DISSERTATION

HARNESSING TRADE FOR STRUCTURAL TRANSFORMATION IN SUB-SAHARAN AFRICA: MONITORING EXPORTS, SOUTH-SOUTH TRADE AND COMMODITY PRICE VOLATILITY

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ABSTRACT

HARNESSING TRADE FOR STRUCTURAL TRANSFORMATION IN SUB-SAHARAN AFRICA: MONITORING EXPORTS, SOUTH-SOUTH TRADE AND COMMODITY PRICE VOLATILITY

This dissertation consists of three main empirical papers that lie at the intersection of international trade and (under) development. In particular, motivated by the proposition that structural change in sub-Saharan Africa (SSA) is needed for sustained growth, the papers build on each other to highlight different dimensions in SSA's quest for structural transformation within the context of global integration. Together, the papers explore the linkages between structural transformation and exports, South-South trade and commodity price volatility.

Much of the literature on pathways for SSA to catch-up is centered on the success in East Asia's export-oriented industrialization and the replicability of this model. While there have been calls to apply the exact export-oriented industrialization recipe that transformed several economies in East Asia, evidence from SSA about the impact of this approach is not well-documented quantitatively. The first empirical paper (chapter 3) attempts to address this gap in the existing literature.

Developing countries, especially those in SSA, have been involved in the production of primary commodities which were traded for imports of technologically-intensive manufacturing commodities, primarily from rich countries in the global North. However, the 2008 global economic crisis, which began in the global North but circulated to the South particularly through its impact on global trade, raised concerns about the desirability of export systems that

depended on Northern demand. This experience encouraged developing countries to deepen their efforts to diversify their trade beyond North-South. Thus, South-South trade became one main alternative for accelerating structural transformation and achieving sustainable development. The second empirical paper (chapter 4) explores the prospects and implications of South-South trade as opposed to North-South trade as drivers of structural transformation in SSA.

The relationship between terms of trade fluctuations and macroeconomic performance has been a deeply debated topic in the growth and development literature. The end of the recent "commodity super cycle" has renewed the discussion of the impact of large terms of trade shocks and the resulting ways of adjustment that follow. Many existing studies use the aggregate terms of trade as a proxy for commodity terms of trade while others have used different variations of the commodity terms of trade that rely on the price of only a few commodities. To address this, the final chapter (chapter 5) uses a newly developed, comprehensive, country-specific commodity terms of trade index and a broad sample of countries (with a special eye for SSA) to study the impact of persistent commodity price volatility on key variables that influence structural transformation in an economy.

To put the results from the papers into perspective, where necessary, we compare the potential differences and similarities that exist with emerging and developing economies in America and Asia.

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CHAPTER 1. INTRODUCTION

Given the focus of the three empirical analyses in this dissertation, the background significantly overlaps, hence this chapter presents an overall view of the study. It begins with a broad summary of international trade and growth theories followed by a discussion of the link between industrialization and economic growth which is still strongly rooted in Kaldor's laws. Next, we present some stylized facts on the position of SSA in the changing architecture of international trade and the challenges that it has faced in its industrialization attempts. This forms the motivation of the entire study. We conclude this introductory chapter by presenting a brief overview of the empirical papers and their results.

1.1. International Trade and Growth Theories

International trade has increased over the years. Along with this increase, the theories, structure and patterns of trade have also changed significantly. The debate on the role of international trade as an engine for growth and development has a large literature and derives from the classical and neoclassical trade economists, from Adam Smith, David Ricardo to Heckscher, Ohlin and Samuelson and more recently Krugman, Grossman and Helpman. These theories predict growth gains that accrue through specialization, productivity increases and improved resource allocation. Four main developments have marked the trajectory in this literature.

First, Adam Smith proposed the so-called theory of absolute advantage. That a country ought to produce only goods with which it has an absolute advantage in, while giving other

countries that have an absolute advantage in other goods the opportunity to do same, providing a reason to trade with each other (Smith, 1776). In reality, absolute advantage is not as straightforward as it seems since countries experience advantages over others in the production of certain goods. In line with this, David Ricardo modified Smith's theory and introduced the concept of comparative advantage citing potential efficiency gains from trade if countries specialized in the commodities they could produce at a lower cost than other commodities –irrespective of if other countries also produced the same commodities – and then imported those commodities they could not produce from the countries that had comparative advantage in their production (Maneschi, 1992). In this way, trade plays a significant role in economic growth by offering countries a way to take advantage of division of labor, specialization and expansion of markets. Each country then, could consume more than it could without trade and with time, employ its capital in sectors that have the highest return.

With changes to the structure and patterns of trade came modifications to the traditional theories of trade. The Ricardian theory assumes that labor is the sole factor of production and hence the only source of comparative advantage between countries. However, differences in labor productivity are not the only source of comparative advantage and factor endowments must play a role. Differences in factor endowments is central to the Heckscher-Ohlin model which postulates that countries should produce the commodities that use their relatively abundant factor of production intensively, while importing those commodities that require intensive use of their relatively scarce resource. Through trade between countries with different capital-labor ratios, resources are efficiently allocated, real output is increased and there is an enlargement in the feasible set of consumption possibilities (Ohlin, 1933). However,

a few of the assumptions underlying the Heckscher-Ohlin model were highly criticized and did not hold up to empirical tests (Feenstra, 2015).

More recent trade theories explain intra-industry trade and challenge the assumption of constant returns to scale. More specifically, they pay attention to the dynamic gains from trade that outwardly shift the production possibility frontier of nations, increases foreign direct investment (FDI), encourages learning-by-doing and the adoption of new technologies all the while being more realistic about market imperfections that affect international trade and result in less optimistic growth outcomes. While trade facilitates the diffusion of innovations and productivity, this is hugely determined by the absorptive capacity of the country. For instance, the quality of research and technological development (R & D), human capital, financial development and institutions, to name a few. Developing economies especially those in the SSA region are characterized by a deficiency of these factors which make market imperfections prevail and the gains from trade not uniformly distributed (Grossman and Helpman, 1991; Hummels and Klenow, 2005; Stiglitz, 2018).

A notable feature of trade theory has been the dearth of alternative theories from political economists, notwithstanding their skepticism of orthodox theories. Neoclassical theory presumes that less developed countries such as those in SSA should grow faster than rich economies. In essence, they enjoy all the advantages that come with economic backwardness. Everything else being equal, because they have lower capital-labor ratios, it should increase their return to investment. Additionally, they can increase output quicker in the tradable goods for which they enjoy comparative advantage and depend on world capital markets to complement domestic saving.

The reality is that convergence has been the exception rather than the norm since the division of the world into core and periphery (Rodrik, 2016).[1] Dependency trade theorists argue that global inequalities between core and periphery countries are due to unequal exchanges that occur through international trade. The main arguments proposed by them is based on the idea that trade between the rich and poor countries systematically creates a global division of labor between primary commodities and manufacturing goods. Under such conditions, the developed countries will have a Ricardian comparative advantage in manufactured goods which have a higher rate of productivity growth while the developing countries concentrate on primary commodity production. Stagnating prices for primary commodities in the absence of a wage struggle from the poor countries creates disadvantages for the periphery while benefitting the core. As a consequence, the majority of the gains from international trade accrue to core countries, exacerbating global uneven development (Prebisch, 1959; Sarkar and Singer, 1991; Sheppard et al., 2009). This has been the reality for many developing economies, especially those in SSA.

1.2. Empirical Approaches to Industrialization, Kaldor's Laws and Economic Growth

Many of the reasons why pursuing industrialization has been given a privileged place in development agendas in most countries are strongly rooted in Kaldor's laws, which provide

[1] With the exception of few countries in East Asia, the gap between developed and developing countries has continued to grow since the second world war. However, Rodrik (2016) as well as other recent studies have shown that absolute convergence is possible in the modern parts of the economy instead of the economy as a whole.

the link between manufacturing and economic growth. The first law theorizes that manufacturing is the engine of economic growth. The second law hypothesizes that manufacturing growth induces productivity growth in manufacturing while the third law proposes that manufacturing growth induces productivity growth to other sectors of the economy (Kaldor, 1966).

On the basis of these laws, several empirical works have been done and provide overwhelming evidence about the importance of pursuing industrialization. McCausland and Theodossious (2012) use Feasible Generalized Least Squares and fixed effects estimations and data for the United States, United Kingdom, Canada, Australia, Germany, France, Sweden, Greece, Japan, Korea and Taiwan over the span of 1992-2012 to examine Kaldor's laws. Their results show that growth in manufacturing output is an important factor in productivity growth and GDP growth. They also find that even with the increasing size of the services sector, it does not appear to play a similar role as the manufacturing sector.

Szirmai and Verspagen (2015) use fixed effects, random effects and data that spans a period of 1950–1970, 1970–1990, and 1990–2005 for 92 developed and developing countries to test the relationship between the value-added share of manufacturing and growth of GDP per capita. They also consider interaction terms between manufacturing and education and manufacturing and income. Their main conclusion is that the contribution of manufacturing to GDP per capita growth is dependent on the level of education and stage of development. Building on this research, Haraguchi et al. (2017) also use the fixed effects methodology to explore if the relationship between economic growth and industrialization, proxied by the share of manufacturing in the economy, is positive. What distinguishes their work from Szirmai and

Verspagen (2015) is that they test if the relationship is stronger than the relationship between the share of other sectors and economic growth. They find that over the period 1970-2010, manufacturing sector's value-added contribution to GDP is the largest and this has not changed significantly since 1970 for both developed and developing countries alike.

Only few studies have focused exclusively on developing countries and in the specific case of SSA, the empirical studies have been few and far between. Dasgupta and Singh (2006) use a Kaldorian framework to assess the evidence of deindustrialization in 48 developing countries over the period 1990-2000. They conclude that manufacturing continued to play an engine of growth role, but surprisingly, services played a similarly important role during that period. Zhao and Tang (2015) use decomposition to examine the sources of growth in China and Russia over the period 1995-2008. They present results that show that the rise in China's growth is due to the manufacturing sector more than it is to the services sector while the opposite is true for Russia.

Another set of recent studies analyze the third law and specifically the intersectoral linkages between manufacturing and the services sector. Su and Yao (2017) using long-run Granger causality tests, cross-sectional and panel regressions and data for 158 middle-income economies over the period 1950-2013, investigate the direction of causality between the manufacturing sector growth and services sector growth. They find that the manufacturing sector growth drives services sector growth and not the other way around. Hence, premature deindustrialization has negative effects on countries that are dependent on their services sector. Similarly, Tunali and Boru (2019) use long-run Granger causality tests to examine the relationship between the manufacturing sector and services sector in Turkey over the period

1970-2017. As opposed to Su and Yao (2017), it is found that there is no causality between the manufacturing sector and services sector.

In the case of SSA, there have been single country case studies, all with varying results. Tabi (2011) use the error correction model to investigate the effect of trade opening on the manufacturing sector in Cameroon from 1967-2007. Similar to Dasgupta and Singh (2006), they conclude that manufacturing continued to play an engine of growth role, but that services played a similarly important role during that period. Isikisal et al. (2016) use the Johansen co-integration testing approach to analyze the relationship between GDP growth, agriculture, industry and services sector in Nigeria over the period 1997-2012. The results reveal that agriculture, industry and services have a significant and positive relationship with GDP growth. Consequently, it is important to develop the agricultural sector to provide the needed support to the industrial and services sectors. Wells and Thirlwall (2003) perform the first extensive work on SSA and examine 45 African countries in the context of Kaldor's Laws over the period 1980-1996 and conclude that all three sectors—agriculture, manufacturing and services have grown roughly at the same rate, and this could be the reason for Africa's continued slow progress. Regardless of this, GDP growth seems to be more associated with manufacturing than it is with agriculture or services.

1.3. The Position of SSA in the Changing Architecture of International Trade

Many countries in SSA attained independence in the late 1950s and early 1960s. Their respective governments viewed the transformation of their economies from agricultural to industrial-based economies as a way to lower their dependence on developed economies. After

a short period of industrial expansion following independence—mainly driven by state-led enterprises, import substitution and public borrowing—the region's industrial sector entered a long period of decline as the industries that were initially created were often non-competitive and unsustainable. The effects of the global economic downturn in the 1980s and the consequent debt crisis further strained many economies in the region. To help countries recover from these effects, the term Washington Consensus was coined to represent a set of 10 export-oriented policies formulated around maintaining liberalization, privatization, fiscal discipline and correcting distortions in prices (Williamson, 1994). These policies were also heavily promoted by international financial institutions, often as conditions for financial assistance, leading to the adoption of structural adjustment programs (SAPs) by many African countries. The economic impacts of these programs remain a deeply debated topic till today. While majority of the early literature found that these policies were unable to improve the economic reality of many African countries, more recent studies have found a positive association between adopting the Washington consensus policies and the subsequent improvement in macroeconomic performance in Africa (Easterly, 2019; Archibong et al, 2021).

After several years of high external debt growth and economic stagnation, an era described as the "economic tragedy of the 20th century", a radical change of course occurred in the last decade making the region the second fastest-growing region in the world and spurring the narrative of a "rising Africa" (Artadi, and Sala-i-Martin, 2003; UNDP, 2013; Beegle et al., 2016). This turnaround can easily be seen in the numbers. As illustrated by figure 1.1, SSA maintained an average annual GDP growth rate of almost 5% from 2000-2009 which is in stark contrast to the calamitous rates in the preceding decades and at a much higher rate than

emerging and developing America. Average annual GDP per capita growth in SSA also increased from a mere -0.36% in the 1990s to about 2.03 % over the period 2000-2009. In comparison, GDP per capita grew from 0.41% to 1.87% in emerging and developing America and decreased from 2.23% to 1.02% in emerging and developing Asia over the same period.[2] SSA also experienced positive total factor productivity growth in 2000-2009 for the first time since the 1970s (Rodrik, 2016).

Thanks in great part to this growth performance, standards of living have also significantly improved. Extreme poverty (people living under $1.90 a day) has declined with an accelerated pace in SSA. Consequently, the proportion of people living under $1.90 a day has gone from 56.5% in 1990 to almost 40% as at 2018 as highlighted by figure 1.2.[3]

However, this aggregate evidence does mask the disparities in growth in the region. The growth story has been characterized by within-continent episodic growth explained by country-specific conditions. About one-half of countries in SSA reported GDP per capita growth rates that averaged less than 1.5% during the 2000s. Many economies that started out as growth leaders post-independence (e.g. Cote D'Ivoire, Togo, Kenya and Zambia) have lagged behind in recent decades.[4] Decomposing countries into resource intensive and non-resource intensive countries, annual GDP growth rates in non-resource intensive countries has been relatively stable at around 4% since the 1990s, but the same cannot be said for resource-rich countries which have experienced huge swings in their growth rates as shown in figure 1.3. The fact that the region's high growth coincided with the last upswing in commodity prices prompts caution

[2] Authors' calculations based on WDI
[3] Author's calculations, from WDI
[4] ibid

about whether the region's decade of growth is just the latest demonstration of a typical boom-bust cycle that is associated with resource exports.

The impressive growth record was accompanied by an expansion in both imports and exports in the region. In effect, trade in goods increased from an average of $130 billion in the 1990s to over $600 billion in the 2000s.[5] Both exports and imports from SSA to advanced economies have been on the decline in the past two decades. Until the early 2000s, the advanced economies were SSA's main trading partners namely, the European Union (EU) and the United States (US) who accounted for about 50% of Africa's exports and 45% of Africa's imports. In a major change, by 2018, these two economies accounted for less than 25% of both total exports and imports for the region with the remainder of the region's trade attributed to emerging and developing economies. Exports to India and China, for instance, amounted to about 1% in 2000. The latest figures from IMF's Direction of Trade Statistics (DOTs) show that together, the two countries account for about 28% of total exports and 22% of imports. These trends are not unique to the SSA region. In emerging developing America, for instance, while exports to advanced economies as a share of total exports declined from 64% in 1990 to 45% in 2018, exports to India and China rose from about 1.5% to 20% of total exports by 2018, highlighting the growing importance of South-South trade.

The trade and growth patterns have been of interest in academia and among policymakers and hence has attracted significant research. On the basis of cross-country studies, several conclusions have been made. First, the growing interest of China in securing natural resources and forging new markets and the simultaneous slowdown of growth within

[5] IMF DOTs

China (and in many advanced regions) have fueled attention and investments in the SSA region. Additionally, SSA has benefited from other favorable external factors such as low interest rates and the so-called “commodity super-cycle”. Furthermore, while the global financial crisis heavily impacted many regions, SSA was fortunately shielded because of its limited external integration. Aside from the external factors, growth fundamentals like political institutions have also improved tremendously generating stability in the region (Rodrik, 2016).

The resumption of growth, though impressive has revealed a key weakness— that the growth has yet to translate into economic transformation necessary to industrialize. One of the earliest and most central insights of the literature on trade and development is that development entails structural change and the countries that manage to enjoy sustained growth are those that diversify their output and labor away from agriculture and other traditional products towards manufacturing or the secondary industry. As labor and other resources move from agriculture into more modern economic activities like manufacturing which is more technologically intensive, it generates positive spillovers—employment increases, overall productivity rises, and economies grow faster.

Yet, the manufacturing sector in SSA employs the least number of people, compared to other sectors and other regions. In contrast, developing countries in East Asia are far ahead and nearing levels attained by OECD members. Historically, agricultural trade represented the largest share of total global trade and source of employment for SSA. However, available data shows that since the 1990s, this has steadily declined as the services sector has taken over (figure 1.4). This shift from agriculture to the services sector is considered alarming and not in line with the developmental phases that the Asian tigers experienced. Figure 1.5 illustrates the

"traditional" process of industrialization. When this process occurs in the "traditional" way as it was done in East Asia, what happens is a reduction in employment share in agriculture and a move into high productivity sectors such as manufacturing and then eventually to the services sector. Rather, countries in SSA (and in other emerging non-SSA countries) have been deindustrializing prematurely and rapidly since the 1990s as highlighted in figure 1.4. By going from informal agriculture to the services sector, SSA has foregone the opportunities, specifically, productivity and employment, that come from manufacturing.

It is posited that the slow pace of the industrialization process in SSA is due to a number of historical, internal and external realities. Of particular importance are the legacies of colonialism which left institutions and infrastructure that had negative impacts on capital development, manufacturing export performance as well as intra-regional trade (Pierson et al, 2002). These weak institutions and poor infrastructure have continuously sent negative signals about the business environment in the region.

Internally, failed government policies and well-meaning but stringent foreign aid policies and Structural Adjustment Programs (SAPs) imposed on countries in SSA derailed the industrialization agenda in the 1990s (Soludo et al., 2004). Furthermore, industries that were created were often unsustainable. The first industries were created after many of the nations gained independence in the 1950s and 1960s. These industries were formed under an Import Substitution Industrialization (ISI) strategy. It was purported that the ISI strategy would increase the production of intermediate goods and capital goods domestically while protecting the infant industries from outside competition. This strategy only resulted in limited gains. The second attempt at developing industries was in the 1980s, a period dubbed as the "Industrial

Development Decade" by the Organization of African Unity (OAU). During this period, the OAU called for all member countries to incorporate export-oriented industrialization in their individual country goals to ensure integration into the global market (Soludo et al., 2004). The results of this attempt, however, were marginal increases in manufacturing which were very much below expectations (UNIDO, 2013).

Externally, critical changes to the architecture of global trade, created opportunities but certainly challenges for Africa's industrialization. First, China's accession to the World Trade Organization (WTO) at the launch of the Doha Development Round in 2001 helped propel China into the pinnacle of international trade, transforming the existing patterns of North-South trade. With the increasing integration of markets, SSA faced a fiercely competitive external trading environment. These, coupled with low pricing power have made it so that SSA has not been able to capture the most value from exporting its manufactures, along the lines of the so-called "Prebisch-Singer hypothesis" (Braunstein, 2016).

All of these factors and changes pose challenges to policymakers. However, late does not mean never but it suggests that fresh thinking may be needed to achieve SSA's industrialization objectives.

1.4. Overview of Study

Growing appreciation for Africa as a source of global dynamism and growth since the turn of this millennium is well-founded, but many questions remain. In light of recent global market trends and with many countries deindustrializing prematurely, the critical question facing many SSA economies is what the next course of action ought to be and how to revive

industrialization and consequently, sustained growth. This dissertation will focus on a subset of these–the prospects for development and industrialization through global integration.

Much of the literature on pathways for SSA to catch-up revolves around the success of East Asia's export- oriented industrialization and the replicability of this model. Advocates of this strategy contend that economies which pursued more inward-oriented policies especially those in Latin America and SSA have underperformed (Ee, 2016). As such, many countries in SSA have attempted to adapt an export-led industrialization model. Some have argued that this strategy is passé and will not work for Africa (Rodrik, 2016). Others have pushed for South-South trade as another alternative for accelerating structural transformation (UNCTAD, 2015a).

Taken together, the first two main empirical chapters in this thesis ask straightforward but difficult questions: Can SSA industrialize given the changing architecture of global trade; which of its current structural transformation pathways has the most potential for the region? Implicit in these questions is the proposition that structural change is needed for sustained growth. First, while there have been several calls to apply the exact export-oriented industrialization recipe that transformed several economies in East Asia, evidence from SSA about the impact of this approach is not well-documented quantitatively. The first empirical paper attempts to address this gap in the existing literature.

Beyond export-oriented industrialization, developing countries, especially those in SSA, have been involved in the production of primary commodities which were traded for imports of technologically intensive manufacturing commodities, primarily from rich countries in the global North. However, the recent global economic crisis, which began in the global North but circulated to the global South particularly through its impact on global trade, raised concerns

about the desirability of export systems that depended on Northern demand. This experience encouraged developing countries to deepen their efforts to diversify their trade beyond North-South. Thus, South-South trade became one main alternative for accelerating structural transformation and sustainable development. To this end, the objective of the second empirical paper is to explore the prospects and implications of inter-regional South-South trade such as the one between SSA and China and India, intra-regional South-South trade, between SSA countries compared to North-South trade, between SSA and European Union and the United States, as drivers of structural transformation in SSA.

The relationship between terms of trade fluctuations and economic performance has been a deeply debated topic in literature, with several studies investigating the significance of aggregate terms of trade in stimulating economic growth, business cycle volatility, current account, real exchange rate movements and international reserves. The end of the recent "commodity super cycle" has renewed the discussion on the impact of large terms of trade shocks and the resulting ways of adjustment that follows. Many existing studies use aggregate terms of trade as a proxy for commodity terms of trade while others have used different variations of the commodity terms of trade that relies on the price of a few commodity exports and imports instead of the full composition of a country's commodity exports and imports. The final chapter uses a recently developed comprehensive, country-specific commodity terms of trade index and a broad sample of countries (with a special eye for SSA) to study the impact of persistent commodity price volatility on key trade, sectoral and macroeconomic variables that influence structural transformation in an economy. Combining the sectoral variables with other trade and macroeconomic variables presents a more nuanced picture and has particular policy

significance for countries in the region.

Our findings suggest the following. First, export-oriented industrialization has had a positive, but quite minimal impact on economic growth in the region, thus, calls for this to be the key strategy to industrialize should be handled with caution. While trade integration has had statistically significant effects—largely negative—on the economy, industrializing can help mitigate this negative effect. Recent reports highlight that because of overcrowding and the fallacy of composition, not all countries can be successful with an export-led industrialization strategy. Thus, this may no longer be the most feasible path to industrialization for all countries in the region. Results suggest that low-income countries, countries that have been able to move up in terms of diversification, those that are not landlocked and countries with the SADC (Southern Africa Development Community) economic region tend to obtain more positive impacts from this strategy.

Secondly, we find that who you trade with matters. For SSA as a whole, trading with the South holds a better potential than trading with the North. This holds true when we consider both industrialization and employment outcomes. Within the South, intra-regional trade (trade between SSA countries) shows the most industrialization-increasing effect. When considering the two economic communities established to promote trade and industrialization, SADC and ECOWAS, what seems to matter for the former is South-South trade but for ECOWAS, North-South trade may, in fact, be more attractive. Distinguishing between exports and imports, we find that exports to EU and to China have a negative and statistically significant impact on both absolute and relative female employment outcomes, casting some doubt on the assumption that exporting is beneficial to female employment. With respect to imports, we find that

imports from China have positive and significant impacts on both men and women's industrial employment perhaps confirming studies that suggest that imported capital goods especially those from China may have boosted productivity.

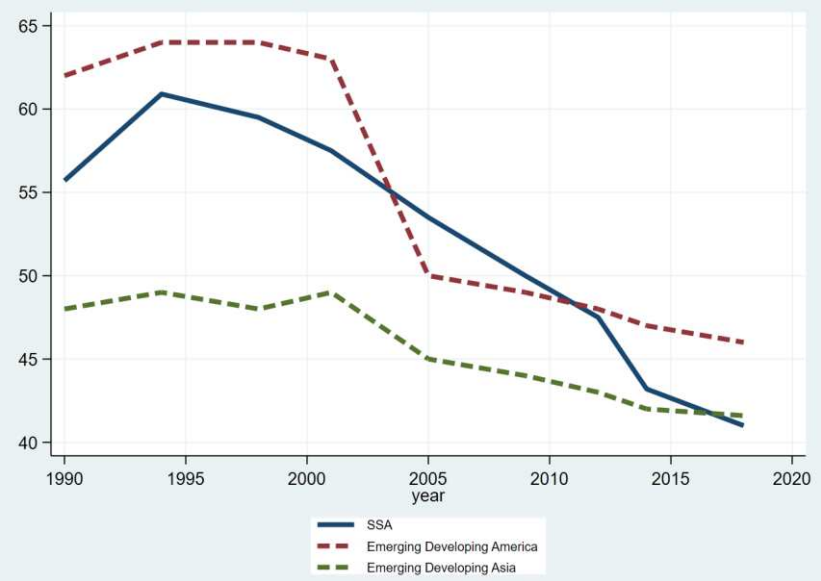
Finally, we find that the response of SSA to a negative commodity price decline is the worsening of the current account, an adverse effect on imports, exports, reserves and a minimal decline in FDI for SSA. While agriculture value added and employment in agriculture fall in response to negative commodity shocks in all three regions, the response and magnitudes of the industrial sector differs by region. We do not find evidence that the industrial sector in emerging and developing Asia is significantly impacted. However, a negative impact on industry value added and employment in industry is observed in SSA and emerging and developing America highlighting perhaps the influence of an already weak industrial sector. Comparing SSA to other emerging and developing economies, it appears that in SSA and emerging and developing America, the commodity price decline is partially offset by a contraction in imports. In emerging and developing Asia, on the other hand, reserves seem to act as a shock absorber and may have aided in the adjustment to the price decline. All of the above results emerge after applying a variety of specifications, methods and sub-sampling analyses on data covering the period 1990-2018.

The dissertation consists of five chapters. After this introductory chapter, chapter 2 gives an overview of the data used in the three main empirical analyses in the dissertation. Using the knowledge reviewed in the opening chapters, chapters 3, 4 and 5 provide the empirical studies detailed above.

1.5 Figures

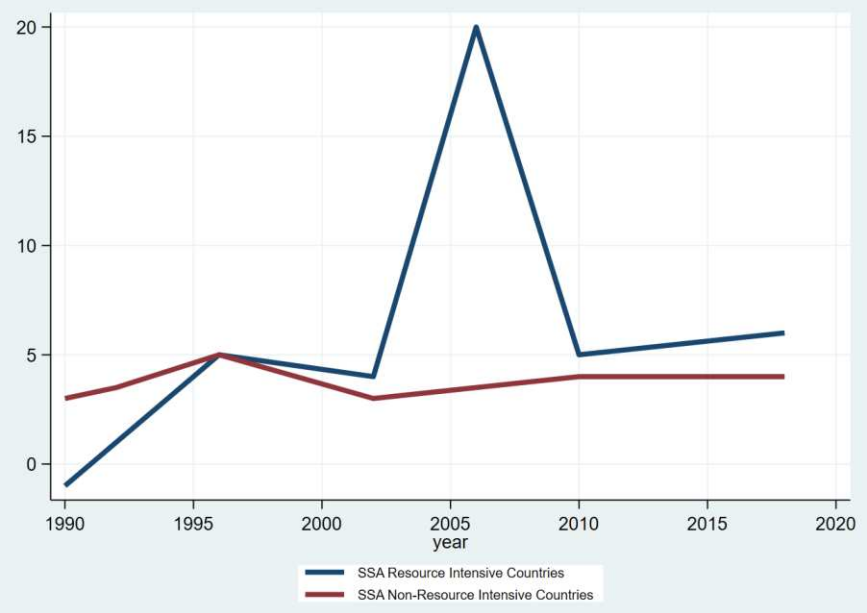
Source and notes: Authors' calculations based on the World Bank's World Development Indicators. SSA maintained an average GDP growth rate of about 5% in 2000-2009 which is in stark contrast to the calamitous rates in the preceding decade, 1990-1999.

Figure 1.1. Average GDP Growth Rates by Region, 1990-2018



Source and notes: Authors' calculations based on the World Bank's World Development Indicators. Extreme poverty (people living under $1.90 a day) has declined sharply and with an accelerated pace in SSA, going from 56.5% in 1990 to almost 40% as at 2018.

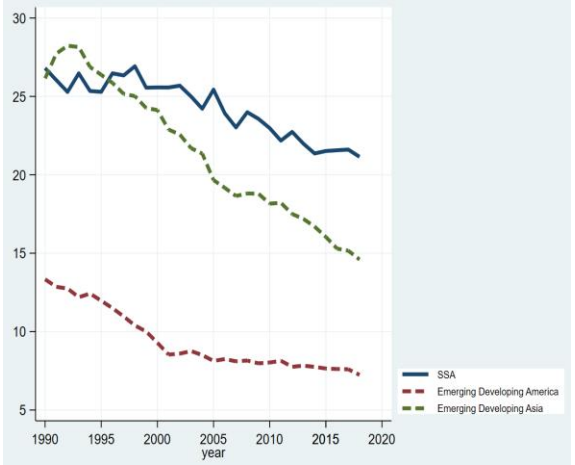
Figure 1.2. Poverty Rates by Region, 1990-2018



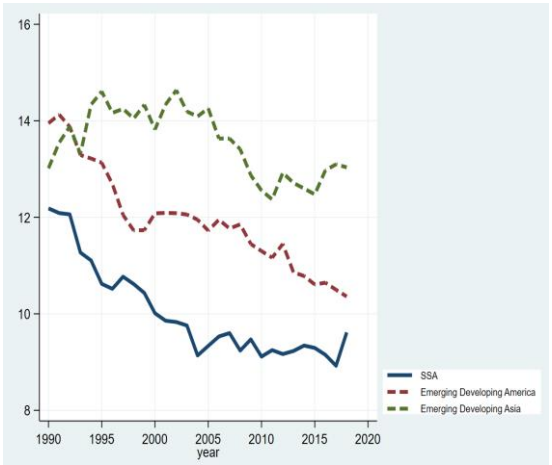
Source and notes: Authors' calculations based on the World Bank's World Development Indicators. GDP growth rates in non-resource intensive countries has been relatively stable compared to resource intensive countries in SSA. Resource-intensive countries (GDP-weighted average)—total natural resources rent greater than 15% of GDP; Non-resource intensive countries (GDP-weighted average)—total natural resources rent less than 15% of GDP.

Figure 1.3. GDP Growth Rates—Resource-Intensive Countries vs Non-Resource Intensive Countries, 1990-2018

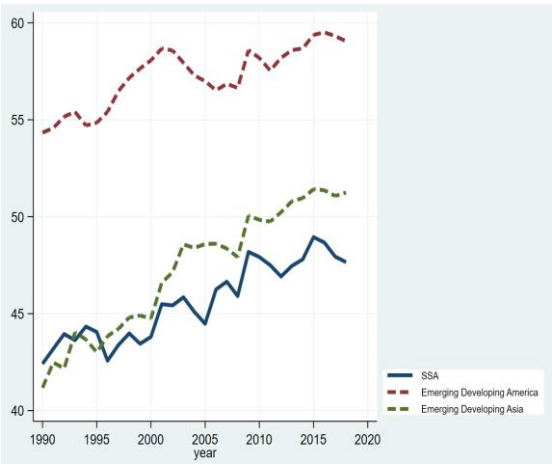
i. Agriculture value-added
(in percent of GDP)



ii. **Manufacturing value-added**
(in percent of GDP)

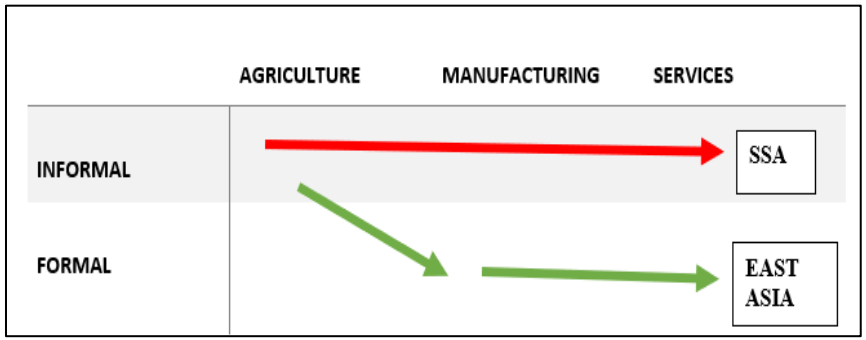


iii. Services value-added
(in percent of GDP)



Source and notes: Author's computation based on World Bank's World Development Indicators. Countries have been deindustrializing prematurely and rapidly since the 1990s.Historically, agricultural trade, represented the largest share but this has steadily declined as the services sector has taken over in SSA (and in other emerging non-SSA countries).

Figure 1.4. Sectoral Value-Added by Region, 1990-2018



Source and notes: Adapted from Rodrik (2016). When the process of industrialization occurs in the "right" way as it did in East Asia (as shown with the green arrows), what happens is a reduction in employment share in agriculture and a move into high productivity sectors such as manufacturing and then eventually to the services sector

Figure 1.5. Patterns of Structural Change East Asia (and Developed Countries) vs. SSA

CHAPTER 2. OVERVIEW OF DATA

Although three different models are used in the three chapters that follow, given the nature of the questions, some of the datasets used overlap. Thus, this chapter provides a general overview of the dataset used.

2.1. Data and Description

The datasets consist of data on 36 SSA countries and a broad sample of countries in emerging and developing America *(EMEDEV_AMER)* and emerging and developing Asia *(EMEDEV_ASIA)* which make up the non-SSA sample of countries. In an attempt to provide meaningful analysis, we limit the sample period to the 1990-2018 time frame mainly because there are considerable missing values for the pre-1990 time period for developing countries.

In general, nine main databases are used in the study: From the World Bank, we use the World Development Indicators (WDI) and Worldwide Governance Indicators (WGI) data. From the International Monetary Fund, we use the International Financial Statistics (IFS), Direction of Trade Statistics (DOTs), Balance of Payments (BOP), Commodity Terms of Trade (CToT) and Africa Regional Economic Outlook (AFRREO) databases. Finally, we also use data from the United Nations (UN) Comtrade and the Penn World Tables (PWT 10.0). A full description of the data, its definitions and computations are provided in table 2.1.

Classifications of countries into different regions—Sub-Saharan Africa *(SSA),* emerging and developing America *(EMEDEV_AMER),* emerging and developing Asia *(EMEDEV_ASIA),* and country subgroups and characteristics—middle-income countries *(SSA_MIC),* low-income countries *(SSA_LIC),* diversified countries *(SSA_DIV),* less diversified countries *(SSA_LESSDIV),*

landlocked countries *(SSA_LOCK),* not landlocked countries *(SSA_NOTLOCK),* Economic Community of West African States *(ECOWAS)* and Southern African Development Community *(SADC)* are all based on classification of countries sourced from International Monetary Fund's AFRREO database.

All variables were converted into natural logs with the exception of tariffs, inflation rate, rule of law, export growth, import growth and GDP per capita growth rate which were not converted because some values take on negative numbers.

2.2. Tables

Table 2.1. Data Sources and Definitions

Variable	Short name	Definition and Notes	Source
GDP per capita growth rate	*GDP_GROW*	Annual percentage growth rate of GDP per capita based on real local currency units.	World Bank WDI
GDP per capita	*lnGDP*	Expenditure-side real GDP per capita at chained PPPs (in mil. 2017 US$).	PWT 10.0
Manufacturing value-added in percent of GDP	*MFG_GDP*	Manufacturing sector refers to ISIC divisions 15-37 and comprises of manufacture of textiles, apparel, leather, wood products, chemicals, cars, electrical and computers.	World Bank WDI
Industry value-added in percent of GDP	*IND_GDP*	Industry sector is classified under ISIC divisions 10-45 and consists of value added from manufacturing, mining, construction, electricity, water and gas.	World Bank WDI

(Continued)

Table 2.1. Continued

Variable	Short name	Definition and Notes	Source
Agriculture value-added in percent of GDP	*AGRIC_GDP*	Agricultural sector is classified under ISIC divisions 1-5 and includes value added in forestry, hunting, cultivation of crops and livestock production.	World Bank WDI
Services value-added in percent of GDP.	*SVCS_GDP*	Services sector includes ISIC divisions 50-99 and includes value added in wholesale trade, retail trade, transport, education, health care and real estate services.	World Bank WDI
Employment in industry	*IND_TOTEMP*	Persons of working age who engaged production of goods and services in the industry sector for pay or profit in percent of total employment.	World Bank WDI
Employment in agriculture	*AGRIC_TOTEMP*	Persons of working age who engaged production of goods and services in the agricultural sector for pay or profit in percent of total employment.	World Bank WDI
Employment in services	*SVCS_TOTEMP*	Persons of working age who engaged production of goods and services in the services sector for pay or profit in percent of total employment.	World Bank WDI
Male employment in industry	*MALEMP_IND*	Male persons of working age who engaged in the industry sector in percent of male employment.	World Bank WDI
Female employment in industry	*FEMEMP_IND*	Female persons of working age who engaged in the industry sector in percent of female employment.	World Bank WDI
Female relative concentration in industrial employment	*FEM_MAL_IND*	Female industrial employment/female total employment)/(male industrial employment/male total employment)	Author's computation based on World Bank WDI

(Continued)

Table 2.1. Continued

Variable	Short name	Definition and Notes	Source
Commodity Terms of Trade	*CTOT*	Average of import prices and export prices of a country's commodities weighted by GDP	IMF CTOT database
Export growth	*EXP_GROW*	Annual growth rate of exports of goods and services provided to the rest of the world	World Bank WDI
Import growth	*IMP_GROW*	Annual growth rate of imports of goods and services from the rest of the world	World Bank WDI
Exports in percent of GDP	*TOTX_GDP*	Exports of goods and services include the value of all goods and market services provided to the world.	World Bank WDI
Imports in percent of GDP	*TOTM_GDP*	Imports of goods and services include the value of all goods and market services received from the world.	World Bank WDI
Fuel and ores exports in percent of merchandise exports	*FUEL_X*	Fuels comprise of commodities in SITC section 3 (mineral fuels, lubricants and related materials) and ores consist of commodities in SITC sections 27, 28 and 68 (crude fertilizer minerals nes, metalliferous ores, scrap and non-ferrous metals)	Author's computation based on World Bank WDI and UN Comtrade
Bilateral Trade **i. Trade with the US** **ii. Trade with the EU** **iii. Trade with the India** **iv. Trade with the China** **v. Trade within SSA**	 *TRADE_US* *TRADE_EU* *TRADE_IND* *TRADE_CH* *TRADE_SSA*	Value of merchandise exports and imports in percent of GDP and disaggregated by country's trade with United States, European Union, India, China and SSA.	Author's computation based on IMF's DOTs and World Bank WDI
Government spending in percent of GDP	*GOVT_GDP*	Government final consumption which includes all government current spending on purchases of goods and services	World Bank WDI

(Continued)

Table 2.1. Continued

Variable	Short name	Definition and Notes	Source
National investment in percent of GDP	*INV_GDP*	Gross fixed capital formation which includes land improvements, plant, machinery, and equipment purchases and the construction of various infrastructure.	World Bank WDI
Net foreign direct investment in national investment	*FDI_INV*	Foreign direct investment in percent of gross fixed capital formation where foreign direct investment is the sum of equity capital, reinvestment of earnings, and other capital.	Author's computation based on World Bank WDI
Reserve assets in percent of GDP	*RES_GDP*	Includes international reserves, official reserve assets and gold	IMF IFS
Current account in percent of GDP	*CA_GDP*	Includes flows of goods, services, primary income, and secondary income between residents and nonresidents.	IMF BOP
Domestic credit to private sector by banks in percent of GDP	*LEND_GDP*	Includes all domestic credit provided by banks to the private sector.	World Bank WDI
Inflation rate	*INFLATION*	Annual rate of growth of the GDP implicit deflator where the GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.	World Bank WDI
Weighted tariff rate	*TARIFF*	Weighted mean of applied tariff rate of all products, weighted by the import shares for each partner country.	World Bank WDI
Education	*EDUC*	Primary school enrollment rate in percent of those of primary school age.	World Bank WDI
Institutional quality	*RULE*	Rule of law ranges from -2.5 to 2.5 and captures different aspects of people's confidence in established institutions such as the police, property rights, courts and the probability of crime and violence.	World Bank WGI

(Continued)

Table 2.1. Continued

Variable	Short name	Definition and Notes	Source
Population	*POP*	Midyear estimates of all residents regardless of legal status or citizenship.	World Bank WDI
Female to male labor force participation rate	*F_MLFPR*	Ratio of women to men labor force participation rate. Labor force participation rate is defined as the proportion of the population aged 15 and older who supply labor for the production of goods and services.	World Bank WDI
Infrastructure	*ELECT_ACCESS*	Percent of population with access to electricity collected from industry, national surveys and international sources	World Bank WDI
Real effective exchange rate	*REER*	Measures the value of a country's currency against the weighted average of foreign currencies (2010=100).	IMF IFS

CHAPTER 3. REVISITING THE IMPACT OF EXPORT-ORIENTED INDUSTRIALIZATION IN SSA

3.1. Introduction

An increased involvement in export-oriented industrialization can result in diversification and sophistication of industries. This positive relationship between exports and the sophistication of a country's manufacturing capacity is by all intents and purposes a prerequisite for sustainable growth and development (Rodrik, 2016; Haraguchi et al. 2017). The literature is instructive. Researchers have examined the effect of industrialization on economic growth, generally in the context of Kaldor's Laws and have found overwhelming evidence that the manufacturing sector increases economic growth. Although there have been several calls to apply the exact recipe that has transformed several economies, to the best of my knowledge, a region where there is still little robust empirical evidence is SSA. Rather than a qualitative assessment of the prospects of an export-led industrialization strategy in SSA, this paper attempts to establish its impact quantitatively.

Wells and Thirlwall (2003) perform the first extensive work on SSA and the following are some shortcomings of the study. First, their time period of 1980-1996 misses the economic growth that the region experienced post-2001 so that any impacts may be underestimated. Secondly, their work and many other works that have been previously done do not control for the potential endogeneity that exists between manufacturing and economic growth. Lastly, their work and other empirical studies done focus exclusively on Kaldor's laws and studies that consider other crucial macroeconomic variables are very few. This paper aims to make a contribution to the literature by addressing these concerns and differs from previous literature

in a few ways. The study covers data over the period 1990-2018 and so accounts for the post-2001 growth period in the region. While it compares the results to those of emerging non-SSA countries, the emphasis is on SSA countries, so policy recommendations are aimed directly at the industrialization challenges that the region faces. In addition to other estimation methods and sub-sampling analyses, it addresses the endogeneity concerns by using improved estimation strategies. Furthermore, empirical tests are not carried out exclusively in the context of Kaldor's laws as in the work of Wells and Thirlwall (2003) but also consider other critical macroeconomic and trade variables. Intuitively, it makes sense to hypothesize that export-oriented industrialization may have a positive impact on economic growth. However, an economy's capacity to fully enjoy these gains might be enhanced or curtailed by the presence of other macroeconomic factors. Hence, the importance of taking these into account.

Following this introductory section, the chapter begins by conceptualizing export-oriented industrialization followed by a discussion of the model and estimation strategies. The final sections present the results, discusses the key findings and then concludes with policy implications.

3.2. Export-Oriented Industrialization and International Production: Constructing and Deconstructing Success

The discussion of the potential of export-oriented industrialization to lead to growth and development centers around the role of manufacturing because it is presumed to be an "escalator sector" as opposed to other sectors such as services or agriculture (Rodrik, 2016). The underlying idea behind this strategy is that a country, by focusing on the export of products with a relatively high technological content (mostly manufactured goods), will gain the most

from trade and the positive externalities that help their economies expand in ways that would otherwise not have taken place (Palley, 2012). Advocates of this strategy contend that economies, especially those in Latin America and SSA which pursued more inward-oriented policies, after gaining independence in the 1950s and 1960s, had underperformed.

By the early 1980s, the extent of consensus among policymakers and researchers about the efficacy of export-oriented industrialization led to it becoming 'conventional wisdom' (Balassa, 1985). It was a pattern typical for the growth of developed countries. The industrial revolution was responsible for the early success stories of Europe and the United States and it was also export-oriented industrialization which made catching up possible for a rising number of non-Western economies dubbed the "East Asian tigers"—Taiwan, South Korea, Hong Kong and Singapore. Through increased exposure to global markets, East Asia became more competitive and highly integrated making the successful shift from exports of raw materials to exports of dynamic manufactured goods. The crux of the impressive decrease in poverty rates in these countries lies in the reallocation of labor from agriculture to manufacturing (Stiglitz, 2018).

