***, 5%: **, 8%:*. Numbers in brackets are t-statistics.

⁸ Borensztein et al., 1998; Lipsey, 2000.

⁹ Lipsey, 2000; Xu, 2000; Görg and Greenaway, 2004 and Li and Liu, 2005.

¹⁰ Hermes and Lensink, 2003 and Alfaro et al., 2004.

¹¹ Balasubramanyam et al., 1996; Bende-Nabende et al., 2000.

¹² Prüfer and Tondl, 2007.

¹³ Olofsdotter, 1998; Busse and Groizard, 2006; Prüfer and Tondl, 2007.

Table 2: Equation 2 - H-T estimates by sub-sample (cluster Robust)

Variable : GDP Obs : 1938 Years : 34	ASS			NASS		
	(1)	(2)	(3)	(4)	(5)	(6)
GDPper capita $t-1$.907*** (17.82)	.909*** (18.47)	.913 *** (11.72)	.906 *** (15.15)	.918*** (14.39)	.923*** (19.69)
Labor	.002 (0.84)	.0004 (0.16)	.00212 (0.55)	-.004** (-2.19)	-.005*** (-2.76)	-.008*** (-3.85)
GFCF	.0087*** (4.88)	.010*** (5.87)	.009*** (3.42)	.0162*** (8.85)	.0157*** (8.40)	.016*** (9.10)
FDI	.0001 (0.25)	.0001 (0.21)	.0002 (0.27)	-.00002 (-0.02)	.0002 (0.25)	.0004 (0.50)
Open	.010*** (2.64)	.009*** (2.47)	.0104** (1.87)	.011 *** (3.06)	.011*** (2.97)	.011*** (2.75)
Inv. Profiles.	.001 (0.41)	.0018 (0.60)	-.0004 (0.50)	.0018 (0.25)	.002 (1.02)	.002 (1.17)
Resources	-.0009 (-.40)	-.0007 (-0.32)	-.0001 (-0.05)	.0003 (.28)	-.0001 (-0.14)	-.0001 (0.15)
Finance	-.005*** (-3.53)	-.005*** (-3.50)	-.005 *** (-2.83)	-.006 *** (-3.12)	-.006*** (-2.83)	-.005*** (-2.53)
Oil	.005 (0.20)	.0014 (0.04)	.0065 (0.52)	-.006 (-0.70)	-.006 (-0.76)	-.007 (-0.99)
AD Agri.	-.019 *** (-2.88)	-	-	-.006 ** (-1.91)	-	-
AD Indu.	-	-.016 *** (-4.05)	-	-	.002 (.52)	-
AD Serv.	-	-	.0065 (0.46)	-	-	-.022 (1.65)
Country vs Pooled effects	F= 3.91 ***	F= 4.11***	F= 3.71 ***	F= 3.71 ***	F= 8.52 ***	F=6.33***
Time effects tested	Yes	Yes	Yes	Yes***	Yes***	Yes***
Hausman (FE/RE)	$\chi^2 = 60.05***$	$\chi^2 = 50.17****$	$\chi^2=51.71***$	$\chi^2=51.71***$	$\chi^2=36.46$	$\chi^2=141.36$
Hausman (RE/H-T)	$\chi^2=45.22***$	$\chi^2= 1.70***$	$\chi^2=47.22***$	$\chi^2=47.22***$	$\chi^2=72.59***$	$\chi^2=336.51***$
Breusch-Pagan LM	$\chi^2 = 9.03***$	$\chi^2=9.12***$	$\chi^2=9.35***$	$\chi^2=201.12***$	$\chi^2= 230.18***$	$\chi^2= 222.12***$
Sargan test	$\chi^2(3)=9.11***$	$\chi^2(6)=6.250***$	$\chi^2 (6)= 3.648$	$\chi^2 (6)=9.754$	$\chi^2 (6)= 11.793$	$\chi^2 (6)= 9.841$
Canonical correlation	Prob> $\chi^2=0.16$ 0.92	Prob> $\chi^2=0.395$ 0.92	Prob> $\chi^2=0.724$ 0.93	Prob> $\chi^2=0.135$ 0.97	Prob> $\chi^2=0.107$ 0.97	Prob> $\chi^2=0.131$ 0.97

Significant level: 1%: ***; 5%: **, 8%:*. Numbers in brackets are t-statistics.

The sub-sample study (Table 2) shows that most of the results are similar to those in Table 1. Notably, the inverse relationship between the agricultural sector and GDP per capita is still observed for each of the country sub-samples. However, two results are noteworthy. First, it is not possible to identify in our analysis a positive relationship between GDP per capita and the development of the service sector. It is therefore difficult here to say that the service sector is a possible path for development within the framework of our model. The second noteworthy fact is that SSA countries have a specificity since in their case, there is an inverse relationship (coefficient of the variable is significant and negative) between GDP per capita and industrialization. This point indicates that this sector may no longer be the path to development for them.

