

Aid for Trade flows and Recipient-Countries' Integration into the World Market for Services Exports: Do Merchandises Exports and Foreign Direct Investment Inflows matter?

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Abstract

An important literature on the recipient-countries' export performance effect of Aid for Trade (AfT) flows has focused on the goods side. The few existing studies on the services exports effects of AfT interventions have reached mixed results, reflecting a positive or weak effect. The present study aims to complement these few studies by examining the effect of AfT flows on recipient-countries' share of services exports in the world services exports ('services export integration'), including through two main channels: their share of countries' merchandises exports in the world merchandises exports ('merchandises export integration') and the size of foreign direct investment (FDI) inflows. The empirical analysis, based on a sample of 105 countries over the period 2002-2016, has shown that these two channels definitely matter for the effect of AfT flows on countries' services export integration. Specifically, by fostering countries' merchandises export integration, AfT flows can promote their services export integration. Furthermore, promoting FDI inflows enhances the positive effect of AfT flows on countries' services export integration.

1. Introduction

It is now well admitted that while openness to international trade can provide substantial benefits, such benefits would not accrue to countries that lack the capacity to trade (e.g., Alonso, 2016; UNCTAD, 2016a). It was in that spirit that the Members of the World Trade Organization (WTO) launched the Aid for Trade (AfT) Initiative at the WTO Hong Kong Ministerial conference in 2005. As stated in the Ministerial Declaration of this conference, AfT flows purport to help developing countries, and in particular the least developed countries (LDCs) among them expand their trade, including by addressing their supply-side 'structural' constraints and implementing WTO Agreements. According to the joint publication by the Organisation of Economic Co-operation and Development (OECD) and World Trade Organization (WTO), since the launch of the AfT Initiative, recipient-countries have received US\$ 409 billion to build trade-related capacities and infrastructure, and US\$ 5,7 billion to help elaborate trade development strategies, negotiate and implement trade agreements (see OECD/WTO, 2019: page 57). Whether or not AfT flows have been effective in helping recipient-countries expand their trade (as envisaged by Trade Ministers at the Hong Kong Ministerial Conference) has been the subject of a growing literature. The latter has shown a mixed evidence, i.e., a positive or weak effect of AfT flows on trade performance in recipient-countries (see Cadot et al. 2014 and OECD-WTO, 2017 for a detailed literature review on this matter). The majority of those studies have looked at the effects of AfT flows on trade in goods, notably export of goods, while very few studies have investigated the effectiveness of AfT flows with respect to services exports (e.g., Ghimire et al., 2013; Hoekman and Shingal, 2019; Martínez-Zarzoso et al. 2017). Ghimire et al. (2013) have used aggregated data and the seemingly unrelated regression (SUR) approach to investigate the effect of sectoral AfT flows (i.e., AfT allocated respectively for the promotion of the agriculture, manufacturing and services sectors) on sectoral exports (i.e., exports of agricultural products; manufacturing exports; and services exports) in recipient-countries. They have uncovered that sectoral AfT flows are positively associated with relevant sectoral exports. This means that as far as the services

sector is concerned, AfT allocated to the services sector has induced higher services exports. Martínez-Zarzoso et al. (2017) have also used aggregated data, but rather the panel quantile regression approach to obtain that total AfT flows enhance exports of goods and services for countries located in the lower quantiles (i.e., 0.1; 0.25; and 0.5), with this positive effect being primarily on goods exports rather than on services exports. In other words, total AfT flows have exerted a weak effect on services exports. The recent work by Hoekman and Shingal (2019) is interesting in that it has used both aggregate and disaggregated data (i.e., bilateral data) to examine the effect of AfT flows, including both total AfT flows and two major components of the latter (AfT for the services sector and AfT for other sectors) on both exports and imports of goods and services. The authors have used the two-stage least square (2SLS) instrumental variable approach, the Generalized Method of Moments (GMM) estimator and the Poisson pseudo-maximum likelihood (PPML) estimator. Their findings are to some extent in line with those of Martínez-Zarzoso et al. (2017): while the analysis based on both aggregate and disaggregate data has shown that AfT flows have exerted a weak effect on goods and services trade (i.e., both exports and imports), the bilateral analysis has revealed that AfT, in particular that allocated to services activities, notably economic infrastructure, has exerted a positive effect on recipients' merchandises exports to donor-countries. Overall, there services exports effect of AfT interventions is non-significant.

The strand of the literature on the services exports effects of AfT flows is still at its infancy. The current paper aims to contribute to this literature by investigating whether AfT flows have helped recipient-countries better integrate into the world market of services exports, including through the effect of these resource flows on recipient-countries' integration into the world market of merchandises exports as well as through foreign direct investment (FDI) flows to these countries. Thus, the current paper departs from previous studies in three ways. First, it considers the effect of AfT flows on the recipient-countries' share of services exports in the world services exports, rather than on the value of services exports as in Martínez-Zarzoso et al. (2017) and Hoekman and Shingal (2019). Second, it adds to the few above-mentioned studies by investigating two mains channels through which AfT flows can affect recipient-countries' integration into the world market of services exports, namely goods exports and FDI inflows. The focus on services exports in this analysis is dictated by the growing importance of services exports in the international trade markets, the increasing relevance of services as intermediate inputs in global and regional value chains (e.g., Baldwin et al., 2015; Lanz and Maurer, 2015) and the key role of services for economic growth, poverty reduction and more generally economic development (e.g., Fiorini, and Hoekman, 2018; François and Hoekman, 2010; Hoekman, 2017; Roy, 2019).

To shed a first light on the relationship between total AfT flows and countries' share of services exports in the world's services exports (in the rest of the analysis, the latter is also referred alternatively as to 'services exports share', 'share of services exports' or 'services export integration'), we present - based on a sample of 105 countries over the period 2002–2016 (this is the panel dataset used in the empirical analysis below) - in Figure 1 the development of both total AfT flows (denoted "AfTTOT") and services exports share (denoted "SERVINT") (the average values of these two indicators over the 105 countries have been computed). Figure 2 shows the correlation pattern between these indicators for both the full sample, as well as the sub-samples of LDCs and NonLDCs (i.e., countries not classified as LDCs in the

full sample). Figure 1 shows that while total AfT flows have substantially increased from US\$ 93 million in 2002–2004 to US\$ 254.2 million in 2014–2016, services exports share has steadily increased from 0.15% in 2002–2004 to 0.19% in 2011–2013, but declined to reach 0.17% in 2014–2016. Figure 2 shows a positive correlation between total AfT flows and services export share both for the full sample, as well as for the sub-samples of LDCs and NonLDCs. This positive correlation does not prejudge the existence of a positive causality from total AfT flows to services exports share, as only the empirical analysis would provide guidance on this.

The rest of the analysis is structured around four sections. Section 2 provides a discussion on the effect of AfT interventions on recipient-countries' integration into the world market of services exports, including through goods exports and FDI. Section 3 lays down the model specification that helps perform the empirical analysis, and briefly discusses the econometric approach for the estimation of this model. Section 4 interprets empirical results, and Section 5 concludes.

