View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by Research Papers in Economics

Munich Personal RePEc Archive

Diversification: towards a new paradigm for Africa's development

Ben Hammouda, Hakim; Karingi, Stephen; Njuguna, Angelica and Sadni Jallab, Mustapha
United Nations Economic Commission for Africa

May 2006

Online at http://mpra.ub.uni-muenchen.de/13359/
MPRA Paper No. 13359, posted 12. February 2009 / 11:27

ATPC

Work in Progress

No. 35

Economic Commission for Africa

African Trade Policy Centre

Diversification: towards a new paradigm for Africa's development

By Hakim Ben Hammouda, Stephen N. Karingi, Angelica E. Njuguna and Mustapha Sadni-Jallab

In collaboration with

Nassim Oulmane, Hedi Bchir, Rémi Lang, Ben Idrissa Ouedraogo, Swaleh Islam and Patrick Osakwe

May 2006

ATPC is a project of the Economic Commission for Africa with financial support of the Canada Fund for Africa

ATPC is a project of the Economic Commission for Africa with financial support of the Canada Fund for Africa

This publication was produced with the support of the United Nations Development Programme (UNDP).

Material from this publication may be freely quoted or reprinted. Acknowledgement is requested, together with a copy of the publication The views expressed are those of its authors and do not necessarily reflect those of the United Nations.

ATPC

Work in Progress

Economic Commission for Africa

Diversification: towards a new paradigm for Africa's development

By Hakim Ben Hammouda, Stephen N. Karingi, Angelica E. Njuguna and Mustapha Sadni-Jallab*

In collaboration with

Nassim Oulmane, Hedi Bchir, Rémi Lang, Ben Idrissa Ouedraogo, Swaleh Islam and Patrick Osakwe

*The authors received excellent research assistance provided by Ambra Del Gaudio and Marie Gilleron which is gratefully acknowledged. The authors would also like to express their thanks to participants of two internal seminars of the Trade and Regional Integration Division that provided useful comments during the formative discussions of this research.

Table des matieres

Introduction

Africa's recent development history could be summarized into two big periods. The first occurred in the first years of independence where African countries sought to support political independence by strengthening their economic autonomy. Most countries therefore commenced vast modernization programmes of their economic structures within the framework of import-substitution strategies. These Modernization strategies were not limited to industrial development but also dealt with agricultural development through the desire to reduce dependency on cash products and increase the share of food products. States played an important role in economic and social modernization strategies through public investments in industry, agriculture and infrastructure. However, these investments required a significant recourse to external intervention in different forms, such as external debt, foreign direct investments (FDI) and transfer of technology.

Modernization played a major role in Africa's development in the 1960's and 1970's, launching industrial development on the continent as well as rapid growth in investments. The agricultural sector also witnessed significant development and an improvement in productivity due to public investments; as well as the development and popularization of research activities and policies enabling access to fertilizers and other agricultural chemicals. Also, modernization saw the beginning of a significant increase in job creation and a slight reduction of unemployment in most African countries, coupled with significant progress in the social sector particularly in the area of education and health. Finally, it is important to mention that the important growth performances registered by African countries in the first two post-independence decades has not been equalled since then.

The limitations of this first development experience became evident from the early 1980's, due to slow growth, great macroeconomic imbalances and the emergence of the debt crisis. These imbalances were the manifestations of a deeper crisis originating from the inability of the growth dynamics to encourage long-term productivity growth and competitiveness of African economies. Indeed, the dynamics of industrial development did not favour strong growth in productivity and a diversification of African countries' economic structures.

Furthermore, the strong protection that African industries benefited from translated into the development of commodity price behaviour that did not favour investments to improve the competitiveness of new industrial activities. Also, agricultural development strategies were unable to improve agricultural productivity or reduce dependency on cash products. Finally, the 1980's saw the start of a reduction in external resources for development with increased debt costs, reduction in international aid and reduction of FDI flows to Africa.

In the 1980's, slow growth marked the beginning of a new period in the continent's development history. This relates to reforms implemented by African countries. These reforms were geared towards reducing big macroeconomic imbalances and boosting economic growth. At the macroeconomic level, stabilization policies sought to reduce local demand in order to reduce public deficits and balance of payments. Furthermore, these reforms were undertaken during a new era when growth and development was not to be dictated by local markets and therefore the role of the State was to change completely. Opening up to the outside world and directing investments towards export activities was at the centre of the new growth dynamic. Furthermore, these reforms reduced the role of States in economic activities through privatization of public enterprises and greater reliance on the market mechanism to regulate economic activity. Thus, stabilization and reform were the catchwords of the new development era that began in Africa in the early 1980's.

Admittedly, some African countries have improved their macroeconomic imbalances and registered an increase in growth. However, this growth was fragile and remained at low levels. In addition, Africa continues to be marginalized in the international economy and the different debt reduction plans have not led to a reduction of the debt burden as evidenced by the continuation of the debt overhang. Moreover, an explosion of poverty in Africa characterized the 1980's and the 1990's.

The fight against poverty took centre stage in the preoccupations of public authorities in Africa and the international community from the mid 1990's. Thus, poverty reduction strategies became the framework for economic policies and development choices in most African countries. This reorientation of economic policies was reinforced by the adoption of the Highly Indebted Poor Countries (HIPC) initiative for debt reduction, with the adoption of a poverty reduction strategy as a precondition to accessing HIPC. Most African countries committed to the poverty reduction path from the mid 1990's and a great number of them have reached the HIPC completion point that allows them to benefit from significant external debt reduction and increase social sector spending in order to combat poverty and assist vulnerable populations. Yet, growth remains weak and fragile, and far from the levels required to achieve the Millennium Development Goals and reduce poverty by half in spite of their efforts in the social sectors.

Thus, the African continent finds itself at crossroads. Indeed, the different development path adopted since the onset of the debt crisis in the 1980s did not lead to a new era of growth and prosperity, partly due to the priorities set. . At this stage, it is possible to identify two major concerns: macroeconomic stabilization in the 1980's and combating poverty in the 1990's. On the one hand, there was need to reduce macroeconomic imbalances and restore economic stability. On the other, there was need to face up to the sharp rise in poverty by strengthening social programmes in African countries and by giving massive

aid to the more vulnerable sections of the population. However, these choices have not paid particular attention to productivity and to the strengthening of industrial potential of African countries.

Yet, it must be noted that these orientations have not had the expected effects. Indeed, disengagement of the State from the productive sectors did not translate into rapid growth in private investment. FDI's to Africa have remained marginal in spite of efforts by the different countries to liberalize host legislations for foreign companies. These investments are concentrated in a few countries and are directed essentially to the oil sector. Furthermore, local private investment was limited and not able to play a dynamic role in the productive sector. Thus the low investments translated into a strong deterioration of the productive fabric. Some public enterprises closed down. Others were privatized but the new proprietors did not make the necessary investments to improve production capacities. Enterprises that remained under State supervision equally suffered from low investments and deterioration of productive capacity. Clearly, new private enterprises have been created which call for new technologies. However, the number of these enterprises is very limited and their investments have not changed the quality of the productive fabric in the African countries. Thus at the end of the 1990's most African countries find themselves with a rather old productive fabric with low productivity. This situation will weigh heavily on the growth dynamics and the continent's prospects for development.

In the 1980's and 1990's, the low renewal and modernization rate of the productive potential in the development choices will have had a significant impact on African countries on at least three levels. Firstly, this situation explains in part the fragile growth on the continent. Indeed, the dynamics of growth were set up on an *empty stomach* and without the ability to achieve the levels needed to attain the Millennium Development Goals. As a result, these dynamics are more linked to the evolution of world markets of some products like oil, coffee, and cocoa that are exported by Africa than to performances of the productive sector. Besides the fragility of the local productive fabric had a negative effect on the performance of export sectors and translated into increased marginalization of African economies in the globalization process.

At this stage, it is pertinent to note the fact that African countries were not able to take full advantage of the preferential access to developed countries' markets granted to them for several years. It should also be mentioned that the fragility of the productive fabric explains Africa's low benefits in the Doha Round negotiations. African countries played an important role in opening a new cycle favourable to development during the World Trade Organization (WTO) Ministerial Conference in Doha in 2001. This new Round should ensure a greater opening of developed countries' markets for exports from African countries and grant these countries a degree of freedom in defining their industrial and agricultural policies. Yet, the different studies and simulations undertaken up to now show that for African countries,

benefits from the Doha Round will be limited[1]. The deplorable state of the productive technology as well as poor diversification of industrial structures are at the origin of the small benefits derived by African countries from the current Round of Negotiations.

The poor results registered by the continent during the last two decades and the increasing marginalization of African economies requires a renewal of the development debate. The debate must move out of the well-trodden tracks and give new prospects for the continent's development. In the past, the emphasis placed on macroeconomic stabilization and combating poverty in a context of decrepit economic structures showed its limitations. The renewal of the debate on development as well as new strategies must take into account the current state of productive structures in African economies and more particularly their obsolete and concentrated nature.

The modernization and diversification of African countries' economic structures could constitute a new paradigm for Africa's development in the years to come. This new paradigm will open new prospects for the continent's development. First of all, it will give a new basis for strong and sustainable growth. Then it will favour an improvement of African countries' competitiveness and improve international integration. Finally, the strengthening of growth and competitiveness will constitute the basis for sustainable improvement of the well being of populations while combating poverty.

The objective of this report is to reflect on the problem of diversification and to make it a framework to formulate development strategies for African economies. This objective is in line with development priorities set by NEPAD. Indeed, the continent's strategic development framework has put emphasis on the crucial need to diversify the continent's economic structures in order to improve competitiveness of African economies and strengthen regional integration.

However, making diversification a new development paradigm does not mean reverting to the policies and development strategies of the 1970's. Indeed, the objective would be to renew the debate on diversification taking into account recent developments in the literature on this issue and lessons from the continent's development experience. More particularly, these strategies must break with protectionist decisions of the past and integrate into the search for balance between local markets and opening up to international markets. Finally, new diversification strategies must come into the current economic globalization context and improve integration of African economies into the global economy. At the same time, they must maintain and strengthen policy space in the formulation and implementation of national decisions and policies.

1 At this stage, see the different studies undertaken by the Trade and Regional Integration Division of the United Nations Economic Commission for Africa on the impact of the Doha Round on Africa, particularly: - T. Achterbosch, H. Ben Hammouda, P. Osakwe and F. van Tongeren, **Trade liberalization under the Doha Development Agenda: Options and consequences for Africa**, ATPC Work in Progress, August 2004.

Eventually, by revisiting the diversification problem this report seeks to formulate a new framework to define the continent's development policies and strategies for the coming years. From this perspective, we would assume that the issue could open a new era in the development debate and action of the continent. But, the renewal of the problem, must take into account results of past experiences and continuous change in the global economic context.

This report is articulated around the following chapters. After this introduction, the first chapter will underscore Africa's development stakes. This analysis will enable us to tackle the problem of modernizing and diversifying the productive fabric of African economies. The second chapter will be devoted to the recent renewal of the diversification problem. It will enable us to underscore the new concerns and the development of the debate on this issue since the failure of the experiences of the 1970's. The third chapter will be devoted to the presentation and the discussion of diversification gauging tools. The fourth chapter will present facts connected to the diversification of African economies. In this chapter, we took a comparative approach that would allow us to put into perspective the different sub-regional experiences as well as link Africa's economic history in comparison to that of Asia and Latin America. In the fifth chapter, we will abandon the descriptive approach in favour of analytical elements and attempt to determine factors justifying diversification. This approach will be reflected upon in detail in the sixth chapter where we will focus our attention on the relation between diversification and economic growth. Finally, in the last chapter we will look into formulating economic policy recommendations for African countries in the area of diversification.

Chapter 1:
Africa at a Crossroads

In the 1980's African countries underwent big financial and economic crises, which were exacerbated by conflicts, wars and political instability. In response, African countries put in place the necessary reforms in order to deal with the social and economic effects of the crises. These reforms favoured the improvement of the macroeconomic situation of most African countries[2] and led to some economic recovery and a decrease in inflation. However, in spite of positive developments in the area of stabilization, Africa's economic situation remains an important subject of concern. Indeed, African economies are far from achieving the Millennium Development Goals in spite of the recent increase in social sector spending. Growth remains relatively fragile with performance heavily dependent on the price of raw materials. The continent has not succeeded in catalysing the dynamics for growth in a localized and sustainable manner, and continues to be marginalized in the globalization process; and progress towards regional integration remains slow. Benefits from preferential trade schemes remain limited and although the different schemes require improvements, it is clear that African countries will take better advantage of them if they succeed in diversifying their economic structures.

The objective of this chapter is to bring out the main characteristics of the continent's economic and social situation. This analysis shows a continent in the medium of the ford and which needs a redefinition of prospects and new development choices in order to revive growth and strengthen international competitiveness.

1.1 Africa's progress is not sufficient to achieve the Millennium Development Goals

The adoption of the Millennium Development Goals constitutes an important step on the part of the international community to build consensus on development priorities and international cooperation. The World Summit organized by the United Nations in September 2005 offered an opportunity to focus on progress made by the world's different regions in order to achieve these objectives.

At this stage, it must be noted that most of the regions registered good results and were able to make laudable progress to achieve its objectives. Thus, between 1990 and 2002 global average incomes increased

2 In this connection see Yearly Economic Reports of the United Nations Economic Commission for Africa that gives an idea on progress made by African countries at the end of the 90's.

by 21 percent[3], the number of people living in extreme poverty decreased by 130 million, and life expectancy progressed from 63 to 65 years.

However, Africa's performance did not live up to expectations. Thus, since 1990, the number of the continent's poor increased by 90 million and their average revenue decreased, which points to a rise in inequality in wealth distribution. The aggravation of poverty translated into a rise in hunger and the crisis in Niger these past months served as a reminder, if one was needed, of the fragility of the food situation in some African countries. The Horn of Africa also remains in a fragile situation with respect to food availability and security.

Progress realized by Africa in the area of education is equally insufficient. Admittedly, African countries witnessed a sharp increase in the number of school going children from 50 percent in 1990 to 61.2 percent in 2000. Nonetheless, progress is still insufficient to achieve the millennium goals in the area of education. Regarding gender equality some sub-regions have made positive strides, but the continent's average remains low. Concerning infant mortality, it must be noted that North Africa witnessed considerable progress with the mortality rate going down from 87 per 1000 births in 1990 to 38 in 2003. However, the continent's average figures were more disappointing and a less obvious decrease with a rate that dropped from 186 to only 174 per 1000 births during that same period.

Maternal health probably constitutes the most worrying issue in Africa. Although North African countries have registered considerable progress and the mortality rate is lower than 150 for 100,000 births, most African countries continue to deal with relatively high mortality rates of around 917 deaths per 100,000 births. In some countries the maternal mortality rate has gone beyond 1000 per 100 000 births.

The health situation is alarming due to the progression of epidemics such as HIV-AIDS and Malaria. Indeed, the results from various studies indicate that in Africa, 7 out of 100 adults live with HIV-AIDS. Furthermore, Malaria continues to wreak havoc on the continent and is the cause of the greatest number of deaths in Africa.

Thus, the situation appears all the more difficult in Africa. Clearly, some sub-regions have realized significant progress. However, the continent's results remain worrisome and progress has been slow with the view to achieving the millennium goals.

3 See for progress with a view to the millennium goals: United Nations Economic Commission for Africa, **Millennium Objectives for development in Africa: progress and challenges,** Addis Ababa, Ethiopia, September 2005.

A weak and fragile growth…

The low performances of African economies can be equally found at the level of its growth dynamics. In 2004, Africa's growth rate was 4.6 percent[4]. Admittedly, this rate is an improvement on past performances, due to the increase in global market prices of primary commodities including oil, higher growth in the agricultural sector and increase of international support to the continent, particularly in the form of aid. However, the rate remains low and growth in Africa is very fragile.

Low growth and fragility are not recent. Indeed, they have marked progress on the continent for several years. In the last 15 years, African economies witnessed slow growth situated between three percent and four percent. Basically, this growth can be explained by the evolution of market prices of raw materials exported by these countries. Thus, economic policies, particularly strategies to combat poverty that most African countries have started to implement seem to have little effect on growth which remains desperately low and fragile. Africa's performances remain below the levels required to achieve the Millennium Development Goals and reduce poverty by half by 2015. Thus, Africa remains trapped in a low growth cycle. The continent's failure to be part of the strong growth dynamic can undoubtedly be explained by the restrictive nature of economic policies and the predominance of stabilization concerns of great macroeconomic balances.

1.2 Marginalization in the globalization process

Parallel to low growth, Africa's situation was equally characterized by marginalization in the globalization process. This marginalization can be observed in capital flow and particularly in Foreign Direct Investments (FDI) that constitutes the preferred path for economic globalization.

Annual capital flows increased from $59 billion in 1982 to $209 billion in 1990, before reaching $560 billion in 2003[5]. But more than the volume, it is especially the growth rate that shows the scope of these movements during the last two decades. The annual growth of FDI flows was 22.9 percent between 1986 and 1990 and 21.5 percent between 1991 and 1995. But, it is particularly during the second half of the 1990's that FDI's witnessed an unprecedented explosion with an annual growth of 39.7 percent. To understand the extent of this growth, we must compare it to production and international trade. The growth of FDI flows was 12 times higher than GDP growth, and more than five times higher than that of international trade. These elements show the importance of movements of capital in globalization.

But this upward trend of capital movement slowed down at the beginning of the century with a strong decline in 2001 estimated at 41.1 percent. The downward trend in FDI's was also accompanied by a

4 For Africa's annual economic performances see the various Annual Economic Reports of the United Nations Economic Commission for Africa.

5 For the various statistics on foreign direct investments see: UNCTAD, **World Investment Report 2004, the shift towards services,** Geneva 2004.

redirection of flows towards developed countries who received close to 65 percent of the total in 2003. This refocusing came at the expense of developing countries whose annual average dropped from $231 billion in 1999 to $172 billion in 2003. Latin America and Asia, who were the most favourite FDI destinations in the 1990's, were the main losers. Thus, the annual average of FDI flows to Latin America more than halved between 1999 and 2003, dropping from $107 to $49 billion. Furthermore, FDI flows to Asia peaked in 2000 at $146 billion, before dropping by on third to only $107 billion by 2003. Undoubtedly, FDI flows to Africa have witnessed a slight increase in 2003, but at only $ 15 billion, the amounts remain marginal and well below the 2001 performance with flows close to $20 billion. FDI flows to Africa are concentrated around a limited number of countries and are directed mainly to natural resources and oil extraction.

This marginalization is not only limited to capital flows but equally extends to international trade.

A weaker position for Africa in international trade…

Africa's place in international trade declined sharply in the last two decades, particularly since the 1980s and the onset of the debt crisis, which led to deep economic recession. The continent's share of world trade declined from 7.6 percent in 1948 to 2.2 percent by 2003, a clear indication of its marginalization. If you take the figures for global exports, Africa's share has fallen from 7.3 percent to 2.4 percent over the same period. Clearly, reforms implemented during the second half of the 1980's bore fruits and were at the origin of international trade recovery. But this recovery showed its fragility in the 1990's with high volatility.

The second major characteristic concerns the composition of traded goods, where Africa is caught in the revenue trap with agricultural and mine products represent 70 percent of total exports. Furthermore, exports of manufactured goods are concentrated in limited numbers of countries among which are North African countries, South Africa, and Mauritius. For imports, more than 70 percent of the total constitute manufactured goods. This structure of African foreign trade is very representative of the traditional North-South divide. It also signifies failure of the attempts to diversify and modernize African economic structures begun in the 1960's and 1970's. Indeed, the debt crisis put an end to African countries' efforts at industrial development and local transformation of cash products.

Finally, African external trade is geographically concentrated in Western Europe. This geographical composition is connected to the composition of traded products by African countries, reproducing the traditional integration scheme with Africa exporting raw materials and agricultural products to European countries and in return importing manufactured goods from these countries. The import-substitution strategies adopted by African countries in the 1960's and 1970's were geared towards putting an end to this scheme by locally manufacturing goods that were in the past imported from colonial powers. The failure of these strategies and the explosion of the debt crisis led to the abandonment of import-

substitution policies and the agro-export model. More recently, North America has increased its share of trade with Africa following the adoption of AGOA by the United States and preferential agreements by Canada in favour of African exports. Asia's share of trade with Africa is also growing rapidly.

1.3 When prices of primary commodities decline

Africa has been subjected to trade shocks from the fall in prices of raw materials due to the domination of traditional integration arrangements in its external trade. For many years, prices had been characterized by a downward trend and strong volatility and many recent studies concur on the tendency of this structural decline of real prices of primary commodities[6].

These works have underscored the price movements during the 20th century, which show a strong rise in the mid 1950's following the Korean War. The nominal price of primary commodities was then stable in the late 1950's and 1960's. The 1970's witnessed a huge rise in commodity prices that peaked in 1974 as a result of mobilization for reform of the international order by developing countries. However, these prices registered a downward trend in the mid 1990's with a 15 percent drop in comparison to their level at the beginning of the decade. However, the real prices of primary commodities witnessed a major decline during the period 1957-2001[7]. These declines were estimated at 1.92 for food products, 1.91 for coffee, 2.04 for cotton and 1.26 for metals. This strong downward trend was accompanied by strong volatility, with coefficients ranging from 0.3 for food products, 0.54 for coffee, 0.39 for cotton and 0.20 for metals.

Therefore, primary commodity prices have been on a downward trend for decades. This drop has had a significant impact on African countries, especially given the importance of primary products in exports from African countries. Recent studies have shown that primary commodities continue to represent not more than 12.3 percent of total exports. Yet, commodities represent a high proportion of African countries' exports, and in some cases, the proportion is more than 80 percent of total exports. This heavy dependency on raw materials explains the impact of price fluctuations on Africa and in part the weak performance of their economies. A joint study by the World Bank and United Nations Economic Commission for Africa estimated losses for the period between 1970 to 1997 for non-petroleum exporting

6 In relation to this see various studies:
- D. Diakosavvas and P. Scandizzo, Trends in terms of trade and primary commodities 1900-1982: the controversy and its origins, **Economic Development and Cultural Change**, no. 39, 1991, pp.231-264,
- H. Bloch and D. Sapaford, Wither the terms of Trade? An elaboration of the Prebisch-Singer hypothesis, **Cambridge Journal of Economics**, No. 24, 2000, pp. 461-481,

7 - P. Cashin and C.J. McDermott, the long-run behaviour of commodity prices: small trends and big variability, **IMF Staff Papers,** No. 49, 2002, 175-199,
- E. Grilli and M.C. Yang Primary Commodity Prices, manufacturing good prices and the terms of trade of developing countries: what the long run shows, **World Bank Economic Review**, No. 2, 1988, pp.1-47,
- A. Maizels, **Commodities in crisis: The commodity crisis of the 1980and the political economy of international commodity policies,** Clarendon Press, Oxford, 1992.
See WTO, **World Trade Report 2003**, Geneva, 2003.

African countries excluding South Africa, to be equivalent to 119 percent of GDP of these countries, 51 percent of aggregate net flows of resources and close to 68 percent of net transfer of resources[8]. Another study by UNCTAD showed that coffee and sugar producers would have earned an additional $19 billion and $1.4 billion respectively, while West African cotton growers would have earned an additional $1 billion between 1999 and 2002 if prices had maintained their 1998 level[9]. According to the same study, the decrease in primary commodity prices cost Africa six percent in annual average for investment coefficient and 50 percent of per capita income. Other studies have considered that the decline in terms of trade in the 1980's translated into an average loss of 0.7 percent growth for African countries[10]. In addition to the loss on the issue of growth and revenue, the fall in commodity prices contributed to African countries' over-indebtedness[11].

Commodity dependent countries are naturally concerned with this heavy decline in terms of trade and high fluctuation of the price of raw materials, and are seeking some price stability in order to enable them to plan for their development and investments. However, the various commodity price stabilization schemes put in place were not able to reverse the international economic situation of the 1980's and the structural nature of the loss in prices. The explosion of these mechanisms at the beginning of the 1980's coincided with an acceleration of the downward trend of prices, which weighed heavily on the economic performance of African countries and was at the origin of the explosion in the rate of poverty. .

Trade preferences were under-utilized…

African countries were unable to fully utilize the various trade preference schemes granted by developed countries due to the low diversification of trade structures and supply-side constraints. Admittedly, there was some evolution of the preference utilization rate accorded to LDC's in the mid 1990's[12]. This rate went from less than 50 percent in 1994 for the whole of the four most important markets to close to 70 percent in 2001. Thus, for Canada the rate went from 65 percent to 70 percent during this period, for utilization rate remained limited at below 50 percent, while the United States recorded the highest improvement with utilization rates estimated at close to 95 percent. However, for Japan coverage rate decreased significantly from nearly 95 percent to 38 percent between 1994 and 2000 before peaking to 83 percent in 2001.

Thus, LDC's took advantage of preferences accorded to them in the recent past and their utilization rate continued to improve. This conclusion is important and calls into question statements by some authors

8 World Bank and Economic Commission for Africa, **Can Africa claim the 21st Century?** Washington, 2000.
9 UNCTAD, **Economic development in Africa. Trade results and dependency with regard to primary commodities**, Geneva 2003.
10 See Y. Hadass and J Williamson, Terms of Trade shocks and economic performance: 1870-1940: Prebisch and Singer revisited, **NBER Working Paper No. 8188**, 2001
11 IMF, **Global economy perspectives,** Washington 2000.
12 UNCTAD (2003), op. cit.

that developing countries have not benefited from these advantages and that the trade preferences did not help improve competitiveness.

However, there is a need to balance this conclusion by indicating that in spite of the improvements, utilization rates remained limited. Thus for instance, for European Union countries constituting Africa's main trading partners this rate remains below 50 percent. Furthermore, for quad (that is Canada, EU, Japan and US) the rate generally remains at around 70 percent. From thereon, the issue at hand is that of comprehending the reasons for the low preference utilization rate given by developed countries.