However, some studies (Loungani et al., 2014), indicate that while the services sector may be the new development path for developing countries, they point out that it is not through a supply of services that is directed towards domestic markets but rather through a supply that is directed towards external markets. Services exports will replace exports of manufactured goods in development strategies and will thus be the new drivers of growth. To test this hypothesis, i.e., international insertion via the services sector as a source of growth, we introduce into equation 1 the last variable, that represents the openness rate of countries $((X+M)/2GDP)$. However, it is not calculated based on the value of all goods and services as is traditionally done but rather only on services (*Open services*). It is assumed that services, like manufacturing products, are part of global value chains since industrial or commercial services such as information technology, factoring, marketing, logistics, assembly and distribution or after-sales service are often outsourced nationally and globally (Ghani and O'Connell, 2014 and Enache et al., 2016), particularly to developing countries. Thus, an increase in services exports can be expected to have a positive impact on growth in the developing countries that are included in these value chains. According to Dihel and Grover (2016), this can go hand in hand with a dynamic manufacturing sector. Indeed, since services are intermediate inputs in the production of not only other services but also other goods, they can contribute to shifting resources from low-productivity activities to high-productivity

activities (especially manufacturing). Services then stimulate the productivity growth of industrial sectors through indirect effects. In the case of SSA, Dihel and Grover (2016), give an example of these effects in the use of services as intermediate inputs and participation in value chains in the agro-food and textile sectors.

Due to strong collinearity with the Open variable, the latter is removed from the estimate.

The results in Table 3 indicate that while international integration via the services sector has a positive impact on the growth of the countries in the sample, only NASS countries manage to benefit from this opportunity. We find for NASS countries, the conclusions of Ghani and O'Connell (2014), Enache et al. (2016), Dihel and Grover (2016) or Loungani (2017) hold.

The hypothesis, if validated, seems to be true only for the countries in the NASS sample, many of which are emerging or middle-income countries (annex 2). For these countries, we find results consistent with the conclusions of Dihel and Grover (2016) that growth in the services sector can allow for higher GDP growth, job creation, poverty reduction, and gender parity¹⁴.

¹⁴ In other work, the authors show that services play a role in gender parity because the share of female senior managers is higher in African service firms than in manufacturing firms (17 per cent versus 13 per cent, respectively) according to Coste and Dihel (2013).

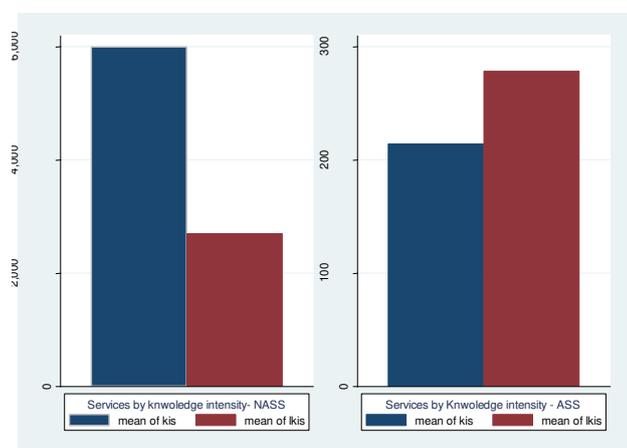
Table 3 - Equation 2 - H-T estimated by sub-sample (cluster Robust)

Variable : GDP	(1)	(2)	(3)
N. Obs : 1938		ASS	NASS
Years : 34			
N_Cluster : 57			
GDP per capita $t-1$.921*** (19.18)	.889*** (18.25)	.916*** (11.39)
Labor	-.001 (-0.75)	.008 (1.64)	-.005*** (-2.83)
GFCF	.0134*** (7.79)	.010*** (3.99)	.017*** (8.99)
FDI	.0001 (0.25)	.0003 (0.38)	.0005 (0.58)
Open Services	.005*** (3.37)	.002 (1.10)	.005 *** (3.05)
Profil d'investissement Resources	.0004 (0.09)	-.007 (-0.72)	.001 (0.36)
Finance	.0006 (0.68)	.001 (0.64)	.001 (1.23)
Oil	-.004*** (-4.67)	-.004*** (-3.79)	-.006*** (-2.94)
	-.0002 (-0.03)	-.008 (-0.44)	-.014 (-1.59)
Country effects vs Pooled	F= 6.54 *** Yes***	F= 4.71*** Yes	F=9.28*** Yes***
Time effects tested	$\chi^2 =$	$\chi^2 = 61.89***$	$\chi^2 = 129.46***$
Hausman test (FE/RE)	139.18*** $\chi^2 =$	$\chi^2 = 10.34$	$\chi^2 = 68.90***$
Hausman test (RE/H-T)	$\chi^2 = 26.16***$ =164.17***	$\chi^2 (5) = 2.026$ Prob>	$\chi^2 = 246.94***$ $\chi^2 (6) = 9.958$ Prob> $\chi^2 = 0.126$
Breusch-Pagan	$\chi^2 (5) = 8.591$ ***	$\chi^2 = 0.845$ 0.62	0.97
Lagrange multiplier Sargan test(overid)	Prob> $\chi^2 =$		
Canonical correlation	0.126		
	0.81		

Significant level: 1%: ***; 5%: **, 8%:*. Numbers in brackets are t-statistics.

This differentiated result is related to the fact that if we analyse services exports by knowledge intensity, we note that NASS countries export mainly knowledge-intensive services (KIS), such as financial, telecommunication, or air transport services, while SSA countries export mainly low-knowledge-intensive services (LKIS), such as postal or courier services (WTO data).

Figure 8 - Service exports by knowledge intensity



WTO database

SSA countries, some of which are LDCs, are therefore struggling to develop the absorptive capacities necessary for the development of an internationally competitive services sector that provides the necessary spill-over effects for long-term growth.

