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Foreign direct investment in sub-Saharan Africa: Beyond its growth effect

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ABSTRACT

This study relates foreign direct investment (FDI) to economic growth, institutional quality and manufacturing value added, using panel data techniques that allow for parameter heterogeneity and non-stationarity. The results confirm that economic growth, institutional quality, and natural resources, each play a positive role in attracting FDI. Besides, institutional quality is itself affected by these variables: economic growth enhances institutional quality, FDI is detrimental to certain aspects. The evidence also reveals the existence of 'institutional' resource curse. Furthermore, FDI has contributed to the 'premature' deindustrialization of the region, except in a few cases where it is non-resource seeking. While confirming established results, the study also identifies detrimental institutional and deindustrializing effects of FDI which have hitherto been overlooked. A policy implication is that countries should be selective on the type of FDI they try to attract by weighing its positive growth effect against its deindustrializing and adverse institutional effects.

1. Introduction

The literature on FDI highlights a range of potential benefits it has for the host economies. These include its role in facilitating technology transfer and skill (human capital) upgrading, its spillover effect on domestic investment, and improvements in institutions. The successful reaping of such benefits, however, depends on conditions prevailing in the host economy. These conditions include the strength of the backward and forward linkages of the sector targeted by FDI, the initial institutional and human capital levels, and trade policies of the host.

Empirical studies have largely focused on the relationship between economic growth and FDI, and consequently, relatively less is known about the influence of FDI on other aspects of economic development. The focus on the growth effect of FDI has led some scholars working on sub-Saharan Africa (SSA) to see the recent change in trend and composition of FDI to the region with some degree of optimism. However, to embrace or encourage more FDI inflows, host countries need to look beyond its growth effect.

One such area of influence not well-studied is the effect of FDI on institutional quality. Compared to the amount of research looking into the growth-FDI nexus or into the role of institutions in attracting FDI, the number of studies examining the effect of FDI on institutional quality is very limited. Moreover, most of the studies which have taken up this issue either utilize cross-sectional data (for instance, Kwok & Tadesse, 2006; Dang, 2013; Long, Yang, & Zhang, 2015) or qualitative case studies (for instance, Lee, 2014), or have focused on the developed

world (Olney, 2013). Exceptions are Ali, Fiess, and MacDonald (2011) who relate FDI to property rights in 70 developing countries and Demir (2016) relating FDI to International Country Risk Guide (ICRG) scores of 133 countries, both using panel data in which about 28 SSA countries are represented. The findings of these studies are mixed, ranging from negative (Olney, 2013; Lee, 2014) to (generally) insignificant (Demir, 2016) to positive (Kwok & Tadesse, 2006; Ali et al., 2011; Dang, 2013; Long et al., 2015) effects. Common to all these studies, the estimated effects are average (homogeneous) effects based on a mix of highly heterogeneous host countries. The current study focuses on a particular region – SSA – and imposes no restriction of homogeneity in the effect of FDI on institutions. Each host country is unique in some way and could respond uniquely to FDI inflows.

This study intends to fill another research gap as well. Even scarcer than studies linking FDI to institutional outcomes are those assessing the effect of FDI on structural change. Furthermore, these studies have focused on developed countries (Kang & Lee, 2011) or countries in transition (Jensen, 2006). To the best of my knowledge, no study has related FDI inflows to structural change in the context of SSA. Although an important motive for attracting FDI is the desire to industrialize, it is becoming a stylized fact that SSA is undergoing deindustrialization (De Vries, Timmer, & de Vries, 2015), which is both 'premature' and against expectations (Rodrik, 2015). Understanding whether FDI has enhanced or moderated the pace of this experience would have an important lesson for policymakers.

As the last two paragraphs indicated, the first two gaps this research

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aims to fill are in the areas of FDI in relation to institutional quality and structural change. Thirdly, even in the well-studied FDI-growth nexus, studies have imposed parameter homogeneity on the effect of one on the other. An exception is the study by [Delgado, McCloud, and Kumbhakar \(2014\)](#), where the slope parameter is modelled as a function of corruption. The current study allows for an unrestricted heterogeneity since heterogeneity could result from many factors, for instance, from the type of FDI.

The findings indicate that the growth-effect of FDI to the region is positive. Secondly, both economic growth and institutional quality records of a country do help in attracting more FDI inflows. On the other hand, FDI has undesirable effects on some institutional quality aspects, namely, rule of law, corruption, and voice and accountability. In addition, FDI to the region preferentially flows to resource-rich countries, and thereby enhances extensive form of economic growth and contributes to the 'premature' deindustrialization of countries in the region. Hence, FDI as a medicine for developmental bottlenecks comes with some serious side-effects.

2. Literature review

The significance of FDI in the process of economic development has been underscored in alternative viewpoints in economics. For instance, new growth theories consider FDI to be an important source of economic growth through its effect of facilitating technology transfer, its spillover effect on domestic investment, and improving human capital and institutions ([Makki & Somwaru, 2004](#)). At the other end of the spectrum, dependency theorists stress that FDI is one mechanism for South-to-North transfer of surplus value ([Sau, 1976](#)). These lines of thought, as well as those occupying the middle ground, agree that FDI is an important link between the developed and developing worlds and that there is a notable overlap and interaction between FDI and international trade.

In line with the former of these two perspectives, the growth effect of FDI has been well researched. Nevertheless, and not surprisingly for an economic issue, the effect of FDI on economic development still remains debatable ([Makki & Somwaru, 2004](#)). Firstly, FDI may crowd-in or crowd-out domestic investment (see, [Morrissey & Udomkerdmongkol, 2012](#); [Farla, De Crombrughe, & Verspagen, 2016](#) for instance), and its success in promoting economic growth depends on an array of conditions (like the strength of its backward and forward linkages, level of financial development, human capital and institutional quality). Secondly, even in cases where it enhances economic growth, findings regarding its effect on poverty and inequality are mixed ([Sumner, 2005](#)).

One possible explanation for such mixed results regarding the development-effects of FDI is difference in conditioning factors such as institutional quality, trade policy and human capital of the host countries. For instance, [Slesman, Baharumshah, and Wohar \(2015\)](#), p. 271 find that capital inflows boost growth "only in countries that score above an optimum threshold on the qualities of institutions, while those that fall below record insignificant or even negative effects." Similarly, some argue that institutional quality is the main reason why sub-Saharan Africa (SSA) as a region has not attracted (and benefited from) as much FDI as the other regions ([Adeleke, 2014](#)). [Dupasquier and Osakwe \(2006\)](#) also mention poor governance as one among the many reasons responsible for the region's inability to competitively attract FDI. Likewise, [Esew and Yaroson \(2014\)](#) underscore the significance of the same factor, but for the specific case of Nigeria. However, the primacy of institutional factors over other determinants of FDI inflow is not shared by everyone. In the context of BRICS, for instance, [Jadhav \(2012\)](#) argues that economic factors matter more than both institutional and political factors. Similarly, [Bhupatiraju \(2020\)](#) finds no evidence of country-level measures of institutional quality significantly affecting inward FDI.

In the context of SSA, even though attributing to any single factor is not easy, there is a growing trend of FDI inflows, especially since 1990s (see [Fig. A1](#)). In addition, the source of FDI to the region is moving away from the traditional sources to new ones. As a result, competition to attract FDI among host countries is now being accompanied by

competition on the other end as well. The nature and composition of FDI is also changing. In particular, the long-neglected infrastructure has gained attention from Chinese FDI, and there is a strong correlation and potential for complementarity between Chinese FDI and trade ([Agbenlenko, Kibet, & Conteh, 2012](#); [Renard, 2011](#)). Moreover, unlike FDI from the West which "is dominated by private firms with limited risk appetite and little long-term commitment," [Renard \(2011\)](#), p. 22 states that, FDI from China is "made with the intention of establishing long-term relationships with governments". With these changes in trend, source, and composition of FDI, scholars are now becoming more optimistic about the development prospects of the region ([Dupasquier & Osakwe, 2006](#)). In fact, there is also a warning against an imprudent optimism, based on such concerns as a renewed scramble for Africa, for some see the new partners (mainly, China) as neocolonial powers ([Asongu & Aminkeng, 2013](#)).

Another potential diminution to such optimism comes from the fact that it is based mainly on the growth effects of FDI. However, equally deserving as its growth effect is the institutional impact of FDI. This is because if more FDI inflows could lead to improvements in institutional quality, that would be a plus to the long-run economic development. To the contrary, if more FDI inflow undermines institutional quality, any positive growth effect should be discounted as it overstates the benefits of FDI. In either case, the institutional effect of FDI needs due coverage. Economic research has so far focused on the effects of FDI inflows on economic growth, the (reverse) effect of economic performance on FDI inflows, and the role of institutional quality in attracting FDI. Generally, the effect of FDI on institutional quality has long been neglected. This trend is changing recently, however, and an increasing number of studies are taking up the subject. For instance, [Kwok and Tadesse \(2006\)](#), [Ali et al. \(2011\)](#), [Dang \(2013\)](#) and [Long et al. \(2015\)](#) have examined causality running from FDI to institutions and arrived at the conclusion that FDI improves the institutional quality of the host.

[Olney \(2013\)](#) finds support for the opposite view that "countries are competitively undercutting each other's labor market standards" (p. 191) in a typical race to the bottom. Similarly, based on evidence at the grass roots level and in the context of Africa, [Lee \(2014\)](#) witnesses how bilateral (FDI) agreements between governments on the two sides (*globalization from above*) and the accompanied (tolerance for) *globalization from below* are undermining the accountability of many African governments to their people and thereby exacerbating the living conditions of the poor in the region.

In a more recent and detailed study, [Demir \(2016\)](#) discusses the potential channels through which FDI may influence institutional quality of the host, presents circumstantial evidences of multinationals bribing developing country governments, and tests for difference between the institutional effects of North-South FDI and South-South FDI. He finds no significant institutional effect of North-South aggregate FDI, but significant negative institutional impact of South-South FDI (particularly in resource-rich host countries). Although the difference between the two types of FDI appears to be mild (not robust to different specifications), [Demir's](#) is the first study to take up the issue of FDI heterogeneity and test for its presence. However, despite the disaggregation of FDI into North-South and South-South components, the estimated effect in each of these cases refers to the average effect – averaged over a large number of host countries. In statistical terms, this means that the slope parameters estimated are not host-specific. Indeed, he has clearly allowed for the possibility of differential institutional impact of FDI in resource-rich versus resource-poor host countries. However, given the large pool of host countries, there still remains a potential for resource-rich (poor) SSA countries to be characterized by different parameters than other host countries within the resource-rich (poor) category. In fact, it is safer not to assume homogeneous parameters for any set of countries, even within SSA. Thus, this study intends to test for the causal relationship between FDI and institutional quality by allowing for host-specific parameters (in the context of SSA).

The second gap in the literature relates to the impact of FDI on the

sectoral composition of the host countries. Of all themes involving (the determinants or effects of) FDI, that relating FDI to structural change is perhaps the rarest (Jensen, 2006; Kang & Lee, 2011). Things are even worse from the developing (SSA) countries' perspective; Jensen (2006) focuses on Central and Eastern European transition economies and Kang and Lee (2011) on OECD countries in general and Korea in particular. Whereas one major reason behind the race to attract FDI is the desire to industrialize, it seems that the opposite is happening, at least in SSA. According to De Vries et al. (2015), it is now a stylized fact that Africa has experienced shrinking share of manufacturing in total value added and employment since 1990s. In a similar account, Rodrik (2015) finds that SSA is one of the world regions hit hard by 'premature' deindustrialization, which he characterizes as a striking finding because "...sub-Saharan countries are still very poor and widely regarded as the next frontier of labor-intensive export-oriented manufacturing..." (p. 16). However, neither of these studies looked into the role of FDI in explaining such a structural change. This study intends to examine how changes in the relative share of the manufacturing sector in SSA are related to variations in FDI inflows.

Finally, even in studies that examine the FDI-growth nexus, the possibility of host-specific response is rarely accounted for. Apparently, the only study that has addressed the issue of slope-parameter heterogeneity in FDI-growth nexus is Delgado et al. (2014). They have, however, modelled slope heterogeneity as a function of a single variable – corruption. The current study allows for unrestricted heterogeneity and thus does not attribute such heterogeneity to any specific variable.

3. Methodology

3.1. Model specification

In line with the research gaps identified earlier, a basic model is specified for each of the following effects of FDI: the growth, the institutional and the (de-) industrialization effects. In addition, an FDI equation is specified to investigate the reverse causal effects running from these variables to FDI.