In this connection, many concur on the importance of rules of origin as well as other new non-tariff barriers that restrict the utilization of preferences. The complexity of the preferential schemes and the cumulative effect of different systems are also problematic. African countries are disarmed in the face of this mosaic of schemes and demanding the harmonization of the different systems in order to bring them in line with the most favourable system.

Ultimately, an improvement in the utilization rate of preference schemes requires greater diversification and an improvement of African economies' competitiveness.

Slow progress in the area of regional integration…

Africa's development constraints can also be observed through the slow progress in regional integration, an issue that has provoked much interest recently[13]. Indeed, there has been an upsurge in efforts at cooperation and integration since the mid 1990's. At the institutional level, this period corresponds to the re-launch of secretariats for Regional Economic Communities that were until then moribund. Furthermore, the new communities were launched to strengthen cooperation ties between countries at regional level. These different entities embarked upon ambitious trade liberalization programmes at the regional level and a better coordination of economic policies. At the continental level, this issue has taken centre-stage in the concerns of African countries and the New Partnership for Africa's Development (NEPAD) has made regional integration one of its most important priorities.

This renewal of interest in regional integration can be explained by the role it could play in improving Africa's international integration and competitiveness. Yet, in spite of increased interest, regional integration results and more particularly of intra-regional trade were poor and below expectations, standing at a little over 10 percent of the continent's total external trade in 2000[14]. African countries must double the current level of their trade in order that intra-African trade reaches the same level as in other regions. SADC countries have achieved greater intra-regional trade levels of about 30 percent

13 On the issue of regional integration see the report published by the United Nations Economic Commission for Africa: ECA, **Assessing Regional Integration in Africa**, Addis Ababa, 2003

14 See ECA (2003), op.cit.

of their total trade. This level can be explained by the dynamic role played by South Africa as a hub for growth and trade in the sub-region.

Several reasons explain the low levels of intra-community trade. The first is probably connected to the delay in the implementation of trade liberalization agreements. Although African countries have signed numerous trade liberalization and customs union agreements, at times implementing them is fraught with difficulties as countries are concerned about loosing revenue following the dismantling of customs tariffs.

Furthermore, some countries are concerned about the competitive edge that their more developed neighbours have over them. Non-tariff barriers among which are administrative procedures, complex customs formalities, border posts and different road blocks also continue to impede progress. Intra-regional trade is also limited by the divergence in rules of origin established by the different African countries. These rules take into consideration local capital share, utilized import inputs and the share of local value added in the total value of the product. There are some differences between the different sub-regional groupings. For example, ECOWAS rules of origin integrate 51 percent for local capital, 40 percent of community raw material and 35 percent of the product's value. At the same time UEMOA countries, which are all members of ECOWAS, have different criteria that led to the requirement for the two communities to harmonize these rules. But generally speaking, the rules of origin continue to differ, which does not facilitate trade within the different communities. Cooperation and intra-regional trade also experienced difficulties due to slow progress in the establishment of customs unions and the implementation of the common external tariffs[15].

In explaining low intra-regional trade, emphasis must be placed on the little complementarity between the production structures of the different African countries. The intensity of intra-regional trade has a strong correlation to the level of diversification of the leading economy in the sub-region, as is the case of SADC countries with South Africa or Kenya within the East African Community. But generally, the low diversification of economies translated into a strengthening of vertical relations with developed countries.

Thus in Africa, the poor development of cooperation and intra-regional trade has contributed to the continent's marginalization in world trade insofar as it did not allow for a greater opening of markets. African countries have not been able to take advantage of economies of scale and major effects to improve their competitiveness and consequently their international integration. Several reasons explain poor trade which are the poor complementarity of production structures, the delay in the implementation of

15 On issues of intra-regional trade see works by Mahamat Abdoulahi:

- M. Abdoulahi, **Le processus de création du marche commun africain: une vue d'ensemble**, ATPC Work in Progress, United Nations Economic Commission for Africa, Addis Ababa, Ethiopia 2004.
- M. Abdoulahi, **An evaluation of regional integration efforts in Africa with the view to promoting intra-african trade.** United Nations Economic Commission for Africa, Addis Ababa, Ethiopia 2005.

liberalization schemes, the diverse rules of origin and the difficulties of establishing customs unions and in the strengthening of regional cooperation as well as difficulties connected to trade facilitation.

This chapter underscores the continent's development stakes. Indeed, different African economies have for some years now made progress in the management of big economic balances. An upward trend in growth as well as an improvement of the institutional environment and the governance of economies have also been registered. However, progress remains insufficient to enable the continent achieve the millennium development goals and improve its position in the globalization process. Poor economic results require a re-orientation of the continent's development strategies towards the diversification of the productive fabric and the improvement of its competitiveness. Diversification is therefore emerging as an important paradigm in development thinking as well as in concerns of international institutions.

Chapter 2
Diversification: A New Paradigm

A New Paradigm

Besides the external factors, Africa's poor results in the area of development and its marginalization in international trade can be partly explained by a series of internal factors. Among these factors, the most important is the failure of diversification experiences that commenced shortly after independence in attempts to break with the traditional model of development. The model was called into question following the crisis of the early 1980's and the advent of reforms, which put emphasis on international specialization. Yet, for some years now, there has been a renewal of the debate on the diversification problem as a means of improving competitiveness of African economies and their integration in international trade.

This chapter will highlight the recent renewal of the diversification debate in development discourse. Part one we will outline the development of diversification policies in Africa. Part two will be devoted to the origins of diversification in economic literature. Part three will seek to determine, through a review of recent literature, the factors that are at the centre of the diversification process. The fourth and last section will deal with the debate on diversification and economic growth.

2.1 Obstacles and misfortunes of diversification policies in Africa

In the 1960's and 1970's most African countries embarked upon an industrial development process whose objective was to diversify their economic structures and reduce dependency on primary commodities. The increase in prices of primary commodities exported by African countries provided the means to fund the necessary investments.

In most African countries, as in the whole of the developing world at the time, these diversification strategies were adapted to import-substitution models, whose objective was to locally produce consumer goods that in the past were imported from abroad. These development strategies translated into rapid investment and employment growth in the manufacturing sectors, and an increase in productivity following the transfer of new technologies in the industrial sector.

Yet, a few years later, the diversification strategies implemented in most of the African countries ended in failure. The crisis first manifested itself through a rise in big macro-economic imbalances. On the one hand, the increase in imports of equipment and intermediary goods weighed heavily on the trade balance and translated into an explosion of current account deficits. On the other hand, the state

played an active role in investments and economic and social regulation, which led to increased public deficits. But, in addition to the rise in big macro-economic imbalances, the failure to diversify can be equally observed in some structural indicators. Due to great income inequalities, local demand did not follow growth of offered consumer-end products. As a result, internal markets were found to be highly limited and did not encourage the development of investment returns to a scale supportive for industrial activities. Therefore, after initial rapid growth, productivity gains stagnated and competition in industrial activities diminished. We must also mention the rigidity of trade and industrial policies that favoured the development of commodity prices behaviour and did not encourage innovation and creativity on the part of local enterprises. Indeed, most African countries opted for tariff protection policies that were applied generally over all sectors. These policies did not take into account the specific needs for diversification and the need to introduce a certain level of competition in order to encourage investments and improve competitiveness of local enterprises[16]. Thus, all of these macro-economic and structural factors were at the beginning of the failure of diversification strategies and the explosion of the debt crisis.

From the early 1980's the debt crisis put an end to import-substitution strategies and translated into a re-orientation of development decisions and strategies in the African countries. Indeed, the structural adjustment programmes established during this decade put emphasis on macro-economic stabilization in order to restore big balances. As a result, sectoral choices and particularly those related to agricultural and industrial development were relegated to the background. Then, it was understood that liberalization and opening to the private sector would boost development, encourage strong growth and cut short commodity price behaviour of enterprises in the 1970's. Thus, the diversification page was finally turned and macro-economic stability became the buzzword of the 1980's and 1990's. It was thought that the reforms implemented during this period, through the strengthening of the role of markets in economic regulation and disengagement of the state, would lead to rapid growth and investment.

At the same time, African countries counted on foreign trade liberalization and on promoting export activities in order to improve their economies competitiveness.

Thus the crisis of the 1980's brought about a major change in the choices and basis of development strategies. Indeed, the diversification model that was at the core of the strategies put forward the hypothesis that development passed through a blackening of the inter-sectoral trade matrix. The increase in trade requires significant investment efforts in order to ensure a greater complementarity between the different interlinking activities. These investments were not supposed to favour the profitability criteria and responded in priority to the needs for coherence within the economic fabric. This choice explains the predominance of public investments in the diversification strategies implemented in most African countries.

16 On this issue: Hakim Ben Hammouda, **Trade liberalization and development: What lessons for Africa?**, ATPC Work in Progress No. 7, ECA, Addis Ababa, Ethiopia, 2004.

Yet, failure of the model at the end of the 1970's translated into a marginalization of the diversification paradigm. Indeed, several analyses placed emphasis on the consequences of the investment decisions made within the framework of this paradigm, particularly their ineffectiveness. The theme of the inefficient utilization of scarce resources in developing countries became familiar in the analysis of the origins of the crises. This inefficiency and poor utilization of resources can be explained, according to the Washington consensus which was the vogue at the time, by strong interventionism on the part of public authorities and the non-respect of natural market rules in the allocation of resources. Furthermore, others emphasized commodity prices behaviour that developed in most African countries due to the strong protection that enterprises benefited from and which did not encourage innovative investments to improve enterprises competitiveness.

The crisis of the diversification paradigm in the early 1980's translated into the resurgence of international specialization. Henceforth, African countries' development had to break with the issue of the coherence of the national productive fabric and come within the perspective for improved international integration. This new problem passed through foreign trade liberalization so as to prevent commodity price behaviour and encourage competitiveness within national economies. This re-orientation of development choices was expected to eliminate the anti-export bias that was at the centre of import-substitution strategies and encourage the promotion of export activities. Furthermore, this new development strategy required State disengagement and recourse to free operation of market forces in the distribution of scarce resources, which would lead to a more effective allocation of resources. Thus, the 1980's crisis put an end to the plan to diversify productive structures of developing countries and replaced it with the specialization paradigm based on comparative advantages.

After two decades of implementing reforms the result is far from satisfactory. Indeed, the new development paradigm and the new strategies implemented by African countries in the 1980's and 1990's were incapable of keeping their promises. Throughout the two decades, growth was weak and fragile and the debt crisis continued to worsen. The marginalization of African countries in international relations continued to be accentuated and traditional integration reaffirmed itself daily. This economic situation translated into increased pauperization and led to an explosion of political and social conflicts.

In this context of new economic reform and its inability to lift Africa out of its marginalization, there is a renewal of the debate on economic development. Different contributors have sought to find ways to renew the debate on strategies to be implemented in order to come out of the current impasse. This renewal has impacted upon several areas such as the debate on trade and development. Several authors have underscored the low contribution of trade in the development of African economies. The renewal of trade policies was at the beginning of the resurgence of the diversification issue in economic debate of these last years. Several authors emphasize more on this issue and the need to re-direct trade and industrial policies in order to encourage greater diversification of developing economies[17].

17 See: J.-C. Berthélemy, **International trade and economic diversification,** to be published in the Journal of Economic Policy

2.2. Origins of the debate on diversification

The issue of diversification in economic literature is not a recent one[18]. The first works on this issue were undertaken by MacLaughlin during the 1930's crisis[19]. He sought to explain the economic cycles in American cities by the degree of concentration of economic activities. Thus, the works demonstrated that cities having a higher level of concentration suffered the most from the resultant crisis of the inter-war period. The debate was reopened during the same period in the study of the vagaries of the economic situation, and more particularly on the fall in prices of raw materials like coffee for Latin American countries. These works were at the beginning of structural transformation strategies of Latin American economies and their desire to escape from commodity price integration based on raw materials whose prices witnessed a dramatic fall in the 1930's and was at the start of a huge crisis in most of these countries. These first reflections were taken up some years later by the Economic Commission for Latin America and the Caribbean (ECLAC) and were at the origin of import-substitution strategies.

These works on diversification developed rapidly in the 1940's and 1950's and constituted the dominant paradigm on growth and development up until the end of the 1970's. Different authors have approached several themes in exploring this new paradigm and in defining new development issues. Thus, Rosenstein-Rodan and Leontief had put emphasis on the concept of the effects of cumulative drive and the density of inter-sectoral matrices[20].

These works constituted the starting point for the theoretical reflection on the diversification of developing economies. This diversification should have translated into the blackening of the intra-sectoral matrix following the development of trade between the different economic sectors due to their complementarity. In this perspective, the different authors sought to identify industrial activities that have a catalytic role in the multiplication of internal trade. These works on the effects of cumulative drive and catalyst industries occupied a privileged place in the debate on developing countries from the end of the second World War up to the mid 1970's[21]. Works on diversification have equally demonstrated that it plays an essential role in controlling economic vagaries, particularly fluctuation in prices of raw materials for developing

18 For a review of the literature on the issues of structural transformation of developing economies see Moshe Syrquin, **Patterns of Structural Change,** in Hollis Chenery and T.N. Srinivasan, **Handbook of Development economics,** Vol.1, North Holland, 1988.

19 Glenn Mac Laughlin, Industrial diversification in American cities, Quarterly Journal of Economics, No. 45, November 1930, pp. 131-149.

20 See:
-W. Leontief, **Input-output economics,** 2nd edition, Oxford University Press, Oxford 1986.
- P.N. Rosenstein-Rodan , Problems of Industrialization of Eastern and Southern Europe, **Economic Journal,** Vol. 33, pp. 202-211, 1943.

21 In this regard see the works of F. Perroux and G.D.De Bernis

countries[22]. On their part, Kuznets and Rostow made structural transformation of economies and their diversification an indispensable passage for growth and development[23].

The first works on diversification placed emphasis on a series of elements considered as essential in strengthening the productive fabric of developing countries. The first element was linked to investment capacity or accumulation by countries[24]. The literature established a large consensus on the need to release significant resources for investment in order to diversify economic structures and strengthen the transformation of traditional economies. The first generation of works on diversification was also at the origin of an important debate on sectoral priorities. Indeed, if some quarters defended the idea of balanced growth, many more emphasized the structural nature of some sectors that could play a cumulative role for the rest of the economy[25]. Parallel to capital accumulation and sectoral policies, the first works on diversification had equally insisted on the role of industry. Indeed, a consensus was established around industrial development and on its place in the transformation of traditional economies and the modernization of productive structures of developing countries[26].

The issue of diversification was at the centre of early works on economic development. It was at the origin of the development of a series of choices in the area of development strategies and more importantly import-substitution strategies implemented by most developing countries in the 1960's and 1970's. Furthermore, these works generated a series of analytical work to define tools for measuring progress towards diversification such as input-output matrices. Finally, these works sought to identify factors at the centre of the diversification process and put emphasis on investment, sectoral policies, and particularly industrial development.

Yet, the crisis that began towards the end of the 1970's and the failure of import-substitution strategies led to the marginalization of the debate on diversification. Macroeconomic stabilization and international specialization became the major themes of reflection and development policies. However, we have seen a dramatic resurgence of the debate on diversification.

---

22 See for example B.F. Massel, Export instability and economic structure, **American Economic Review,** Vol.60, No.4, pp. 618-630, 1970.

[23]See:

- S. Kuznets, **Modern economic growth,** Yale University Press, New Haven, 1966
- W.W. Rostow, **The stages of economic growth: A non communist manifesto,** Cambridge University Press, Cambridge, 1960.

[24] In this regard see: W.A.Lewis, **Economic development with unlimited supplies of labour**, Manchester School of Economics and Social Studies, No.22, pp. 139-191, 1954.

[25] See in particular: A.O. Hirschman, **The Strategy of Economic Development**, Yale University Press, New Haven, 1958.

[26] See in particular: A.Gerschenkron, **Economic backwardness in historical perspective**, Belknap, Cambridge, 1962.

23 See:

- S. Kuznets, Modern economic growth, Yale University Press, New Haven, 1966
- W.W. Rostow, The stages of economic growth: A non communist manifesto, Cambridge University Press, Cambridge, 1960.

24 In this regard see: W.A.Lewis, Economic development with unlimited supplies of labour, Manchester School of Economics and Social Studies, No.22, pp. 139-191, 1954.

25 See in particular: A.O. Hirschman, The Strategy of Economic Development, Yale University Press, New Haven, 1958.

26 See in particular: A.Gerschenkron, Economic backwardness in historical perspective, Belknap, Cambridge, 1962.

2.3 The determinants of diversification

Several reasons explain the resurgence of the diversification issue. First, is the weak economic performances in a great number of regions and countries, particularly in Africa. Furthermore, African countries did not benefit much from the trade preferences accorded to them by a great number of developed countries, and various studies undertaken on the benefits likely to be derived by African countries from the Doha Round show that the benefits will be limited[27]. Several studies emphasize supply constraints and lack of diversification of African economies as reasons for Africa's low benefits from international openings.

These concerns originate from the resurgence of a few years ago of the debate on diversification in economic literature. This new literature sought to come into the historical continuity of the open tradition in the debate on diversification[28]. The second direction taken by the theoretical renewal concerns determining the conditions for success for the diversification of productive structures of economies. The new research has an undisputed advantage compared to studies carried out in the 1960's and 1970's as it can draw on the differentiated experiences of developing countries during the last three decades. The new generation research draws lessons from historical development experiences in the different sub-regions to enrich the debate on the conditions and policies that lead to successful diversification.

Recent literature has identified several factors to explain the diversification process in Africa. The first series of factors is linked to the level of income in an economy.

The works of Imbs and Waciarg show that diversification has an inverted U-shaped relationship with the level of development[29]. Thus, diversification increases with economic development, measured by per capita revenue, then decreases with a turning point situated at around $ 9000 per capita. In particularly, this study put the emphasis on macro-economic aspects. Barthélemy confirmed this argument and emphasized the importance of healthy macro-economic management in the success of diversification efforts[30].

Another determining factor of diversification is investment, which contributes highly to the growth dynamics and to increasing productivity of new economic sectors. From this perspective, the historical experience of developing countries show that a rise in investments always translates into increased

27 The ECA produced a series of studies on Africa's benefits from the Doha Round, see ATPC, **Trade liberalization under the Doha Development Agenda: Options and consequences or Africa,** ATPC Work in Progress, August 2004, Addis Ababa, Ethiopia.

28 Amin Guiterrez de Pineers, S. and M. Ferrantino, **Export diversification and structural dynamics in the growth process: the case of Chile,** Journal of Development Economics, No. 52, pp.375-91, 1997.

28 Amin Guiterrez de Pineers, S. and M. Ferrantino, Export diversification and structural dynamics in the growth process: the case of Chile, Journal of Development Economics, No. 52, pp.375-91, 1997.

29 J. Imbs and R. Wacziarg, Stages of diversification, **American Economic Review,** Vol. 93, No.1, pp.63-86,2003.

30 Jean Claude Berthélemy (2004), op.cit.

31 See UNCTAD, **Trade and development Report 2003,** United Nations, Geneva, 2003.
UNCTAD (2003), op.cit.

diversification of the productive capacity. Thus the 1970's and 1980's were characterized by a rise in investment rates in most regions of the world resulting in greater diversification of national economies. Yet, the beginning of the 1980's was characterized by a sharp drop in investment rates from 24.6 percent to 17.2 percent for Africa; and from 26 percent to 20 percent for Latin America between 1975 and 2000. For the same period, investments rates in Asia and China continued to increase from 22.7 percent to 29.5 percent and from 21.2 percent to 27 percent respectively[31]. This investment dynamics played a major role in the diversification process of the different sub-regions. Indeed, at the time when Asian countries pursued their accumulation efforts, in spite of the 1997 crisis, and were able to increase their competitiveness and improve their international integration, African and Latin American countries were unable to pursue their investment efforts thus accentuating their marginalization in international economy.

In addition to investments, work on diversification has underscored the place and the role of industrial policies. Recent interest taken in industrial development constitutes a major renewal of sectoral policies in the debate. Today, undoubtedly industrialization must be at the heart of new diversification strategies in order to improve international integration of developing countries. Historical experience shows the role of this sector in growth dynamics and in improving competition of national economies. Indeed, the most dynamic regions in international trade are those where the share of industry in GDP continues to increase since the beginning of the 1970's. Thus between 1996 and 2000, this share moved up from 14.6 percent to 27 percent and from 13.8 percent to 15.7 percent for East Asia and South Asia respectively. But the most dramatic development is certainly that of China where industry share moved from 23.7 percent to 34.5 percent of GDP during the same period[32]. The performances of first generation emerging economies are also noteworthy, where the share of industry in GDP increased greatly between 1960 and 1980, moving from 16.3 percent to 29.6 percent of the total before regressing and thereafter dropping to 26 percent. This evolution does not mean a de-industrialization of these countries, but coincides with the structural evolution of the economy where productivity growth in the industrial sector enables it to respond to increasing demand without creating new jobs. The additional jobs demand is then transferred to services sector which adheres to extensive dynamics and needs jobs to increase its productivity.

The situation of African countries even where it obeys the same dynamics could be explained by a different logic. Indeed, the share of the manufacturing sector in sub-Saharan Africa progressed from 15.3 percent to 17.4 percent of the total between 1960 and 1980. However, failure of import-substitution strategies and reforms implemented translated into regression for the manufacturing sector whose share dropped to 14.9 percent of GDP in 2000. But, it is probably Latin America that witnessed spectacular development inasmuch as the share of the manufacturing sector in GDP dropped by 10 points from 28.1

31 See UNCTAD, Trade and development Report 2003, United Nations, Geneva, 2003. UNCTAD (2003), op.cit.

32 UNCTAD (2003) op.cit.

percent to 17.3 percent between 1960 and 2000. This fall in the share of manufacturing can be explained by the de-industrialization that these regions witnessed.

Thus, it appears clearly that industrial development plays a major role in the diversification of developing countries' economies and in improving international competition. Different studies have shown that other factors contribute in the diversification of the economic fabric including new technologies and opening up to foreign markets. These different works as well as historical experience emphasize the link at the origin of the diversification process and the improvement of international competition. Indeed, the countries which have succeeded in improving their position are those that maintained during the last three decades a high investment rate particularly in the industrial sector. This investment enabled them to access new technologies and improve productivity and competitiveness of their economies. These links have enabled these countries to increase their exports and improve their international integration. African countries are among those regions that were unable to come into the virtuous growth and diversification cycle. Indeed, after two decades of investment growth and increase in the share of the manufacturing sector in the product, the 1980's crisis called into question this dynamic, which translated into increased marginalization of African countries in world trade. These diversification experiences were hampered by the limitations of national markets but also by the slow progress realized in the area of regional integration.

Industrial policies are not the only sectoral policies to play an important part in the diversification of economies. Trade policies can also contribute to the strengthening of competition and greater diversification[33]. Historically, trade policies in Africa have lacked dynamism and gave constant and linear support to some industrial activities, which was not favourable to the development of competition in African economies[34].

Other research place emphasis on the determinants of diversification that are growth, investment, new technologies, productivity of factors as well as exports to world markets[35].

---

33 See ECA, **Mainstreaming trade in national development strategies,** Addis Ababa, 2004.

34 Hakim Ben Hammouda, **Trade liberalization and development: lessons for Africa,** ATPC Work in Progress No.6, September 2004, Addis Ababa, Ethiopia.

35 See:

-Robert C. Feenstra, Dorsati Madani, Tzu-Han Yang and Chiyuan Liang, Testing endogenous growth in South Korea and Taiwan, **Journal of development economics,** Vol.60, pp.317-341, 1999.

-

35 See:

-Robert C. Feenstra, Dorsati Madani, Tzu-Han Yang and Chiyuan Liang, Testing endogenous growth in South Korea and Taiwan, Journal of development economics, Vol.60, pp.317-341, 1999.

2.4 Diversification and growth

The renewal of the debate on diversification was coupled with a consensus on its role in the growth dynamics. Indeed, recent literature explains the fragility of growth in African economies and the continent's marginalization in the global economy by the poor diversification of African economic structures. Several authors have sought to explain the connection between diversification and growth. Particularly, recent works on endogenous growth have emphasized the importance of diversification. Thus, the Romer model introduced a beneficial effect of diversification which is expressed through the availability of inputs within an economy and can contribute to increasing labour productivity and human capital[36]. Diversification can equally contribute to growth by increasing the number of sectors and accordingly, investment opportunities and reducing investors' risks[37].

But for different authors diversification plays a major role in economic growth through the stabilization of export revenues. Indeed, specialization in only one product was always considered a source for volatility and great instability. These works took inspiration from research on financial portfolios and the different diversification strategies in order to reduce investors' risks. At this stage, different works have shown the correlation between diversification and stability of export revenues and accordingly the sustainability of growth dynamics.[38]

In the analysis of the link between diversification and growth, most of the authors used macro-econometric models where they sought to test the correlation between the level of growth and the different indices of diversification. The works of J.-C. Berthélemy, who used a particular methodology, must be mentioned[39]. Firstly, he uses the traditional methodology of breaking down the contribution of different factors to growth. At this level, he uses the Cobb Douglas production function, which he breaks down into different contributions capital, labour and total factor productivity of factors. Thereafter, through an econometric regression he considers the different factors that could explain the total productivity of factors. At this stage, he has retained several explanatory variables that are indices of diversification, development finance,

---

36 See

-J.-C. Berthelémy and L. Söderling, The role of capital accumulation, adjustment and structural change for economic take-off: empirical evidence from African economic growth policies, **World development,** Vol.29, No.2, pp. 323-343, 2001.

-F. Al-Marhubi, Export diversification and growth: an empirical investigation, **Applied economic Letters**, Vol.7, pp.559-562, 2000.