As Figure 8 shows, while the majority of NASS countries' services exports are, on average, in the KIS sector, the situation is the opposite for SSA countries, which remain specialized in LKIS.

CONCLUSION

SSA countries suffer from premature industrialization. Tight domestic markets and strong global demand for services leave few growth opportunities for SSA manufacturing sectors. Moreover, their high specialization in resources prevents them from benefiting from the positive effects of international integration. But, our work shows that the services sector, which is growing in this region, generates few spill-over effects on the income of SSA countries, which remain highly specialized in low-knowledge-intensive services. The opposite result is observed for NASS countries. It is not possible within the context of this study to validate the hypothesis that the service sector is the key to sustained growth in SSA countries.

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Annex 1

List of variables:

Variables	Definitions	Expected signs	Sources
GDP _{it}	GDP per capita for period t and country i		WB
Finance _{it}	Financial Development Domestic credit to private sector by banks (% of GDP)	+	WB
Open _{it}	Openness rate	+	UNCTAD
FDI _{it}	Inward FDI	+/-	UNCTAD
GDP _{it-1}	GDP per capita lagged	+/-	WB
GFCF _{it}	Gross fixed capital formation as percentage of GDP	+	UNCTAD
Labour _{it}	Labour force	+/-	WB
ADS _{jit}	Share of each sector j in the total value added (ADS _j , with j=Agriculture, Manufacturing, AD. Agri; AD.indust.; AD.Services	- + -	UNSD
Resources _{it}	Share of profits from all natural resources as percentage of GDP	+/-	WB
Oil	Dummy variable for oil producer (1 if yes and 0 if not)	-	Trading Economics
Investment profiles _{it}	Institutional variable (Investment Profile)	+	PRS group (ICRG)
Open services	Openness rate of countries(for only service) Authors calculation	+	UNCTAD

Annex 2

Table 2: Country list - GDP per capita (US\$ constant 2010) - Manufacturing value-added (% of total) in 2017

Country	GDP per capita	Share of Manufacturing sector	Country	GDP per capita	Share of Manufacturing sector	Country	GDP per capita	Share of Manufacturing sector
South Africa	7525.5	13.5	Ghana	2323.7	13.8	Nigeria	2412.4	9.1
Angola	3333.2	5.8	Guatemala	3124.1	18.4	Uganda	625.5	9.1
Argentina	10468.2	17.3	Guinea (Bissau)	603.5	11.7	Pakistan	1201.6	13.4
Bolivia	2522.8	13.1	Guinea (Equatorial)	806.5	9.6	Paraguay	4045.2	12.9
Botswana	7523.2	6.9	Honduras	2210.5	15.9	Philippines	2891.3	22.8
Brazil	10862.2	11.9	Hong Kong	38067.5	1.4	Peru	6172.6	14.2
Burkina Faso	685.7	8.1	India	1954.0	18.7	Sierra Leone	462.6	2.0
Cameroun	1511.8	15.8	Indonesia	4130.6	22	Singapore	54300.6	19.7
Chile	15059.5	10.6	Kenya	1169.3	10.4	Sri Lanka	3954.01	17.2
China	7207.3	23.7	Liberia	403.2	5.7	Senegal	1454.9	18.5
Colombia	7600.7	11.9	Madagascar	480.0	7.9	Tanzania	889.2	7.1
Congo, R	2520.1	6.1	Malaysia	11528.3	23.3	Thailand	6126.2	27.3
Congo, DR	409.1	15.1	Mali	996.3	13.1	Togo	652.3	11.2
South Korea	26152.0	31.8	Morocco	3541.1	16.8	Tunisia	4249.7	16.5
Ivorian Coast	1625.4	13.4	Mexico	9947.9	16.2	Uruguay	14362.5	12.8
Egypt	2731.0	15.9	Mozambique	519.0	9.1	Vietnam	1834.6	19.6
Equateur	5269.6	12.4	Namibia	5854.8	10.6	Venezuela	8892.9	11.1
Gabon	442.0	5.7	Nicaragua	2016.3	16.9	Zambia	1637.3	8.5
Gambia	801.3	4.1	Niger	395.9	6.9	Zimbabwe	923.4	8.8

Authors' calculations (UNSD and World Bank databases)