Accordingly, the basic model for the growth-equation is given by:

$$\begin{aligned} grGDPPC_{it} = & \alpha_{0i} + \sum_{k=1}^p \alpha_{1ki} grGDPPC_{it-k} + \sum_{k=0}^p \alpha_{2ki} FDI_{it-k} \\ & + \sum_{k=0}^p \alpha_{3ki} Instit_{it-k} \\ & + \sum_{k=0}^p \alpha_{4ki} Rent_{it-k} + \epsilon_{it} \end{aligned} \quad (1)$$

Similar equations can be specified for the other three variables. As all of them involve the same set of variables – economic growth (*grGDPPC*), institutional quality (*Instit*), FDI and natural resource rent (*Rent*) – the exercise is simply to normalize Eq. 1 on each variable in turn. That is, interchanging the role of *grGDPPC* and *FDI* in Eq. 1 above yields an FDI-equation; and similarly for *Instit*. However, while *Rent* is an important (potential) determinant of institutional quality, FDI inflows and economic growth in the literature, no equation is specified for natural resource rent itself. Instead, an equation is specified for a closely related variable, $\ln(M/N)$ – (the natural logarithm of) manufacturing value added (*M*) relative to non-manufacturing value added within the industrial sector (*N*) – as a function of economic growth, FDI and institutional quality. A rise in the ratio *M/N* implies expansion of manufacturing relative to non-manufacturing and is interpreted as industrialization while falling *M/N* means deindustrialization. In this last equation, as the denominator (i.e., *N*) is more or less the natural resource sub-sector, the variable *Rent* is not included as a regressor.

However, in variants estimated for robustness check – where the dependent variable is manufacturing value added (*MVA*) – *Rent* is included.

To facilitate the simultaneous estimation of long-run and short-run parameters, Eq. 1 is reparameterized into an Error-Correction Model (ECM) equivalent:

$$\begin{aligned} \Delta grGDPPC_{it} = & \pi_{0i} + \lambda_i (grGDPPC_{it-1} - \beta_{2i} FDI_{it-1} - \beta_{3i} Instit_{it-1} - \beta_{4i} Rent_{it-1}) \\ & + \sum_{k=1}^{p-1} \pi_{1ki} \Delta grGDPPC_{it-k} + \sum_{k=0}^{p-1} \pi_{2ki} \Delta FDI_{it-k} \\ & + \sum_{k=0}^{p-1} \pi_{3ki} \Delta Instit_{it-k} + \sum_{k=0}^{p-1} \pi_{4ki} \Delta Rent_{it-k} + \epsilon_{it}; \end{aligned} \quad (2)$$

where π 's, β 's and λ are parameters to be estimated; ϵ is the stochastic term; the subscripts *i* and *t* stand for country and year, respectively; and *k* is the lag length. Long-run causality is inferred from two conditions: the significance of β 's, and λ lying in the interval (-2, 0) and being significantly different from zero.

3.2. Estimation techniques

Principally, the study employs three dynamic panel data estimation techniques that address issue of non-stationarity. These are the dynamic fixed effect (DFE), the mean group (MG) and the pooled mean group (PMG) estimators. These techniques do not assume any variable to be exogenous a priori. Instead, exogeneity is inferred only if the other variable(s) fail to provide any predictive power in the equation concerned.

The DFE option imposes parameter homogeneity except for the intercept (π_{0i}), PMG imposes homogeneity on the long run parameters (β 's in Eq. 2), and MG does not impose any restriction (Blackburne, 2007). The Hausman test is employed to choose between them. Between DFE and MG, the test prefers the latter, implying that parameter heterogeneity is an issue that should be addressed. Between MG and PMG, however, the test chooses PMG, i.e., the group of countries share long-run parameters (β 's) but not the short-run parameters (π 's) or the adjustment coefficients (λ 's) – see Table A1. The tests were conducted, first, with a constant in the cointegrating equation (adequate to capture a trend term in the untransformed relationship), and then repeated with both a constant and a trend term (to allow for the possibility of a quadratic trend term in the original equation). In line with these test results, all the regression analyses below employ the PMG technique (with heterogeneity limited to short run parameters and the speed of adjustment).

The use of *grGDPPC* as opposed to the level of income (*lnRGDPPC*), in the regression analyses below, is based on unit-root and cointegration tests. Unanimity between the IPS unit-root test and Hadri's stationarity test – i.e., rejection of the null hypothesis in the first case and failure to reject the null in the latter case – is reached with the first-difference of *grGDPPC* but not with that of *lnRGDPPC* (Table A2). Similarly, it is only with the use of *grGDPPC* that both Pedroni's and Westerlund's tests of cointegration reject the null of no-cointegration (Table A3). Each of these tests was also done both with and without the trend term, with the same conclusions reached in both cases.

4. Data

Data on growth rate of GDP per Capita (*grGDPPC*), FDI inflow as share of GDP (*FDI*), and the sectoral shares in total value added – i.e., the manufacturing value added (*MVA*) and the industrial value added (*IVA*)

from which non-manufacturing (industrial) value added (NVA) is calculated – are extracted from the online database of UNCTAD.¹ Measures of institutional quality come from two sources. The longer series on political rights (*PolRight*), civil liberties (*CivLib*), and their average (*InstitQual*) is obtained from the Freedom House. This is available annually since 1972. These indices have been rescaled so that higher values mean better institutional quality (1 signifying the worst and 7 the best quality). Data on the second set of institutional quality indices – Rule of Law (*RuleLaw*), Voice and Accountability (*Voice*) and Corruption (*Corruption*) – come from the Worldwide Governance Indicators (WGI) database of the World Bank Group (World Bank, 2015b). The natural resource rent as a share of GDP (*Rent*) is from the World Development Indicators (WDI) of the World Bank database (World Bank, 2015a). Table A4 presents the mean values of all the variables.

There are strong and statistically significant correlations amongst the three institutional quality measures from the Freedom House. The same holds for the three institutional quality indexes from the Worldwide Governance Indicators. All the possible pairwise correlations ($6 \times 5/2 = 15$ pairs from the two sources combined) are also statistically significant (see part (a) of Table A5). Along the cross-sectional dimension, the correlations amongst the various institutional quality indices remain intact – strong and statistically significant (part (b) of Table A5). On the other hand, the over-time correlations amongst the institutional quality indicators are somewhat different (part (c) of Table A5). First, the correlations between the rule of law index and each of the three indexes from the Freedom House, though still positive, are no more statistically significant. Secondly, corruption is now ('unconventionally') positively correlated with each of the other five measures, though its correlation with political rights and rule of law indexes are statistically insignificant. Interestingly, while all the other institutional quality indicators – for the whole region (on average) – have improved over the years, corruption has been on the rise.

So much for the correlation among the measures of institutional quality themselves. Then, how is each of these measures related to the other variables of interest? Based on the pooled-data correlations, FDI displays positive and statistically significant correlations with *PolRight*, *CivLib* and *InstitQual*; negative but insignificant correlations with *RuleLaw* and *Voice*; and, positive yet insignificant correlation with *Corruption*. On the other hand, regardless of the institutional quality index used, it seems that cross-country variation in average FDI inflows is not related to institutional quality. Despite the statistical insignificance, the signs (in all the six cases) suggest that more FDI is associated with 'bad' institutions. Over time, FDI is positively (and significantly) correlated with all indices of institutional quality, except corruption. The positive association between FDI and corruption is statistically insignificant.

With regard to economic growth, it is positively and significantly correlated with *PolRight*, *CivLib* and *InstitQual* both in pooled and time-series settings, but insignificantly in the cross-sectional one. Of the remaining three measures of institutional quality, none is significantly associated with growth in time-series, only corruption is positively (and significantly) associated with it in the pooled-data, and corruption (negatively) and rule of law (positively) associated with it in the cross-sectional settings.

¹ Accessed January 10, 2016 at: <http://unctad.org/en/Pages/Statistics.aspx>. UNCTAD defines FDI as "an investment made by a resident enterprise in one economy (direct investor or parent enterprise) with the objective of establishing a lasting interest in an enterprise that is resident in another economy (direct investment enterprise or foreign affiliate). The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise. The ownership of 10% or more of the voting power of a direct investment enterprise by a direct investor is evidence of such a relationship." NVA is simply $IVA - MVA$

Unanimously for all the six indexes, the share of value added coming from the manufacturing sub-sector (in total value added, or GDP) is positively and significantly associated with 'good' institutions in the pooled part. Although the signs in the pooled-data setting hold for the cross-sectional one as well, only corruption has a marginally significant association with manufacturing value added (MVA). Over time, with the exception of corruption, MVA is unfavorably associated with institutional quality, but only correlations with the Freedom House measures are significant.

Finally, differences in economic growth – the 'track record' – are positively related to differences in FDI in all the three settings: pooled, cross-sectional and time-series. MVA is unfavorably associated with both economic growth and FDI inflow in the pooled-data setting. Unlike growth, FDI retains its significance under the cross-sectional case as well. Likewise, under the time-series case, MVA varies inversely (and significantly) with both economic growth and FDI inflow. Correlations for the value added in the non-manufacturing industrial sub-sector (NVA) are not reported here, but the overall picture is more or less the flip side of MVA.

The differences – between pooled, cross-sectional and time-series cases – in sign and significance of the correlations reported may give an indication that some (pooled-data-based) results are driven more by over-time variations than cross-country differences, or vice versa. For instance, the significant positive relationship between FDI and *InstitQual* in the pooled setting appears to be a manifest of the time-series aspect rather than of the cross-sectional dimension. However, all of these correlations are contemporaneous ones, and do not take into account the possibility of time lags in a variable's response to a change in another. The regression results in a later section address this issue.

To add some historical flavor to these correlations, Fig. 1 depicts the time trends of the major variables. One remarkable point from the figure is the rise in institutional quality beginning around 1989 and the contrasting fall in both economic growth (*grGDPPC*) and FDI around the same time. Two major global incidents may partly explain these 'valleys' in the latter two variables (*grGDPPC* and FDI) that lasted almost a decade. One – particularly relevant for FDI – is the end of the Cold War. As the war to 'rescue' Africa from the socialist camp ended, the West shifted its focus from Africa to managing transitions in Eastern Europe (Edoho, 2011). The other factor is the Structural Adjustment Programs (SAPs) which squeezed the public sector without bringing about the desired boost in the private sector, and this could be blamed for the drop in *grGDPPC*. While SAPs are acknowledged to have failed in SSA in particular (for instance, see Currie-Alder, Kanbur, Malone, & Medhora, 2014; Kingston, Irikana, Dienye, Kingston, & Gogo, 2011), it is unfair to attribute the decline fully to the programs. The political instability and civil wars which came (or intensified) with the global ideological victory of free-market economy over command economy might have played some role. However, equally importantly, SAPs cannot be claimed to explain the sharp rise in institutional quality index. Again, the same ideological transition might have contributed. Looking for the right explanation(s) for the contrasting trends is beyond the scope of this study; however, it is imperative to notice that progress in institutional quality is not always related to favorable movements in economic growth and FDI inflow.

The slow change in institutional quality relative to all other variables in Fig. 1 also makes intuitive sense – institutions evolve only over the long term. The region's economic stagnation is also clear from this figure: despite the sharp fall before early 1990s and a rise thereafter, *grGDPPC* in 2014 is less than that in 1972 (four decades earlier). Lastly, the co-movement of FDI and non-manufacturing value added is more striking than any other pairs in the figure.

However, it is imperative to recall that this figure depicts only the average trend for all the countries in the sample, and may hide a richer relationship between the variables. The regression analyses in the next section utilize both the between-country and over-time variations to identify more revealing results.