P. Romer, Endogenous technological change, **Journal of Political Economy**, Vol. 98, No.5, 1990.

37 D. Acemoglu and F. Zilibotti, Was Prometheus unbound by chance? Risk diversification and growth, **Journal of Political Economy**, No. 105, 1997, pp. 709-751.

38 See: Denise L. Stanley and Sirima Bunnag, a new look at the benefits of diversification: lessons from Central America, Applied Economics, No.33, 2001, pp. 1369-1383.

39 [38]See: Denise L. Stanley and Sirima Bunnag, a new look at the benefits of diversification: lessons from Central America, **Applied Economics,** No.33, 2001, pp. 1369-1383.

See:

-Jean-Claude Berthelémy and Sophie Chauvin, **Structural changes in Asia and growth prospects after crisis,** CEPIL, No. 9, 2000

-Jean-Claude Berthelémy and Ludvig. Söderling, The role of capital accumulation, adjustment and structural change for economic take-off: empirical evidence from African economic growth policies, **World development,** February 2001.

economic openness and human capital. This methodology is interesting for it enables, through the total productivity of factors, to show the contribution of diversification to economic growth.

This chapter has shown that for some years now there has been a resurgence of the debate on diversification. The numerous theoretical studies and works show the importance of diversification in development and economic growth. Indeed, diversification contributes to increasing the productivity of factors, in the stabilization of export revenues as well as strengthening investment.

The objective of this reflection is two-pronged. Firstly, it is to emphasize the importance of diversification and the role it could play in strengthening and stabilizing growth dynamics in Africa. The second objective is to help decision makers define policies adapted to and capable of strengthening the structural transformation process of African economies through greater diversification. In this chapter, the literature review enabled the identification of a series of variables that influence the diversification process, which are grouped as five categories of variables. The first one pertains to the physical factors that are investment, growth and human capital. The second category is connected to policy decisions and particularly the impact of trade and industrial policies in strengthening the industrial fabric and in the diversification of African economies. The third category deals with macro-economic variables such as exchange rates, inflation and big macro-economic imbalances. The fourth category touches upon institutional variables such as governance, conflicts and investment environment. Finally, the last variable concerns the issue of market access, which could play an important role in diversification policies especially through the elimination of tariff peaks and tariff escalation for African exports to developed countries. The next chapter of this study will seek to measure the impact of each category of factors. This examination is necessary in order to better define diversification policies.

Chapter 3
Diversification: Measuring Tools

Measures of Diversification

This section presents a brief discussion on some of the most commonly used measures of diversification and background to the evolution of each measure.

A simple definition of export diversification is the change in the composition of a country's export mix (Ali, Alwang and Siegel 1991). By changing the shares of commodities in the existing export mix, or by including new commodities in the export portfolio, a country can attain export diversification. And a more general definition of diversification is the spread of production over many sectors, which do not necessarily imply different productivity levels (Berthelemy and Chauvin 2000).

There are several ways of measuring export diversification in the literature. The earliest attempt to measure diversity was undertaken by MacLaughlin in 1930[40] (see citation in Attaran and Zwick 1987). In the recent past, researchers are more concerned with the correlation between exports diversification and exports instability of different countries (see e.g., Massel 1970; and MacBean and Nguyen 1980). In most cases, the choice of a measure corresponds to its definition. In most studies related to export diversification and exports instability, the concentration ratio is often the choice.

In the face of recent developments, which relate economic growth with the structural changes in exports and exports diversification, measuring diversification becomes very crucial. Export diversification enters as one of the explanatory variables in the regression analysis of economic growth (Al-Marhubi 2000; and Berthelemy and Soderling 2001). Again, the use of concentration ratio as a measure of diversification also proved useful in investigating this relationship.

Meanwhile, some recent studies also employed a "non-traditional" measure of export diversification that involves time series data to determine and compare the export experiences of the different commodities (see Gutierrez de Pineres and Ferrantino 1997; and ESCAP 2004). The use of time series data gives a graphic illustration of the structural changes or the 'traditionality' of a particular export commodity. The following are some of the measures of diversification.

40 MacLaughlin tested the strength of relationship between the degree of industrial concentration in a given city and the severity of the cyclical, as well as the seasonal, economic fluctuations that the city experienced. His concentration measure was percent of value added by manufacture concentrated in the first five industries in each city (see Attaran and Zwick 1987).

3.1. Concentration ratios

One of the ways to measure the degree of diversification is by using concentration ratios. Under this group, there are several methods that have been developed to measure diversity. The concentration ratios commonly used includes the Ogive index, the Entropy index, Hirschman index and the aggregate specialization index.

Ogive Index

The Ogive index is one of the most commonly used indices of industrial diversification (see citation in Attaran and Zwick 1987). This index measures the deviation from an equal distribution of employment in all sectors, that is the mean of the distribution. This index may also be used as a measure of export diversification or concentration (see e.g. Ali et al. 1991; and ESCAP 2004) and is given as:

$$\text{OGV} = N \sum_{i=1}^{N} (P_i - 1/N)^2$$

or

$$\text{OGV} = \sum_{i=1}^{N} \frac{(P_i - 1/N)^2}{1/N}$$

where $P_i = (x_i / X)$ is the actual share of i*th* commodity (x_i) in total exports ($X = \Sigma x_i$), N represents the total number of export commodities in the export portfolio and *1/N* is assumed to be the "ideal" share of export earnings, which is the mean export share for each commodity. The minimum value of OGV, that is zero, is attained when the share of export is distributed equally among commodities. When the value of OGV approaches 0, this implies an economy is highly diversified. On the other hand, a larger value of OGV indicates a relatively less diversified economy, which means that there are only few commodities in its export portfolio.

The Entropy Index

Entropy is a form of measurement that has been applied to many areas such as in sciences, communication theory, business and finance, and economics (Attaran and Zwick 1987). For example, in biological and behavioral sciences, entropy has been used as a measure of disorganization. In a marketing context, entropy can represent the distribution of consumer preferences for various brands. Applications of entropy statistics were developed mainly during the late 1960s and 1970s (see citations in Frenken 2003). As a measure of diversity, entropy measure gives the diversity or spread of the distribution. The entropy index is given as:

$$ENT = -\sum_{i=1}^{N} P_i \log_2 P_i$$

Or

$$ENT = \sum_{i=1}^{N} P_i \log_2 (1/P_i)$$

where N and P_i is defined as above. The maximum value of ENT given by $\log_2 N$, is attained when all P_i are equal. This value denotes greater diversification as all commodities in the export portfolio have identical share. If the ith commodity is the only contributor to the total exports, the $P_i = 1$, all the other $P_i = 0$, and $ENT = 0$. This value indicates extreme specialization or concentration in one commodity.

Hirschman Index

Another measure of an index of diversification/concentration is the Hirschman Index[41] developed by Albert Hirschman in 1945 (see Hirschman 1964). This index is the most widely used measure of trade and commodity concentration (see e. g., Massell 1970; Kingston 1976; MacBean and Nguyen 1980; Svedberg 1991; and Stanley and Bunnag 2001). The Hirschman index may be written as:

$$H_1 = \sqrt{\sum_{i=1}^{N} \left(\frac{x_i}{X} \right)^2}$$

where x_i represents the export value of a specific ith commodity, X is the country's total exports, and N is the number of commodity groups. Again, the higher the value of H_1 indicates greater concentration of exports on few commodities and vice versa.

According to Hirschman (1964), this index is designed as a measure when concentration is a function of both unequal distribution and fewness. The traditional measures of concentration, generally devised in connection with income distribution and the Lorenz curve, are sensitive only to inequality of distribution.

It is observed that H_1 is a function of the mean and variance of the value of exports share in different commodity groups. Specifically, H_1 is the index that would results if a country's export receipts were divided evenly among $1/(H_1)^2$ different commodities (Adelman 1969; and Massell 1970). This means

41 This index is also commonly known as the Hirschman-Gini index (Massel 1970; and Svedberg 1991), or Gini-Hirschman Index (ESCAP 2004), and also commonly refers to as the Herfindahl-Hirschman index or the "H" index (Adelman 1969).

that when the share of exports is identical or equally distributed to all commodity groups, then the variance is equal to zero and N is equal to $1/(H_1)^2$. This also implies that for a given N, the minimum value of H_1, which occurs when the variance is zero and all shares are identical, is $1/\sqrt{N}$.

The Hirschman index has been frequently used as a variable to investigate the relationship between export instability and export diversification (see e. g. among others, Massell 1970; Kingston 1976; MacBean and Nguyen 1980 and Stanley and Bunnag 2001). Empirical studies, however, found either no significant relationship or weak relationship if there is between export concentration/diversification and export instability.

As a measure of geographic concentration of exports or trade concentration, the Hirschman index (see Kingston 1976) may be expressed as:

$$G = (\sum_{i=1}^{T} c_i^2)^{1/2}$$

where c_i is the proportion of each country's exports purchased by country i in a given year, and T is the number of destination countries for each year.

Normalized-Hirschman Index

The Hirschman index[42] may also be used as a relative measure of diversification by expressing its value between 0 and 1 according to the following formula:

$$N\text{-}H_1 = \frac{\sqrt{\sum_i^N P_i^2} - \sqrt{\frac{1}{N}}}{1 - \sqrt{\frac{1}{N}}}$$

where $P_i = \frac{x_i}{X}$, x_i is the value of exports of commodity i, $X = \sum_1^N x_i$, and N is the number of products. The normalized-Hirschman ($N\text{-}H_1$) index is used by Al-Marhubi (2000) to discriminate between two countries, which are relatively more concentrated and used as an explanatory variable in growth regression.

42 See UNCTAD, 2004, p. 405 and p.414.

The value closer to 1 represents the most extreme concentration. Likewise, a low value of this index indicates lower exports concentration or a relatively diversified economy.

Herfindahl Index

The Herfindahl index is an index commonly used for measuring industrial concentration, which was developed by Orris Herfindahl in 1950 (see Hirschman 1964; and Adelman 1969). This index is a method of summarizing the degree to which an industry is oligopolistic and the concentration of market control held by the largest firms in the industry. The Herfindahl index is defined as the sum of squared percentages of the market and may be expressed as:

$$H_2 = \sum_{i=1}^{N} S_i^2$$

where S_i is the market share of the ith firm. Note that the expression for the Herfindahl index is very similar to the Hirschman index (see above) except for the square root. That is why, this index is commonly referred to as the Herfindahl-Hirschman index or the "H" index.

As a measure of industrial concentration, Kelly (1981) observed that this index did not seem to have had wide use due to following reasons: firstly, as for empirical work, its use requires data on the market shares of each firm, and this data is frequently unavailable; secondly, the index does not appear to have a very clear intuitive meaning; and lastly, not everyone agrees that the link between concentration and monopoly power is clear enough that any concentration measure would be worthwhile. However, Adelman (1969) provided an economically meaningful interpretation of this index. Adelman has shown that the reciprocal of the index is equal to the number of firms of identical size, which would generate that value of the index. Therefore, the reciprocal of "H" is called a "numbers-equivalent".

Recently, this index was also employed as another measure of specialization (and/or to measure export diversification) (see for example Gutierrez de Pineres and Ferrantino 1997; Imbs and Wacziarg 2003; and ESCAP 2004). The index is commonly referred to as the *aggregate specialization index* and is discussed below.

Aggregate Specialization Index

The *aggregate specialization index* is an index to measure export diversification. The index is derived from an index of concentration of the distribution of exports among products. As mentioned above, this measure is quite similar to the Herfindahl index of industrial concentration and to the Hirschman index of trade concentration. To measure export diversity, the index is expressed as follows:

$$\text{SPE} = \sum_{i=1}^{N} \left(\frac{x_i}{X} \right)^2$$

where again, x_i is the export of commodity i; X is the country's total exports; and N is the number export commodities. A numerical value of *SPE* approaching 1 implies reliance on a single export (a high degree of specialization) while a numerical value of SPE approaching 0 implies a high degree of export diversification. When the share of exports is equally distributed among different commodities, then the value of SPE is 1/N, which is also the minimum value.

Berthelemy and Sorderling (2001) used an index of diversification, which is the inverse of aggregate specialization index (SPE) and is computed as:

$$\text{DIV} = \frac{1}{\sum_{i=1}^{N} \left(\frac{x_i}{X} \right)^2}$$

where the variables are as defined above. The value of this particular index increases with the degree of diversification, which is from 1 to N. One indicates extreme concentration and N exhibits perfect diversification.

The variables SPE and DIV are both used in empirical studies to investigate the relationship between export diversification and growth. Both Gutierrez de Pinerez and Ferrantino (1997); and Bethelemy and Soderling (2001) for example, found that export diversification is an important source of economic growth for some countries under studies.

It has been observed that the Ogive, Entropy and Hirschman (below) indices can provide quite similar rankings of export concentration and thus, by and large, may be used interchangeably (see Attaran and Zwick 1987; and Ali et al. 1991). These measures are conceptually similar, as their approaches compare actual distribution to a hypothetical uniform distribution.

3.2. Commodity-specific cumulative export experience function

Aside from the concentration ratios, there are many other measures of diversification that were used in empirical research. These measures are those that commonly measure the structural changes or the traditionality of specific exports for a given industry. The first of this measure can be obtained by

estimating a cumulative exports experience function of a particular commodity i (see Gutierrez de Pineres and Ferrantino 1997; and ESCAP 2004).

The cumulative export experience function for each commodity is obtained by:

$$CXF_{i,\tau} = \frac{\sum_{t=t_o}^{t} x_{it}}{\sum_{t=t_0}^{T} x_{it}}$$

Where x_{it} is the **value of export** of commodity **i** in year **t**, expressed in constant prices; t_0, τ, and T represent the initial, current and terminal periods of the sample period, respectively.

It should be noted that the variable CXF has properties analogous to that of a cumulative distribution function in the sense that it may take a very small (or near zero) value in the initial period and subsequently rises to 1 in the terminal period. In this context, if the numerical values of CXF are plotted for two or more commodities (or industries) together, a commodity whose export experience was focused in the initial period (which could be labelled as "traditional") is expected to be different from a commodity whose experience was concentrated in the later years (labelled as "non-traditional") in that its export experience function would shift to the left. In other words, for the more "traditional" commodity one would expect the plot of CXF for such a commodity to be shifted to the left or linear, whereas for a "non-traditional" commodity the graph of CXF would be expected to shift more towards the right.

A comparison of CXF across different commodities may also shed light on the diversification of the export industries. For, instance, the commodities for which plots of CXF are shifted further to the right should not only be considered to be more non-traditional export commodities but they should also be expected to be more vertically diversified.

The null hypothesis that two industries have identical cumulative export experience functions can be tested against the alternative that one of the industries is more 'traditional' in several ways. The most straightforward method of ranking exports by traditionality is to construct the mean of the cumulative export experience index, called traditionality index, for each industry and is defined below.

Traditionality index

An alternative way of ranking exports by the "traditionality" attribute, which involves computing the mean of the cumulative export experience index for each ith commodity for the entire sample period is computed as follows

$$T_i = \frac{\sum_{t=t_0}^{T} CXF_i}{T - t_0 + 1}.$$

More traditional industries have a higher value of T_i. Using both CXF and T_i, it is possible to identify and estimate the extent and nature of diversification of a country's export portfolio of different varieties. The first possibility is that the country may experience a broad-based vertical as well as horizontal export diversification if the composition of export commodities is such that, for a large of export items, CXF plots are shifted to the right with small T_i values and, for other equally large numbers of export commodities, the CXF plots are also shifted to the right (to a lesser degree) but with small values of T_i.

The second possibility is that there is little or no horizontal diversification but a vertical diversification in a limited number of specialized export commodities. In this situation, the CXF plots for most export commodities are linear (or even shifted to the left) with high T_i values and, for a few export items, CXF plots are shifted to the right with small T_i values.

In the third case, a country could experience neither horizontal nor vertical diversification if the CXF plots for export commodities are mostly linear and also have relatively higher T_i values.

Variance of T_i

In order to test the robustness of the commodity-specific traditionality index, one can also estimate the variance of T_i (VT_i) for the sample period using the following equation:

$$VT_i = \frac{\sum_{t=t_0}^{T} (T_i - \overline{T_i})}{T - t_0 + 1}$$

Where $\overline{T_i}$ is the mean value of T_i. A low value of VT_i would imply that the composition of traditionality for a specific commodity has been stable over the sample period.

3.3. Absolute deviation of the country commodity share

Another measure of export diversification is the absolute deviation of the country commodity shares from the world structure and is given as follows:

$$S_j = \frac{\sum_i | h_{ij} | - | h_i |}{2}$$

Where h_{ij} is the share of commodity i in total exports of country j, and h_i is the share of commodity i in the world exports (see Al-Marhubi 2000[43]). The value of the above index ranges from zero to one and discriminates between countries, which are relatively more diversified. In this measure, a higher value of the index implies more diversified exports.

This index is used by UNCTAD to measure the extent of the differences between the structure of trade of a particular country and the world average. The index value closer to one indicates a bigger difference from the world average.

This index was also used by Al-Marhubi (2000) as one of the explanatory variable in the growth regression and similarly found to be significant in explaining faster economic growth.

43 Al-Marhubi also used in his study a simple indicator of export diversification, which involves only counting of the number of products exported at the three-digit SITC. He included only those products that are greater than 0.3% of the country's total exports.

Chapter 4
Diversification: Stylized Facts

Africa's Exports Diversification Trends

The performance of economic growth in Africa and the accompanying slow rate of economic and social development have been linked to the lack of diversification in the African economies. While the link between diversification and economic growth, mainly through trade has remained largely an empirical question, there is an emerging body of literature that is revisiting the role diversification plays in both trade and economic growth. In this chapter, Africa's diversification trends are explored to try and uncover some stylized facts that can be stated on how Africa has fared. Section I of this chapter first briefly takes a critical look at the current opportunities that African countries have in global trade within the context of ongoing trade negotiations. It arrives at some conclusions that point to the reality that might soon confront African countries. The thrust of this critical analysis is the argument that while there are likely to be benefits arising from current trade negotiations at multilateral and bilateral level, these benefits are insufficient to provide the growth momentum that African countries need if they are to have significant impacts on reducing poverty and unemployment. As a result it is argued that economic diversification should be seen as one of the invaluable pillars upon which African economic development could be re-energized. In Section II the chapter then goes straight to applying some of the methodologies for computing diversification indexes to show the state of diversification for African countries at the continental, sub-regional and national level. In Section III, the chapter analyses selected export experiences of some African countries. The section aims at demonstrating whether African countries have managed to have some breakthrough in their diversification efforts by using the export experiences to tease out the extent of horizontal and vertical diversification in the selected countries. In Section IV, the evidence from the previous two sections on diversification trends and cumulative exports experiences is used to highlight diversification regimes that characterize the results of the African countries diversification efforts. Section V concludes.

4.1 Africa's fortunes in the global trade: What are the prospects?

The low level of integration of Africa in the global trading system and the sub-optimal outcomes in regional integration at the continental level has been an issue of concern for the last two decades. Since 1980, Africa's share in international merchandise trade has fallen substantially; from six to two percent while other developing regions have been gaining (UNCTAD 2004). Figure 4.1a shows the conventional trade openness measure of selected African countries. In the majority of cases, African economies are more open today than they were at the beginning of the 1980s. This increased openness has however not translated into the continent's increased share of global trade. The main explanation to this lack of

correlation between increased openness and the declining share of the continents trade in the global economy has been attributed to the production structures in the African economies. The continent has not managed to diversify into the exports that are experiencing rapid growth and African economies have continued to be stuck with exports in the lower end of the value chain. These are exports with a tendency for having low-income elasticity and on the whole are of low value.

To explore the limited diversification as an explanation for the lack of linkage between trade openness and the continent's share in total global trade, it is more insightful to analyse the share of exports in a country's total income. The focus in this case is to see whether a country has been able to increase its share of exports in total income. Trade openness, which is used as the indicator for share of total trade in GDP, masks the difference in rates of growth between imports and exports. The distinction between exports share and trade openness and the information one can get regarding diversification is more important because trade liberalization almost always results in imports growing at a faster rate than exports.

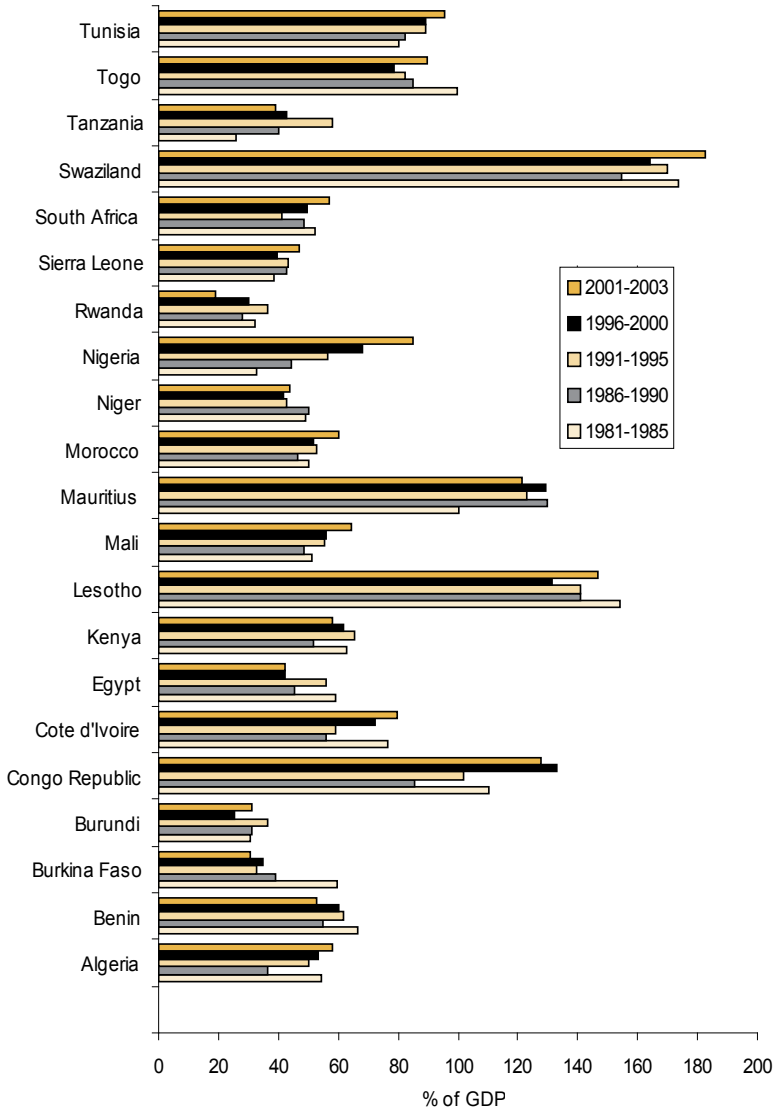
Figure 4.1b shows the share of exports in the incomes of selected African economies. For some countries, the share of exports in total income declined over the last twenty years. But in other cases, the share of exports is now higher than it was in the early 1980s. An important observation however

is that in structural terms, for most of the countries shown in Figure 4.1b, the share of exports in total GDP has not changed in any significant way. This is evident for countries such as Bénin, Burkina Faso, Egypt, Kenya and South Africa. But there are some countries where the share of exports has witnessed dramatic increases such as in Republic of Congo, Mauritius and Swaziland. Nigeria and Tunisia have consistently increased their shares of exports to GDP in a steady way. And as will be clear in later discussions, these two countries are examples of how in one case, and that is Tunisia, diversification may have played a significant part in increasing export share. While in Nigeria, the increased share has occurred with increasing concentration.

The African region also accounts only for barely one percent of global GDP. Its share of global manufactured exports is almost zero. In addition, over the past 30 years it has lost market share in global trade even in traditional primary goods and failed to diversify (World Bank 1999). Africa therefore remains almost totally dependent on its traditional export commodities despite their low-income elasticity and declining and volatile terms of trade. It is now accepted that continuing concentration on these traditional exports would have adverse consequences for income and employment.

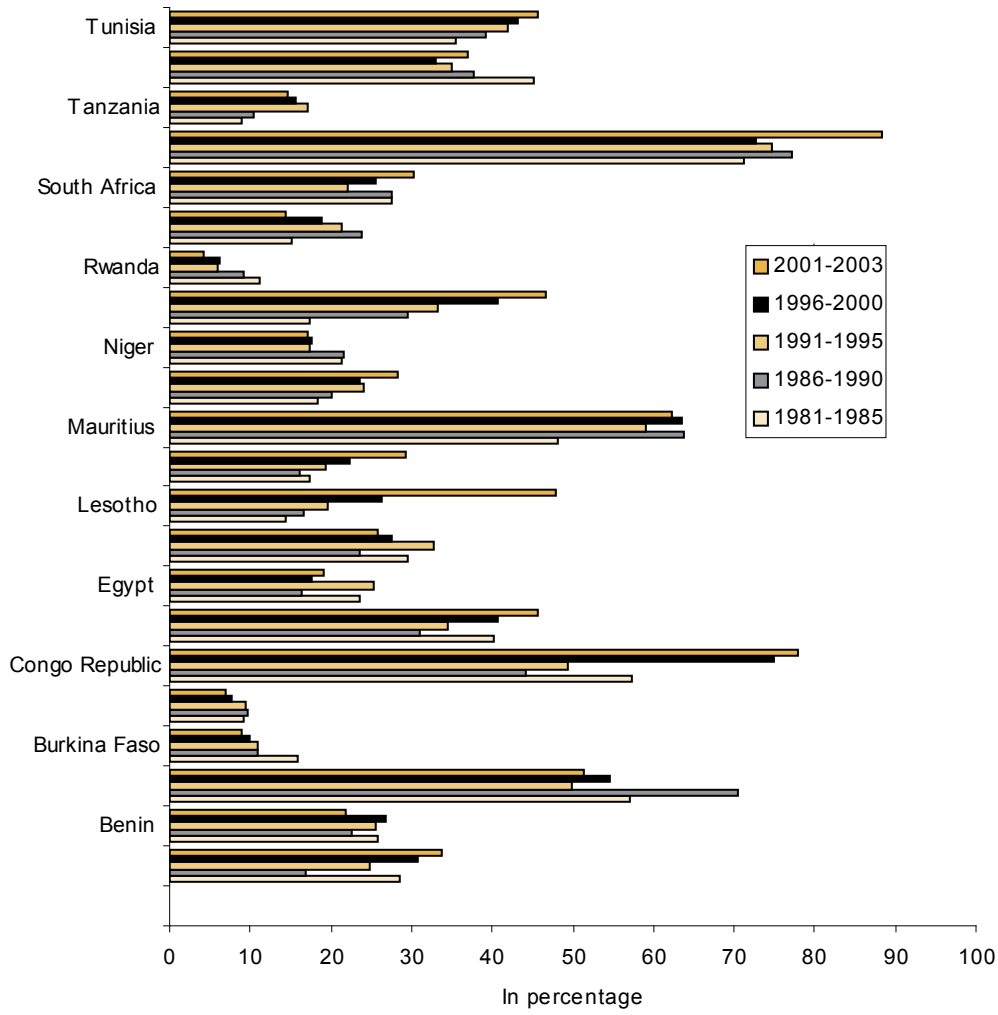
As Africa's trade performance has continued to decline, a lot of work has gone into establishing how Africa could maximize gains from the global trading system, especially in the last ten years. This has spawned a lot of research, most of it focusing on helping Africa in the multilateral and bilateral negotiations at the WTO and with the European Union in the context of Economic Partnership Agreements respectively (Economic Commission for Africa 2004; Karingi et al. 2005). Some studies have looked at specific issues

Figure 4.1a: Trade openness (total trade as share of GDP)



Source: UNCTAD, 2004.