2. Theoretical Discussion On The Effect Of Aft Flows On Countries' Integration Into The World Market Of The Services Exports

The OECD has categorized total AfT flows into three main compartments (which are also largely used in the empirical literature on the AfT effectiveness). These categories are AfT related to economic infrastructure, AfT allocated for enhancing productive capacity; and Aid dedicated to trade policy and regulation. The details on the sub-components of each of these AfT categories are provided in Appendix 1. AfT flows can affect recipient-countries' exports by reducing trade costs (notably through its AfT for economic infrastructure and AfT for trade policy and regulation components), enhancing productive capacity (through the AfT for building productive capacity) and helping policymakers of recipient-countries be better equipped with the appropriate trade policy tools to implement WTO agreements and develop trade promotion strategies (through the AfT for trade policy and regulation component). Additionally, AfT for trade policy and regulation helps reduce costs associated with trade policy liberalization. The trade costs reduction effect of AfT interventions takes place through the development of hard infrastructure such as roads and ports, soft infrastructure such as the information communication and technology tools, as well as the reduction of administrative costs and regulatory bottlenecks to trade. A number of studies have shown a strong positive effect of trade facilitation on trade performance, including export performance of recipient-countries (e.g., Anderson and Marcouiller, 2002; Beverelli et al., 2015; Cali and TeVelde, 2011; Iwanow and Kirkpatrick, 2009; Limao and Venables, 2001; Portugal-Perez and Wilson, 2012; Vijil and Wagner, 2012; Wilson et al., 2003, 2005).

Even though some studies in the literature on the recipient-countries' export performance effect of AfT interventions have reported a somewhat weak effect (e.g., Hoekman and Shingal, 2019; Martínez-Zarzoso et al. 2017), many other studies have shown that AfT flows are positively associated with recipient-countries' export performance, in particular exports of goods (e.g., Bearce et al. 2013; Cali and TeVelde, 2011; Ferro et al., 2014; Ghimire et al. 2016; Gnangnon, 2019b; Hühne et al. 2014a, 2014b; Pettersson and Johansson, 2013; Vijil and Wagner, 2012). On the other hand, another strand of the literature has

underlined the strong linkages between goods exports and services exports, whereby for example, cross-border services trade are by-products of international manufacturing activities (e.g., Broussolle, 2012; Deardoff, 2001; Eichengreen and Gupta, 2013a; François and Hoekman, 2010; Hoekman and Mattoo, 2008; Lennon, 2008; Lodefalk, 2012; Nordås, 2010; Stern and Hoekman, 1987). Eichengreen and Gupta (2013a), and Sahoo and Dash (2014) have provided empirical support for their hypothesis that there is a 'network effect' of the rise in goods exports (notably manufacturing exports) on services exports: as countries' exports of goods rises, they develop a network in the international trade market that helps them promote their services exports. In the same vein, Gnanngnon and Shishir (2016) have found empirical evidence that if LDCs diversify their export products basket, they will enjoy a rise in their commercial services exports. The positive effect of trade in goods on services trade has also been reported by Ceglowski (2006), Karmali and Sudarsan (2008) and Kimura and Lee (2006). Against this background, we postulate that AfT flows can promote integration into the world market for services exports for countries that enjoy a greater integration into the world market of goods exports. In other words, we expect AfT flows to be associated with a rise in recipient-countries' services export share of the world services exports when these countries experience an increase in the share of merchandises exports in the world's merchandises exports (*Hypothesis 1*).

We also posit that AfT flows can affect recipient-countries' services exports share through its effect on FDI inflows. Maurer and Magdeleine (2008) have noted that two-thirds of international trade in services takes place via Mode 3 of services or commercial presence, notably FDI inflows. Similarly, UNCTAD (2016b) has pointed out that the predominant destination of FDI is the services sector, as FDI in this sector represents two-thirds of the global FDI stock. At the same time, two main studies (Lee and Ries, 2016; Ly-My and Lee, 2019) have underlined the positive effect of AfT interventions on FDI inflows. Lee and Ries (2016) have obtained a positive effect of total AfT on greenfield investment, with this effect mainly reflecting the positive impact of AfT for economic infrastructure and AfT for building productive capacity. In addition, the authors have investigated whether this impact holds for LDCs as well as NonLDCs in the full sample. They have found that this finding does not hold for LDCs, while it is confirmed for NonLDCs. With respect to the components of total AfT flows, the authors have observed that AfT for economic infrastructure and AfT for building productive capacity have exerted a strong positive effect on greenfield investment in recipient-countries. In light of the potential benefits of greenfield investment in terms of jobs creation and technology transfer, they have therefore concluded,, that AfT has been accomplishing its development objectives, at least with regard to the more advanced recipient countries. Ly-My and Lee (2019) have investigated the greenfield FDI flows effects of AfT in recipient-countries, and reported that AfT flows have led to a rise in the dollar value of FDI flows to the recipient countries, and helped diversify the greenfield projects and source countries of these FDI inflows. Interestingly, AfT flows have induced a higher positive effect on greenfield FDI sourced from donor (developed) countries than from non-donor (developing) countries. As for the components of total AfT flows, the authors have uncovered that AfT for economic infrastructure and AfT for trade policy and regulation have positively influenced greenfield FDI, with this effect being particularly higher for FDI from

developed countries. However, AfT for productive capacity building has promoted greenfield FDI from donor countries, while adversely affecting greenfield FDI flows from non-donor countries.

The study by Selaya and Sunesen (2012) has not focused explicitly on the FDI inflows effect of AfT inflows, but rather on the effect of total official development aid (which includes AfT flows) on FDI inflows. They have obtained that aid invested in complementary inputs such as public infrastructure development (aid allocated for the construction of roads, electricity, ...etc) and human capital investments is associated with an increase in the marginal productivity of capital and higher FDI inflows. In contrast, aid in the form of physical capital transfers (i.e. directed towards productive sectors such as agriculture, manufacturing, banking,....etc) crowds out productive private investment. On another note, the services export promotion effect of FDI inflows has been reported for example by Grünfeld and Moxnes (2003), Sandra and Pelin (2012) and Wong et al. (2009). Similarly, as FDI inflows can help develop manufacturing exports (e.g., Athukorala, 1995; Camarero and Tamarit, 2004; Ghosh and Roy, 2018; Leichenko and Erickson, 1997) as well as export product diversification (e.g., Amighini and Sanfilippo, 2014; Gnangnon and Roberts, 2017; Harding and Javorcik 2012, Zhu and Fu 2013), one can also expect that these capital inflows would result in higher services exports share through the 'network effect' highlighted above.

Against this backdrop, we argue that AfT flows can affect recipient-countries' integration into the world market of services exports through its effect on FDI inflows. In particular, AfT flows would result in higher services export share (of the world services exports) as FDI inflows to recipient-countries would rise (*hypothesis 2*). We test both hypotheses (1) and (2) in the empirical analysis.

3. Empirical Model

The empirical analysis of the effect of AfT flows on recipient-countries' services export share is investigated by taking cue from the empirical literature on the determinants of services exports more generally, and more specifically from the above-mentioned few studies on the effect of AfT flows on recipient-countries' services trade. Therefore, we consider specifically control variables that are deemed to influence the expected effect of AfT flows on recipient-countries' services export share through merchandises exports and FDI inflows. These control variables include the real per capita income, the population size, the real exchange rate, trade policy, the financial development depth, the education level and the institutional and governance quality.