Theoretically, a framework for understanding the mechanisms in which export-oriented industrialization can lead to sustained growth can be categorized into two. On the one hand, we have exports of manufactures and how they impact structures of production. On the other hand, we have the impacts on structures of distribution and accumulation (Braunstein, 2016).

In terms of the structures of production, export-oriented industrialization can generate productivity growth not only within sectors but also across sectors. It has the potential to generate economies of scale because by exporting manufactures, there is access to a much

larger market. Additionally, it could generate economies of scope in the sense that once you become good at exporting certain products and increase capabilities in producing those products, it is much easier to engage in other activities that are very closely related. Both economies of scale and scope can generate productivity growth and hence, ignite development. There is, however, a potential source of contradiction which must be highlighted. Economies of scale and scope open up the prospects of larger firms having a first mover advantage, especially the firms that started out early and so provides a foundation for establishing infant industry protection because the small firms have to develop some more before they can compete on the international market. An additional way in which exports of manufactures can impact the structure of production and productivity is through its effect on structural change, a key requirement for industrialization to take off. In particular, exporting by reallocating resources from low productivity sectors such as agriculture and services to high productivity sectors like manufacturing, but specifically formal manufacturing activities, will automatically increase overall productivity.

The second element is through its impact on structures of distribution and the consequences for capital accumulation. On the one hand, strong investment drives that were sustained in the East Asian export-led model came from generating profits and channeling these profits into developmentally-oriented activities. There is also the possibility of generating foreign exchange that can be used to purchase technology, foreign capital and goods that enhance productivity growth. Following the success of the East Asian tigers, there has been an increased call to emulate the export-oriented industrialization model in order to revive industrialization and spark an African growth miracle. However, despite efforts to emulate this

model, the structural transformation that took place in the Western and East Asian markets has been elusive in the region. In many countries within the region, while agriculture value-added as a percentage of GDP decreased, the transformation was not in favor of manufacturing. Instead, there has been a shift from the agricultural sector directly to unproductive, low-technology, and low skill-intensive services sector.

The success stories of the East Asian miracle may hide the vulnerabilities and the complexities that are associated with export-oriented industrialization. Of note is, many of the export-oriented industrialization conditions that countries benefitted from are currently not available to those playing catch-up. First, many developed countries began the process of deindustrialization in the late 1960s, while some of the countries in East Asia entered this deindustrialization phase in the early 1990s. At about the same time, after some radical economic reforms, many countries in SSA also began to deindustrialize prematurely, despite their level of GDP per capita being much lower than the other countries which began the deindustrialization process earlier. This is significant as it has reduced the possibility of convergence with income levels of the advanced economies and disconnected the channel through which developed countries achieved rapid growth in the past (Rodrik, 2016).

Another culprit has been the proliferation of Global Value Chains (GVCs) which poses threats to SSA's export-oriented industrialization goals. Intermediate goods now make up two-thirds of world trade and much of this is within the realm of GVCs. In East Asia, for instance, more than 60% of total manufactured exports are related to value chains (Razeen, 2013). While a country can now specialize exclusively in producing a single part of a final good, it must typically apply high level technology and capital in order to be completely and competitively

inserted into a GVC. This recent development of GVCs has boosted trade only marginally for SSA since technology and capital are scarce resources that are very costly, making opportunities for upgrading very minimal and hence, creating even more marginalization for the region (Gereffi, 2016).

Additionally, the success of the export-oriented model depended on the availability of labor that is productive and the willingness to work for low wages. Women, as opposed to men, are presumed to fit these two characteristics very well and this contributed to the high demand for female labor in export-oriented sectors. First, women are assumed to be more productive in these types of jobs because of physical attributes such as having "small hands" and "nimble fingers" that make them more productive, thus more female workers are employed in these sectors (Elson and Pearson, 1981). Aside these reasons, the irregularity and flexibility of female labor makes them more attractive (Standing, 1999). With insecurity in the incomes of families, especially for those in developing economies such as SSA, more women were easily lured into these low-paid and more flexible jobs which allowed for labor exploitation in the export-oriented sectors (Seguino, 2010). In more recent times, with increases in education and improvements in the legal and regulatory framework that protect female labor in SSA, it may be more challenging to exploit female labor to maintain a competitive export sector. Moreover, the low wages associated with these export-oriented sectors are not enough to ensure the success of these sectors because as these sectors get more technologically intensive and as the value-added increases, they require a higher set of skills and higher wages in order to be sustainable.

All of these reasons suggest that the context at the time of the region's attempt to re-industrialize in the 1990s was fundamentally distinct from the one faced by the economies that had industrialized earlier and the traditional export-oriented pathway to industrialization may now be a long and winding road.

3.3. Econometric Analysis

3.3.1. Model Specification

As previously outlined, we analyze the economic growth impacts of export-oriented industrialization. In order to accomplish this, we run the following baseline model:

$$GDP\_GROW_{i,t} = \alpha + \beta MFG\_GDP_{i,t} + \theta TOTX\_GDP_{i,t} + \delta(MFG\ x\ TOTX)_{i,t} + \vartheta X_{i,t} + \mu_i + \gamma_t + \varepsilon_{i,t} \quad \text{for } t = 1,2,3 \dots T \text{ and } i = 1,2,3 \dots N \tag{1}$$

where GDP_GROW, the dependent variable represents per capita GDP growth. Following the trade literature, industrialization (MFG_GDP) is measured by manufacturing value-added as a percentage of GDP (Kang and Lee, 2011 and others). Total exports as a share of GDP ($TOTX\_GDP$) is a measure of trade integration. The interaction between industrialization and the measure of trade integration ($MFG\_GDPxTOTX\_GDP$) is simply denoted by $MFGxTOTX$. Finally, X is a vector of controls identified below, μ_i and γ_t are country-specific and time-specific fixed effects and $\varepsilon_{i,t}$ is the error term.

It is expected that industrialization will have growth-enhancing impacts. To account for the impact of sectoral distribution of production, we also include services value-added as a share of GDP ($SVCS\_GDP$). The agricultural sector is excluded in the independent variables

hence the estimates of the other two sectoral coefficients are relative to the share of agriculture value-added. Our measure of trade integration captures the extent to which an outward-oriented industrial strategy allows large markets to be accessible and consequently increase aggregate demand. It also captures an economy's exposure or vulnerability to external shocks. Because what matters most for export-oriented industrialization is exports, trade integration is first measured by exports of goods and services as a share of GDP *($TOTX\_GDP$).* In a first check of sensitivity of results, we also use disaggregated exports, specifically, fuels and ores exports as a share of merchandise exports *($FUEL\_X$).*

In the regressions where we focus on fuels and ores exports as a share of merchandise exports ($FUEL\_X$), we run the following similar model:

$$GDP\_GROW_{i,t} = \alpha + \beta MFG\_GDP_{i,t} + \theta FUEL\_X_{i,t} + \delta(MFG \times FUELX)_{i,t} + \vartheta X_{i,t} + \mu_i + \gamma_t + \varepsilon_{i,t}$$
$$\text{for } t = 1,2,3 \ldots T \text{ and } i = 1,2,3 \ldots N \quad (2)$$

A common concern of resource-rich countries is how natural resource dependence impacts development of the manufacturing sector in an economy and exposes the economy to Dutch disease effects. A traded sector that is competing with a burgeoning natural resource sector for factors of production will find itself contracting, whereas the non-traded sector will gain, an occurrence believed to be detrimental to the long-term performance of an economy (Rodríguez and Sachs, 1999). Due to ambiguous results from both an empirical and theoretical point of view, the expected sign of the coefficient on trade integration is unknown (Rodriguez and Rodrik, 2001; Baltagi et al, 2009). Thus, it becomes an empirical question as to what the impact is. The interaction term, ($MFGxTOTX$) in equation 1 and ($MFGxFUELX$) in equation 2 are the interaction between industrialization (MFG_GDP) and one of the two

measures of trade integration ($TOTX\_GDP$ or $FUEL\_X$). This is included to capture the importance of export-oriented industrialization in stimulating economic growth. In essence, $\delta > 0$ suggests a positive impact on growth in response to a push towards export-oriented industrialization.

Although the primary interest is in the impact of export-oriented industrialization, we also control for other variables that have been found to affect growth in developing countries. $X_{i,t}$ is a vector that includes controls for convergence effects, global integration, domestic policy and demographic variables drawn liberally from the theoretical and empirical growth and industrialization literature and also based on data availability. Following Barro (1996), we include the log of real per capita GDP (GDP) at the start of the period. This is included to capture the convergence effect or the so-called advantages of economic backwardness—the hypothesis that richer countries will grow at a slower pace than poorer countries due to diminishing returns to capital.

With respect to trade integration, in addition to exports as a share of GDP we control for foreign direct investment as it has been found to be a source for transferring technology and capital to economies. The ratio of foreign direct investment in gross fixed capital formation (FDI_INV) captures the relative size of longer-term foreign investment as a share of national investment in the economy. Weiss and Clara (2016) opine that higher amounts of FDI is expected to boost productive capacities and industrialization by stimulating aggregate demand, facilitating the transfer of capabilities and technology spillovers. In fact, East Asian countries such as Korea and Taiwan benefited significantly from FDI inflows and this initiated the "big push" during the structural transformation that occurred in their economies (Akkemik, 2008; Di

Maio, 2009). Markusen and Vernables (1999), however, show that there could also be a competition effect if domestic firms are not well-equipped to take advantage of the infiltration of the foreign firms. The technology and capital that is assumed to come with FDI, although it brings with it opportunities for increased investments, could also potentially lead to crowding out effects when foreign firms compete with domestic ones.

While trade integration accounts for the interconnectedness of markets, it does not account for trade policy. Thus, measures of trade restrictions represented by the weighted mean of applied tariffs *($TARIFF$)* are also included to account for how governments are managing trade, with lower values indicative of more liberalization. Some of the literature has found that tariffs are important protecting the infant industry in developing countries, hence to the extent that this occurs in SSA, a positive effect is expected (Storm, 2017).

To account for domestic policies, we control for government spending as a share of GDP *($GOVT\_GDP$).* This is included to approximate the effects of any productive government spending and is expected to generate growth-enhancing effects, especially if spending is associated with industrial sector activities (Barro, 2003). To control for the role of domestic investment in the economy, we also control for gross fixed capital formation as a share of GDP *(INV_GDP). A priori*, a positive coefficient is expected as greater investment especially in productive sectors has been shown to be one of the key drivers of growth (Bakari, 2017). Inflation *($INFLATION$)* is included as a proxy for macroeconomic stability. Although, some amount of inflation is beneficial to generate growth, high inflation tends to be costly and generates significant uncertainty, businesses tend to perform poorly in such economies. Hence, it may lead to growth-reducing effects. Finally, we use rule of law $(RULE)$ as a measure of

institutional quality in the domestic economy due to the well-known impacts of institutional quality in stimulating growth (Acemoglu and Robinson, 2008).

The next set of independent variables includes demographic indicators that have been found to be correlated with economic growth: Population (POP), female-to-male labor force participation ratio (F_MLFPR) and education ($EDUC$). Population is included as a proxy for market size potential and availability of a large labor force. We also include the ratio of female-to-male labor force participation rate to capture the impact of gender inequality in labor markets and on economic growth. This is important as studies have shown that less gender-related labor market discrimination increases the quality of labor in the market. A rise in the ratio signals a relative increase in women's labor force participation which should be growth-enhancing (Seguino, 2010; Mujahid and Zafar, 2012; Tsani et al., 2013; Seguino and Braunstein, 2019). Primary school enrollment rate as a share of those of primary school age is included as a proxy for the effects of human capital. Human capital investment has been found to increase innovation capabilities, attract investments and allow the economy to manage the increases in demands (Barro, 2003). All other things being equal, a positive coefficient is expected as greater enrollment ratios lead to greater human capital.

3.3.2. Estimation Strategy

The empirical approach adopted in this study differs from the approach in similar studies on the industrialization-growth relationship as we rely on both static and dynamic approaches. The static model which is the baseline method used in the estimations employ fixed effects (*FE*) panel estimations which remove any unobserved heterogeneity. In determining whether to use fixed effects or random effects, a Hausman test was conducted. Since the null hypothesis that

the random effects are independent of explanatory variables is rejected, the test points to fixed effects being the preferred method. All explanatory variables are lagged one year to avoid simultaneity bias (Woolridge, 2002). To correct for the possible existence of heteroscedasticity, all models report robust and homoscedasticity-consistent standard errors as proposed by White (1980).

It is highly plausible that industrialization and the growth determinants considered are jointly endogenous. This could potentially lead to overstating of the impacts. A vast amount of literature also shows the persistence of macroeconomic variables such as GDP per capita growth (e.g. LoFaso, 2012). Thus, in another check of sensitivity of results, we specify a dynamic panel model that allows for joint endogeneity of the variables and contains lagged values of the dependent variable. Using equation 1 as an illustration, we run the following dynamic model:[6] [7]

$$GDP\_GROW_{i,t} = \alpha + \varphi GDP\_GROW_{i,t-1} + \beta MFG\_GDP_{i,t} + \theta TOTX\_GDP_{i,t} + \delta(MFG\ x\ TOTX)_{i,t} + \vartheta X_{i,t} + \mu_i + \gamma_t + \varepsilon_{i,t} \quad (3)$$

Including the lag of the dependent variable makes it so that the equation (3) is generally not well-estimated by panel fixed effects estimator because of endogeneity issues. In this case, the Generalized Method of Moments (GMM) estimator for dynamic models of panel data is employed which internally transforms the data and provides consistent results in the presence of simultaneity bias that may come from the existence of endogeneity (Roodman, 2009; Schultz et. al, 2010; Wintoki et al. 2012).[8] The estimation process develops a simultaneous system of

[6] We run a similar dynamic model for equation 2 where we use fuel and ores exports ($FUEL\_X$).
[7] Including yearly time dummies for the 2008/2009 financial crisis does not significantly affect results.
[8] Although GMM is the preferred method in this paper to address endogeneity issues, we also run estimations with

equations—one set of equations in levels that uses lags of the regressors in first- differences as instruments, and another set in first differences that uses lags of the regressors in levels as instruments.

For identification, I follow Arellano and Bond (1991) and Blundell and Bond (1998) and use as internal instruments, the lags of potential endogenous and exogenous regressors since they satisfy the hypothesis of being correlated with the potential endogenous regressors but uncorrelated with the error term, so that their estimated impact on growth, wherever they occur, will only operate through the variables that are being instrumented. The validity of the estimates from GMM, however, depends on the validity of the instruments used. An important assumption for the validity of estimates from the GMM is that the instruments are exogenous. Thus, two specification tests proposed by Arellano and Bond (1991) and Blundell and Bond (1998) to check for the consistency within the system are the Hansen test of overidentification which tests the null hypothesis of overall validity of the instruments and the Arellano and Bond test for second order serial autocorrelation (*AR2*) which tests the null hypothesis of no second order serial correlation. Failure to reject the null hypothesis related to the Hansen test of overidentifying restrictions and the Arellano Bond test of second order autocorrelation gives support to the choice of instruments and the validity of the exogeneity assumption. It has been shown that the system GMM may produce standard errors that tend to be biased downward.

two stage least squares (2SLS) with qualitatively similar results. We only present the results for the GMM estimation since the 2SLS has been shown to be a particular case of the GMM (Cameron and Trivedi, 2005). As with the GMM estimator, because it is difficult to find good, external instruments, our identification strategy is such that we use lagged values as instruments for the potential endogenous regressors.

Hence, the estimations compute the robust standard errors and apply the Windmeijer bias-corrected robust variance (Windmeijer, 2005).

To systematically draw out the impact of export-oriented industrialization and to allow for comparisons, there are different data samples used. The first, second and third data sets include 36 SSA countries for the periods 1990-2018, 1990-2001 and 2002-2018, respectively. The second and third datasets are included to capture variations across two distinct time periods in the region. The 1990s was a period where many countries in the region significantly reduced trade barriers and aggressively employed an export-led industrialization strategy (ADB, 2014). In the second period, the dramatic economic growth period of the 2000s coincided with a change in the global architecture of trade with China joining the WTO and transforming the patterns of trade.

Although the focus is on SSA countries, we draw inter-regional comparisons when relevant by drawing out the potential differences and similarities that exist with emerging and developing economies in America and in Asia. To assess how heterogeneity contributes to the gains from export-oriented industrialization (if any), we also split SSA countries into different income groupings, country characteristics and regional trade communities.[9] Specifically, following IMF's classification of SSA countries, we split the data into low-income countries *(SSA_LIC)* and middle-income countries *(SSA_MIC),* landlocked countries (*SSA_LOCK*) and countries that are not landlocked *(SSA_NOTLOCK),* diversified *(SSA_DIV)* and less diversified

[9] See table 3.14 and figures 3.1-3.3 for sampled countries, groupings and trends in the variables by income group and country characteristics

(SSA_LESSDIV), and finally along the two main regional economic and trading communities (ECOWAS and SADC) that have been established to promote trade and industrialization.

3.4. Results

3.4.1. Descriptive Analysis

First, regarding correlation among the variables, it is vital to check that they do not exhibit too much collinearity as this will give rise to biased estimates. Table 3.1 shows the results of the test of the possibility of collinearity using a pairwise correlation matrix. Although, there is no consensus on what specific correlation one should be cautious of, it is generally adhered to that any correlation of +/- 0.8 and more is worrisome (Wooldridge, 2002). Thus, going by the correlations of the variables, the multicollinearity problem is avoided. Results at a first glance show that with the exception of tariffs, fuels and ores exports and inflation, all variables are positively correlated with economic growth.

Tables 3.2-3.5 present the descriptive statistics. The descriptive statistics of the variables for the three regional groups: *SSA, EMEDEV_AMER* and *EMEDEV_ASIA* presented in table 3.2 show that with respect to the dependent variable, GDP per capita growth rate, *EMEDEV_ASIA* dominate recording an average of 3.12% while *SSA* and *EMEDEV_AMER* had an average per capita growth rate of 1.43% and 1.79% respectively. In terms of the economic structure variables, *EMEDEV_ASIA* also boast of having the highest manufacturing value added (13.55%) and trade integration (37.60%) as represented by total exports while *EMEDEV_AMER* have the highest services value added (57.28%) over this period. Export of fuels and ores seem to be most important to the exports of countries within SSA (26.24%) than with the other regions.

With respect to global integration variables, FDI in total investment is largest in *EMEDEV_AMER* while SSA's tariffs remain the highest in comparison to the other two regions. Shifting to domestic policy, inflation is highest among countries in *EMEDEV_AMER* while *EMEDEV_ASIA* records the highest amount of national investment. Government spending does not appear, on average, to be substantially different across the three regions. Finally, rule of law is the lowest among SSA countries (-0.57). On the demographic indicators, namely population, the ratio of female to male labor force participation rate and education, SSA has the largest market size, the highest ratio of female to male labor force participation rates and the lowest primary school enrollment rates.

Table 3.3 show the descriptive statistics for the two distinct sub-periods in SSA. With the exception of manufacturing value added, all of the economic structure variables and demographic variables recorded increases over the two sub-periods. The region also made significant progress on the global integration indicators. FDI in investment almost doubled while tariffs also decreased suggesting more liberalization. Of important note is that on the domestic front, inflation rate drastically decreased from an average of about 47% to 8.5%. Across the regional economic and trade demarcations, average GDP per capita growth was highest among SADC countries (1.74%). Along with having the highest average GDP per capita, on average, SADC also performs better with respect to the other variables. However, it also recorded the highest average inflation rate for the sample period, undoubtedly driven by Zimbabwe (table 3.4).

Descriptive statistics based on country characteristics are presented in tables 3.5. We observe that perhaps, unsurprisingly, middle income countries, countries that are not

landlocked and those that are more diversified tend to perform better on economic structure indicators as well as on domestic policy. Inflation, however, is lowest among low income countries, countries that are landlocked and those that are not diversified. In terms of global integration and policy, low income countries appear to be more open, having the lowest tariffs and the highest FDI in national investment. Turning to the demographic factors, low income countries record the highest ratio of female to male labor force participation rates (largely a reflection of women's high participation in traditional agriculture and market services), but the lowest primary school enrollment rates. Market size, as indicated by population does not vary between the two income groups nor based on the country characteristics.

Taken together, the summary statistics suggest that the aggregate summaries mask the large differences in the variables between the 1990s and 2000s period. The largest changes occurred in primary school enrollment which saw a substantial increase and inflation rate which considerably decreased over the two periods. In comparison to other emerging non-SSA economies in Asia and America, on average, SSA lags behind especially on the economic structure variables and global integration variables, having the highest tariffs among the three regions. With respect to the regional economic communities, SADC seems to have been the most successful in achieving its high economic growth and free trade objectives, relative to the ECOWAS. Low income countries, those that are not landlocked and less diversified tend to be more integrated globally, having the lowest tariffs and the highest FDI in national investment.

3.4.2. Discussion of Results

As a first step, for the baseline results, we estimate equation (1) employing fixed effects panel data regressions. We do this for the entire period 1990-2018 for SSA (table 3.6) and then for the two distinct periods, 1990-2001 and 2002-2018 (table 3.7), using total exports as a measure of an outward-oriented industrial strategy. Following this, we ask whether regional features matter. Thus, we compare SSA to other emerging non-SSA countries in *EMEDEV_AMER* and *EMEDEV_ASIA*. These results are also presented in tables 3.6. Additionally, we test to see if the economic and trade region a country belongs to (table 3.8) and country characteristics (table 3.9) have any significant impact on whether export-oriented industrialization strategy is successful. Since an important source of revenue for many of these countries is natural resources, in a check of sensitivity of results, we also use disaggregated exports, specifically, fuels and ores. In another check of robustness, two step system GMM regression results are also reported to manage any endogeneity issues (tables 3.10-3.13). We report different specifications so that taken together, the results can give a reasonable range and can be used for inference.

Beginning with our first variable of interest, the positive coefficient on the industrialization indicator (*MFG_GDP*) is consistent with *a priori* expectations that industrialization is a boost to economic growth. The impact is statistically significant for both *SSA* and *EMEDEV_AMER*. Focusing on columns 1 and 2 in table 3.6, the results suggest that a 10% increase in industrialization results in a 0.7 and 0.9 percentage point increase in per capita GDP growth in *SSA* and *EMEDEV_AMER*, respectively. Among researchers and policymakers, a robust manufacturing sector is understood to be a fundamental path to sustained growth and

development and throughout history, this recipe has been able to transform economies in the United States, United Kingdom and the East Asian tigers. Looking across the subperiods in table 3.7, some interesting patterns emerge. We observe that *MFG_GDP* is statistically significant, with a negative effect on growth during the 1990-2001 period and a positive effect in the second sub-period.

It has been pointed out that compared to Latin America and Asia, import substitution which was attempted in the 1970s and 1980s was successful in expanding industrial activities for only a short period in SSA. It was ineffective in generating a sustainable manufacturing sector leaving existing industries vulnerable and non-competitive, thus curtailing any growth potential. The effects of this coupled with some questionable policy decisions in the 1980s could have potentially spilled over well into the 1990s making a larger manufacturing sector a proxy for poor investments and over-borrowing in the 1980s. This is in line with discussions on the challenges faced in the industrial sectors in SSA (Soludo, 2004; Africa Development Bank; 2018).

Looking at the estimates for the regions in table 3.6, we do observe a negative association between the size of the service sector (relative to agriculture) and consequent growth for all three regions. As Rodrik highlights, the success of the services sector in contributing to productivity growth depends on a strict accumulation of capabilities and is very context specific (Rodrik, 2016). Additionally, services do not act as an escalator sector like the manufacturing sector and this is an indication of why we may be observing the growth-deterring effects with the exception of the 2002-2018 sub-period where it is positive (table 3.7). Although SSA has seen some signs of engaging in innovative services, for instance, through the

expansion of mobile banking services, it still has not been enough to generate significant value-added. Given the growing importance of the service sector in SSA economies, policymakers ought to devote attention to increasing efficiency and innovation in this sector. Interestingly, based on the economic and trade regions, it seems that ECOWAS countries are the only ones that pick up a positive and statistically significant impact of services relative to agriculture, at least in the short run (table 3.8). A 10% increase in services value added results in a 4 percentage point increase in economic growth among ECOWAS countries. The variation in results for services value-added may be giving an indication of the complicated relationship that services has with economic growth, unlike manufacturing and particularly relative to agriculture value added.

The extant literature shows that trade integration plays an important role in economic growth, however, what you export matters greatly (Hausmann et al., 2007). Generally, we pick up a negative and statistically significant impact of trade integration represented by total exports (*TOTX_GDP)* on growth in SSA while the other two regions record positive impacts. In essence, a 10% increase in total exports as a share of GDP leads to a 1.6 percentage point decrease in per capita growth in SSA (table 3.6). These results hold true also in the 1990-2001 sub-period and also for countries belonging to the ECOWAS trading region. The effect is a clear indication of the merchandise goods exported by countries in SSA. It is well-documented that a significant portion of merchandise exports from most countries in SSA are typically composed of unprocessed primary products and fuels which can be detrimental in the short run and create only small multiplier effects over time (UNCTAD, 2015a). The 2002-2018 period for total exports and fuel exports (columns 2 and 4 in table 3.7) however show positive and statistically

significant impacts on growth, suggesting that perhaps the Dutch disease effects from relying on primary and resource products are being slowly avoided in the region and trade integration is beginning to have a positive impact in the region. Growing access to markets in the emerging economies could also be contributing to improving Africa's exports and hence the overall trade balance.

The interaction between trade integration and industrialization *(MFG x TOTX)* is included to test the efficacy of export-oriented industrialization in contributing to growth. Although we observe a positive relationship for SSA, it is generally not statistically significant which is an indication that the state of the manufacturing sector is not robust enough to play a contributory role in increasing economic growth in the region. We do observe a positive and statistically significant impact of export-oriented industrialization on growth in *EMEDEV_AMER* but like SSA, results in *EMEDEV_ASIA* are positive but not statistically significant. When we focus on the sub-sample period 2002-2018, the results are stronger. We do observe a small but positive and statistically significant impact of export-oriented industrialization on growth. In essence, a 10% increase in export-led industrialization is associated with an increase in per capita GDP growth of 0.3 percentage points. Among countries in SADC, export-oriented industrialization results in a 6.5 percentage point increase in growth.

Pushing further, we ask if income groups and country heterogeneity matter in fully realizing the benefits from such a strategy. Results are presented in table 3.9 where we split the sample into low income *(SSA_LIC)* and middle income countries *(SSA_MIC),* countries that are landlocked *(SSA_LOCK)* and not landlocked *(SSA_NOTLOCK),* and those that are diversified *(SSA_DIV)* and less diversified *(SSA_LESSDIV).* We find very little evidence that export-oriented

industrialization can have a significant impact on growth in middle-income countries but surprisingly, it turns out that there is a positive and statistically significant impact in low-income countries, signaling that it is highly likely that at early stages of development, such a strategy may be beneficial but it loses its steam as an economy becomes more advanced. SSA's geography is different from many other regions which may be a contributing factor to whether an economy benefits from such a strategy. First, relative to other regions, the region is far from many major markets. Relatedly, many countries in SSA tend to be landlocked which increases the costs of transportation. Thus, we test the hypothesis of a larger positive impact of export-oriented industrialization in countries that are not landlocked.

In line with findings by Gallup and Sachs (2001) on the growth performance of countries that are not landlocked, we find a positive and statistically significant impact of export-oriented industrialization on countries that are not landlocked *(SSA_NOTLOCK)*. It is suspected that countries in SSA that are not landlocked tend to perform much better than those that are because they may be generally more equipped and readily able to export their manufactured goods quicker and at a much cheaper cost. A look across the country groups within the region also seems to suggest that the gains from an export-led industrialization strategy is much larger and significant for countries that are diversified *(SSA_DIV)*. A 10% increase in export-led industrialization is associated with an increase in per capita GDP growth by about 5 percentage points (column 5). Intuitively, an economy that is less diverse may have very little insurance against exogenous shocks and may be less capable of absorbing commodity and terms of trade shocks (Haddad et al., 2013). Additionally, studies have shown that more diverse economies are relatively more equipped to shift into new products and sectors

(horizontal diversification) and also successfully move from primary production to manufacturing (Grossman and Helpman, 1991; De Loecker, 2013).

The effect of the log of real per capita GDP *(lnGDP)* at the start of the time period is generally significant across specifications providing some evidence of conditional convergence across countries. Consistent with the economic intuition on the importance of investments, the highly robust empirical finding that investment (*INV_GDP*) and FDI as a share of investment *(FDI_INV)* are positively associated with growth effects holds across all specifications and both seem to have played the most significant role in SSA's growth turnaround suggesting that crowding out effects have been avoided. However, focusing on columns 1 and 2 in table 3.7, there is a slight variation over the two sub-periods, with the latter period (2002-2018) reflecting stronger and statistically significant impacts of FDI, possibly because of more aggressive policies and investment treaties that were pursed to protect FDI during this time (UNCTAD, 2015b). It could also be capturing the impact of the increased Chinese FDI inflow that has occurred during this time. Furthermore, these two variables seem to play important and statistically significant roles in sustaining growth in low-income countries in line with studies that have shown that Chinese investments in low-income countries in SSA have increased more than six-fold since the 2000s (Gutman et al, 2015). For both regional economic communities, we pick up a positive impact on both indicators of investment, the strongest effect coming from ECOWAS (table 3.8).

Although some of the literature (e.g. Storm, 2017), shows that tariffs are often used as an industrialization instrument, specifically to protect infant industry, we find weak evidence for this. The coefficients are in fact negative across all specifications in the main regressions. This does not suggest that tariffs are altogether bad for the region, but it could simply be an

indication that tariffs are extremely high which is what is negatively affecting growth. Similar effects are picked up in other emerging non-SSA countries signaling that the growth-deterring effects of tariffs may not be unique to SSA. Along the regional trade communities, the statistically significant negative impact is emphasized for countries in the ECOWAS region which do record some of the highest tariffs in the region. Tariffs in SADC, on the other hand, may serve beneficial to industries in that economic region.

The positive coefficient on government spending *(GOVT_GDP)* in SSA supports the view that productive government consumption is beneficial for growth and the region is seeing a lot of this compared to countries in *EMEDEV_AMER* and also compared to the 1990-2001 period in SSA, where there are signs of unproductive government spending. There also seems to be high levels of unproductive government spending in the SADC region, which may be derailing growth. As expected, our indicators for macroeconomic stability, rule of law and inflation, generally corroborate the literature. Rule of law has growth-enhancing effects while there is some variation in results for inflation. This may be an indication that high inflation may be bad for growth but at the same time, some inflation is good for growth.

Turning to the demographic factors, population (*POP*) is included as a proxy for market size. Although an extended population boom can have a negative impact on growth, the positive impact of population that is observed in the specifications is an indication that in the short run, market size encourages economic growth and can prove beneficial. This outcome is supportive of findings by Busse and Groizard (2008) and others. Although it could bring some challenges, the population boom could create some opportunities to enhance consumer

demand, knowledge spill overs and higher levels of resource sharing. There is a real opportunity to capitalize on this.

We include information on female to male labor force participation rate (*F_MLFPR)*. The coefficient is generally positive and confirms that more equality tends to be beneficial to growth. The positive and significant coefficient since 2002 may be due to more women going to school which is increasing their relative wages. There have also been improvements in the legal, regulatory and policy framework that enhance female labor force participation like the Legal Capacity of Married Persons Act 9 in 2006 which enabled women to access labor markets. Many countries have enacted similar policies since 2000 (Gonzales.et al, 2015). However, the generally insignificant effect with the exception of the 2002-2018 period could be explained by the kinds of low skill, low paying sectors women generally work (ADB, 2014). The result that increases in primary education is growth-enhancing is intuitive and very consistent with predictions of endogenous growth models. The impact observed, however, is minimal and for one, could be an indication that although education levels are rising, people remain unemployed after school, hence the feedback effect on economic growth is not being fully captured. Additionally, it could also be because the skills gained through education, take a long time to realize the return on growth.

The results from the GMM estimations, for the most part, confirm those obtained for the fixed effects estimations discussed above. The robustness checks confirm that there is some evidence that such a strategy will be beneficial for low-income countries, countries that are not landlocked and diversified countries. The negative and statistically significant impact of exporting on growth in the region is even stronger in the GMM estimations. This may be a clarion call for

policymakers to find ways to diversify the kinds of merchandise exports emanating from SSA to more technologically intensive goods. Based on the subperiods, services show some potential of positively impacting growth in more recent years, but again this is not significant (table 3.11). Finally, the coefficients on the other control variables are generally consistent with the empirical findings from the previous results and discussions.

3.5. Concluding Remarks

There is much to celebrate about SSA's recent economic performance. Gone is the traditional pessimism about the region's growth prospects. Over the period 2002-2018, SSA experienced a distinct reversal in its trade and overall economic performance. While the region has achieved a period of strong growth, industrialization has been much slower than in other regions. As a result, there is renewed debate on how to tap into this recent growth to foster industrialization. This paper pushes the debate forward by quantifying the impact of export-oriented industrialization. Taken together, the resulting regressions suggest that export-oriented industrialization has had a positive, but quite minimal impact on economic growth. Industrialization on its own is a boost to economies in the region. Although trade integration, generally, has a negative and statistically significant impact on the economy, industrializing can help mitigate this effect. Recent reports highlight the fact that because of overcrowding and the fallacy of composition, not all countries can be successful with an export-led industrialization strategy making this path no longer the most feasible path to industrialization for all countries in the region. Hence, there ought to be a selective number of countries that adopt such a strategy.

Results suggest that low income countries, countries that have been able to move up in terms of diversification and those that are not landlocked tend to obtain more positive impacts

from this strategy. There is very little that can be done regarding geography. However, the results that diversified countries can benefit from such a strategy may be a clarion call to policymakers to attempt to diversify their exports before pursuing this strategy successfully. Admittedly, for low-income countries, specifically those in SSA, export-led path to industrialization is unavoidable. With small domestic markets, these countries will require some external export markets to expand production. Countries may be able to make good use of their domestic markets by increasing intraregional trade and creating their own regional value chains. The population boom in the region could help with that as it can enhance consumer demand, knowledge spill overs and higher levels of resource sharing. Among the other factors that are important to growth, what seems to matter the most is, investment. Thus, policies that continually encourage its increase should be vigorously pursued.

With the services sector becoming the most important sector in the region, is it possible to envision a growth model that sidesteps the industrialization phase, with productive resources shifting directly to services? The regions can continue to push to innovate the services sector, however, the balance of evidence suggests that the positive impact of the services sector on economic growth will run its course over time. Among researchers and policymakers, a robust manufacturing sector, and not services, is understood as a fundamental path to sustained growth and development and throughout history, this recipe has been able to transform economies. Decomposing total exports, the resulting regressions suggest that there is an improvement in managing fuels and ores exports post-2001. Thus, policies that continually encourage these outcomes should be vigorously pursued. In the foreseeable future, the potential for Africa's manufacturing sector to revive industrialization will be mainly driven by how best it can create policies to continue to attract FDI in the region and form linkages between its strong sector, i.e. its

natural resource sectors, especially fuels and ores, and the manufacturing sector. The revenues generated from its natural resources, if managed properly, can be used to transform the manufacturing sector from the informal industries that they currently are to more formal manufacturing which can put industrialization back on track.

3.6. Tables and Figures

Table 3.1. Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) GDP_GROW	1.00													
(2) MFG_GDP	0.01	1.00												
(3) SVCS_GDP	0.02*	-0.05*	1.00											
(4) TOTX_GDP	0.03*	0.07*	0.19*	1.00										
(5) FUEL_X	-0.04*	-0.17*	-0.36*	0.01	1.00									
(6) lnGDP	0.02*	0.15*	0.16*	-0.13*	-0.10*	1.00								
(7) FDI_INV	0.01	-0.08*	0.12*	0.22*	-0.03*	-0.04*	1.00							
(8) TARIFF	-0.01	-0.09*	-0.26*	-0.21*	-0.02	-0.10*	-0.09*	1.00						
(9) INV_GDP	0.20*	0.03*	-0.04*	0.15*	0.06*	0.10*	-0.02*	0.01	1.00					
(10) GOVT_GDP	0.07*	-0.14*	0.26*	0.02*	-0.01	0.02	0.01	-0.22*	0.10*	1.00				
(11) INFLATION	-0.11*	0.07*	-0.08*	-0.01	0.00	-0.01	-0.01	0.01	-0.06*	-0.02*	1.00			
(12) RULE	0.07*	0.04*	0.62*	0.31*	-0.23*	0.18*	0.10*	-0.37*	0.06*	0.23*	-0.08*	1.00		
(13) POP	0.08*	0.12*	-0.08*	-0.14*	-0.07*	0.62*	-0.04*	0.13*	0.16*	-0.08*	-0.00	-0.01	1.00	
(14) F_MLFPR	0.03*	-0.18*	-0.04*	-0.04*	-0.09*	0.01	0.02	-0.09*	-0.05*	0.05*	0.02*	0.10*	-0.07*	1.00

Notes: * shows significance at the 0.1 level

Table 3.2. Descriptive Statistics for Regions

	SSA		EMEDEV_AMER		EMEDEV_ASIA	
Variables	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
GDP_GROW	1.43	5.16	1.79	3.40	3.12	4.47
Economic Structure Variables						
MFG_GDP	9.98	4.89	11.92	5.83	13.55	8.20
SVCS_GDP	45.69	10.84	57.28	9.91	47.69	9.79
TOTX_GDP	28.28	16.80	35.69	20.88	37.60	23.59
FUEL_X	26.24	30.03	20.31	23.22	14.56	18.17
Global Integration Variables						
FDI_INV	16.12	39.1	18.41	16.3	12.39	19.01
TARIFF	14.11	7.59	11.87	6.15	13.42	10.50
Domestic Policy Variables						
INV_GDP	20.06	8.03	20.85	5.62	26.54	9.67
GOVT_GDP	14.35	5.78	13.21	3.71	13.90	10.10
INFLATION	23.95	188.8	40.06	349.5	8.533	17.45
RULE	-0.57	0.66	-0.08	0.74	-0.18	0.63
Demographic Variables						
POP	15.77	1.47	14.67	2.28	15.43	3.08
F_MLFPR	80.62	15.23	63.65	12.47	69.09	19.61
EDUC	74.86	19.65	91.12	8.40	89.50	10.19

Table 3.3. Descriptive Statistics for Sub-Periods in SSA

	1990-2001		2002-2018	
Variables	Mean	Std. Dev.	Mean	Std. Dev.
Dependent Variable	(1)	(2)	(3)	(4)
GDP_GROW	0.62	5.96	1.98	4.46
Economic Structure Variables				
MFG_GDP	10.95	5.39	9.35	4.43
SVCS_GDP	43.70	11.42	46.99	10.25
TOTX_GDP	25.26	15.49	30.28	17.34
FUEL_X	24.44	30.51	27.07	29.80
Global Integration Variables				
FDI_INV	9.12	33.21	20.24	42.09
TARIFF	16.58	10.22	12.36	4.18
Domestic Policy Variables				
INV_GDP	18.56	8.59	21.05	7.48
GOVT_GDP	14.57	6.51	14.22	5.26
INFLATION	46.52	294.3	8.47	15.19
RULE	-0.60	0.77	-0.56	0.64
Demographic Variables				
POP	15.56	1.438	15.92	1.48
F_MLFPR	78.56	16.52	82.08	14.09
EDUC	67.71	21.74	79.91	16.25

Table 3.4. Descriptive Statistics for Economic and Trade Regions in SSA

	ECOWAS		SADC	
Variables	Mean	Std. Dev.	Mean	Std. Dev.
Dependent Variable	(1)	(2)	(3)	(4)
GDP_GROW	1.45	4.73	1.74	4.96
Economic Structure Variables				
MFG_GDP	8.75	4.06	11.64	5.49
SVCS_GDP	43.67	11.03	51.77	10.67
TOTX_GDP	24.16	9.85	42.19	19.31
FUEL_X	26.00	30.18	24.97	30.15
Global Integration Variables				
FDI_INV	21.2	56.5	15.1	20.34
TARIFF	13.83	7.11	13.12	9.37
Domestic Policy Variables				
INV_GDP	19.39	8.30	21.90	8.03
GOVT_GDP	12.42	4.59	19.40	6.05
INFLATION	10.16	17.84	56.89	351.1
RULE	-0.63	0.56	-0.16	0.79
Demographic Variables				
POP	15.72	1.35	15.28	1.83
F_MLFPR	79.72	13.35	79.85	13.51
EDUC	65.54	20.33	87.15	10.87

Table 3.5. Descriptive Statistics for Country Characteristics in SSA

Variables	SSA_MIC		SSA_LIC		SSA_LOCK		SSA_NOTLOCK		SSA_DIV		SSA_LESSDIV	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
GDP_GROW	1.79	4.02	1.15	5.91	1.59	6.04	1.18	4.67	1.21	4.94	1.37	5.70
Economic Structure Variables												
MFG_GDP	11.29	5.37	8.88	4.15	10.26	4.62	10	4.84	10.84	4.5	8.84	5.26
SVCS_GDP	50.16	10.63	42.3	9.72	42.1	8.25	46.45	11.05	45.52	9.9	43.38	11.55
TOTX_GDP	38.01	18.43	20.83	10.53	18.83	10.3	33.61	17.63	28.22	17.13	31.59	18.43
FUEL_X	33.84	34.13	18.96	23.32	25.14	29.1	28.81	30.47	17.76	19.82	52.61	39.65
Global Integration Variables												
FDI_INV	12.3	17.0	19.1	49.3	12.8	15.1	19.4	44.8	16.2	39.1	21.3	41.8
TARIFF	14.3	9.45	13.96	5.77	15.21	6.84	15.54	7.18	13.64	6.96	13.49	7.84
Domestic Policy Variables												
INV_GDP	24.1	7.07	17.32	7.47	17.64	7.5	22.07	9.88	20.22	8.45	22.34	12.19
GOVT_GDP	16.16	6.68	13.1	4.69	14.1	5.16	14.37	5.93	14.92	5.5	12.62	5.6
INFLATION	39.31	282.3	11.75	20.44	13.59	24.1	76.04	1004	72.13	1090	46.68	305.6
RULE	-0.21	0.7	-0.86	0.48	-0.79	0.51	-0.58	0.7	-0.57	0.69	-0.79	0.57
Demographic Variables												
POP	15.56	1.99	15.93	0.86	16.39	0.47	15.67	1.65	16.04	1.44	15.04	3.28
F_MLFPR	76.63	15.22	83.51	14.59	81.29	16.33	80.59	16.7	82.73	15.77	88.28	13.19
EDUC	81	13.72	70.09	22.1	70.68	22.85	73.88	18.49	73.62	21.11	71.55	18.83

Table 3.6. Results for Regions (Fixed Effects)

	TOTAL EXPORTS			DISAGGREGATED EXPORTS		
	SSA	EMEDEV_AMER	EMEDEV_ASIA	SSA	EMEDEV_AMER	EMEDEV_ASIA
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)	(5)	(6)
Economic Structure Variables						
MFG_GDP	0.073**	0.091***	0.209	0.022**	0.010	0.133
	(0.337)	(0.341)	(0.169)	(0.101)	(0.132)	(0.134)
SVCS_GDP	-1.614	-1.151***	-3.355	-1.170***	-1.799**	-1.906
	(1.496)	(3.544)	(3.895)	(1.628)	(3.739)	(4.427)
TOTX_GDP	-0.161***	0.142***	0.003			
	(0.039)	(0.045)	(0.013)			
FUEL_X				0.033*	-0.031	0.009
				(0.019)	(0.027)	(0.035)
MFGxTOTX	0.214	0.222**	0.017			
	(0.094)	(0.092)	(0.030)			
MFGxFUELX				-0.021	0.012	0.024
				(0.019)	(0.021)	(0.018)
lnGDP	-0.333**	-0.923***	-0.334	0.456***	-0.131***	-0.508
	(1.028)	(0.902)	(1.090)	(1.006)	(0.973)	(1.207)
Global Integration Variables						
FDI_INV	0.890*	0.747	3.241***	1.324**	1.524	1.026**
	(0.477)	(1.308)	(1.084)	(1.510)	(1.336)	(1.194)
TARIFF	-0.062	-0.209***	-0.102**	-0.099*	-0.250***	-0.125**
	(0.064)	(0.068)	(0.050)	(0.055)	(0.073)	(0.049)
Domestic Policy Variables						
INV_GDP	0.152***	0.043	0.119***	0.179***	0.080	0.051
	(0.040)	(0.049)	(0.044)	(0.044)	(0.054)	(0.049)