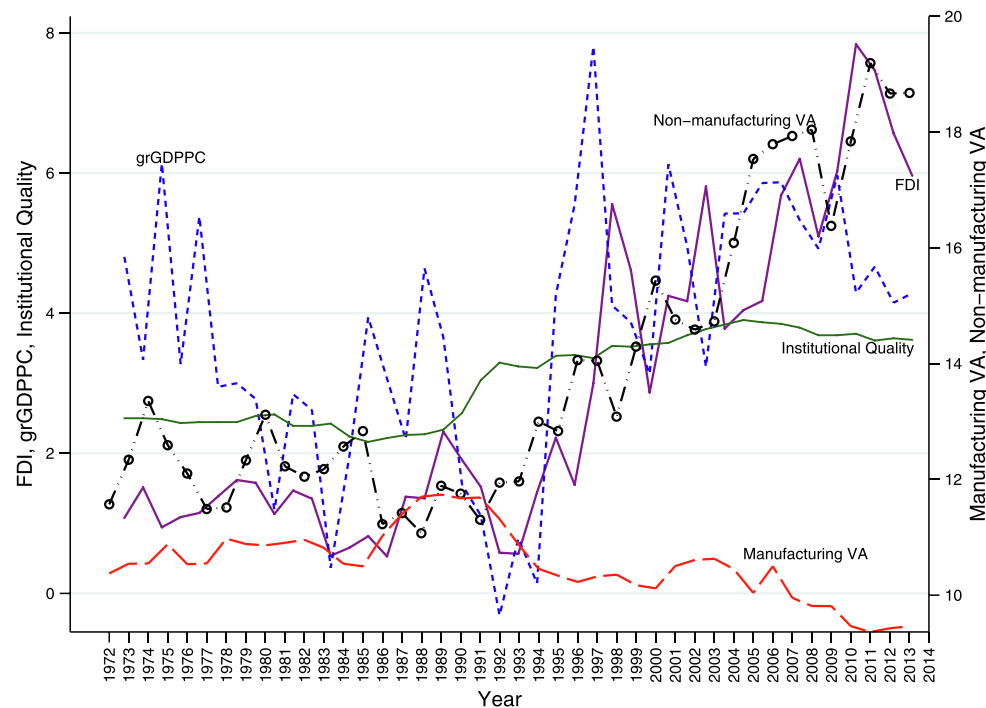


Fig. 1. Time Series Plot of Some Variables (Regional Averages).

5. Results and discussion

5.1. Economic growth, FDI and institutional quality

The first equation estimated is the growth (grGDPPC) equation, and the regression results from a wide range of alternative specifications are reported in Table 1. Unanimously for all models, FDI inflow has a positive and statistically significant effect on economic growth in the long run (first row of Table 1). Model 1 presents the bivariate version of the long run association between FDI and growth. Models 2–4 add the average institutional quality measure – *InstitQual* – from the Freedom House, with differing lag length specifications. Models 5 and 6, respectively, replace the average institutional quality measure by the civil liberties and political rights components, and Model 7 controls for natural resource rent. Models 8–10 employ a different set of institutional quality measures: rule of law, voice and accountability, and corruption. The positive growth effect of FDI is robust throughout. The magnitude of the effect varies somewhere between 0.13 (Model 10) and 0.27 (Model 4). The coefficients of FDI in Models 8–10 are less than those in Models 1–7. This perhaps reflects that the effect of FDI increases with the length of time considered. The short run effects of FDI on economic growth are generally insignificant (except in Model 3) (Table 1).

Regarding the effect of institutional quality on economic growth, Models 2–7 (Table 1) reveal a robust positive and statistically significant long run growth effect of institutions. The growth effect of institutional quality is positive and significant even in the short run, except in Model 3.² The other set of institutional quality measures (i.e., those from the WGI) entail the use of a shorter panel due to data availability. Nonetheless, consistent with the other measures, voice and accountability (*Voice*) contributes positively to economic growth both in the short-run and the long-run. Corruption has also the expected negative sign, though

significant only in the short run. Rule of law has unexpected negative signs both in the short run and the long run, but insignificant in both cases. Finally, the effect of natural resource rent on economic growth is positive, but statistically significant only at a level of significance marginally above the 10% (p-value of 0.102).

Table A6 repeats the regressions in Table 1 with the inclusion of the time trend in the cointegrating equation and gross domestic saving in both the long run and short run relationships. The results are qualitatively the same.³ A remarkable difference is that the *Rule of Law* variable has now the expected positive sign and is statistically significant. The statistical significance of *Rent* also improves slightly. As the trend term is statistically insignificant, there is no support for a quadratic time trend in the growth equation. Hence, the results in Table 1 are the preferred ones.

In a similar manner, ten specifications of the FDI equation were estimated. Table 2 presents the results. Robust across all the models, faster economic growth attracts more FDI. Similarly, better institutional quality fetches more FDI.⁴ Consistent with the majority of the literature on determinants of FDI to developing countries in general and SSA in particular (for instance, see, Asiedu, 2002), natural resource rent has a highly significant positive effect on FDI inflow. In contrast to the growth equation, the trend terms are significant in the FDI equations, suggesting that there is a quadratic trend in FDI even after controlling for the other variables in the models. Nonetheless, the differences between including and excluding the trend term are negligible (compare Tables 2 and A7).

Table 3 summarizes the estimation results for the institutional quality equation. On the basis of the Freedom House indices, FDI does not have a significant effect on institutional quality. While the long run

² The linear combinations of the short run coefficients of institutional quality variables in Models 3 and 4 are 1.065 and 1.828, respectively, and the corresponding p-values are 0.296 and 0.100.

³ The relationship between FDI and economic growth withstands the inclusion of other important controls such as human capital, trade-openness, aid, population growth and government consumption, in addition to domestic savings. See the online appendix to Wako (2018).

⁴ The coefficients of grGDPPC (Model 8) and InstitQual (Model 3) in the cointegrating equation lose statistical significance, but only at the margin. The p-values are 0.127 and 0.119, respectively.

Table 1
Estimation Results for the Growth Equation.

	Dependent Variable: $\Delta \text{grGDPPC}$									
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
<i>Long Run:</i>										
FDI	0.216***	0.180***	0.239***	0.271***	0.177***	0.186***	0.143***	0.131***	0.141***	0.126***
InstitQual		0.308***	0.308***	0.300***			0.303***			
CivLib					0.327***					
PolRight						0.264***				
Rent							0.031			
RuleLaw								−0.259		
Voice									2.337***	
Corruption										−0.314
<i>Short Run:</i>										
Adj. Speed	−0.820***	−0.819***	−0.826***	−0.813***	−0.821***	−0.822***	−0.823***	−0.832***	−0.850***	−0.833***
ΔFDI	0.143	0.104	0.144*	0.148	0.119	0.080	0.103	−0.006	0.024	0.063
$L\Delta \text{FDI}$			0.039	0.124						
$L2\Delta \text{FDI}$				0.094						
$\Delta \text{InstitQual}$		2.788***	2.571***	2.783***			2.527***			
$L\Delta \text{InstitQual}$			−1.506**	−0.897**						
$L2\Delta \text{InstitQual}$				−0.058						
$L\Delta \text{grGDPPC}$			0.041	0.030						
$L2\Delta \text{grGDPPC}$				−0.039						
ΔCivLib					1.410***					
$\Delta \text{PolRight}$						2.762***				
ΔRent							2.659			
$\Delta \text{RuleLaw}$								−0.464		
ΔVoice									7.043***	
$\Delta \text{Corruption}$										−3.868*
Constant	2.498***	1.800***	1.628***	1.451***	1.724***	1.932***	1.661***	3.332***	4.746***	3.679***
N	1932	1906	1860	1814	1906	1906	1860	810	810	808
\bar{T}	42	41.435	40.435	39.435	41.435	41.435	40.435	18	18	17.956
n	46	46	46	46	46	46	46	45	45	45

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, N = Number of Observations, n = Number of Countries, \bar{T} = Average Number of Observations per Country.

coefficient of FDI in Model 4 is negative and statistically significant (consistent with results in Models 8–10), this changes remarkably with slight modification of the lag length (Models 2 and 3), addition of a control variable (Model 5) or dropping of a control variable (Model 1). Based on the indices from the WGI, which are less crude than the Freedom House indices, the influence of FDI on institutional quality is detrimental and statistically highly significant (in the long run). More FDI inflow is associated negatively with rule of law and voice and accountability, and positively with corruption.

In almost all the models, economic growth encourages better institutional quality, both in the short run and the long run (Table 3). The only exception is the insignificance of its effect on corruption. Another important determinant of institutional quality in this table is the natural resource rent variable. In line with the natural resource curse literature, this variable significantly hurts institutional quality through undermining the rule of law and voice and accountability, and boosting corruption. With the use of the Freedom House variables, natural resource rent has a consistent negative coefficient. However, statistical significance is found only for civil liberties (Model 6). Like the FDI equation, and unlike the growth equation, the specification with time trend is the preferred one. For results without the trend term, see Table A8.

To recapitulate, there are bidirectional causality between growth and FDI as well as between growth and institutional quality, in the long run. Both FDI and institutional quality foster economic growth; and, economic growth, in turn, has favorable effects on both FDI inflow and institutional quality. The direction of causality between FDI and institutional quality depends on the indicator of institutional quality used. Using variables from the Freedom House suggests that the direction of causality is mainly one-way: FDI responds positively to institutional quality, but the causation in the reverse direction is not robust to

different specifications. The WGI dataset shows a bidirectional long run causality between FDI and institutional quality. FDI responds positively to improvements in the rule of law and voice and accountability, but negatively to corruption. On the other hand, FDI adversely affects the institutional quality of host countries. It contributes to the deterioration in the rule of law and voice and accountability as well as rising level of corruption. Perhaps, this is because the inflow entails bribery and other forms of corruption at the startup stage of multinational corporations (MNCs). This type of association between MNCs (FDI inflow) and corruption is in line with the arguments of Hawley (2000), which is also recognized by Fan, Morck, Xu, and Yeung (2009), among others. Some argue that it is the stock of FDI, more than the flow, that may nurture corruption. Data from the current sample seem to support this claim. However, as the stationarity test rejects the null that FDI stock is an I(1) variable (in favor of I(2)), this could be a spurious result. Hence, this line of analysis is not pursued further.

FDI has also a robust significant effect of undermining the rule of law, and also negatively affect voice and accountability. Perhaps host country governments become less and less accountable to their citizens as they learn to become more and more accountable to multinationals, consistent with a point made by Koenig-Archibugi (2004). A case in point is well-documented in Lee (2014). Accordingly, following a riot by the “Tri-Star ‘girls’” triggered by ‘disciplinary beating’, the company fired close to 300 workers without compensation. Subsequently, as if the long list of concessions made (which could, arguably, make some economic sense) was not enough, the government had to ‘claim responsibility for the attack.’ Partly quoting from a study by De Haan and Vander Stichele (2007), Lee (2014) states that: “President Museveni announced to the press that, ‘I sacked those girls because of indiscipline, as their action would have scared off investors who had plans to set up

Table 2

Estimation Results for the FDI Equation with Trend in the Cointegrating Equation

	Dependent Variable: ΔFDI									
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
<i>Long Run:</i>										
grGDPPC	0.066***	0.063***	0.099***	0.159***	0.063***	0.063***	0.070***	0.028	0.068**	0.048**
Year	0.059***	0.054***	0.058***	0.050***	0.054***	0.056***	0.050***	0.053***	0.125***	0.088***
InstitQual		0.103*	0.090	0.158***			0.107*			
CivLib					0.105*					
PolRight						0.087*				
Rent							0.056***			
RuleLaw								1.304***		
Voice									1.398***	
Corruption										-1.420***
<i>Short Run:</i>										
Adj. Speed	-0.479***	-0.482***	-0.443***	-0.423***	-0.480***	-0.477***	-0.482***	-0.615***	-0.616***	-0.651***
Δ grGDPPC	0.014	0.004	0.017	0.021	0.009	0.002	0.014	0.011	0.014	0.011
$L\Delta$ grGDPPC			-0.007	-0.009						
$L2\Delta$ grGDPPC				-0.001						
Δ InstitQual		0.762	0.658	0.516			0.592			
$L\Delta$ InstitQual			-0.029	-0.107						
$L2\Delta$ InstitQual				-0.482*						
$L\Delta FDI$			-0.090**	-0.115**						
$L2\Delta FDI$				-0.060*						
Δ CivLib					0.349					
Δ PolRight						0.918				
Δ Rent							-0.433			
Δ RuleLaw								-2.413		
Δ Voice									1.280	
Δ Corruption										1.830
Constant	-54.822***	-50.965***	-50.184***	-40.999***	-50.303***	-52.097***	-46.730***	-61.870***	-150.768***	-111.547***
N	1932	1906	1860	1814	1906	1906	1860	810	810	808
\bar{T}	42	41.435	40.435	39.435	41.435	41.435	40.435	18	18	17.956
n	46	46	46	46	46	46	46	45	45	45

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, N = Number of Observations, n = Number of Countries, \bar{T} = Average Number of Observations per Country.**Table 3**

Estimation Results for the Institutional Quality Equation with Trend in the Cointegrating Equation