Figure 4.1b: Average Share of Exports on Country's GDP (in %)



Source: UNCTAD, 2004.

dealing with market access questions and have tried to estimate the potential gains for Africa if there is a successful conclusion of the Doha Round of trade negotiations (Economic Commission for Africa 2004; Hammouda et al. 2004; Hammouda et al. 2005). The expected gains for Africa quantified from these studies given these economies current structures do not look too promising. The gains from trade liberalization to the developing world will be unevenly distributed (Economic Commission for Africa 2004; Cline 2004; Fernandez de Cordoba et al. 2005). Estimates of welfare effects from multilateral trade liberalization showing global effects and developing countries are summarized in Charlton and Stiglitz (2005).

Several other studies have tackled the question of trade preferences currently being enjoyed by African countries (Mold 2005; Olarreaga and Ozden 2005). And as reiterated in both Mold (2005) and in Olarreaga and Ozden (2005) most of the preference schemes have delivered sub-optimal gains due to various reasons. These include product exclusions, rules of origin requirements, quotas (export ceilings), and non-permanent nature of the schemes. In other words, the preference schemes have also not helped the African countries diversify their exports in manner consistent to the expectations of these schemes. This shortcoming in the preference schemes is highlighted also in Hammouda et al. 2005 where the unrestricted market access for sub-Saharan Africa countries in the QUAD is quantified.

Olarreaga and Ozden (2005) do however raise an important constraint that is overlooked in looking at the shortcomings in the preferential schemes. Using the case of AGOA, the study shows that in spite of AGOA being less restrictive, in terms of rules of origin for the least developed countries, the proportion of tariff rent captured by the preference receiving countries is reduced since the importing firms in America are able to capture a significant portion of the tariff rent. More specifically, prices of apparel from seven sub-Saharan African countries increased by only six percent while the tariff phased out for the same products under AGOA were 20 percent. This means that the African exporters were able to capture only one-third of the tariff rent. It may not be difficult to link this limited bargaining power compared to that wielded by the importers to the exports base of firms from these countries. Exporters from South Africa on their part captured at least half of the tariff rents in apparel exports under AGOA.

The following are some of the main conclusions that can be deduced from the results of most of this research effort:

- There are gains still to be realized from the market access agenda and most of these gains could accrue to developing countries. However, there is going to be little benefits for Africa from the multilateral negotiations given the current structure of the African economies and so their marginalization in the global trading system is likely to continue.
- The risks of de-industrialization of some of the African economies that have made some steps towards development of some industries are real within the context of full reciprocity. In the same vein, reciprocity unless it is deeply asymmetric will undermine regional integration given the prevailing structures and competitiveness of African economies.

- While there are some benefits from preferences, these benefits could be greater, with internal supply capacities being one main reason why gains have not been maximized.
- Erosion of preferences in the context of multilateral liberalization is real and this will be worsened by possible declines in government revenues as the liberalization is deepened unless there is significant restructuring within these economies.

It can therefore be argued that at the heart of the results upon which these conclusions are made is a crosscutting explanation of the weak supply responses of African economies. This raises some interesting issues. Firstly, a question on the efficacy of the economic policies implemented since the mid-1980s arises. It can be argued that these policies failed to provide the catalyst or complementary push sufficient to help Africa achieve the response capacity necessary for it to benefit fully from trade. Put differently, it could be reasonable to conclude that while macroeconomic stabilization achieved in the continent has been a welcome result of these policies, the reforms may have failed to achieve the expected benefits in terms of improving Africa's supply capacity.

Given the conclusions above, major challenges lie ahead for Africa, including continued fragile growth and weak international competitiveness. Unemployment and poverty are likely to remain major concerns for the continent in many years to come unless there is a significant shift on how trade among other things could be utilized more effectively to overcome these challenges. The overriding question here is what policies should Africa pursue to promote trade and growth that would enable it tackle the twin challenges of unemployment and poverty. Nested in this question are issues such as what sectoral policies are growth enabling; what trade policies can improve international competitiveness; and how can regional integration be made more efficient?

Charlton and Stiglitz (2005) observe the dramatic transformation in the industrial pattern of the global economy. The advanced industrial economies transformed in the 19th century from agriculture into manufacturing and are currently becoming more service and knowledge based economies. On the other hand, the developing countries comprise those that are subsistence agriculture based; export agriculture oriented; or experiencing rapid transformation from agriculture, as they become increasingly manufacturing based. The per capita incomes and levels of poverty today depend on whether the country is service and knowledge-based, centred on manufacturing, export agriculture or subsistence agriculture oriented.

Much of Africa is subsistence agriculture based with some of the countries being export agriculture based. This points to the need to revisit the idea of diversification of African economies. In so doing, it will become necessary to ask questions such as what macro policies can promote diversification; what sectoral policies enable economies to diversify; how can diversification be optimally exploited to help in regional integration and in international competitiveness. It is important, as noted in Charlton and Stiglitz (2005), to observe that while agriculture is important for most developing countries, many of these countries have dramatically diversified their industries and moved up the value-added chain. The

2004 Global Economic Prospects report of the World Bank shows that in low-income countries, the shares of manufactures in total exports have risen from 20 percent in 1981 to more than 80 percent in 2001 (World Bank 2004). However, much of this dramatic transformation of exports is associated to the rapid economic growth in India and China. The World Bank (2004) report further shows that even when the export shares are unweighted, on average, manufactured exports share in total exports in low income countries have doubled from 25 percent to 50 percent. A point further emphasized in World Bank (2005) where the changing structure of export composition is taken as one of the three fundamental changes in which international trade has changed. Exports of manufactured products from developing countries have become increasingly important in almost all the developing regions except Africa.

4.1 The diversification trends in Africa

Diversification trends at regional level

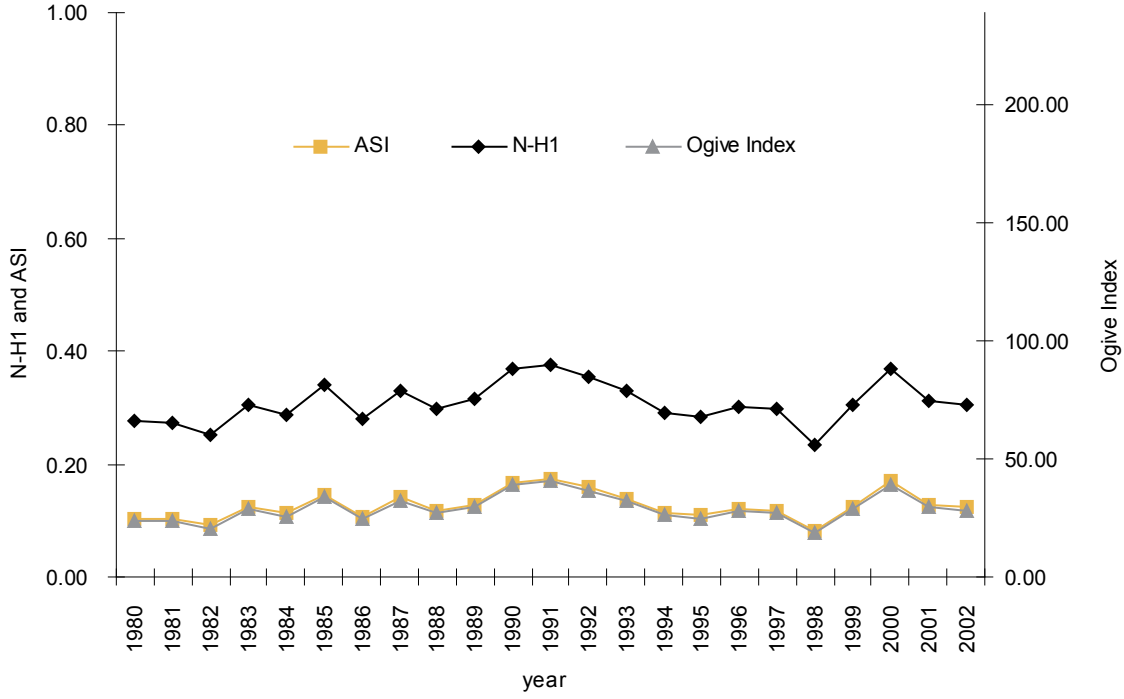
The different measures of diversification were presented in the previous chapter. Therefore, this section will focus on presenting the indices computed to show the trends of diversification in the continent. This is done at the continental, sub-regional and country level. Figure 4.2 shows three diversification measures for the African economies as a whole. The first two measures on the left-hand scale are the normalized-Hirschman index and the aggregate specialization index. On the right scale is the Ogive index. The figure presents the regional picture and three clear messages can be drawn from these indices.

The trends for the three measures of diversification are similar and as a result, the messages from Figure 4.2 could be elaborated by focusing on the normalized Hirschman index. The index defines four time-periods providing an interesting picture for the African economies diversification debate. These defined time-periods are: 1980-1982; 1982-1991; 1991-1998; and 1998-2002. The first time period up to 1982 exhibits a declining trend of the diversification index implying that the African economies were making some progress at becoming more diversified. Clearly, although the African economies were at this time experiencing the adverse effects of the economic crises that started around this period, the improving normalized Hirschman index suggest that the efforts for diversification during the 1970s were still achieving positive results that continued in the early 1980s.

However, the escalation of the economic crises in the first half of 1980s and the adjustment measures that were instituted to deal with the crises, appear to have had negative impacts on the diversification efforts. Thus, as Figure 4.2 indicates, there is a second clearly defined period 1982-1991, in which the diversification index is upward trending. The gains of diversification that had earlier been achieved were reversed over these ten years. The extent to which this reversal of the diversification gains could be attributed to the economic crises and to possible negative effects of the measures put in place to address the crises in the form of structural adjustment policies has remained a matter of great empirical interest.

The third distinct period of the results of African efforts toward diversification starts in 1992. The diversification index shows some progress towards having more diversified economies. One could suppose that the macroeconomic stabilization policies of the 1980s may have contributed to this positive development. Unfortunately, the gains registered were fragile as the improvement in the diversification index lasted only up to 1998. Since then, African economies have taken towards becoming more concentrated, considering the upward trending nature of the normalized Hirschman index from 1998 to 2002. This current trend (1998-2002) defines the fourth episode of diversification experience in the continent and clearly needs to be reversed if the continent will be able to trade its way out of the challenges it currently faces.

Figure 4.2: The Diversification Indexes for Africa



In some ways, the trend in diversification index and the defined phases can easily be correlated to the exports growth. Figure 4.3 summarizes the merchandise export growth by sub-regions while Table 4.1 provides some selected country level performances of the same. In the period up to early 1980s, rapid exports growth took place in all the sub-regions. But this growth dissipated for most of the period covered between 1980 and 2001. The nominal growth rates during these 20 years were very low at the regional

level. It is noteworthy that in 2002 and 2003 there has been some recovery at the continental level and generally in all the sub-regions.

At this point, one can be able to provide some concise comments on the general trend of Africa's diversification experience.

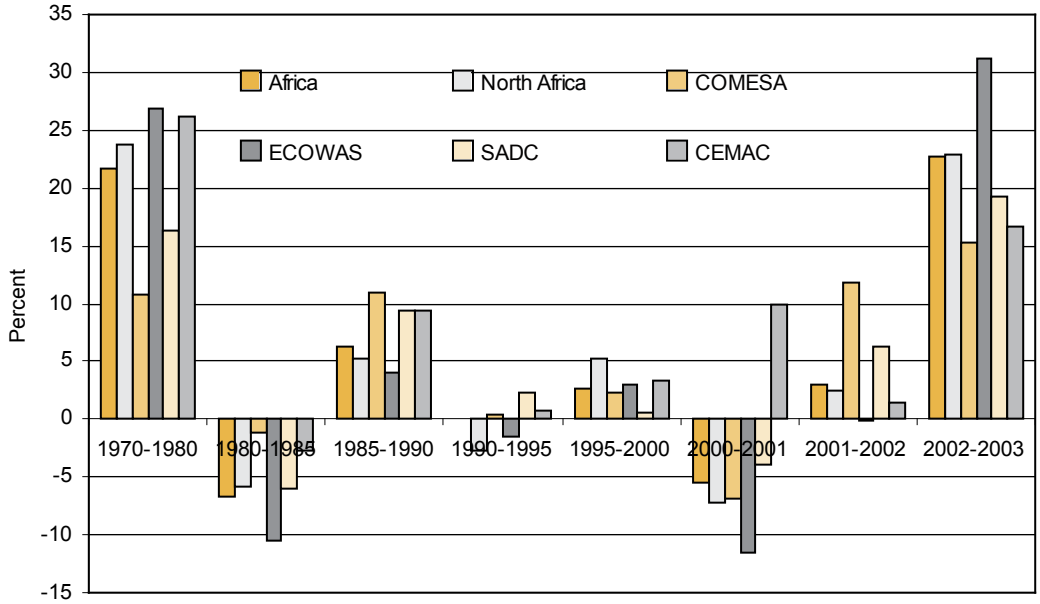
- Firstly, African economies exhibit very low levels of diversification. By all measures and accounts, there has been limited diversification of exports by African economies. Over the last 25 years or so, there has been very little change towards improved diversification in African economies in general.
- Second, the African diversification experience has been volatile. Considering the evidence from different measures of export diversification, there is no distinct and general trend of the African experience. On the whole, the diversification trend lacks a clear and definite direction. What is clear though is that at the continental level, there has been volatility in the diversification indicators.
- And thirdly, where there have been some gains towards improved diversification, these gains have been fragile. Associated with the volatility noted above, African economies have been unable to register on the aggregate, any sustainable movements towards deepening diversification. The periods where the deepening of diversification is indicated by declining trend of the various indices, have turned out to be quite fragile and probably an indication that the fundamentals that would support such a deepening were not in place.

Table 4.1: Growth of merchandise exports, 1970-2003 (percent)

	1970-80	1980-85	1985-90	1990-95	1995-00	2001	2002	2003
Africa	21.62	-6.77	6.36	-0.03	2.71	-5.54	2.99	22.63
North Africa	23.68	-5.75	5.27	-2.72	5.29	-7.19	2.48	22.88
Algeria	31.23	-2.22	1.67	-6.34	10.4	-12.17	-1.14	20.23
Egypt	12.95	2.7	12.81	-6.39	3.86	-11.97	14.05	13.8
Morocco	16.14	-2.57	14.02	8.66	0.8	2.63	9.89	15.66
Tunisia	26.89	-6.38	15.96	8.39	1.58	13.35	3.67	16.77
COMESA	10.79	-1.19	10.96	0.34	2.38	-6.83	11.86	15.22
Burundi	17.4	10.69	-9.96	7.15	-8.48	-23	-21.57	24.72
Kenya	16.97	-4.61	-0.62	12.42	-2.62	12.12	8.86	13.94
Mauritius	21.07	1.17	19.54	4.75	-0.81	4.52	10.67	7.63
Rwanda	21.65	3.55	-8.32	-18.71	-1.02	62	-34.44	-1.24
ECOWAS	26.9	-10.56	4	-1.59	3.07	-11.57	-0.1	31.28
Benin	1.56	33.74	15.37	7.65	-2.91	-4.78	19.96	23.6
Burkina Faso	18.24	-2.88	12.57	9.3	-2.28	11.96	1.28	37.55
Côte d'Ivoire	22.95	-0.48	-1.36	2.9	0.81	1.5	33.67	10.79
Mali	18.88	-7.87	18.59	4.63	5.67	31.73	22	5.11
Niger	33.73	-15.02	-1.24	-2.77	-0.73	-3.74	2.59	21.15
Nigeria	33.01	-13.56	3.49	-4.08	5.15	-17.71	-12.48	47.04
Sierra Leone	7.25	-8.2	-0.18	-17.68	-30.75	122.56	67.79	89.55
Senegal	15.89	4.84	5.29	5.1	-0.57	9.05	6.33	24.75
Togo	20.97	-8.9	6.69	5.28	-1.62	-1.64	19.53	44.32
SADC	16.39	-6.04	9.48	2.33	0.51	-3.86	6.36	19.25
Angola	11.68	4.05	15.71	-2.52	10.41	-17.5	16.31	13.97
Botswana	31.84	14.55	16.85	2.68	2.68	-9.7	2.49	21
Lesotho	25.98	-17.64	26.65	22.97	3.89	28.18	29.43	30.68
South Africa	21.12	-7.5	7.16	3.25	-0.18	-2.42	1.59	22.74
Swaziland	15.8	-13.88	23.95	9.38	1.51	15.87	-11.05	22.59
CEMAC	26.26	-2.78	9.45	0.69	3.28	9.84	1.35	16.69
Congo	36.3	4.61	2.51	1.67	12.14	-20.05	12.36	16.23
Cameroon	21.18	-10.8	23.93	-4.56	-1.06	36.97	8.33	27.57
Gabon	32.33	-2.49	3.55	3.72	-5.01	7.6	-20.73	22.99

Source: UNCTAD, 2004

Figure 4.3: Africa and Sub-regions: Growth of Merchandise Exports



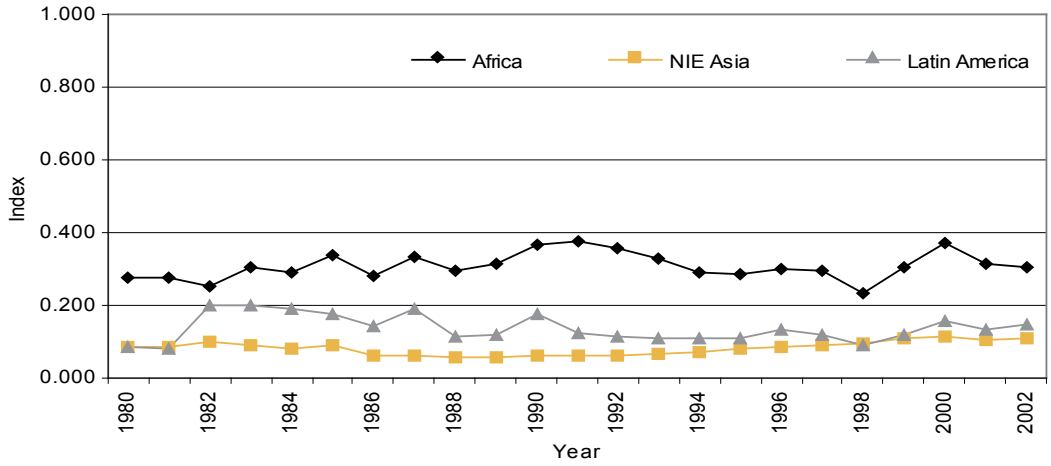
Source: UNCTAD, 2004

But how does Africa's diversification trend compare with those of other regions. Figure 4.4 shows the results of diversification efforts in Latin America and Newly Industrialized Economies of Asia compared with the African situation. The countries included in NIE - Asia are Korea, Hong Kong, Taiwan, Indonesia, Malaysia, Philippines, Singapore and Thailand.

The diversification indices of the three regions indicate firstly that at the beginning of the 1980s, both Latin America and the NIE of Asia had the same level of diversification. Secondly, Africa was at a less diversified position in comparison to the other two regions and has remained so to date. The NIE of Asia have managed to maintain their highly diversified nature. The Latin American region, like Africa was significantly affected by the economic crises of the 1980s. The diversification index for Latin America indicates loss of diversification gains up to 1987. But unlike Africa, the Latin America economies managed to reverse the trend towards exports concentration. For the period 1987 to 1999, the diversification index for the Latin American economies show a move towards becoming more diversified. It is worth noting that by 1998, Latin America and NIE of Asia had the same level of diversification again. Although for the remaining period to 2002 the Latin American economies were left behind again by the NIE of Asia. But the important result from this comparative analysis of the indices given in Figure 4.4 is that the NIE of Asia and Latin American economies have managed to achieve positive results from their diversification

efforts while Africa's effort have not been sustainable. Whether this could be attributed to higher variability in policy timelines is an important issue worth exploring. In empirical terms, establishing the factors that in the first instance have enabled the NIE of Asia to maintain their high level of diversification is critical. Secondly, what are the different factors that enabled Latin American economies to reverse the losses that resulted from the economic crises while African economies could not manage to sustain the diversification endeavours? But it needs to be recognized that by 1980, African economies were already behind the other two regions and it may not be fair to expect that they would be in the same position today. However, one would expect to see similar trends in the diversification indices if similar efforts were being put in the three regions.

Figure 4.4: Normalized-Hirschman Index: Africa, Latin America and NIE Asia



The following could be summarized as the key points that can be drawn from the comparison of Africa's efforts to those of the other regions.

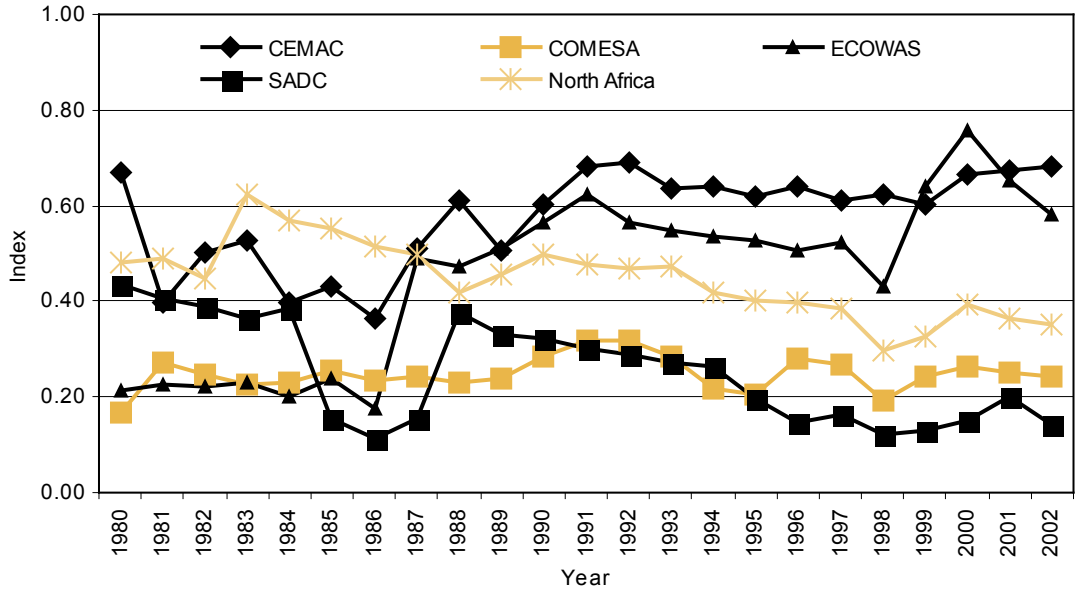
- In the period running from 1970s to the early 1980s, all the three regions made concerted efforts towards diversification. However in the 1980s, the intensity of the economic crises that ravaged mainly the developing world had very serious impacts on the results of the diversification efforts.
- The main determining factor of the impact the crises had on the different regions appears to be the nature of response. The NIE of Asia from the early years of the crises resorted to a dynamic response by accelerating investments and the diversification process. Clear policies aimed at integrating the NIE of Asia to the production value chains have been documented. But in Africa, it appears that the region was less dynamic and its response was one of more concentration on a few commodities. The African countries on the larger part seem to have adopted a defensive reaction instead. The windfalls in some of the commodities sectors underpinned this defensive reaction. This is especially the case

with regards to the oil factor that has dominated the exports of the Central and Western African region. Rather than exploiting the oil exports towards more dynamism in exports, the African countries took a defensive reaction backed up by the growing oil revenues leading them towards a more concentrated as opposed to a diversified path.