The use of the real per capita income (which also acts for the development level) as a control variable aims to account for the effect of the domestic demand structure on services exports (e.g., Linder, 1961). Specifically, the real per capita income reflects the economies of scale, as the latter can induce a higher demand for new services and consequently generate higher services production and exports (e.g., Li et al., 2005; Nyahoho, 2010; Sapir and Lutz, 1981). The population size variable aims to capture countries' size. As noted by Goswami et al. (2012), the rise in the population size is associated with a higher demand for services, and the expansion of the services sector. This could, in turn, be associated with a rise in services

exports. Thus, we expect a rise in the real per capita income to be positively associated with countries' integration into the world market for services exports. Trade policy liberalization can affect services exports through its pro-competitive effect in domestic markets that increases firms' productivity (e.g., Melitz 2003), its effect on the expansion of the market sizes that is conducive to economies of scale (e.g., Alesina et al. 2005) and finally through the promotion of knowledge diffusion (e.g., Grossman and Helpman 2015). The services exports effect of trade policy liberalization can also take place indirectly through the effect of trade policy liberalization on exports of goods. In light of the 'network effect' of merchandises exports on services exports (e.g., Eichengreen and Gupta, 2013a and Sahoo and Dash, 2014), one can expect that trade policy liberalization that promotes goods exports will result in greater services exports. Overall, we expect greater trade policy liberalization to result in greater integration of countries into the world market for services exports. The real exchange rate variable has been introduced in model (1) in light of the importance of this variable for services export dynamics. The few existing works on the matter have shown that an appreciation of the real exchange rate exerts a negative effect on services exports, which is even more pronounced than its negative effect on goods exports (e.g., Abeyasinghe and Yeok, 1998; Baggs et al. 2010; Eichengreen and Gupta, 2013b; Sahoo and Dash, 2014; 2017; Smith, 2004). The education level variable (proxied here by the secondary school enrolment rate) has been included in model (1) because almost all empirical studies on the determinants of services exports have emphasized the importance of an educated workforce for the promotion of services exports (e.g., Eichengreen and Gupta, 2013a, 2013b; Goswami et al., 2012). Similarly, financial development is key for the enhancement of services exports (e.g., Sahoo and Dash, 2017). Finally, institutions matter for export dynamics (e.g., Araujo et al., 2016). In particular, the absence of good institutions prevent firms from taking advantage of new trade opportunities (e.g., Méon and Sekkat, 2008), including in services markets (e.g., Gani and Clemes, 2016; Kimura and Lee, 2006; Sahoo and Dash, 2014, 2017; Cattaneo et al. 2010).

In light of the foregoing, we consider the following baseline model (1):

$$\text{Log}(\text{SERVINT})_{it} = \alpha_0 + \alpha_1 \text{Log}(\text{SERVINT})_{(it-1)} + \alpha_2 \text{Log}(\text{AfT})_{it} + \alpha_3 \text{Log}(\text{GDPC})_{it} + \alpha_4 \text{Log}(\text{POP})_{it} + \alpha_5 \text{Log}(\text{REER})_{it} + \alpha_6 \text{Log}(\text{TP})_{it} + \alpha_7 \text{Log}(\text{EDU})_{it} + \alpha_8 \text{Log}(\text{FINDEV})_{it} + \alpha_9 \text{INST}_{it} + \mu_i + \lambda_t + \omega_{it}$$

The subscripts i and t represent respectively the countries' index and the time-period. Model (1) is estimated using an unbalanced panel dataset of 105 countries (of which 35 LDCs) over the period 2002–2016, based on the availability on data concerning variables in this model. Non-overlapping sub-periods of 3-year average (i.e., 2002–2004; 2005–2007; 2008–2010; 2011–2013; and 2014–2016) have been used for the variables so as to mitigate the effect of business cycles on these variables (this yields 5 sub-periods). The parameters α_0 to α_9 are to be estimated. μ_i represent countries' unobservable time invariant specific effects that can affect countries' services exports. ε_{it} is a well-behaving error-term. λ_t are time dummies, and represent global shocks affecting simultaneously all countries' services exports.

The dependent variable "SERVINT" represents for a given country in a given year, the share of services exports in the world services exports. As noted above, for the sake of simplification, we will henceforth

refer it as to 'services exports share', 'share of services exports' or 'services export integration'. The variable "AfT" stands for the measure of AfT flows, which can be either total AfT flows ("AfTTOT") or one of its three components described in Section 2, i.e., AfT for economic infrastructure ("AfTINFRA"), AfT for productive capacity ("AfTPROD"), and AfT for trade policy and regulation ("AfTPOL"). All AfT variables are expressed in US Dollar, constant prices 2016. The variables "GDPC", "POP", "REER", "TP", "EDU", "FINDEV" and "INST" represent respectively the real per capita income, the population size, the real exchange rate, trade policy, the education level, the financial development depth and the institutional and governance quality. The description of all these variables is provided in Appendix 1, and their related standard descriptive statistics are displayed in Appendix 2. Appendix 3 shows the list of the 105 countries, including that of the 35 LDCs. As it can be noted in model (1), the natural logarithm ("Log") has been applied to all variables in model (1) (with the exception of the variable "INST" which has negative and positive values) not only to reduce their skewness, but also to obtain coefficient in terms of elasticities. The variables expressed in terms of ratios (i.e., "SERVINT" and "FINDEV") are not expressed in percentage. Finally, the introduction of the one-period lag of the dependent variable as a regressor in model (1) aims to capture the state dependence nature of the share of services exports, i.e., its likely persistence over time.

We begin the empirical analysis by estimating a static specification of model (1) - i.e., by removing the one-period lag of the dependent variable among regressors - using the fixed effects ("FE") estimator and the cross-section weighted feasible generalized least squares (FGLS) estimator. The variable "AfT" is measured by the total AfT flows. The results of these estimations are displayed in Table 1. However, all regressors (except for the population size variable) in this static specification of model (1) can be endogenous due notably to the reverse causality from the dependent variable to each of these regressors. Taking for example the AfT variables, one can expect that donors would provide a higher amount of AfT to countries with a lower share of services exports with a view to helping them promote their services exports. Likewise, countries that aim to further integrate into the world market for services exports can further liberalize their trade regime, adopt appropriate exchange rate policies, promote education of their citizen, adopt measures to enhance the development of their domestic financial markets, and promote better institutional and governance quality. Finally, a better integration into the world market for services exports can also influence countries' development level, proxied by their real per capita income. In addition to the possible endogeneity of these regressors, estimating the static specification of model (1) can raise the omitted variables problem, due in particular to the omission of the one-period lag of the dependent variable. At the same time, the use of the FGLS approach to estimate the dynamic specification of model (1) (i.e., as it stands) can yield biased and inconsistent estimates because of the potential correlation between the one-period lag of the dependent variable and countries' specific effects. The bias induced by this correlation is particularly due to the nature of our panel data, which contains a small time-period and relatively large cross-section dimension (this is the so-called Nickell bias - see Nickell, 1981). We take into account these endogeneity concerns by estimating the dynamic model (1) using the Generalized Methods of Moments (GMM) estimator, in particular the two-step system GMM estimator of Arellano and Bover (1995) and Blundell and Bond (1998). This estimator is particularly