	Model 1 Δ InstitQual	Model 2 Δ InstitQual	Model 3 Δ InstitQual	Model 4 Δ InstitQual	Model 5 Δ InstitQual	Model 6 Δ CivLib	Model 7 Δ PolRight	Model 8 Δ RuleLaw	Model 9 Δ Voice	Model 10 Δ Corruption
<i>Long Run:</i>										
FDI	0.012	0.005	0.003	-0.021**	0.004	-0.008	-0.003	-0.012***	-0.010***	0.007***
Year	0.008**	0.030***	0.047***	0.013***	0.042***	0.052***	0.036***	0.017***	0.016***	0.009***
grGDPPC		0.057***	0.018**	0.026***	0.048***	0.038***	0.066***	0.035***	0.027***	-0.006***
Rent					-0.005	-0.009*	-0.002	-0.015***	-0.005***	0.012***
<i>Short Run:</i>										
Adj. Speed	-0.166***	-0.169***	-0.177***	-0.165***	-0.202***	-0.195***	-0.165***	-0.211***	-0.236***	-0.331***
ΔFDI	0.008	0.006	0.005	0.001	0.006	0.004	0.005	-0.002	-0.004	-0.001
$L\Delta FDI$			-0.007	-0.012						
$L2\Delta FDI$				-0.003						
Δ grGDPPC		0.008***	0.007***	0.008**	0.007***	0.007***	0.008***	0.004***	0.004***	-0.000
$L\Delta$ grGDPPC			0.001	0.001						
$L2\Delta$ grGDPPC				0.002						
$L\Delta$ InstitQual			0.110***	0.106***						
$L2\Delta$ InstitQual				0.006						
Δ Rent					-0.138	-0.170	-0.175	0.113	0.144	-0.098
Constant	-2.121***	-9.714***	-15.967***	-3.647***	-16.418***	-19.600***	-11.303***	-7.437***	-7.700***	-5.860***
N	1906	1906	1860	1814	1860	1860	1860	765	765	763
\bar{T}	41.435	41.435	40.435	39.435	40.435	40.435	40.435	17	17	16.956
n	46	46	46	46	46	46	46	45	45	45

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, N = Number of Observations, n = Number of Countries, \bar{T} = Average Number of Observations per Country.

business here ...'." (p. 126).⁵

However, the total institutional impacts of FDI are ambiguous. While FDI harbors corruption and does a direct harm to voice and accountability, and the rule of law, its growth-enhancing effect implies favorable indirect institutional effect. The contrasting direct effects of FDI on growth and on institutions trigger conflicting dynamics between the latter two. The stronger of these two effects (of FDI), in turn, affects the amount of FDI forthcoming, setting in another round of conflict and perpetuating the cycle. Based on what is happening elsewhere in the economy (or the world at large), either of these effects could turn out to be the stronger one at a specific round. In the unlikely case where the *ceteris paribus* assumption holds, FDI could be a 'perpetual blessing' (if its growth effect and its indirect effect on institutions are stronger than the direct negative institutional effect) or a 'perpetual curse' (if the former is weaker than the latter).

Included in all the three equations is the natural resource rent. While economic growth is positively associated with natural resource rent, its statistical significance is weak. On the other hand, natural resource rent enhances FDI inflows, undermines the rule of law and voice and accountability, and raises the level of corruption. Testing for the reverse causality running from economic growth, FDI and institutions to the natural resource sub-sector (more precisely, to structural change) is the subject of the next subsection.

At this point, some words on the short run relationships are in order. The bidirectional causality between economic growth and institutional quality holds in the short run as well. There is no robust short run causality between FDI and economic growth, nor is there such association between FDI and institutional quality. MNCs take some time rather than responding instantaneously to changes in economic growth or institutional quality. And indeed, the benefits of FDI take time to be reaped. However, even if institutions may evolve only slowly, people's perceptions about institutional quality change with economic performance.

Another noticeable point from the 'short run' regression results (Tables 1–3) is the significance of the lagged values of the dependent variables in the FDI and institutional quality models. There is a strong memory or persistence in institutional quality, as indicated by the positive and statistically significant coefficients of its first lag in Models 3 and 4 (Table 3). That is, incidence of events which harm or efforts which improve institutions in one period has impact on institutional quality for the subsequent year as well. With regard to FDI inflows, it seems that times of increased inflows are followed by times of slowdown (Models 3 and 4 in Table 2). This is consistent with the observation that some foreign (multinational) firms have been jumping from one host country in the region to another (Lee, 2014). It also makes intuitive sense for a continent that is considered a latecomer to the business, since – without adequate and reliable information – multinationals could be treading carefully as they test an 'unknown' business environment.

5.2. Structural change

The manufacturing sector has long been recognized to be the source of productivity growth, skill transfers, and more generally a source of both static and dynamic structural change bonus (Storm, 2015). Empirically, "there are no important examples of success in economic development in developing countries since 1950, which have not been driven by industrialisation" (Szirmai, 2012, p. 417). If the manufacturing sector is so important, then developing countries should naturally be concerned with how to boost its share in their respective

economies and must actively address factors that work against it.

Meanwhile, the trend around the world is that the employment and output shares of the manufacturing sub-sector are falling, with a few exceptions. This is true for developed and developing countries alike. However, unlike deindustrialization in the developed world which is largely due to rapid technological progress in manufacturing, deindustrialization in developing world is mainly a result of globalization (Rodrik, 2015). An important aspect of globalization is the growing prominence of multinationals and their FDI. Whether FDI contributes to industrialization or deindustrialization depends on its type and sector of destination. In the context of this study, for the positive growth effect of FDI (established in the previous subsection) to have overarching and sustainable effects, it is imperative that the investment is directed to areas with potential for productivity increase and strong spillovers (which is traditionally equated with the manufacturing sector), or at least, should not massively flow to sectors with no or poor backward and forward linkages. A logical question is then: *what is the association between FDI inflows and the manufacturing sub-sector, in the context of SSA?* This section intends to answer this question.

Using both the nominal and real definitions of manufacturing value added (MVA), there is a clear deindustrialization in SSA beginning around 1990 (Fig. A2 (top)). The year 1990 marks the outset of intensified and massive liberalization moves but it is also "a demarcation of the period in which globalization gathered speed" (Rodrik, 2015, p. 21). The pattern he finds for the developing countries at large holds for SSA as well. The gap between the real and nominal MVA has also increased since early 1990s, though slightly. The real MVA has fallen a bit faster than the nominal (similar to what Rodrik (2015) has found for Latin America.) This points toward one source of deindustrialization than the other. As Rodrik (2015) details deindustrialization could be explained by (1) shrinking real production in the manufacturing sector relative to other sectors, and/or (2) the trend in the world price of manufacturing products disfavoring a region. If the region is deindustrialized more according to the nominal definition than the real definition, then it means that the world price movements (i.e., terms of trade of manufacturing products vis-à-vis other products) put the region in a disadvantageous position. On the other hand, if the real definition shows more deindustrialization than the nominal (which is the case here for SSA), then the source is decline in the industrial sector of the region even after control for sectoral terms of trade changes. In sum, SSA's deindustrialization is more because of the shrinkage in the share of its manufacturing sector than because of manufacturing products facing unfavorable terms of trade when it is finally Africa's turn to produce manufactured goods.

Nonetheless, not all countries in SSA share the same deindustrialization story though. Democratic Republic of Congo (DRC), Ghana and Guinea-Bissau have experienced the worst deindustrialization scenario between 1970 and 2014 (drops of 35, 24 and 11 percentage points, respectively). On the other hand, Lesotho and Swaziland have seen double-digit rises in the share of their manufacturing value added in GDP (see Fig. 2). Countries in the former group are richer than those in the latter one in terms of natural resources. The average natural resource rents (as share of GDP) are as follows: DRC 20.36%, Guinea-Bissau 17.44%, Ghana 8.93%, Swaziland 6.75% and Lesotho 6.28%.

As Lesotho and Swaziland are resource-poor countries by SSA standard (Thorborg & Blomqvist, 2015), their proximity to South Africa may partly explain the type of FDI going there. As discussed in Basu and Srinivasan (2002), these countries have attracted market-seeking FDI attributed to their location in relation to South Africa and the trade sanctions on South Africa in the 1980s and 1990s. Besides, the two countries are among the major beneficiaries of the Textile and Apparel Provision of the AGOA (African Growth and Opportunity Act) (Lee, 2014; Chen, Geiger, & Fu, 2015). On the contrary, DRC and Ghana are among the resource-rich countries of the region (Thorborg & Blomqvist, 2015), and the FDI they attracted is mainly in mineral extraction industries. Up to 80% of FDI stock in the former is in the mining sub-sector

⁵ The underlying cause of the 'disciplinary beating' and the riot is the very harsh working conditions including denial of access to drinking water, ventilation and use of toilet during working hours, and verbal and sexual abuses. Lee (2014) provides, to say the least, a nice documentation of stories related to FDI in SSA, which would, definitely, never show up in macroeconomic statistics.

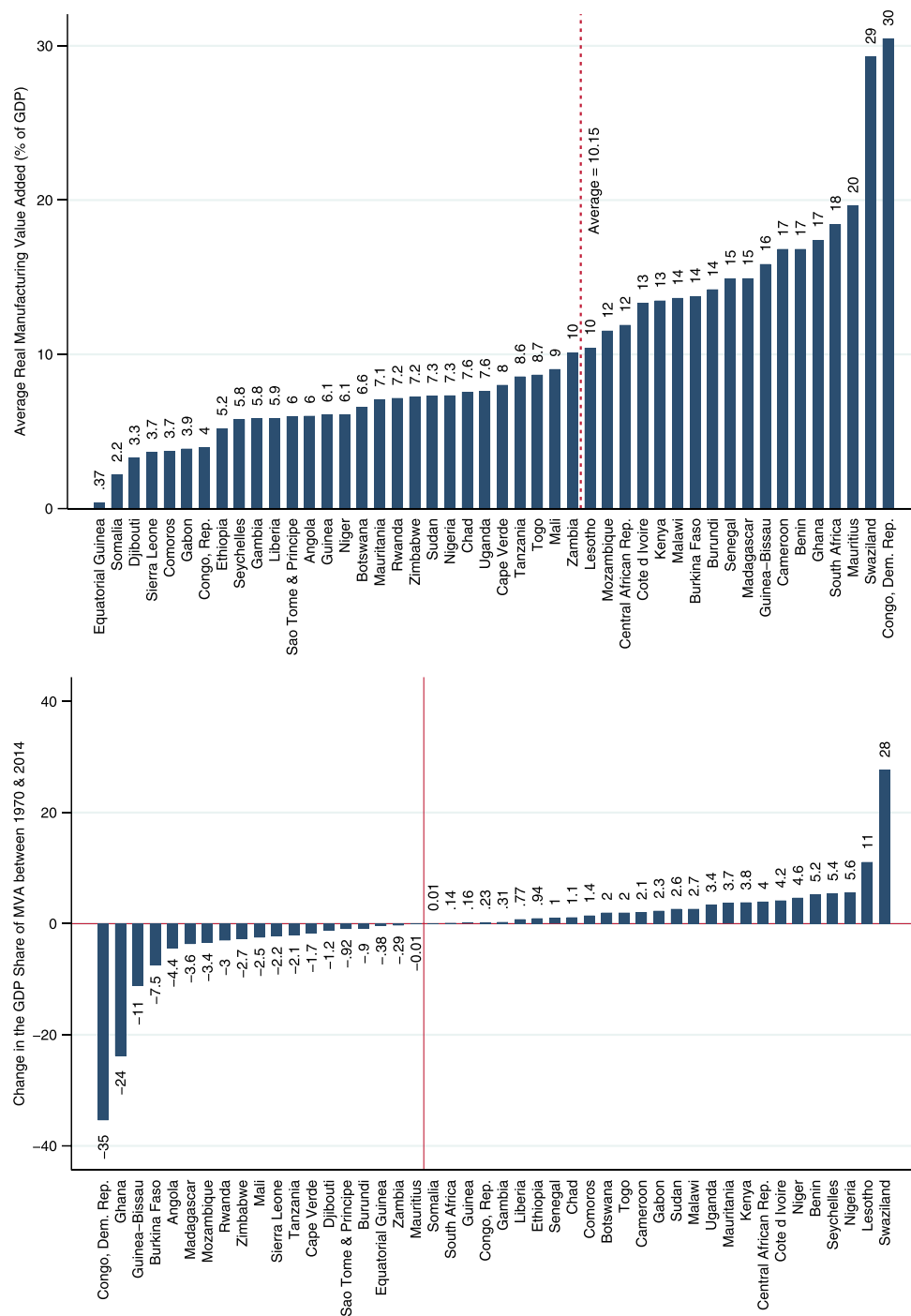


Fig. 2. Real Manufacturing Value Added: Period Average [top], and Its Change between 1970 & 2014 [bottom].