GOVT_GDP	0.181**	-0.447***	0.018	0.056	-0.555***	0.075
	(0.075)	(0.109)	(0.130)	(0.071)	(0.123)	(0.130)
INFLATION	0.019	-0.048**	-0.142***	0.001	-0.068**	-0.177***
	(0.014)	(0.021)	(0.033)	(0.016)	(0.029)	(0.033)
RULE	0.498	0.688	0.646	0.890*	0.898**	0.401
	(1.163)	(0.803)	(1.127)	(1.117)	(0.933)	(1.377)
Demographic Variables						
POP	0.422***	0.625*	-0.147	0.770***	0.337*	-0.217
	(2.783)	(2.800)	(5.621)	(2.762)	(3.264)	(6.120)
F_MLFPR	0.069	0.083	0.100	0.021	0.093	0.064
	(0.076)	(0.057)	(0.065)	(0.071)	(0.205)	(0.080)
EDUC	0.081**	0.033	0.012	0.091**	0.066	0.001
	(0.035)	(0.047)	(0.044)	(0.036)	(0.047)	(0.068)
Observations	742	487	332	489	362	193
R-squared	0.104	0.253	0.219	0.154	0.237	0.243

Notes: All variables are converted into natural logs with the exception of inflation, rule of law, tariffs and the dependent variable which were not converted because some values take on negative numbers. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 3.7. Results for Sub-Periods in SSA (Fixed Effects)

	TOTAL EXPORTS		DISAGGREGATED EXPORTS	
	1990-2001	2002-2018	1990-2001	2002-2018
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)
Economic Structure Variables				
MFG_GDP	-0.066*	0.072***	-0.032	0.030***
	(0.709)	(0.427)	(0.272)	(0.119)
SVCS_GDP	-0.682	0.622	-1.249*	1.454***
	(2.866)	(2.064)	(2.932)	(1.955)
TOTX_GDP	-0.244**	0.182***		
	(0.099)	(0.046)		
FUEL_X			0.032	0.060**
			(0.046)	(0.024)
MFGxTOTX	0.059	0.025**		
	(0.237)	(0.125)		
MFGxFUELX			-0.005	0.023
			(0.038)	(0.022)
lnGDP	-1.381***	-1.792	-0.808	-0.873*
	(2.943)	(1.421)	(3.506)	(1.514)
Global Integration Variables				
FDI_INV	2.038	1.244**	1.917	2.970*
	(1.058)	(0.611)	(1.334)	(1.725)
TARIFF	-0.051	-0.108	-0.089	-0.13
	(0.053)	(0.093)	(0.132)	(0.081)
Domestic Policy Variables				
INV_GDP	0.166**	0.145***	0.021	0.151***
	(0.082)	(0.047)	(0.128)	(0.051)
GOVT_GDP	-0.659***	0.269***	-0.342**	0.097
	(0.182)	(0.092)	(0.164)	(0.088)
INFLATION	0.009	0.012	0.061*	0.002
	(0.021)	(0.015)	(0.032)	(0.017)
RULE	0.364	0.113	0.988	0.658
	(1.355)	(1.952)	(1.09)	(1.253)
Demographic Variables				
POP	0.490**	0.500***	0.441	1.450***
	(1.135)	(1.772)	(1.992)	(0.862)
F_MLFPR	0.093	0.114*	0.452	0.013
	(0.205)	(0.058)	(0.316)	(0.097)
EDUC	0.045	0.084*	0.072	0.097**
	(0.092)	(0.049)	(0.147)	(0.046)

Observations	276	466	131	358
R-squared	0.187	0.115	0.221	0.158

Notes: See notes to Table 3.6

Table 3.8. Results for Economic and Trade Regions (Fixed Effects)

	TOTAL EXPORTS		DISAGGREGATED EXPORTS	
	ECOWAS	SADC	ECOWAS	SADC
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)
Economic Structure Variables				
MFG_GDP	0.402	1.083	0.185	0.950***
	(0.478)	(0.812)	(0.159)	(0.241)
SVCS_GDP	0.402*	-1.683	0.423**	-1.215**
	(1.395)	(1.344)	(2.004)	(1.023)
TOTX_GDP	-0.133**	0.254***		
	(0.053)	(0.085)		
FUEL_X			0.031	0.223***
			(0.025)	(0.060)
MFGxTOTX	0.196	0.653***		
	(0.160)	(0.240)		
MFGxFUELX			-0.048*	-0.043
			(0.025)	(0.030)
lnGDP	-0.437	-0.637***	-0.695**	-0.533*
	(1.139)	(1.676)	(1.494)	(1.294)
Global Integration Variables				
FDI_INV	0.863*	1.069	0.545***	0.102
	(0.506)	(2.004)	(1.915)	(2.390)
TARIFF	-0.042	0.216**	-0.468***	0.005
	(0.047)	(0.088)	(0.174)	(0.082)
Domestic Policy Variables				
INV_GDP	0.131***	0.124	0.102*	0.175**
	(0.043)	(0.077)	(0.059)	(0.088)
GOVT_GDP	0.116	-0.308***	0.012	-0.334***
	(0.096)	(0.103)	(0.106)	(0.121)

INFLATION	0.022	0.046**	0.007	0.045*
	(0.017)	(0.018)	(0.023)	(0.026)
RULE	0.282	0.970*	0.115	0.744
	(1.992)	(1.300)	(1.810)	(1.504)
Demographic Variables				
POP	1.112	-1.181**	1.373	-1.090***
	(3.042)	(5.272)	(4.039)	(5.182)
F_MLFPR	0.023	0.166**	0.037	0.499***
	(0.070)	(0.077)	(0.093)	(0.108)
EDUC	0.052	0.215*	0.003	0.509***
	(0.048)	(0.113)	(0.053)	(0.166)
Observations	337	224	197	168
R-squared	0.210	0.275	0.353	0.646

Table 3.9. Results for Country Characteristics (Fixed Effects)

	TOTAL EXPORTS					
	SSA_ MIC	SSA_ LIC	SSA_ LOCK	SSA_ NOTLOCK	SSA_ DIV	SSA_ LESSDIV
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)	(5)	(6)
Economic Structure Variables						
MFG_GDP	0.878**	1.453***	-0.343	0.026	1.478***	-0.024
	(0.439)	(0.494)	(0.487)	(0.377)	(0.423)	(0.581)
SVCS_GDP	-1.511	1.553	2.544	1.965*	0.344	3.515*
	(1.908)	(1.947)	(3.108)	(1.190)	(2.251)	(2.053)
TOTX_GDP	-0.083*	-0.221***	-0.081	0.097***	0.181***	0.125**
	(0.046)	(0.060)	(0.098)	(0.036)	(0.049)	(0.060)
MFGxTOTX	0.217	0.141***	-0.140	0.023*	0.531***	-0.018
	(0.116)	(0.170)	(0.158)	(0.103)	(0.137)	(0.155)
lnGDP	-0.523	-1.653	-1.316***	-0.783	-0.488***	-1.641
	(0.922)	(1.911)	(2.164)	(0.837)	(1.614)	(1.477)
Global Integration Variables						
FDI_INV	2.819	0.786*	1.584*	0.884*	1.281**	1.987**
	(1.588)	(0.572)	(2.856)	(0.455)	(0.539)	(0.917)
TARIFF	-0.060**	-0.164	-0.117	-0.030	-0.169**	-0.086
	(0.026)	(0.111)	(0.083)	(0.035)	(0.069)	(0.055)
Domestic Policy Variables						
INV_GDP	0.031	0.189***	0.218***	0.069**	0.112*	0.135***
	(0.046)	(0.055)	(0.071)	(0.031)	(0.057)	(0.049)
GOVT_GDP	-0.202**	0.287***	0.248*	0.054	0.194**	-0.312**
	(0.088)	(0.103)	(0.133)	(0.070)	(0.077)	(0.136)
INFLATION	-0.005	0.019	0.028	-0.008	0.013	-0.012
	(0.013)	(0.023)	(0.022)	(0.011)	(0.017)	(0.017)

RULE	2.480	2.367	0.092	4.389***	1.184	0.797
	(1.811)	(1.686)	(2.156)	(1.317)	(1.176)	(2.845)
Demographic Variables						
POP	0.195	0.958*	-1.06***	-1.160	1.991***	-1.305*
	(2.712)	(4.095)	(5.020)	(2.295)	(0.428)	(1.401)
F_MLFPR	0.030	0.114	0.326*	0.031	0.033	0.366**
	(0.056)	(0.141)	(0.167)	(0.053)	(0.076)	(0.166)
EDUC	0.166**	0.090	0.050	0.029	0.102***	0.058
	(0.053)	(0.048)	(0.051)	(0.030)	(0.035)	(0.067)
Observations	292	427	272	470	341	260
R-squared	0.208	0.138	0.157	0.070	0.181	0.108

Table 3.9. Continued

	DISAGGREGATED EXPORTS					
	SSA_ MIC	SSA_ LIC	SSA_ LOCK	SSA_ NOTLOCK	SSA_ DIV	SSA_ LESSDIV
Dep Var: GDP_GROW	(7)	(8)	(9)	(10)	(11)	(12)
Economic Structure Variables						
MFG_GDP	0.204	0.288**	0.521***	0.129	0.267**	0.186
	(0.142)	(0.132)	(0.170)	(0.132)	(0.108)	(0.196)
SVCS_GDP	-1.258**	-1.625**	-4.492**	-4.177**	-2.739	-0.126***
	(1.352)	(1.049)	(3.190)	(1.673)	(2.079)	(2.820)
FUEL_X	0.021	0.031*	0.025	0.001	0.014	0.037
	(0.027)	(0.022)	(0.027)	(0.019)	(0.020)	(0.034)
MFGxFUELX	0.022	0.016	-0.018	0.003	0.005	-0.065**
	(0.028)	(0.023)	(0.026)	(0.026)	(0.020)	(0.032)
lnGDP	-1.496	-2.571**	2.758***	-2.311**	3.962***	-2.805**
	(1.097)	(1.510)	(2.010)	(1.084)	(1.094)	(2.235)
Global Integration Variables						
FDI_INV	3.700*	1.254	1.205	3.149**	2.076	1.236
	(1.954)	(1.889)	(2.635)	(1.455)	(1.766)	(2.308)
TARIFF	-0.054	-0.010	-0.041	0.113	-0.028	-0.163
	(0.059)	(0.078)	(0.089)	(0.069)	(0.049)	(0.221)
Domestic Policy Variables						
INV_GDP	0.007	0.139**	0.094	0.085*	0.093*	0.111
	(0.056)	(0.066)	(0.079)	(0.044)	(0.052)	(0.089)
GOVT_GDP	-0.234*	0.013	0.069	0.225**	0.056	-0.256
	(0.121)	(0.084)	(0.104)	(0.090)	(0.07)	(0.181)
INFLATION	-0.034	0.045**	0.051**	-0.036*	0.030*	-0.106**
	(0.024)	(0.019)	(0.022)	(0.020)	(0.016)	(0.049)
RULE	2.104	2.187	4.583**	1.660	2.139	3.180
	(1.872)	(1.625)	(1.992)	(1.259)	(1.313)	(2.903)

Demographic Variables						
POP	0.351***	0.996**	-1.339**	-1.223***	-1.890***	-2.501***
	(3.494)	(3.589)	(3.626)	(3.186)	(1.663)	(1.869)
F_MLFPR	0.132*	-0.000	0.042	0.153**	0.024	0.444**
	(0.075)	(0.102)	(0.154)	(0.069)	(0.063)	(0.186)
EDUC	0.244***	0.046	0.019	0.091**	0.094***	0.118
	(0.062)	(0.043)	(0.048)	(0.043)	(0.035)	(0.077)
Observations	222	297	193	294	318	128
R-squared	0.163	0.124	0.172	0.143	0.131	0.349

Notes: See notes to Table 3.6

Table 3.10: Robustness Check: Results for Regions (Generalized Method of Moments)

	TOTAL EXPORTS			DISAGGREGATED EXPORTS		
	SSA	EMEDEV_AMER	EMEDEV_ASIA	SSA	EMEDEV_AMER	EMEDEV_ASIA
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)	(5)	(6)
Economic Structure Variables						
L. GDP_GROW	0.181***	-0.013	0.133*	0.153***	-0.026	0.024
	(0.043)	(0.051)	(0.069)	(0.054)	(0.055)	(0.080)
MFG_GDP	0.222	0.748*	0.065	0.435***	0.258	0.091
	(0.473)	(0.422)	(0.163)	(0.124)	(0.168)	(0.167)
SVCS_GDP	-0.077	-0.365***	0.099	-0.114***	-0.325***	0.054
	(0.051)	(0.081)	(0.098)	(0.043)	(0.084)	(0.119)
TOTX_GDP	-0.124***	-0.228***	0.035			
	(0.044)	(0.049)	(0.037)			
FUEL_X				0.063***	-0.013*	0.016
				(0.022)	(0.030)	(0.045)
MFGxTOTX	0.066	0.257**	0.019			
	(0.129)	(0.112)	(0.025)			
MFGxFUELX				0.016	0.039	0.009
				(0.021)	(0.025)	(0.028)
lnGDP	-2.817*	-2.364**	-0.678	-2.958***	-2.569**	-0.066
	(1.541)	(1.167)	(1.312)	(1.669)	(1.307)	(1.348)
Global Integration Variables						
FDI_INV	0.584	0.823	2.270**	1.761	1.575	3.225***
	(0.561)	(1.450)	(0.938)	(1.485)	(1.572)	(0.998)
TARIFF	-0.135	-0.131	-0.041	-0.128	-0.229**	0.012
	(0.099)	(0.088)	(0.079)	(0.080)	(0.095)	(0.091)

Domestic Policy Variables						
INV_GDP	0.149***	0.002	0.087*	0.148***	0.037	0.030
	(0.047)	(0.056)	(0.044)	(0.047)	(0.069)	(0.049)
GOVT_GDP	0.347***	-0.290**	-0.174	0.013	-0.474***	-0.150
	(0.102)	(0.145)	(0.123)	(0.084)	(0.173)	(0.119)
INFLATION	0.023	-0.165***	0.091**	0.014	-0.141***	0.080
	(0.014)	(0.034)	(0.045)	(0.015)	(0.036)	(0.054)
RULE	0.374	0.340	0.584	0.757*	0.805	2.029
	(1.473)	(0.890)	(1.308)	(1.416)	(1.070)	(1.423)

(Continued)

Table 3.10. Continued

	TOTAL EXPORTS			**DISAGGREGATED EXPORTS**		
	SSA	EMEDEV_AMER	EMEDEV_ASIA	SSA	EMEDEV_AMER	EMEDEV_ASIA
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)	(5)	(6)
Demographic Variables						
POP	1.005***	-1.748*	1.757	1.850***	-1.903*	1.448
	(1.412)	(2.462)	(1.042)	(1.757)	(0.627)	(0.621)
F_MLFPR	0.202	0.135*	0.094	0.024	0.201**	0.039
	(0.154)	(0.078)	(0.063)	(0.097)	(0.079)	(0.071)
EDUC	0.015	0.008	0.021	0.094**	0.042	0.007
	(0.056)	(0.063)	(0.048)	(0.044)	(0.065)	(0.070)
Observations	636	410	288	387	296	160
AR (2)	0.16	0.18	0.16	0.14	0.11	0.12

Hansen P value	0.8	0.9	0.8	0.2	0.9	0.2

Notes: See notes to Table 3.6

Table 3.11: Robustness Check: Results for Sub-Periods in SSA (Generalized Method of Moments)

	TOTAL EXPORTS		DISAGGREGATED EXPORTS	
	1990-2001	2002-2018	1990-2001	2002-2018
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)
Economic Structure Variables				
L. GDP_GROW	0.374***	0.227***	0.456**	0.261***
	(0.059)	(0.052)	(0.159)	(0.074)
MFG_GDP	-0.594**	1.509**	0.052	0.229
	(0.276)	(0.720)	(0.241)	(0.209)
SVCS_GDP	-0.251	0.633	0.502	-0.829**
	(1.887)	(1.321)	(1.924)	(3.368)
TOTX_GDP	-0.121***	0.329***		
	(0.036)	(0.066)		
FUEL_X			0.077	0.062**
			(0.058)	(0.029)
MFGxTOTX	0.129*	0.407**		
	(0.071)	(0.196)		
MFGxFUELX			0.184**	0.004
			(0.086)	(0.034)

(Continued)

Table 3.11. Continued

	TOTAL EXPORTS		DISAGGREGATED EXPORTS	
	1990-2001	2002-2018	1990-2001	2002-2018
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)
lnGDP	-1.136*	-1.281***	-1.128	-1.531***
	(0.588)	(2.412)	(2.254)	(2.768)
Global Integration Variables				
FDI_INV	1.318**	1.610**	0.333**	0.405***
	(0.566)	(0.794)	(0.136)	(0.113)
TARIFF	-0.045**	-0.282*	-0.246*	-0.415***
	(0.021)	(0.148)	(0.122)	(0.138)
Domestic Policy Variables				
INV_GDP	2.621***	2.045***	1.912***	2.461**
	(0.705)	(0.369)	(0.619)	(1.166)
GOVT_GDP	-0.139	0.436	0.384	0.018
	(0.533)	(0.536)	(0.338)	(0.612)
INFLATION	0.057*	0.026***	0.001***	0.016*
	(0.028)	(0.005)	(0.000)	(0.009)
RULE	1.788***	2.223	2.197	2.720*
	(0.485)	(2.357)	(2.501)	(2.495)
Demographic Variables				
POP	0.082	0.005	0.138*	0.036
	(0.123)	(0.104)	(0.071)	(0.147)
F_MLFPR	0.421	0.272	0.142	3.725
	(1.402)	(1.900)	(1.821)	(6.036)
EDUC	1.198	1.227**	0.241	2.779
	(0.738)	(0.468)	(0.417)	(2.297)
Observations	245	426	123	308
AR (2)	0.38	0.70	0.55	0.61

Hansen P value	0.18	0.50	0.40	0.60

Notes: See notes to Table 3.6

Table 3.12: Robustness Check: Results for Economic and Trade Regions (Generalized Method of Moments)

	TOTAL EXPORTS		DISAGGREGATED EXPORTS	
	ECOWAS	SADC	ECOWAS	SADC
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)
Economic Structure Variables				
L. GDP_GROW	0.112	0.393***	0.194	0.203*
	(0.071)	(0.111)	(0.145)	(0.113)
MFG_GDP	1.209	2.322	-0.381	-0.927**
	(1.126)	(2.390)	(0.356)	(0.439)
SVCS_GDP	0.017	-0.562***	-0.165	-0.483***
	(0.112)	(0.175)	(0.109)	(0.151)
TOTX_GDP	-0.377***	-0.045		
	(0.085)	(0.192)		
FUEL_X			0.058	0.325***
			(0.038)	(0.106)
MFGxTOTX	0.655*	0.898		

	(0.368)	(0.658)		
MFGxFUELX			0.044	0.071
			(0.043)	(0.064)
lnGDP	-1.721***	-1.333**	-1.101*	-1.641***
	(1.590)	(1.442)	(1.256)	(1.503)
Global Integration Variables				
FDI_INV	1.452*	1.865	4.958	1.072
	(0.846)	(2.754)	(3.810)	(2.637)
TARIFF	-0.225	-0.170	-0.309	0.260
	(0.288)	(0.270)	(0.378)	(0.226)
Domestic Policy Variables				
INV_GDP	0.178**	0.344**	0.176*	0.199
	(0.085)	(0.158)	(0.092)	(0.140)
GOVT_GDP	0.164	-0.091	-0.523*	0.009
	(0.234)	(0.221)	(0.269)	(0.202)
INFLATION	0.013	0.040	0.008	0.033
	(0.029)	(0.027)	(0.031)	(0.033)
RULE	1.178	-1.131*	0.699	-1.821**
	(1.451)	(1.748)	(1.920)	(1.017)

(Continued)

Table 3.12. Continued

	TOTAL EXPORTS		DISAGGREGATED EXPORTS	
	ECOWAS	SADC	ECOWAS	SADC
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)
Demographic Variables				
POP	-1.240***	-1.117	-2.371**	-1.882
	(1.112)	(1.004)	(1.791)	(1.011)
F_MLFPR	0.181	-0.289	0.242	0.715*
	(0.326)	(0.496)	(0.286)	(0.410)
EDUC	0.242	0.107	0.165	0.540
	(0.167)	(0.450)	(0.173)	(0.411)
Observations	294	190	137	122
AR (2)	0.32	0.61	0.53	0.60
Hansen P value	0.31	0.52	0.42	0.51

Notes: See notes to Table 3.6

Table 3.13: Robustness Check: Results for Country Characteristics (Generalized Method of Moments)

	SSA_ MIC	SSA_ LIC	SSA_ LOCK	SSA_ NOTLOCK	SSA_ DIV	SSA_ LESSDIV
Dep Var: GDP_GROW	(1)	(2)	(3)	(4)	(5)	
Economic Structure Variables						
L.GDP_GROW	0.034	0.222***	0.322***	0.060	0.221***	-0.002
	(0.087)	(0.061)	(0.090)	(0.057)	(0.064)	(0.077)
MFG_GDP	0.805	1.617*	0.863	0.929	1.836**	-1.501
	(1.221)	(0.923)	(1.267)	(0.933)	(0.781)	(1.480)
SVCS_GDP	-0.210*	0.165	0.55***	0.006	0.090	0.63***
	(0.110)	(0.104)	(0.152)	(0.089)	(0.089)	(0.188)
TOTX_GDP	-0.183*	-0.414***	-0.064	-0.330***	-0.332***	-0.298**
	(0.110)	(0.085)	(0.204)	(0.066)	(0.068)	(0.146)
MFGxTOTX	-0.207	0.518*	-0.445	0.239	0.582**	-0.363
	(0.314)	(0.294)	(0.398)	(0.246)	(0.234)	(0.382)
lnGDP	-1.232	-2.140***	-1.36***	-1.341***	-2.690***	-0.925
	(2.349)	(3.627)	(3.286)	(2.679)	(3.351)	(3.459)
Global Integration Variables						
FDI_INV	0.226	0.770	2.727	1.552**	0.643	2.725
	(2.808)	(0.879)	(2.718)	(0.755)	(0.710)	(2.738)
TARIFF	-0.052	-0.426**	-0.458**	-0.018	-0.356**	-0.161
	(0.142)	(0.217)	(0.216)	(0.181)	(0.156)	(0.318)
Domestic Policy Variables						
INV_GDP	0.050	0.207**	0.227*	0.112*	0.088	0.088
	(0.081)	(0.080)	(0.124)	(0.064)	(0.081)	(0.086)
GOVT_GDP	-0.317*	0.246	0.108	0.022	0.173	-0.109
	(0.185)	(0.178)	(0.194)	(0.168)	(0.138)	(0.297)
INFLATION	-0.006	0.006	0.013	-0.001	0.003	-0.002
	(0.018)	(0.023)	(0.029)	(0.019)	(0.019)	(0.028)
RULE	2.366	2.678	0.136**	0.262	0.371**	0.591**
	(2.996)	(3.028)	(3.833)	(2.536)	(2.529)	(2.342)

Demographic Variables						
POP	0.653	0.291***	-0.314***	-0.241***	2.814***	- 3.105***
	(1.490)	(1.586)	(1.128)	(1.178)	(1.566)	(1.275)
F_MLFPR	0.236	0.494	0.294	0.193	0.106	0.654*
	(0.230)	(0.455)	(0.550)	(0.251)	(0.290)	(0.366)
EDUC	0.133	0.467***	0.307***	0.184	0.159	0.313**
	(0.163)	(0.124)	(0.117)	(0.123)	(0.097)	(0.158)
Observations	232	365	193	391	278	197
AR (2)	0.3	0.2	0.3	0.8	0.3	0.8
Hansen P value	0.3	0.5	0.2	0.1	0.1	0.1

Notes: See notes to Table 3.6

Table 3.13 Continued

	DISAGGREGATED EXPORTS					
	SSA_ MIC	SSA_ LIC	SSA_ LOCK	SSA_ NOTLOCK	SSA_ DIV	SSA_ LESSDIV
Dep Var: GDP_GROW	(7)	(8)	(9)	(10)	(11)	(12)
Economic Structure Variables						
L.GDP_GROW	-0.017	0.125***	0.204**	0.123	0.244***	-0.205
	(0.098)	(0.088)	(0.091)	(0.082)	(0.070)	(0.136)

MFG_GDP	-0.047	0.235***	-0.991***	0.050	-0.479**	-0.249
	(0.098)	(0.088)	(0.284)	(0.243)	(0.221)	(0.281)
SVCS_GDP	-0.158	-0.608**	-0.513***	-0.030	-0.186**	-0.708***
	(0.272)	(0.259)	(0.126)	(0.087)	(0.088)	(0.203)
FUEL_X	0.002	0.081**	-0.002	0.090***	-0.008	0.130***
	(0.040)	(0.036)	(0.045)	(0.026)	(0.030)	(0.040)
MFGxFUELX	0.072	0.020	-0.010	-0.036	0.070*	-0.035
	(0.051)	(0.042)	(0.046)	(0.041)	(0.040)	(0.047)
lnGDP	-1.273	-1.868***	1.751***	-1.171**	-1.690***	1.204
	(3.654)	(4.044)	(4.253)	(3.527)	(3.498)	(4.291)
Global Integration Variables						
FDI_INV	4.901	1.697	0.755	1.842	0.698	4.751
	(3.329)	(2.213)	(2.410)	(2.245)	(2.126)	(2.898)
TARIFF	0.065	0.548***	0.529***	-0.002	0.423***	-0.121
	(0.164)	(0.171)	(0.173)	(0.173)	(0.143)	(0.441)
Domestic Policy Variables						
INV_GDP	-0.187**	0.265***	0.269**	0.133**	0.143*	0.082
	(0.086)	(0.096)	(0.131)	(0.066)	(0.082)	(0.114)
GOVT_GDP	0.044	-0.057	0.074	-0.225	0.070	-0.130
	(0.209)	(0.166)	(0.159)	(0.190)	(0.144)	(0.292)
INFLATION	0.003	0.010	0.016	-0.025	0.011	-0.161***
	(0.033)	(0.021)	(0.024)	(0.024)	(0.018)	(0.060)
RULE	1.664	-1.742***	-1.605***	1.104	-1.161***	1.651
	(1.338)	(1.112)	(1.247)	(1.705)	(1.741)	(1.058)
Demographic Variables						
POP	1.531*	3.021***	2.561***	-1.011*	-2.371***	-1.672**
	(1.006)	(1.470)	(1.541)	(1.377)	(1.044)	(1.786)
F_MLFPR	0.393*	0.072	0.197	0.045	0.195	0.224
	(0.233)	(0.383)	(0.449)	(0.219)	(0.274)	(0.354)
EDUC	0.092	0.238**	0.112	0.011	0.103	0.041

	(0.158)	(0.109)	(0.098)	(0.112)	(0.093)	(0.135)
Observations	182	206	135	241	270	101
AR (2)	0.5	0.2	0.8	0.9	0.8	0.4
Hansen P value	0.4	0.6	0.2	0.1	0.1	0.3

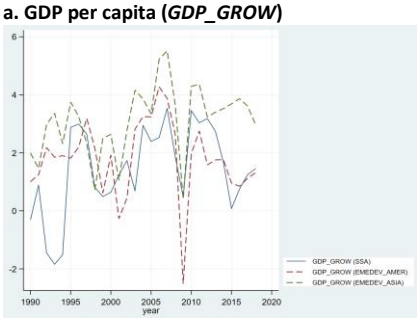
Notes: See notes to Table 3.6

Table 3.14. List of Countries Sampled

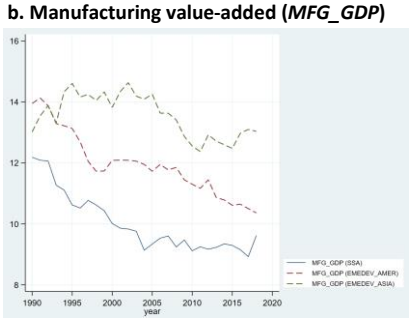
Sub-Saharan Africa *(SSA)*					
Angola # Ϙ Ψ	Central African Rep ϯ Φ	Ghana * Ϙ Ψ	Malawi * ϯ Φ	Rwanda * ϯ Φ	Tanzania * ϯ
Benin * ϯ Ψ	Chad # ϯ Φ	Guinea * ϯ Ψ	Mali * ϯ Φ	Senegal ϯ Ψ	Togo ϯ Ψ
Botswana * Ϙ Φ	Cote d'Ivoire * ϯ Ϙ Ψ	Guinea-Bissau # ϯ Ψ	Mauritius * Ϙ Ψ	Seychelles * Ϙ Ψ	Uganda * ϯ Φ
Burkina Faso # ϯ Φ	Democratic Republic of Congo * ϯ	Kenya * Ϙ Ψ	Namibia Ϙ Ψ	Sierra Leone # ϯ Ψ	Zambia # Ϙ Φ
Burundi * ϯ Φ	Gabon # Ϙ Ψ	Liberia * ϯ Ψ	Niger * ϯ Φ	South Africa * Ϙ Ψ	Zimbabwe * ϯ Φ
Cabo Verde # Ϙ Ψ	Congo Rep # Ϙ	Madagascar * ϯ Ψ	Nigeria # Ϙ Ψ	Cameroon * Ϙ Ψ	Comoros ϯ
Emerging and Developing Asia *(EMEDEV_ASIA)*					
Bangladesh	China	India	Indonesia	Cambodia	Timor-Leste
Bhutan	Mongolia	Myanmar	Maldives	Nepal	Tonga
Malaysia	Philippines	Samoa	Sri Lanka	Thailand	Tuvalu
Vietnam					
Emerging and Developing America *(EMEDEV_AMER)*					
Argentina	Bolivia	Brazil	Chile	Colombia	Uruguay
Costa Rica	Dominican Republican	Ecuador	El Salvador	Guatemala	Antigua and Barbuda
Grenada	Haiti	Honduras	Mexico	Nicaragua	Bahamas
Belize	Jamaica	St. Kitts and Nevis	St Lucia	Dominica	Barbados
Suriname	Trinidad and Tobago	Peru	Paraguay	Panama	St Vincent and the Grenadines

Notes: Based on IMF classifications *, #, Ϙ, ϯ, Φ, Ψ denote "diversified", "less diversified", "middle income", "low income", "landlocked and "not landlocked" countries, respectively.

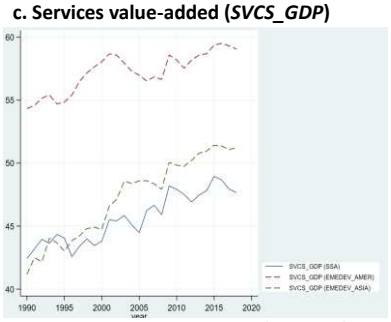
a. GDP per capita (*GDP_GROW*)



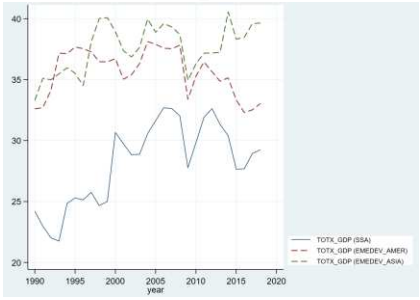
b. Manufacturing value-added (*MFG_GDP*)



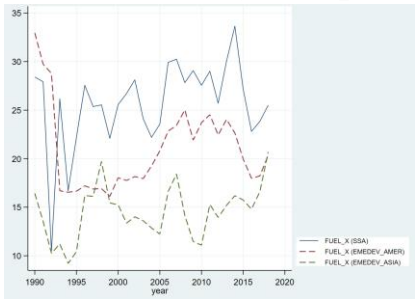
c. Services value-added (*SVCS_GDP*)



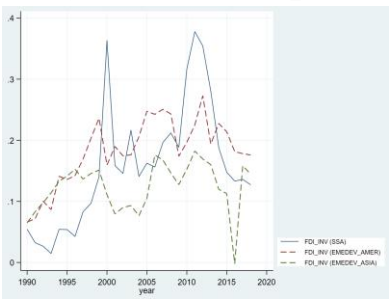
d. Total Exports (*TOTX_GDP*)



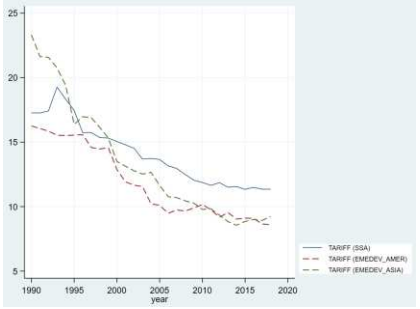
e. Fuels and Ores and Exports (*FUEL_X*)



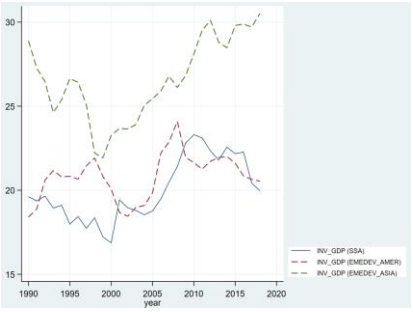
f. Foreign Direct Investment (*FDI_INV*)



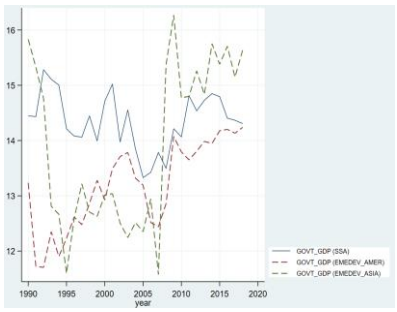
g. Tariff (*TARIFF*)



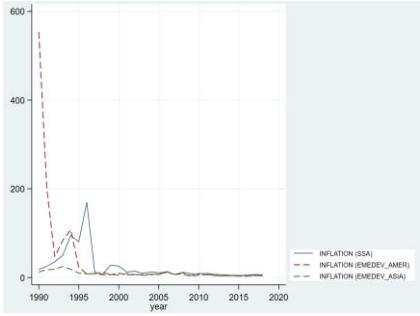
h. Investment (*INV_GDP*)



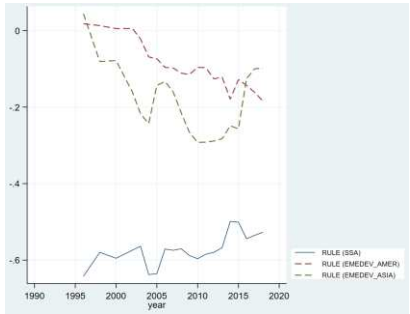
i. Government Spending (*GOVT_GDP*)



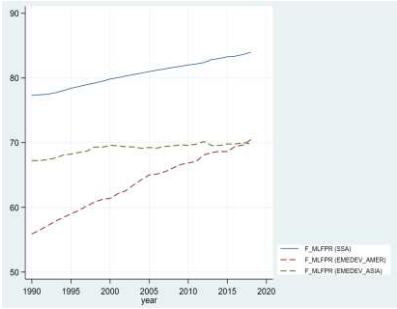
j. Inflation (*INFLATION*)



k. Rule of Law (*RULE*)



l. Female/Male LFPR (*F_MLFPR*)



m. Education (*EDUC*)

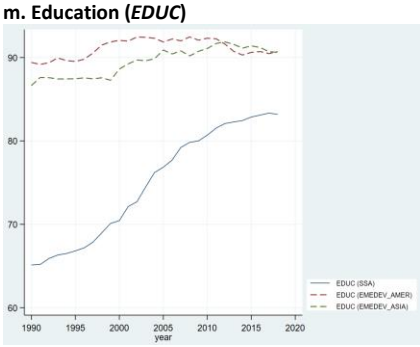
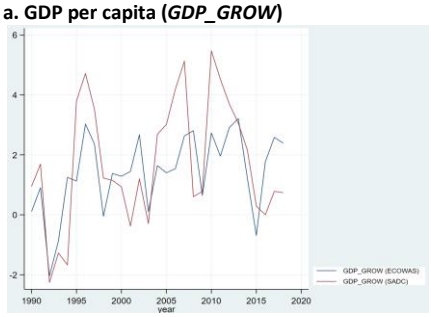
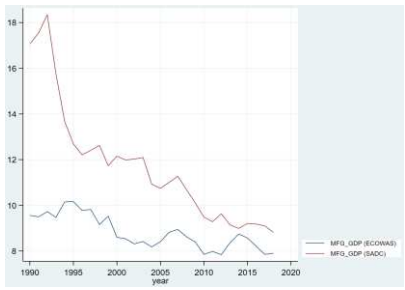


Figure 3.1. Trend of Variables by Country Region, 1990-2018

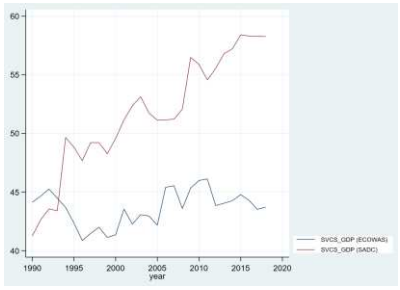
a. GDP per capita (*GDP_GROW*)



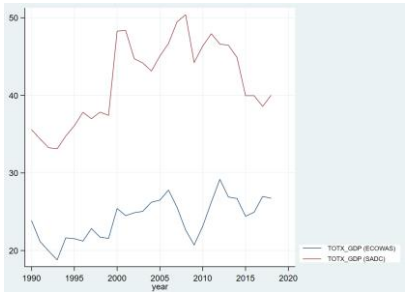
b. Manufacturing value-added (*MFG_GDP*)



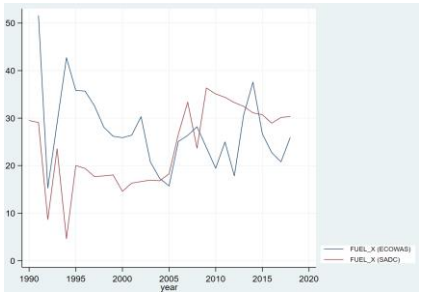
c. Services value-added (*SVCS_GDP*)



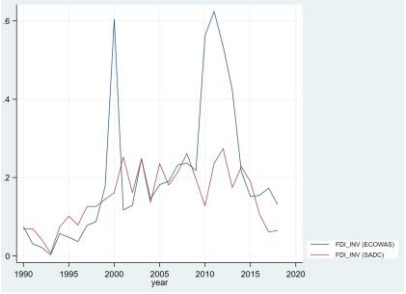
d. Total Exports (*TOTX_GDP*)



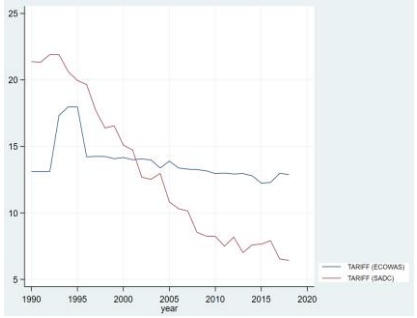
e. Fuels and Ores and Exports (*FUEL_X*)



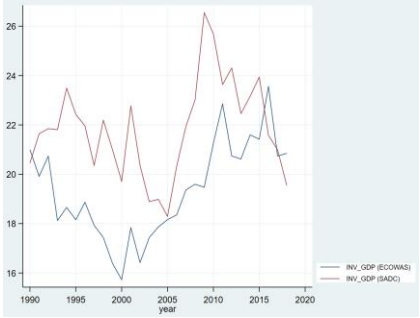
f. Foreign Direct Investment (*FDI_INV*)



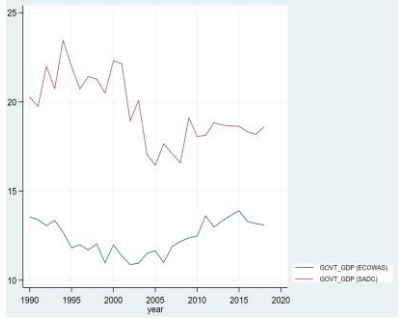
g. Tariff (*TARIFF*)



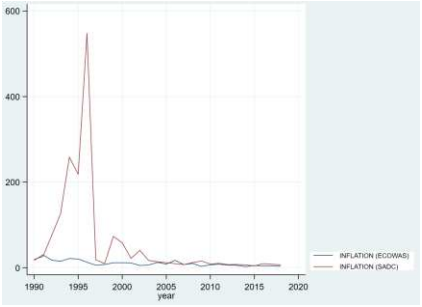
h. Investment (*INV_GDP*)



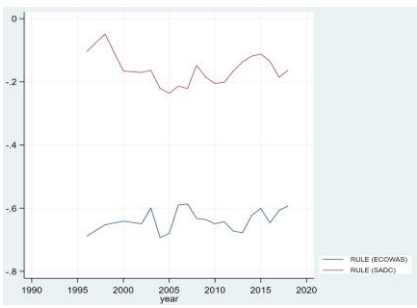
i. Government Spending (*GOVT_GDP*)



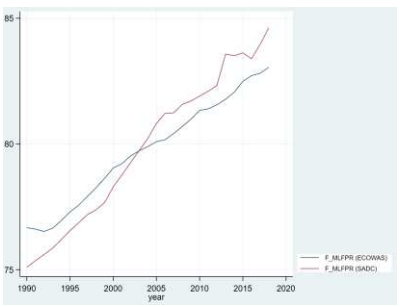
j. Inflation (*INFLATION*)



k. Rule of Law (*RULE*)



l. Female/Male LFPR (*F_MLFPR*)



m. Education (*EDUC*)

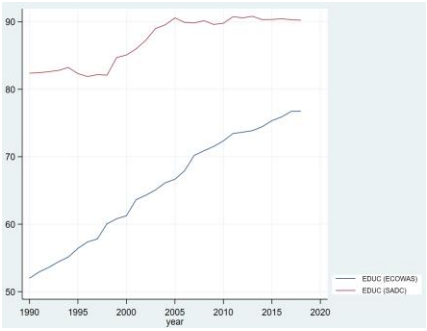
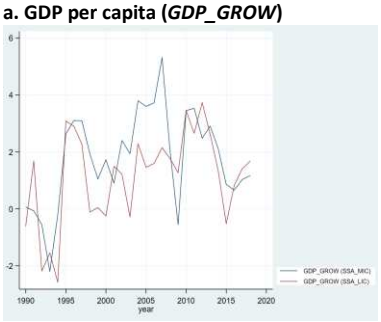
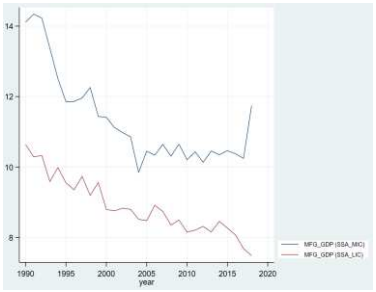


Figure 3.2. Trend of Variables by Economic and Trade Regions, 1990-2018

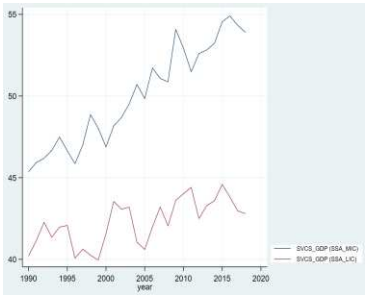
a. GDP per capita (*GDP_GROW*)



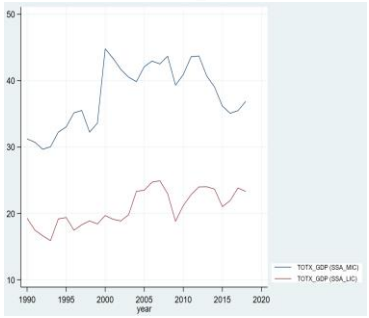
b. Manufacturing value-added (*MFG_GDP*)



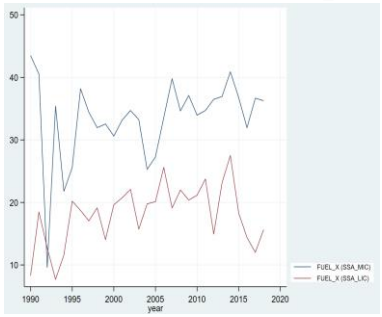
c. Services value-added (*SVCS_GDP*)



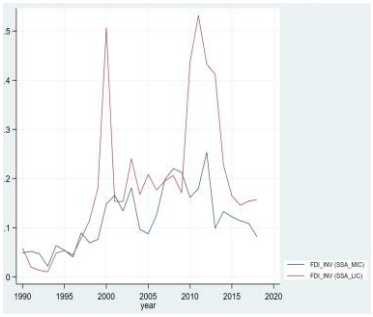
d. Total Exports (*TOTX_GDP*)



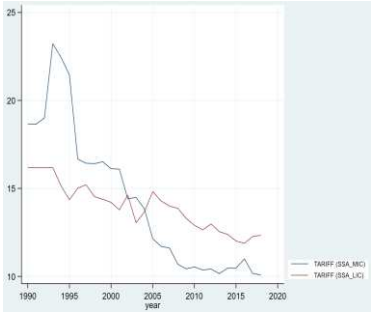
e. Fuels and Ores and Exports (*FUEL_X*)



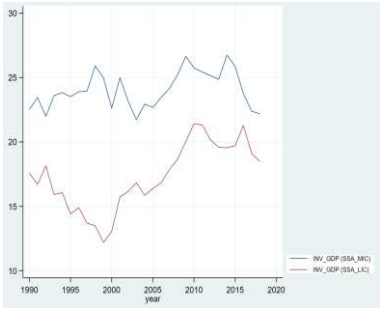
f. Foreign Direct Investment (*FDI_INV*)