suitable for dynamic panels with a small-time dimension and large cross-section, and particularly where variables, notably the dependent variable exhibits a strong persistence over time. Additionally, this estimator helps handle the aforementioned endogeneity concerns (i.e., the correlation between the one-period lag of the dependent variable and countries' specific effects, as well as the reverse causality issue). Estimating model (1) by means of the two-step system GMM estimator amounts to estimating a system of equations, where an equation in differences is combined with an equation in levels, and where lagged first differences are used as instruments for the levels equation and lagged levels are used as instruments for the first-difference equation. This estimator has been found to be more efficient than the difference-GMM estimator developed by Arellano and Bond (1991) when variables are persistent over time. This is because using lagged values of the first difference of variables generates weak instruments in the difference-GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998). Therefore, the two-step system GMM estimator would be our preferred estimator. Its consistency is evaluated using the standard Arellano-Bond test of first-order serial correlation in the error term (denoted AR(1)) and no second-order autocorrelation in the error term (denoted AR(2)) (whose null hypothesis should not be rejected) as well as the Sargan/Hansen test of over-identifying restrictions (OID), which determines the validity of the instruments used in the estimations. In other words, we should expect that, at the 10% level of statistical significance, the p-value associated with the AR(1) test should be lower than 0.10, and the p-values related to the AR(2) test and to the OID test should be higher than 0.10. Finally, we need to meet the rule of thumb, whereby the number of instruments should not exceed the number of countries used in the regressions, otherwise the above-mentioned tests may lose power (Roodman, 2009). In the regressions based on the two-step system GMM approach, all variables except the population size variable, have been considered as endogenous. To meet the requirements of this estimator, including the rule of thumb described above, we have used in the regressions a maximum of 3 lags of the dependent variable as instruments, and a maximum of 4 lags of endogenous variables as instruments. All regressions are performed using both the total AfT flows variable as well as its three components.

Against this background, we perform the following estimations in the empirical analysis based on the two-step system GMM approach. First, we estimate the dynamic model (1), results of which are reported in Table 2. Second, we investigate whether the effect of AfT flows on services export share in LDCs versus NonLDCs. To that effect, we estimate another specification of model (1) in which we include a dummy variable ("LDC") - which takes the value 1 for countries in the LDC category, and 0, otherwise - that is interacted with each of the AfT variables, namely total AfT flows and its three components. The outcomes of these estimations are reported in Table 3. Third, we now test *hypothesis 1* set out above (i.e., whether the effect of AfT flows on countries' services exports shares depends on their degree of integration into the world market of merchandises exports (also henceforth referred to as 'merchandises export integration'). We test this hypothesis by estimating other variants of model (1) that include a variable denoted "GOODINT" - which represents for a given country and in a given year, the share of merchandises exports in world merchandises exports - as well as its interaction with the relevant "AfT" variable (either total AfT flows, or each of its components) in model (1). Results of these estimations are provided in Table 4. Fourth, and lastly, we test *hypothesis 2*, i.e., whether the effect of AfT flows on

countries' services export shares passes through FDI inflows. To perform this analysis, we estimate different other specifications of model (1) that contain the variable measuring FDI inflows, and denoted "FDICST", which is interacted with the relevant "AfT" variable. Results of these estimations are reported in Table 5. Note that "FDICST" is the real FDI inflows (constant US\$ 2010 prices). It has been computed by first multiplying the ratio of inward FDI flows to GDP by the real GDP (constant 2010 US\$) so as to obtain values of FDI inflows in constant 2010 US\$ (denoted "FDI") (see for example Nagel et al. 2015 and Herzer, 2011 who have used the same procedure). Given that the variable "FDI" contains negative and positive values, and is additionally highly skewed, we have transformed it by means of the formula borrowed from Yeyati et al.(2007), which goes as follows: $FDICST = \text{signFDI} * \log(1 + \text{FDI})$, where FDI refers to the absolute value of the variable "FDI". It is also noteworthy that in the regressions whose outcomes are presented in Tables 4 and 5, both "GOODINT" and "FDICST" variables, as well as their related interaction variables have been considered as endogenous because of the potential reverse causality from the dependent variable to each of these variables.

4. Interpretation Of Empirical Results

The results based on fixed effects estimator and reported in column [1] of Table 1 suggest a negative and significant effect of total AfT flows on the services export share, while results (based on the FGLS approach) in column [2] of the same Table indicate a positive and significant effect of total AfT flows on services export share. These conflicting results might reflect the endogeneity of the total AfT flows variables (i.e., the simultaneity bias), and additionally the need for considering a dynamic specification so as to correct for the bias introduced by omission of the one-period lag of the dependent variable in the static specification of model (1). While coefficients of control variables can also be biased for the reasons outlined above, we nevertheless note from the Table 1 that except from the real exchange rate and the financial development variables, all other variables exhibit the same sign in the two columns of this Table. In particular, at the 5% level, services export share is positively driven by a rise in the real per capita income, a higher population size, restrictive trade policy measures (result which is quite surprising and goes against our theoretical expectation), an improvement in the education level, and a better institutional and governance quality. At the 5% level, the real exchange rate is not significantly associated with the share of services exports, while financial development influences negatively this share in column [1] and positively in column [2].

We now turn to results in Tables 2 to 5, which are based on the two-step system GMM estimator. The results of the tests that allow evaluating the consistency of this estimator are provided at the bottom of the Tables. There are fully consistent with our expectations, and therefore show the appropriateness of this estimator for conducting the empirical analysis. Additionally, across all columns of Tables 2 to 5, we find that the services exports share variable shows a strong persistence over time (as the coefficient of the one-period lag of this variable is always positive and significant at the 1% level), thereby highlighting the relevance for considering the dynamic model (1) in the analysis. Based on these findings, we can now interpret results provided in Tables 2 to 5. We will focus on significance of estimates at least at the 5% level, and therefore, consider coefficients significant at the 10% level as ultimately loosely significant.

Results in column [1] of Table 2 suggest a negative and significant coefficient of “AfTTOT”, with this coefficient (-0.0454) being lower in absolute value than both the one obtained from the Fixed effects-based regression (the coefficient amounts here to -0.073), and the one obtained from the FGLS-based regression (the coefficient amounts here to 0.0544). This result suggests that total AfT flows induce a lower services export integration, finding which tends to more than confirming the findings by Hoekman and Shingal (2019) and Martínez-Zarzoso et al. (2017) that at the aggregate level, AfT flows play a little role in promoting services exports in recipient-countries. At the same time, results in column [2] of Table 2 show that this negative effect of total AfT flows on the services exports share reflects in reality a positive effect of both AfT flows for productive capacity building and AfT flows for trade policy and regulation on services exports share, and concurrently a negative effect of AfT flows for economic infrastructure (the magnitude of the negative effect dominates the magnitude of each of the positive effects). Thus, these outcomes suggest that AfT interventions to build productive capacity and AfT interventions related to trade policy and regulation promote countries’ integration into the world market for services exports, while AfT interventions for building economic infrastructure hinders countries’ integration into the world market for services exports. The negative effect of AfT interventions for economic infrastructure might signify that by reducing trade costs, these types of AfT interventions promote goods exports rather than services exports. The negative outcomes may also reflect the fact that the effect of AfT interventions for economic infrastructure (as well as that of total AfT flows) on services exports share depends indeed on countries’ performance in terms of goods exports in the world market of goods, as assumed in *hypothesis 1*, as well as the size of FDI inflows, as argued in *hypothesis 2*. In terms of magnitude of the effects, we obtain that a 1 percentage increase in total AfT flows is associated with a 0.045 percentage decrease in services exports share: this reflects at the same time the fact that a 1 percentage increase in AfT flows for economic infrastructure, AfT flows for productive capacity building and AfT flows for trade policy and regulation is respectively associated with a 0.113 percentage decrease in the services exports share, a 0.08 percentage rise in the services export share, and a 0.044 percentage rise in the services exports share. Results of control variables in the two columns of Table 2 show that services export share is positively driven by a rise in the real per capita income, an increase in the population size, a depreciation of the real exchange rate, trade policy liberalization, a higher education level, a rise in the financial development depth, and an improvement in the institutional and governance quality. These findings concerning the effect of control variables on the services export share are, to a large extent, confirmed in Tables 3 to 5.