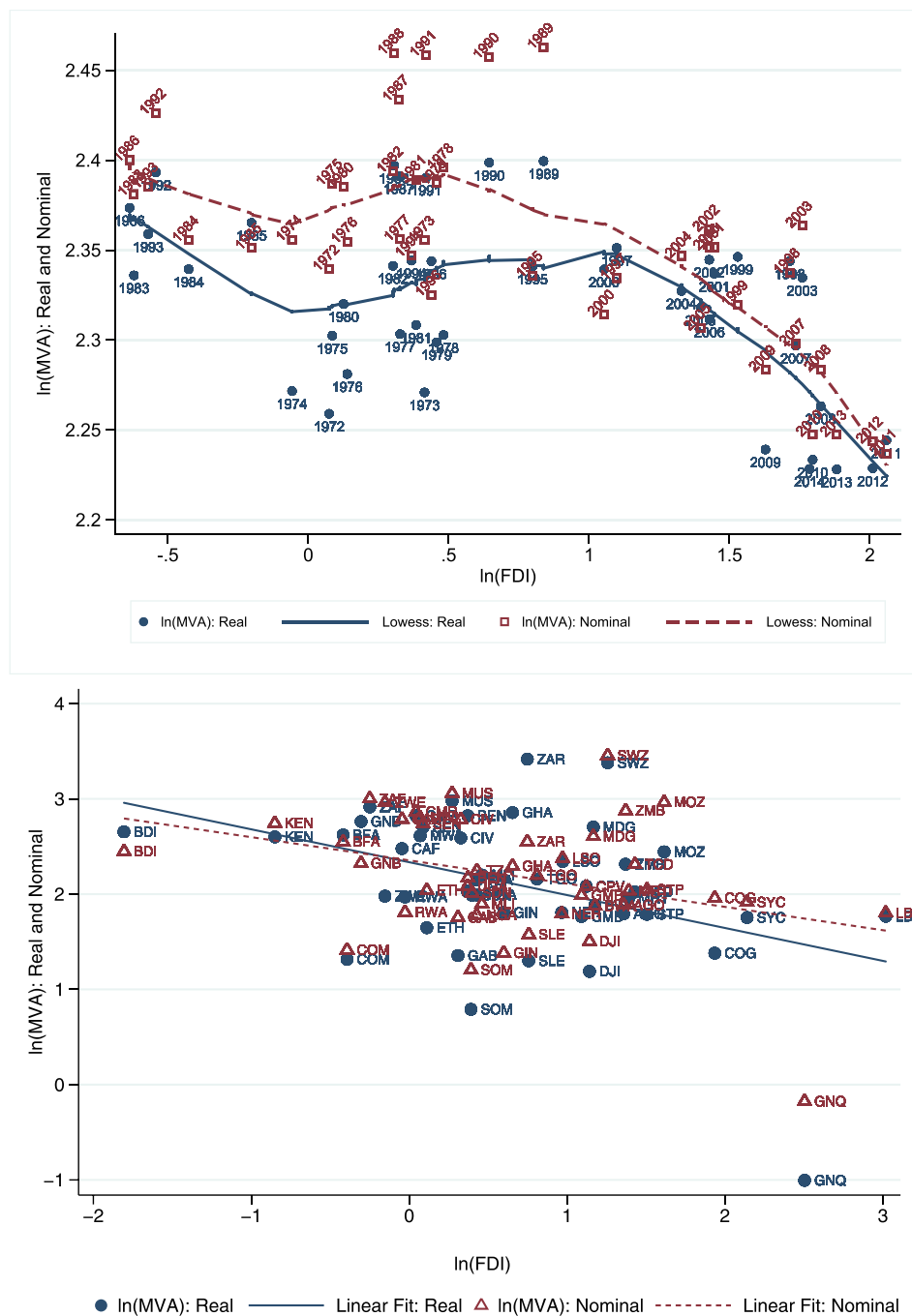


Fig. 3. Manufacturing Value Added vs. FDI: Time-series & Cross-sectional Plots.

(Oxford Policy Management & Synergy Global, 2013), and despite the recent rising trend in its manufacturing FDI (Chen et al., 2015), the mining sub-sector is also the largest destination of FDI to Ghana (see, Tsikata, Asante, & Gyasi, 2000).

In this study, deindustrialization is not just about the declining contribution of the industrial sector relative to the other (primary and service) sectors. That appears to be a universal experience by now. This study goes a step further: it zooms into the industrial sector itself and looks at the trend in the manufacturing sub-sector relative to the non-manufacturing industrial sub-sector. Accordingly, the sample average reveals that manufacturing value added of the region had been growing faster than non-manufacturing before 1990; that manufacturing value added was greater than the non-manufacturing value added between 1981 and 1991 (except for 1984 and 1985); and that there is a sharp fall in the relative share of manufacturing value added since 1991 (Fig. A2 (bottom)). The deindustrialization observed is stronger with the use of this definition than the simple MVA (as share of GDP) definition. However, the two definitions depict a qualitatively similar picture overall.

A cursory inspection of both time-series and cross-sectional dimensions of the data show that increases in both FDI inflow (Fig. 3) and GDP per capita (Fig. A3) are associated with deindustrialization. The

negative relationship between FDI to the region and the share of manufacturing value added is consistent with the argument that FDI to SSA chases natural resources. The average negative relationship holds for periods with average FDI inflow below 1% of GDP or in excess of 2.7% of GDP (i.e., $\ln(\text{FDI}) < 0$ plus $\ln(\text{FDI}) > 1$ in Fig. 3). The inverse relationship between FDI and industrialization was thus put on hold in mainly in the 1970s. The association with rising income is 'natural' as "deindustrialization is the common fate of countries that are growing" (Rodrik, 2015, p. 9). The only thing 'unnatural' about it is that it happened at a very low level of income (Rodrik's 'premature deindustrialization') and that it slopes downward throughout, as opposed to the expected inverted U-shape.

Moreover, as FDI is positively associated with economic growth, it means that FDI contributes to deindustrialization both directly through altering sectoral shares (between manufacturing and non-manufacturing) and indirectly through raising income level. The formal tests for the association between FDI and the share of manufacturing in total economic activities (as well as relative to non-manufacturing) and the direction of causality are undertaken using the PMG estimator.

Regression results in Table 4 confirm the positive relationship between FDI and deindustrialization observed earlier. In addition, the

Table 4
FDI and Manufacturing Value Added: Cointegration with Trend

	Model 1 $\Delta \ln(M/N)$	Model 2 $\Delta \ln(M/N)$	Model 3 $\Delta \ln(M/N)$	Model 4 $\Delta \ln(M/N)$	Model 5 ΔMVA	Model 6 ΔFDI	Model 7 ΔFDI	Model 8 ΔFDI	Model 9 ΔFDI	Model 10 ΔFDI
<i>Long Run:</i>										
FDI	-0.066***	-0.051***	-0.088***	-0.021***	0.039**					
grGDPPC	-0.068***	-0.033***	-0.037***	-0.042***	-0.057***	0.060***	0.118***	0.153***	0.040	0.071***
InstitQual	-0.115***	0.059***	0.048***	0.084***	0.161**	0.157***	0.113*	0.266***	0.218***	0.114**
Year	-0.020***	-0.010***	0.000	-0.014***	-0.066***	0.051***	0.057***	0.043***	0.057***	0.052***
Rent					-0.111***					0.054***
$\ln(M/N)$						-0.397***	-0.182	-0.791***	-1.298***	
MVA										0.005
<i>Short Run:</i>										
Adj. Speed	-0.110***	-0.151***	-0.124***	-0.170***	-0.172***	-0.474***	-0.437***	-0.425***	-0.418***	-0.479***
ΔFDI	-0.001	-0.002	-0.001	0.009	0.003					
$L\Delta \text{FDI}$		-0.002	0.003	-0.003			-0.103***	-0.138***	-0.175***	
$L2\Delta \text{FDI}$			0.007	0.005				-0.061	-0.083	
$L3\Delta \text{FDI}$				0.008					-0.048	
$\Delta \text{grGDPPC}$	-0.006***	-0.004***	-0.003*	-0.001	-0.015*	0.004	0.017	0.022	0.022	0.012
$L\Delta \text{grGDPPC}$		0.001	0.001	0.004*			-0.008	-0.011	0.035	
$L2\Delta \text{grGDPPC}$			0.002	0.005**				0.005	0.028	
$L3\Delta \text{grGDPPC}$				0.002					0.007	
$\Delta \text{InstitQual}$	0.024	0.027	0.025	0.030	0.134	0.776	0.674	0.666	0.705	0.635
$L\Delta \text{InstitQual}$		-0.018	-0.018	-0.020			-0.147	-0.218	-0.334	
$L2\Delta \text{InstitQual}$			-0.027	-0.037*				-0.423	-0.282	
$L3\Delta \text{InstitQual}$				0.021					-1.175***	
$L\Delta \ln(M/N)$		-0.021	-0.068*	-0.036			-0.414	-0.547	-0.651	
$L2\Delta \ln(M/N)$			-0.016	-0.008				-1.430	-2.396	
$L3\Delta \ln(M/N)$				0.024					-1.772	
$\Delta \ln(M/N)$						0.557	0.049	-0.193	-0.034	
ΔRent					0.485					-0.333
ΔMVA										0.194
Constant	4.393***	2.917***	-0.049**	4.587***	24.459***	-46.963***	-48.147***	-35.044***	-46.694***	-48.774***
N	1858	1811	1764	1717	1860	1858	1811	1764	1717	1860
\bar{T}	40.391	39.37	38.348	37.326	40.435	40.391	39.37	38.348	37.326	40.435
n	46	46	46	46	46	46	46	46	46	46

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, N = Number of Observations, n = Number of Countries, \bar{T} = Average Number of Observations per Country.

relationship is of bidirectional nature and robust to alternative specifications. As the first row of Models 1–4 shows FDI has a robust and statistically highly significant adverse influence on the relative share of manufacturing value added. This influence remains intact after controlling for institutional quality and economic growth. Models 6–9 test for causality in the opposite direction. As presented in the previous subsection, both economic growth and improved institutional quality enhance the inflow of FDI to the region. After controlling for these two variables, and a quadratic trend term, higher shares of manufacturing value added relative to non-manufacturing (i.e., M/N) call forth less FDI inflows. For comparison to results without the trend term, see Table A9.

However, it is possible that the bidirectional association between FDI and (M/N) works through the denominator of the latter – N. That is, FDI may reduce the relative share of manufacturing value added by raising the denominator of (M/N) with little or no adverse effect on the numerator (M) per se. Models 5 and 10 are estimated to check for this possibility, using the manufacturing value added and natural resource rent (both as percentage share of GDP) as two separate variables. It is evident from Model 10 that, after controlling for natural resource rent (part of the denominator in Models 1–4 and 6–9), manufacturing value added (MVA) does not have a significant influence on FDI inflows. And from Model 5, there is a significant deindustrializing-effect of FDI apart from that which operates through expanding the non-manufacturing industrial sub-sector (*Rent*) and indirectly through economic growth (*grGDPPC*). In a nutshell, FDI inflows are associated with both relative (M/N) and absolute (MVA) deindustrialization.

6. Conclusion

To summarize the main findings, more FDI flows to countries with good economic track record as measured by growth in per capita GDP, and this result is robust to a number of model specifications. In the opposite direction, FDI also robustly contributes to economic growth. With few exceptions (as in the insignificance of the effect of rule of law on growth in the model without trend), the (statistical) causality between institutional quality and economic growth is also positive, bidirectional and robust to alternative specifications.

On the other hand, the relationship between FDI and institutional quality depends on what measure is used for the latter. Indeed, more FDI flows to countries with higher scores in terms of political rights, civil liberties, average institutional quality, and rule of law, voice and accountability, and to less corrupt ones. As to causality in the opposite direction, FDI does not induce any long-run improvement or deterioration in political rights, civil liberties or their average. Nonetheless, robust detrimental effects of FDI boil to the surface with the use of voice and accountability, corruption and the rule of law indices. The direct effect of natural resources on growth is positive. However, natural resources attract FDI (whose contribution is unclear) and undermine institutional quality – à la the famous *resource curse*! The findings here suggest the existence of a broader resource curse – emanating both from FDI and natural riches – rather than the narrower *natural resource curse* common in the literature. Besides, it is a modified form of resource curse as the adverse effect is on institutional quality (and through institutional quality, on economic growth) rather than directly on economic growth as defined in Poelhekke and van der Ploeg (2013) for instance.

FDI has also contributed to the region's premature deindustrialization both directly and indirectly through enhancing resource-based extensive growth. That is, both FDI and economic growth reward the non-manufacturing industrial sector (basically, the extractive industry) – which is the source of their success – vis-à-vis the manufacturing sector. This should in no way be taken to suggest that resource-based FDI should be halted. Preventing the share of manufacturing from falling by

keeping the denominator (non-manufacturing) stagnant can never be an option. However, industrial policies that transfer revenues from the resource sector to manufacturing should be pursued.