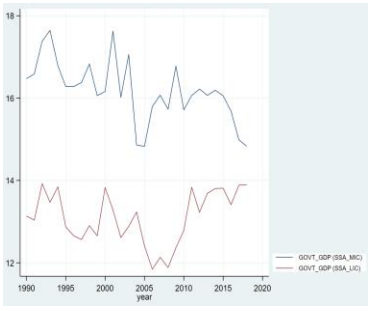
g. Tariff (*TARIFF*)



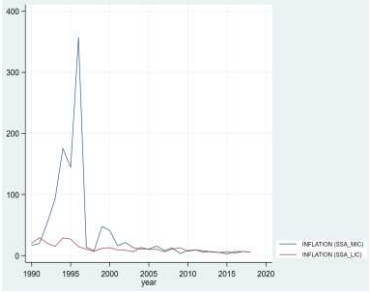
h. Investment (*INV_GDP*)



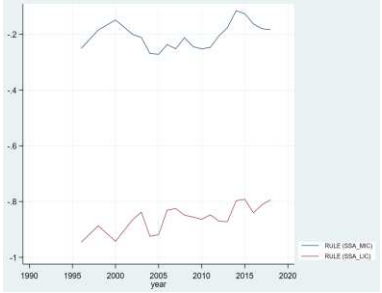
i. Government Spending (*GOVT_GDP*)



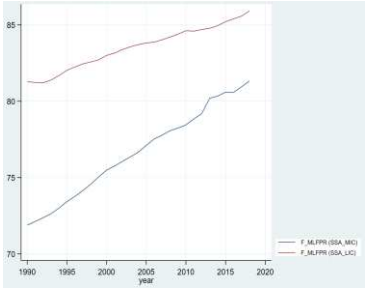
j. Inflation (*INFLATION*)



k. Rule of Law (*RULE*)



l. Female/Male LFPR (*F_MLFPR*)



m. Education (*EDUC*)

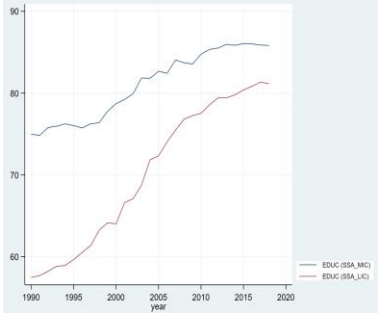
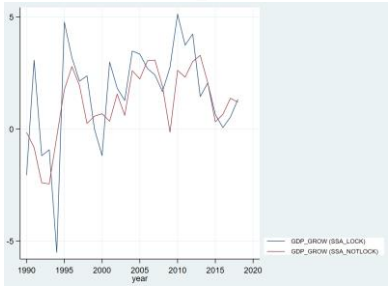
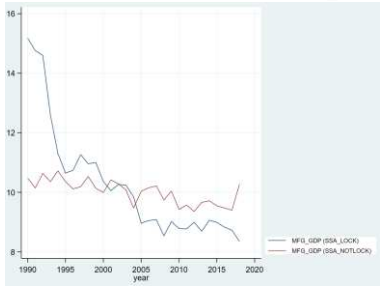


Figure 3.3a. Trend of Variables by Country Characteristics (*SSA_MIC and SSA_LIC*), 1990-2018

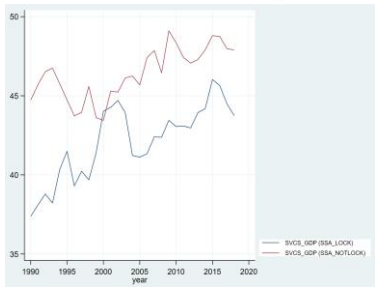
a. GDP per capita (*GDP_GROW*)



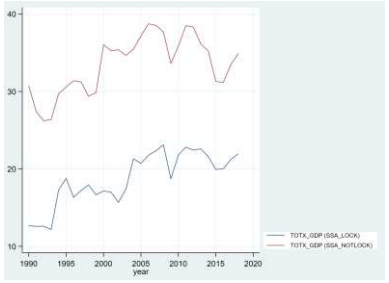
b. Manufacturing value-added (*MFG_GDP*)



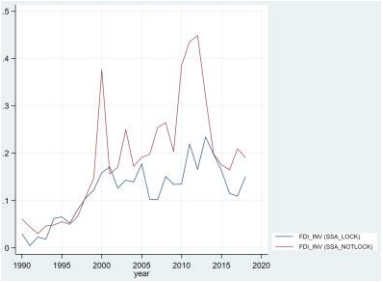
c. Services value-added (*SVCS_GDP*)



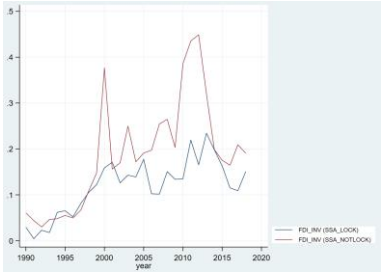
d. Total Exports (*TOTX_GDP*)



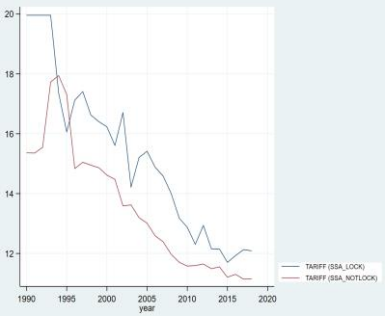
e. Fuels and Ores and Exports (*FUEL_X*)



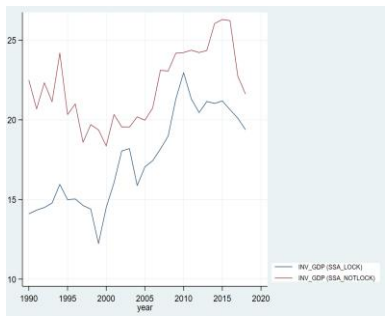
f. Foreign Direct Investment (*FDI_INV*)



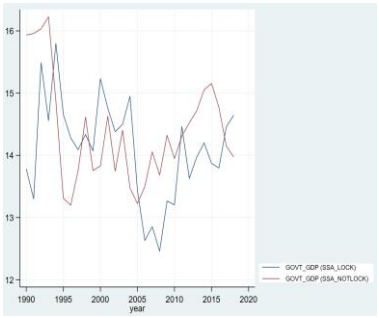
g. Tariff (*TARIFF*)



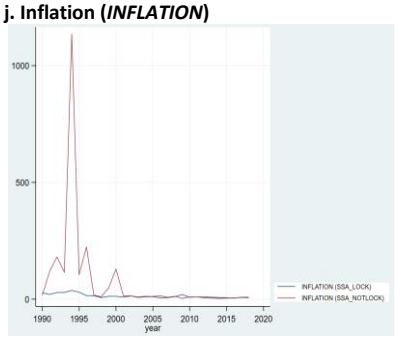
h. Investment (*INV_GDP*)



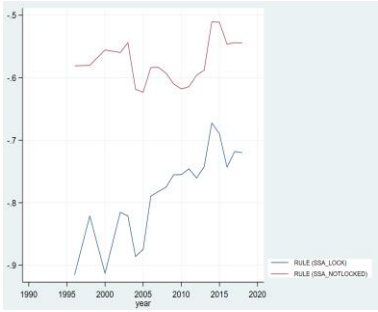
i. Government Spending (*GOVT_GDP*)



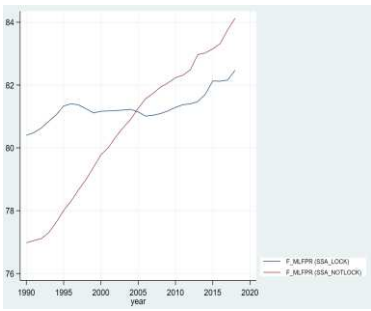
j. Inflation (*INFLATION*)



k. Rule of Law (*RULE*)



l. Female/Male LFPR



m. Education (*EDUC*)

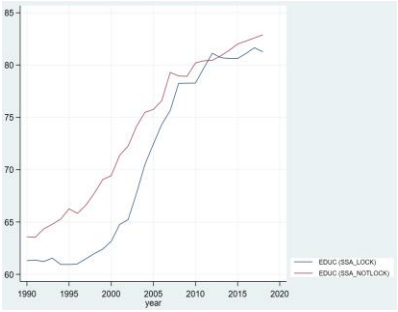
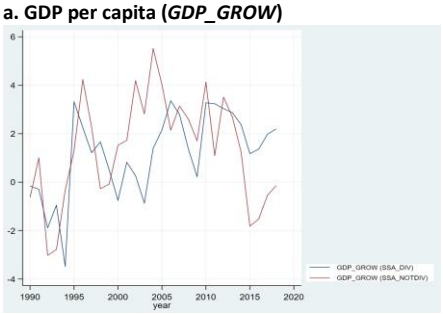
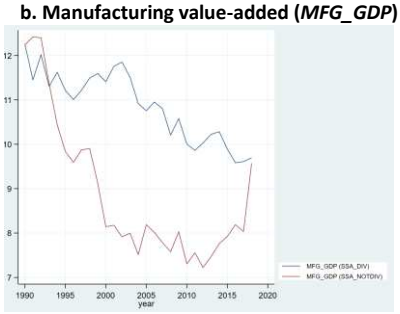


Figure 3.3b.Trend of Variables by Country Characteristics (*SSA_LOCK and SSA_NOTLOCK*), 1990-2018

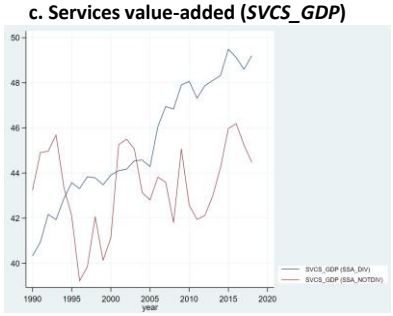
a. GDP per capita (*GDP_GROW*)



b. Manufacturing value-added (*MFG_GDP*)

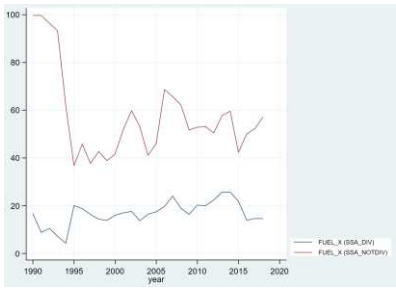


c. Services value-added (*SVCS_GDP*)

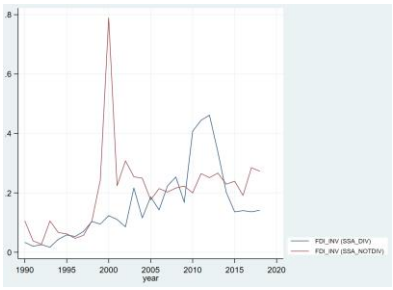


d. Total Exports (*TOTX_GDP*)

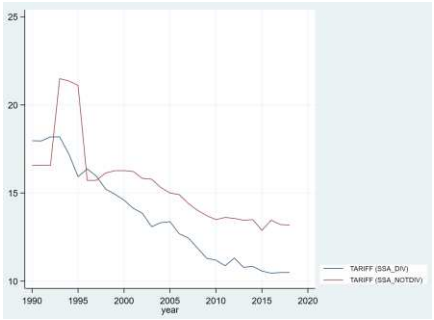
e. Fuels and Ores and Exports (*FUEL_X*)



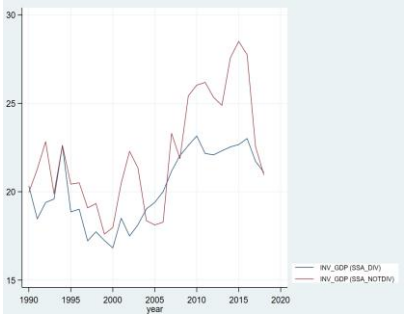
f. Foreign Direct Investment (*FDI_INV*)



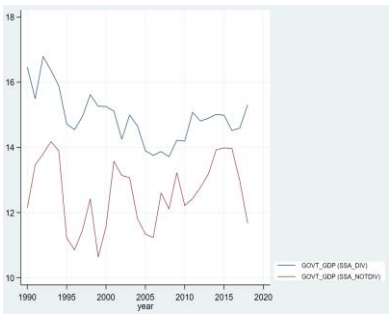
g. Tariff (*TARIFF*)



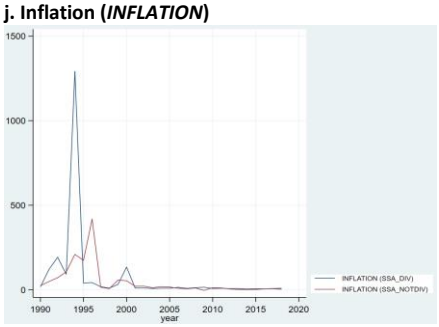
h. Investment (*INV_GDP*)



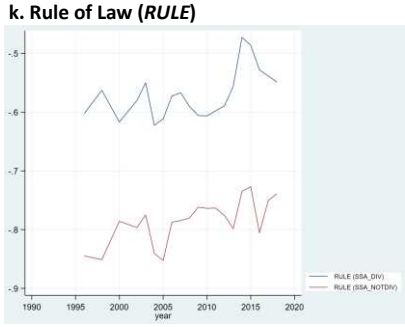
i. Government Spending (*GOVT_GDP*)



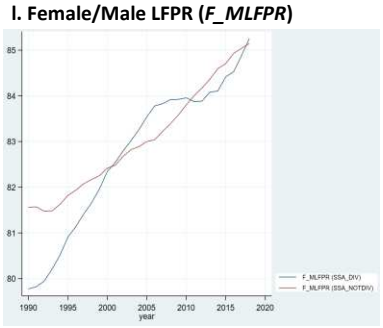
j. Inflation (*INFLATION*)



k. Rule of Law (*RULE*)



l. Female/Male LFPR (*F_MLFPR*)



m. Education (*EDUC*)

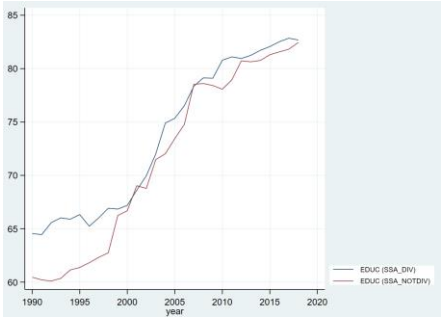


Figure 3.3c. Trend of Variables by Country Characteristics *(SSA_DIV and SSA_LESSDIV),* 1990-2018

CHAPTER 4. IMPACT OF SOUTH-SOUTH AND NORTH-SOUTH TRADE: DOES IT MATTER WHERE TRADING PARTNERS COME FROM?

4.1. Introduction

Developing countries especially those in SSA have been largely involved in the production and export of primary commodities which they traded for imports of technologically intensive manufacturing commodities from rich countries in the North. The global economic crisis which began in the global North but circulated to the South primarily via the global trading system, raised concerns about the desirability of export systems that depended on Northern demand. This experience encouraged developing countries to deepen their efforts of diversifying their trade past North-South. Thus, in the past decade and a half, the global economy's trading profile has changed significantly from North-South trade to South-South trade exchanges between developing countries. Indeed, South-South trade amounted to almost $10 trillion in 2014, outperforming North-South trade. The increasing importance of South-South trade relationships is also manifested by the rise in foreign direct investment (FDI). South-South FDI inflows reached a record high of almost $700 billion in 2014, which constituted over 50% of world FDI inflows (UNCTAD, 2015b).

Although there have been several attempts to push forth South-South trade, to the best of my knowledge, there is a dearth in empirical studies that assess the impact of South-South and North-South trade from an African perspective. It is still not clear empirically if this emerging trade pattern has the potential to move past the asymmetrical outcomes of North-South trade and be mutually beneficial. Some studies that have been previously done—mostly

qualitative in nature— are worth mentioning. Some have discussed the costs and benefits of North-South and South-South trade (Ewelukwa, 2011; Ofodile, 2011; Dahi and Demir, 2017). Others have performed case studies on some African countries examining how Western aid and imported technologies from the North compare to those from China, all with varying results (Atta-Ankomah, 2014; Xu et. al, 2016). While it is clear that a new geography of trade has emerged and is "reshaping the global economic landscape" , its implications remain unclear especially for SSA. Does trading with the South hold a better potential than trading with the North? Given its potential significance, far more empirical work is warranted into the dynamics and implications of South–South trade.

The study covers a panel of 36 SSA countries over the period 1990-2018. [10] It uses fixed effects and GMM estimation methods and attempts to fill the gap in the literature by providing a better understanding of the implications and prospects of inter-regional South-South trade such as that between SSA and China and India and intra-regional South-South trade within SSA, versus North-South trade between SSA and European Union and the United States as an opportunity for structural transformation in SSA.

Following this introductory section, the chapter begins by providing a brief yet detailed overview of the evolution of trade between Africa and its main trading partners and a conceptualization of the promises of South-South trade. This is followed by a description of the model and estimation strategy to be used. The final sections present the results, discusses the key findings and then concludes with some policy implications.

[10] It uses the same sample of SSA countries from the previous empirical paper

4.2. SSA's Main Trading Partners in the North and South: Developments and Patterns

4.2.1. SSA's Inter-Regional Trade with the North

The share of Northern trade in SSA's total exports and imports has been decreasing over the past two and a half decades as shown in figure 4.1. Within the Northern market, SSA's two largest trading partners are the EU and the US. As SSA's main trading partner, the EU has had a very long post-colonial trading relationship with SSA. The Lome Agreement of 1975 and the Cotonou Agreement of 2000 between the EU and its former colonies in Africa, the Caribbean and the Pacific (ACP), were signed to initiate trading relations and promote sustainable development. As figure 4.2 illustrates, today, almost all SSA countries benefit from some amount of access to markets in the EU either through Economic Partnership Agreements (EPAs) or preferential tariffs. The EPAs grant duty free and quota free access to all products with the exception of arms, while the beneficiaries of the preferential tariffs enjoy lower EU tariffs on over 60% of products (Persson and Wilhelmsson, 2016).

Current data shows that Africa's trade with the EU has been on a downward trend especially since the 2000s, with EU imports as a share of total imports declining from an average of 43% over the 1990-1999 period to 24% over the period 2010-2018. Similar trends are observed for exports—exports to the EU decreased from an average of about 36% of total exports during the 1990-1999 time frame to 26% over the period 2000-2009 falling even further to 21% over the 2010-2018 period. As of 2018, SSA's total exports to the EU amounted to about $75 billion, an almost 19% decrease from its 2012's level of about $92 billion. Major trading countries in the region include South Africa, Nigeria, Cote D'Ivoire, Angola and Ghana,

who together make up about 40% of SSA's trade with the EU.[11] While imports have been mostly composed of manufactured goods, export products from the region have remained largely undiversified and include products such as petroleum oil, petroleum gas, gold, motors (primarily due to South Africa), cocoa beans and diamonds. [12]

The African Growth and Opportunity Act (AGOA), which was passed in 2000 to significantly increase SSA's access to US markets and has most recently (in 2015) been extended until 2025, underpins the trading relationship between SSA and the US. In addition to duty-free benefits for about 5,000 product lines under the US Generalized System of Preferences program, AGOA beneficiaries are given preferential access to an additional 1,800 product lines (Williams, 2015). SSA's trade with the US is dominated by crude petroleum exports, apparel and textiles exports. Top SSA exporters to the US were South Africa, Nigeria, Angola, Cote D'Ivoire and Botswana while importers were mainly South Africa, Nigeria, Ghana, Ethiopia and Angola. From 2001 to 2013, exports under AGOA increased from $7.6 billion to $24.8 billion but declined over 50% in 2014 to $11.6 billion. In more recent years, however, trade between the two regions has started to pick up again albeit very slowly.

From a theoretical point of view, while a rich literature (Prebisch, 1959; Dutt, 2012; Acemoglu, 2015) has questioned the perceived benefits of North-South trade mainly because of its path dependency and uneven development outcomes for the South, another strand of the literature highlights that relative to trade between southern partners, North-South trade allows for access to larger markets, is associated with better diffusion of technologies at a lower cost,

[11] IMF DOTs database
[12] UNCTADstat database

increased export unit values, improvement in the institutional quality in the South (due to requirements and conditions from the North) and upgrading potential that would not be possible under South-South trade (Venables, 2003; Long et al., 2015; Manova and Zhang, 2012; Dahi and Demir, 2016; Fernandes et al., 2016). The empirical evidence to support these conclusions in SSA, however, remain mixed. For instance, while Manchin (2006) points out that trade with the EU has been underwhelming due to many countries in SSA not taking full advantage of the market access that the EU grants to their exports, Cirera et al. (2016) finds that the trade exchange between the EU and SSA has been mutually beneficial in boosting exports and generating growth in SSA. Continuing with this line of thought, Perrson and Wilhelmsson (2016) argue that while this is true, it has led to the well-known drawbacks associated with specialization in primary goods relative to the exports of manufactured goods. Regarding trade with the US, Nilsson (2002) and Mueller (2008) have found that trade with the US has had no significant impact on SSA's trade. Alternatively, Collier and Venables (2007) as well as Frazer and Van Biesebroeck (2010) found that the US-Africa trade has been especially important in upgrading and increasing the competitiveness of Africa's textile and apparel industry.

4.2.2. SSA's Inter-Regional Trade with the South

SSA's largest inter-regional trading partners in the South are in Asia, particularly China and India. Together, these are the two Southern partners who have taken on enormous investments and initiatives to strengthen their partnership with SSA over time. SSA and Asia's history of trade and cooperation started with relatively low levels of trade and investment but

more recently, SSA's direction of trade has changed from its traditional partners in the North towards this region.

Sino-African trade has been rapidly increasing over the past decade. Imports from China increased from an average of 2% of total imports during the 1990-1999 period to 14% over the period 2010-2018. Similarly, over the same period, exports to China increased from an average of about 1% of total exports to about 15%. [13] Going beyond trade in goods, also worth noting is China's growing importance as a source of foreign direct investment in SSA's manufacturing sector. As shown in figure 4.3, the sources and amounts of FDI inflows into the manufacturing sector changed significantly in a short period and China's rise is evident.[14] In a little over a year, China has gone from being the 5th source of FDI in the manufacturing sector (as at 2015) with 3% of the market share to being the number one source of FDI in the manufacturing sector with about 38% of market share by 2016.[15] Many SSA countries benefit from access to Chinese markets either through duty-free preferential tariffs or through special economic zones. In 2021, China officially signed its first free trade agreement with an African country (Mauritius) with the hopes of ratifying even more free trade agreements with other SSA countries in the near future (China Ministry of Commerce, 2021). The largest SSA exporters to China are Angola, South Africa and The Republic of Congo while the largest importers are South Africa and Nigeria.

[13] IMF DOTs

[14] While it would have been preferred to use multi-year trends, sectoral FDI data for Africa's case is notoriously difficult to come by and for now, is only available for 2015 and 2016. However, the broad consensus from discussions are that China's FDI in manufacturing in Africa has been on an upward trend in recent times.

[15] The Africa Investment Report, 2016 and 2017

Chinese officials have often claimed that their policies towards Africa are based on a partnership of equals (Xiaoming, 2017). As trade expands between the two partners, concerns have been raised as to whether this partnership is truly one of equals. Studies have pointed out that although China has increased its trade relationships with resource-poor countries in SSA, exports from Africa to China are still dominated by natural resources with fewer exports of manufactured goods, thus the Sino-African trade should be perceived as a new form of colonialism and a scramble for natural resources in the region (French, 2014). Scholars like Mayer and Fajarnes (2008) and Busse et. al (2016) maintain a more positive view of China's presence and argue that it has been mutually beneficial.

Before 2000, trade between SSA and India was at its lowest, averaging 2% of total exports and about 1.8% of total imports.[16] Sen (2004) notes that India perceived the liberalization and multilateralism that characterized the existing trading system as distrustful and hence were hesitant to integrate globally. Despite this, India has made efforts since then to increase its trade with Africa with exports to India averaging close to 10% of total exports over the period 2010-2018. Africa's major exports are rather homogenous and include crude oil, petroleum and gold with Nigeria, South Africa, Angola, Cameroon, Congo and Equatorial Guinea being its top trading countries with India. On the contrary, Africa's imports from India are very diverse and include manufactured goods, transportation equipment and pharmaceuticals. [17]

As at 2018, India had close to 20 trade agreements with different countries in the region and a majority of these agreements are guided by the principle of Most Favored Nation (MFN).

[16] IMF DOTs
[17] UNCTADstat database

Some SSA countries have also benefited from India's Duty-Free Tariff Preference agreement with LDCs. African countries classified as LDCs are granted duty-free access to 98% of India's tariff lines (UNCTAD, 2010). Currently, other preferential agreements such as the Comprehensive Free Trade Agreement (CFTA) are under negotiation between India and the major countries in Southern Africa. In addition to the southern countries in SSA, India is still negotiating the possibility of different free trade agreements with other parts of the continent that have formed regional economic communities in Africa. Following China's footsteps, India officially signed its first free trade agreement with an African country (Mauritius) in 2021—the Comprehensive Economic Cooperation and Partnership Agreement, under which Mauritius will be granted free trade access for over 600 of its primary and manufactured goods in India's markets (WTO, 2021).

A perusal of the literature shows that research on the impacts of Asian trade is still in its very early stages, making it difficult to characterize its impact. McCormick (2008) suggests that the trade partnership between Africa and Asia is very significant and both countries benefit from it not only in economic terms but also politically. More recently, Ancharaz et. al (2014) investigate if India's duty-free scheme can stimulate trade and development in Africa and find that in SSA, only Madagascar is well-positioned to benefit from improved access to India's markets mainly because it has a higher export capacity due to its geographical location. Burundi, Rwanda and Somalia were at the bottom of the list since the scheme excludes many of their preference products. Indeed, many questions remain as to whether these recent free trade agreements with China and India will produce more encouraging results.

4.2.3. SSA's Intra-Regional Trade

SSA's intra-regional trade constitutes another type of South-South trade. This type of trade can be traced back to the development of the Organization of African Unity in 1963 which saw the coming together of African countries with the common goal of achieving greater regional integration and raising the standards of living in the region until it was replaced by the African Union in 2002. Since then, the African Union has played a key role in coordinating the policies underpinning the many regional trade agreements (RTAs) that exist in the region. These agreements have been proliferating in the past three decades, reflecting among many other things, the increasing desire and perceived need for deeper trade integration in the region. Both SSA's intraregional exports and imports doubled from about 10% over the 1990-1999 period to almost 20% over the last decade.[18] While these RTAs have boosted intraregional trade, compared to other regions in Asia and Europe, intra-African trade remains low (IMF Africa REO, 2014).

Two major agreements in the region are the Economic Community of West African States (ECOWAS) and the Southern African Development Community (SADC). ECOWAS was founded by 15 countries in 1975 with a stated mission of enhancing economic and trade integration across the region. The current status of ECOWAS in achieving its goals is hotly debated. While some early studies done by Jebuni et al. (1999) and others critiqued the agreement because of the hegemonic role that economies such as Nigeria plays, its many inefficiencies and inability to reach its goals, more recent studies remain optimistic about its future potential (Edi, 2007).

[18] IMF DOTs

SADC on the other hand is composed of 16 countries and has been successful in establishing a free trade zone among all its members. Some have pointed out that despite being able to eliminate tariff barriers, it still faces high non-tariff barriers in the form of custom processes, transport costs, licenses and border posts (Peters et. al, 2015). Despite the somewhat disappointing performance of existing trade agreements, in 2012, 54 African countries agreed to sign the African Continental Free Trade Area (AfCFTA) with the goal of encouraging a single market for the movement of goods and services. It is widely perceived that this regional agreement will be a crucial driver for industrialization and sustainable development in Africa (Sallah and Saygili, 2018). The AfCFTA, if enacted will be the largest trade agreement since the signing of the Marrakesh Agreement over two decades ago.

4.3. A New Geography of Trade: The Good, The Bad and The Ugly

For developing countries, especially those in SSA, the change in the geography of trade—the decreasing importance of North-South trade and its replacement by South-South trade exchanges as highlighted in figure 4.1—represent an opportunity for expansion, increasing access to new and larger markets and new sources of capital. It has been a key part in the overall rise in trade in the past decade, and specifically helped to revive economies after the global financial crisis. This change also represented an opportunity to gain from specialization and the increased productive efficiency that comes with it, serving as an important alternative for accelerating structural transformation and sustainable development (Milberg and Winkler, 2010; UNCTAD, 2015a).

Countries in SSA appear to be fully embracing this type of trade. However, how promising is this alternative for SSA? In the process of industrializing, does trading with the South hold a better potential than trading with the North? Concerns about the promises of South-South trade are crucial because implicit in this type of trade is that of a more balanced exchange that replaces a trading architecture that was shaped by colonialism and one that was most beneficial to the North (Prebisch, 1959).

Since we focus on the potential of South-South trade, it is important to explain its linkages to structural transformation. At its core, the perceived superiority is mostly as a result of two effects that we refer to as a volume upgrading effect and a functional upgrading effect. Both effects are capable of influencing overall employment, productivity and consequently structural transformation.

Starting with the volume upgrading effect, the shift from North-South trade to South-South trade has been a key component in the overall rise in trade volume in the past decade and has especially helped to revive economies after the global financial crisis. The rise in South-South trade and its related investment is closely related to another development that has occurred in global trade, specifically, the rise of global value chains (GVCs) which have supported the breaking up of the production processes into tasks and driven trade in intermediate goods across the globe. Consequently, trade within GVCs has expanded significantly over the past decade, improving productivity and generating employment opportunities (Lopez-Acevedo et al., 2016). Here, also, the participation of developing economies has been significant. To shed more light on these trends, the South-South share in total network trade which is divided into “parts and components” and “final assembly” has

shown a persistent rise, going from about 40% in the 1990s to 48.7% by the end of 2010 and 59% as at 2017, reflecting the increasing importance of the South.[19] Admittedly, developing countries in Asia account for a larger share of the total network trade than other developing regions but it serves as a glimmer of hope for other developing economies who currently play a minor role.

The impact of South-South trade on volume upgrading is also visible in the Africa- Asia trade exchanges which has provided greater access to markets and financial resources. China and India, for instance, through their provision of preferential access to their markets have presented an avenue for SSA countries to expand and diversify their export markets. Importantly, the discussion on South–South trade has hinted that in many instances, such trade is characterized by more sophisticated products than what exists between North-South countries and this may fuel some diversification and industrialization. Bernhardt (2014) for instance, uses an Autoregressive Distributed Lag (ARDL) method to estimate income elasticities of import demand for bilateral trade exchanges between a sample of developing countries compared to trade with two Northern markets, the European Union (EU) and the US. It is hypothesized that if South-South trade is characterized by higher income elasticities of import demand than North-South trade, then an expansion of South-South trade will be beneficial to developing countries.[20] Resulting estimations conclude that South-South trade between developing countries tend to be characterized by higher income elasticities of import demand

[19] Compiled from Athukorala and Nasir (2012) and UN Comtrade database.
[20] This is derived from the assumption that South-South trade is characterized by a larger share of manufacturing goods with a higher elasticity indicative of more manufacturing goods in a basket.

than North-South trade hence deepening South-South trade may generate higher benefit and could be a promising alternative source of structural transformation.

An additional source of volume upgrading is the access to financial resources for infrastructure that South-South trade offers. In SSA, for example, as OECD infrastructure financing has been on the decline, Chinese financing has become a main alternative source of external financing (Gutman et. al, 2015). Underdeveloped infrastructure remains one of the biggest obstacles to South-South trade, reducing both inter-regional and intra-regional market access (UNCTAD, 2015a). Thus, to the extent that South-South trade provides a more reliable pathway to improving infrastructure, this influences the likelihood of a volume upgrading effect.

In terms of functional upgrading, South-South trade is characterized by better transfer of technology and has also been found to create more attractive collaborative learning opportunities and spillovers (Atta-Ankomah, 2014). Whether because of a lack of cultural pressure or pressure from other sources such as governments and NGOs, there are lower entry requirements and criteria for standards of trade and production within the global South. Consequently, fewer scarce resources and programs are required to be put into targeting the meeting of these standards, making functional upgrading more likely. This combination of better technology transfer, collaborative learning opportunities and lower entry requirements all have the potential of generating more employment prospects, improving labor productivity and igniting structural transformation (Gibbon and Ponte, 2005; Nadvi, 2008; Kaplinsky et al., 2011; Horner, 2014).

As a result of the mechanisms outlined above, many researchers and policymakers have a largely optimistic opinion about the prospects of South-South trade. While the positives from volume and functional upgrading effects merit attention, other perspectives on the likelihood of only limited gains from such a trade cannot be ignored. One perspective holds that as a result of the lower entry barriers, rather than complementary effects from this type of trade, there may be considerable competition and unevenness within the global South which limits the benefits from South–South exchanges and reduces the potential of functional upgrading (Tegegne, 2007).

Addressing this, Giovanetti and Sanfilippo (2009) discuss how a great deal of crowding out occurs within South-South trade. For instance, it is found that manufacturing exports from Africa to US and EU and other countries in the global South are crowded out by exports from China. Particularly, this intense competition is linked to lower prices and reduced value realized for the products from Africa. In industries where such competition exists, firms within the global South may be unevenly positioned—with larger firms better positioned to benefit at the expense of smaller entrepreneurs. Additionally, entry requirements place a lot of significance on suppliers achieving economies of scale and scope, and this may also have the effect of discriminating against smaller suppliers and crowding them out of the market making this form of exchange, perhaps, not any more attractive than North-South relationships (Fold and Larsen, 2011).

A lack of diversity in the countries in SSA that actively participate in South-South trade also remains a big concern. In particular, with the exception of Nigeria, Angola, Sudan, Congo, South Africa and to some extent, Equatorial Guinea, many countries from SSA are marginalized

in the South-South trade network. The countries that participate in South-South trade and receive extensive infrastructure financing are also mainly resource-rich countries raising concerns about neo-colonialism within this network (Gutman et. al, 2015). Others question the benefits of South-South trade exchanges that, compared to those with the North, lack corporate social responsibility, environmental standards and results in a race to the bottom in labor (Jauch, 2011).

Finally, the distributional effects of South-South trade on employment bring into question whether it is indeed superior to North-South trade. On the one hand, in the process of industrializing, volume and functional upgrading may result in increased availability of employment opportunities for both men and women. Yet, upgrading can also work in the opposite way, adversely affecting the employment of women as the demand for unskilled workers, which in SSA are mainly women, decreases. Thus, even if total employment opportunities are to increase, female employment rates may not improve, either absolutely or relatively (Wamboye and Seguino, 2015).

Given that the outcomes may be negative or positive, it remains an empirical question as to what the impact of such a trade is and what the resulting policy discussion ought to entail.

4.4. Model and Estimation Strategy

The main interest of this paper is to test the hypothesis advanced in the literature that in the process of industrializing, South-South trade holds a better potential than North-South trade. To do this, it first identifies SSA's five main trading partners: trade with US *(TRADE_US)* and trade with EU *(TRADE_EU)* represent trade with the North while trade with China

(TRADE_CH), trade with India *(TRADE_IND)* and trade within SSA *(TRADE_SSA)* characterize its trade with the South.[21] Then, it investigates the impact of these different types of trade on industrialization *(MFG_GDP)* and employment outcomes in industry as a share of total employment *(IND_TOTEMP).* To address the multidimensionality of trade, it also pays attention to distribution effects by investigating the absolute impacts on male employment in industry as a share of total male employment *(MALEMP_IND)* and female employment in industry as a share of total female employment *(FEMEMP_IND)* as well as the relative employment effects *(FEM_MAL_IND).*

As discussed in the previous section, the growing access to markets especially in the South may generate more employment opportunities and has the potential to ignite structural transformation. Notwithstanding these benefits, its impact in SSA conditional on trade partners and other macroeconomic conditions, is unknown as there could be competing effects, external and internal constraints that result in unfavorable outcomes thus limiting the realized gains, especially for women.

Although our primary interest is in the trading partners, we also include controls for other factors that have been found to impact structural transformation via manufacturing value-added and industrial employment growth. On the demand side, we control for domestic demand using the prior period's GDP per capita growth *(GDP_GROW).* We expect that a strong economy will encourage the aggregate demand for manufacturing goods which consequently speeds up the process of industrialization. To the extent that economic growth affects

[21] Together, trade with these two partners in the North represents 34 % of total trade while trade with the three partners represent about 42 % of total trade (IMF DOTs).

consumption and investment, this should likely have positive spillover effects on employment outcomes. As a result of the lower wages that characterize women's employment, relative job opportunities for women may also increase. The net effect will however depend on the economy's structure and the division of labor. Because a country's structure of production is a key determinant of industrialization and employment, we also control for fuels and ores exports *(FUELS_X).* Concerns of how a natural resource sector competes with the development of the manufacturing sector and exposes the economy to Dutch disease effects is well-known. However, insofar as fuels and ores exports increases, we would expect male employment effects to be more positive than women's since the latter group is underrepresented in these sectors.

We also control for export growth *(EXP_GROW)* as well as import growth *(IMP_GROW)* to account for any internal leakages. We include government spending *(GOVT_GDP)* to approximate any productive or unproductive spending. It is expected to promote industrialization and generate employment activities, especially if spending is targeted and associated with industrial sector activities (Barro, 2003). Whether or not government spending contributes to gains in the level of female employment and or their relative share of industrial employment depends on both the direct effects on employment demand and indirect effects on enabling women to access employment opportunities (Seguino and Braunstein, 2019). Finally, we use the real exchange rate *(REER)* to account for the global competitiveness of domestic production. Appreciated real exchange rates could negatively impact the trade balance, reduce manufacturing output, thus affecting employment generation potential and domestic demand.

We include additional variables that reflect supply side conditions. Human capital *(EDUC),* is a measure of the skills and is proxied by primary school enrollment as a share of those of primary school age. It is expected that skills from acquiring human capital will have a positive impact on the productive capacity of the population which will have spillover effects on employment and industrialization. The literature stresses the importance of infrastructure in stimulating industrialization (Le Blanc, 2015). As the literature has pointed out, it can also aid in reducing women's care burden, hence, encouraging their participation in paid employment (Agenor and Agenor, 2009). With this control variable, based on the literature, there were many choices to use as a proxy, from electricity access to transportation access to availability of communication equipment, to name a few. Because the manufacturing sector is energy-intensive, we elect to use electricity access *(ELECT_ACCESS)* to capture infrastructure.

We also include two measures of global integration, captured by foreign direct investment as a share of total investment *(FDI_INV)* and tariffs *(TARIFF).* [22] Finally, we include rule of law to capture the well-known role of institutions in influencing the structures of production and overall development of the economy (Acemoglu and Robinson, 2008).

Based on this discussion, we run the following model:

$$y_{i,t} = \alpha + \beta_1 Trade\_US_{i,t} + \beta_2 Trade\_EU_{i,t} + \beta_3 Trade\_CH_{i,t} + \beta_4 Trade\_IND_{i,t} + \beta_5 Trade\_SSA_{i,t} + \lambda Controls_{i,t} + \mu_i + \gamma_t + \varepsilon_{i,t}$$

$$\text{for } t = 1,2,3 \dots T \text{ and } i = 1,2,3 \dots N \qquad (1)$$

where *y* is one of our five dependent variables: Industrialization *(MFG_GDP)*, total employment in industry as a share of total employment *(IND_TOTEMP)*, male employment in

[22] Similar interpretation as in the previous chapter.

industry as a share of total male employment *(MALEMP_IND)*, female employment in industry as a share of total female employment *(FEMEMP_IND)* and female relative concentration in industry *(FEM_MAL_IND).* In terms of its trade with its partners, we consider the following five as discussed: *TRADE_US, TRADE_EU, TRADE_CH, TRADE_IND* and *TRADE_SSA.* These measure the bilateral trade between SSA and its trading partners in the North (US and EU) and its main trading partners in the South (China, India and SSA). $CONTROLS$ represents a vector of the ten controls discussed above. Finally, μ_i and γ_t are country-specific and time-specific fixed effects and $\varepsilon_{i,t}$ is the error term.

We run a first set of baseline regressions on equation (1) where we use fixed effects panel estimation on the full sample of 36 SSA countries over the period 1990-2018, another set of regressions for the economic and trade regions, ECOWAS and SADC, and a final set of separate regressions where we substitute trade with exports and imports. Because GDP growth and many of the independent variables may itself be influenced by the dependent variables, GMM estimation is added as a robustness check to account for any potential endogeneity in the explanatory variables. [23] [24]

4.5. Discussion of Results

Table 2.1 in chapter 2 describes each of the variables and how they are measured and table 4.1 presents the summary statistics for the full sample and the two regional and economic

[23] We follow a similar estimation strategy and identification used in the previous chapter. For brevity, we do not repeat that detailed discussion in this chapter.

[24] We also check for robustness of results using alternative measures of industrialization (industry value added as a share of GDP). Results available upon request.

trade regions. Before turning to our regression results, as a first step, we use simple correlations to observe the relationship between trade with its partners in the North and South and each of the dependent variables (figures 4.4-4.9). [25]

Without distinguishing between trade partners, in figure 4.4, we observe an undeniable positive association between total trade and total employment in industry (the correlation coefficient is 0.611), as well as between total trade and absolute male and female employment in industry which have correlation coefficients of 0.531 and 0.496 respectively. Now considering the different trading partners in figures 4.5 – 4.9, we observe that there are heterogenous impacts that are compelling. The figures indicate the following: (1) Only $TRADE\_SSA$ shows a small but positive relationship with manufacturing value added with a correlation coefficient of 0.094; (2) With a correlation coefficient of 0.389, $TRADE\_EU$ seems to be the most consistent in increasing total industrial employment; (3) Between its northern partners, male employment in industry benefits the most from its trade with EU, while in the south, all three partners indicate a positive correlation; (4) Among the trading partners, $TRADE\_EU$, $TRADE\_IND$ and $TRADE\_SSA$ are the ones that are positively associated with female employment in industry with correlation coefficients of 0.383, 0.101 and 0.154 respectively; and (5) When looking at relative employment in industry, only $TRADE\_SSA$ shows signs of closing the employment gap between males and females in industry (the correlation coefficient is 0.109).

[25] Trade variables are in percent of GDP and male (female) employment in industry variables are in percent of male (female) employment

These correlations indicate the importance of distinguishing between trading partners as there are differential outcomes based on who you trade with. Yet, this is only a first step as there could be other underlying structural factors that can impact these outcomes, hence, the importance of examining these relationships within a multivariate econometric analysis.

Tables 4.2-4.6 report results that highlight the heterogenous effects of trade conditional on partners. Table 4.2 presents the results for the full sample while tables 4.3 and 4.4 report results for the two economic regions. The final two tables present results when trade is disaggregated into exports and imports, respectively. Although we present fixed effects as well as GMM results, we limit the discussion to the GMM results. The lagged dependent variable is significant across all specifications suggesting the autoregressive nature of the variables over the sample period.

Beginning with our full sample in table 4.2, we provide empirical evidence that for SSA as a whole, trade with the South as opposed to trade with the North, may speed up the industrialization process. To give a sense of the magnitude, we find that if economies in SSA increase $TRADE\_SSA$, $TRADE\_CH$ and $TRADE\_IND$ by 10%, it will increase industrialization as measured by manufacturing value added as a share of GDP by 0.92%, 0.78% and 0.52%, respectively. This is a combined impact of about 2.2% increase in industrialization as compared to the 0.61% increase from trading with the North, specifically $TRADE\_US$ (column 2). While $TRADE\_IND$ loses its significance on total employment in industry, the statistically significant coefficient on total employment in industry holds with respect to $TRADE\_SSA$, $TRADE\_CH$ and $TRADE\_US$. A 10% increase in $TRADE\_SSA$, $TRADE\_CH$ and $TRADE\_US$ results in a 0.8%, 0.3% and 0.2% increase in industrial employment for the region, respectively (column 4).

These results are consistent with the hypothesis in the literature that for SSA, technologies imported from the South are relatively more cost-effective and fit the adaptive capability of the local needs (Atta-Ankomah, 2014). These are especially important in the process of industrializing since easy adoption of technology helps to jump start production processes with a higher degree of automation than would have otherwise been possible. Qualitative studies have also discussed how participation in South–South trade has created more attractive collaborative learning opportunities and spillovers (Klinger, 2009). Research conducted in Uganda's pharmaceutical industry, for instance, has found that some local suppliers have managed to learn from India's firms and consequently functionally upgraded and "leapfrogged" to some final stage production processes (Haakonsson, 2009). In another study on agro-food suppliers in SSA, southern markets were found to be a collaborative learning field, generating capabilities for higher quality production (Fold and Larsen, 2011). All of these qualitative evidence provide possible explanations for these empirical results.

On the contrary, we find weak evidence that $TRADE\_EU$ can offer a significant pathway to industrializing as coefficients on industrialization (column 2) and total employment (column 4) are negative but insignificant. While the results for $TRADE\_US$ are more encouraging, the results for $TRADE\_EU$ despite being a significant portion SSA trade, is quite perplexing. This could simply be due to products and markets in the North (specifically, $TRADE\_EU)$ being competitive for the SSA region at this stage of development. Another possible reason could be that, compared to EU preferential schemes, AGOA's trade preferences are characterized by less stricter rules of origin which reduces the barriers and costs of trade for SSA (Mullings and Mahabir, 2017). Even more, $TRADE\_US$ is characterized by a significant proportion of apparel

and textiles and this could be contributing to the positive effect with $TRADE\_US$ as opposed to $TRADE\_EU$.