Results in Table 3 show that total AfT flows exert a higher positive effect on LDCs’ services exports share than in NonLDCs’ services exports share (as the coefficient associated with the interaction variable “ $(\text{Log}(\text{AfTTOT})) \cdot \text{LDC}$ ” is positive and significant. The net effects of total AfT flows on services export share in LDCs and NonLDCs amount respectively to 0.108 ($= 0.158 - 0.0501$), and -0.0501 . Hence, total AfT flows exert on average, a positive effect on LDCs’ services exports share and a negative effect on NonLDCs’ services exports share. Turning to the components of total AfT flows, we obtain that AfT flows for economic infrastructure affect negatively services export share in LDCs and NonLDCs alike (see results in column [2]), while AfT flows for productive capacity building and AfT flows for trade policy and

regulation affect positively LDCs' services export integration, with the coefficient of the magnitude amounting respectively to 0.26 (= 0.196+0.0605) and 0.117 (= 0.0772+0.0400). It appears that for LDCs, AfT for productive capacity results in a higher positive effect on services export integration than AfT for trade policy and regulation does. The effects of AfT interventions for productive capacity building and AfT interventions for trade policy and regulation are both positively significantly associated with services export share in NonLDCs, with the magnitude of the effects amounting respectively to 0.06 and 0.04. Thus, compared to NonLDCs, LDCs enjoy a higher positive effect of AfT interventions for productive capacity building and AfT interventions for trade policy and regulation on the services exports share.

We now turn to results in Tables 4 and 5 that help test *hypotheses 1 and 2*. Taking up results in Table 4, we note from column [1] that the coefficients of both the variable "Log(AfTTOT)" and the interaction variable (" $[\text{Log}(\text{AfTTOT})] * [\text{Log}(\text{GOODINT})]$ ") are positive and significant at the 1% level. These suggest that total AfT flows promote recipient-countries' integration into the world market for services exports, and the magnitude of this positive effect rises as countries enjoy a greater integration into the world market for merchandises exports. Results in column [2] suggest negative and significant coefficients of the variables "Log(AfTINFRA)" and (" $[\text{Log}(\text{AfTINFRA})] * [\text{Log}(\text{GOODINT})]$ "). These indicate that AfT flows for economic infrastructure reduce services export integration in recipient-countries that experience a higher merchandises export integration: the higher the countries' share of merchandise goods in world merchandise goods, the greater is the magnitude of the negative effect of AfT flows for economic infrastructure on countries' services export integration. These results lead us to conclude that AfT interventions for economic infrastructure tend to promote recipient-countries' merchandise at the expense of their services export integration. These findings (concerning AfT flows for economic infrastructure) go against our theoretical expectation that this type of AfT interventions can promote recipient-countries' services exports share through the 'network effect' on services export integration induced by an increase in the countries' share of merchandises exports in total world merchandises exports. The outcomes provided in column [3] of Table 4 show positive and significant coefficients for both "Log(AfTPROD)" and (" $[\text{Log}(\text{AfTPROD})] * [\text{Log}(\text{GOODINT})]$ ") variables. Hence, AfT interventions for productive capacity consistently promote recipient-countries' services export integration as these countries experience a greater merchandises export integration: the greater this share, the higher is the magnitude of the positive effect of AfT flows for productive capacity on recipient-countries' share of services exports. Finally, we observe from results in column [4] of Table 4 that none of the variables "Log(AfTPROD)" and (" $[\text{Log}(\text{AfTPROD})] * [\text{Log}(\text{GOODINT})]$ ") show a significant coefficient. Therefore, we conclude that the effect of AfT flows related to trade policy and regulation on services exports share is not influenced by recipient-countries' level of integration into the world market for merchandises exports.

Considering now results in Table 5, we focus on the coefficient of the relevant AfT variable as well as the coefficient of the related interaction variable. We note from column [1] of this Table that the interaction term (related to the interaction variable) is positive and significant at the 1% level, while the coefficient of "Log(AfTTOT)" is negative and significant at the 1% level. These two outcomes, taken together, suggest that for lower size of FDI inflows, total AfT flows leads to lower services exports share, and for higher size of FDI flows, total AfT flows are positively and significantly associated with countries' services export

share. Thus, above a certain level of FDI inflows (in real values), total AfT flows promote recipient-countries' integration into the world market for services exports: FDI inflows are complementary with total AfT flows in enhancing recipient-countries' services export integration. Results in columns [2] and [3] of Table 5 show similar patterns as those in column [1] of the same Table (although with different coefficients of the AfT variables and the interaction variables): above a certain threshold of FDI inflows (respectively in columns [2] and [3]), AfT interventions for economic infrastructure and AfT interventions for productive capacity building promote countries' integration into the world market for services exports. In addition, the greater the size of FDI inflows (above the threshold), the higher is the magnitude of the positive effect of AfT flows for economic infrastructure and AfT flows for productive capacity on services exports share. Once again, FDI inflows appear to be complementary with these two types of AfT interventions in promoting recipient-countries' integration into the world market for services exports. The outcomes presented in column [4] of Table 5 show that neither the coefficient of "Log(AfTPOL)", nor the interaction term associated with the relevant interaction variable are significant (even at the 10% level). Therefore, we infer that the size of FDI inflows do not matter for the effect of AfT flows related to trade policies and regulation on recipient-countries' integration into the world market of services exports.

5. Conclusion

The bulk of the existing studies on the AfT effectiveness in terms of recipient-countries' trade performance has focused on the goods side, and particularly on goods exports performance. The very few studies on the effect of AfT flows on recipient-countries' services exports have reported a mixed effect, i.e., positive and weak (including non-significant) effects. The current study complements the nascent literature on the services exports effects of AfT flows by examining how AfT flows affect countries' integration into the world market for services exports, notably through the channels of merchandises exports and FDI inflows. The analysis has covered a set of 105 countries over the period 2002–2016. The findings indicate that while total AfT flows exert a negative effect on recipient-countries' integration into the world market of services exports, this negative effect reflects yet a negative effect of AfT flows for economic infrastructure, but positive effects of both AfT flows for building productive capacity and AfT flows allocated to trade policy and regulation. At the same time, total AfT flows appear to promote LDCs' services export integration, while they are negatively associated with NonLDCs' services export integration. As for the components of total AfT flows, we observe that while AfT for economic infrastructure is negatively associated with services export share in LDCs and NonLDCs alike, both LDCs and NonLDCs enjoy a greater integration into the world market for services exports further to a rise in AfT flows for productive capacity building and AfT flows allocated for trade policy and regulation. However, the positive effect of these two types of AfT interventions is higher in LDCs than in NonLDCs. The findings concerning the channels through which the effects of AfT interventions on services exports share materialize are quite interesting. Total AfT flows, and in particular AfT flows for productive capacity building promote recipient-countries' services export integration as these countries enjoy a greater integration into the world market for merchandise goods, and the magnitude of this positive effect rises as these countries' share of merchandises exports in total world merchandise export increases. On the

other hand, AfT flows for building economic infrastructure influence negatively countries' share of services exports (in the world services exports) as these countries' share of merchandises exports (in the world merchandises exports) increases. In other words, the trade costs reduction associated with AfT interventions for economic infrastructure tends to promote countries' merchandises export integration at the expense of their services export integration. Finally, the level of countries' merchandises export integration does not matter for the effect of AfT flows allocated to trade policy and regulation on their services export integration.