Diversification trends at sub-regional level

The general picture that was shown in Figure 4.2 on the continental performance masks the gains and losses made on diversification efforts at the sub-regional and country levels. In this sub-section, we consider a more disaggregated view of the diversification of exports. Figure 4.5 gives the situation at the sub-regional level and it compares five sub-regions defined around some of the regional economic communities. In 1980, the most diversified sub-regions were COMESA and ECOWAS. The least diversified was CEMAC with SADC and North Africa in-between. By 2002, the diversification gains at the sub-regional level had changed. The most significant gains have been made by SADC, which is now the most diversified region on the continent. It is followed by COMESA and North Africa. CEMAC has remained as the least diversified sub-region. SADC's index of diversification especially in recent years is attributed more to South Africa's heavily diversified economy. There are other countries such as Botswana that have been concentrating on achieving more diversification of their economies, but all in all, it is South Africa that has had the most impact on the outcome at SADC of the level of diversification. The South African influence notwithstanding, the experience of SADC makes a case worth some further inquiry. For the best part of the 1980s, SADC index for diversification consistently improved, falling from 0.44 to 0.11. Nevertheless, some of the SADC gains were lost for a period as the index started trending upwards peaking at 0.38 in 1988 before starting to trend downwards again. Understanding the policy timeline of the SADC performance might help to unravel the role macroeconomic stabilization policies could have played.

Figure 4.5: Normalised Hirschmann Index: Africa's Sub-Regions



In the case of North Africa, there is a clear trend towards diversification. Compared to other regions such as COMESA, North Africa's diversification index has improved from 0.48 to 0.35. This could be attributed to the efforts of Morocco, Egypt and Tunisia to diversify given the proximity to the large and lucrative European market. Tunisia in particular, as will be seen in later discussions, focused policies aimed at deepening the manufacturing industries, especially those related to textiles.

Unlike the experience in North Africa, COMESA has lost some of the diversification edge it had at the beginning of the 1980s, as its index has risen from 0.17 to 0.24 with no major dramatic movements registered in its performance. But probably COMESA is one region that had a great incentive to diversify. Unlike the other sub-regions such as West, Central and North, the East African region has not been endowed with new discoveries of export commodities such as oil. This means that it ought to have been more innovative on ways to ensure that it is able to trade more and achieve rapid economic growth. But the reality is that the sub-region failed to put in place policies that could have led to a more dynamic response to the challenges that it faced after the main economic crises. Rapid investments that could have launched the economies in the sub-region to become more diversified failed to occur and the sub-region remains with weak infrastructure to date. The sub-region also had its share of political and hence institutional constraints that might have limited its capacity to deepen diversification or at least minimize erosion of the gains that had already been registered prior to the economic crises. Conflicts in the horn of

Africa and political instabilities in some of the countries in the sub-region had a negative impact to the East African region's capacity to deepen diversification processes.

Yet the most interesting case of all is ECOWAS, which at the beginning of the period was one of the most diversified sub-regions. The sub-region was even more diversified in its exports than COMESA from 1981 to 1984. And even though SADC appeared to have more diversified exports in 1985 and 1986, ECOWAS was still more diversified than the COMESA region. But beginning 1986 onwards, ECOWAS sub-region started to become a more concentrated region and has remained so ever since. ECOWAS was probably the region that lost the most in the process of diversification. Within 25 years, the gains that had already been made on diversification were eroded as the sub-region became more and more concentrated. Clearly, the response of the ECOWAS countries to the early crises in the 1980s appears to have tended towards more concentration on a few commodities, a situation made worse by the abundance of oil exports. At one stage in 1998 – 2000, it was even more concentrated than CEMAC. The ECOWAS experience is to a large extent all about the oil factor.

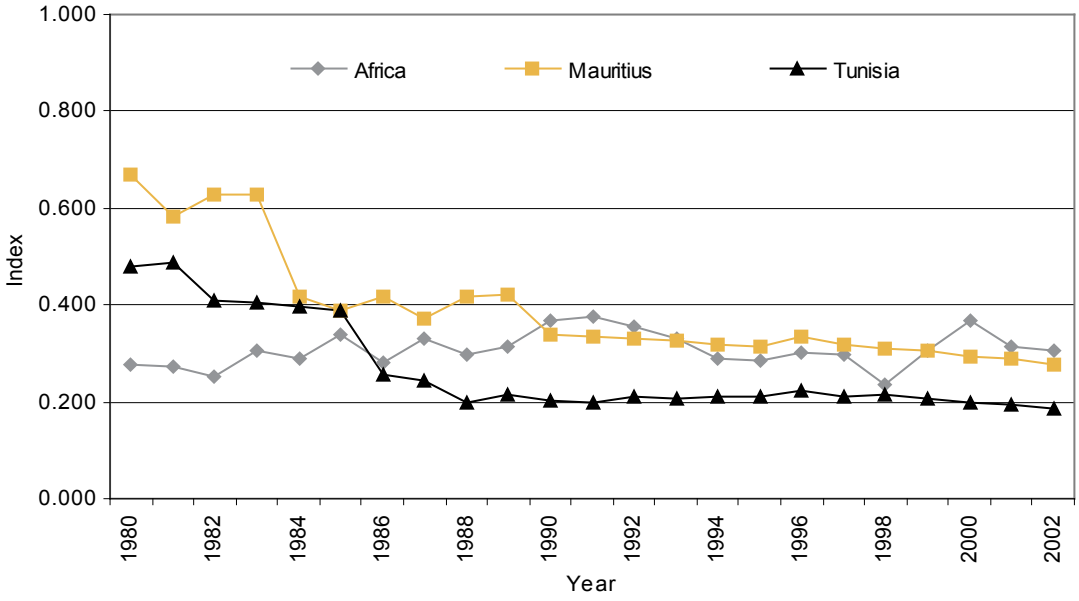
As Figure 4.5 indicates, in the 1970s and early 1980s there were gains already made in diversification efforts in the ECOWAS sub-region. This happened in economies such as Nigeria, Ivory Coast and Senegal. But since oil exports emerged as the leading exports especially in Nigeria, the largest economy in the sub-region, the gains made on diversification were eroded as the sub-region's economy became more concentrated. The diversification experience of ECOWAS could also be linked to political factors. It is not possible to discount the possibility that political factors associated with conflicts and instabilities could have played a part in the erosion of the diversification gains. Conflicts and instabilities in ECOWAS member States such as Cote d'Ivoire, Liberia and Sierra Leone might have undermined efforts being made to diversify the economies in the region. This is particularly the case with the recent history of Cote d'Ivoire, which at one point was a leading economy in the sub-region.

It is useful to note however that, while the prominence of oil exports in ECOWAS and CEMAC is a good explanation to the picture that is seen, there is the other important element of whether policy could have played a major role in achieving these results. In any case, the North African sub-region also comprises of countries that are oil exporting and yet this sub-region managed to make some progress in moving from being too concentrated to some reasonable diversification, placing it as the third most diversified sub-region in Africa. The role of policy in determining diversification outcome is an issue that is worth coming back to.

What Figure 4.5 has demonstrated is that to understand the African concentration and diversification stories, it helps to look into more details on the sub-regional performances. It is apparent that the continental gains could be attributed to just a few African countries whose experience could be replicated elsewhere if these gains could be attributed to better economic and social performances. Figure 4.6 serves to strengthen this assertion that country level performances are important if one was to understand what

is happening at the continental level. At the start of the period, Africa as a whole was more diversified with normalized Hirschman index of 0.28 than both Tunisia and Mauritius whose indices were 0.48 and 0.67 respectively.

Figure 4.6: Normalized-Hirschman Index: Africa, Mauritius and Tunisia

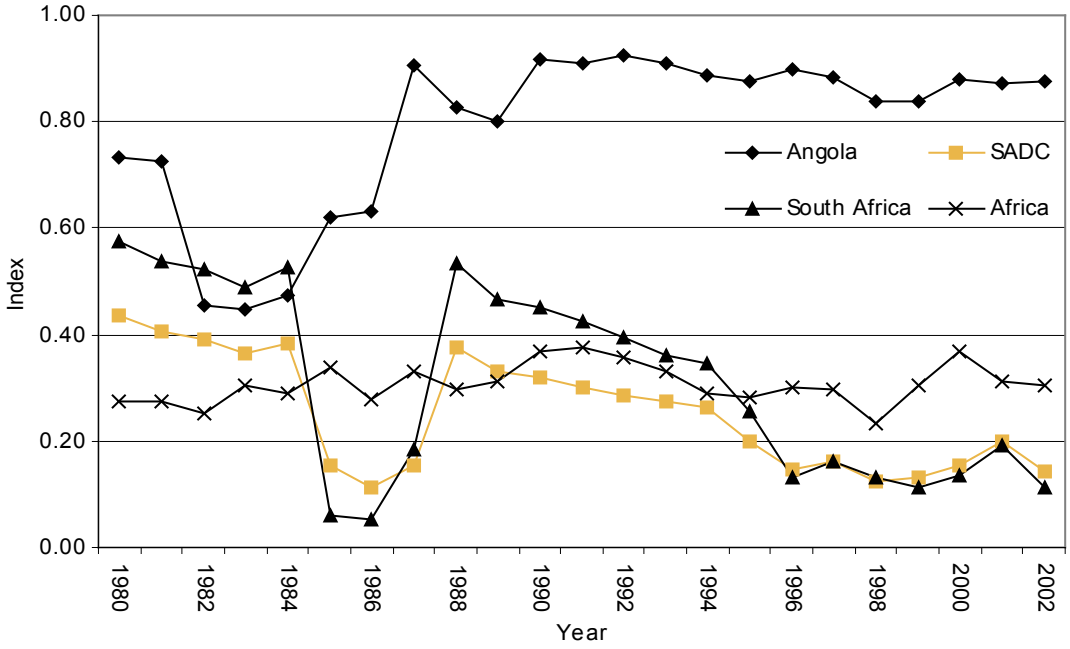


For the period 1982 to 1991, Africa's gains on diversification were being reversed while in the case of Tunisia and Mauritius, the diversification index was trending downwards, indicating positive achievements towards becoming more diversified economies. The key issue then is, what is it that Mauritius and Tunisia did that made the two economies overcome the constraints posed by the economic crises that so negatively affected the continent as a whole. What did the economic policies or even other policies pursued in these two countries have to do with the gains made on diversification? Very minimal volatility is discernible in the diversification indices of both Tunisia and Mauritius, unlike the one experienced in the continent as a whole. The minimal volatility could be an indication of a stable and sustained policy regime aimed at very specific outcomes, in this case, increased diversification.

The volatile nature of the diversification indices at the country level can be seen from trends for selected countries at each of the sub-regions. Figures 4.7 – 4.11 show the results for each of the sub-regions, and it compares the sub-region's performance to the continental level and presents selected countries' cases. Figure 4.7 confirms the South African factor in SADC's diversification results. As already noted, SADC sub-region has generally improved its diversification index. But the overall SADC diversification index

is being driven largely by South Africa. The diversification results in other SADC countries appear to be easily masked by the dominant nature of the South African economy. The example of the Angolan economy is a case in point. The Angolan economy has been getting more and more concentrated owing to its reliance on oil. However, this concentration is hidden in the overall SADC results due to the South African dominant factor.

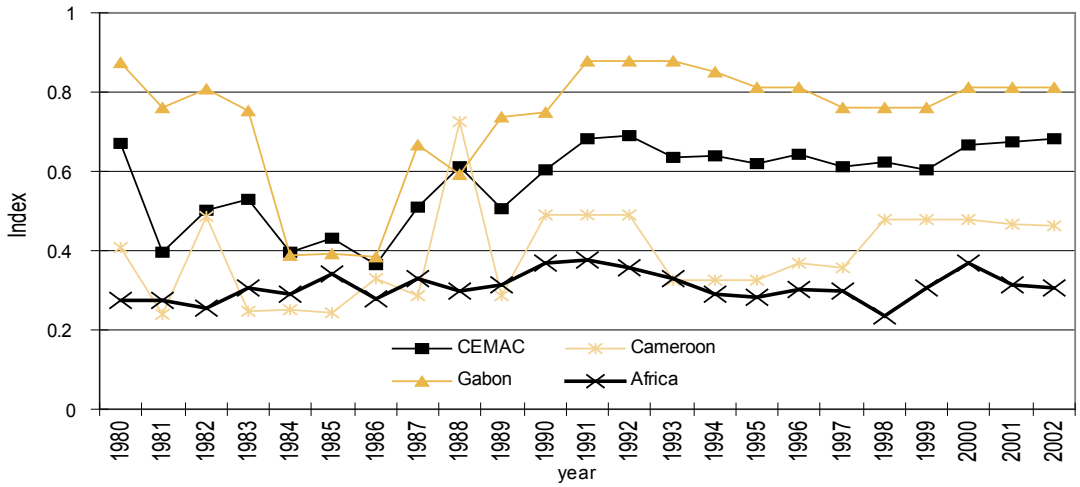
Figure 4.7: Normalized Hirschman Index: SADC



Central African economies' diversification efforts in comparison to Africa's overall efforts are highlighted in Figure 4.8. The sub-region's performance is weaker than the continent's average performance. In addition, the diversification index shows volatility for most of the 1980s. The oil factor appears to be a dominant factor through Gabon, whose economy is one of the most concentrated in the sub-region. The Cameroon economy is more diversified than the sub-region's average. But this result for Cameroon is not strong enough to outweigh the dominant effect of Gabon. Like in the overall performance of African economies, countries like Gabon and Cameroon registered improved diversification indices in the early 1980s, resulting in an overall improvement in the sub-region's performance. This could be a reflection of the diversification momentum that carried through from the 1970s. Since the mid-1980s however, the gains achieved earlier started to be eroded. In the case of Gabon, the economy became more concentrated and there has been no attempt it seems to try to recapture the earlier gains registered in the

early 1980s. As for Cameroon, there was a shock for the period 1987 to 1989, but generally, the trend of the diversification index has been gently sloping upwards indicating stagnation of the diversification efforts.

Figure 4.8: Normalised Hirschmann Index: Central Africa



The North African experience shows that the region now has diversification results that are close to the overall African results. It is noteworthy that while the North African economies diversification was weaker in 1980, the gap between these economies and that of the whole of Africa has been significantly diminished. The Tunisian economy's experience on diversification seems to have played a big role in achieving the sub-regional outcome given that the performance of economies such as Algeria after making some significant progress until 1985 or so have remained static. This is quite evident in Figure 4.9.

Figure 4.9: Normalized Hirschmann Index: North Africa

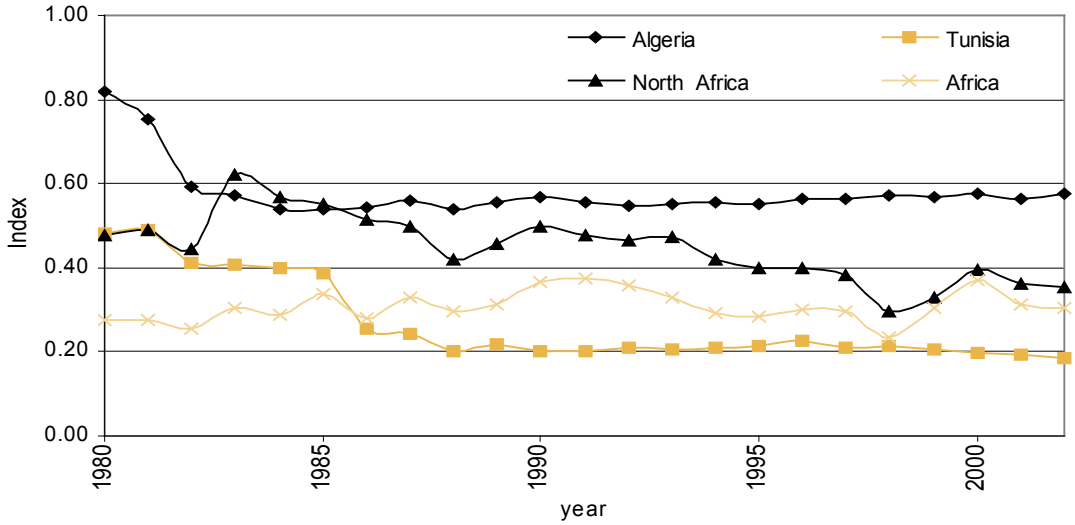
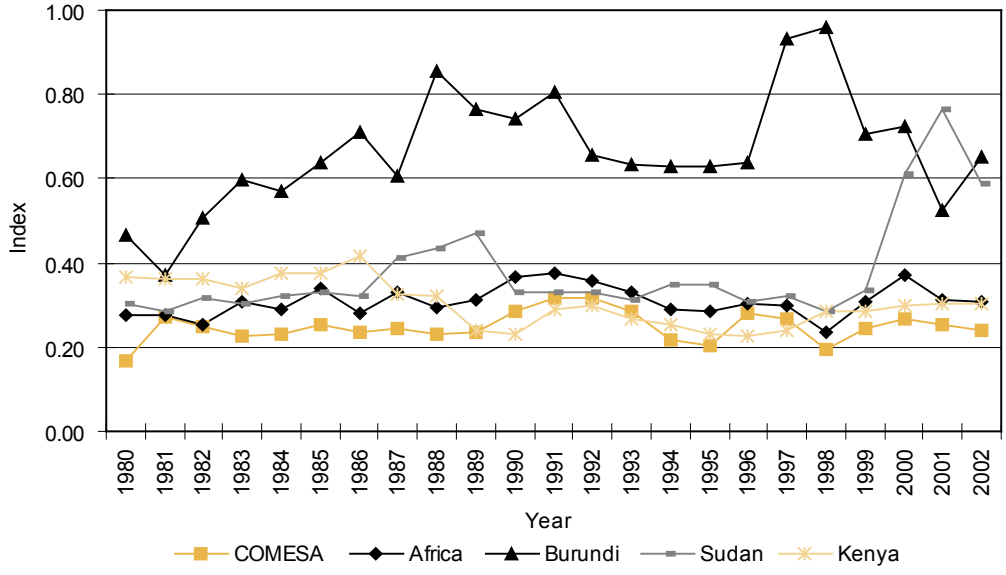


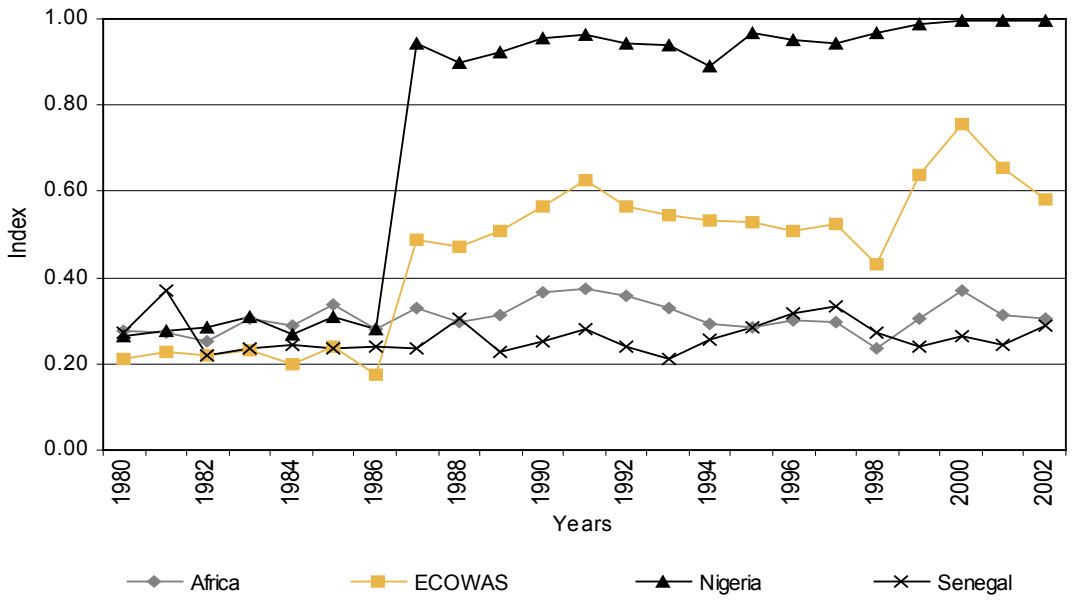
Figure 4.10: Normalized-Hirschman Index: COMESA



The COMESA region as already discussed is one of the most diversified sub-regions in Africa. The sub-region is even more diversified than Africa on average. But like in the other regions, a few economies have a dominant effect on the overall sub-regional diversification picture. As Figure 4.10 shows, while the COMESA index tracks closely the African index, it is also evident that it is also closely mimicked by Kenya's index. Moreover, Mauritius whose index is presented in Figure 4.6 must also have had a strong influence on COMESA's overall index. The two countries have had significant diversification and as such they have outweighed the influence of some of the other economies such as Burundi that has had a tendency to become more concentrated. It is important to note that Sudan, which is one of the largest economies in the sub-region, has managed to maintain a stable path of diversification until recently when a structural change occurred as indicated by the spike in the index of diversification starting in 1998 and peaking in 2001. This is again related to the oil factor.

The incidence of the oil factor in African economies is most pronounced in ECOWAS where Nigeria's diversification index shows a near perfect concentration (see Figure 4.11). The dominance of the Nigerian economy in ECOWAS seems to have pulled upwards (indicating loss of diversification gains) the sub-region's overall performance. From the late 1970s to the early 1980s, the diversification index for ECOWAS was superior to the aggregate African index. Nigeria's index also tracked the African economy's average. But in 1986, a clear structural shift occurred in Nigeria that is related to the oil effect and this shift has been strong enough and has pushed the ECOWAS average above the African index where it has remained. However, for the period 1991 to 1998, the ECOWAS trend line for the sub-region's index correlates positively with that for the whole continent despite the dominating feature of Nigeria. This implies that some of the other economies in the sub-region such as Ivory Coast were making substantial progress on diversification. In addition, economies like that of Senegal managed to safeguard the little gains they had achieved at diversification. However, as intimated earlier, conflicts and political instability have had a negative impact to any counteracting effect that efforts in other countries would have been expected to have to neuter the Nigerian oil effect.

Figure 4.11: Normalized Hirschmann Index: ECOWAS



4.3 Weak structural dynamics in exports diversification: The cumulative exports experience functions of selected African countries

The discussion so far on some of the diversification trends in relation to African economies indicates that different countries achieved varying results in diversification. The conclusions based on assessment of the normalized Hirschman indices for different countries indicate that overall, African economies have failed to make gains beyond their initial positions in the early 1980s. As mentioned earlier, African economies reacted defensively to the crises that beset them in the 1980s and the macroeconomic stabilization policies may not have created a conducive environment for a dynamic response such as was the case in a good number of countries in Asia and Latin America. This defensive reaction that perpetuated the status quo in some instances was worsened by the oil factor, which eroded earlier gains in such countries as Sudan, Nigeria and Gabon.

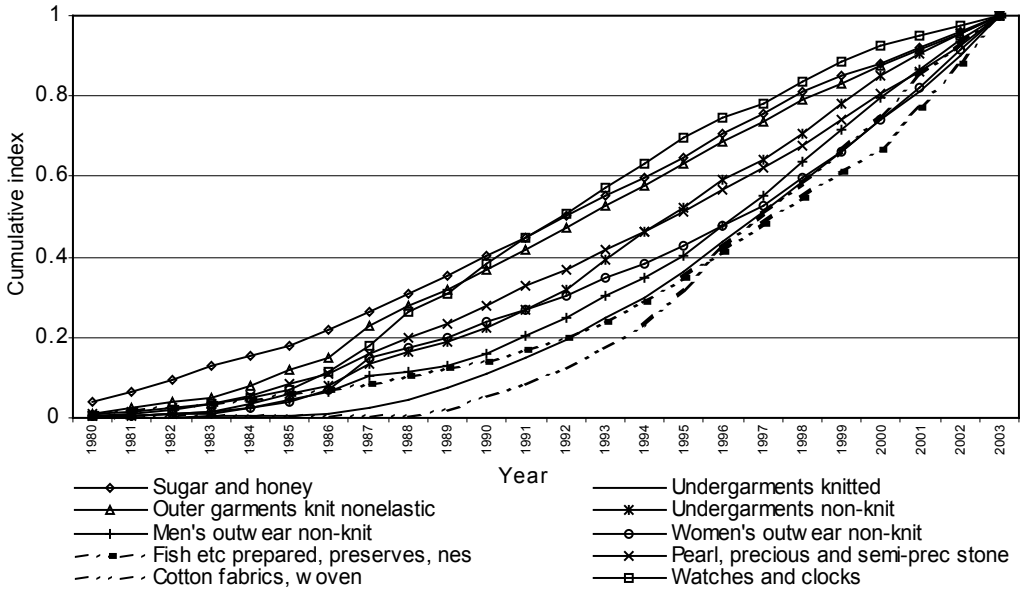
In this sub-section, some selected results on the different outcomes at country level for countries efforts to diversify are discussed. The evidence on how some countries responded is based on the exports experience functions. The cumulative export experience functions for the top ten commodities for selected countries are employed to make the point that exports diversification experience in Africa has been varied.

Nevertheless, most countries have not managed to break out of their traditional exports to more dynamic non-traditional sectors with higher exports earnings potential. Figure 4.12 presents the cumulative exports experience for Mauritius, one of the more diversified African economies. The interpretation of the information in the cumulative export experience functions is as follows[44]. For two different industries whose cumulative export experience functions are plotted together, an industry whose export experience was concentrated earlier would have its export experience function shifted to the left. The sectors whose export experiences were concentrated earlier are the ones normally referred to as traditional. On the other hand, those sectors whose export experience is concentrated later in a given sample period is often referred to as the non-traditional industries. Increasing numbers of industries that are concentrated in later years is an indication of a country's efforts to break from relying too much on the more traditional exports. The more the number of sectors with cumulative export experience functions shifted to the right, the more the indication of some dynamism in new exports development.

In the Mauritius case, the more traditional sectors whose cumulative export experience functions are shifted to the left are sugar and honey; knitted outer garments; and watches and clocks. This indicates that the largest proportion of their exports occurred early in the 22-year period under consideration. Considering the slope of their functions, the real exports of these three commodities are now growing at a constant rate. On the other hand, Mauritius has managed to develop non-traditional export sectors as shown by the functions shifted to the right. These include fish; woven cotton fabrics; knitted undergarments, and non-knitted women's outerwear. These are sectors whose export experiences have been in the more recent years. The last three of these exports that are related to the textiles and apparel sector could also be an indication of some vertical diversification.