Turning to the two trade and regional economic communities in tables 4.3 and 4.4, ECOWAS and SADC, we find that in the South, $TRADE\_IND$ and $TRADE\_SSA$ have a statistically significant impact on industrialization among ECOWAS countries with a combined effect of a 10% increase in trade yielding a 1.9% increase in industrialization. Interestingly, both $TRADE\_EU$ and $TRADE\_US$ show positive statistical significance in ECOWAS (column 2). For instance, a 10% increase in $TRADE\_EU$ and $TRADE\_US$ yields a combined effect of about 4% increase in industrialization for ECOWAS countries suggesting that for this group, North-South trade may, in fact, be more attractive. The results are not as supportive of the industrialization and employment inducing effects of North-South trade in SADC as both of the coefficients are insignificant (column 2). What seems to matter for countries in SADC is South-South trade. A 10% increase in $TRADE\_CH$, $TRADE\_SSA$ and $TRADE\_IND$ is associated with a 1.7%, 1.1% and 0.9% increase in industrialization, and a 0.7%, 0.9% and 0.4% increase in industrial employment, respectively (columns 2 and 4). These results suggest that the recent increasing trade ties with India and China are well-founded. Advances in free trade among SADC member countries may also be an important contributing factor to these positive results.

Looking at the absolute impacts on male employment and female employment in industry in the full sample (table 4.2), results suggest that with the exception of $TRADE\_IND$ which is not significant, a positive and statistically significant impact of all trade partners on male employment in industry is observed (column 6). On the contrary, only $TRADE\_SSA$ in the South and $TRADE\_US$ in the North appears to result in a significant but small increase in female

employment in industry. In column 9, these two trade partners appear to contribute to closing the gap between male and female employment in industry but these results are not robust when endogeneity issues are addressed (column 10).

The literature stresses that the effects of trade on male and female employment outcomes differ depending on whether we consider exports or imports. The export-oriented sectors have been found to be an important factor that positively influences women's employment rates. More women are hired in this sector due to combination of physical attributes that employers perceive as making women more productive, and how women's lower wages contribute to global competitiveness in labor-intensive production. Hence, in the vein of Wamboye and Seguino (2015), rather than using total trade between SSA and its trading partners, we disaggregate trade into exports and imports for each of its trading partners. Tables 4.5 and 4.6 present these results for exports and imports, respectively.

Distinguishing between exports and imports, we find that while exports to India and SSA yield positive impacts on the share of female employment in industry, exports to EU and to China have a negative and significant impact on both women's absolute industrial employment share and their share relative to men (columns 8 and 10 in table 4.5), suggesting that equality in employment opportunities for women declines with this type of trade which casts some doubt on the above hypothesis. Turning to the imports in table 4.6, we find that imports from China is the most robust, positive and significant correlate of industrial value added and employment possibly confirming studies that suggest that imported capital goods especially from China boost productivity of workers (Mullings and Mahabir, 2017).

With respect to the control variables, results appear to confirm prior expectations that fuel and ores exports tend to be more positive for men's industrial employment and that targeted government spending has the potential of increasing productivity and employment. Results for REER and GDP growth appear inconclusive, though the impact of government spending on women's industrial employment share holds up. Other noteworthy results are that infrastructure which is proxied by $ELECT\_ACCESS$ is positive and statistically significant across multiple specifications. More so, we see from the full sample that if infrastructure access increases by 10%, women's industrial employment share will increase by 0.72% (column 8) and relative employment opportunities will rise by 0.30% (column 10). This is consistent with research that has found that access to infrastructure reduces women's care burden and opens up more employment opportunities for them. In the case of the literature on SSA specifically, these results corroborate studies by Wamboye and Seguino (2015), who although do not explore the impacts conditional on trade partners, provide evidence that total trade can negatively impact women's relative employment opportunities but increased access to infrastructure (proxied by telephone and sanitation access) can play a mediating role. Thus, our results are comparable to existing literature.

Furthermore, we find industrializing-increasing effects of investment and no evidence to support the argument that, controlling for other factors, tariffs are an effective tool for encouraging industrialization in value-added or employment. The results on rule of law are mostly not significant in the full sample but appear to be very important to countries in SADC and for that economic region, corroborate the discussions in the literature that good institutions are associated with positive economic outcomes.

4.6. Concluding Remarks

The 2008 global economic crisis, which began in the global North but circulated to the global South particularly through its impact on global trade, has raised concerns about the desirability of export systems that depend on Northern demand. This experience encouraged developing countries to deepen their efforts to diversify their trade beyond North-South. Thus, South-South trade became one main alternative for accelerating structural transformation and sustainable development. Some researchers have doubted the desirability of South–South trade, raising concerns about new forms of inequity, the potential of neo-colonialism and the crowding out of many countries in the rest of the South, especially as China rises. To address the multidimensionality of trade, this chapter assesses the potential of South-South trade as opposed to North-South trade on two main outcome variables, namely, industrialization and total employment in industry. To explore distribution effects, employment is further disaggregated by gender as well as the components of trade.

Reiterating briefly, we find that within the South, intra-regional trade (trade between SSA countries) shows the most industrialization-increasing effect. This holds true when we consider both industrialization and employment outcomes. In the North, trade with the US appears to be the most beneficial but the magnitude is not as large as parts of the South. That trade with EU produces negative outcomes in multiple specifications despite being a significant portion of SSA trade, is quite interesting. This could possibly be due to relatively stricter entry requirements compared to those from the US. When considering the two economic communities, SADC and ECOWAS, while what seems to matter for SADC is South-South trade, we find that for ECOWAS, North-South trade may, in fact, be more attractive.

Disaggregating employment in industry by gender, we observe that with the exception of trade with India, all trade partners show a positive and significant impact on male employment in the full sample while only trade with SSA and trade with US hold a better potential on female employment in industry. On relative female employment, there is a muted impact of all trade partners in the full sample. Substituting trade with exports by partner, we find that exports to EU and to China have a negative and significant impact on both absolute and relative female employment outcomes, casting some doubt on the hypothesis that export-oriented sectors are beneficial to female employment. With respect to imports, we find that imports from China have positive and significant impacts on both men and women's industrial employment perhaps confirming studies that suggest that imported capital goods especially those from China may have boosted productivity. Finally, among others, policies that continually encourage investment and access to infrastructure should be vigorously pursued to reduce women's care burden and improve relative female employment opportunities.

While these are important conclusions that can be discerned from the results, the study inevitably has some limitations that need to be pointed out. First, we consider trade only in the case of final finished goods, a more elaborate model could be developed to analyze disaggregated trade (eg. trade in manufactured goods) more thoroughly. Furthermore, some points should be made about causality. Any positive effects on employment should be viewed with some caution as the employment measures do not account for wages and so does not say anything about how increased trade with a particular partner improves job quality. Any evidence of positive impact of infrastructure does not necessarily infer that gender gaps in industrial employment will automatically be narrowed. Research from developing countries (eg.

Chakraborty, 2010) have shown that infrastructure only results in more gender-equalizing outcomes if accompanied by favorable employment policies such as increased skills training for women.

4.7. Tables and Figures

Table 4.1. Summary Statistics

Variables	FULL SAMPLE		ECOWAS		SADC	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variables						
MFG_GDP	9.98	4.890	8.750	4.064	11.64	5.493
IND_TOTEMP	11.99	6.942	12.36	5.361	15.94	9.546
MALEMP_IND	14.77	7.600	14.45	6.460	21.02	9.331
FEMEMP_IND	8.469	7.325	9.647	5.933	9.869	10.38
FEM_MAL_IND	0.576	0.419	0.766	0.520	0.399	0.254
Trade Variables						
TRADE_US	2.983	5.066	2.496	3.791	0.031	0.038
TRADE_EU	12.15	10.85	13.39	10.06	17.08	15.79
TRADE_CH	4.064	7.200	4.025	7.183	4.172	6.756
TRADE_IND	1.761	2.701	2.180	3.679	2.161	2.642
TRADE_SSA	9.518	12.29	7.335	6.924	3.186	3.870
Control Variables						
GDP_GROW	1.431	5.160	1.450	4.737	1.740	4.960
EXP_GROW	7.410	20.04	7.373	22.42	7.616	19.65
IMP_GROW	7.588	19.16	6.682	17.58	8.263	20.18
GOVT_GDP	14.35	5.781	12.42	4.595	19.40	6.053
FUELS_X	26.24	30.03	26.00	30.18	24.97	30.15
REER	108.2	36.75	110.3	30.23	99.99	29.56
EDUC	74.86	19.65	65.54	20.33	87.15	10.87
RULE	-0.57	0.667	-0.63	0.568	-0.16	0.795
FDI_INV	15.81	36.89	21.11	56.34	15.13	20.40
TARRIF	14.11	7.592	13.83	7.115	13.12	9.373
ELECT_ACCESS	32.67	26.44	28.79	20.56	48.38	32.26

Table 4.2. Results for Full Sample (Fixed Effects and Generalized Method of Moments)

FULL SAMPLE										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L. MFG_GDP		0.919***								
		(0.020)								
L. IND_TOTEM				0.851***						
				(0.074)						
L. MALEMP_IND						1.007***				
						(0.023)				
L. FEMEMP_IND								0.989***		
								(0.032)		
L. FEM_MAL_IND										0.674***
										(0.141)
Trade Variables										
TRADE_US	0.059*	0.061**	0.086***	0.018***	0.154***	0.019*	0.072***	0.008***	0.081*	0.009
	(0.031)	(0.010)	(0.029)	(0.003)	(0.054)	(0.005)	(0.024)	(0.002)	(0.046)	(0.008)
TRADE_EU	-0.074	-0.027	-0.013	-0.021	0.313***	0.024**	-0.060	0.001	-0.054	-0.021
	(0.064)	(0.018)	(0.057)	(0.005)	(0.107)	(0.009)	(0.049)	(0.004)	(0.045)	(0.014)
TRADE_CH	0.073	0.078**	0.013	0.025*	0.004	0.027*	-0.045	0.001	-0.020	0.002
	(0.046)	(0.011)	(0.039)	(0.003)	(0.073)	(0.005)	(0.033)	(0.002)	(0.030)	(0.008)
TRADE_IND	0.091*	0.052***	0.051*	0.003	0.065	0.017	0.051**	0.003	0.014	0.011
	(0.034)	(0.010)	(0.030)	(0.002)	(0.055)	(0.004)	(0.025)	(0.002)	(0.048)	(0.007)
TRADE_SSA	0.120**	0.092*	0.015	0.079**	0.062	0.013*	0.056*	0.005*	0.016*	0.011
	(0.038)	(0.010)	(0.002)	(0.035)	(0.064)	(0.004)	(0.029)	(0.002)	(0.056)	(0.007)

(Continued)

Table 4.2. Continued

FULL SAMPLE										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
GDP_GROW	-0.029***	-0.007	-0.009	0.001**	-0.033**	-0.000	-0.000	0.002***	-0.033**	0.010***
	(0.009)	(0.002)	(0.008)	(0.001)	(0.015)	(0.001)	(0.006)	(0.000)	(0.013)	(0.002)
EXP_GROW	-0.030	0.033	-0.018	0.001	0.010	0.004	-0.027	-0.000	0.037	0.012*
	(0.028)	0.008	(0.025)	(0.003)	(0.048)	(0.004)	(0.022)	(0.002)	(0.041)	(0.006)
IMP_GROW	0.0058	0.002	-0.011	0.001	-0.032	0.001	-0.000	0.001	-0.031	-0.013**
	(0.025)	(0.007)	(0.023)	(0.002)	(0.043)	(0.003)	(0.019)	(0.002)	(0.037)	(0.006)
GOVT_GDP	0.246***	(0.039)*	0.106	0.004	0.085	0.006	0.181***	0.003	0.266**	0.002
	(0.076)	0.023	(0.069)	(0.007)	(0.130)	(0.012)	(0.059)	(0.006)	(0.112)	(0.018)
FUELS_X	-0.014	-0.121***	0.002	-0.001	0.128***	0.143***	-0.015	0.010	0.021	0.006
	(0.028)	0.009	(0.026)	(0.002)	(0.049)	(0.004)	(0.022)	(0.042)	(0.002)	(0.007)
REER	-0.405	-0.007	0.020***	0.001	-0.036***	0.001	0.008	0.000	-0.006	0.002
	(0.317)	0.006	(0.007)	(0.002)	(0.013)	(0.003)	(0.006)	(0.001)	(0.034)	(0.005)
EDUC	0.085	0.026	0.019***	0.002	0.017**	0.010	0.020***	0.001	0.500**	0.044
	(0.223)	0.045	(0.005)	(0.012)	(0.006)	(0.021)	(0.006)	(0.016)	(0.222)	(0.032)
RULE	0.039	0.029	0.000	0.017	-0.000	0.018	0.001	0.015	0.037	0.074
	(0.026)	(0.031)	(0.001)	(0.008)	(0.001)	(0.014)	(0.001)	(0.007)	(0.050)	(0.026)

(Continued)

Table 4.2. Continued

FULL SAMPLE										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
Control Variables										
FDI_INV	1.101***	0.081**	0.011**	0.139*	0.031***	0.024***	0.002	0.013**	0.010***	0.001
	(0.301)	(0.000)	(0.005)	(0.000)	(0.009)	(0.000)	(0.005)	(0.000)	(0.002)	(0.000)
TARRIF	0.007	0.004	-0.009**	-0.001*	-0.018***	-0.003**	-0.007**	0.011	-0.011*	-0.061
	(0.004)	0.001	(0.003)	(0.000)	(0.007)	(0.000)	(0.003)	(0.000)	(0.006)	(0.001)
ELECT_ACCESS	0.121*	0.283***	0.110	0.423***	0.311***	0.041*	0.044	0.072***	0.134**	0.030**
	(0.044)	0.014	(0.039)	(0.004)	(0.073)	(0.006)	(0.033)	(0.004)	(0.063)	(0.011)
Observations	623	584	623	584	623	584	623	584	623	584
R-Squared	0.517		0.658		0.514		0.501		0.411	
AR (2)		0.2		0.3		0.8		0.6		0.7
Hansen p value		0.2		0.6		0.5		0.4		0.2

Notes: All variables are converted into natural logs with the exception of GDP growth, export growth, import growth, rule of law and tariffs which were not converted because some values take on negative numbers. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 4.3. Results for Economic and Trade Regions—ECOWAS (Fixed Effects and Generalized Method of Moments)

	ECOWAS									
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L. MFG_GDP		0.935***								
		(0.023)								
L. IND_TOTEM				1.053***						
				(0.014)						
L. MALEMP_IND						0.978***				
						(0.010)				
L. FEMEMP_IND								1.023***		
								(0.011)		
L. FEM_MAL_IND										0.896***
										(0.016)
Trade Variables										
TRADE_US	0.292***	0.194**	0.081	0.011	0.101	0.001	0.035	0.001	0.075***	0.103
	(0.081)	(0.090)	(0.097)	(0.000)	(0.162)	(0.000)	(0.084)	(0.000)	(0.023)	(0.116)
TRADE_EU	-0.238*	0.196***	-0.294	0.002	0.001	0.027**	-0.142	0.001**	-0.054	0.079
	(0.133)	(0.070)	(0.151)	(0.001)	(0.251)	(0.001)	(0.131)	(0.000)	(0.045)	(0.119)
TRADE_CH	-0.022	0.153	0.135	0.001*	0.067**	0.000	0.013	-0.000	-0.020	0.103
	(0.088)	(0.099)	(0.083)	(0.000)	(0.139)	(0.001)	(0.072)	(0.000)	(0.030)	(0.128)
TRADE_IND	0.143	0.071**	0.100	0.011	0.011	0.015***	0.005	0.000	0.040*	0.050
	(0.045)	(0.135)	(0.071)	(0.000)	(0.118)	(0.001)	(0.061)	(0.000)	(0.023)	(0.140)
TRADE_SSA	0.185***	0.120*	0.071	0.042**	0.024	0.021	-0.055	0.001**	0.077***	0.090
	(0.063)	(0.066)	(0.073)	(0.011)	(0.122)	(0.001)	(0.063)	(0.000)	(0.027)	(0.109)

(Continued)

Table 4.3. Continued

ECOWAS										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
GDP_GROW	-0.034**	0.057***	-0.018	-0.000***	-0.041*	-0.000**	-0.005	-0.000**	0.005	0.067***
	(0.014)	(0.009)	(0.014)	(0.000)	(0.024)	(0.000)	(0.012)	(0.003)	(0.006)	(0.018)
EXP_GROW	-0.016	0.047	-0.021	-0.002***	-0.000	0.001*	-0.037	-0.034*	-0.007	-0.045
	(0.045)	(0.063)	(0.054)	(0.000)	(0.090)	(0.001)	(0.047)	(0.013)	(0.020)	(0.060)
IMP_GROW	0.016	0.027	0.048	-0.000	0.053	-0.000*	0.056	0.004	-0.016	-0.019
	(0.037)	(0.030)	(0.044)	(0.000)	(0.074)	(0.000)	(0.038)	(0.010)	(0.018)	(0.080)
GOVT_GDP	0.092	0.092	0.109	0.004**	0.549**	0.000	0.085	0.041***	0.123**	0.148
	(0.13)	(0.120)	(0.154)	(0.001)	(0.256)	(0.001)	(0.134)	(0.006)	(0.051)	(0.136)
FUELS_X	0.317***	0.267	0.020	0.301	0.470***	0.210***	-0.138**	-0.019	0.054***	0.143***
	(0.063)	(0.278)	(0.073)	(0.081)	(0.121)	(0.132)	(0.063)	(0.018)	(0.020)	(0.032)
REER	-0.023***	0.026*	-0.015**	-0.019**	-0.023**	-0.003**	-0.010*	0.000	0.000	0.000
	(0.006)	(0.014)	(0.006)	(0.011)	(0.010)	(0.024)	(0.005)	(0.000)	(0.017)	(0.000)
EDUC	0.506*	0.061	0.830***	0.015**	0.495***	0.007***	0.741***	0.009	0.121	0.073**
	(0.266)	(0.043)	(0.292)	(0.002)	(0.485)	(0.002)	(0.253)	(0.026)	(0.109)	(0.694)
RULE	0.170	0.002	0.012	0.015	0.004	0.001	0.047	0.022	0.052	0.088
	(0.145)	(0.001)	(0.079)	(0.073)	(0.121)	(0.110)	(0.07)	(0.017)	(0.053)	(0.056)

(Continued)

Table 4.3. Continued

	ECOWAS									
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
FDI_INV	0.089*	0.911**	0.152***	0.003*	0.238***	0.011**	0.115**	0.011**	0.001	0.072
	(0.046)	(0.277)	(0.050)	(0.002)	(0.083)	(0.004)	(0.043)	(0.004)	(0.001)	(0.075)
TARRIF	-0.006	-0.254***	-0.021**	-0.001	-0.027*	-0.001	-0.017**	-0.001	0.000	0.014
	(0.007)	(0.042)	(0.009)	(0.000)	(0.015)	(0.002)	(0.007)	(0.002)	(0.003)	(0.018)
ELECT_ACCESS	0.049***	0.054***	0.084**	0.130**	0.147	0.000	0.146***	0.001	0.119***	0.000
	(0.087)	(0.042)	(0.097)	(0.063)	(0.161)	(0.001)	(0.084)	(0.001)	(0.031)	(0.001)
Observations	352	290	352	290	352	290	352	290	352	290
R-Squared	0.437		0.441		0.430		0.528		0.518	
AR (2)		0.074		0.223		0.205		0.206		0.466
Hansen p value		0.753		0.634		0.643		0.595		0.550

Notes: See notes to Table 4.2

Table 4.4. Results for Economic and Trade Regions—SADC (Fixed Effects and Generalized Method of Moments)

SADC										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L. MFG_GDP		1.028***								
		(0.107)								
L. IND_TOTEM				0.480*						
				(0.187)						
L. MALEMP_IND						0.675*				
						(0.419)				
L. FEMEMP_IND								0.594***		
								(0.148)		
L. FEM_MAL_IND										0.242***
										(0.293)
Trade Variables										
TRADE_US	0.060	0.468	-0.053	0.035	0.151**	0.074*	0.017	0.082*	0.049***	-0.005
	(0.101)	(0.361)	(0.047)	(0.028)	(0.097)	(0.043)	(0.046)	(0.006)	(0.012)	(0.021)
TRADE_EU	-0.082	0.227	0.027***	0.008	0.006***	0.019	0.101***	0.011	0.054**	-0.011
	(0.087)	(0.162)	(0.041)	(0.013)	(0.084)	(0.017)	(0.040)	(0.035)	(0.024)	(0.015)
TRADE_CH	0.044	0.171*	-0.040	0.069***	0.111	0.067**	-0.023	0.013	0.007	-0.068***
	(0.067)	(0.707)	(0.032)	(0.013)	(0.065)	(0.032)	(0.016)	(0.025)	(0.016)	(0.015)
TRADE_IND	0.063	0.093**	0.018	0.038*	0.120	0.021	-0.022	0.015	-0.065***	0.046**
	(0.082)	(0.485)	(0.039)	(0.022)	(0.080)	(0.029)	(0.038)	(0.014)	(0.012)	(0.019)
TRADE_SSA	0.001	0.105*	0.080	0.092*	0.147	0.012	0.096*	0.032**	0.061***	-0.015
	(0.112)	(0.065)	(0.051)	(0.017)	(0.105)	(0.025)	(0.050)	(0.014)	(0.011)	(0.016)

(Continued)

Table 4.4. Continued

	SADC									
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
GDP_GROW	-0.021	0.128***	-0.015**	-0.001	-0.042***	-0.006	-0.005	0.000	-0.003	-0.036**
	(0.014)	(0.041)	(0.006)	(0.003)	(0.013)	(0.004)	(0.006)	(0.003)	(0.013)	(0.016)
EXP_GROW	0.012	0.108	0.012	0.009	0.041	0.006	0.001	0.011	0.022**	0.089
	(0.031)	(0.267)	(0.015)	(0.010)	(0.030)	(0.017)	(0.014)	(0.010)	(0.010)	(0.058)
IMP_GROW	0.027	-0.082	-0.010	0.011	-0.014	0.017	-0.008	0.006	-0.002	0.006
	(0.030)	(0.314)	(0.014)	(0.010)	(0.029)	(0.017)	(0.013)	(0.008)	(0.009)	(0.051)
GOVT_GDP	0.299	0.061	0.395***	0.178***	0.027***	0.156	0.269*	0.190***	0.048*	0.036***
	(0.291)	(2.030)	(0.139)	(0.056)	(0.282)	(0.099)	(0.136)	(0.039)	(0.028)	(0.131)
FUELS_X	0.133*	-0.022	0.171***	0.034	0.315***	0.166**	0.138***	0.0661***	0.063***	0.134***
	(0.071)	(0.040)	(0.033)	(0.031)	(0.068)	(0.075)	(0.032)	(0.018)	(0.010)	(0.042)
REER	-0.002	0.793***	0.000	0.022	0.001	0.028	-0.001	0.063	-0.010	-0.112
	(0.001)	(0.065)	(0.000)	(0.053)	(0.001)	(0.093)	(0.001)	(0.048)	(0.001)	(0.165)
EDUC	0.975***	0.505	0.750***	0.529***	0.769***	0.936***	0.748**	0.194**	0.322***	1.520***
	(0.742)	(2.498)	(0.352)	(0.095)	(0.714)	(0.149)	(0.344)	(0.073)	(0.057)	(0.369)
RULE	-0.044	0.793***	0.017	0.022	0.041***	0.028	0.026	0.063	0.175*	-0.112
	(0.188)	(0.065)	(0.090)	(0.053)	(0.183)	(0.093)	(0.088)	(0.048)	(0.094)	(0.165)

(Continued)

Table 4.4. Continued

	SADC									
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
FDI_INV	0.024	0.900*	0.040*	0.032*	0.062	0.053**	0.031	0.015	0.001	0.007**
	(0.047)	(0.499)	(0.022)	(0.018)	(0.045)	(0.024)	(0.022)	(0.015)	(0.001)	(0.003)
TARRIF	-0.005	0.075	-0.003	0.011***	0.003	0.015***	-0.008	0.007**	0.000	-0.020***
	(0.012)	(0.072)	(0.005)	(0.002)	(0.012)	(0.003)	(0.005)	(0.003)	(0.001)	(0.007)
ELECT_ACCESS	0.143***	0.141***	0.129***	0.173***	0.180***	0.189***	0.122***	0.143***	0.140***	0.152
	(0.074)	(0.069)	(0.034)	(0.066)	(0.070)	(0.126)	(0.033)	(0.057)	(0.016)	(0.102)
Observations	315	280	315	280	315	280	315	280	315	280
R-Squared	0.401		0.470		0.472		0.467		0.460	
AR (2)		0.303		0.242		0.631		0.296		0.234
Hansen p value		0.876		0.476		0.344		0.652		0.390

Notes: See notes to Table 4.2

Table 4.5. Results for EXPORTS (Fixed Effects and Generalized Method of Moments)

EXPORTS										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L. MFG_GDP		0.636**								
		(0.218)								
L. IND_TOTEM				0.140***						
				(0.012)						
L. MALEMP_IND						0.735***				
						(0.014)				
L. FEMEMP_IND								0.172***		
								(0.072)		
L. FEM_MAL_IND										0.202***
										(0.022)
Trade Variables										
TRADE_US	0.025***	0.045***	0.045	0.020	0.039	0.021*	0.046	0.186	0.007	0.010
	(0.492)	(0.507)	(0.059)	(0.012)	(0.058)	(0.012)	(0.059)	(0.012)	(0.008)	(0.019)
TRADE_EU	-0.040*	-0.099	-0.015	-0.058***	0.014	0.055***	-0.160	-0.061***	-0.033**	-0.109***
	(0.149)	(0.681)	(0.009)	(0.015)	(0.005)	(0.015)	(0.097)	(0.016)	(0.014)	(0.024)
TRADE_CH	0.089	0.005***	0.008	0.024**	0.010	0.012**	-0.065	-0.004**	-0.006	-0.025*
	(0.352)	(0.425)	(0.040)	(0.009)	(0.039)	(0.008)	(0.040)	(0.010)	(0.060)	(0.015)
TRADE_IND	0.076	0.002	0.029	0.022*	0.021	0.010*	0.030	0.012*	0.003	0.027
	(0.378)	(0.471)	(0.045)	(0.011)	(0.044)	(0.011)	(0.045)	(0.011)	(0.006)	(0.017)
TRADE_SSA	0.010	0.070	0.041	0.020**	0.038	0.021**	0.043	0.019**	0.023***	0.048
	(0.177)	(0.114)	(0.054)	(0.009)	(0.003)	(0.009)	(0.054)	(0.009)	(0.008)	(0.014)

(Continued)

Table 4.5. Continued

	EXPORTS									
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
GDP_GROW	0.049	0.048	0.003	0.000	0.004	0.000	0.003	0.009	0.000	0.012
	(0.038)	(0.060)	(0.004)	(0.001)	(0.003)	(0.001)	(0.005)	(0.015)	(0.001)	(0.022)
EXP_GROW	0.273	0.043***	0.019	0.006	0.076	0.006	0.025*	0.050	0.001	0.020
	(0.253)	(0.375)	(0.029)	(0.008)	(0.028)	(0.006)	(0.029)	(0.088)	(0.044)	(0.013)
IMP_GROW	0.120	0.117	-0.014	0.006	-0.016	0.012	-0.013	0.006	-0.043	0.001
	(0.191)	(0.301)	(0.023)	(0.007)	(0.023)	(0.072)	(0.023)	(0.074)	(0.035)	(0.011)
GOVT_GDP	0.005*	0.153	0.020*	0.044	0.023	0.042	0.021*	0.027*	0.018	0.074
	(0.155)	(0.363)	(0.014)	(0.031)	(0.013)	(0.029)	(0.014)	(0.030)	(0.021)	(0.047)
FUELS_X	1.204	0.149	0.056***	-0.033	0.065***	0.034	0.050***	0.102**	0.121***	0.032
	(1.400)	(1.374)	(0.017)	(0.037)	(0.016)	(0.033)	(0.017)	(0.034)	(0.026)	(0.051)
REER	-0.009	-0.490	0.001	-0.002	0.000	-0.003	0.002	-0.002	0.001	-0.008
	(0.006)	(0.310)	(0.000)	(0.007)	(0.000)	(0.003)	(0.000)	(0.005)	(0.000)	(0.011)
EDUC	1.820**	1.215***	0.013	0.079***	0.010	0.073***	0.014	0.079***	0.019	0.124***
	(0.879)	(0.986)	(0.010)	(0.024)	(0.010)	(0.029)	(0.010)	(0.024)	(0.015)	(0.036)
RULE	0.027	-0.490	-0.003	-0.002	-0.033	-0.003	-0.003	-0.002	-0.002	-0.008
	(0.228)	(0.310)	(0.002)	(0.007)	(0.026)	(0.003)	(0.002)	(0.005)	(0.040)	(0.011)

(Continued)

Table 4.5. Continued

	EXPORTS									
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
FDI_INV	0.245***	0.412***	0.003	0.001	0.005	-0.002	0.001	0.005	0.001	0.009
	(0.062)	(0.080)	(0.007)	(0.001)	(0.072)	(0.018)	(0.007)	(0.001)	(0.001)	(0.028)
TARRIF	0.203**	-0.101	0.089***	0.000	0.015***	0.066***	0.033***	-0.052***	0.015***	0.096***
	(0.092)	(0.061)	(0.011)	(0.001)	(0.011)	(0.001)	(0.017)	(0.013)	(0.001)	(0.020)
ELECT_ACCESS	0.147	0.094***	0.038**	0.025**	0.031**	0.022**	0.039**	0.027**	0.027	0.113***
	(1.514)	(0.478)	(0.014)	(0.011)	(0.018)	(0.011)	(0.018)	(0.013)	(0.027)	(0.017)
Observations	623	584	623	584	623	584	623	584	623	581
R-Squared	0.531		0.548		0.737		0.372		0.579	
AR (2)		0.197		0.211		0.233		0.420		0.303
Hansen p value		0.639		0.648		0.609		0.444		0.361

Notes: All variables are converted into natural logs with the exception of GDP growth, export growth, import growth, rule of law and tariffs which were not converted because some values take on negative numbers. Trade data used in these regressions is in reference to exports. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 4.6. Results for IMPORTS (Fixed Effects and Generalized Method of Moments)

IMPORTS										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L. MFG_GDP		0.667*								
		(0.335)								
L. IND_TOTEM				1.003***						
				(0.027)						
L. MALEMP_IND						0.955***				
						(0.042)				
L. FEMEMP_IND								1.031***		
								(0.044)		
L. FEM_MAL_IND										0.933***
										(0.026)
Trade Variables										
TRADE_US	0.039	0.139	0.010	0.082	0.005	0.013**	0.015	0.017	0.076	0.040
	(0.318)	(0.201)	(0.029)	(0.051)	(0.026)	(0.052)	(0.031)	(0.005)	(0.021)	(0.063)
TRADE_EU	1.579***	1.680***	-0.038	0.031***	-0.037	0.022**	-0.044	0.032	0.023	0.048
	(0.548)	(0.380)	(0.053)	(0.010)	(0.047)	(0.010)	(0.056)	(0.010)	(0.051)	(0.012)
TRADE_CH	0.083***	0.011***	0.065***	0.015**	0.037*	0.018***	0.069***	0.015**	0.067	0.020***
	(0.253)	(0.240)	(0.024)	(0.063)	(0.022)	(0.062)	(0.059)	(0.006)	(0.025)	(0.007)
TRADE_IND	0.011	0.087***	0.018	0.065	0.030	0.045	0.003	0.006	0.012	0.006
	(0.278)	(0.247)	(0.027)	(0.006)	(0.024)	(0.062)	(0.002)	(0.004)	(0.028)	(0.007)
TRADE_SSA	0.068	0.023***	0.074*	0.007	0.026	0.045	0.089**	0.009	0.044	0.005
	(0.421)	(0.324)	(0.042)	(0.008)	(0.037)	(0.086)	(0.044)	(0.008)	(0.040)	(0.010)

(Continued)

Table 4.6. Continued

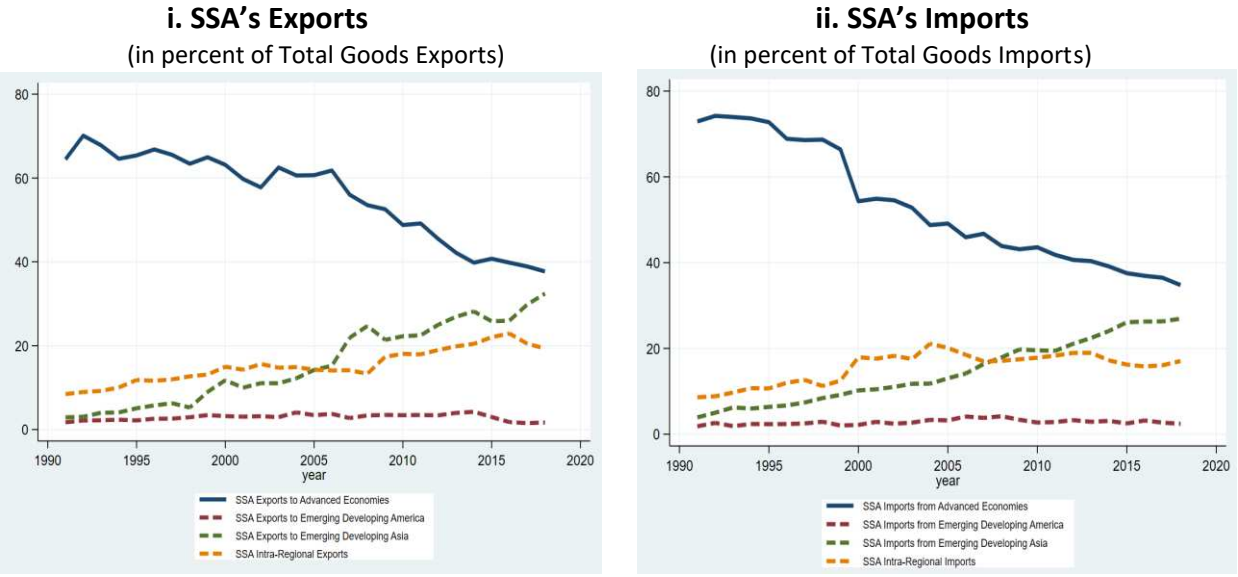
IMPORTS										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
GDP_GROW	-0.015	-0.026	-0.000	0.001	-0.000	0.013	-0.000	0.001	-0.000	0.002*
	(0.029)	(0.041)	(0.030)	(0.001)	(0.026)	(0.011)	(0.003)	(0.001)	(0.003)	(0.001)
EXP_GROW	-0.335**	-0.588***	-0.021	-0.001	0.047	0.017	-0.000	-0.002	0.014	0.006
	(0.162)	(0.221)	(0.016)	(0.005)	(0.014)	(0.058)	(0.017)	(0.005)	(0.017)	(0.007)
IMP_GROW	0.341**	0.397*	0.006	0.000	0.009	0.023	0.004	0.005	0.002	0.000
	(0.168)	(0.231)	(0.016)	(0.006)	(0.014)	(0.000)	(0.017)	(0.005)	(0.017)	(0.007)
GOVT_GDP	0.148***	0.624***	0.013*	0.016	0.018**	0.001	0.011	0.019	0.024***	0.037**
	(0.810)	(0.571)	(0.008)	(0.015)	(0.071)	(0.015)	(0.084)	(0.014)	(0.084)	(0.018)
FUELS_X	-0.539	0.762	-0.069***	0.073**	-0.066***	0.085***	-0.061***	0.066**	-0.030*	0.057
	(1.646)	(1.272)	(0.016)	(0.031)	(0.014)	(0.032)	(0.017)	(0.031)	(0.010)	(0.039)
REER	-0.004	-0.018	0.000	0.000	-0.000	0.001	-0.000	0.000	-0.002*	-0.003
	(0.011)	(0.013)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.003)	(0.001)	(0.004)
EDUC	0.189	0.167	0.187	0.043**	0.010*	0.056***	0.079	0.041**	0.088	0.038*
	(0.623)	(0.713)	(0.062)	(0.018)	(0.005)	(0.018)	(0.065)	(0.018)	(0.063)	(0.022)
RULE	-0.388**	-1.076***	0.013	-0.010**	0.002	-0.007	0.012	-0.010**	-0.007	-0.012**
	(0.191)	(0.180)	(0.019)	(0.004)	(0.016)	(0.004)	(0.019)	(0.005)	(0.020)	(0.058)

(Continued)

Table 4.6. Continued

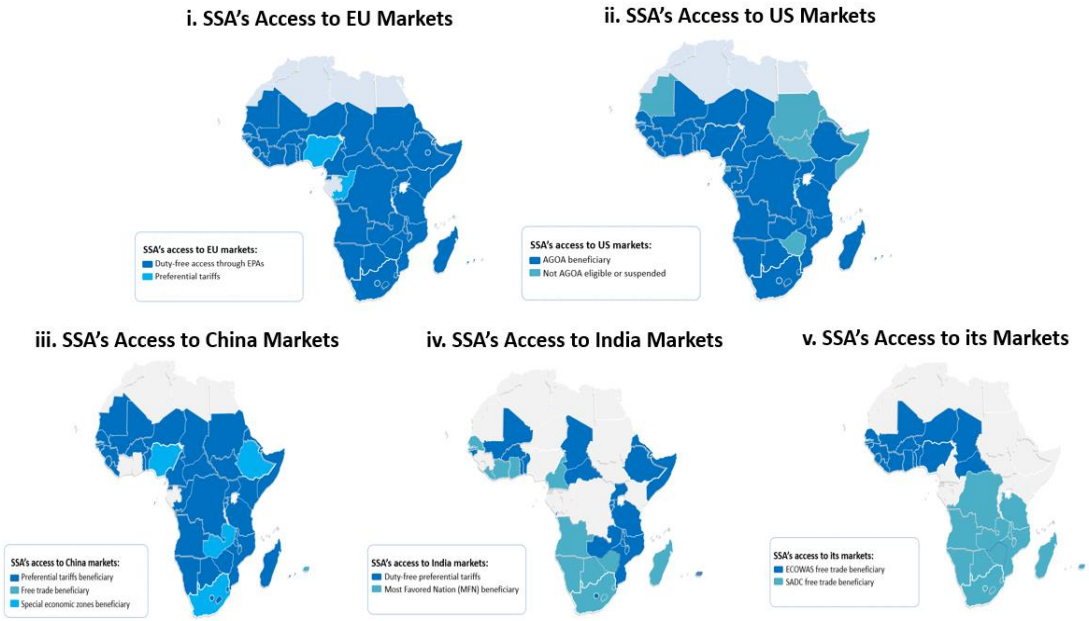
IMPORTS										
Dependent Variables	MFG_ GDP		IND_ TOTEM		MALEMP_ IND		FEMEMP_ IND		FEM_MAL_ IND	
	FE	GMM	FE	GMM	FE	GMM	FE	GMM	FE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Variables										
FDI_INV	0.135***	0.016	0.004	0.003**	0.016	0.001**	0.066	0.031**	0.0037	0.000***
	(0.050)	(0.052)	(0.051)	(0.001)	(0.004)	(0.003)	(0.005)	(0.013)	(0.001)	(0.001)
TARRIF	-0.144***	-0.071***	-0.000	-0.007***	-0.008***	-0.015***	-0.005***	0.001***	-0.061***	-0.017***
	(0.049)	(0.015)	(0.048)	(0.000)	(0.042)	(0.004)	(0.050)	(0.002)	(0.005)	(0.004)
ELECT_ACCESS	0.149	0.131*	0.116	0.106	0.130***	0.012	0.013	0.011	0.020*	0.093***
	(0.105)	(0.459)	(0.010)	(0.012)	(0.096)	(0.010)	(0.011)	(0.011)	(0.011)	(0.019)
Observations	623	584	623	584	623	584	623	584	623	584
R-Squared	0.325		0.321		0.751		0.692		0.591	
AR (2)		0.207		0.140		0.221		0.195		0.128
Hansen p value		0.134		0.424		0.574		0.381		0.422

Notes: All variables are converted into natural logs with the exception of GDP growth, export growth, import growth, rule of law and tariffs which were not converted because some values take on negative numbers. Trade data used in these regressions is in reference to imports. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1



Source and notes: Author's computation based on the IMF's Direction of Trade data. In addition to exports, imports from SSA to the North has been decreasing slowly in the past two decades, while imports and exports to the South have been on the rise.

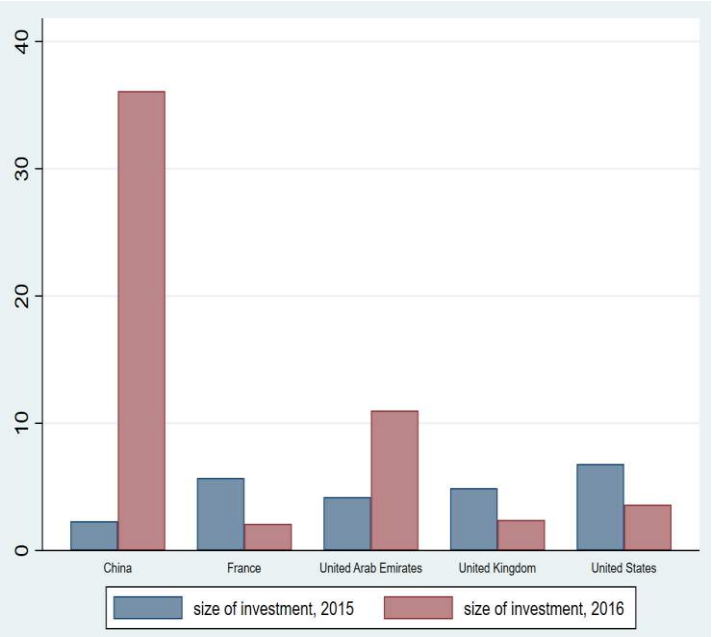
Figure 4.1. Trade by Region, 1991-2018



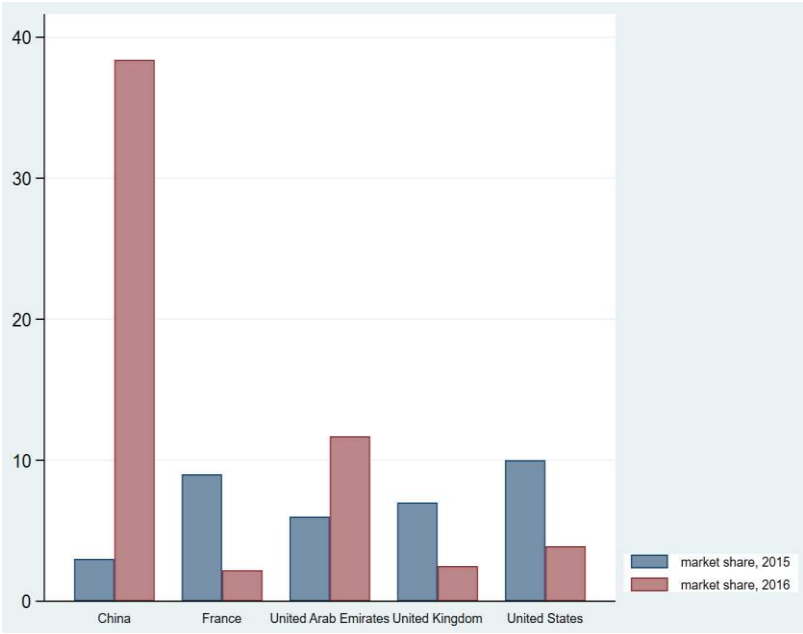
Source and notes: Author's computation using information from the European Commission, AGOA, UNCTAD, ECOWAS and SADC official websites.

Figure 4.2. SSA's Access to Markets

a. Size of Investment (in US billion)



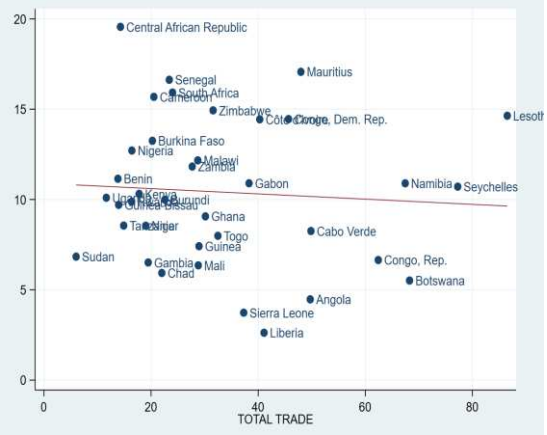
b. Market Share in SSA (in percent)



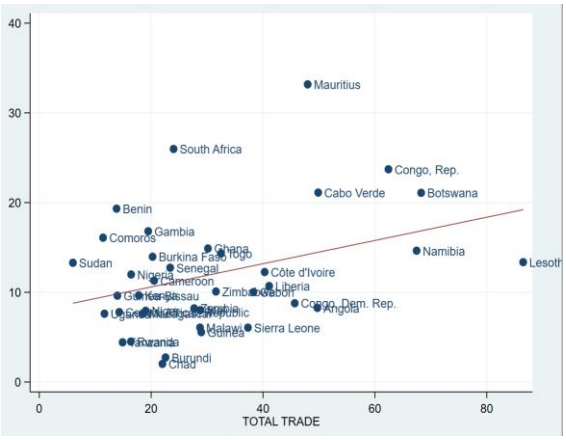
Source and notes: Author's computation based on the 2016 and 2017 Africa Investment Reports. The sources and amounts of FDI inflows have changed significantly in the last few years and China's rise is evident— in a little over a year, China has gone from being the 5th source of FDI in the manufacturing sector (as at 2015) with 3% of the market share to being the number 1 source of FDI in the manufacturing sector with about 38 % of market share and 38 billion dollars invested in the manufacturing sector by 2016.