Figures

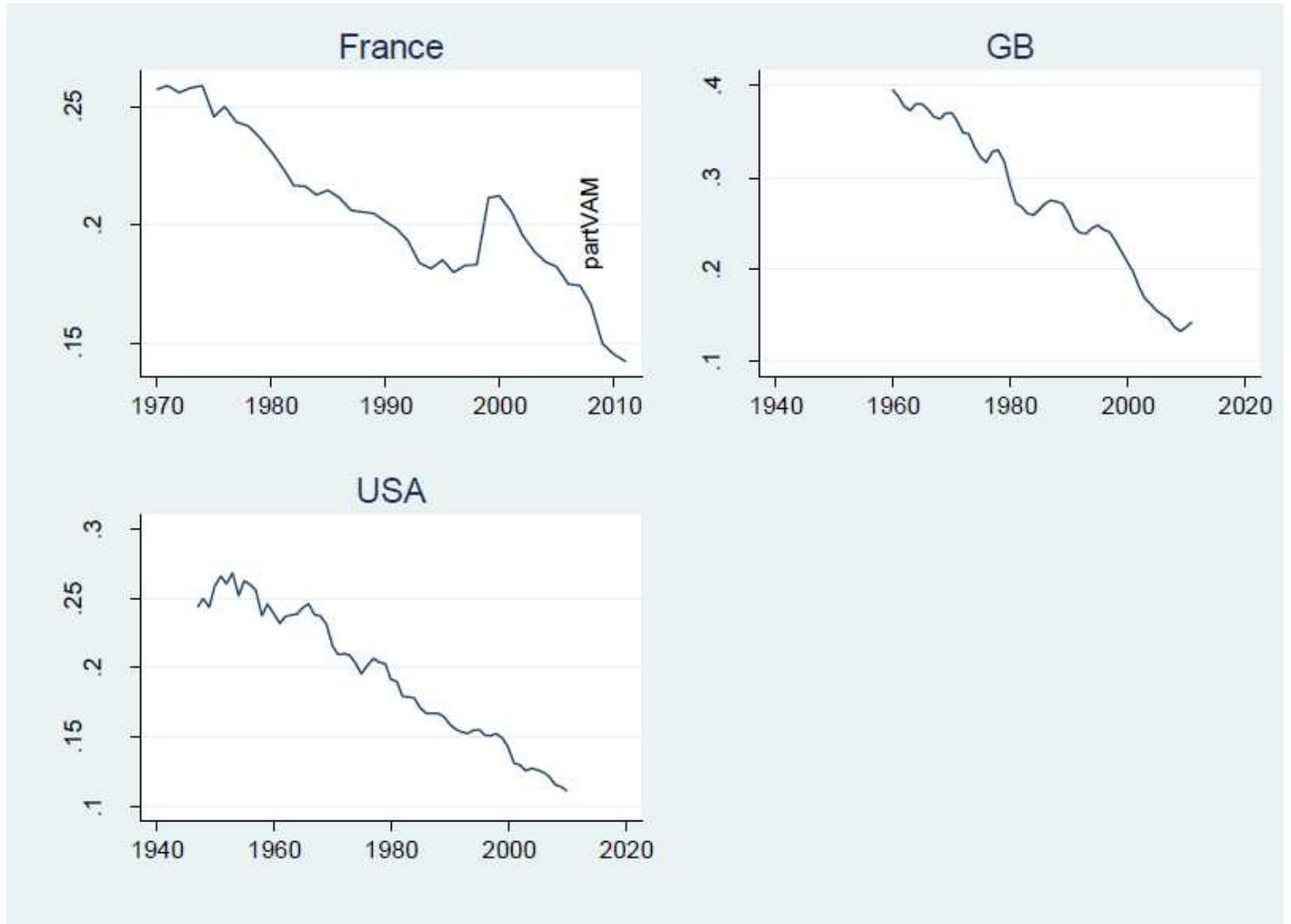


Figure 1

Manufacturing value-added share as % of GDP - FICs - 1950-2014

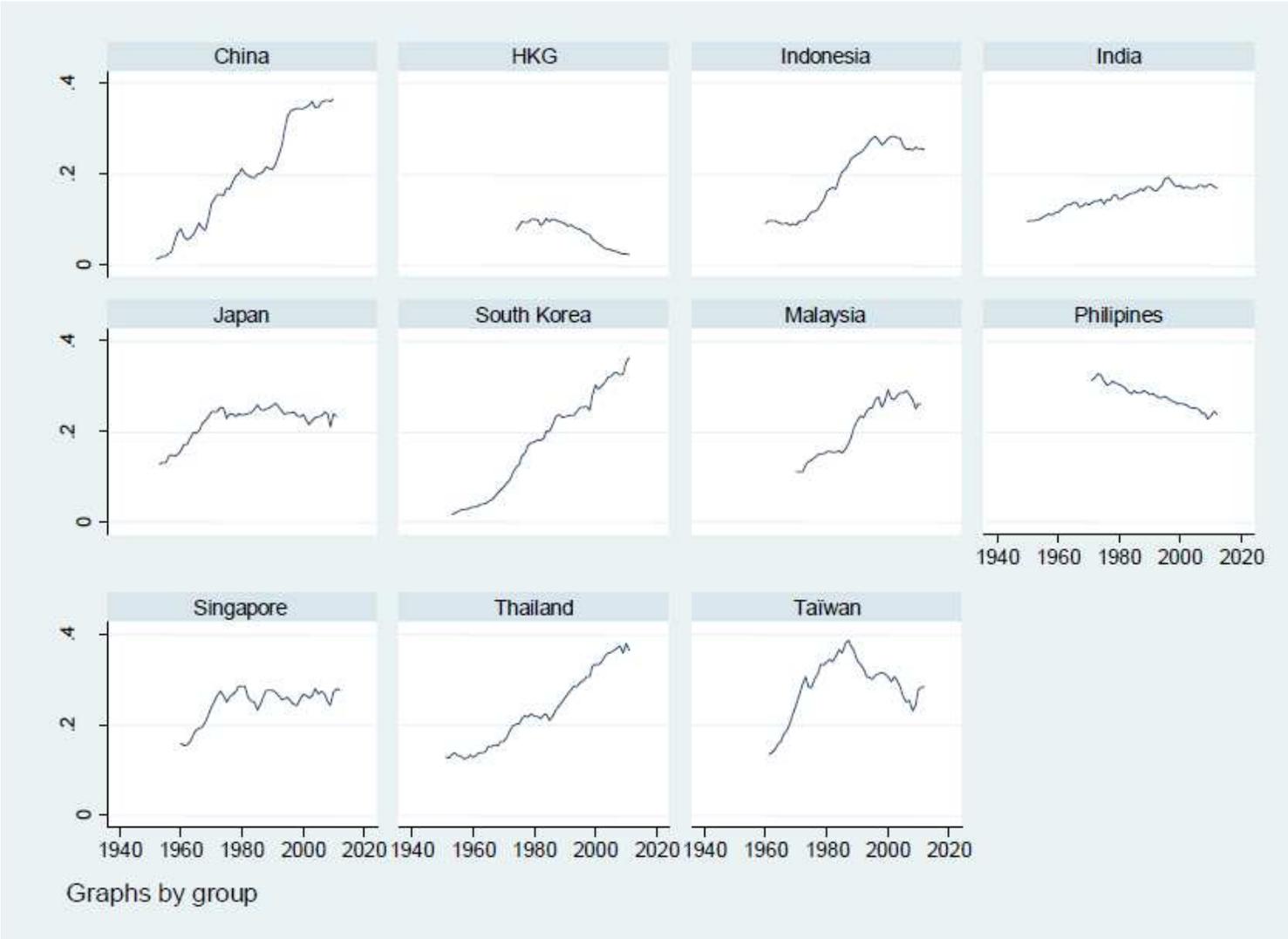


Figure 2