44 See Gutierrez de Pineres, S.A. and M. Ferrantino, M., 1997, "Export diversification and structural dynamics in the growth process: the case of Chile", *Journal of Development Economics*, Vol. 52, pp. 375-391.

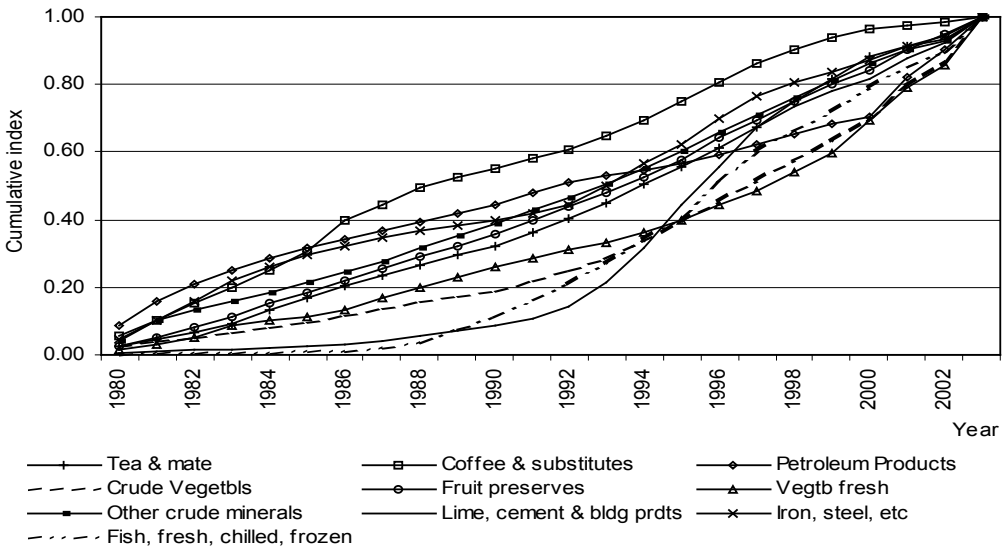
Figure 4.12: Cumulative export functions of top 10 Mauritius export products



The Kenyan experience as depicted in Figure 13 does not differ much from the experience of Mauritius. However, the experiences in the different sectors are more pronounced. Kenya is also one of the more diversified economies. However, looking at the exports experience functions, it is evident that the top ten commodities have not broken into the manufacturing range where there is generally evidence of more dynamism. The most traditional sector is coffee in Kenya. The export function of iron and steel is also showing a strong tendency towards shifting to the left, an indication that it is becoming more of a traditional export. As for the non-traditional industries, Kenya has managed to attain strong real growth in recent years in vegetables in particular. But more interestingly, petroleum products[45] export experience has shifted in recent years strongly to the left, a clear indication that exports in this industry is also becoming traditional in nature.

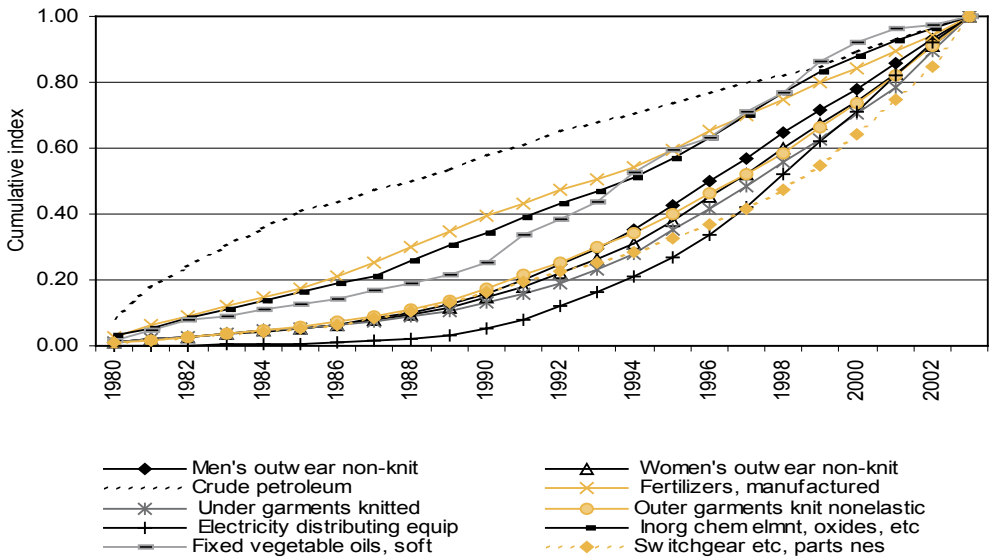
45 Kenya handles a substantial portion of petroleum products re-exports in the neighbouring landlocked countries through its oil refinery based in the coastal town of Mombasa.

Figure 4.13: Cumulative export functions of Kenya's top 10 export products



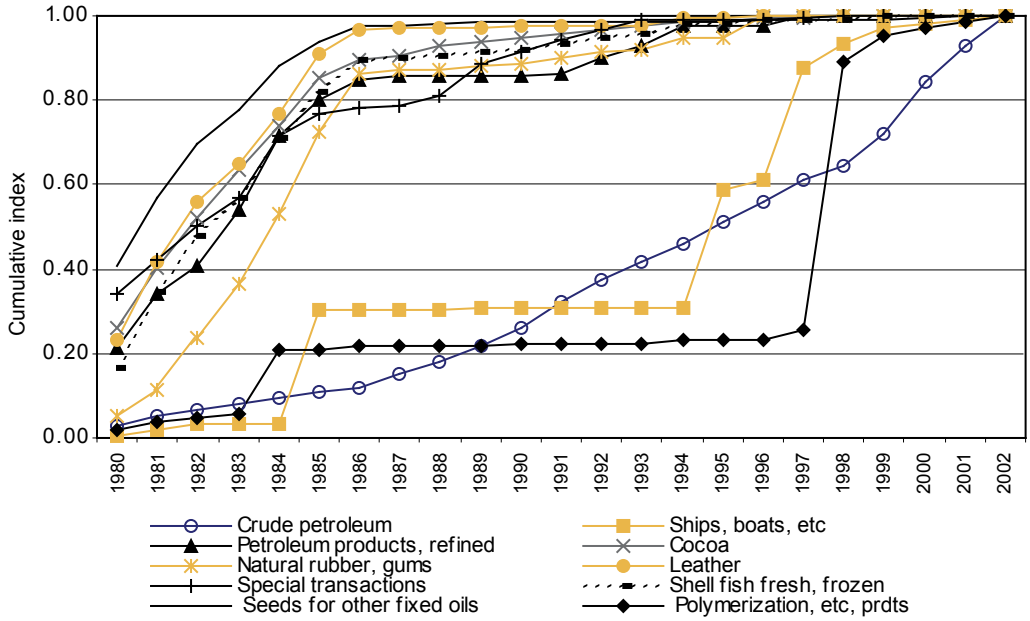
The Tunisian diversification experience is one example that indicates significant horizontal diversification in exports (see Figure 14). Most of the cumulative export experience function plots for Tunisia's top ten products are shifted to the right for the period 1980-2002. These products are mostly garments such as knitted non-elastic outer garments; non-knitted men and women's outwear, knitted under garments. The others are switchgear etc, and electricity distributing equipment. These products indicate greater export experiences in the recent period. These items are the emerging or newer products in the export mix. On the other hand, the plots of manufactured fertilizer, and inorganic chemical elements, oxides and others remained relatively flat for the same period implying that no significant structural changes took place in these commodities for 24 years. The plot of crude petroleum, which is Tunisia's traditional product, has shifted to the left implying that a relatively large percentage of its exports took place in the earlier period. Crude petroleum share of exports at the beginning of the period was about 50 percent of the total exports while in 2002 its share went down to about seven percent of the total exports.

Figure 4.14: Cumulative Export Function for Tunisia's Top 10 Commodities



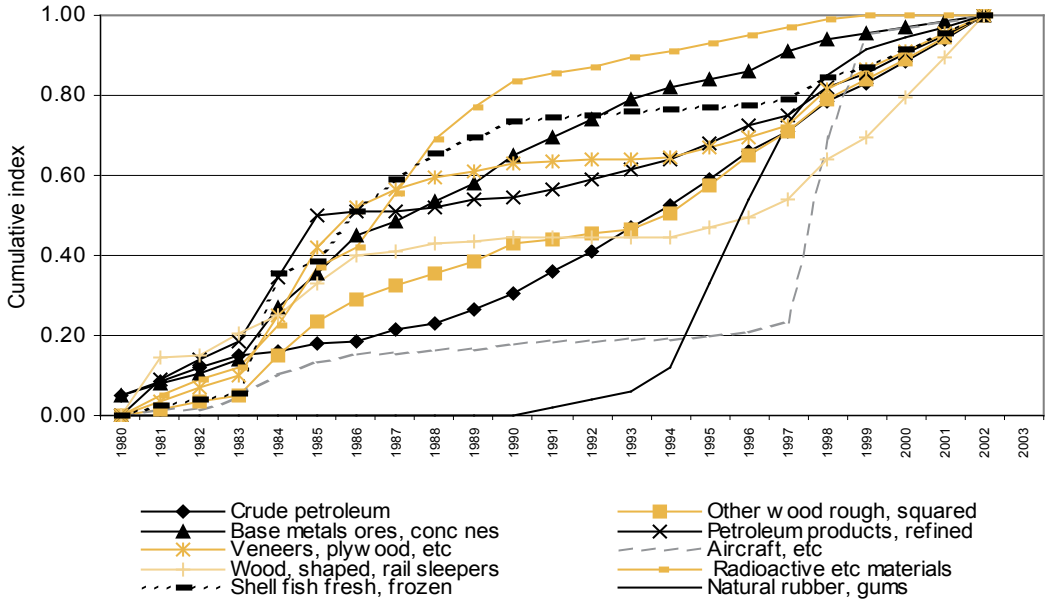
The Nigerian experience shown in Figure 4.15 provides a distinct feature associated with the oil factor that was earlier mentioned. Nigeria's overall picture of the cumulative exports experience function is somewhat unique as most of the top export products are shifted to the far left. These commodities include seed for other fixed oils, leather, cocoa, fresh and frozen shellfish, natural rubber and gums, petroleum products refined and special transactions. These traditional export products decreased their share in the total country's export around the middle of the 1980s, as crude petroleum became the dominant export product in Nigeria. From 1987, crude petroleum export share rose to almost 95 percent of the total of the country's exports and maintained its level and then again increased to over 99 percent in 2000. As can be observed, the cumulative export experience functions plot of Nigeria's crude petroleum is leaning rightwards. The two other products such as ships and boats, and polymerization products do not have steady directions as in the earlier period they are not among the traditional exports but there are periods where their exports were very high. And finally, in the late 1990s, these two products were actually dominated by the exports of crude petroleum.

Figure 4.15: Cumulative Exports Function for Nigeria's Top 10 Commodities



Gabon shown in Figure 4.16 is another example of the oil-factor effect on exports diversification in Africa. The plots of the cumulative export experience functions for most of the export commodities in Gabon are flat and somewhat shifted to the left, implying that the composition of the export mix for this country has not changed significantly during the period under study. Those commodities, whose plots are shifted to the left include radioactive materials; ores and concentrates of base metal; fresh and frozen shellfish (crustaceans and molluscs); veneers, plywood, etc; and refined petroleum products. The exports of these products are more concentrated earlier in the period. The plots of crude petroleum and other rough or roughly squared wood are relatively flat in the beginning of the 1990s to the end of the period, which indicates that their export values are relatively constant. However, there are products that have experienced some marginal expansion later in the period. These are natural rubber and gums; aircraft and associated equipments and parts; and wood products. However, only wood products maintain the expansion during the period, in which the momentum was regained in 1995.

Figure 4.16: Cumulative Exports Function for Gabon's Top 10 commodities



4.4 Diversification regimes in Africa

Using the diversification indices in the foregoing discussion and analysing the cumulative export experience functions, it is possible to define diversification regimes that are distinct and that characterize varying experiences in Africa. Analysing the various diversification indices and the structure of composition of the top ten export commodities for selected countries over the last 22 years has provided some useful insights which can be used to define the diversification regimes that can be discerned from Africa's experience. Five diversification regimes can be identified from Africa's experience. It is noteworthy that these regimes should not be viewed as providing a step-wise or continuum that a country must follow as it moves from a concentrated to a diversified economy, but rather the regimes are a result of the policy actions that a country has set in place over a given period of time. In other words, the particular regime that a country falls into is likely to be a result of the mix between the various determinants of diversification.

Diversification is an endogenous process and the trend of diversification indices, and the structure of the cumulative export experience for a given country can be explained by socio-political and economic factors. Examples of these factors include physical variables such as rates of investment; macroeconomic variables such as exchange and inflation rates; institutional variables such as governance and investment

climate or country risks; international variables such as market access; and other variables such as trade and industrial policy. In the following chapter, the empirical investigation of the role of these variables on diversification is explored. But in this section, the five regimes that can be identified to have resulted from Africa's diversification efforts are summarized.

- **Little economic diversification:** The countries exhibiting this regime are those that have not achieved much. These are the countries that even though they have not experienced any conflicts have been unable to achieve any diversification gains that can be pointed at. Countries that exhibit this regime are exemplified by Burkina Faso, Senegal and Zimbabwe.
- **Countries that started the process but have not made any significant breakthrough:** These are countries that have not made major breakthroughs in their diversification efforts over the last 20 years. An example of the countries that fall under this regime is Kenya. Even though these countries are among the more diversified on the continent they have not managed to achieve deep horizontal diversification that encompasses high-value export commodities. As indicated by Kenya's cumulative export experience functions, vertical diversification has occurred leading to new agriculture related exports[46]. However, the vertical diversification is still not in the higher valued exports bracket that is characteristic of the NIE of Asia and Latin American countries. The vertical diversification that has taken place in the countries that fall under this regime is still very labour intensive where returns tend to be low and as such it has not enabled these economies to use these exports as catalysts for rapid economic growth. This is unlike in the NIE of Asia where both vertical and horizontal diversification has occurred, leading to exports of high-value capital-intensive commodities.
- **Deepened diversification process:** A deepened diversification regime is one that bears potential to be sustainable. This is a regime that is characterized by both horizontal and vertical diversification. The diversification indices presented in the foregoing sections coupled with the cumulative experience functions of the different African countries indicate that there are countries that have managed to move beyond their situation 20 years ago to reasonably deepened diversification. Examples that stand out are Tunisia and Mauritius. Tunisia has managed to achieve horizontal diversification into higher-value exports. Mauritius on the other hand has achieved deep vertical diversification, which has led to more textiles related exports.
- **Backsliders in the diversification process:** The fourth regime is for those countries that started well and were registering positive diversification gains but later fell back. It is a regime characterized by countries that after the economic crises of the early 1980s responded by concentrating on an internal focus. An example of the countries that fit into this regime is Nigeria. The Dutch-disease might have played a major part in the characterization of the countries under this regime. In the majority of cases, export booms based on a single commodity in these countries played a part in the diversion of factors of production away from other tradables, especially the exportables. The Dutch-disease factor, especially associated to oil, reversed and diminished the contribution of earlier industries in the exports diversification process. The export experience of Nigeria and Gabon are good examples of

46 This is horizontal diversification at agriculture sector level but the new exports are still not high-value type.

the evolution of exports of the countries that fall in this regime. These two countries were unable to follow the strategy that Tunisia adopted whereby the traditionality of the petroleum related exports continued but new sectors were able to emerge and thrive.

- **Conflict and post-conflict countries:** The fifth regime in this characterization of African economies is the one that captures conflict and post-conflict countries. Liberia, Democratic Republic of Congo and similar countries exhibit diversification efforts experience that cannot be attributed to particular policy actions.

4.5 Conclusions

The following conclusions summarize Africa's exports diversification efforts results:

- The results at regional and sub-regional levels indicate that the efforts towards diversification in the 1970s and early 1980s had positive results in that for most countries, the indices for diversification were in general trending downwards, showing movements towards some diversification.
- The diversification gains were however not sustainable as they could not withstand the pressures of the economic crisis and the attendant adjustment policies that needed to be instituted to deal with the crises. The gains made when this happened remained low and the diversification results were more reminiscent of volatility and fragility. Africa has been unable to sustain a strong foundation of diversified economies. Yet, other regions such as Latin America and Asia came under similar pressures but managed to protect and even deepen their diversification gains.
- Overall, African economies appear to have responded differently to the challenges posed by the economic crises of the early 1980s as opposed to the kind of response that the Asian economies adopted. But it is important to point out that there have been clear differences between sub-regions and between countries in the same sub-region. In spite of between and within sub-regions differences, it is clear that African economies were on the whole less dynamic compared to Asian countries.
- Five regimes characterize Africa's experience with diversification. The policy mix in the various African countries ranging from macroeconomic factors to institutional issues have played a major part in determining the regime in which each African country falls into.

Chapter 5
Diversification: Determinants

Determinants of Diversification in Africa

As can be deduced from the discussions in the previous chapters, diversification is not simply an exogenous process, but is to a large extent endogenous. This means that policy actions both economic and non-economic are likely to affect the level and rate of diversification in a country. The probability that economic and institutional variables reinforce the endogenous nature of the process of diversification in a given country is high. But before one can treat diversification as an endogenous process in economic development, it is imperative that there is sufficient empirical evidence establishing the link between the economic and non-economic variables with a country's capacity to diversify. This means that it is important to derive empirically the determinants of diversification.

The previous chapters outlined the possible links between the level of diversification in a given economy to some economic and non-economic variables, and concluded that the relevant variables are policy related and institutional in nature. The theoretical arguments identified those variables that could influence diversification. On the basis of this theoretical framework, this chapter presents the empirical analysis aimed at testing and pinning down the particular economic and institutional variables that are significant determinants of diversification in Africa.

A statistical model for the determinants of diversification in Africa was developed and estimated under several model specifications. Panel data methodologies are employed in the empirical analysis. In the following sub-sections, the statistical model, estimation procedure and results from this empirical analysis at the African region and sub-regional levels are presented and discussed.

5.1 Methodology

The statistical model

As an endogenous variable, it is assumed that diversification is a function of different economic and non-economic variables. As mentioned earlier, these include physical, policy, macroeconomic, and institutional variables. In the statistical model, investment and per capita income are used to represent the physical variable; trade openness and industrial production for policy variables; inflation, exchange rate and fiscal balance for macroeconomic variable; and lastly, governance and/or investment climate and conflict or war for institutional variables. These variables are used as the explanatory variables in the regression model for the determinants of diversification in Africa. An index of diversification was

used as the dependent variable. In this study, the diversification index was derived using the normalized-Hirschman index (see earlier chapters on computation method) and is calculated using the UNCTAD data on exports products at the three-digit SITC level.

In mathematical form the basic statistical model may be expressed as:

$$I1_t = \beta_0 + \beta_1 GCF_t + \beta_2 GDPca_t + \beta_3 Indprod_t + \beta_4 Trade_t + \beta_5 Inflate_t + \beta_6 Exrate_t$$

$$+ \beta_7 Fbalance_t + \beta_8 Govern_t + \beta_9 Conflict_t + u_t \qquad (5.1)$$

Where $I1$ is an index of diversification; *GCF* is the gross capital formation representing investment; *GDPca* is GDP per capita; *Indprod* is index of industrial production; *Trade* is trade openness; *inflate* is inflation; *Exrate* is exchange rate; *Fbalance* is fiscal balance; *Govern* is governance; *Conflict* is a dummy variable indicating the presence of conflict; β_i's are the coefficients to be estimated; and *t* is the time index.

As argued through the literature reviewed in Chapter 2, physical variables such as investments and income are expected to promote diversification. This means that more investments and higher income have the likely effect of deepening diversification. Increases in trade and promotion of industrial products are also expected to be significant determinants of diversification, even though the kind of relationship is at most an empirical question at this stage. However, as for macroeconomic variables, a competitive exchange rate could also deepen diversification. As for the balance on government budget, the a priori expectation is indeterminate. It would depend to a large extent on whether if there is a higher deficit, whether such deficit is driven by expenditures that have a direct impact on the productive capacity of the economy. On the other hand, where deficits are as a result of recurrent spending, it is possible that such a fiscal policy would be counter diversification process. Besides the exchange rate and the level of fiscal balance, the other macroeconomic variable that is tested in this study is inflation. Again, inflation effect on diversification might also be indeterminate. The key question is whether the level of inflation falls within that band where it is not injurious to growth. If it were higher than the maximum point of this band, then inflation would slow down diversification. Political violence and civil conflicts are seen to be

counter productive and would slow down economic growth, and therefore would restrain diversification. Furthermore, good governance and good investment climate ought to help in deepening diversification. Since there is no established theoretical model on the determinants of diversification, these hypotheses need to be tested empirically.

Data and estimation

The statistical model described above was estimated using panel data for a sample of African countries for the period spanning from 1996 to 2001. The estimation could have been undertaken using data that ranged from 1980, but this was not possible due to lack of governance data before 1996. The institutional block in the outlined statistical model would have been incomplete without governance. The analysis considered the opportunity cost of excluding governance for additional degrees of freedom[47]. The final sample that was used to estimate the statistical model with all the specified variables mentioned above, included 18 African countries, the reason being that only this number of African countries were found to have data on industrial production and/or production of manufacturing products. As stated above, the period 1996 to 2001 was chosen because data on governance[48] were only available from 1996 (See Appendix A for details and data sources). For each country, three observations were constructed by taking two-year non-overlapping averages of each variable during the sub-period 1996-1997, 1998-1999, and 2000-2001.

Several versions and functional forms of the model were estimated based on the sample described above. A set of unbalanced panel data was used since in some countries, the observations were not complete. Firstly, a pooled regression model with all the specified variables was estimated but the results were poor. Next, the model was estimated using the generalized least squares (GLS), which correct for the presence of heteroskedasticity. There were some improvements in the results but the overall results were not good. The model was also estimated under the fixed-effect and random-effect specifications and again both results were poor. In the estimation, it was also noted that governance and investment climate variables could not be estimated in the same equation since they are highly correlated and in the different estimations where both were included, the signs of their coefficients were very unstable. Therefore, one of them had to be dropped from the estimation. It was found that governance had more relevance and appreciably more robust results in the model.

The model specification that yielded the best results is the regression model, whose functional form included quadratic or individual squares of investment and per capita income variables. This functional

47 This decision has implication on the robustness of the results, but as will be seen in the discussion, the final specification of the model for determinants of diversification in Africa does fit reasonably to some of the existing literature such as that discussed in Imbs and Wacziarg (2003).

48 The World Bank Institute gathers the data on governance and their series go back to 1996. In the sub-regional and country specific estimations reported here, an alternative approach was to use the ICRG data (investment climate and country risk data), which has governance indicators as some of its components besides other indicators.

form of diversification and income has been established in other works such as Imbs and Wacziarg (2003) and will be revisited below in the discussions. This model was again corrected for heteroskedasticity[49]. Moreover, diagnostic analysis on the model residuals showed that there is no presence of autocorrelation. The results of this regression are presented on Table 5.1. Variations of the model and the plot of residuals are found in the Appendices B and C.

5.2. Results

The regional (continental) level

Starting with the basic model postulated in the theoretical framework, and subsequent statistical investigations to specify an appropriate model for determinants of diversification in Africa, the results summarized in Table 5.1 show the final specification. The results are organized in Table 5.1 according to the four main blocks of the theoretical exposition: physical, policy, macro and institutional. While market access was the fifth block discussed in the theory, assembling market access data posed some difficulties in terms of availability. Nevertheless, the trade policy variable (openness) has some relevance to the question of market access as it captures both exporting and importing capacity of the economy in question which depend to a large extent on the tariff structure faced in the target market and the defensive tariffs in the domestic economy. It is evident from the empirical model in Table 1 that both economic and institutional factors are essential for diversification. The results for each of the variables are considered below in turns.

As results in Table 5.1 indicate, ***investment*** is vital for an economy to diversify. The inverse relationship between investment and the diversification index indicates that as the level of investments increase, there is a tendency for economies to become more diversified. Effectively, a country is unlikely to be able to diversify unless it commits a portion of its national income to building capital stock. It is noteworthy that in this empirical model for Africa as one region, it is gross-fixed capital formation that was established to be the significant determinant to diversification, as opposed to separate inputs of public and private investments. It would have been easier intuitively to interpret the implications of investment on diversification had it been possible to fit a model with public and private investments as separate variables. Attempts to have these two variables separately resulted in unstable (non-robust) results. However, the fact that the gross fixed capital formation emerged as a significant determinant could imply that it is the totality of public and private investments in accumulating the capital stock that is vital. But it does also mean that the total investments are able to have a positive impact on diversification because of the

49 In this study, the GLS specification used the cross-section specific heteroskedasticity, which in effect is the weighted least squares as described in the EViews 5 User's Guide (2004) p. 848. Moreover, a robust estimator for coefficient covariances, that is the White cross-section method, was used in the estimation of the final model (see EViews 5 User's Guide 2004 p. 853; and Wooldridge 2002).

possibility that public investments crowd-in[50] rather than crowd-out private investments in general. This may not be the case at individual countries level where fiscal policy rather than monetary policies might be the major drivers of the mix between public and private investments.