Turning now to the FDI channel, we find that above a certain threshold of the size of FDI inflows, both total AfT flows, AfT interventions for economic infrastructure and AfT interventions for productive capacity building promote recipient-countries' integration into the world market for services exports. This means that FDI inflows (as well as they reach a certain level) are complementary with these AfT interventions in promoting recipient-countries' integration into the world market for services exports. In contrast, FDI flows do not matter at all for the effect of AfT interventions for trade policy and regulation on recipient-countries' share of services exports in world's services exports.

The present study, therefore, underlines two key channels (i.e., merchandises exports and FDI inflows) through which AfT flows can affect recipient-countries' services export integration. In fact, this analysis shows that AfT flows can genuinely promote recipient-countries' participation in the world services export market if these capital flows (notably AfT interventions for productive capacity and AfT for trade policy and regulation) enhance their merchandises export integration, or if greater AfT flows are associated with higher FDI inflows to these countries. From a policy perspective, the analysis suggests that AfT interventions can foster recipient-countries' integration into the world market for services exports if they result in a greater share of merchandises exports in the world merchandises exports. Furthermore, countries that enjoy higher AfT flows can benefit from a greater integration into the world market for services exports if at the same time a significant amount of FDI flows into these countries. Thus, policies to promote FDI inflows (in addition to the eventual positive FDI flows effect of AfT flows) would be very useful in fostering the positive effect of AfT flows on recipient-countries' integration into the world market for services exports.

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Tables

Table 1: Effect of AfT flows on countries' integration into the world market for services exports

Estimators: FE and FGLS

	FE	FGLS with panel-specific AR(1)
Variables	Log(SERVINT)	Log(SERVINT)
	(1)	(2)
Log(AfTTOT)	-0.0730**	0.0544***
	(0.0282)	(0.00899)
Log(GDPC)	0.959***	0.724***
	(0.153)	(0.0168)
Log(POP)	0.293***	0.681***
	(0.0703)	(0.0119)
Log(REER)	0.249	-0.101*
	(0.158)	(0.0605)
Log(TP)	-0.416***	-0.210***
	(0.144)	(0.0454)
Log(EDU)	0.252***	0.465***
	(0.0595)	(0.0343)
Log(FINDEV)	-0.134**	0.238***
	(0.0673)	(0.0137)
INST	0.112*	0.109***
	(0.0594)	(0.00840)
Constant	-19.14***	-25.08***
	(1.477)	(0.404)
Observations - Countries	399 - 105	393 - 99
Within R-squared	0.1576	
Pseudo R-squared		0.9202

Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. For the regression based on the Fixed effects estimator, standard errors have been corrected for

heteroscedasticity, autocorrelation and cross-sectional dependence using the Driscoll and Kraay (1998) technique. The Pseudo R2 has been computed for the regression based on the FGLS estimator as the correlation coefficient between the dependent variable and its predicted values. Time dummies have been included in the FGLS-based regression.

Table 2: Effect of AfT flows on countries' integration into the world market for services exports

Estimator. Two-Step System GMM

Variables	Log(SERVINT)	Log(SERVINT)
	(1)	(2)
Log(SERVINT) _{t-1}	0.530***	0.511***
	(0.0314)	(0.0292)
Log(AfTTOT)	-0.0454**	
	(0.0187)	
Log(AfTINFRA)		-0.113***
		(0.0165)
Log(AfTPROD)		0.0821***
		(0.0165)
Log(AfTPOL)		0.0444***
		(0.00895)
Log(GDPC)	0.235***	0.320***
	(0.0613)	(0.0384)
Log(POP)	0.421***	0.374***
	(0.0355)	(0.0335)
Log(REER)	-0.582***	-0.533***
	(0.0690)	(0.0623)
Log(TP)	0.292*	0.481**
	(0.176)	(0.200)
Log(EDU)	0.453***	0.196**
	(0.111)	(0.0765)
Log(FINDEV)	0.0532	0.231***
	(0.0591)	(0.0353)
INST	0.0860***	0.0594**
	(0.0203)	(0.0266)
Constant	-11.73***	-12.41***
	(1.431)	(0.988)

Observations - Countries	325 - 105	323 - 105
Number of Instruments	77	86
AR1 (P-Value)	0.0462	0.0280
AR2 (P-Value)	0.7703	0.7464
OID (P-Value)	0.6105	0.6295

*Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. The variables "AfTTOT", "REER", "TP", "FINDEV", "INST", "EDU", "GDPC" have been considered as endogenous. The variable "POP" has been considered as exogenous. Time dummies have been included in the regressions. The latter have used a maximum of 3 lags of the dependent variable as instruments, and a maximum of 2 lags of endogenous variables as instruments.*

Table 3: Effect of AfT flows on countries' integration into the world market for services exports in LDCs versus NonLDCs

Estimator. Two-Step System GMM

Variables	Log(SERVINT)	Log(SERVINT)	Log(SERVINT)	Log(SERVINT)
	(1)	(2)	(3)	(4)
Log(SERVINT) _{t-1}	0.464***	0.538***	0.551***	0.582***
	(0.0309)	(0.0488)	(0.0486)	(0.0435)
[Log(AfTTOT)]*LDC	0.158***			
	(0.0461)			
[Log(AfTINFRA)]*LDC		0.0344		
		(0.0583)		
[Log(AfTPROD)]*LDC			0.196***	
			(0.0743)	
[Log(AfTPOL)]*LDC				0.0772***
				(0.0246)
Log(AfTTOT)	-0.0501***			
	(0.0163)			
Log(AfTINFRA)		-0.155***	-0.0974***	-0.0842***
		(0.0219)	(0.0286)	(0.0282)
Log(AfTPROD)		0.0772**	0.0605**	0.0219
		(0.0338)	(0.0283)	(0.0363)
Log(AfTPOL)		0.0548***	0.0444**	0.0400**
		(0.0164)	(0.0177)	(0.0195)
LDC	-3.085***	-0.486	-3.516***	-0.944***
	(0.882)	(1.095)	(1.308)	(0.348)
Log(GDPC)	0.381***	0.324***	0.426***	0.273***
	(0.0453)	(0.0645)	(0.0682)	(0.0682)
Log(POP)	0.397***	0.357***	0.333***	0.348***
	(0.0289)	(0.0462)	(0.0479)	(0.0427)
Log(REER)	-0.454***	-0.693***	-0.604***	-0.623***
	(0.0552)	(0.131)	(0.138)	(0.144)
Log(TP)	0.524***	0.514**	0.404*	0.264

	(0.108)	(0.207)	(0.237)	(0.244)
Log(EDU)	0.0910***	0.163	-0.109	0.283**
	(0.0349)	(0.120)	(0.115)	(0.123)
Log(FINDEV)	0.160***	0.253***	0.234***	0.161***
	(0.0304)	(0.0531)	(0.0587)	(0.0532)
INST	0.0495***	0.0687*	0.0310	0.0457
	(0.0172)	(0.0353)	(0.0386)	(0.0315)
Constant	-12.85***	-10.52***	-10.26***	-9.592***
	(0.907)	(1.761)	(1.853)	(1.900)
Observations - Countries	325 - 105	323 - 105	323 - 105	323 - 105
Number of Instruments	86	74	74	74
AR1 (P-Value)	0.0529	0.0226	0.0315	0.0267
AR2 (P-Value)	0.7296	0.8568	0.7989	0.5988
OID (P-Value)	0.6104	0.7227	0.5474	0.6025

Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. The four AfT variables, the variables "REER", "TP", "FINDEV", "INST", "EDU", "GDPC" as well as 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. The latter have used a maximum of 3 lags of the dependent variable as instruments, and a maximum of 2 lags of endogenous variables as instruments.