Manufacturing value-added share as % of GDP. Asian countries - 1950-2014

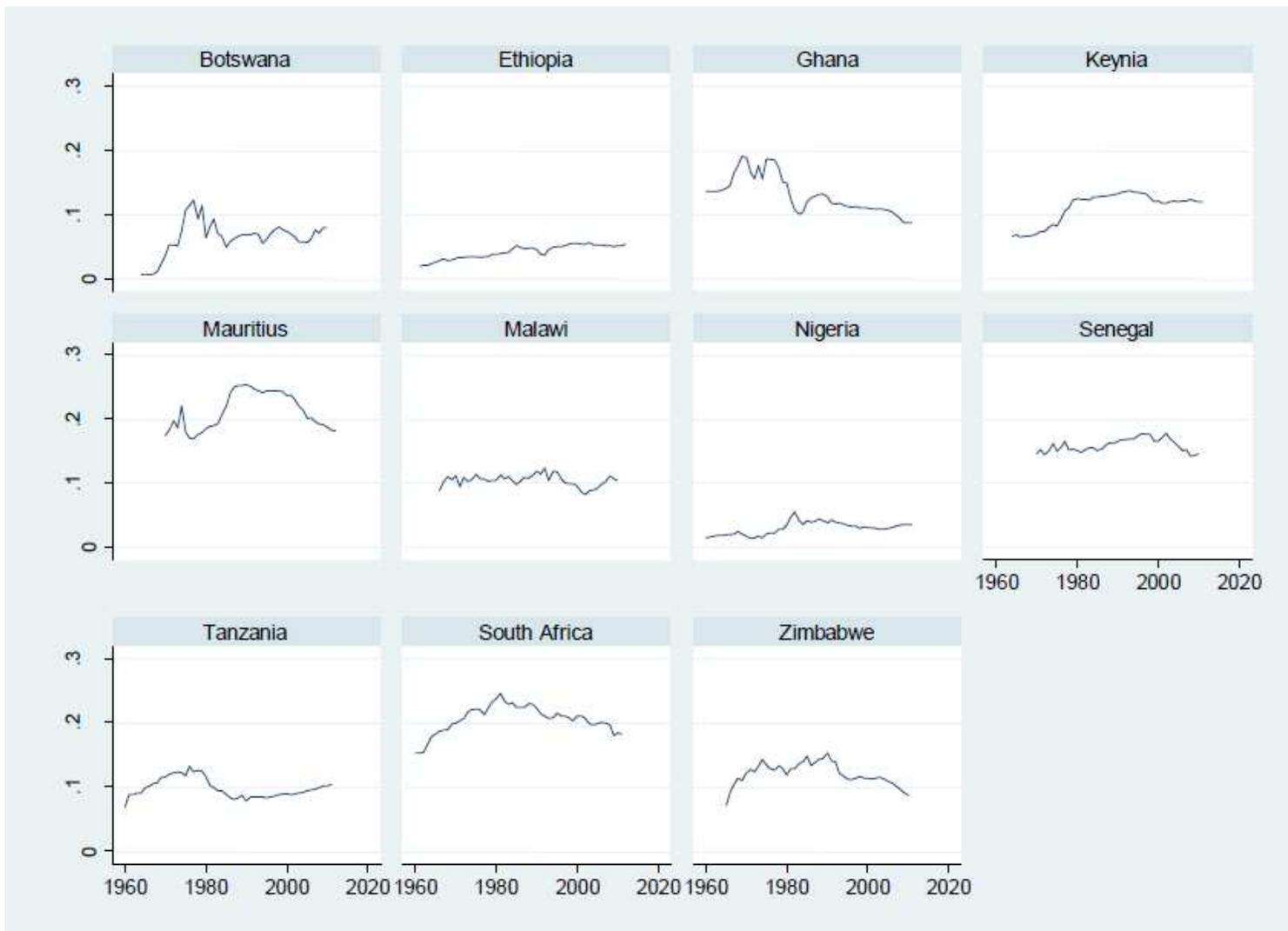


Figure 3

Manufacturing value-added share as % of GDP. SSA countries - 1950-2014