The empirical results also mean that there could be a critical level of investment necessary to optimize the diversification process. The quadratic[51] specification of the relationship between diversification and investment, and the significance of the investment variables was used to establish this critical level at which investment optimises diversification. While there is need for caution in interpreting the relevance of this critical level, based on the estimated results of the sample used in Table 5.1, a country has to invest at least 12.5 percent of its GDP (see Figure 5.1). There is need for caution in interpreting this level of investment because as in any econometric or statistic model, it is driven by the sample used in the estimation. This proportion of income that needs to be invested in order to optimize diversification is significantly less than half the average level of investment to GDP ratio that the South East Asian economies committed in support of their galloping economic growth rates in the 1980s to the present. But it is important to recall, and the more reason why not much weight can be attributed to the optimal investment point of the African countries, that as was shown in the previous chapters, NIE of Asia are more diversified. Therefore, in spite of the monotonic relationship that was found for the above equation when Asian economies were included, if one was to hypothesize the existence of a similar relationship for the Asian countries alone similar to that of the African countries, then the plot of the relationship between diversification and investment would be expected to be shifted both downwards and to the left indicating the much higher level of diversification, and higher investment intensity. This means that it is possible for a country to lengthen the monotonically declining part (or left side) of the U-curve in Figure 5.1 through higher investments.

The ***income level*** is a significant determinant of diversification in Africa. As income per capita increases, there is tendency for the African economies to experience improvement in their diversification processes. This is a very significant result and which is in line with other empirical evidence (see Imbs and Wacziarg 2003), which shows that poor countries tend to diversify at first as their incomes rise; before they later begin to become more specialized. Essentially, the African countries also disprove a monotonic relationship between income and diversification. They therefore fit the U-shaped stages of diversification theory that has been given much credence by the robust empirical evidence in Imbs and Wacziarg (2003). In other words, there is some evidence that African countries also grow through two stages of diversification. Initially, there is a tendency for increased diversification. This first stage is consistent with those theories that predict a monotonic relationship between income and diversification as captured in the earlier cited literature such as Acemoglu and Zilibotti (1997). This first stage fits perfectly to the portfolio arguments as such diversification would be expected to minimize the shocks to the economy attributable to over-

50 There is abundant literature that public investments have a crowding-in effect to private investments. The crowding-out factor is a concern usually when there is competition for domestic credit between the public and private sectors.

51 The estimation results of a model that hypothesized a linear relationship between diversification and investments resulted in insignificant results. However, when a similar linear model was estimated with Asian countries included, significant results were obtained. Some of the African countries are investing below this optimum level.

reliance on one particular sector. But like in the case of investment (capital stock build-up), there is a turning point. This turnaround point occurs at higher levels of per capita income resulting in the non-monotonic relationship between diversification and per capita income. According to the robust estimates of Imbs and Wacziarg (2003) this turnaround point occurred at different points for different countries. For instance, for Singapore this occurred at $2,500 of per capita income while for Cyprus it was at $5,800. Ireland on the other hand experienced this turnaround point at a per capita income of $7,000. Nevertheless, the pooled sample benchmark estimate from Imbs and Wacziarg (2003) was $9,000 of per capita income. In each of the countries involved, after attaining the optimal level of diversification, as empirical results have indicated, the specialization process may start taking root. But as will be noted below, Imbs and Wacziarg (2003) also suggest that how early in the development process this turning point occurs depends on the interaction between per capita income and openness.

The critical per capita income required for achieving the optimal diversification for African countries or the turnaround point was computed to be approximately US$ 1,667. This means, high and sustained high levels of economic growth are required to drive the diversification process towards its optimum level. Of course there is the important question of causality between per capita incomes and diversification. The sample used in the empirical analysis reported in Table 5.1 is not sufficient to establish conclusively the causality between the growth and the diversification process. However, the proposition that diversification is an endogenous process implies that it is important to growth just as growth is important to the diversification process itself.

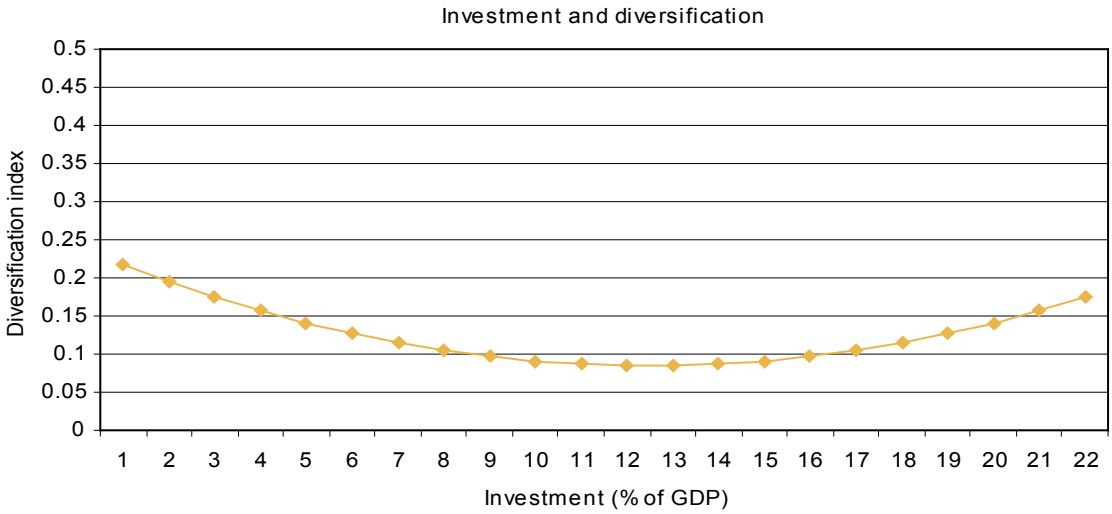
The trade policy question and its role in economic growth and developed has preoccupied most economic researchers. This debate has attained a different level of intensity after new research evidence from various authors have introduced new dimensions questioning for instance the role of trade liberalization in explaining economic growth in developing countries (see Rodrik 1997; Rodriguez and Rodrik 1999; and Rodrik 2002). The evidence that was obtained from the estimated results in Table 5.1 showed that ***trade openness*** does not necessarily lead to deepening of diversification. Variations of the empirical analysis using the African countries data consistently showed a positive relationship between increasing openness and the tendency to specialize. But is this result counter-intuitive? Do trade openness, rather than encouraging a country to diversify actually support a concentration or specialization process? Conventional trade theory supports the positive relationship obtained between openness and diversification. As conventional trade theory postulates, in a world where there are no barriers, countries would specialize in those goods, and services where they have comparative advantage. Thus, countries would therefore have exports concentration rather than diversification. The work by Imbs and Wacziarg (2003) also sheds light on this aspect. As earlier pointed out, they concluded that the interaction between per capita income and openness influence the turnaround point in the U-shaped stages of diversification. This means that, at a certain stage in the diversification process, the portfolio motive for diversification ceases to dominate the comparative advantage considerations that would be supportive of the kind of result that we established in our estimations.

Table 5.1: Determinants of diversification in Africa: Panel estimation results

	Variable	Coefficient value
Constant	Constant	0.241 (0.185)
Physical variables	Gross fixed capital formation (% of GDP)	-0.025*** (0.007)
	Gross fixed capital formation (quadratic)	0.001*** (0.005)
	GDP per capita (US$ 1995)	-0.0002*** (0.000)
	GDP per capita (quadratic)	0.00000006*** (0.000)
Policy variables	Trade openness ((X+M) as % of GDP)	0.003*** (0.007)
	Industrial production	-0.001*** (0.0001)
Macro stability	Inflation (%)	0.004*** (0.0001)
	Exchange rate (real effective exchange rate)	0.002*** (0.0001)
	Fiscal balance (% of GDP)	0.006 (0.170)
Institutional variables	Governance	-0.249*** (0.000)
	Conflict	0.120* (0.090)
Model diagnostics	R-squared (weighted) Number of observations	0.88 52

The figures in parentheses are p-values.
*** Significance at 1%; ** Significant at 5 %; *Significant at 10 %

Figure 5.1: Empirical relationship between diversification and investment using African sample data



Source: Authors' computation

These results regarding trade openness effect on diversification seem to indicate the relevance of an optimal trade policy. Given that the results suggest that rapid liberalization may actually limit an economy's capacity to diversify, then it raises the possibility that for strategic reasons, the speed towards openness could be dictated by whether a country seeks a more diversified or a more specialized economy. This finding is not surprising. A decomposition of the components of the openness variable comprises two opposing effects. The exports components would favour specialization while the imports competition component would be more supportive of the diversification process. Consequently, the empirical evidence for African countries indicates that the exports growth effect leading to specialization more than offsets the diversification process that import competition would support. This is consistent with the Ricardian trade theory which postulates that open economies would be more specialized, producing a specific range of goods.

It is worth recalling earlier evidence that the tendency to specialize after diversification occurs both in open and closed economies. However, the difference between the two is that the turnaround point occurs at a much earlier point for open economies compared to the case for closed economies. Using data from UNIDO, ILO and OECD, Imbs and Wacziarg (2003) showed that countries that went through a minimum level of specialization relatively early tend to be substantially more open to trade on average by

15 percentage points in the UNIDO data set and 11.5 and 17 percentage points in the ILO and OECD data sets. Thus, using UNIDO employment data, Imbs and Wacziarg (2003) showed that the turning point occurred at a per capita income level of $5,405 for an average openness of 78 percent. And based on OECD employment data, the turning point occurred much later in the development process at a per capita income of $9,161 for an average openness of 47.4 percent. Thus, depending on the development model a country pursues, it can remain less open and still diversify with the turning point occurring much later in the development path. Alternatively, a country could consider a much earlier diversification turnaround point more optimal and as such be comfortable with an aggressive trade openness policy.

Hence, it is not surprising that these results simply add weight to the arguments made by proponents of gradualism in trade liberalization, especially developing countries. Proponents of a gradual approach to trade liberalization point out that there are inherent constraints in countries that limit their ability to build a competitive advantage to export new products in a short period of time. As such, they argue for policy space that would allow them pursue policies that would lead to diversification through industrialization. This argument is even more apt for those economies that are commodities dependent in their exports base given the tendency for the Ricardian trade theory arguments to be so strong in such economies. These results therefore reinforce to some extent that there is merit for policy space and calls for such space from multilaterally imposed policies may not be misplaced viewed in the context of strategic trade policy. Yet, it could still be up to each country to decide whether to exploit its Ricardian type specialization or pursue a diversification strategy[52] that has a much longer transition point in the hope that it will then specialise products higher up in the value chain. Thus, one can consider income per capita and openness as substitutes in determining the stages of diversification.

Industrial production at the continental level, leads to deepening of diversification. Taking industrial production as a proxy for industrialization, then it fits within the established theoretical development process where a country moves from specialization through industrial deepening before starting to specialize again.

The other important area of investigation was the role that macro policies play in the diversification process. And as the results indicate, at the regional level, ***macroeconomic stability*** is one of the most critical determinants of diversification. In all the models tested with the African data, the macroeconomic stability variables such as inflation and exchange rate consistently emerged as significant explanatory variables to the level of diversification. These two variables shown in Table 5.1—inflation rate and the real effective exchange rate—consistently maintained the signs indicated and in each model specified, both were found to be significant.

52 Nonhomothetic preferences in a closed economy are sufficient to generate diversification forces. However, such diversification would be at a cost, as it would not benefit from the efficiencies expected from a Ricardian trade theory point of view.

The positive and significant relationship between inflation and diversification is economically intuitive. High levels of inflation damage the diversification prospects and the tendency under such circumstances is for increased concentration with little opening of new export sectors. This result is not surprising given that diversification in itself requires the emergence and growth of new industries or sectors which are able to meet not just the domestic demand for their products, but also be competitive in the international market. A high inflation environment is not conducive to the development and maturation of new sectors, nor is it supportive of an environment that would make the other determinants of diversification make significant impact. While the positive and significant relationship showing that inflation leads to specialization that diversification does raise an empirical issue in relation to the portfolio motives for diversification in the case of the African countries as captured in the sample. Ordinarily, under the portfolio motive, it is reasonable to expect that high inflation could lead to diversification as an economy diversifies away sector-specific income shocks. And as Saint-Paul (1992) argues, in the case of incomplete markets, economies can be led to diversify for insurance purposes, and specialize again as financial markets deepen and the dominance of the portfolio motive diminishes.

In the same vein, exchange rate matters for diversification. The positive relationship between the exchange rate and the diversification index imply that a depreciating currency is not always supportive of diversification efforts. These results in the face of it might appear to be counter-intuitive in the sense that depreciation underpinned by appropriate macroeconomic fundamentals should support increases in existing exports and aid potential exportables break into new markets. Yet such a result supposes two things. First, it pre-supposes that the country already has this export potential and the depreciation has the price effect of making the exports cheaper for the foreign markets. Second, it also assumes that the depreciation is supported by sound macroeconomic fundamentals with the depreciation being more than a process of building or maintaining competitiveness in the international market of the economy in question. But the positive relationship indicated in Table 5.1 means that the depreciation does not lead to deepening of diversification. This could be interpreted in one of two ways. In the first instance, it could mean that African countries have a narrow export potential base and the depreciation simply makes the narrow export base more concentrated and specialized. The second explanation could be that the depreciation is symptomatic of macroeconomic instabilities whose consequences would be to create an environment that is not conducive for diversification in the first place. The implication of the results for inflation and the exchange rate is that macroeconomic stability is crucial for the emergence of a diversified economy.

Even as some elements of macroeconomic stability may be critical as seen in the case of inflation and exchange rate, it was clear that fiscal space matters in the process of diversification. A positive relationship was seen between fiscal balance and diversification even though the relationship is weakly significant. The positive but weakly significant result between fiscal balance and diversification might be seen as contradicting the argument that macroeconomic stability as measured by inflation and the exchange rate are critical to how deep a diversification process gets. Given the definition of the fiscal balance used

in the empirical analysis, what this result indicates is that running budget surpluses may compromise the diversification efforts. This is assuming that the spending constraint would be on investments that would support diversification. An alternative model was specified excluding the weakly significant fiscal balance. The results showed that the other variables in the model are robust (See Appendix B).

In effect therefore, the results with regards to fiscal balances and diversification suggest that conservative economic policy, or fiscal conservatism for that matter, may not be good for a country that wishes to have a diversified economy. Suffice though to note that expansionary fiscal policies would only be as good to diversification as the absorptive capacity of an economy and the requisite fiscal discipline that would ensure that there is fiscal spending directed at building economic productive capacities. A non-conservative fiscal policy that ends up raising the level of government consumption through higher wage bills and consumption of other goods and services may not be good for diversification. The success of an expansionary fiscal policy assuming an optimal[53] tax regime would also to a large extent depend on the way the deficit is financed. Financing options such as through domestic borrowing (assuming illiquid money market) or using credit from the Central Bank are likely to have the undesirable effect of putting pressure on the domestic interest rates, a situation that would undermine the required investments that were seen earlier to be important to diversification. Yet, where domestic money markets are liquid with minimal risk of crowding out private investments, public investments expenditures can be expanded through domestic borrowing that would allow for higher fiscal deficits without any detrimental effects in the economy.

Institutions really matter if a country is to be able to diversify. ***Governance*** as one of the variables that captures the part that institutions play emerged as strongly significant and in fact, in absolute term, looked at the regional level has stronger influence compared to other variables in the model. This is reflected in the magnitude of its estimated coefficient. It is highly probable that good governance enables economies to deepen diversification. As governance structures improve so does the capacity for a country to develop a diversified exports base. One can theorise that it is the interaction of governance and other variables such as per capita income and investments that drive the diversification process rather than individual effects. Just like openness has been found to interact with per capita income to determine the turning point of the U-shaped stages of diversification, it is possible that it is the interaction of governance and the other variables that is key. Governance relies to a large extent on the quality of institutions. In the same way these institutions have been found to be critical to growth, so is their effect as captured by the governance variable in determining the extent of diversification.

It is not surprising that ***conflict*** stifles diversification. The positive relationship between conflict and diversification (even though significant at only 10 percent) indicates critical influence on diversification.

53 It is envisaged in the argument made here that a country pursuing an expansionary fiscal stance has set its taxes at rates that have minimal distortionary effects on the economy. Thus, the extra revenues for the higher expenditures are to be derived from borrowings (domestic and/or foreign).

Intuitively, the a priori expectation of the impact of conflict on diversification would be to see a result, which implies that escalation of conflict leads to reduced capacity to diversify as our results indicate.

The sub-regional level results

The focus of the preceding discussion was the empirical results obtained using data for 18 African countries. The results and the ensuing discussion point to some strong conclusions regarding the determinants of diversification. The results were actually found to be fairly robust, considering the weaknesses and difficulties encountered with data used. But the results at the continental level could not provide sufficient information that would help us determine whether the factors found to be explaining diversification were universal or whether they were sub-regional and country specific. On the question whether they are regional specific, there are two options through which this could be addressed. The first option was to introduce dummy variables representing the sub-region in which each of the African countries falls, be it North, South, Central, East or West, and then assess the significance of the dummy. However, this methodology would still not be able to indicate which particular explanatory variables are relevant and which are not. This led to the adoption of the second approach where we start with the specified model of the continental estimations. Using this model and sub-regional data for East Africa, West Africa, and North Africa an estimation of the determinants of diversification for each of these regions was made. Table 2 gives the results where the dependent variable is still the normalized Hirschman index and the explanatory variables are the same as those reported in the African regional results. As the results in Table 5.2 clearly indicate, it was not possible to replicate the robust results that had been achieved at the continental level. This can be explained by the relatively poor quality of data and their limited coverage. There were only five countries with complete data series for the variables included in the model for the East African sub-region resulting in 34 observations and for West Africa, only four countries leading to a total of 22 observations could be obtained. Hence, caution is urged on these results.

However, the following observations can be made regarding the sub-regional determinants of diversification on the basis of the limited sample. In the three sub-regions, the *a priori* expectations on the nature of the relationship between the diversification index and some of the explanatory variables were not realized. However, in most of those cases, the results were not significant. In the East African sub-region, the only significant variables and with economically intuitive results are ***openness, inflation, fiscal balance, and conflict***. The physical variables that had been motivated in the earlier theoretical framework were found to be insignificant on the basis of the current sample. In West Africa on the other hand, the significant and economically plausible determinants of diversification in the sub-region are: ***per capita income; openness; exchange rate; and fiscal balance***. It is important to note that in both the East and West African sub-regions, fiscal balance has the effect of curtailing diversification. As noted before, the transmission mechanism through which this effect could be occurring is likely to be the effect that contractionary fiscal policies or fiscal conservatism might have on public investments. As for North Africa, ***industrial production and conflict*** are the only economically plausible and significant

determinants when an attempt is made to use the functional specification that was identified through the continental results. This specification for North Africa is especially quite poor regardless of the possible autocorrelation problem.

An attempt was made to see whether the weak results for the sub-regions as presented in Table B.2 could be improved further. Two options were explored. The first option aimed specifically at increasing the number of observations. To achieve this, two variables—governance and industrial production—whose series go back to 1996 were substituted with proxies. In the case of governance variable, country risk was used instead. While country risk is a broad variable, it contains governance indicators as some of its elements. In the case of industrial production, the growth in manufacturing value added was introduced as the proxy. The data series for these two proxies allowed us to increase the number of observations as they go back to 1984. Using this expanded data, estimations were carried out to establish the key determinants of diversification at the sub-regional level and the results are summarized in Table B.2 in Appendix B. As those results show, there was not much improvement in the quality of the results[54].

54 In fact the diagnostics of the new estimations reported in Table B.3 point to the presence of autoregressive conditional heteroskedasticity (ARCH) for all sample regions, which means that variance of the residuals are serially correlated. A maximum likelihood estimation procedure is being explored to address this condition.

Table 5.2: Determinants of diversification based on the regional African model

Variable	East Africa	West Africa	North Africa[1]
Constant	-0.182 (0.770)	1.984** (0.035)	0.202*** (0.0004)
Gross fixed capital formation (% of GDP)	-0.006 (0.616)	-0.011 (0.728)	0.009 (0.604)
Gross fixed capital formation (quadratic)	0.0003 (0.696)	0.0005 (0.453)	-0.0002 (0.582)
GDP per capita (US$ 1995)	-0.0004 (0.909)	-0.004* (0.078)	0.000004 (0.977)
GDP per capita (quadratic)	-0.000003 (0.688)	0.000003 (0.137)	0.0000 (0.888)
Trade openness ((X+M) as % of GDP)	0.009*** (0.003)	-0.009*** (0.0002)	0.0002 (0.556)
Industrial production	0.0006 (0.605)	-0.0004 (0.793)	-0.001** (0.022)
Inflation (%)	0.002** (0.011)	-0.001 (0.366)	-0.0005** (0.011)
Exchange rate (real effective exchange rate)	0.002 (0.367)	0.003* (0.057)	-0.0004 (0.180)
Fiscal balance (% of GDP)	0.004* (0.106)	0.011* (0.026)	-0.0005 (0.68)
Governance	-0.068 (0.722)	-0.010 (0.812)	0.005 (0.651)
Conflict	0.487*** (0.003)	0.033 (0.854)	0.342*** (0.000)
R-squared (weighted) Number of cross-sections Number of observations Durbin-Watson stat	0.78 5 34 1.629	0.99 4 22 1.900	0.99 3 21 3.307

The figures in parentheses are p-values.
*** Significance at 1%; ** Significant at 5 %; *Significant at 10 %

The other option pursued was akin to a step-wise regression procedure where the insignificant variables were dropped until economically plausible estimates could be obtained. This is the same as finding nested models within the general continental specification. This resulted in the key determinants for each of the sub-regions as shown in Table B.3 in Appendix B. Like the results in Table B.2 in the appendix, there is a possibility of serious autoregressive conditional heteroskedasticity especially for the East and West African regions. Therefore, in both cases of using new proxy variables and finding nested relationships for

the East and West African regions resulted in specifications with weak diagnostics properties compared to the results obtained in Table 5.2. However, as can be seen in Table B.3, it was possible to derive strong and economically plausible results for the North African region.

On the basis of the estimations in Table 5.2, the following observations regarding diversification at sub-regional level[55] for the East and West African sub-regions can be made. It is evident that there are different influences to the diversification process and these happen to be sub-regional specific. Within the East African sub-region, conflict has a very strong and significant influence on diversification. Conflict has worked against the diversification process in the sub-region. Trade openness impact on diversification is in line with the earlier results at the continental level. The Ricardian-type specialization exceeds the portfolio motive of diversification. As such, as the East African economies have opened up, they have become more and more specialized. Macroeconomic variables and by extension macro policies also have significant influence on the diversification process in this sub-region. As seen in the continental results, inflation is positively related to diversification indicating that as inflation rises, the less the progress in the sub-region's economies diversification. A similar positive relationship is obtained with regard to fiscal balance. While this is weakly significant at 10 percent, it does indicate that higher fiscal deficits are counter to the diversification process in the sub-region. Some elaboration on the role of the fiscal balance in the diversification process is in order here. Intuitively, if a country runs a high fiscal deficit that is driven by public investments, it is reasonable to expect to see a deepening of the diversification process. However, if a country piles up fiscal deficit that is a result of recurrent expenditures, it would not be surprising to observe a result where the fiscal balance is positively related to diversification. This means that the crowding out effects of recurrent spending outweighs the crowd-in effects expected from deficit financed public investments. Consequently, the result seen in the case of the East African sub-region is one in which the fiscal deficits have not been diversification promoting.

In the West African sub-region, the per capita income has a significant influence in diversification. Although a nonmonotonic relationship as established using the continental results could not be confirmed for the sub-region, as the quadratic variable of the per capita income variable is significant only at 13.7 percent. There are two somehow intriguing results for this sub-region. The first one is the indication that trade openness actually leads to diversification rather than specialization. A highly significant negative relationship between openness and diversification was registered, implying that openness is supportive of diversification in this sub-region. However, it must be pointed out that only four countries had a complete data set among which was Nigeria, which is a highly specialized economy in terms of its exports. It is therefore not possible to draw a strong conclusion from these results which somehow imply that the portfolio motive for diversification, probably financed by oil revenues, is still strong in the sub-region and it dominates the Ricardian type specialization expectations. The other surprising result was that of the insignificance of the conflict variable, but this has more to do with the countries with the

55 Efforts to tackle the diagnostics problems in the results in Tables B.2 and B.3 continue to see whether these observations are robust sufficiently.

sample, as countries such as Sierra Leone, Liberia and Cote D'Ivoire are not included in the sample of four with a complete series of the variables. Like in the results at the continental level and as in the East African sub-region, macro variables also matter, only that in the West African case, it is the exchange rate and the fiscal balance. In both of these cases, a rising exchange rate and a high fiscal deficit undermine the diversification process. Yet again, it appears to be the case that fiscal deficits in the West African countries could actually be a result of higher recurrent spending rather than public investments.

Table 5.3: Nested model for the determinants of diversification for North African countries

Variable	North Africa I	North Africa II
Constant	0.428*** (0.0001)	0.236*** (0.000)
Gross fixed capital formation (% of GDP)	0.008*** (0.0000)	--
Gross fixed capital formation (quadratic)	--	--
GDP per capita (US$ 1995)	0.0001*** (0.000)	--
GDP per capita (quadratic)	--	--
Trade openness ((X+M) as % of GDP)	-0.006*** (0.000)	0.001*** (0.000)
Industrial production	-0.0018*** (0.000)	-0.0005*** (0.000)
Public investment (% of GDP)	--	-0.0029** (0.0231)
Private investment (% of GDP)	--	-0.004*** (0.0069)
Exchange rate (real effective exchange rate)	--	0.002*** (0.0039)
Fiscal balance (% of GDP)	0.007*** (0.000)	-0.0009** (0.022)
Governance	-0.138*** (0.000)	--
Country risk	--	-0.0001 (0.232)
Conflict	--	--
R-squared (weighted) Number of cross-sections Number of observations Durbin-Watson stat	0.99 4 28 1.669	0.99 4 24 2.76

The figures in parentheses are p-values.
*** Significance at 1%; ** Significant at 5 %; *Significant at 10 %

As for North Africa, the nested model results while interesting and appeared to provide useful observations regarding the determinants of diversification in the sub-region were not substantially robust to allow us to draw strong conclusions (see Table 5.3).