Figure 4.3. Major Sources of Foreign Direct Investment in SSA's Manufacturing 2015 and 2016

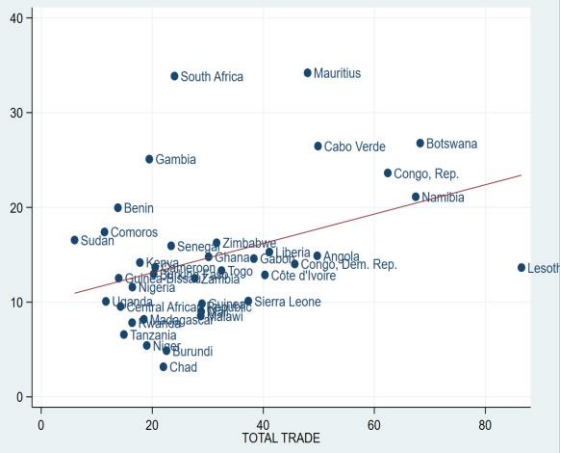
a. Manufacturing Value Added and Total Trade



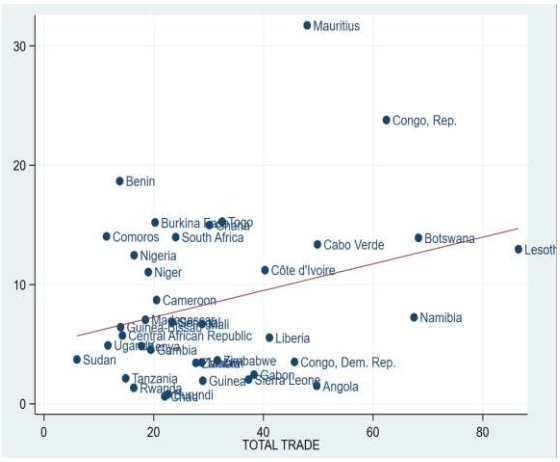
b. Total Employment in Industry and Total Trade



c. Male Employment in Industry and Total Trade



d. Female Employment in Industry and Total Trade



e. Relative Employment in Industry and Total Trade

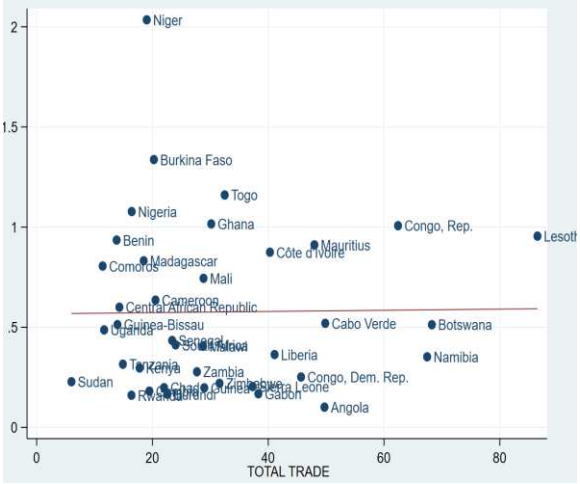
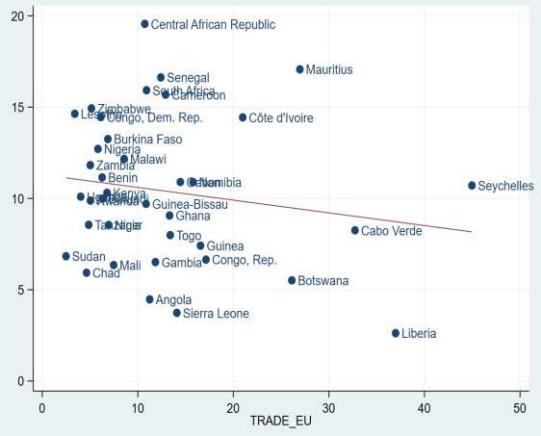
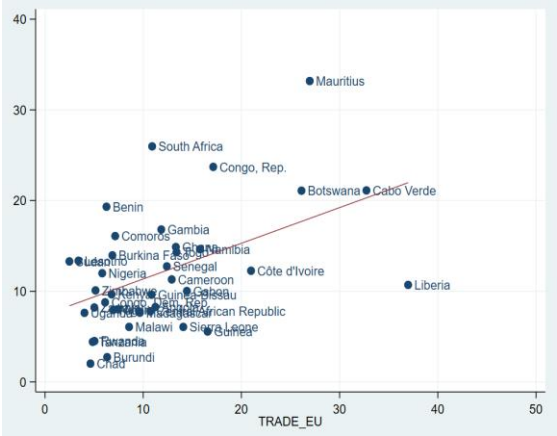


Figure 4.4. Correlations between Total Trade and Dependent Variables

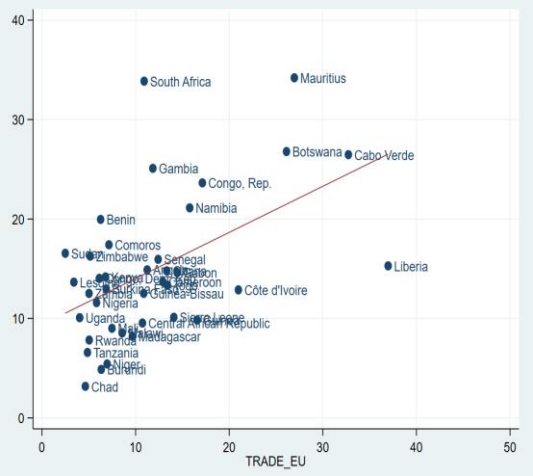
a. Manufacturing Value Added and Trade_ EU



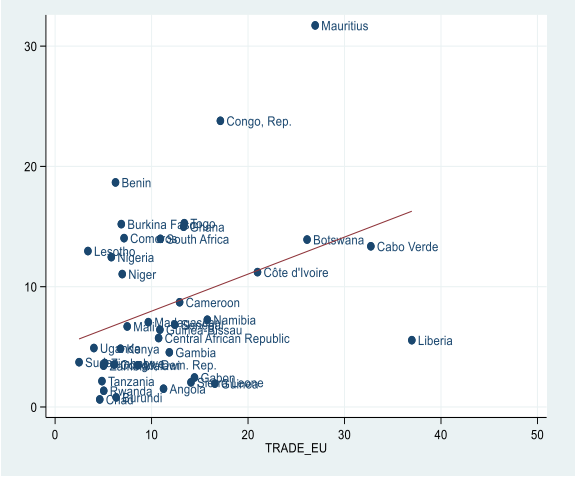
b. Total Employment in Industry and Trade_ EU



c. Male Employment in Industry and Trade_ EU



d. Female Employment in Industry and Trade_ EU



e. Relative Employment in Industry and Trade_ EU

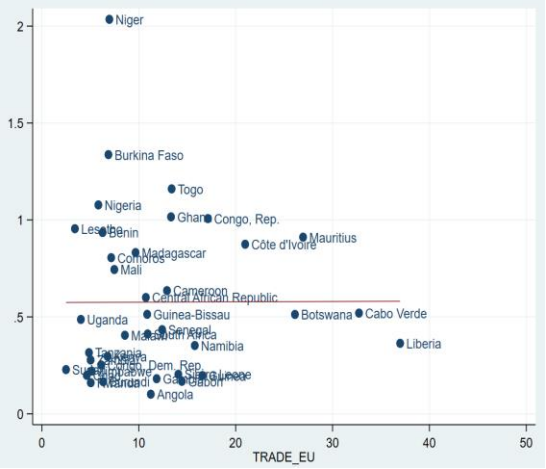
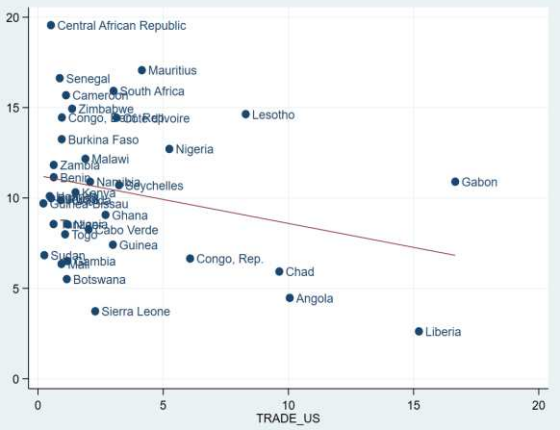
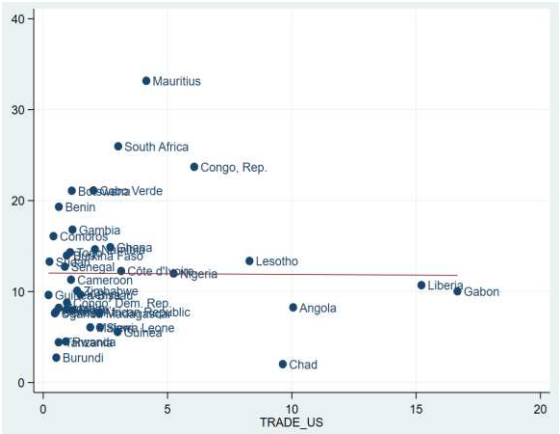


Figure 4.5. Correlations between *Trade_EU* and Dependent Variables

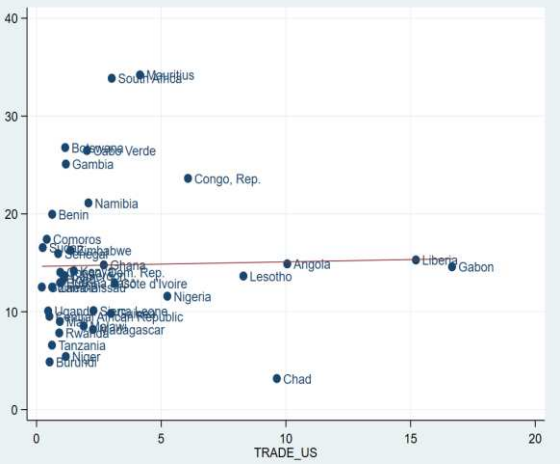
a. Manufacturing Value Added and Trade_ US



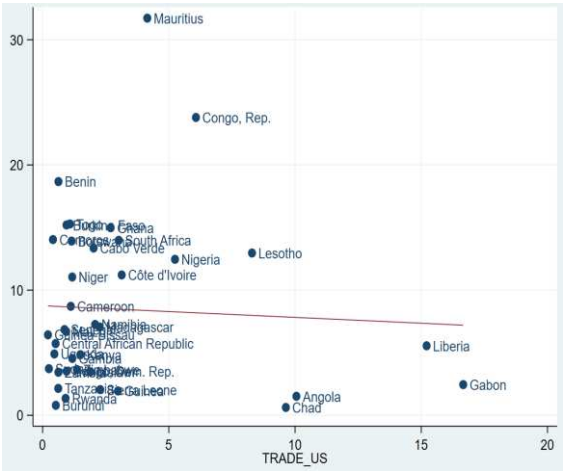
b. Total Employment in Industry and Trade_ US



c. Male Employment in Industry and Trade_ US



d. Female Employment in Industry and Trade_ US



e. Relative Employment in Industry and Trade_ US

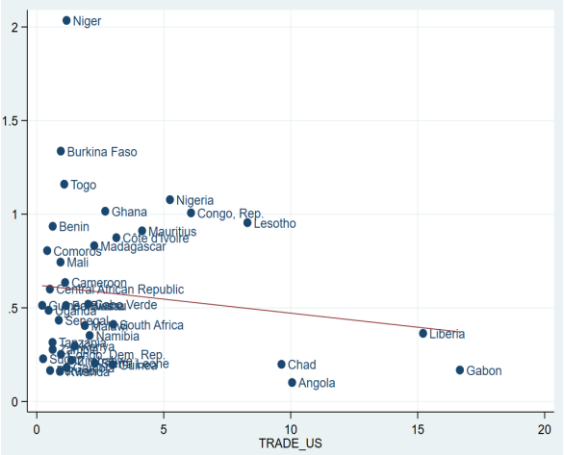
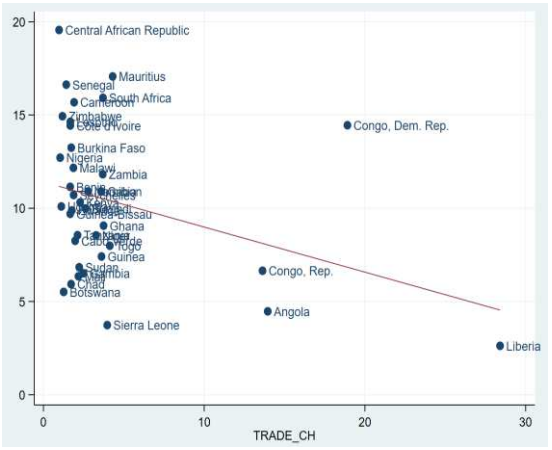
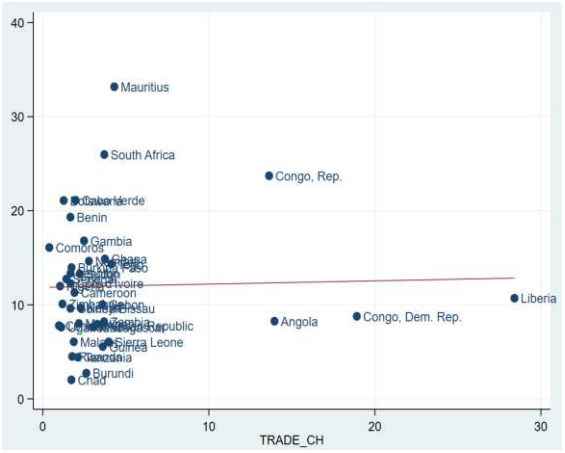


Figure 4.6. Correlations between *Trade_US* and Dependent Variables

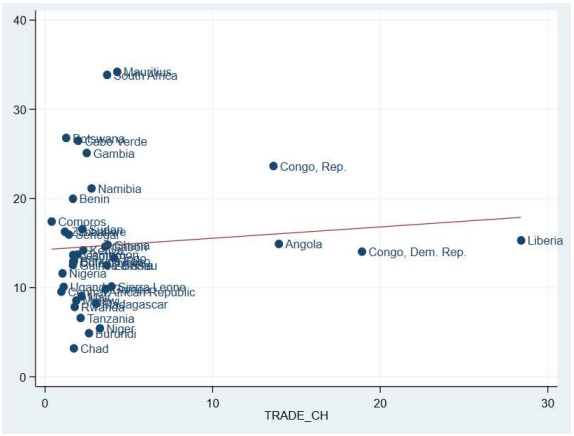
a. Manufacturing Value Added and Trade_ CH



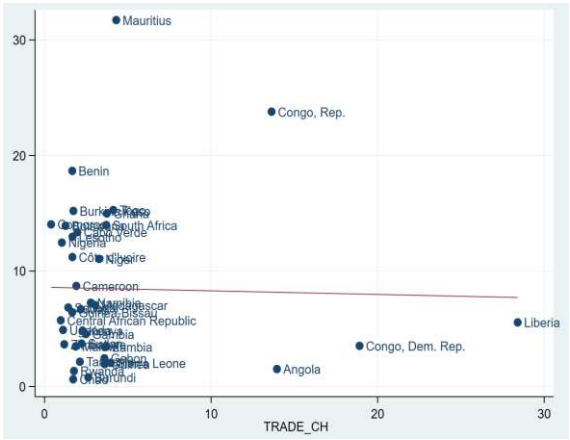
b. Total Employment in Industry and Trade_ CH



c. Male Employment in Industry and Trade_ CH



d. Female Employment in Industry and Trade_ CH



e. Relative Employment in Industry and Trade_ CH

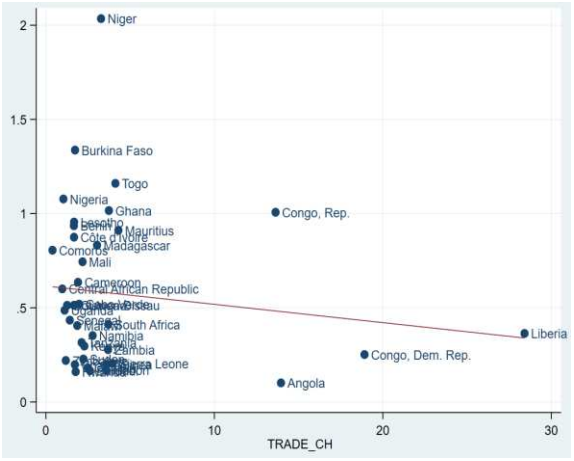
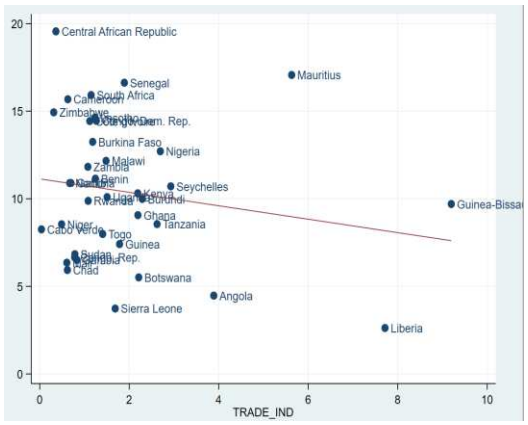
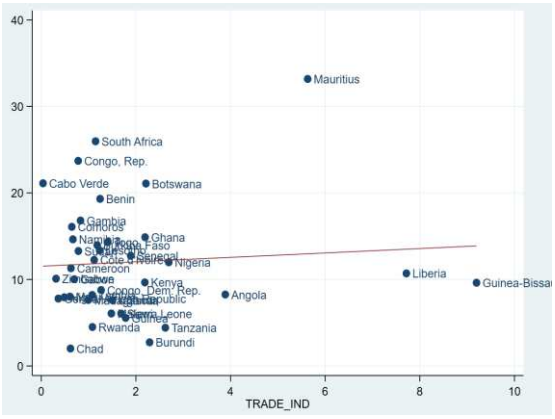


Figure 4.7. Correlations between *Trade_CH* and Dependent Variables

a. Manufacturing Value Added and Trade_IND

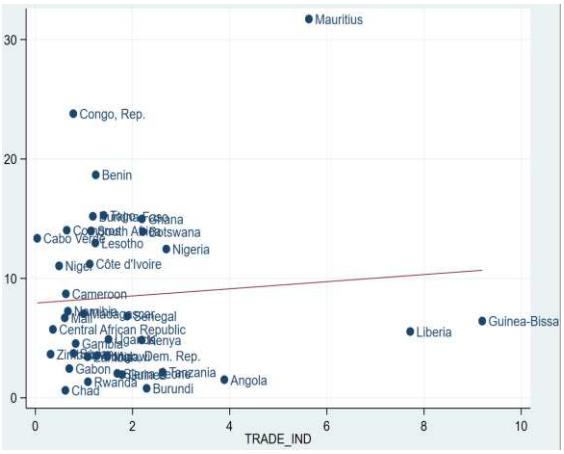


b. Total Employment in Industry and Trade_IND



c. Male Employment in Industry and Trade_IND

d. Female Employment in Industry and Trade_IND



e. Relative Employment in Industry and Trade_IND

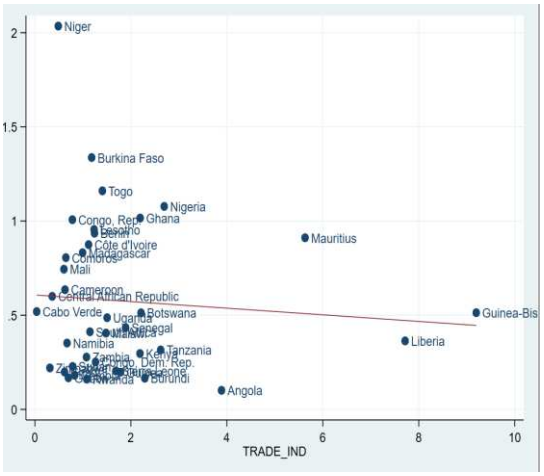
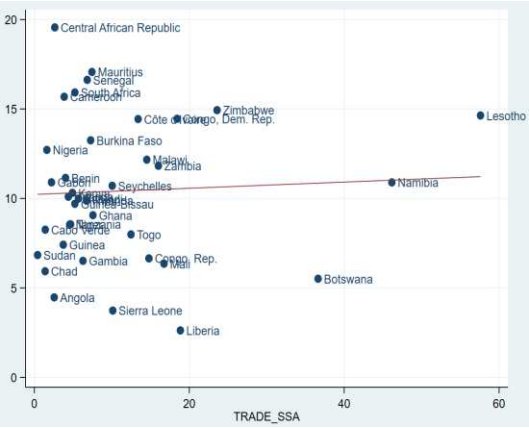
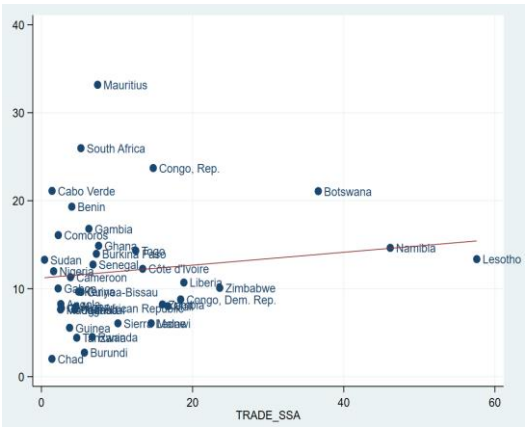


Figure 4.8: Correlations between *Trade_IND* and Dependent Variables

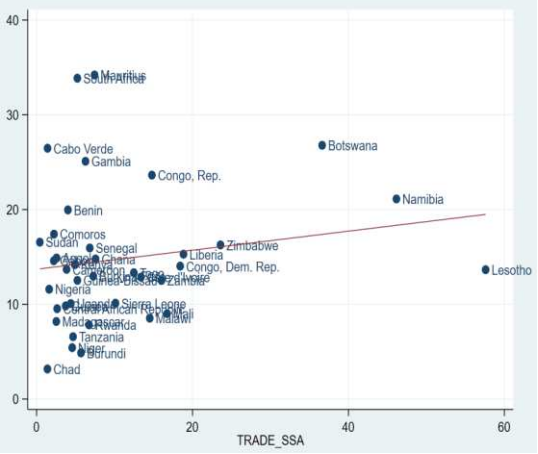
a. Manufacturing Value Added and Trade_SSA



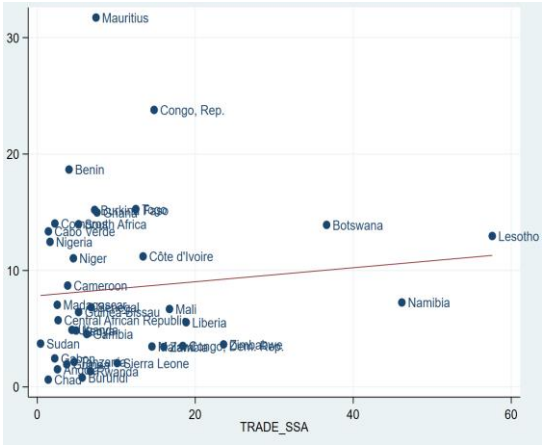
b. Total Employment in Industry and Trade_SSA



c. Male Employment in Industry and Trade_SSA



d. Female Employment in Industry and Trade_SSA



e. Relative Employment in Industry and Trade_SSA

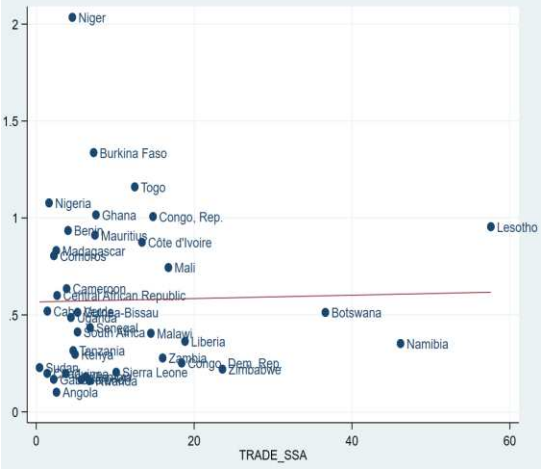


Figure 4.9: Correlations between *Trade_SSA* and Dependent Variables

CHAPTER 5. COMMODITY PRICE VOLATILITY AND MACROECONOMIC PERFORMANCE: A COMPARATIVE STUDY

5.1. Introduction

Commodity price volatility greatly affects the macroeconomic outcomes of commodity exporting countries and these effects are significant for developing countries, especially those in sub-Saharan Africa which depend on the exports of primary commodities. [26] There has been a voluminous amount of literature since the development of the Prebisch-Singer hypothesis which identifies that a decline in the price of commodities relative to manufactured goods can result in a deterioration of the terms of trade in developing countries. Since the formulation of this hypothesis, many studies have evaluated the impact of commodity price volatility on numerous outcome variables. The end of the recent "commodity super cycle" has renewed this discussion. A concern often raised in these studies is how the resulting deterioration of the terms of trade affects the current account balances and overall economic performance of countries (Roch, 2017; Schmitt-Grohe and Uribe, 2018; Allen and Hagan, forthcoming). An understanding of this is significant from a policy perspective.

Adler et al. (2017) use Markov switching methods to study the behavior of macroeconomic indicators around aggregate terms of trade declines. Particularly, they focus on the differences between advanced and emerging market economies in Latin America. They find that developing economies experience significantly larger declines than advanced economies.

[26] See works by Rodriguez and Sachs (1999) and van der Ploeg (2011)

Moreover, exchange rate flexibility and international reserves lessen the impact. Jiménez-Rodríguez (2008) assess the impact of oil price declines on the manufacturing sector in OECD countries and find that it reduces the value added in manufacturing sector of all the countries under study. Vallejo (2017) construct a country-specific commodity index and use a panel VAR methodology and the Cholesky identification to study the macroeconomic performance and fiscal response to commodity price declines in eight Latin American and find that it is a significant contribution to business cycles in Latin America and the magnitude of the contribution is larger in these countries compared to high income countries. Aizenman et al. (2012) use co-integration techniques and also analyze the ways in which Latin American countries have adjusted to the impact of commodity terms of trade declines. They confirm that reserves play a significant buffering role in reducing its impact in Latin America. In Chile, Colombia and Peru, Roch (2017) finds that exchange rate flexibility and fiscal loosening contribute to quicker adjustment to commodity terms of trade declines.

We identify two gaps in the existing literature that we seek to make contribution to. Many recent empirical research have been largely centered on Latin America and OECD countries. With commodity dependency characterizing majority of economies in SSA, it becomes imperative to extend the analysis to this region.[27] Additionally, we build on these previous research but unlike studies that have used the aggregate terms of trade or a commodity terms of trade index that relies on the prices of individual commodities (or the prices of few commodities), we rely on a newly developed commodity terms of trade index to

[27] Latin America and SSA are noted to be the two regions most vulnerable to commodity price declines (Wilson et. al, 2021)

describe the macroeconomic consequences of commodity price declines (busts).[28] The paper has two main goals. First, to conduct an event study that documents the behavior key trade, sectoral and macroeconomic variables in the period leading up to a bust episode and the period during the episode. Then, we use econometric estimations to formally estimate the performance of these variables during a bust episode. In both approaches, the period of study is from 1990-2018 for a broad sample of 41 developing countries.

We find that the response of SSA to a negative commodity price decline is the worsening of the current account, an adverse effect on imports, exports, reserves and a minimal decline in FDI for SSA. While agriculture value added and employment in agriculture fall in response to negative commodity shocks in all three regions, the response and magnitudes of the industrial sector differs by region. We do not find evidence that the industrial sector in emerging and developing Asia is significantly impacted. However, a negative impact on industry value added and employment in industry is observed in SSA and emerging and developing America highlighting perhaps the influence of an already weak industrial sector. Comparing SSA to other emerging and developing economies, it appears that in SSA and emerging and developing America, the negative commodity decline is partially offset by a contraction in imports. In emerging and developing Asia, on the other hand, reserves seem to act as a shock absorber and may have aided in the adjustment to the price decline.

[28] The index we use is from Gruss (2019). The merit of using this index over the aggregate terms of trade index (the ratio of a country's export prices to import prices) is that it allows us to capture country-specific commodity price index that is truly representative of a country's commodity basket. It would have been important to also study commodity price upswings (booms). However, given ongoing concerns (eg. IMF REO, 2016) about how recent events associated with commodity price declines or busts will impact macroeconomic outcomes in Africa, we limit the discussion to busts and leave work on booms for future research.

The remainder of this paper is organized as follows. Section 2 briefly reviews the literature on commodity price volatility and macroeconomic performance while section 3 discusses the differences between the commodity terms of trade index used and the aggregate terms of trade index and why the former is preferred for this study. This is followed by the methodology used to identify commodity terms of trade busts and classify the episodes. Section 4 presents the event study and econometric analysis. The final section presents our concluding remarks and key takeaways.

5.2. On Commodity Price Volatility and Macroeconomic Performance

Developing countries especially those in sub-Saharan Africa who have historically been dependent on primary commodity exports, have been exposed to the volatility in international commodity markets. This volatility features as one of the main mechanism advanced in the literature to explain the detrimental effects of commodity dependence on growth and development outcomes.[29] The literature on commodity price volatility and its association with macroeconomic performance is large and dates back to works of Prebisch (1950), Singer (1950) and Harberger (1950). According to their main hypothesis, commodity dependence creates a persistent disadvantage for primary commodity exporting economies in their trade with industrialized countries because primary commodity prices tend to be more volatile than the prices of manufactured goods. Thus, these authors identify a deterioration in the terms of trade

[29] See works by Rodriguez and Sachs (1999) and van der Ploeg (2011)

for countries that export primary commodities. Since then, many studies have evaluated the effect of commodity price volatility on growth and economic development outcomes.

One strand of the literature has highlighted the economic instability that commodity price volatility creates. Particularly, these studies have established that by creating unanticipated fluctuations in GDP, commodity price volatility is one of the primary causes of the resource curse—the notion that countries with abundant resources experience stagnant or declines in economic growth (Van de Ploeg, 2011; Fernandez et al., 2017). Another strand of the literature is concerned with its effect on government fiscal balance. Commodity price volatility generates uncertainty about future government revenue that are largely sourced from the export of primary commodities. Thus, the volatility in this source of revenue may result in changes in public spending as the government reevaluates its expected revenue, causing substantial adjustment costs (Spatafora and Tytell, 2009).

A third strand of the literature focuses on its impact on firm decisions. For firms, commodity price volatility heighten their incentives to either delay investments until price levels settle or sometimes reallocate these investments and resources outside of the commodity sector (Bacon and Kojima, 2008). This reduces economic activity in the commodity sectors. In theory, when commodity prices decline, the resulting reallocation of investments should shift resources towards the manufacturing or service industries. Yet, commodity-dependent low-income countries with little mobility in labor resources often face challenges in reallocating their labor resources, thus the resulting decrease in economic activity in the commodity sectors ultimately spills over to the rest of the economy decreasing employment and incomes further (Hou, 2015).

Commodity price fluctuations can also have an adverse effect on countries' financial systems. The uncertainty created by fluctuations can result in increased deposit withdrawals, government loan defaults and a slowdown in lending (Agarwal et al. 2017). Such dynamics at one financial institution could potentially spill over to other domestic and regional lending institutions and open up the economy to systemic risks that are associated with a breakdown of overall fractional-reserve banking process. Eberhardt and Presbitero (2018) for instance, examine the effects of commodity price declines on banking crises in 60 low income countries and find that commodity prices declines are an important driver of banking crises in low-income countries. More specifically, a one standard deviation reduction in commodity prices is associated with a 1.4 percentage point increase in the probability of a banking crisis.

The above dynamics undermine economic growth and development planning in low-income countries. However, evidence suggest that in the short term, adopting prudent fiscal and monetary policies play an undeniable role in how much the economy is impacted by commodity price volatility (Landon and Smith, 2015). Other studies confirm that exchange rate flexibility and accumulating reserves play a significant buffering role in reducing the vulnerability to commodity price volatility (Aizenman et al., 2012; Roch, 2017; Adler et al, 2017). In the long term, however, diversification of the commodity basket in commodity exporting countries and the strengthening of sectors outside of the commodity sector (especially, the manufacturing sector) remain key in reducing vulnerability to the volatile commodity prices (Cavalcanti et al, 2015).

5.3. On the Difference between Commodity Terms of Trade and Aggregate Terms of Trade

Although aggregate terms of trade and commodity terms of trade are related, they are conceptually different. The aggregate terms of trade (ToT) is simply constructed as:

$$ToT = \frac{p_x^i}{P_m^i} \quad (4)$$

where p_x^i and P_m^i measure the ratio between a country i's export prices and its import prices. Constructing ToT this way ignores how commodity price volatility can affect countries in different ways based on the composition of both their export and import baskets. Thus, we employ a country-specific weighted commodity terms of trade index (*CToT*) index developed by Gruss and Kebhaj (2019) which is constructed as:

$$\Delta log\ (CToT)_{i,t} = \sum \Delta P_{j,t} \delta_{i,\ j,t} \quad (1)$$

where $P_{j,t}$ is the log of the real price of the commodity j in time t, Δ is the first difference and $\delta_{i,\ j,t}$ are country specific, commodity-specific time varying weights.[30] These log differences are then used to develop the indices in levels which are set to 2012 = 100 for the annual data. The time varying weights are based on the average trade flows over the previous three years, hence, the weights reflect changes that occur over time in the commodity basket instead of changes in response to price fluctuations in each period t. Specifically:

$$\delta_{i,\ j,t} = \frac{1}{3} \sum_{s=1}^{3} w_{i,\ j,t-s} \quad (2)$$

And the weight of the individual commodities, given by $w_{i,\ j,t}$ is constructed as:

$$w_{i,\ j,t} = \frac{x_{i,\ j,t} - m_{i,\ j,t}}{GDP_{i,t}} \quad (3)$$

[30] The commodities are divided into four categories: energy, metals, food and raw materials.

where $x_{i,\,j,t}(m_{i,\,j,t})$ represents the exports (imports) value of commodity j by country i in year t while $GDP_{i,t}$ represents country i's nominal GDP in US dollars in year t.

One merit in using this particular commodity terms of trade index is that it is based on international prices of up to 45 individual commodities rather than only a few commodities as previous studies have done. By weighting the index in terms of GDP and the comprehensive set of commodities, the index not only accounts for the significance of commodities based on the composition of an economy's export and import baskets but also accounts for cross-country differences in output.

Further, in an empirical study, Cashin and Pattillo (2006), using cointegration analysis and data on 42 SSA countries over the period 1960-1996 find that there is no long-term relationship between commodity terms of trade and aggregate terms of trade, hence using one as a proxy for the other may result in misleading policy recommendations. Thus, in discussing commodity terms of trade declines in this chapter, we elect to use the commodity terms of trade index over the aggregate terms of trade index. Looking at all countries, on average, the aggregate terms of trade and commodity terms of trade indices follow each other quite closely with the exception of 2005-2010 where the gap between the two widens (figure 5.1a). The differences are highlighted when the sample is divided across the different country groups: SSA, emerging and developing America and emerging and developing Asia (figures 5.1b-5.1d). For instance, in SSA, between 1990 until 2010, the commodity terms of trade index lay significantly above the terms of trade index. After 2010, the terms of trade trends higher than the commodity index. Same trends are observed for countries in emerging and developing America. In emerging and developing Asia, while the commodity terms of trade, was on average decreasing over time

until 2012, the same cannot be said for the terms of trade, providing some first-hand evidence that indeed the two do not always trend similarly. [31]

5.4. Identification, Dating and Classification of Busts

5.4.1. Identification and Dating of Busts

The identification process we choose for identifying commodity price declines (busts) applies the Bry-Boschan methodology which is a standard for dating upswing and downswing cycles (Harding and Pagan, 2002). Thus, for each country-specific commodity terms of trade series, the algorithm identifies large swings in the terms of trade-- upturns (trough to peak) and downturns (peak to trough). However, because the focus here is on busts, the upturns are of less importance for the analysis. Figure 5.2 illustrates this identification of downturns for the cases of Angola, Venezuela and Mongolia which are three relatively known cases in SSA, emerging and developing America and Asia, respectively. The figures show that Angola experienced commodity busts from 1991 to 1994, 1997 to 1998, 2008 to 2009 and then from 2012 to 2016. Venezuela was hit by a commodity bust from 1996 to 1999, from 2008 to 2009 and then a final one from 2012 to 2015 while Mongolia's was from 1997 to 1999, 2007 to 2009 and a longer one from 2011 to 2015. Importantly, the Bry-Boschan methodology seems to correctly capture all of the significant commodity busts.

[31] In general, we would expect a close relationship between the two indices (since the aggregate terms of trade also includes primary commodities) with the exception of where commodity prices rise significantly above the overall price level.

5.4.2. Classification of Bust Episodes

Following this, bust episodes are then classified. In an attempt to identify appropriate thresholds, we experiment with different thresholds and methods in order to ascertain the robustness of results. (Adler and Magud, 2015; Adler and Sosa, 2011; Roch, 2017).[32] Following Adler and Sosa (2011) who study countries in Latin America, we define a bust episode as an event in which the following two conditions hold:

i. a cumulative decline in the commodity terms of trade is at least 3 percentage points of GDP, from peak to trough, excluding the peak year but including the trough year

ii. at least two consecutive years of commodity terms of trade decline

The threshold of 3 percentage points is set at a relatively high level to increase the probability of identifying impact but at the same time not too high in order to preserve a reasonable sample size of countries and episodes. By requiring at least two consecutive years of commodity terms of trade declines, the sample does not include any short- lived episodes. This criteria identifies 55 bust episodes (Table 5.1).[33] In many of the countries, the commodity bust has been persistent, with an average bust episode duration of about 6 years.

After identifying and classifying the busts, the chapter uses two complementary approaches to document its macroeconomic consequences. We first use an event study analysis to study how these variables behave during bust episodes in a sample that consists of a number of SSA countries and countries in emerging and developing America and Asia. We do

[32] Thresholds in the literature are quite arbitrary and using alternative thresholds changes the duration and classification of bust episodes. For instance, the lower threshold of 1 and 2 percentage points reduces the magnitude of the commodity terms of trade shock and leads to the identification of many bust episodes, many of them very short-lived.

[33] Some countries have more than one identified bust episode.

this to observe if there are similarities and differences in the behavior of the variables over the duration of the bust episodes among the three regions.[34] A limitation of the event study is of course the fact that it does not control for other important variables. Thus, we use econometric estimations to formally quantify just how much the variables are impacted during bust episodes. This alternative method allows us to control for important external variables that can affect commodity prices. We collate a set of 15 economic indicators over the period 1990-2018 that can be classified under three rubrics: 1). Trade indicators 2). Sectoral indicators and 3). Macroeconomic indicators. The trade indicators include the current account *(CA_GDP)*, imports of goods and services *(TOTM_GDP),* exports of goods and services *(TOTX_GDP),* foreign direct investment *(FDI)* and reserves *(RES_GDP)*. The sectoral indicators include agriculture value added *(AGRIC_GDP),* industry value added *(IND_GDP)*, employment in agriculture *(AGRIC_TOTEMP)* and employment in industry *(IND_TOTEMP).* [35] The set of macroeconomic variables consist of national investment *(INV_GDP),* domestic credit to the private sector by banks *(LEND_GDP),* real GDP growth *(GDP_GROW),* government spending *(GOVT_GDP),* inflation *(INFLATION)* and the real effective exchange rate index *(REER).* These indicators are selected based on existing literature on the impact of terms of trade and the availability of data.

[34] The discussion in this chapter is meant to be largely descriptive of observed trends among the three regions. We reserve the in-depth analytical discussion to future work.
[35] The services sector is excluded hence the analysis of sectoral outcomes are relative to this sector.

5.5. Commodity Bust Episodes and Economic Dynamics

5.5.1. Event Study Analysis

The event study characterizes the median path of the different trade, sectoral and macroeconomic indicators during a typical commodity bust episode. To this end, we capture both the period building up to an episode until the end period, hence considering a total window of nine years that starts two years before the beginning of each episode. We experiment with two alternative ways of presenting the event study. We characterize the median path of the indicators using the standard raw data. We also transform the data and focus on the cyclical component of each indicator by observing its deviations from the HP trend.[36] As is typical in the existing literature on episodes, we present the results from the latter method (e.g., Gourinchas et. al., 2001; Cardarelli et al., 2010, Benigno et al., 2015). In each of the figures in 5.3-5.5, time t marks the start of the bust episode. Each panel presents a plot of the evolution of one of the variables for each of the three regions: SSA, emerging and developing America and emerging and developing Asia. Although all three groups have similar trends, the magnitude and responses of the variables to a commodity bust episode differs.

We start the analysis with the behavior of the commodity terms of trade in figure 5.3a to provide a check that we are indeed capturing commodity bust episodes. We see from the event study that a typical bust episode is more intense in countries in emerging and developing America than the other two regions. The commodity terms of trade rises above trend (indicated

[36] Results are robust when we consider the standard data and the transformed data. We also consider means rather than medians and there are very few differences in the trends produced by means, suggesting that results are not driven by outliers.

by the zero value on the y-axis) by about 5% for SSA and *EMEDEV_ASIA* and 7% for *EMEDEV_AMER*. In fact, a year after the start of the bust, the commodity terms of trade falls from its peak of 7% above trend to 2% in *EMEDEV_AMER* and decreases sharply thereafter (figure 5.3a). This relatively large shock in this region compared to the other two could be attributed to the composition of the commodity basket in *EMEDEV_AMER* which is largely oil. With oil being arguably the most volatile commodity that is traded, the sizeable drop in oil prices, especially since 2014 left countries like Bolivia, Venezuela and Ecuador in developing America most vulnerable (Aizenman et al., 2012; IMF Western Hemisphere REO, 2015).[37] Six years after the start of the bust, the commodity terms of trade of all three regions still remains below trend, highlighting the persistence of commodity busts.

Consider a small, open economy such as the ones in SSA, *EMEDEV_AMER* and *EMEDEV_ASIA* which faces an exogenous shock to its commodity terms of trade. The effect of this shock is seen contemporaneously in the current account (figure 5.3b). In the buildup towards the bust, current account of all three regions rises continuously and peaks at time t and is then depressed significantly after the start of the bust for all three regions. By period 6, however, *EMEDEV_AMER* and *EMEDEV_ASIA* return to their pre-bust level. The exchange rate is an important aspect of the response to lower commodity prices. In theory, lower commodity prices reduce the supply of foreign exchange in the commodity exporting countries causing an exchange rate depreciation (Adler and Magud, 2017). This is evidenced in SSA where weakening of the commodity terms of trade led to weaker currencies immediately (figure 5.5e). The REER subsequently drops below trend in t+4 before rising slowly for the remainder of the period.

[37] Oil prices plunged by almost 50 percent over two quarters in 2014 (IMF Western Hemisphere REO, 2015).

Strikingly, in *EMEDEV_AMER* and *EMEDEV_ASIA*, the REER displays the opposite pattern. Once the bust starts, the median REER appreciates above trend at t+1 for *EMEDEV_ASIA* before it depreciates. In *EMEDEV_AMER*, it appreciates continuously until it peaks in t+5 before depreciating. This could be attributed to active policies by the central banks in these regions to prevent sharp movements in their currencies, and to protect against the domestic inflation that exchange rate depreciation can bring (Roch, 2017). In SSA, the depreciation of the currencies seems to have influenced the movement of inflation creating temporary inflationary pressures (figure 5.5f). In the cases of *EMEDEV_ASIA* and *EMEDEV_AMER*, due to the slow response of the exchange rate, inflationary pressures were kept relatively under control over the duration of the bust episode. By t+6, the effect on inflation disappears for all three regions as they return to their pre-bust level.

When looking at the sectoral production and productive resources allocated to these sectors, relative to the value added in the services sector, there is an immediate decline in the shares of agriculture and industry value added for all three regions (figures 5.4a-5.4d). The share of productive resources allocated to the agriculture and industry sector also decline during bust episodes in SSA. In the subsequent years, these shares are very unstable. The decline in the tradable sector, though contrary to theory, could just be an indication that countries with relatively weaker industrial sector already in place are less able to withstand negative shocks of any kind. By period 6, however, the impact on value added in industry is practically zero in all three regions suggesting that a full adjustment occurs over this time horizon.