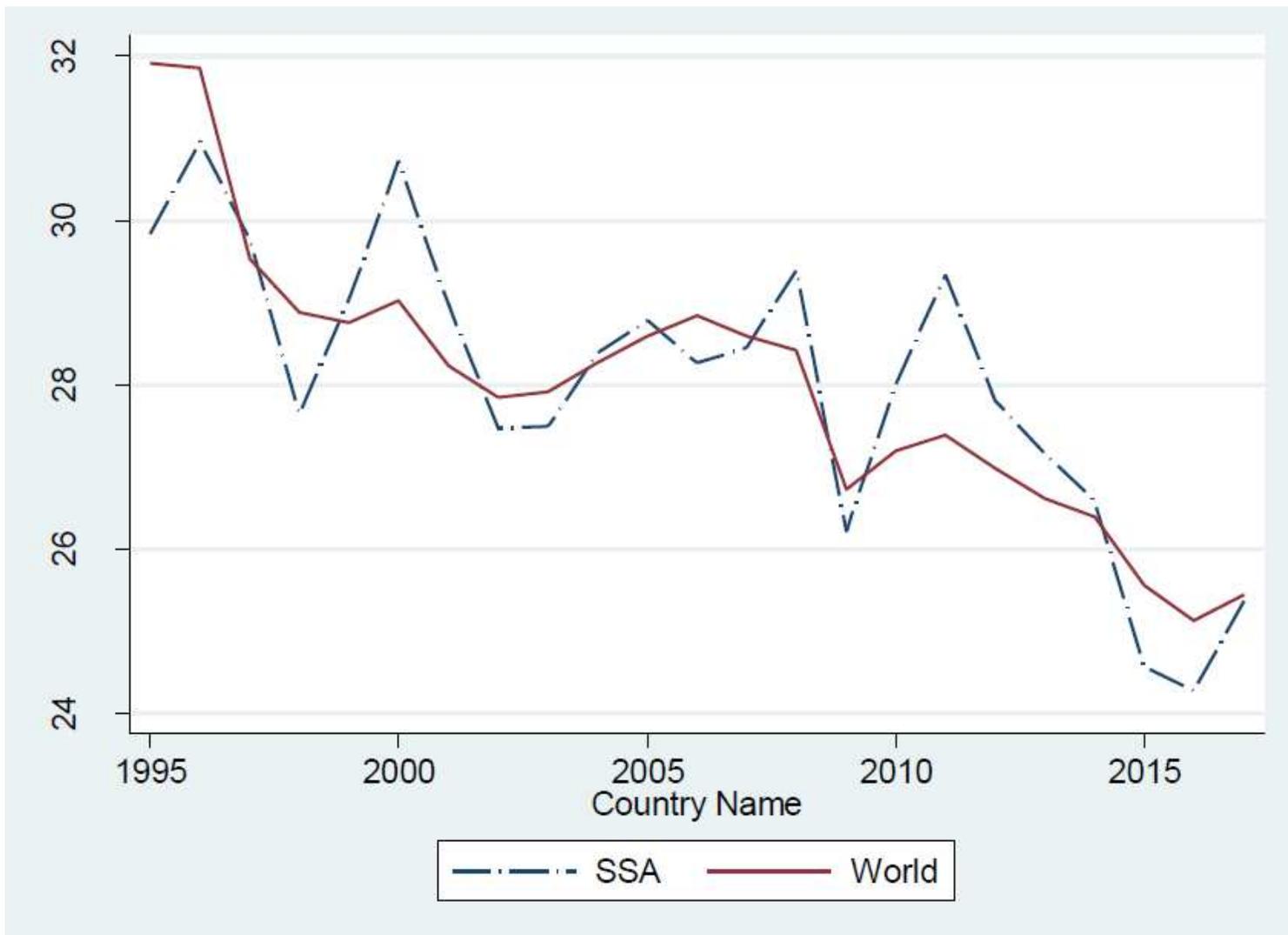


Figure 4

Industrial value-added share as % of GDP in the world and in SSA – 1995-2014

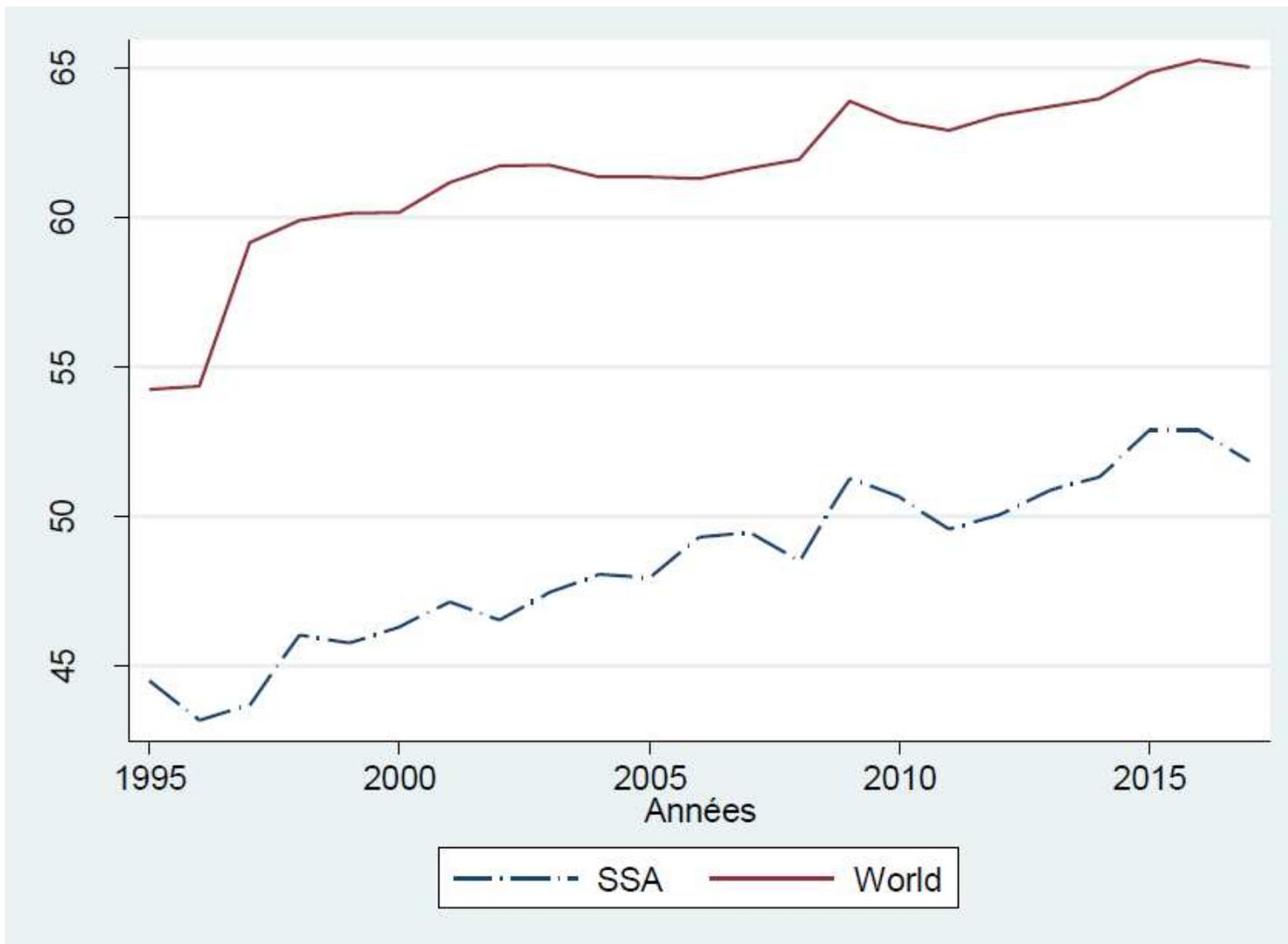


Figure 5