In addition to the deindustrialising and resource-curse effects, the positive feedback loops between FDI, economic growth and natural resources should be questioned on ground of sustainability. That is, natural resources are depletable! Moreover, there are a lot of issues related to FDI that the current study has not covered. These include investigating the association of FDI with rising inequality (Jirasvetakul & Lakner, 2016; Herzer, Hühne, & Nunnenkamp, 2014), deteriorating “domestic labour, environmental and health standards” (Van Vuuren, 2002, p. 71) and enhanced capital flight in the region. As stated in Thorborg and Blomqvist (2015), SSA suffers from illicit financial flows more than any other region of the world, and this is linked to multinationals in the extractive industries.

The existence of such additional negative aspects associated with FDI greatly undercuts the positive growth effects of FDI. As a result, the findings of this study are more likely to understate than overstate the downside of FDI. Nonetheless, these findings point out enough counteracting (institutional and structural) factors that issue warning against the current unguided competition to attract FDI among countries of the region. It is imperative for SSA countries to be selective on the type of FDI they try to attract by weighing its positive growth effect against its deindustrializing and resource curse effects, among others.⁶ However, as long as parts of the revenue from resource sale find their way into the personal vaults of politicians, and thus as long as the political elites remain the beneficiaries of the ‘curse’, the competition to attract as much FDI as possible will persist, with no or little regard for its type and non-growth effects.

Finally, the results of this study do not prove causality in its philosophical sense as a change in any one of the variables would influence most of the other variables, and thus, none of these variables can be taken as ‘the unmoved mover’. Despite the use of state-of-the-art estimation technique, one should be warned that no amount of statistical exercise proves causality. The fact that the data at hand support hypotheses of bi-directional causation would also add to the difficulty policymakers face in choosing where to intervene. However, of all the variables assessed here, institutional quality is the only one with clearly favorable effect on all the others. Besides, it is characterized by high persistence, implying that a change in institutional quality at a point in time would have a lasting effect. Hence, without claiming that institutions rule over other factors,⁷ it is imperative that policymakers focus on getting institutions right.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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⁶ Comparison between Swaziland and Lesotho on the one hand and DRC and Ghana on the other supports the hypothesis that market-seeking or export-platform FDI outperforms resource-seeking FDI. However, more in depth investigation is needed in this regard, and firm/industry level analysis is suggested as avenue for further research.

⁷ See, for instance, Rodrik, Subramanian, and Trebbi (2004) and Acemoglu, Johnson, and Robinson (2005) for the debate.

Appendix A. Figures

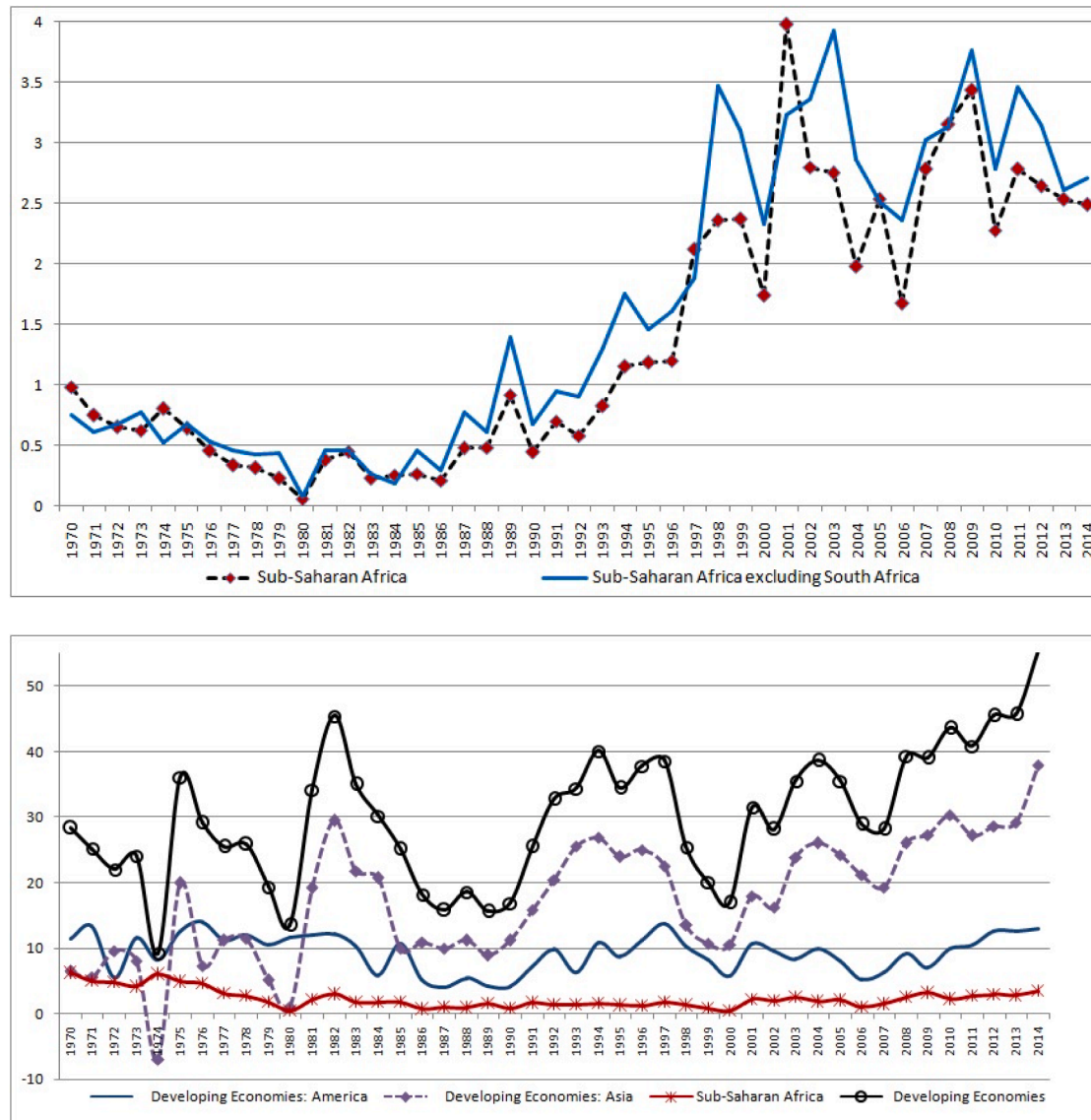


Fig. A1. FDI Inflow to SSA (% of GDP) [top], and Regional Shares of Developing Countries in FDI Inflows (% of World Total) [bottom]: 1970–2014.

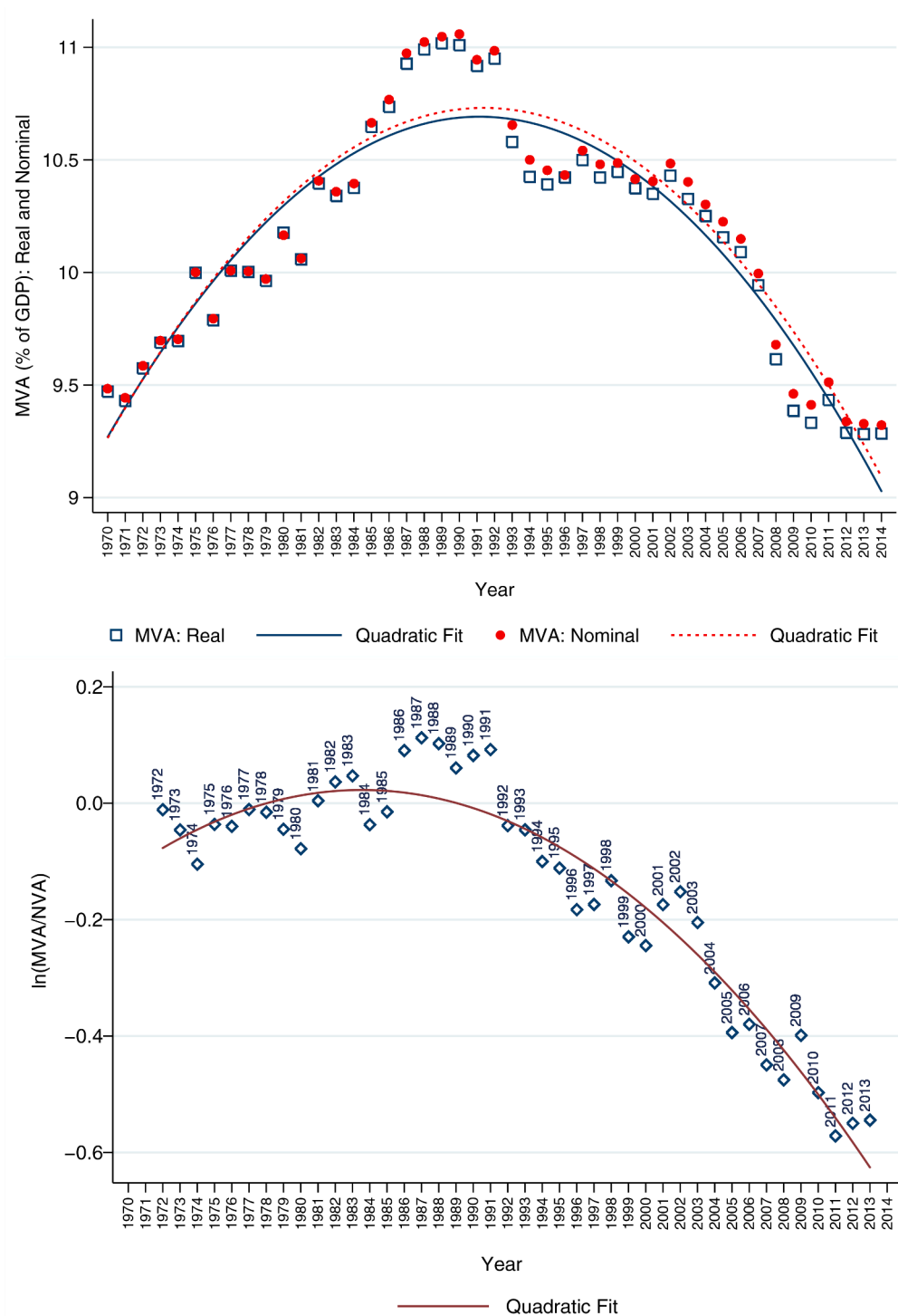


Fig. A2. Manufacturing Value Added: Real vs Nominal MVA [top], and Real MVA Relative to Non-manufacturing Value Added [bottom].

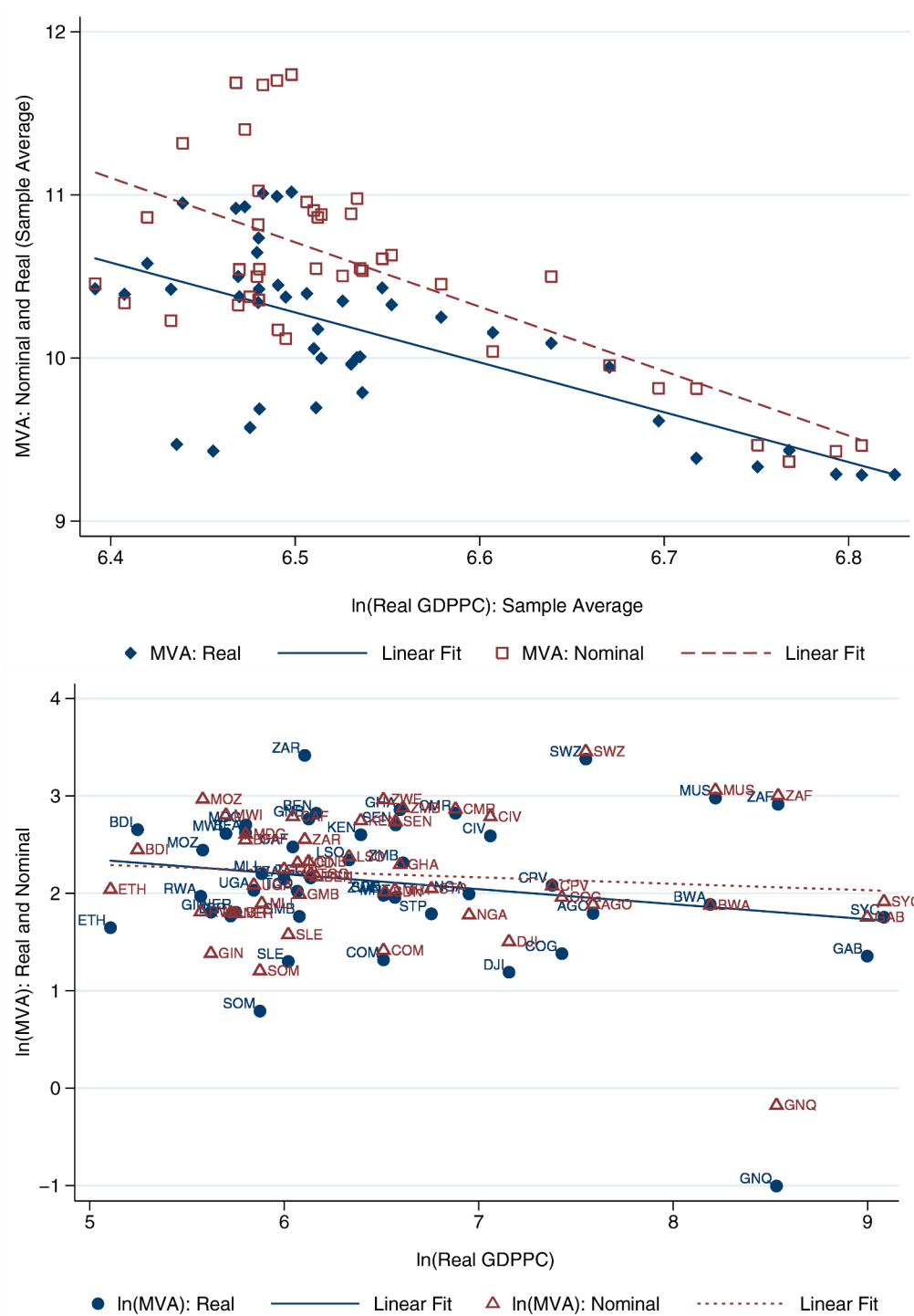


Fig. A3. Manufacturing Value Added against GDP per Capita: Time-series [top] and Cross-sectional [bottom] Plots.