In line with the theory, we observe a decline in lending activity once the bust starts for all three regions. For the case of *EMEDEV_AMER*, by period 6, lending activity returns to its pre-bust level (figure 5.5b). On the government side, government spending decreases immediately due to reduced revenues related to the commodity shock (figure 5.5d). Interestingly, government spending stayed relatively stable in *EMEDEV_AMER* and *EMEDEV_ASIA* compared to SSA. The lasting impacts of a commodity bust depends partly on how the government allocated its revenues during booms. Thus, this could highlight the fact that when the bust episode started, SSA was already running a deficit while the other two had surpluses and so had a lot of room to implement a steady fiscal adjustment which helped with a much smoother adjustment to the shock (Roch, 2017). Looking at both domestic and foreign investment, both remain unstable over the duration of the bust (figures 5.5a and 5.3e, respectively).

In SSA and *EMEDEV_AMER*, the decline in commodity price is partially offset by a reduction in imports rather than an increase in exports (figure 5.3c-5.3d). This contraction in imports, however, appears to occur with a lag. A year after the start of the bust, imports peak in period in both SSA and *EMEDEV_AMER* before contracting. In the case of *EMEDEV_ASIA*, imports do not respond as sharply. Instead, we observe a slight increase in exports in response to the commodity bust. Figure 5.3f makes it clear that in *EMEDEV_ASIA*, reserves seem to act as a shock absorber and may have aided in the adjustment to the shock. Before the start of the episode, both SSA and *EMEDEV_AMER* reserves start to decline making them more vulnerable to shock while reserves in *EMEDEV_ASIA* do not start to decrease until three years after the shock.

Finally, in all three cases, the bust episode coincides with a decline in real GDP growth (figure 5.5c). However, the well-noted continuous improvement in the policy frameworks in these regions may have in part, allowed them to weather the large commodity terms of trade declines and still record above trend growth rates.

5.5.2. Econometric Analysis

To formally estimate the performance of the variables during a bust episode, we undertake an econometric exercise. Specifically, following Cespedes and Velasco (2012) and Adler et. al (2017), we estimate the following equation for each of our trade indicators, sectoral indicators and macroeconomic indicators:

$$y_{i,t} = \alpha + \beta \Delta CToT_{i,t} + \vartheta X_t + \varepsilon_{i,t} \quad (5)$$

where y is the difference between the average of the indicators of interest (trade indicators, sectoral indicators and macroeconomic indicators) during the commodity bust episode and the average in the two previous years before the start of the bust episode-year t for country i.
The regressor of interest is the change in commodity price, $\Delta CToT$. The $\Delta CToT$ is the percent change in the average commodity price index for country i during the bust episode-year t with respect to the average of the commodity price index in the two years prior to the beginning of the bust episode.[38] Finally, X_t is a vector of supplemental regressors. In the vein of Adler et. al (2017), we include two regressors that control for external conditions, namely the US real interest

[38] A full list of bust episodes is found in table 5.1

rate to control for global financial volatility and world real GDP growth rate for external demand. Finally, $\varepsilon_{i,t}$ is the error term.

We run a first set of baseline regressions on equation (5) where we use fixed effects estimation on the sample of countries. Although the commodity price shocks are exogenous due to the countries in the sample having little impact on international commodity prices, the model may suffer from issues that arise from simultaneity bias and omitted variables. Thus, we also use GMM estimators in which case we include the lag of the dependent variable. Due to the superiority of the GMM methods in the literature, in our discussion of the results, we prioritize those results above those of the fixed effects. The coefficients on the lagged dependent variables are generally significant across the regions highlighting that the persistence of economic variables is consistent with the empirical literature. Tables 5.2, 5.3 and 5.4 present the results for the trade variables, sectoral variables and the macroeconomic variables, respectively.[39]

The first set of econometric results show that for all three regions, a negative commodity price shock has a significant impact not only on the external sector of economies but also on the internal macroeconomic variables. As expected, this impact is broadly negative and the experiences are qualitatively similar especially among countries in SSA and *EMEDEV_AMER* while countries in *EMEDEV_ASIA* show a few salient differences in responses.

In general, the response of the trade variables to a negative commodity price shock is a worsening of the current account for all three regions, an adverse effect on imports, exports and reserves for SSA and *EMEDEV_AMER* and a statistically significant decline in FDI for SSA.

[39] For the sake of brevity, in tables 5.2-5.4, we omit the coefficients of the two regressors that we use as controls for external conditions.

Particularly, a 10% decline in the commodity price index is associated with a 1.55%, 1.82% and 1.03% worsening of the current account as a share of GDP in SSA, *EMEDEV_AMER* and *EMEDEV_ASIA,* respectively. This demonstrates that countries in *EMEDEV_AMER* are more sensitive to negative commodity shocks than the other two regions (columns 2, 4 and 6 in table 5.2). For SSA and *EMEDEV_AMER,* we find qualitatively similar and significant results for imports and exports with *EMEDEV_AMER* experiencing the largest negative impacts. If the commodity terms of trade declines by 10% then imports as a share of GDP decrease by 0.69% and 4.7% in SSA and *EMEDEV_AMER*, respectively (columns 8 and 10). Regarding exports, *EMEDEV_AMER* are more impacted by the decline. To get a sense of the magnitude, while exports for *EMEDEV_ASIA* rise by 0.5% and SSA's exports decrease by 1.67%, the decline in *EMEDEV_AMER* is about 6.19% (columns 14, 16 and 18).

Reserves in SSA and *EMEDEV_AMER*, are similarly impacted—about a 1.9% and 1.8% decrease in response to a 10% decline in commodity price index, respectively (columns 26 and 28). Interestingly, in the *EMEDEV_ASIA* case*,* reserves are positive and statistically significant (column 30). With respect to FDI, only SSA picks up a negative and statistically significant impact and surprisingly, this impact is quite minimal at only 0.06% of GDP (column 20). More broadly, this minimal effect on FDI could be an indication of the well-noted improvement in the business climate in SSA which might still be making the region attractive despite the volatility in commodity prices.

Turning to the sectoral variables in table 5.3, we find that, while agriculture value added and employment in agriculture (relative to services) decrease during the bust episode in all three regions, the response of the industrial sector differs by region. Specifically, a 10 %

commodity price decline is associated with a 1.40%, 1.52% and 0.76% decline in agriculture value added as a share of GDP in SSA, *EMEDEV_AMER* and *EMEDEV_ASIA* and an associated 1.14%, 2.56% and 1.61% decrease in employment in agriculture respectively (columns 2, 4, 6, 20, 22 and 24). On theoretical grounds, we expect that a commodity bust should lead to a fall in commodity sector production and labor demand and a reallocation of labor to other sectors. However, we find a negative impact on industry value added and employment in industry in SSA and *EMEDEV_AMER.* Industry value added declines by 2.29% compared to *EMEDEV_AMER*'s 0.74% and employment in industry in SSA decreases by 1.42% while *EMEDEV_AMER's* decline is 0.4% (columns 8, 10, 26 and 28). For *EMEDEV_ASIA,* we do not find evidence that the industrial sector is significantly impacted (columns 12, 18, 30 and 36).

Finally, with respect to the macroeconomic variables presented in table 5.4, in response to commodity price declines, we find that SSA experiences the largest impact on national investment and lending activity which is captured by domestic credit provided by banks to the private sector. While we do not find evidence of a significant impact in the other two regions, national investment and lending measures decline by 1.69% and 2.90%, respectively (columns 2 and 8) in SSA. The impact on government spending is more moderate in SSA than it is in *EMEDEV_AMER.* While the results for GDP growth are qualitatively similar among all three regions, only SSA and *EMEDEV_AMER*, pick up significance at the 1% level. If commodity price declines by 10%, then economic activity will reduce by 0.62% and 0.54% in these two regions. On the other hand, in *EMEDEV_ASIA*, government spending and GDP growth do not respond significantly during a bust episode. Finally, we observe that the shock is associated with a

decrease in inflation for *EMEDEV_AMER* and *EMEDEV_ASIA* but this is not the case for SSA where the depreciation of the REER seems to have contributed to inflationary pressures.

5.6. Concluding Remarks

This paper describes the experiences of 41 countries that underwent bust episodes between 1990 and 2018. Unlike other studies that have focused on the aggregate measure of terms of trade to describe the behavior of macroeconomic variables, we rely on a country-specific weighted commodity terms of trade index to describe the economic consequences of bust episodes using a broad sample of countries, with a special eye for SSA. The paper has two main goals. First, to document the behavior of key trade, sectoral and macroeconomic variables over bust episodes and secondly, estimate how much the variables increase or decrease during bust episodes.

The econometric results show that the response of the trade variables to a negative price decline is a worsening of the current account for all three regions, an adverse effect on imports, exports and reserves for SSA and *EMEDEV_AMER* and a minimal decline in FDI for SSA. While agriculture value added and employment in agriculture fall in response to negative commodity shocks in all three regions, the response and magnitudes of the industrial sector differs by region. We do not find evidence that industrial sector in *EMEDEV_ASIA* is significantly impacted. However, a negative impact on industry value added and employment in industry is observed in SSA and *EMEDEV_AMER* highlighting perhaps the influence of an already weak industrial sector. Moreover, the macroeconomic variables show that SSA experiences the largest effect on its national investment and lending activity. Government spending and GDP growth in

EMEDEV_ASIA are not significantly impacted by the shock. Finally, we observe that the shock is associated with a decrease in inflation for *EMEDEV_AMER* and *EMEDEV_ASIA* but this is not the case for SSA where the depreciation of the REER is associated with inflation.

The event study identifies a set of descriptive facts surrounding a typical commodity bust episode in the three regions. The most salient results from the event study are the following: Once the bust starts, the REER appreciates above trend for *EMEDEV_ASIA* and *EMEDEV_AMER* before depreciating. This could be attributed to active policies by the central banks in these regions to prevent sharp movements in their currencies. In SSA, the depreciation of the currencies seems to have influenced the movement of inflation creating temporary inflationary pressures. In SSA and *EMEDEV_AMER*, the negative commodity shock is partially offset by a contraction in imports rather than an increase in exports. This contraction in imports, however, appears to occur with a lag. In *EMEDEV_ASIA*, on the other hand, reserves seem to have acted as a shock absorber and may have aided in the adjustment to the shock.

Bust episodes coincide with a decline in the share of productive resources allocated to the agriculture and industry sector in SSA. In the subsequent years, these shares are very unstable. By period 6, however, the impact on industry value added is practically zero in SSA suggesting that a full adjustment occurs in this sector over this time horizon. Finally, while real GDP growth declines for all three, the well-noted continuous improvement in the policy frameworks in these regions may have in part, allowed them to weather the large commodity terms of trade and still record above trend growth rates.

Our results therefore suggest that policymakers should pay particular attention to the industrial sector in their economies and strengthen this sector so that it is able to compensate

for losses in the agriculture sector associated with commodity price shocks. Robust monetary frameworks may be needed to limit the inflationary responses to shocks in SSA. The importance of having a buffer such as reserves to smoothen the negative effects of the external shocks should remain a key consideration for policy makers going forward. Finally, on a positive note, the minimal effect on FDI could be an indication of the well-noted improvement in the business climate in SSA which might still be making the region attractive despite volatility in commodity prices. The above trend GDP growth rates during busts may also be a signal that continuous improvement in policy framework might help in dealing with external shocks.

5.7. Tables and Figures

Table 5.1. List of Bust Episodes, 1990-2018

SSA																												
Year	**'90**	**'91**	**'92**	**'93**	**'94**	**'95**	**'96**	**'97**	**'98**	**'99**	**'00**	**'01**	**'02**	**'03**	**'04**	**'05**	**'06**	**'07**	**'08**	**'09**	**'10**	**'11**	**'12**	**'13**	**'14**	**'15**	**'16**	**'17**	**'18**
Angola																													
Burkina Faso																													
Burundi																													
Cabo Verde																													
Chad																													
Congo, Dem.																													
Congo, Rep.																													
Côte d'Ivoire																													
Gabon																													
Ghana																													
Guinea																													
Lesotho																													
Liberia																													
Mozambique																													
Nigeria																													
Senegal																													
Seychelles																													
Sierra Leone																													
Togo																													
Zambia																													

(Continued)

Table 5.1. Continued

EMEDEV_AMER

Year	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
Belize						■	■	■	■	■	■																		
Bolivia																		■	■	■	■	■	■	■	■	■	■	■	■
Chile															■	■	■	■	■	■	■								
Costa Rica	■	■	■	■																									
Ecuador																						■	■	■	■	■	■		
Guatemala	■	■	■	■																									
Guyana				■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■					■	■	■	■	
Honduras									■	■	■	■	■	■	■	■	■			■	■	■	■	■					
Nicaragua									■	■	■	■	■	■	■	■	■	■	■	■									
Trinidad and Tobago	■	■	■	■	■																								
Venezuela							■	■	■	■													■	■	■	■			

EMEDEV_ASIA

Year	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
Brunei Darussalam	■	■	■	■	■	■	■	■	■									■	■	■	■	■	■	■	■	■	■		
Fiji										■	■	■	■	■	■	■	■	■	■	■									
Kiribati								■	■	■	■	■	■	■	■	■	■	■	■	■									
Mongolia																						■	■	■	■	■			
Papua New Guinea			■	■	■	■	■	■	■	■	■	■	■																
Solomon Islands			■	■	■	■	■	■	■				■	■	■	■	■	■	■										
Timor-Leste																						■	■	■	■	■	■		
Tonga							■	■	■	■	■	■	■	■	■	■	■	■	■										
Tuvalu											■	■	■	■	■	■	■	■	■	■	■	■							
Vanuatu																			■	■	■	■	■						

Notes: In many of the countries, the commodity bust has been persistent, with an average bust episode duration of about 6 years.

Table 5.2. Trade Performance during Commodity Bust Episodes

Dep. Variable (Y):	***CA_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
L.Y		-0.675***		-0.507***		-0.418***
		(0.008)		(0.108)		(0.023)
Δ CTOT	-0.212***	-0.155***	-0.183	-0.182**	-0.143	-0.103**
	(0.075)	(0.005)	(0.079)	(0.127)	(0.136)	(0.036)
Observations	182	149	125	105	96	85
R-squared	0.269		0.358		0.343	
AR(2)		0.518		0.157		0.379
Hansen p value		0.134		0.025		0.389

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.2 Continued

Dep. Variable (Y):	***TOTM_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(7)	(8)	(9)	(10)	(11)	(12)
L.Y		-0.577***		-0.821***		-0.913***
		(0.085)		(0.069)		(0.059)
Δ CTOT	0.119	-0.069***	0.077	-0.470***	-0.164***	0.06
	(0.071)	(0.010)	(0.106)	(0.039)	(0.091)	(0.029)
Observations	182	149	125	105	96	85
R-squared	0.303		0.318		0.479	
AR(2)		0.524		0.144		0.387
Hansen p value		0.372		0.041		0.078

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

(Continued)

Table 5.2 Continued

Dep. Variable (Y):	***TOTX_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(13)	(14)	(15)	(16)	(17)	(18)
L.Y		-0.844***		-0.435***		-0.969***
		(0.006)		(0.047)		(0.042)
Δ CTOT	0.037	-0.167***	-0.168*	-0.619***	0.049	0.050***
	(0.048)	(0.003)	(0.093)	(0.142)	(0.069)	(0.027)
Observations	182	149	125	105	96	85
R-squared	0.547		0.552		0.598	
AR(2)		0.506		0.133		0.118
Hansen p value		0.212		0.178		0.143

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.2 Continued

Dep. Variable (Y):	***FDI***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(19)	(20)	(21)	(22)	(23)	(24)
L.Y		-0.649***		-0.645***		-0.682***
		(0.002)		(0.047)		(0.005)
Δ CTOT	-0.027	-0.006**	-0.099	-0.020	0.003	-0.003
	(0.038)	(0.002)	(0.063)	(0.039)	(0.050)	(0.035)
Observations	182	149	125	105	96	85
R-squared	0.387		0.219		0.564	
AR(2)		0.671		0.149		0.146
Hansen p value		0.156		0.136		0.104

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

(Continued)

Table 5.2. Continued

Dep. Variable (Y):	***RES_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(25)	(26)	(27)	(28)	(29)	(30)
L.Y		-0.116***		-0.276***		-0.355***
		(0.003)		(0.093)		(0.023)
Δ CTOT	-0.041	-0.185***	-0.101	-0.180***	0.110	0.215**
	(0.046)	(0.001)	(0.068)	(0.011)	(0.113)	(0.081)
Observations	182	149	125	105	96	85
R-squared	0.038		0.126		0.146	
AR(2)		0.187		0.337		0.548
Hansen p value		0.504		0.177		0.631

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.3. Sectoral Performance during Commodity Bust Episodes

Dep. Variable (Y):	***AGRIC_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
L.Y		-0.732***		-0.380***		-0.608***
		(0.008)		(0.018)		(0.009)
Δ CTOT	-0.051**	-0.140***	0.003	-0.152***	-0.168**	-0.076*
	(0.025)	(0.007)	(0.057)	(0.014)	(0.071)	(0.038)
Observations	182	149	125	105	96	85
R-squared	0.523		0.405		0.671	
AR(2)		0.082		0.106		0.333
Hansen p value		0.112		0.095		0.317

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

(Continued)

Table 5.3. Continued

Dep. Variable (Y):	***IND_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(7)	(8)	(9)	(10)	(11)	(12)
L.Y		-0.633***		-0.845***		-0.591***
		(0.017)		(0.053)		(0.045)
Δ CTOT	0.003	-0.229***	0.042	-0.074***	0.095*	0.019
	(0.029)	(0.015)	(0.025)	(0.012)	(0.054)	(0.050)
Observations	182	149	125	105	96	85
R-squared	0.127		0.788		0.155	
AR(2)		0.331		0.507		0.366
Hansen p value		0.216		0.168		0.168

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.3. Continued

Dep. Variable (Y):	***AGRIC_TOTEMP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(19)	(20)	(21)	(22)	(23)	(24)
L.Y		-0.782***		-0.885***		-0.982***
		(0.008)		(0.141)		(0.046)
Δ CTOT	-0.173***	-0.114***	-0.147	-0.256**	-0.116	-0.161***
	(0.039)	(0.002)	(0.108)	(0.109)	(0.108)	(0.029)
Observations	182	149	125	105	96	85
R-squared	0.417		0.348		0.290	
AR(2)		0.206		0.129		0.535
Hansen p value		0.038		0.184		0.127

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

(Continued)

Table 5.3. Continued

Dep. Variable (Y):	***IND_TOTEMP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(25)	(26)	(27)	(28)	(29)	(30)
L.Y		-0.529***		-0.344***		-0.331***
		(0.007)		(0.123)		(0.049)
Δ CTOT	-0.000	-0.142***	0.075	-0.040***	-0.078	-0.193
	(0.132)	(0.011)	(0.123)	(0.120)	(0.068)	(0.061)
Observations	182	149	125	105	96	85
R-squared	0.019		0.048		0.163	
AR(2)		0.159		0.494		0.281
Hansen p value		0.191		0.412		0.274

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.4: Macroeconomic Performance during Commodity Bust Episodes

Dep. Variable (Y):	***INV_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
L.Y		-0.939***		0.232		-0.724***
		(0.008)		(0.167)		(0.020)
Δ CTOT	-0.204**	-0.169**	0.028	-0.013	0.042	0.087
	(0.061)	(0.018)	(0.054)	(0.150)	(0.096)	(0.065)
Observations	182	149	125	105	96	85
R-squared	0.569		0.281		0.783	
AR(2)		0.271		0.453		0.471
Hansen p value		0.027		0.095		0.156

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.4. Continued

Dep. Variable (Y):	***LEND_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(7)	(8)	(9)	(10)	(11)	(12)
L.Y		-0.964***		-0.909***		-0.714**
		(0.002)		(0.042)		(0.305)
Δ CTOT	-0.063	-0.290***	-0.089	-0.627	-0.347*	-0.442
	(0.0576)	(0.010)	(0.175)	(0.363)	(0.193)	(0.745)
Observations	182	149	125	105	96	85
R-squared	0.830		0.850		0.538	
AR(2)		0.349		0.095		0.336
Hansen p value		0.143		0.024		0.247

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.4. Continued

Dep. Variable (Y):	***GDP_GROW***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(13)	(14)	(15)	(16)	(17)	(18)
L.Y		-0.623***		-0.343		-0.447***
		(0.029)		(0.293)		(0.052)
Δ CTOT	-0.048	-0.062***	-0.017	-0.054***	-0.063	-0.060
	(0.038)	(0.003)	(0.057)	(0.059)	(0.047)	(0.029)
Observations	182	149	125	105	96	85
R-squared	0.101		0.178		0.137	
AR(2)		0.461		0.117		0.404
Hansen p value		0.431		0.140		0.497

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.4. Continued

Dep. Variable (Y):	***GOVT_GDP***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(19)	(20)	(21)	(22)	(23)	(24)
L.Y		0.808***		-0.842***		0.275**
		(0.055)		(0.059)		(0.132)
Δ CTOT	0.013	-0.009***	-0.002	-0.012**	0.001	0.018
	(0.009)	(0.001)	(0.012)	(0.006)	(0.005)	(0.013)
Observations	182	149	125	105	96	85
R-squared	0.597		0.747		0.102	
AR(2)		0.267		0.498		0.268
Hansen p value		0.211		0.128		0.336

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.4. Continued

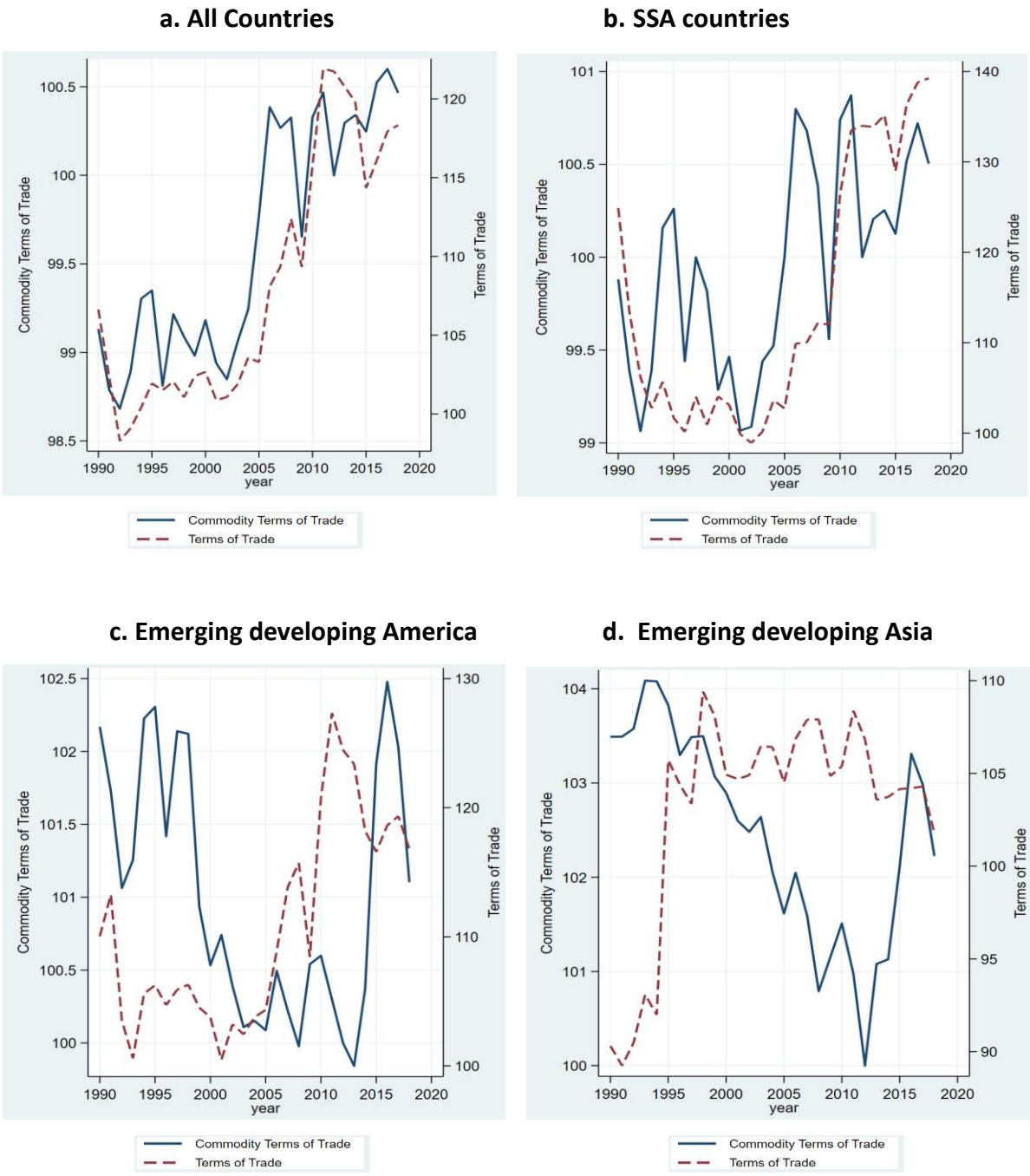
Dep. Variable (Y):	***REER***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(25)	(26)	(27)	(28)	(29)	(30)
L.Y		-0.899***		-1.787***		-0.657***
		(0.026)		(0.207)		(0.181)
Δ CTOT	-0.090	-1.570***	0.701	1.880**	0.098	0.139**
	(0.084)	(0.015)	(0.474)	(0.749)	(0.069)	(0.113)
Observations	182	149	125	105	96	85
R-squared	0.675		0.648		0.556	
AR(2)		0.335		0.134		0.160
Hansen p value		0.157		0.163		0.195

Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1

Table 5.4. Continued

Dep. Variable (Y):	***INFLATION***					
	SSA		EMEDEV_AMER		EMEDEV_ASIA	
	FE	GMM	FE	GMM	FE	GMM
VARIABLES	(31)	(32)	(33)	(34)	(35)	(36)
L.Y		-0.048***		1.276***		0.219
		(0.000)		(0.020)		(0.199)
Δ CTOT	2.739*	0.089***	-0.243	-0.347***	-0.092	-0.278***
	(1.412)	(0.018)	(0.476)	(0.088)	(0.066)	(0.035)
Observations	182	149	125	105	96	85
R-squared	0.034		0.357		0.087	
AR(2)		0.633		0.631		0.528
Hansen p value		0.004		0.217		0.16

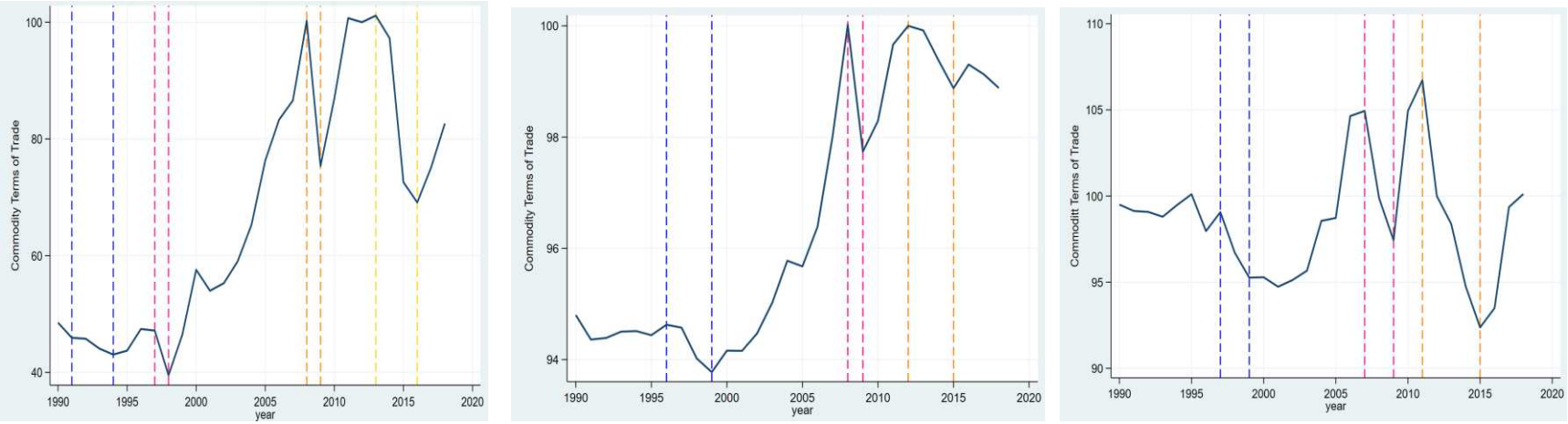
Notes: Includes controls for external conditions, namely the US real interest for global financial volatility and world real GDP growth rate for external demand. Robust standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1



Source and Notes: Author's computation based on terms of trade data. First-hand evidence that indeed the two do not always trend similarly and so using one as a proxy for the other may lead to misinformed analysis.

Figure 5.1: Commodity Terms of Trade and Aggregate Terms of Trade, 1990-2018

a. Angola **b. Venezuela** **c. Mongolia**

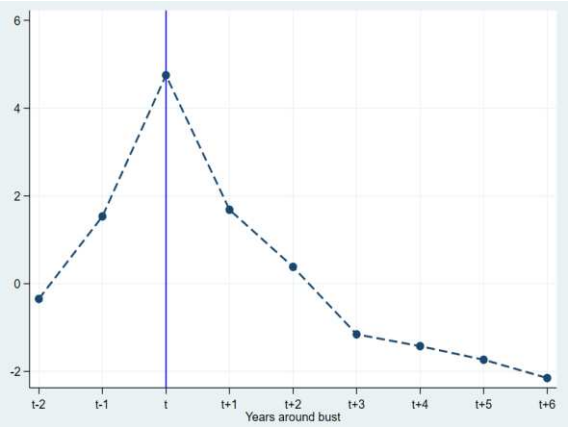


Source and Notes: Author's computation. Using the Bry-Boschan algorithm seems to correctly identify all major busts as illustrated with three case studies

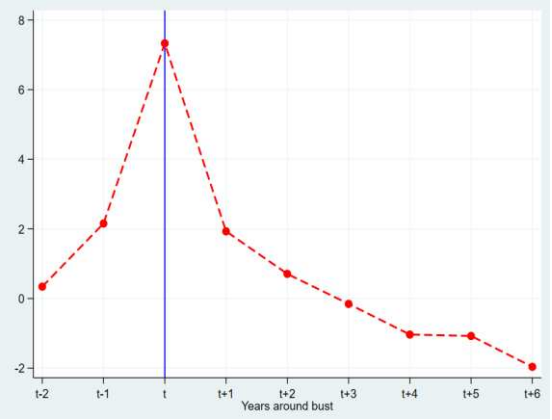
Figure 5.2: Commodity Terms of Trade Bust Examples using the Bry-Boschan Algorithm

a. Commodity Terms of Trade *(CToT)*

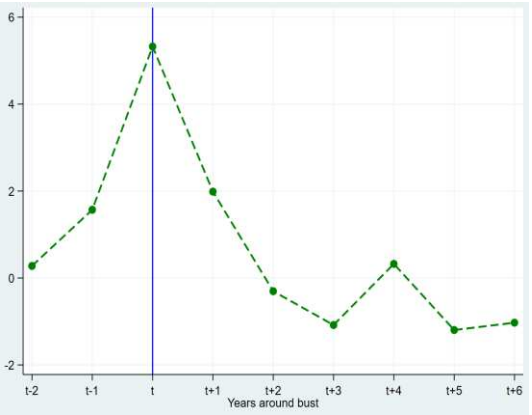
SSA



EMEDEV_AMER

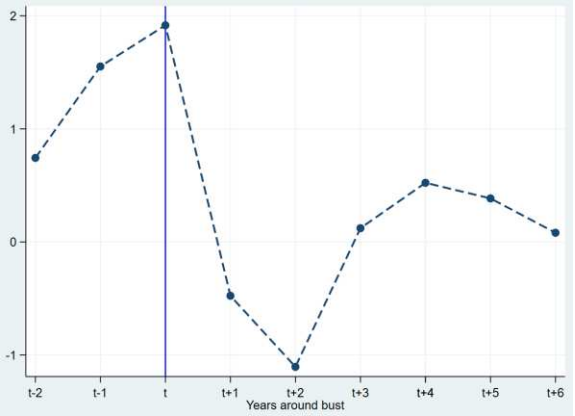


EMEDEV_ASIA

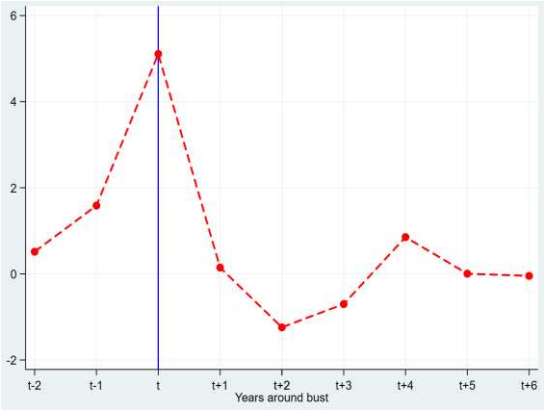


b. Current Account *(CA_GDP)*

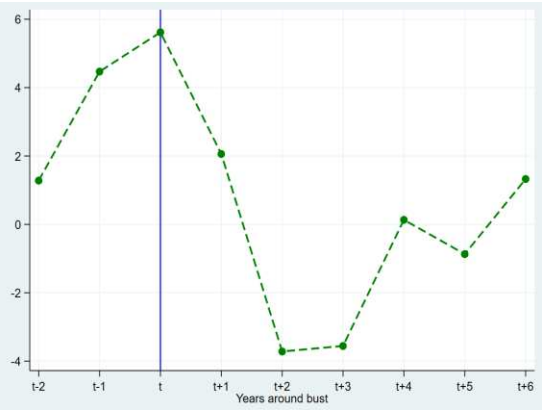
SSA



EMEDEV_AMER

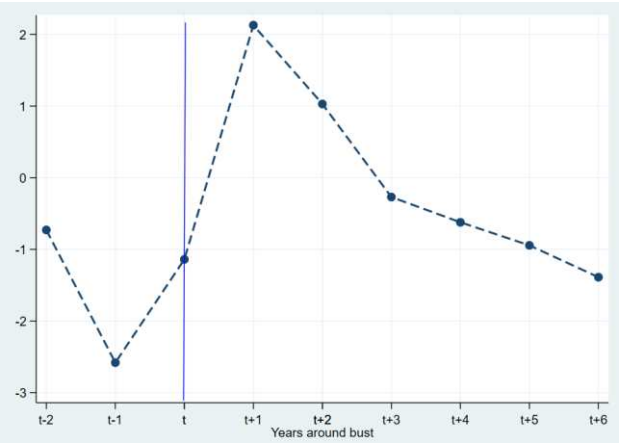


EMEDEV_ASIA

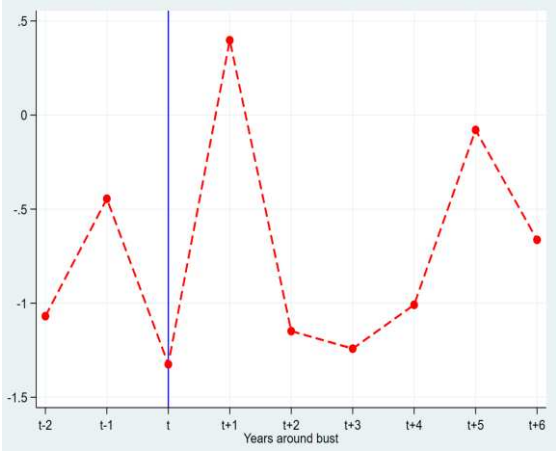


c. Imports *(TOTM_GDP)*

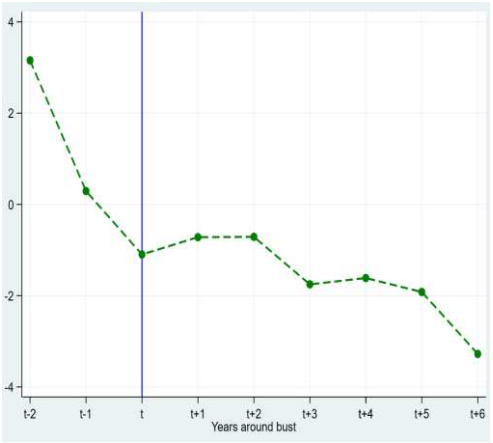
SSA



EMEDEV_AMER

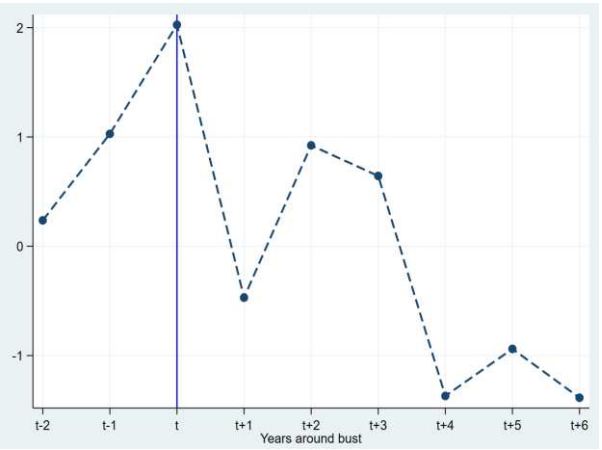


EMEDEV_ASIA

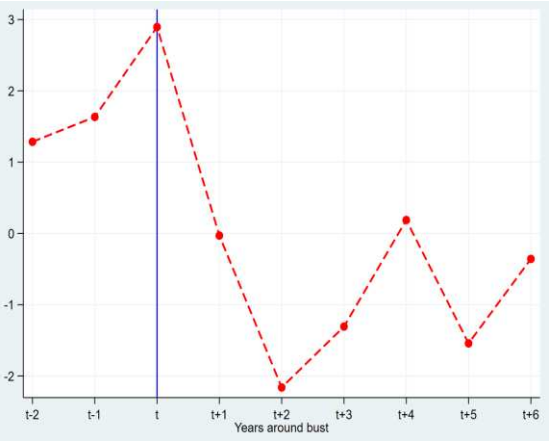


d. Exports *(TOTX_GDP)*

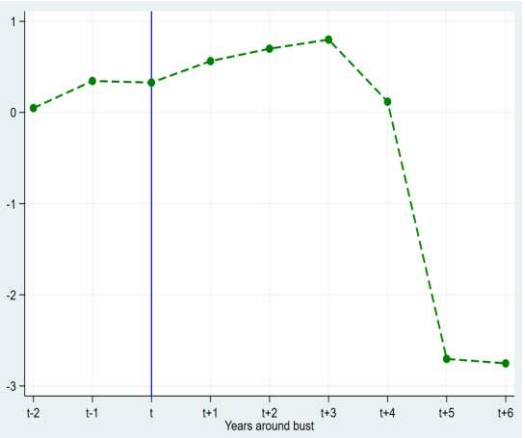
SSA



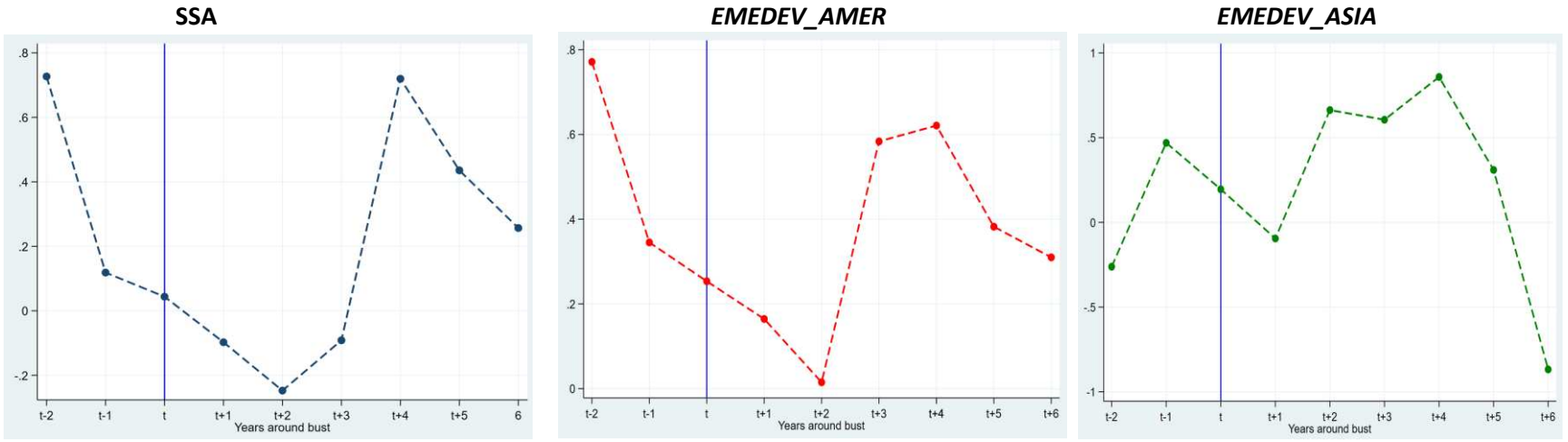
EMEDEV_AMER



EMEDEV_ASIA



e. Foreign Direct Investment (FDI)



f. Reserves *(RES_GDP)*

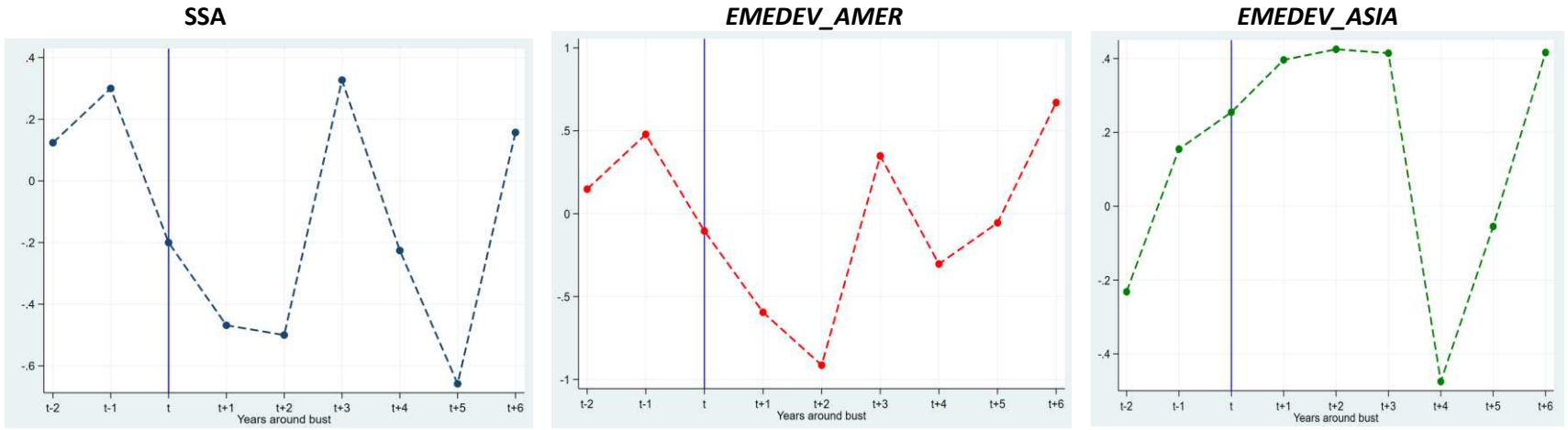
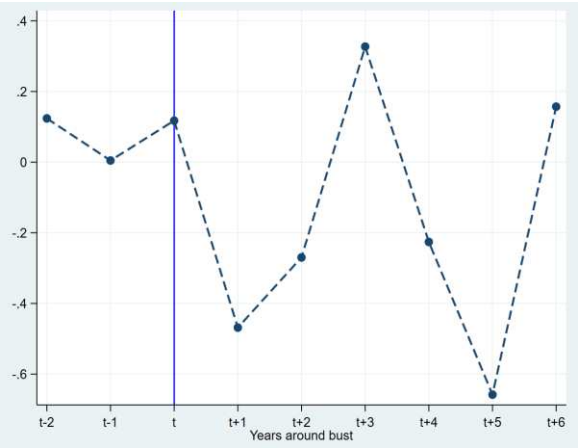