Service value-added share as % of GDP in the world and in SSA - 1995-2014



Figure 6

World exports of services and goods (millions of US dollars) - 1980-2014

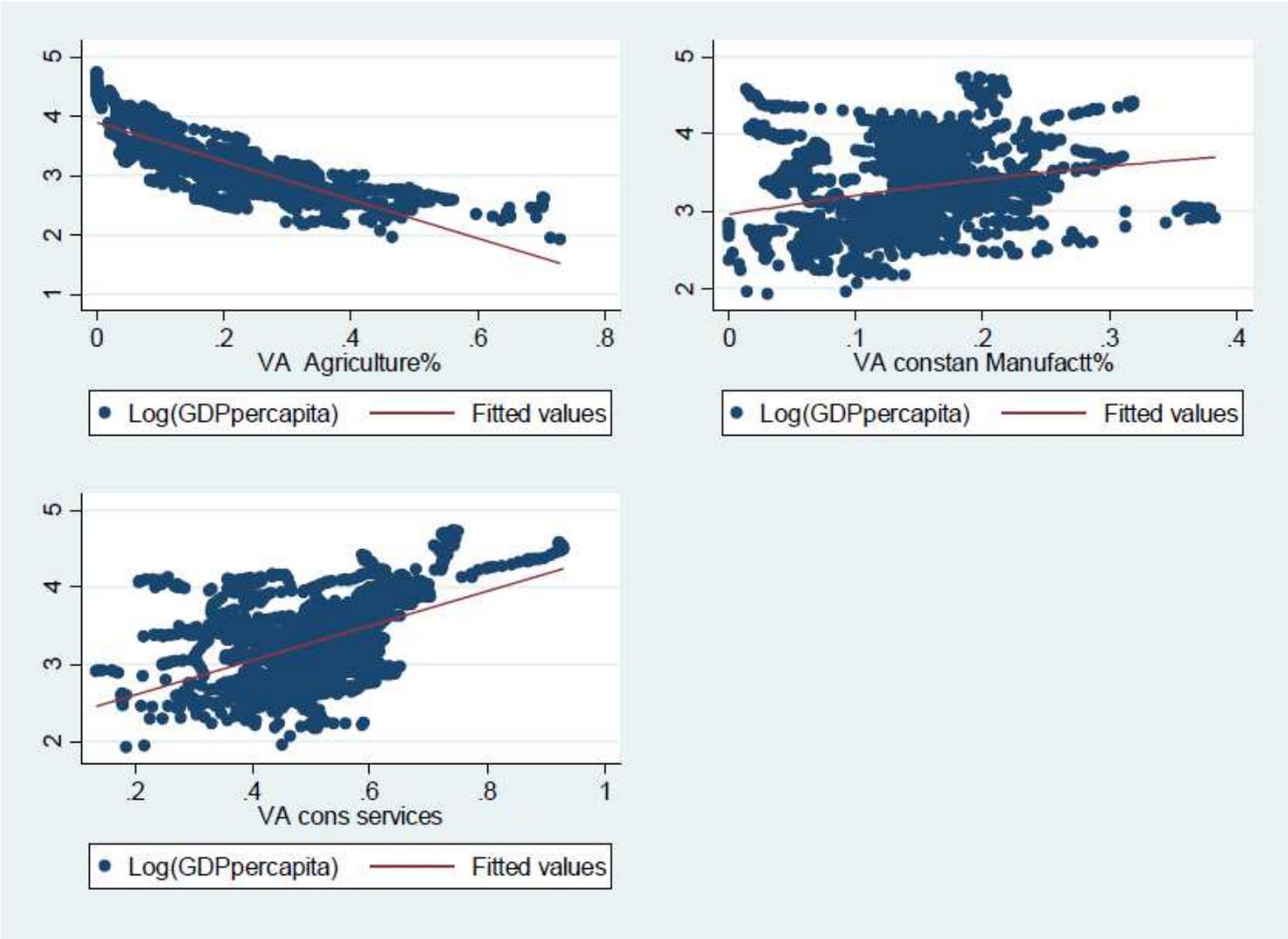