Appendix B. Tables

Table A1

Hausman's Test: Between MG & DFE with and without Trend (a, b); between MG & PMG with and without Trend (c, d)

	<i>Consistent Estimator*</i>	<i>Efficient Estimator**</i>	<i>Test Statistic</i>	<i>p-Value</i>
(a)	Mean Group (MG)	Dynamic Fixed Effects (DFE)	22.45	0.0001
(b)	Mean Group (MG)	Dynamic Fixed Effects (DFE)	119.01	0.0000
(c)	Mean Group (MG)	Pooled Mean Group (PMG)	2.28	0.5171
(d)	Mean Group (MG)	Pooled Mean Group (PMG)	3.34	0.6485

* Consistent under both the null (H_0) and the alternative (H_a) hypotheses.** Inconsistent under H_a , but efficient under H_0 . [H_0 : Difference in coefficients not systematic.]

Lines (a) and (c) are based on models with grGDPPC, FDI, InstitQual and Rent; (b) and (d) additionally include GDS and time trend.

Table A2

Unit-Root/Stationarity Tests: *p-values*

IPS Unit Root Test			Hadri Stationarity Test	
Variable	<i>Level</i>	<i>Difference</i>	<i>Level</i>	<i>Difference</i>
<i>lnRGDPPC</i>	0.9884	0.0000	0.0000	0.0000
<i>lnRGDPPC*</i>	0.9970	0.0000	0.0000	0.0000
<i>grGDPPC</i>	0.0000	0.0000	0.0000	1.0000
<i>grGDPPC*</i>	0.0000	0.0000	0.0000	1.0000
<i>FDI</i>	0.0000	0.0000	0.0000	1.0000
<i>FDI*</i>	0.0000	0.0000	0.0000	1.0000
<i>InstitQual</i>	0.0078	0.0000	0.0000	0.9283
<i>InstitQual*</i>	0.0296	0.0000	0.0000	0.3433
<i>Rent</i>	0.0000	0.0000	0.0000	1.000
<i>Rent*</i>	0.0000	0.0000	0.0000	1.000
<i>ln(M/N)</i>	0.3131	0.0000	0.0000	0.9249
<i>ln(M/N)*</i>	0.0367	0.0000	0.0000	0.9727
H_0 :	All panels contain unit-roots		All panels are stationary	

* Tested with time trend included.

Table A3

Tests of Cointegration

VariablesInvolved	Pedroni's Test*			Westerlund's Test**		
	Stat.	Panel	Group	Stat.	Value	Rob. p-value
<i>ln(RGDPPC), FDIInstitQual & Rent</i>	<i>v</i>	-2.885	.	<i>Gt</i>	-1.800	0.802
	<i>ρ</i>	0.4134	1.436	<i>Ga</i>	-4.811	0.996
	<i>t</i>	-1.482	-2.58	<i>Pt</i>	-4.412	0.982
	<i>adf</i>	-1.097	-1.815	<i>Pa</i>	-1.116	0.990
<i>ln(RGDPPC), FDIInstitQual & ln(M/N)</i>	<i>v</i>	-2.942	.	<i>Gt</i>	-1.778	0.854
	<i>ρ</i>	-0.136	2.061	<i>Ga</i>	-5.346	0.986
	<i>t</i>	-3.305	-0.9249	<i>Pt</i>	-11.543	0.410
	<i>adf</i>	-3.161	-0.5727	<i>Pa</i>	-4.481	0.644
<i>grGDPPC, FDIInstitQual & Rent</i>	<i>v</i>	6.102	.	<i>Gt</i>	-3.805	0.000
	<i>ρ</i>	-16.41	-15.7	<i>Ga</i>	-14.518	0.000
	<i>t</i>	-23.51	-28.6	<i>Pt</i>	-25.399	0.000
	<i>adf</i>	-22.52	-27.16	<i>Pa</i>	-17.255	0.000
<i>grGDPPC, FDIInstitQual & ln(M/N)</i>	<i>v</i>	6.422	.	<i>Gt</i>	-3.995	0.000
	<i>ρ</i>	-16.84	-15.95	<i>Ga</i>	-14.666	0.000
	<i>t</i>	-24.28	-29.58	<i>Pt</i>	-22.525	0.000
	<i>adf</i>	-23.61	-28.06	<i>Pa</i>	-16.007	0.000
<i>ln(RGDPPC), FDI, GDSInstitQual & Rent, Trend</i>	<i>v</i>	-1.078	.	<i>Gt</i>	-2.357	0.758
	<i>ρ</i>	2.994	4.286	<i>Ga</i>	-6.206	0.984
	<i>t</i>	0.7752	1.122	<i>Pt</i>	-9.400	0.918
	<i>adf</i>	1.078	1.25	<i>Pa</i>	-3.510	0.994
<i>ln(RGDPPC), FDI, GDSInstitQual & ln(M/N), Trend</i>	<i>v</i>	-0.5368	.	<i>Gt</i>	-2.323	0.804
	<i>ρ</i>	2.322	4.03	<i>Ga</i>	-5.983	0.994
	<i>t</i>	-0.3654	0.6792	<i>Pt</i>	-8.627	0.876

(continued on next page)

Table A3 (continued)

VariablesInvolved	Pedroni's Test*			Westerlund's Test**		
	Stat.	Panel	Group	Stat.	Value	Rob. p-value
<i>grGDPPC, FDI, GDSInstQual & Rent, Trend</i>	<i>adf</i>	0.4002	1.576	<i>Pa</i>	-4.364	0.940
	<i>v</i>	0.3993	.	<i>Gt</i>	-3.695	0.000
	<i>ρ</i>	-9.755	-8.011	<i>Ga</i>	-9.847	0.000
	<i>t</i>	-22.76	-25.13	<i>Pt</i>	-22.253	0.000
	<i>adf</i>	-21.95	-23.91	<i>Pa</i>	-12.999	0.042
<i>grGDPPC, FDI, GDSInstQual & ln(M/N), Trend</i>	<i>v</i>	0.9935	.	<i>Gt</i>	-3.729	0.000
	<i>ρ</i>	-10.03	-8.216	<i>Ga</i>	-9.920	0.000
	<i>t</i>	-23.66	-26.04	<i>Pt</i>	-21.728	0.000
	<i>adf</i>	-22.12	-23.36	<i>Pa</i>	-15.339	0.002

* "All test statistics are distributed $N(0,1)$ under a null of no cointegration, and diverge to negative infinity [under the alternative] (save for panel *v*)" (Neal, 2014).

** Robust P-values are obtained from bootstrapping 500 times; bootstrapping is invoked.

because of possible cross-sectional dependence (Persyn & Westerlund, 2008).

Table A4

Descriptive Statistics: Mean Values of the Variables.

Country	grGDPPC	FDI	InstQual	Corruption	RuleLaw	Voice	Rent	ln(M/N)
Angola	4.10	3.89	1.79	1.32	-1.44	-1.27	30.14	-1.96
Benin	4.15	1.45	3.87	0.69	-0.47	0.22	7.27	0.39
Botswana	8.30	3.24	5.74	-0.85	0.60	0.59	2.94	-1.72
Burkina Faso	4.82	0.66	3.37	0.24	-0.56	-0.42	9.19	0.68
Burundi	3.45	0.16	1.98	1.12	-1.30	-1.15	16.86	0.82
Cameroon	3.48	1.04	2.09	1.06	-1.15	-1.07	10.44	0.44
Cape Verde	4.30	3.07	4.89	-0.49	0.49	0.82	0.48	-0.73
Central African Rep.	0.52	0.96	2.49	1.08	-1.47	-1.06	9.58	0.85
Chad	4.18	4.18	1.84	1.16	-1.30	-1.23	15.32	0.65
Comoros	2.70	0.67	3.67	0.86	-1.09	-0.55	1.64	-0.63
Congo, Dem. Rep.	0.74	2.11	1.78	1.48	-1.74	-1.58	20.36	-0.31
Congo, Rep.	4.16	6.93	2.44	1.06	-1.28	-1.17	47.37	-1.83
Cote d'Ivoire	2.78	1.39	2.53	0.79	-1.20	-1.04	6.15	0.80
Djibouti	2.47	3.13	2.80	.	.	.	0.79	-1.24
Equatorial Guinea	10.75	12.23	1.27	1.49	-1.32	-1.74	25.13	-3.86
Ethiopia	4.37	1.12	2.17	0.68	-0.75	-1.17	13.74	0.21
Gabon	3.57	1.36	2.74	0.73	-0.45	-0.72	41.93	-2.13
Gambia	3.50	2.98	4.10	0.57	-0.26	-0.99	3.40	-0.04
Ghana	3.76	1.92	4.06	0.12	-0.09	0.17	8.93	0.46
Guinea	3.07	1.82	2.00	0.89	-1.37	-1.19	12.56	-2.01
Guinea-Bissau	2.13	0.74	2.93	1.10	-1.47	-0.94	17.44	0.78
Kenya	3.98	0.43	3.20	0.97	-0.92	-0.46	4.13	0.69
Lesotho	5.20	2.64	3.94	0.06	-0.13	-0.18	6.28	-0.04
Liberia	3.78	20.46	2.92	1.02	-1.48	-0.75	36.65	-0.49
Madagascar	1.58	3.21	3.70	0.22	-0.52	-0.30	5.09	1.47
Malawi	3.84	1.07	3.07	0.50	-0.29	-0.27	8.54	0.87
Mali	4.33	1.58	3.52	0.57	-0.41	0.02	6.35	-0.26
Mauritania	3.35	4.02	2.13	0.38	-0.65	-0.87	20.93	-0.94
Mauritius	5.19	1.31	6.14	-0.51	0.95	0.88	0.03	0.94
Mozambique	5.00	5.03	3.13	0.49	-0.69	-0.17	9.69	1.41
Niger	2.25	2.63	2.87	0.83	-0.72	-0.60	7.38	-0.52
Nigeria	4.40	1.53	3.37	1.13	-1.23	-0.85	35.46	-1.08
Rwanda	4.76	0.97	2.01	0.19	-0.82	-1.32	7.82	-0.13
Sao Tome & Principe	2.96	4.51	4.46	0.39	-0.49	0.27	1.01	-0.27
Senegal	3.14	1.09	4.36	0.24	-0.17	-0.01	3.32	0.86
Seychelles	4.39	8.50	3.86	-0.33	0.25	0.14	0.06	0.14
Sierra Leone	2.61	2.13	3.40	0.89	-1.13	-0.62	11.84	-0.73
Somalia	1.48	1.48	1.12	1.71	-2.34	-1.95	4.38	-0.38
South Africa	2.50	0.78	4.55	-0.33	0.09	0.67	4.35	0.20
Sudan	3.88	1.49	1.65	1.22	-1.41	-1.72	5.25	-0.12
Swaziland	5.20	3.52	2.56	0.27	-0.61	-1.27	6.75	1.53
Tanzania	4.58	1.54	3.10	0.73	-0.39	-0.35	5.03	0.22
Togo	2.10	2.25	2.36	0.87	-0.87	-1.15	9.19	-0.40
Uganda	4.31	1.45	2.84	0.87	-0.52	-0.69	15.82	0.35
Zambia	2.60	3.94	3.64	0.69	-0.49	-0.33	14.81	-0.18
Zimbabwe	3.15	0.86	2.67	1.12	-1.48	-1.30	5.63	0.47
Total	3.74	2.90	3.06	0.65	-0.76	-0.64	11.68	-0.15