Table 4: Effect of AfT flows on countries' integration into the world market for services exports for varying levels of the share of merchandises exports in total world merchandises exports

Estimator. Two-Step System GMM

Variables	Log(SERVINT)	Log(SERVINT)	Log(SERVINT)	Log(SERVINT)
	(1)	(2)	(3)	(4)
Log(SERVINT) _{t-1}	0.503***	0.526***	0.537***	0.477***
	(0.0229)	(0.0412)	(0.0398)	(0.0380)
[Log(AfTTOT)]* [Log(GOODINT)]	0.0144***			
	(0.00251)			
[Log(AfTINFRA)]* [Log(GOODINT)]		-0.0122**		
		(0.00528)		
[Log(AfTPROD)]* [Log(GOODINT)]			0.0200***	
			(0.00594)	
[Log(AfTPOL)]* [Log(GOODINT)]				-0.000428
				(0.00507)
Log(AfTTOT)	0.0777***			
	(0.0212)			
Log(AfTINFRA)		-0.219***	-0.128***	-0.0926***
		(0.0411)	(0.0269)	(0.0207)
Log(AfTPROD)		0.0760**	0.249***	0.0810***
		(0.0326)	(0.0611)	(0.0308)
Log(AfTPOL)		0.0472***	0.0397***	0.0452
		(0.0150)	(0.0124)	(0.0498)
Log(GOODINT)	-0.128**	0.210***	-0.176*	0.172***
	(0.0498)	(0.0794)	(0.0929)	(0.0645)
Log(GDPC)	0.213***	0.337***	0.0690	0.0884*
	(0.0265)	(0.0631)	(0.0506)	(0.0528)
Log(POP)	0.256***	0.378***	0.190***	0.184***
	(0.0255)	(0.0463)	(0.0497)	(0.0471)
Log(REER)	-0.397***	-0.828***	-0.485***	-0.368***

	(0.0416)	(0.142)	(0.123)	(0.112)
Log(TP)	-0.0443	0.260	0.289	0.132
	(0.0654)	(0.192)	(0.190)	(0.175)
Log(EDU)	0.221***	0.128	0.263***	0.341***
	(0.0358)	(0.0917)	(0.0946)	(0.0886)
Log(FINDEV)	0.126***	0.273***	0.0607	0.155***
	(0.0186)	(0.0463)	(0.0525)	(0.0512)
INST	0.0232**	0.0287	0.111***	0.0641*
	(0.00976)	(0.0355)	(0.0352)	(0.0365)
Constant	-8.685***	-7.927***	-8.265***	-6.739***
	(0.463)	(1.474)	(1.454)	(1.384)
Observations - Countries	325 - 105	323 - 105	323 - 105	323 - 105
Number of Instruments	95	80	80	80
AR1 (P-Value)	0.0482	0.0303	0.0266	0.0346
AR2 (P-Value)	0.8539	0.7720	0.9235	0.8679
OID (P-Value)	0.6070	0.7405	0.7871	0.7569

Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. The four AfT variables, the variables "GOODINT", "REER", "TP", "FINDEV", "INST", "EDU", "GDPC" as well as 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. The latter have used a maximum of 3 lags of the dependent variable as instruments, and a maximum of 4 lags of endogenous variables as instruments.

Table 5: Effect of AfT flows on countries' integration into the world market for services exports for varying shares of FDI inflows in GDP