Figure 7

Value added of sectors as % of GDP and log of GDP per capita in SSA - 1984-2017

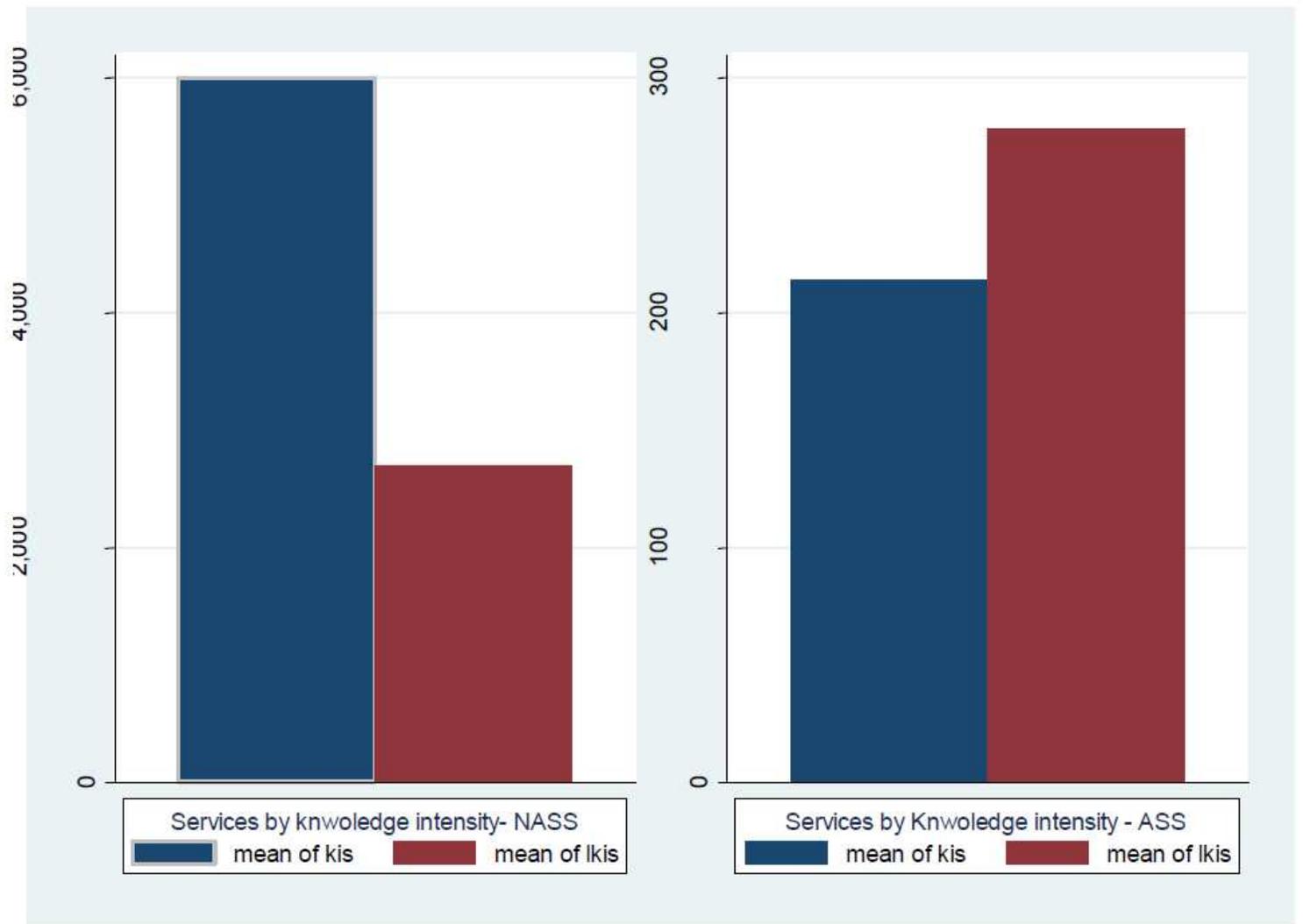


Figure 8

Service exports by knowledge intensity