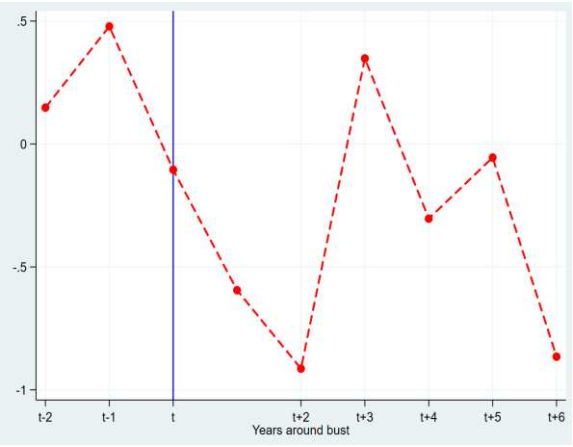
Figure 5.3: Trade Variables and Commodity Bust Episodes

a. Agriculture Value Added *(AGRIC_GDP)*

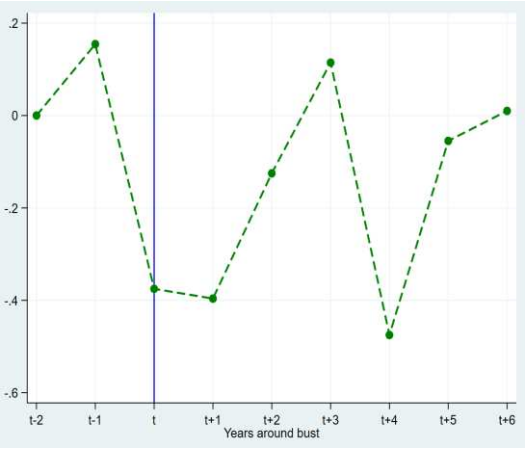
SSA



EMEDEV_AMER

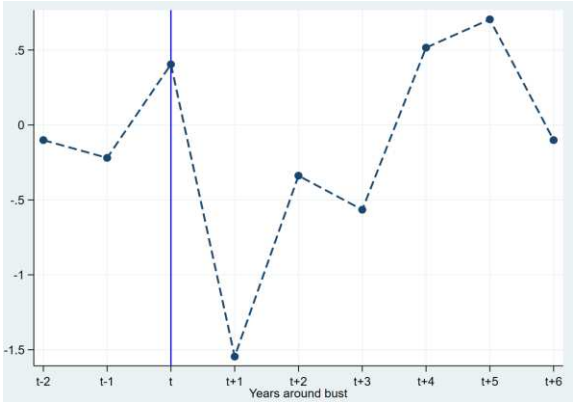


EMEDEV_ASIA

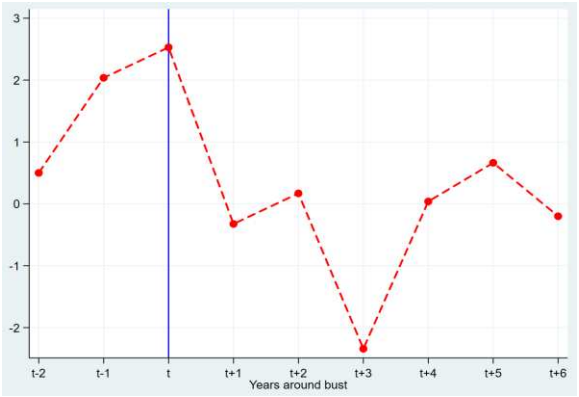


b. Industry Value Added *(IND_GDP)*

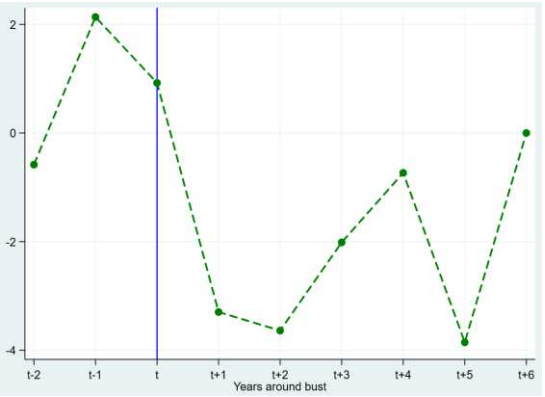
SSA



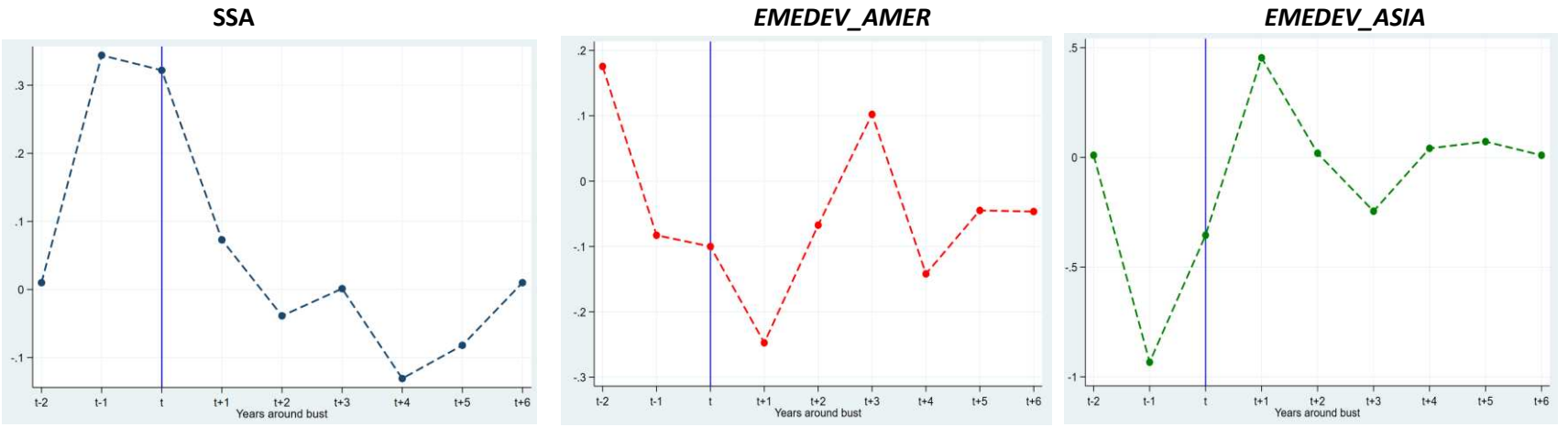
EMEDEV_AMER



EMEDEV_ASIA



c. Employment in Agriculture *(AGRIC_TOTEMP)*



d. Employment in Industry *(IND_TOTEMP)*

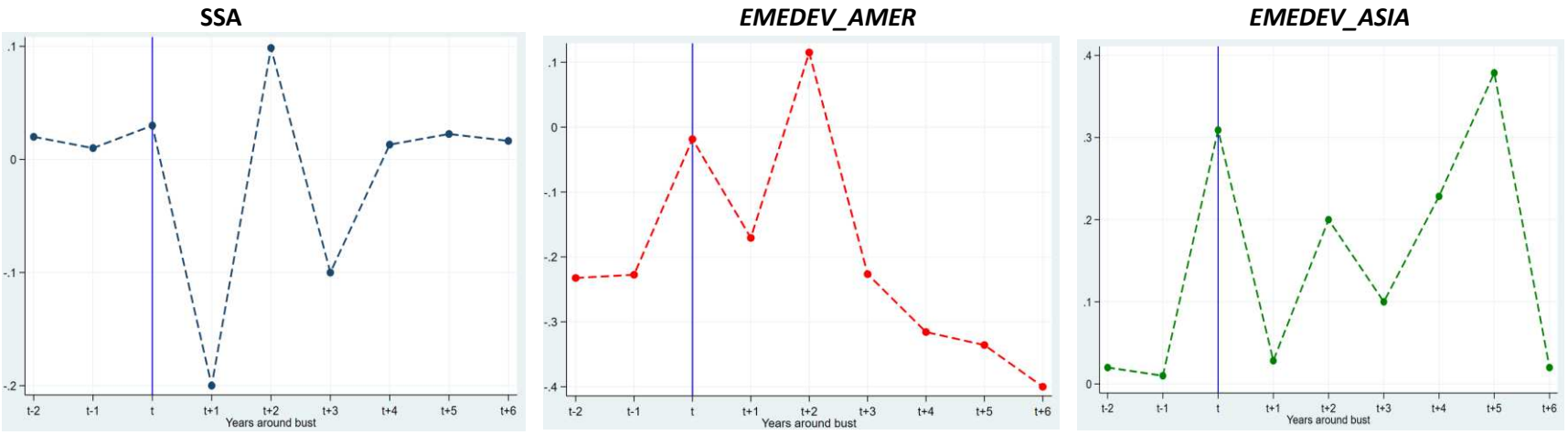
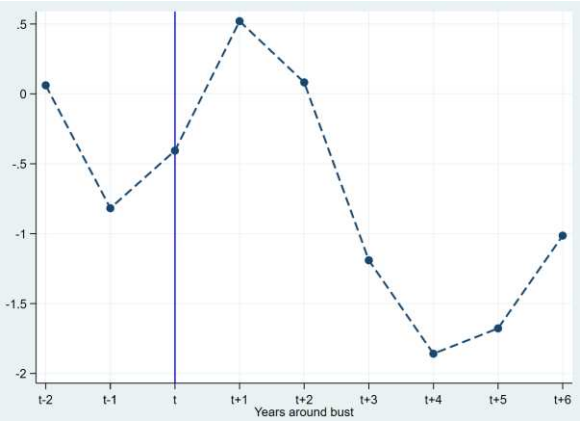


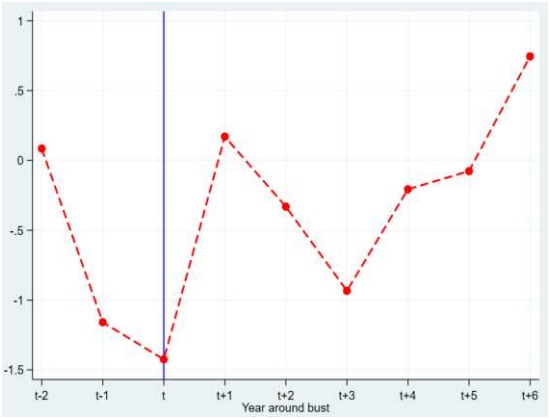
Figure 5.4: Sectoral Variables and Commodity Bust Episodes

a. National Investment *(INV_GDP)*

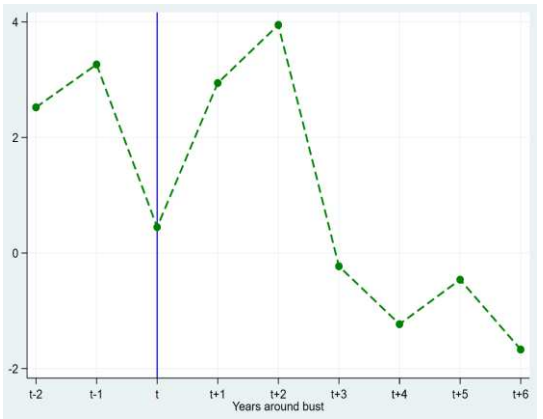
SSA



EMEDEV_AMER

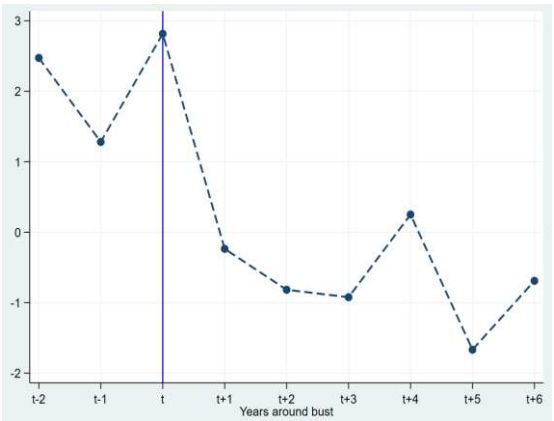


EMEDEV_ASIA

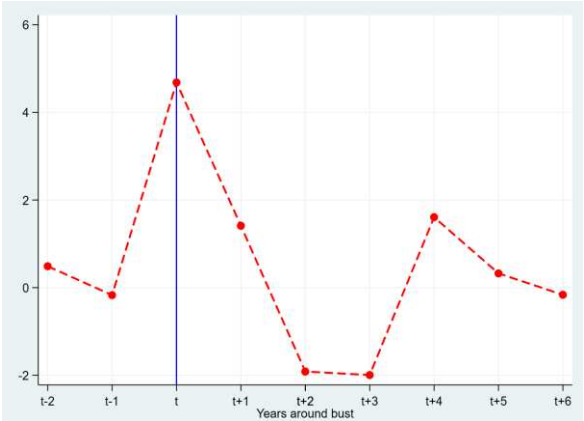


b. Domestic Credit to Private Sector *(LEND_GDP)*

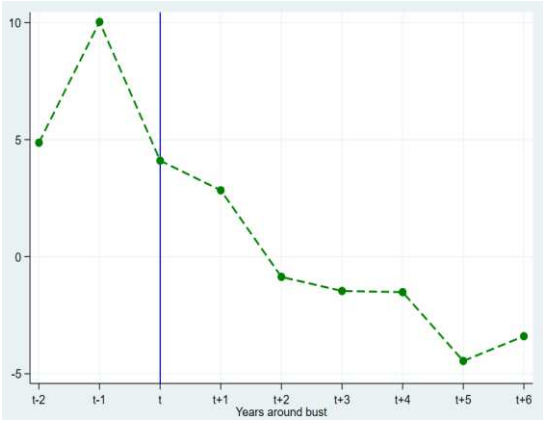
SSA



EMEDEV_AMER

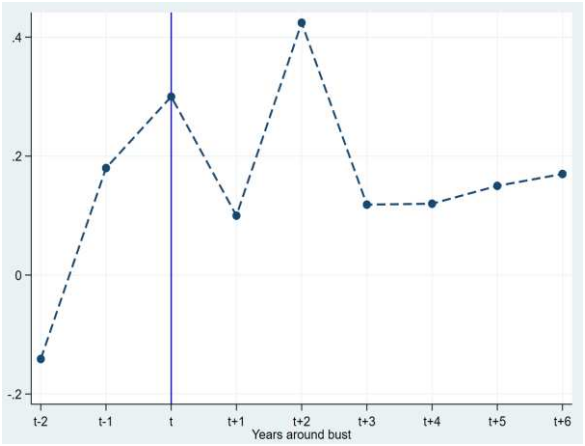


EMEDEV_ASIA

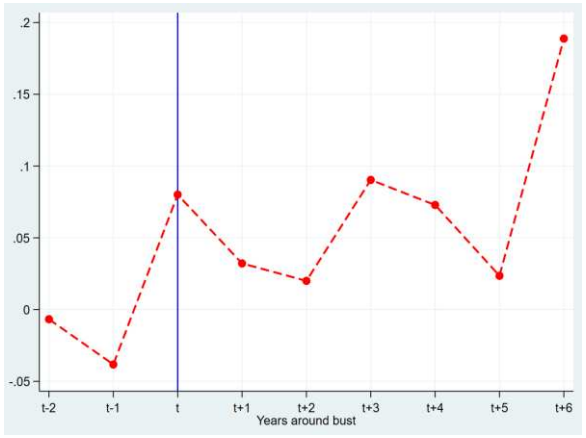


c. Real GDP growth *(GDP_GROW)*

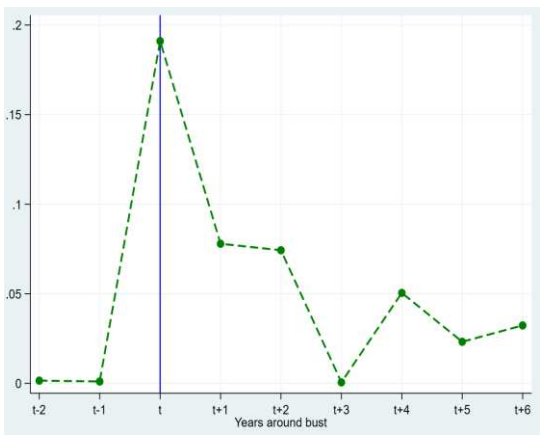
SSA



EMEDEV_AMER

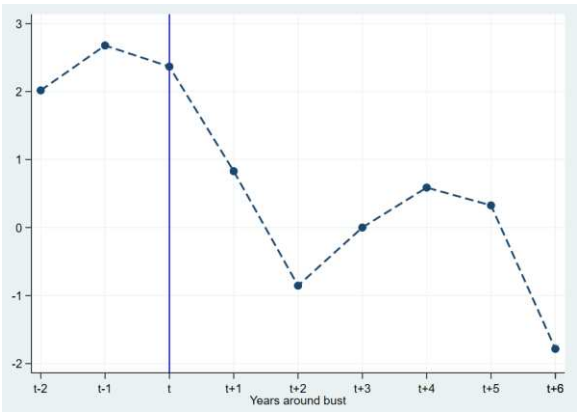


EMEDEV_ASIA

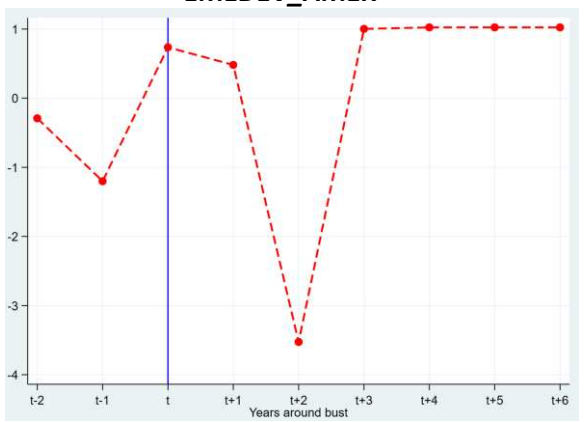


d. Government Spending *(GOVT_GDP)*

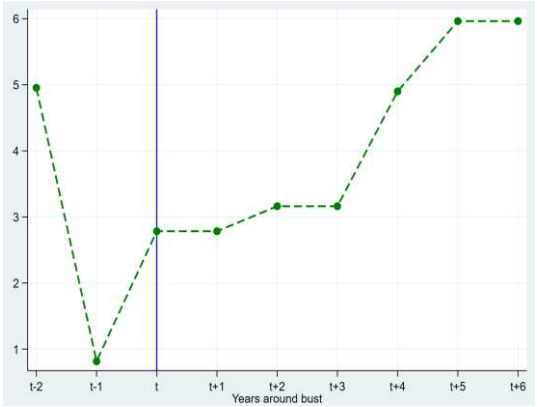
SSA



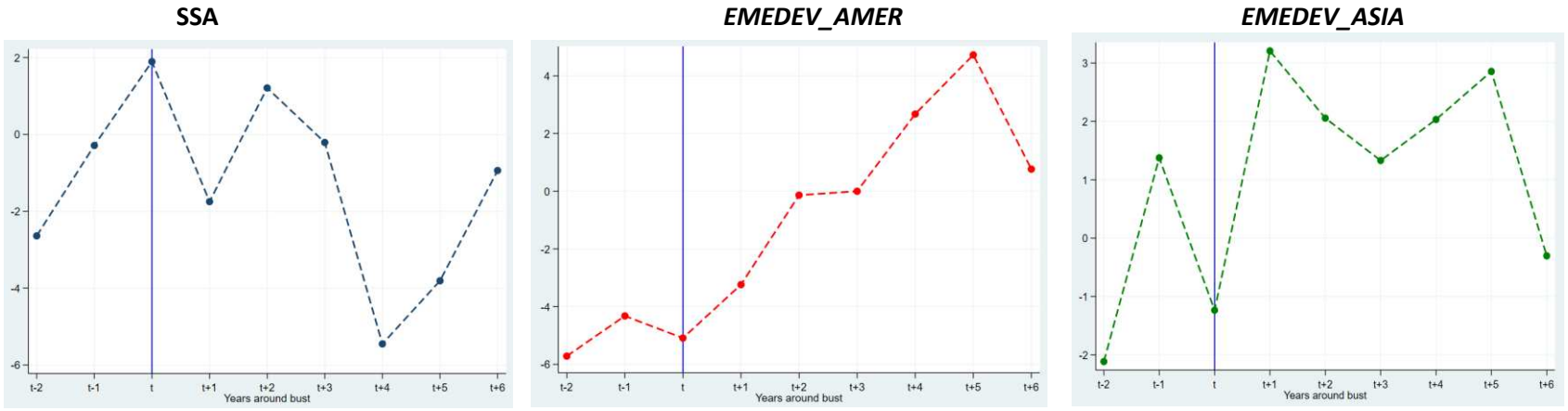
EMEDEV_AMER



EMEDEV_ASIA



e. REER



f. Inflation

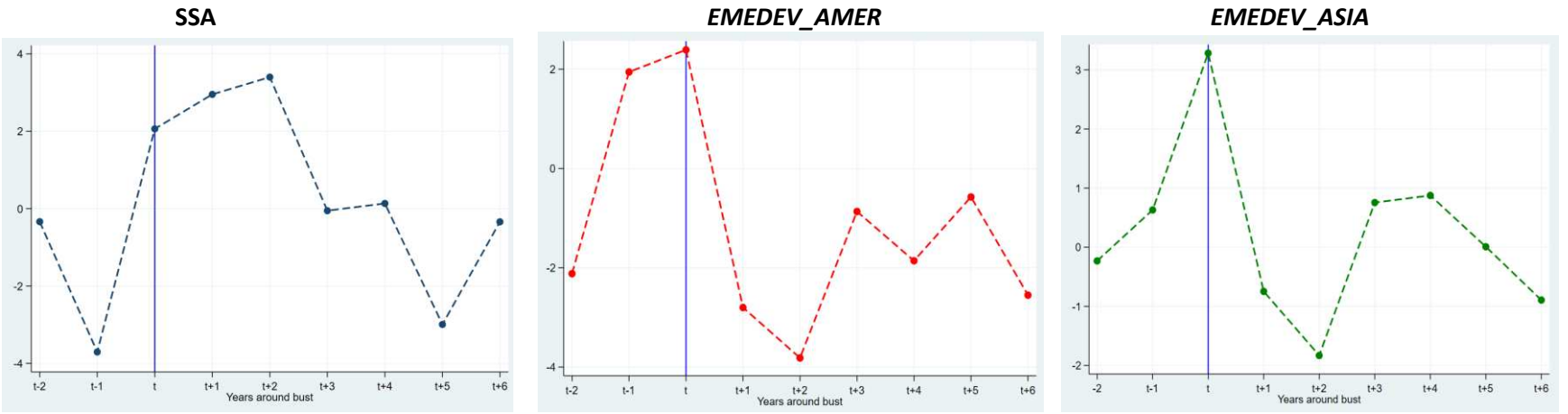


Figure 5.5: Macroeconomic Variables and Commodity Bust Episodes

References

Acemoglu, Daron and James Robinson. 2008. The Role of Institutions in Growth and Development. Commission on Growth and Development. Working Paper No. 10. Washington, DC: The World Bank.

Acemoglu, Daron. 2015. Localised and Biased Technologies: Atkinson and Stiglitz's New View, Induced Innovations, and Directed Technological Change. *The Economic Journal*, *125*(583), 443-463.

Adler, Gustavo, and Sebastian Sosa. 2011. "Commodity price cycles: The perils of mismanaging the boom."

Adler, Gustavo, Nicolas Magud, and Alejandro Werner. 2017."Terms-of-Trade Cycles and External Adjustment." Terms-of-Trade Cycles and External Adjustment1, no. 29 (2017): 1-33.

Adler, Gustavo, and Nicolas E. Magud. 2015. "Four decades of terms-of-trade booms: A metric of income windfall." *Journal of International Money and Finance* 55 : 162-192.

Africa Development Bank. 2014. *Global Value Chains and Africa's Industrialisation*. African Economic Outlook.

———. 2018. *Macroeconomic Performance and Structural Change*. African Economic Outlook.

Agarwal, I., Duttagupta, R., and Presbitero, A. F. 2017. Commodity Prices and Bank Lending in Low-Income Countries. International Monetary Fund, Working Paper WP/17/279.

Agénor, Pierre-Richard and Madina Agénor. 2009. Infrastructure, Women's Time Allocation, and Economic Development. Centre for Growth and Business Cycle Research Discussion Paper Series No. 116. The University of Manchester, Manchester.

Aizenman, Joshua, Sebastian Edwards, and Daniel Riera-Crichton. 2012. "Adjustment Patterns to Commodity Terms of Trade Shocks: The Role of Exchange Rate and International Reserves Policies." Journal of International Money and Finance 31, no. 8: 1990-2016.

Ali, Akkemik Kucuk. 2008. "Industrial Development in East Asia: A Comparative Look at Japan, Korea, Taiwan And Singapore (With Cd-rom)". World Scientific.

Ancharaz, V., Ghisu, P., Wan, J. 2014. "Can India's Duty-free Scheme Foster Trade and Development in African Least Developed Countries?" GREAT Insights. Volume 3, Issue 4. April 2014

Archibong, Belinda et. al. 2021. "Washington Consensus Reforms and Lessons for Economic Performance in Sub-Saharan Africa." *Journal of Economic Perspectives*, 35 (3): 133-56.

Arellano, Manuel, and Stephen Bond. 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations." *The Review of Economic Studies* 58(2): 277-297.

Artadi, Elsa V., and Xavier Sala-i-Martin. 2003. "The Economic Tragedy of the XXth Century: Growth in Africa." NBER Working Paper 9865, National Bureau of Economic Research, Cambridge, MA.

Athukorala, Prema-chandra, and Shahbaz Nasir. 2012. “Global Production Sharing and South-South Trade.” *Indian Growth and Development Review*.

Atta-Ankomah, Richmond. 2014. “China’s Presence in Developing Countries’ Technology Basket: The Case of Furniture Manufacturing in Kenya.” PhD thesis, The Open University, UK.

Bakari, Sayef. 2017. “The Impact of Domestic Investment on Economic Growth: New Evidence from Malaysia.”

Balassa, Bela. 1985. Exports, Policy Choices, and Economic Growth in Developing Countries after the 1973 Oil Shock. *Journal of Development Economics*, 18(1), 23-35.

Baltagi, Badi H., Panicos O. Demetriades, and Siong Hook Law. 2009. “Financial Development and Openness: Evidence from Panel Data.” *Journal of Development Economics* 89(2): 285-296.
Barro, Robert. (2003). Determinants of Economic Growth in a Panel of Countries. *Annals of Economics and Finance*, *4*, 231-274.

Beegle Kathleen. et al. 2016. “Poverty in a Rising Africa.” The World Bank.

Benigno, Gianluca, Nathan Converse, and Luca Fornaro. 2015. "Large Capital Inflows, Sectoral Allocation, and Economic Performance." *Journal of International Money and Finance* 55: 60-87.

Bernhardt, Thomas. 2014. “How Promising is South-South Trade as a Contributor to Economic Development in Asia and South America? Insights from Estimating Income Elasticities of Import Demand.” Unpublished Manuscript.

Blundell, Richard, and Stephen Bond. 1998. “Initial Conditions and Moment Restrictions in Dynamic Panel Data Models.” *Journal of Econometrics* 87(1): 115-143.

Braunstein, Elissa. 2016. “Revisiting the Role of Trade in Manufactures in Industrialization.” *Trade and Development Report*, 97-138.

Busse, Matthias, and José L. Groizard. 2008. "Technology Trade in Economic Development." *World Economy* 31(4): 569-592.

Cashin, Paul and Pattillo, Catherine. 2006. African Terms of Trade and the Commodity Terms of Trade: Close Cousins or Distant Relatives?. *Applied economics*, *38*(8), pp.845-859.

Céspedes, Luis and Velasco, Andres. 2012. Macroeconomic performance during commodity price booms and busts. *IMF Economic Review*, *60*(4), pp.570-599.

Chakraborty, Lekha. 2010. "Public Investment and Unpaid Work in India: Selective Evidence from Time-Use Data." *Unpaid Work and the Economy*. Palgrave Macmillan, London. 140-162.

Cirera, Xavier, Francesca Foliano, and Michael Gasiorek. 2016. "The Impact of Preferences on Developing Countries’ Exports to the European Union: Bilateral Gravity Modelling at the Product Level." *Empirical Economics* 50(1): 59-102.

Collier, Paul, and Anthony J. Venables. 2007. "Rethinking Trade Preferences: How Africa Can Diversify its Exports." *World Economy* 30(8): 1326-1345.

Dahi, Omar and Firat Demir. 2017. "South–South and North–South Economic Exchanges: Does it Matter Who is Exchanging What and With Whom?." *Journal of Economic Surveys* 31(5): 1449-1486.

Dasgupta, Sukti and Ajit Singh. 2006. "Manufacturing, Services and Premature Deindustrialization in Developing Countries: A Kaldorian Analysis." No. 2006/49. WIDER Research Paper.

De Loecker.2013. Detecting Learning by Exporting. *American Economic Journal: Microeconomics*, 5(3), pp.1-21.

Di Maio, Michele. 2009. "Industrial Policies in Developing Countries: History and Perspectives." *Industrial Policy and Development*, 107-143.

Dutt, Amitava Krishna. 2012. "Distributional Dynamics in Post Keynesian Growth Models." *Journal of Post Keynesian Economics* 34.3: 431-452.

Easterly, William. (2019). "In search of reforms for growth: New stylized facts on policy and growth outcomes". *National Bureau of Economic Research.*

Eberhardt Markus, and Andrea Presbitero. 2018. "Commodity Price Movements and Banking Crises" International Monetary Fund.

Edi, Eric. M. 2007. *Globalization and Politics in the Economic Community of West African States.* Durham and North Carolina: Carolina Academic Press

Ee, Chia Yee. 2016. "Export-led Growth Hypothesis: Empirical Evidence from Selected Sub-Saharan African Countries." *Procedia Economics and Finance* 35(2): 232-240.

Elson, Diane, and Pearson, Ruth. 1981. 'Nimble Fingers Make Cheap Workers': An Analysis of Women's Employment in Third World Export Manufacturing. *Feminist Review*, *7*(1), 87-107.

Ewelukwa, Uché U. 2011. "South-South Trade and Investment: The Good, the Bad and the Ugly-African Perspectives." *Minn. J. Int'l L.* 20: 513.

Fernandes Maemir, H. B., Mattoo, A., and Forero Rojas, A. 2019. Are Trade Preferences a Panacea?: The African Growth and Opportunity Act and African Exports. The World Bank.

Fold, Niels, and Marianne Nylandsted Larsen. 2011. "Upgrading of Smallholder Agro-food Production in Africa: the Role of Lead Firm Strategies and New Markets". *International Journal of Technological Learning, Innovation and Development*, *4*(1-3), 39-66.

Frazer, Garth, and Johannes Van Biesebroeck. 2010. "Trade Growth Under the African Growth and Opportunity Act." *The Review of Economics and Statistics* 92(1): 128-144.

French, Howard. 2014. "China's Second Continent: How a Million Migrants are Building a New Empire in Africa". New York: Knopf Publishers.

Gereffi, Gary, and Joonkoo Lee. 2016. "Economic and Social Upgrading in Global Value Chains and Industrial Clusters: Why Governance Matters." *Journal of Business Ethics* 133(1): 25-38.

Giovannetti, Giorgia and Sanfilippo, Marco. 2016. Do Chinese exports crowd-out African goods? An Econometric Analysis by Country and Sector. *In the Power of the Chinese Dragon* (pp. 10-41). Palgrave Macmillan, London.

Gonzales, Christian, et al. 2015. "Fair Play: More Equal Laws Boost Female Labor Force Participation". International Monetary Fund.

Gourinchas, Pierre-Olivier, Rodrigo Valdes, and Oscar Landerretche. 2001. "Lending booms: Latin America and the world". No. w8249. National Bureau of Economic Research

Grossman, Gene M., and Elhanan Helpman. 1991. *Innovation and Growth in the Global Economy*. MIT Press.

Gruss, Bertrand, and Suhaib Kebhaj. 2019. "Commodity Terms of Trade: A New Database."

Gutman, Jeffrey, Sy, Amadou and Chattopadhyay, Soumya. 2015. Financing African Infrastructure: Can the World Deliver?.

Harding, Don and Pagan, Adrian. 2002. Dissecting the Cycle: A Methodological Investigation. *Journal of Monetary Economics*, *49*(2), pp.365-381.

Haakonsson, Stine. 2009. The Changing Governance Structures of the Global Pharmaceutical Value Chain. *Competition and Change*, *13*(1), pp.75-95.

Haraguchi, Nobuya, Charles Fang Chin Cheng, and Eveline Smeets. 2017. "The Importance of Manufacturing in Economic Development: Has this Changed?" *World Development* 93: 293-315.

Harberger, Arnold, 1950, "Currency Depreciation, Income, and the Balance of Trade," *Journal of Political Economy*, Vol. 58 No. 1, 47–60.

Hausmann, Ricardo, Jason Hwang, and Dani Rodrik. 2007. "What You Export Matters." *Journal of Economic Growth* 12(1): 1-25.

Hofmann, Shim and H S Shin. 2016. "Sovereign yields and the risk-taking channel of currency appreciation", *BIS Working Papers*, no 538.

Hummels, David, and Peter J. Klenow. 2005. "The Variety and Quality of a Nation's Exports." *American Economic Review* 95(3): 704-723.
International Monetary Fund. 2014. "Regional Economic Outlook, Sub-Saharan Africa.

Isiksal, Aliya Z., and Odoh John Chimezie.2016. "Impact of Industrialization in Nigeria." *European Scientific Journal* 12(10).

Jauch, Herbert. 2011. "Chinese investments in Africa: Twenty-first Century Colonialism?", New Labor Forum (Murphy Institute), Vol. 20 No. 2, pp. 48-55.

Jebuni, C.D., Ogunkola, E.O. and Soludo, C.C., 1999. “A Review of Regional Integration Experience in Sub-Saharan Africa: A Case Study of the Economic Community of West African States.” *Regional Integration and Trade Liberalization in Sub-Saharan Africa*.

Jiménez-Rodríguez, Rebeca. 2011. The Impact of Oil Price Shocks: Evidence from the Industries of Six OECD Countries. Energy Economics. 30. 3095-3108. 10.1016/j.eneco.2008.06.002.

Kaldor, Nicholas.1966. ”Causes of the Slow Rate of Economic Growth of the United Kingdom: An Inaugural Lecture”. Cambridge University Press.

Kang, Sung Jin and Hongshik Lee. 2011. "Foreign Direct Investment and De-Industrialisation." *The World Economy* 34(2): 313-329.

Klinger, Bailey. 2009. Is South-South Trade a Testing Ground for Structural Transformation?. *UN Policy Issues in International Trade and Commodities Study*, (40).

Laursen, Svend. and Lloyd. Metzler. 1950, “Flexible Exchange Rates and the Theory of Employment,” *Review of Economics and Statistics*, Vol. 32, No. 4, pp. 281–299.

Le Blanc, David. 2015. "Towards Integration at Last? The Sustainable Development Goals as a Network of Targets." *Sustainable Development* 23(3): 176-187.

LoFaso, Michael. 2012. "Measuring the Persistence of Output Shocks: A Study of Output Behavior using ARMA and Monte Carlo Methods." *Colgate Academic Review* 7(1): 11.

Lopez-Acevedo, Gladys, and Raymond Robertson. 2016. “Stitches to Riches?: Apparel Employment, Trade, and Economic Development in South Asia”. World Bank Publications.

Lundgren, Charlotte Alun H. Thomas, and Robert C. York. 2013. *Boom, Bust or Prosperity? Managing Sub-Saharan Africa’s Natural Resource Wealth*. International Monetary Fund.

Manchin, Miriam. 2006. Preference Utilisation and Tariff Reduction in EU Imports from ACP Countries. *World Economy*, *29*(9), 1243-1266.

Maneschi, Andrea. 1992. “Ricardo’s International Trade Theory: Beyond the Comparative Cost Example.” *Cambridge Journal of Economics* 16(4) 421-437.

Manova, Kalina, and Zhiwei Zhang. 2012. "Export Prices Across Firms and Destinations." *The Quarterly Journal of Economics* 127.1: 379-436.

Markusen, James and Anthony J. Venables. 1999. "Foreign Direct Investment as a Catalyst for Industrial Development." *European Economic Review* 43(2): 335-356.

Mayer, Jörg, and Pilar Fajarnes. 2008. "Tripling Africa's Primary Exports: What, How, Where?." *The Journal of Development Studies* 44(1): 80-102.

McCausland, W. David, and Ioannis Theodossiou. 2012. "Is Manufacturing Still the Engine of Growth?" *Journal of Post Keynesian Economics* 35(1): 79-92.

McCormick, Dorothy. 2008. China & India as Africa's New Donors: The Impact of Aid on Development. *Review of African political economy*, *35*(115), 73-92.

Milberg, William, and Deborah Winkler. 2010. "Economic Insecurity in the New Wave of Globalization: Offshoring and the Labor Share Under Varieties of Capitalism." *International Review of Applied Economics* 24(3): 285-308.

Mueller, T. F. 2008. "The Effect of the African Growth and Opportunity Act (AGOA) on African Exports to the US." Paper presented at the Annual Meeting of the ISA's 49th Annual Convention, Bridging Multiple Divides.

Mullings, Robert. and Mahabir, Aruneema. 2018. Growth by Destination: The Role of Trade in Africa's Recent Growth Episode. *World Development*, *102*, pp.243-261.

Mujahid, Nooreen, and Naeem uz Zafar. 2012. "Economic Growth-Female Labour Force Participation Nexus: An Empirical Evidence for Pakistan." *The Pakistan Development Review*, 565-585.

Nilsson, Lars. 2002. "Trading Relations: Is the Roadmap from Lomé to Cotonou Correct?"Applied Economics, 34(4): 439–452.

Ofodile, Uche Ewelukwa. 2011. "South-South Trade and Investment Relations: Harmony and Disharmony—African Perspectives." In Proceedings of the ASIL Annual Meeting.

Ohlin, B. 1933. *Interregional and International Trade.* Cambridge, Mass: Harvard University Press.

Ozkan, Mehmet. 2008. Turkey Discovers Africa: Implications and Prospects*." SETA Foundation for Political, Economic and Social Research, Policy Brief*, 22.

Park, Jong-Dae. 2018. "Re-Inventing Africa's Development: Linking Africa to the Korean Development Model". Springer.

Palley, Thomas. 2012. "The Rise and Fall of Export-led Growth." *Investigación Económica*, 141-161.

Persson, Maria, and Fredrik Wilhelmsson. 2016. "EU Trade Preferences and Export Diversification." *The World Economy* 39(1): 16-53.

Peters, Ralf, David Vanzetti, and Christian Knebel. 2015. "Sand in the Wheels: Non-Tariff Measures and Regional Integration in SADC "

Pierson, Paul, and Theda Skocpol. 2002. "Historical Institutionalism in Contemporary Political Science." *Political Science: The State of the Discipline* 3(1): 1-32.

Prebisch, Raul. 1959. "Commercial Policy in the Underdeveloped Countries." *The American Economic Review* 49(2), 251-273.

Roch, Francisco. 2017.” The Adjustment to Commodity Price Shocks in Chile, Colombia, and Peru”. International Monetary Fund

Rodrik, Dani. 2016. “An African Growth Miracle?” *Journal of African Economies* 27(1): 10-27.

Rodriguez, Francisco, and Dani Rodrik. 2001. "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence." *NBER Macroeconomics Annual* 15: 261-325.

Rodriguez, Francisco, and Jeffrey D. Sachs. 1999. "Why do Resource-Abundant Economies Grow More Slowly?." *Journal of Economic Growth* 4(3): 277-303.

Roodman, David. 2009. “How to do Xtabond2: An Introduction to Difference and System GMM in Stata.” *The Stata Journal*, *9*(1), 86-136.

Sallah, Edrissa, and Fatih Saygili. 2018. “The Prospects and Challenges of Trade in Sub-Saharan Africa.” Unpublished Manuscript.

Razeen, Sally. 2013. "Asia's Story of Growing Economic Freedom." *Cato Institute Policy Analysis* 725.

Sarkar, Prabirjit, and Hans W. Singer. 1991. "Manufactured Exports of Developing Countries and their Terms of Trade since 1965." *World Development* 19(4): 333-340.

Schultz, Emma, David Tan, and Kathleen Walsh. 2010. Endogeneity and the Corporate Governance-Performance Relation. *Australian Journal of Management, 35*(2), pp.145-163.

Schmitt-Grohé, Stephanie, and Martín Uribe. 2018. "How Important are Terms-Of-Trade Shocks?." *International Economic Review* 59, no. 1: 85-111.

Seguino, Stephanie. 2010. "Gender, Distribution, and Balance of Payments Constrained Growth in Developing Countries." *Review of Political Economy* 22(3): 373-404.

Seguino, Stephanie, and Elissa Braunstein. 2019. "The Costs of Exclusion: Gender Job Segregation, Structural Change and the Labour Share of Income." *Development and Change* 50(4): 976-1008.

Sen, Julius. 2004. Negotiating Trade Agreements with India: The Reality Below the Water Line.

Sheppard, Eric, Philip W. Porter, David R. Faust, and Richa Nagar. 2009. *A World of Difference: Encountering and Contesting Development*. Guilford Press.

Smith, Adam. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations.* eds. RH Campbell and AS Sinner. New York: Oxford University

Soludo, Charles Chukwuma, Michael Osita Ogbu, and Ha-Joon Chang, eds. 2004. ”The Politics of Trade and Industrial Policy in Africa: Forced Consensus?” IDRC.

Spatafora, Nicola, and Irina Tytell. 2009. "Commodity terms of trade: The history of booms and busts.“

Stiglitz, Joseph E. 2018. “From Manufacturing Led Export Growth to a 21st Century Inclusive Growth Strategy for Africa: Explaining the Demise of a Successful Growth Model and What to Do About It." Unpublished Manuscript.

Storm, Servaas. 2017. “The Political Economy of Industrialization. Introduction to Development and Change Virtual Issue.” *Development and Change.* https://doi.org/10.1111/dech.12281.

Su, Dan, and Yang Yao. 2017. "Manufacturing as the Key Engine of Economic Growth for Middle-Income Economies." *Journal of the Asia Pacific Economy* 22(1): 47-70.

Szirmai, Adam, and Bart Verspagen. 2015. "Manufacturing and Economic Growth in Developing Countries, 1950–2005." *Structural Change and Economic Dynamics* (34): 46-59.

Tabi, Henri Ngoa, and Henri Atangana Ondoa. 2011. "Industrialization of the Manufacturing Sector and Trade Opening in Cameroon." *Research in World Economy* 2 (1): 58.

Tegegne Gebre-Egzlabher. 2007. Impacts of Chinese imports and coping strategies of local producers: the case of small-scale foot wear enterprises in Ethiopia. *Journal of Modern African Studies*, pp.647-679.

Tsani, Stella, Leonidas Paroussos, Costas Fragiadakis, Ioannis Charalambidis, and Pantelis Capros. 2013. "Female Labour Force Participation and Economic Growth in the South Mediterranean Countries." *Economics Letters* 120 (2): 323-328.

Tunali, Cigdem Borke, and Furkan Boru. 2019. "The Causality Effects of Manufacturing Sector on Some Macroeconomic Variables in Turkey." *Procedia Computer Science* (158):1109-1113.

UNCTAD. 2010. Most Favored-Nation Treatment. New York and Geneva: United Nations

———. 2015a. *Global Value Chains and South-South Trade*. New York and Geneva: United Nations

———. 2015b. *Foreign Direct Investment: An Important Source of External Development Financing for the Poorest Economies*. New York and Geneva: United Nations.

———. 2018. *Platforms and the Free Trade Delusion.* New York and Geneva: United Nations.

UNDP. 2013. *Assessing Progress in Africa Towards the Millennium Development Goals*. United Nations Development Program

UNIDO. 2013. “Sustaining Employment Growth: The Role of Manufacturing and Structural Change.” *Industrial Development Report*. United Nations Industrial Development Organization

Venables, Anthony . 2003."Winners and Losers from Regional Integration Agreements." *The Economic Journal* 113.490: 747-761.

Páez Vallejo. 2017. Assessing the Effect of Commodity Price Shocks in the Macroeconomic Performance and Fiscal Outcomes in Latin America Countries

Wamboye, Evelyn and Seguino, Stephanie, 2015. Economic Structure, Trade Openness, and Gendered Employment in sub-Saharan Africa. *Feminist Economist, 21(3):* pp. 82-113.

Weiss, M., and M. Clara. (2016). "Unlocking Domestic Investment for Industrial Development." *Inclusive and Sustainable Industrial Development Working Paper Series UNIDO, WP* (12): 1-54.

Wells, Heather, and Anthony P. Thirlwall. 2003. "Testing Kaldor's Growth Laws Across the Countries of Africa." *African Development Review* 15(2): 89-105.

White, Halbert. 1980. "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity." *Econometrica: Journal of the Econometric Society*, 817-838.

Windmeijer, Frank. 2005. A Finite Sample Correction for the Variance of Linear Efficient Two-Step GMM Estimators. *Journal of Econometrics*, *126* (1), pp.25-51.

Wintoki, Babajide, Linck James and Netter, Jeffry. 2012. Endogeneity and the Dynamics of Internal Corporate Governance. *Journal of Financial Economics*, *105*(3), pp.581-606.

Williams, Brock. 2015. "African Growth and Opportunity Act (AGOA): Background and reauthorization." Unpublished Manuscript.

Williamson, John. 1994. *The Political Economy of Policy Reform*. Peterson Institute.

Woolridge, Jeffrey. 2002. "Econometric Analysis of Cross Section and Panel Data."

Xiaoming Liu. 2017. “China's Role in Africa is as an Equal Partner”. https://www.telegraph.co.uk/news/2017/12/06/chinas-role-africa-equal-partner/ . accessed September 2019).

Xu, Xiuli, Xiaoyun Li, Gubo Qi, Lixia Tang, and Langton Mukwereza. 2016. "Science, Technology, and the Politics of Knowledge: The Case of China’s Agricultural Technology Demonstration Centers in Africa." *World Development* 81:82-91.

Zhao, Jingfeng, and Jianmin Tang. 2015. "Industrial Structural Change and Economic Growth in China, 1987–2008." *China & World Economy* 23(2): 1-21.