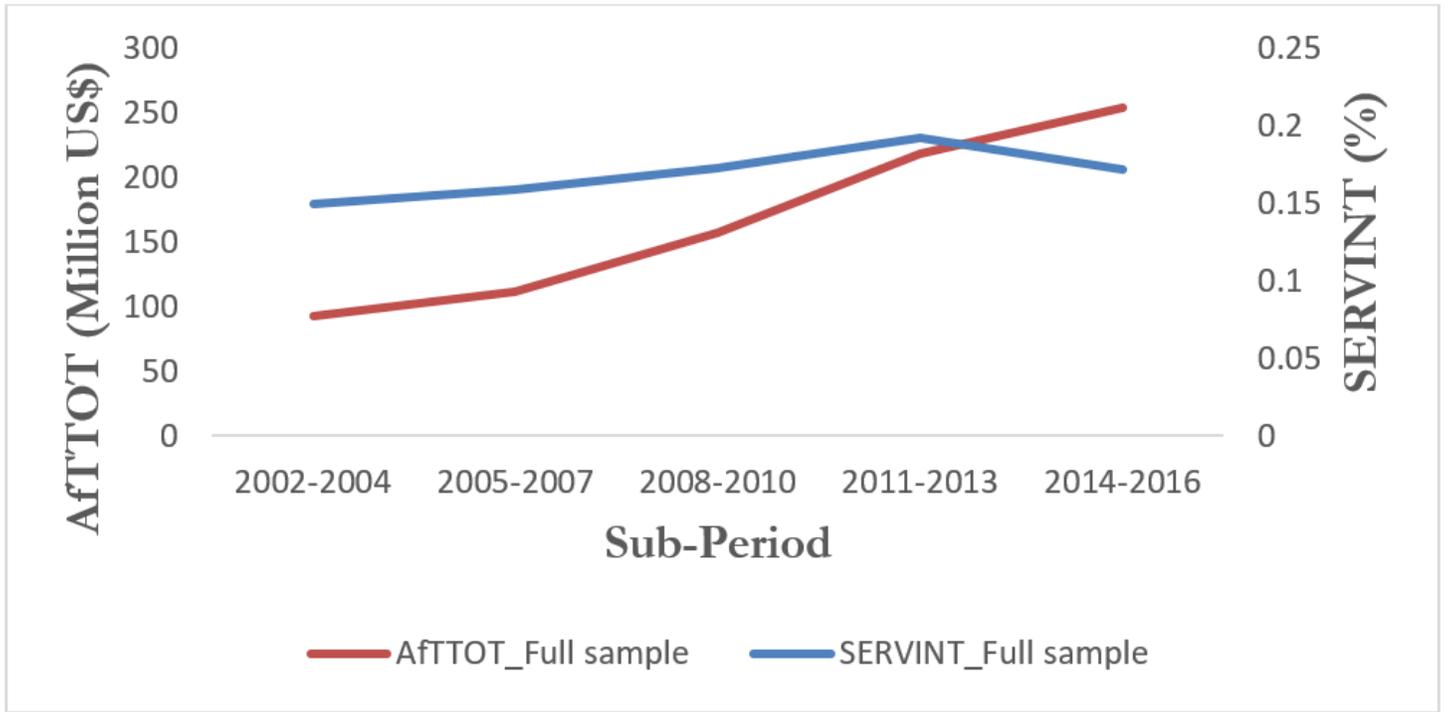
Estimator. Two-Step System GMM

Variables	Log(SERVINT)	Log(SERVINT)	Log(SERVINT)	Log(SERVINT)
	(1)	(2)	(3)	(4)
Log(SERVINT) _{t-1}	0.565***	0.531***	0.619***	0.502***
	(0.0412)	(0.0320)	(0.0324)	(0.0343)
[Log(AfTTOT)]*[FDICST]	0.0310***			
	(0.00746)			
[Log(AfTINFRA)]*[FDICST]		0.0161***		
		(0.00402)		
[Log(AfTPROD)]*[FDICST]			0.0411***	
			(0.00590)	
[Log(AfTPOL)]*[FDICST]				0.000372
				(0.00263)
Log(AfTTOT)	-0.854***			
	(0.185)			
Log(AfTINFRA)		-0.554***	-0.141***	-0.150***
		(0.0990)	(0.0192)	(0.0218)
Log(AfTPROD)		0.0960***	-0.939***	0.0831***
		(0.0253)	(0.150)	(0.0273)
Log(AfTPOL)		0.0365***	0.0165	0.0458
		(0.0127)	(0.0128)	(0.0656)
FDICST	-0.559***	-0.283***	-0.686***	-0.00807
	(0.129)	(0.0685)	(0.0978)	(0.0347)
Log(GDPC)	0.0910	0.298***	0.174***	0.327***
	(0.0739)	(0.0508)	(0.0551)	(0.0434)
Log(POP)	0.427***	0.372***	0.317***	0.358***
	(0.0450)	(0.0324)	(0.0344)	(0.0362)
Log(REER)	-0.609***	-0.602***	-0.516***	-0.632***
	(0.161)	(0.109)	(0.0865)	(0.106)
Log(TP)	0.663***	0.791***	0.642***	0.812***

	(0.234)	(0.166)	(0.150)	(0.169)
Log(EDU)	0.692***	0.0946	0.203**	0.0498
	(0.159)	(0.0905)	(0.0959)	(0.0814)
Log(FINDEV)	-0.000540	0.300***	0.196***	0.283***
	(0.0740)	(0.0369)	(0.0385)	(0.0358)
INST	0.128***	0.0571*	0.0908***	0.0464
	(0.0354)	(0.0303)	(0.0322)	(0.0316)
Constant	1.659	-4.967**	7.546**	-11.90***
	(4.080)	(2.280)	(3.076)	(1.795)
Observations - Countries	325 - 105	323 - 105	323 - 105	323 - 105
Number of Instruments	68	80	80	80
AR1 (P-Value)	0.0383	0.0222	0.0188	0.0255
AR2 (P-Value)	0.7309	0.9074	0.7926	0.9262
OID (P-Value)	0.4032	0.2451	0.2515	0.4754

Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. The four AfT variables, the variables "FDICST", "REER", "TP", "FINDEV", "INST", "EDU", "GDPC" as well as 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. The latter have used a maximum of 3 lags of the dependent variable as instruments, and a maximum of 4 lags of endogenous variables as instruments.

Figures

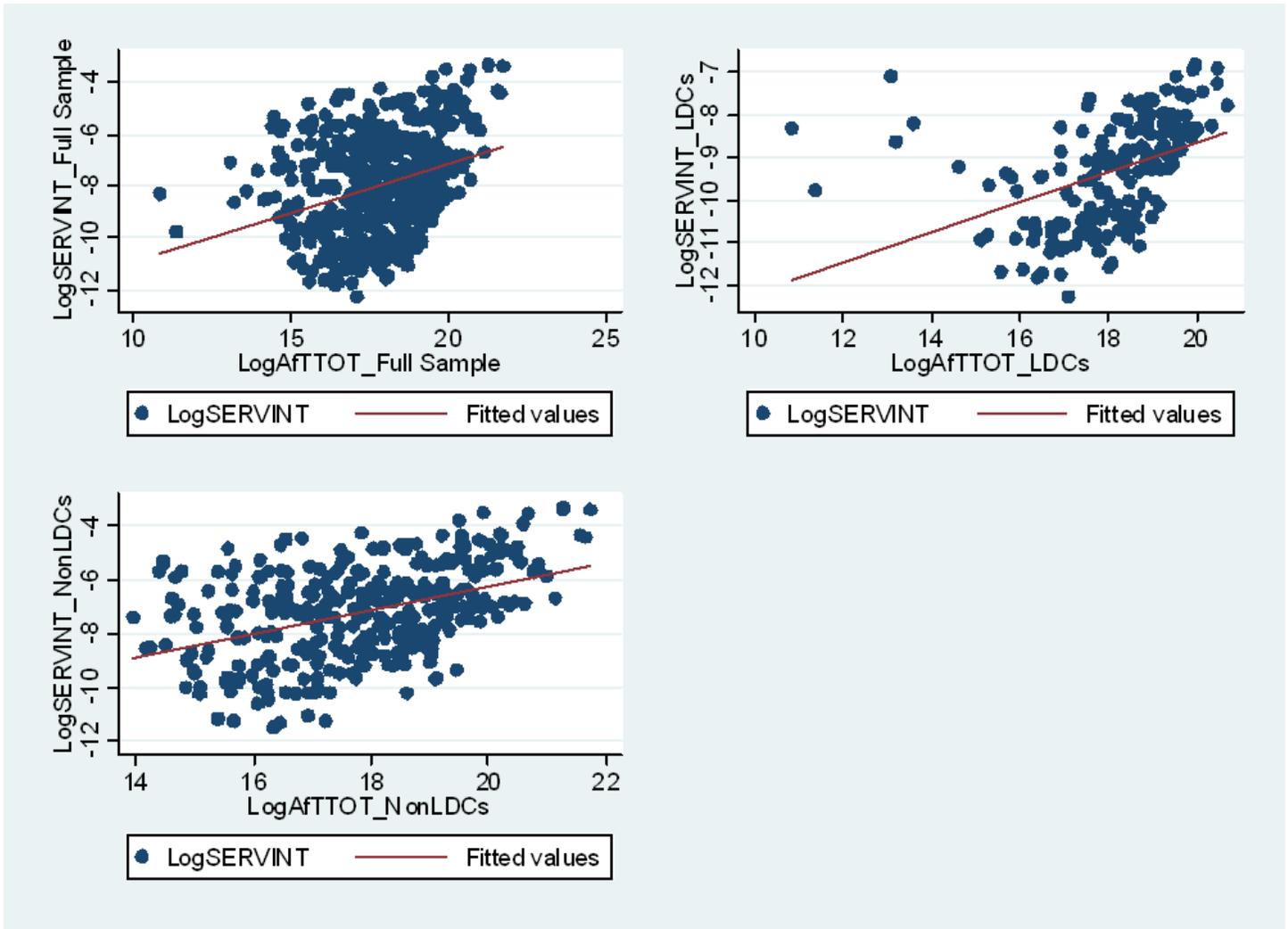


Source: Author

Note: The variable "AfTTOT" is expressed in million US Dollars, constant 2016 prices.

Figure 1

Total AfT flows and Services export Integration



Source: Author

Note: The variable "SERVINT" is not expressed here in percentage.

Figure 2

Correlation pattern between total AfT flows and Services export Integration

Supplementary Files

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- [Appendix1.docx](#)