Table A5

Correlation among Various Indicators of Institutional Quality, FDI, Economic Growth and Manufacturing Value Added

	InstitQual	PolRight	CivLib	RuleLaw	Corruption	Voice	grGDPPC	FDI	MVA
<i>(a) Pooled:</i>									
InstitQual	1.000								
PolRight	0.972***	1.000							
CivLib	0.960***	0.867***	1.000						
RuleLaw	0.742***	0.683***	0.766***	1.000					
Corruption	-0.694***	-0.644***	-0.711***	-0.873***	1.000				
Voice	0.950***	0.915***	0.930***	0.831***	-0.767***	1.000			
grGDPPC	0.113***	0.108***	0.111***	-0.049	0.069**	-0.022	1.000		
FDI	0.089***	0.083***	0.089***	-0.047	0.038	-0.017	0.189***	1.000	
MVA	0.096***	0.094***	0.092***	0.210***	-0.279***	0.129***	-0.087***	-0.124***	1.000
<i>(b) Cross-Sectional (Period Average):</i>									
InstitQual	1.000								
PolRight	0.991***	1.000							
CivLib	0.986***	0.955***	1.000						
RuleLaw	0.842***	0.823***	0.846***	1.000					
Corruption	-0.812***	-0.791***	-0.817***	-0.921***	1.000				
Voice	0.918***	0.917***	0.898***	0.863***	-0.822***	1.000			
grGDPPC	0.141	0.122	0.160	0.337**	-0.269*	0.134	1.000		
FDI	-0.082	-0.072	-0.093	-0.096	0.069	-0.063	0.336**	1.000	
MVA	0.205	0.190	0.218	0.216	-0.252*	0.186	-0.126	-0.241#	1.000
<i>(c) Time-Series (Sample Average):</i>									
InstitQual	1.000								
PolRight	0.986***	1.000							
CivLib	0.985***	0.941***	1.000						
RuleLaw	0.232	0.295	0.175	1.000					
Corruption	0.434*	0.306	0.497**	0.063	1.000				
Voice	0.826***	0.777***	0.812***	0.657***	0.453*	1.000			
grGDPPC	0.412***	0.392***	0.420***	-0.230	-0.041	-0.046	1.000		
FDI	0.794***	0.779***	0.785***	0.471**	0.334	0.480**	0.496***	1.000	
MVA	-0.639***	-0.643***	-0.616***	-0.0596	-0.238	-0.121	-0.515***	-0.718***	1.000

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, # $p = 0.106$.**Table A6**

Estimation Results for the Growth Equation with Trend in the Cointegrating Equation

	Dependent Variable: $\Delta \text{grGDPPC}$									
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
<i>Long Run:</i>										
FDI	0.163***	0.162***	0.178***	0.202***	0.152***	0.169***	0.124***	0.132***	0.138***	0.119***
GDS	0.009	0.006	0.002	-0.022***	0.006	0.006	0.008	0.049***		
Year	0.020*	-0.002	-0.010	0.002	0.000	0.000	-0.004	-0.010	0.004	0.016
InstitQual		0.298***	0.244***	0.251***			0.302***			
CivLib					0.306***					
PolRight						0.249***				
Rent							0.034*			
RuleLaw								1.083*		
Voice									2.328***	
Corruption										-0.335
<i>Short Run:</i>										
Adj. Speed	-0.798***	-0.797***	-0.796***	-0.781***	-0.800***	-0.801***	-0.800***	-0.835***	-0.849***	-0.832***
ΔFDI	0.091	0.049	0.113	0.091	0.056	0.049	0.065	-0.033	0.023	0.061
ΔFDI			0.170*	0.217						
ΔGDS	0.226***	0.231***	0.228***	0.200***	0.231***	0.213***	0.234***	0.194***		
ΔGDS			0.125**	0.194***						
ΔGDS				0.020						
$\Delta \text{InstitQual}$		2.536***	2.156***	2.584***			2.403***			
$\Delta \text{InstitQual}$			-1.491**	-0.897*						
$\Delta \text{InstitQual}$				0.082						
$\Delta \text{grGDPPC}$			0.007	-0.029						
$\Delta \text{grGDPPC}$				-0.056**						
ΔCivLib					1.379***					
$\Delta \text{PolRight}$						2.459***				
ΔRent							2.986			
$\Delta \text{RuleLaw}$								-0.211		
ΔVoice									7.029***	

(continued on next page)

Table A6 (continued)

	Dependent Variable: Δ grGDPPC									
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Δ Corruption										−3.833*
Constant	−29.333***	4.834***	17.756***	−1.920***	1.662***	1.225***	7.915***	20.222***	−2.107***	−23.079***
N	1848	1830	1786	1742	1830	1830	1786	792	810	808
\bar{T}	42	41.591	40.591	39.591	41.591	41.591	40.591	18	18	17.956
n	44	44	44	44	44	44	44	44	45	45

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, N = Number of Observations, n = Number of Countries, \bar{T} = Average Number of Observations per Country.

Table A7

Estimation Results for the FDI Equation

	Dependent Variable: Δ FDI									
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
<i>Long Run:</i>										
grGDPPC	0.068***	0.066***	0.135***	0.185***	0.065***	0.066***	0.074***	0.046**	0.072***	0.052***
InstitQual		0.361***	0.408***	0.454***			0.328***			
CivLib					0.350***					
PolRight						0.325***				
Rent							0.090***			
RuleLaw								1.714***		
Voice									0.491	
Corruption										−2.209***
<i>Short Run:</i>										
Adj. Speed	−0.411***	−0.434***	−0.383***	−0.359***	−0.432***	−0.426***	−0.445***	−0.586***	−0.579***	−0.599***
Δ grGDPPC	0.013	0.003	0.020*	0.023	0.008	0.001	0.014	0.020	0.020	0.018
L Δ grGDPPC			−0.010	−0.008						
L2 Δ grGDPPC				−0.000						
Δ InstitQual		0.855	0.732	0.584			0.677			
L Δ InstitQual			−0.037	−0.122						
L2 Δ InstitQual				−0.481*						
L Δ FDI			−0.120***	−0.153***						
L2 Δ FDI				−0.083**						
Δ CivLib					0.433*					
Δ PolRight						0.989				
Δ Rent							−0.499			
Δ RuleLaw								−2.284		
Δ Voice									1.288	
Δ Corruption										1.648
Constant	1.360***	0.910**	0.750*	0.758	0.914**	0.942**	0.409	3.946***	3.289***	3.986***
N	1932	1906	1860	1814	1906	1906	1860	810	810	808
\bar{T}	42	41.435	40.435	39.435	41.435	41.435	40.435	18	18	17.956
n	46	46	46	46	46	46	46	45	45	45

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, N = Number of Observations, n = Number of Countries, \bar{T} = Average Number of Observations per Country.

Table A8

Estimation Results for the Institutional Quality Equation

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
	Δ InstitQual	Δ InstitQual	Δ InstitQual	Δ InstitQual	Δ InstitQual	Δ CivLib	Δ PolRight	Δ RuleLaw	Δ Voice	Δ Corruption
<i>Long Run:</i>										
FDI	0.013	0.024**	−0.009	−0.011	0.018*	0.014	0.001	−0.009***	−0.010***	0.007***
grGDPPC		0.035***	0.019***	0.016**	0.029***	0.012	0.062***	0.018***	0.038***	−0.002
Rent					0.011**	−0.007	0.007	−0.010***	−0.003	0.013***
<i>Short Run:</i>										
Adj. Speed	−0.160***	−0.151***	−0.152***	−0.158***	−0.151***	−0.171***	−0.165***	−0.225***	−0.213***	−0.318***
Δ FDI	0.008	0.008	0.007	0.001	0.006	0.008	0.004	−0.002	−0.004	−0.001
L Δ FDI			−0.004	−0.012						
L2 Δ FDI				−0.003						
Δ grGDPPC		0.006***	0.006**	0.007**	0.005***	0.004**	0.008***	0.003***	0.006***	0.001
L Δ grGDPPC			0.001	0.001						
L2 Δ grGDPPC				0.002						
L Δ InstitQual			0.097***	0.106***						

(continued on next page)

Table A8 (continued)

	Model 1 ΔInstitQual	Model 2 ΔInstitQual	Model 3 ΔInstitQual	Model 4 ΔInstitQual	Model 5 ΔInstitQual	Model 6 ΔCivLib	Model 7 ΔPolRight	Model 8 ΔRuleLaw	Model 9 ΔVoice	Model 10 ΔCorruption
L2ΔInstitQual				0.002						
ΔRent					−0.128	−0.136	−0.146	0.053	0.117	−0.109
Constant	0.473***	0.434***	0.439***	0.455***	0.419***	0.548***	0.435***	−0.122***	−0.154***	0.144***
N	1906	1906	1860	1814	1860	1860	1860	765	765	763
\bar{T}	41.435	41.435	40.435	39.435	40.435	40.435	40.435	17	17	16.956
n	46	46	46	46	46	46	46	45	45	45

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, N = Number of Observations, n = Number of Countries, \bar{T} = Average Number of Observations per Country.

Table A9

FDI and Value Added in the Manufacturing (Relative to the Non-manufacturing) Industrial Sector

	Model 1 Δln(M/N)	Model 2 Δln(M/N)	Model 3 Δln(M/N)	Model 4 Δln(M/N)	Model 5 ΔMVA	Model 6 ΔFDI	Model 7 ΔFDI	Model 8 ΔFDI	Model 9 ΔFDI	Model 10 ΔFDI
<i>Long Run:</i>										
FDI	−0.096***	−0.066***	−0.088***	−0.042***	0.010					
grGDPPC	−0.091***	−0.032***	−0.037***	−0.057***	−0.066***	0.044***	0.097***	0.090***	0.046*	0.070***
InstitQual	−0.223***	0.033**	0.049***	0.032**	−0.112	0.421***	0.457***	0.499***	0.539***	0.311***
Rent					−0.124***					0.087***
ln(M/N)						−1.164***	−1.192***	−1.176***	−1.198***	
MVA										−0.020
<i>Short Run:</i>										
Adj. Speed	−0.086***	−0.141***	−0.124***	−0.143***	−0.163***	−0.439***	−0.395***	−0.388***	−0.375***	−0.442***
ΔFDI	−0.002	−0.003	−0.001	0.008	−0.003					
LΔFDI		−0.003	0.003	−0.002			−0.124***	−0.157***	−0.200***	
L2ΔFDI			0.007	0.005				−0.070	−0.098	
L3ΔFDI				0.007					−0.054	
ΔgrGDPPC	−0.007***	−0.004***	−0.003*	−0.001	−0.016*	0.001	0.013	0.015	0.021	0.011
LΔgrGDPPC		0.001	0.001	0.005**			−0.002	0.005	0.036	
L2ΔgrGDPPC			0.002	0.006**				0.014	0.028	
L3ΔgrGDPPC				0.003					0.008	
ΔInstitQual	0.021	0.024	0.025	0.027	0.127	0.878*	0.777*	0.740*	0.729*	0.730*
LΔInstitQual		−0.015	−0.018	−0.014			−0.167	−0.238	−0.405	
L2ΔInstitQual			−0.027	−0.037*				−0.421	−0.288	
L3ΔInstitQual				0.026					−1.185***	
Δln(M/N)						0.369	−0.122	−0.278	−0.115	
LΔln(M/N)		−0.027	−0.068*	−0.057			−0.248	−0.560	−0.797	
L2Δln(M/N)			−0.016	−0.023				−1.462	−2.540	
L3Δln(M/N)				0.011					−1.879	
ΔRent					0.501					−0.363
ΔMVA										0.181
Constant	0.060***	−0.042*	−0.020	−0.022	1.954***	0.780**	0.669*	0.701	0.595*	0.566*
N	1858	1811	1764	1717	1860	1858	1811	1764	1717	1860
\bar{T}	40.391	39.370	38.348	37.326	40.435	40.391	39.370	38.348	37.326	40.435
n	46	46	46	46	46	46	46	46	46	46

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, N = Number of Observations, n = Number of Countries, \bar{T} = Average Number of Observations per Country.

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