In the first instance, the final nested model is highly influenced by the way investment is captured in the equation. In the specification using gross capital formation, highly significant results were obtained for investment, per capita income, openness, fiscal balance, governance and conflict. The relationship between investment and diversification index however indicates that increasing investment leads to specialization. The only significant macro variable in this specification is fiscal balance. On the other hand, when the gross fixed capital formation was decomposed into both public and private investments, the most significant variables turned out to be both types of investment, openness, industrial production, exchange rate and fiscal balance and the country risk. Somehow the non-robust nature of the results in Table 5.3 makes it difficult to make strong statements on the actual determinants of diversification in North Africa. Suffice to say though that the specification with the two components of capital formation decomposed are more intuitive and are in line to the regional (continental) results save for the fact that income in not relevant in this particular specification.

Africa's diversification regimes and determinants of diversification: country level results

Based on the diversification trends in the continent, five diversification regimes were identified as characterizing the different African countries. The five regimes are: those countries with little diversification; countries that started but got stuck in the diversification process; those with deepened diversification; backsliders in diversification; and the conflict and post-conflict countries. As emphasized earlier, these regimes are not step-wise in such a way that a country moves from one regime to another. Rather, belonging to a particular regime it was argued had more to do with the policy and institutional factors at the country level. Consequently, one would expect just as the determinants of diversification in the different sub-regions vary, there are different determinants if the analysis was to be brought to the country level. In this section then, focus is on establishing the determinants at the country level. The approach adopted was to select one country under each of the diversification regimes and see whether the same factors matter for diversification across the regimes. This meant estimating statistical models to test which variables within each of the theoretically determined blocks had the most significant influence on diversification. However, there was a data hitch. Given the variables identified by the theory, even using the proxies for governance and industrial production as discussed previously, it was only possible to put together 19 observations for each country. While it is still possible to fit country level models, the number of observations are too few to allow us to achieve the level of confidence that would be sufficient to make strong conclusions from such an analysis. Moreover, if it were established that there are econometric problems such as multicollinearity, it would be quite difficult to fix since one would need to either increase the number of observations (which is not possible) or impose restrictions (which we have no basis to do).

To overcome the above data constraint, a more simpler but less data demanding approach was adopted. Using Pearson correlation coefficient at the country level, we were at least able to draw some observations, though weak, that allowed us to establish whether the country level determinants vary. The main difference between the correlation and regression analysis is that in correlation analysis one can measure the degree of linear relationship[56] between two variables without implying a cause and effect relationship while in the latter, this relationship is implied. Although cause and effect relationship is not implied in the correlation analysis, this method helps to show the relationship between diversification and the different economic variables, which were earlier, indicated to be significantly related to the diversification at the continental level. Therefore by using this method, it is possible to show the differences among the varying diversification regimes.

Table 5.4 shows the correlation between diversification and the different economic variables for Tunisia, Kenya, Nigeria, Burkina Faso and Sudan. Tunisia was chosen to represent a regime with deepened diversification. The results show that for Tunisia diversification is positively and significantly related with investment, inflation and exchange rate while it is negatively and significantly related with income per capita, trade and country risk. From this set of variables, four of them, namely: per capita income, inflation, exchange rate and country risk, resemble the direction of relationship with diversification as indicated in the continental results (Table 5.1). Inspection of the data plots shown in Appendix C would confirm clearly these relationships. For example, Tunisia started with a period of low per capita income and throughout the sample period, its per capita income has been increasing steadily. On the other hand, the index of diversification started at a less diversified economy and throughout the period, it has gradually move into a more diversified set of products.

Nonetheless, two of the variables namely: investment and openness have opposite direction of relationship to the continental results. The data plot clearly indicates a negative relationship between Tunisia's diversification and openness variables. However, the positive relationship between diversification and investment is not remarkable since some earlier periods, investments were high and these could have lead to diversification. As for the negative relationship between trade and diversification, opening up of the economy might have in some way precipitated the diversification of products (see earlier discussion).

Kenya is an example of a country where diversification had taken off but was not able to go very far. Apparently, in the case of Kenya, per capita income reiterates that it is a strong influence in diversification. The results show a significant and negative correlation between income and diversification. This relationship is somewhat reflected in the data plots for income and diversification. Another variable that has significant relationship with diversification is exchange rate. This result is also consistent with the continental findings that depreciation has inverse relationship with diversification. Like Tunisia, Kenya's openness is negative but significantly related with diversification, which implies that it will tend to deepen

56 The correlation coefficient ranges from +1 to –1. +1 indication perfect positive linear relationship while –1 indicates perfect negative linear relationship. 0 coefficient means there is no linear relationship between two variables.

diversification rather than restraining it. This relationship is again somehow depicted in the data plots. As for the other variables such as investment, growth in manufacturing value added, inflation and country risk, their relationship with diversification is not significant.

Nigeria is an example of an African country where oil dominates exports. Hence, Nigeria is a highly specialized economy in terms of exports products. As discussed earlier, Nigeria's oil exports account for 98 percent of its total exports value. As for the correlation coefficients between diversification and the different economic variables in the study, Nigeria's results contradict the direction of relationships that were established in the continental results. These variables are the investment, income, trade, exchange rate and country risk. However, some of these results may not be relevant to the case of finding a solution to the diversification problem since again oil dominates Nigeria's export products. For example, in this study it is hypothesized that per capita income is likely to deepen diversification but for Nigerian data, it might be the income from exports (that is oil), which is likely to effect income to rise. The other variables such as growth in the value added of manufacturing products and inflation have no significant correlation with Nigeria's diversification index.

In the case of Burkina Faso and Sudan, countries representing the regimes where there has been limited diversification and the conflict and post-conflict countries respectively, the relationships shown by the correlations do not make any plausible economic observations and the data plots have no clear patterns. In both cases, even an examination of the data lacks any clear relationship between the different economic variables and diversification that can allow reasonable observations to be made regarding countries in these regimes.

Table 5.4. Correlation between diversification and different economic variables for Tunisia, Kenya, Nigeria, Burkina Faso and Sudan

Variables	Tunisia	Kenya	Nigeria	Burkina Faso	Sudan
	Diversification				
GCF	0.433**	0.166	0.702***	0.295	--
GDPCA	-0.468**	-0.586***	0.720***	0.496**	0.644**
Trade	-0.632***	-0.613***	-0.801***	-0.384*	0.399**
MVAGr	0.053	0.212	0.097	-0.173	-0.267
Inflation	0.518**	-0.235	0.114	-0.088	-0.476**
Exchange rate	0.977***	0.482**	-0.929***	--	-0.403**
Country risk	-0.634***	-0.271	0.756***	0.532***	0.773***

Notes: Numbers are Pearson Correlation Coefficient; ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

5.3. Conclusions

This chapter sought to empirically determine the determinants of diversification in Africa. The empirical investigation was done at the continental, sub-regional and country level. Like other studies dealing with cross-country analysis, the analysis is limited by the quality and the availability of the data. Despite these difficulties, the study was able to identify, at least at the continental level of the empirical analysis, that the diversification process is highly influenced by investment, per capita income, level of openness, the macroeconomic policy stance, governance and conflict. Thus, high levels of investment and rising per capita incomes are necessary for deepening diversification. However, both these determinants have a U-shaped relationship with diversification indicating there are two-stages such that initially, increasing investment and per capita income first lead to diversification and after a given level, a turning point is reached where increases further lead to specialization. Another important conclusion from our analysis was that trade liberalization in Africa could have led to more specialization rather than diversification. The Ricardian-type specialization forces that have led African countries to aim to optimize on their comparative advantages as they have become more open have on average overshadowed the portfolio motive for diversification. Yet another significant conclusion from the regional results is that macroeconomic stability matters for diversification. High inflation and unstable exchange rates undermine diversification. On the fiscal side, conservative fiscal policy emerged to be clearly counter to diversification forces. Besides the macroeconomic policy stance, conflicts undermine diversification while good governance promotes diversification.

Chapter 6
Diversification: Growth, Productivity and Stability

Growth, Productivity and Diversification

There is abundant literature with empirical evidence showing that the level of exports influences[57] growth. However, it is argued that it is not just the level of exports that lead to growth but also the level of diversified exports or products. The theory identifies two ways in which diversification may influence growth or income. Firstly, diversification may enter as a production factor by increasing the productivity of the other factors of production (see Romer 1990) and secondly, it may increase income by expanding the possibilities to spread investment risks over a wider portfolio (Acemoglu and Zilibotti 1997).

The main purpose of this chapter is to investigate the relationship among economic growth, productivity and diversification. In Section I, a growth accounting exercise is undertaken to quantify the relative contribution of capital, labour and total factor productivity in economic growth of African countries. Then in Section II, the relationship between the total factor productivity and diversification is investigated, on the basis that the transmission mechanism of diversification to economic growth could be through this route as indicated in Romer (1990).

6.1. The sources of growth

To be in a position to investigate the link between growth and diversification, one has to quantify the contribution of total factor productivity to economic growth. This section analyzes the sources of growth for African countries using the standard growth accounting method, making it possible to disaggregate the share of growth that is contributed by total factor productivity, capital and labour. Following in the tradition of the Solow-growth modelling, a production function is used as a benchmark to study and identify the sources of economic growth. This approach provides an understanding of the different sources of growth, and makes it possible to quantify the contribution of each factor. Consider the Cobb-Douglas production function with constant return to scale:

$$Y = AK^{a} L^{1-a} \qquad (6.1)$$

where Y is output, A is the total factor productivity, K is capital stock, L is labour, and α is a constant with $0 < \alpha < 1$. The constant α measures the elasticity of output with respect to capital when the supply of labour is held constant; and similarly $(1 - \alpha)$ measures the elasticity of output with respect to labour,

57 Besides the view that exports cause growth, the causal relationship could also run the other way, with growth causing rapid exports growth.

when the supply of capital is held constant. This form of production technology has been proven useful in many empirical studies. By taking the logarithm of equation (6.1), and differentiating it with respect to time it is possible to derive the growth in output. This gives:

$$\frac{d \ln Y}{dt} = \frac{d \ln A}{dt} + \alpha \frac{d \ln K}{dt} + (1-\alpha)\frac{d \ln L}{dt}$$

or

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + \alpha \frac{\dot{K}}{K} + (1-\alpha)\frac{\dot{L}}{L} \qquad (6.2)$$

where the dotted variables denote time derivatives. Equation (6.2) states that the growth in output is the sum of the growth in capital, growth in labour and growth in total factor productivity (TFP). Capital accumulation is an essential element in the growth process, as it enlarges the economy's capacity to produce while increases in labour or labour force has traditionally been considered a positive factor in stimulating economic growth. Technical progress or TFP is also an important and perhaps the main factor in the growth process. It is the advances in technology that continue to stimulate the growth of the rich industrial countries, especially as their population growth rates are more at replacement levels. In Africa on the other hand, there is a popular idea that it is more the factor accumulation that drives economic growth, with below average contribution by the TFP. As will be shown in Section II, diversification is expected to have a positive contribution to TFP growth, and by extension, to economic growth. And given that in the previous chapter the determinants of diversification have already been identified, it would then be possible to influence the rate of contribution of diversification to TFP and hence growth, by influencing these determinants.

In order to decompose the contribution of capital, labour and TFP to growth, it is necessary to first estimate the value of capital and labour elasticities, represented by α. This is done by taking the logarithm of equation (1), which yield the following regression model:

$$\ln Y_t = \delta + \alpha \ln k_t + \beta \ln L_t + e_t \qquad (6.3)$$

where LnY = log of GDP, ln$K$ = log of capital, ln$L$ = log of labour force, $\delta = \ln A$, $\beta = (1 - \alpha)$, e is the error term and t is time index. The model in equation (3) was estimated using a cross section of 35 African countries from a period of 1981 to 2000, using five-year non-overlapping averages, a total of 140 panel observations. The data on output and labour force were taken from the World Development Indicators (WDI) while capital stock[58] was from Tahari et al. (2004).

58 We thank Dhaneswar Ghura for sharing with us their data on capital stock for sub-Saharan Africa.

Equation (6.3) was estimated using fixed effects model correcting for heteroskedasticity[59]. The results are presented in Table 1. The estimated equation gave an estimate of $\hat{a}$ = 0.39 for the share of capital and $\hat{b}$ = 0.61 for share of labour. These estimates are in the same range to the estimated values of other studies such as the ones of Berthelemy and Soderling (2001) and Tahari et al. (2004).

Table 6.1: Panel data estimates of the growth equation

Dependent variable: log of income	Coefficient (p-value)
Constant	2.012*** (0.000)
Elasticity of output with respect to capital	0.394*** (0.000)
Elasticity of output with respect to labour	0.606*** (0.000)
Adjusted R-squared Number of cross-sections Number of observations Hausmann test (Random versus fixed) Estimation method (Panel EGLS fixed effect)	0.99 35 140 c^2 (2) = 18.70

The figures in parentheses are p-values.
*** Significance at 1%; ** Significant at 5 %; *Significant at 10 %

With the estimated values of the shares of capital and labour, the contributions of production factors and TFP to growth were estimated using equation (6.2). The results from the growth accounting exercises for individual countries for five-year averages from 1981 to 2000 are presented in Appendix E Table E.1 and E.2. The latter table gives the proportional contribution of the three sources of growth in each of the economies. Looking at both these tables however, the results confirm that economic growth in Africa is driven by the accumulation of the factors of production. The average contribution of TFP to growth is negative for the majority of the African countries with the exception of a few countries such as Botswana, Burkina Faso, Cape Verde, Chad, Equatorial Guinea, Ethiopia, Gabon, Guinea-Bissau, Malawi, Mauritius, Mozambique, Senegal, Swaziland, Uganda, Zambia and Zimbabwe.

Another important observation worth noting is that in majority of the countries, the contribution of TFP to growth was positive in the 1980s, especially for the period 1981-1985 and it is the early 1990s mainly when most of them experienced negative contributions from TFP. In deed, even for a country like Botswana, the first half of the 1990s saw a negative contribution by TFP. There was therefore a reversal

59 Or Panel estimated using Generalized Least Squares (see E-VIEWS User Manual 2004).

in the sources of growth in the continent in that the TFP contribution declined significantly from the second half of the 1980s. In a good proportion of the countries, TFP contributed at least 30 percent of the growth, and in some cases more than half of the total growth, but this clearly changed especially in the beginning of the 1990s and to a significant extent in the second half of the 1980s. Thus in Botswana, except for the period 1991-1995, TFP contributes more than one-third of the growth. For Burkina Faso, in 1981-85 and 1991-95, TFP contributed half of the growth. Another important observation worth pointing out is that the period 1996-2000 has witnessed a return to positive contribution by TFP to growth. This contribution is however lower when compared to TFP's contribution in the period 1981-1985.

How can one explain the transition of the contribution of the TFP to economic growth from positive to negative? As indicated here, it is in the late 1980s and early 1990s that the transition to negative contribution of TFP occurred. To provide the intuition to the causes of this transition, it is worth recalling that the stylized facts of African economies diversification indicated that the diversification efforts of the 1970s were yielding favourable results as we entered the 1980s. The favourable, though fragile results of the diversification efforts that were registered in the early 1980s were correlated with the favourable growth results of the same period. Thus, the positive and significant contribution of the TFP in the early 1980s explains the better diversification results at the time. However, these gains could not be sustained in the later years of the 1980s. Two explanations come to mind. First is the direct impact of the economic crises of the early 1980s itself and secondly the adjustment measures addressing this crises started to bite.

The adjustment measures that needed to be instituted to deal with the economic crises required stringent macroeconomic policies. The stringent policies took the form of fiscal and monetary conservativeness. This meant on the fiscal front that countries had to make hard choices. Some of the choices that had to be made meant cutting development expenditures and curtailing the rate of growth private sector credit. Reduced development spending by the public sector and weak private sector investments could have led to the weakening of the contribution of the TFP to growth. The tight macroeconomic policies reduced the flexibilities that countries had to pursue diversification-enhancing programmes and this may have contributed to the transition from positive to negative contribution to growth by the TFP. In the section below, the empirical link between diversification and growth through the TFP is explored. The significance of this transmission mechanism is that if established, it will be possible to validate the propositions made here that the hard macroeconomic choices that countries had to make to deal with the economic crises invariably affected the role of TFP in Africa's growth by undermining the diversification efforts at the time.

6.2. Economic growth and diversification: Exploring the TFP link in Africa

In this section, the results from panel data estimation that sought to explore the link between TFP and diversification are reported. The motivation behind these empirics is the theoretical proposition that diversification could influence economic growth through one of two links if not both at the same time. These links highlighted earlier are via increasing total factor productivity (as in Romer 1990) or by risk minimization through spreading of investment portfolios (as argued in Acemoglu and Zilibotti 1997). The focus of this section is in the TFP link while recognizing that the neoclassical growth model and its competing endogenous growth model are one and the same to some extent[60], only that the latter attempts to disaggregate potential components of the TFP. Risk minimization and its influence on growth, leading to diversified exports could reasonably be captured through its possible influence on TFP.

In investigating whether there is a significant link between diversification and total factor productivity, we assume that TFP is a function of an index of diversification, human capital, some policy and institutional variables such as openness, financial development and conflict. The regression model may be expressed as:

$$TFP_t = \beta_0 + \beta_1 I1_t + \beta_2 Human_t + \beta_3 Open_t + \beta_4 FD_t + \beta_5 Conflict + \varepsilon_t \qquad (6.4)$$

where *I1* = index of diversification, *Human* = human capital, *Open* = openness, *FD* = financial development, *Conflict* = dummy for the presence of conflict or war, βs are the parameters to be estimated and β is the regression error term, *t* is the time index.

Diversification: The theoretical justification for having diversification as an exogenous variable in this model has already been discussed. Essentially, the level of diversification is expected to have a significant influence on the productivity of capital and labour in the economy.

Human capital: Borrowing from the endogenous growth literature, human capital is assumed to be different to other forms of capital. As a result, the level of investment in a country on human capital is expected to have a bearing on the productivity of both labour and capital in the economy. In our model, the level of enrolment in secondary schools measures human capital.

Openness: As discussed in the foregoing chapters of this report, openness to trade has been one of the most studied issues in economic literature in recent times. Accordingly, the influence of TFP from openness are

60 Using bootstrap J test, Fingleton (2005) shows that the neoclassical growth model does not reject the new economic geography specification (an extension akin to standard endogenous growth models). This implies the new specifications could actually be nested in the neoclassical orthodox models through the TFP or more aptly the Solow residual.

assumed to derive from external effects such as exposure to foreign competition, transfer of technology and economies of scale, also in some extent from increased speed of convergence toward richer countries. The level of openness depends much on the kind of trade policy a country pursues. Opposing schools of thought put different weights to the significance of trade liberalization in promoting growth. In our model, the objective was to capture the influence of openness to TFP. In the literature, as captured in the critical work of Rodrik and Rodriguez (1999), there are different measures of openness (also see Berthelemy and Soderling 2001). Thus, in our model, two of these measures: exports as a proportion of GDP and exports plus imports as a proportion of GDP were tested, to see which gives the most plausible results.

Financial deepening: According to the literature, financial development may influence growth positively in two ways. Firstly, a more developed financial structure allows a better mobilization of savings and thus may support more investment and secondly, within a more developed financial sector, available information on investment projects will be treated more efficiently and then boost investments in productive sectors (see Berthelemy and Chauvin 2000; and Berthelemy and Varoudakis 1996).

The lack of access to credit has been identified as one of the impediments to growth in Africa. The arguments in favour of financial markets liberalization were mainly based on the premise that the binding capital constraint to African economies could be undone by liberalizing not just the money markets, but also the financial markets in broad sense. Thus, the full potential of the banking, insurance, development finance, stock and bond markets needed to be unleashed by dismantling the controls and restrictive controls that hampered the development and the deepening of the financial sector. Studies such as Tahari et al. (2004) have even provided results to show that the performance of the countries whose programmes with the IMF were adjudged to be on track was better. While this has been an issue of major empirical investigation and debate, it was instructive to find out whether financial deepening has a significant influence on total factor productivity in the case of African countries. There are several ways through which financial deepening has been captured in empirical work. First, the credit to the private sector has been one of the indicators. Second, in some cases, the combined total of the credit by the banking sector (implying both credit to the private and public sectors) has been another popular indicator. Third, the broad money supply (M3) as a proportion of GDP is another widely used measure of financial deepening. In our model, all these three measures of financial deepening were explored alternately.

Conflict: Economic growth in Africa has been variously linked to the presence or absence of conflict. Significant work has been undertaken on the economics of conflict and post-conflict countries. In deed, in recent times, most empirical works have been considered incomplete if they fail to take account of conflict. Weak growth could be attributed to the presence of conflict in a country. Conflict could influence this growth performance either directly or indirectly. In the more direct route, adverse effects on populations (hence labour force) and capital destruction could undermine the obvious sources of growth through factor accumulation. In the more indirect route, conflict could affect the TFP, leading

to declines in the TFP and hence its contribution to growth. In our model, a dummy representing the presence or absence of conflict was introduced.

The values of the TFP were derived using equation (6.3) and used as the dependent variable in equation (6.4). The regression model[61] in equation (6.4) was again estimated using panel data under a fixed effect assumption for sub-Saharan[62] Africa plus South Africa economies. The results are reported in Table 2. The results from three of the estimated models are shown. The difference between the three models is with respect to the exogenous variables captured. These differences are driven by the fact that there are different indicators for some of the explanatory variables under study. Thus, different measures of openness were explored just as different indicators for financial deepening were included in the different models.

The following are notable with respect to the empirical results. Firstly, the expected sign with respect to total factor productivity and diversification was achieved in the three models, indicating the robust nature of this relationship. Essentially, increasing level of diversification leads to higher total factor productivity. The negative[63] relationship in all the three models between diversification and TFP simply indicates that as an economy moves from high level of specialization to becoming more diversified, the total productivity of both labour and capital rises.

Of the three estimations, diversification is significant in Models I and II. But Model I was found to have the best overall diagnostics results. It is therefore clear from the results of this model that diversification significantly drives growth in the total factor productivity. In other words, a significant empirical link between diversification and growth does indeed exist with regards to the African economies via the total factor productivity. If a country wishes to raise the level of growth, on the basis of the empirical results in Table 6.2, pursuing diversification-deepening policies could actually help achieve this objective. Important policy implications of this link arise with respect to the determinants of diversification that were discussed in the last chapter. It was noted that key determinants of diversification are physical variables such as per capita incomes and investment, policy variables such as trade and industrial strategies policies, macroeconomic stability especially fiscal policy stance, and institutional variables such as governance and conflict. The significance of the results in Table 6.2 is that they suggest that even for African economies in general, if capital and labour are binding, countries can unlock growth potential by pursuing diversification-enhancing policies.

61 The variables included in the model were tested for the presence of unit root. With the exceptions of GDP and exports, all the other variables are stationary.

62 The growth model upon which the TFP data was derived included African countries other than North Africa. The capital stock data for North African economies was not available at the time of the empirical estimations.

63 The normalized-Hirschmann index was used as the measure of diversification. As the index is between zero and one with zero being perfect diversification and an index of one representing specialization on one commodity, a negative sign in relation to the TFP is the *a priori* expectation.

Table 6.2: Economic growth and diversification—the TFP link

Endogenous variable: TFP	Model I	Model II	Model III
Constant	23.497*** (0.000)	21.324*** (0.000)	18.887*** (0.000)
Diversification	-3.256* (0.073)	-1.916* (0.080)	-1.119 (0.233)
Human capital	0.071* (0.062)	0.057 (0.278)	0.026 (0.409)
Openness (X/GDP)	-0.012 (0.184)	-0.010 (0.296)	--
Financial deepening (DCP/GDP)	--	0.051 (0.117)	0.076** (0.015)
Financial deepening ((DCP+DCG))/GDP	-0.008 (0.425)	--	--
Conflict	-1.056** (0.049)	-1.041* (0.067)	-1.155** (0.054)
R-squared (adjusted) Number of cross-sections Number of observations Durbin-Watson stat	0.99 26 98 1.71	0.99 26 98 1.68	0.99 28 105 1.47

The figures in parentheses are p-values.
*** Significance at 1%; ** Significant at 5 %; *Significant at 10 %

Whereas the objective of this chapter was to establish the significance of the empirical link between diversification and growth via TFP, it is worthwhile to discuss briefly the rest of the results. Human capital is also an important explanatory variable to TFP performance, but its results are not as robust as in the case of diversification. However, on the basis of Model I, just like diversification, the significance level occurs only within 10 percent, but it does indicate that building human capital matters. Thus, while economic policies could be oriented at deepening diversification through the determinants already discussed, social policy that dictates higher investments in human capital ought also to be defined. Diversification and human capital oriented economic and social policies would complement each other towards enhancing the TFP and by extension economic growth.

The other robust result that is noteworthy in terms of influence on TFP is conflict. In all the three models specified, irrespective of the variables included, conflict remained highly significant. Presence of conflict has a negative and significant influence on TFP. It was noted above that conflict could affect economic growth either directly through destruction of the factors of production, or indirectly through their combined productivity. The results indicated in Table 6.2 imply that the indirect link through the TFP is also significant. Policies aimed at enhancing growth by deepening diversification that would be transmitted through the TFP could easily become neutralized by the presence of conflict.

Openness and financial deepening did not emerge as significant determinants of TFP in the analysis. Different indicators of openness and financial deepening were included in various specifications. Insignificant results were registered with respect to openness as shown in Models I and II. It is important to note at this juncture that the conventional definition of openness, combining both exports and imports as a proportion of GDP, resulted in poor results throughout. The results were only robust when the alternative measure, which uses exports instead, was included in the estimations. Berthelemy and Soderling (2001) in a similar analysis aimed at exploring the link between diversification and total factor productivity also relied on the same measure of openness for robust results. Yet the important point from this analysis is that for the African economies in the sample, openness has no significant impact on productivity. Does this mean that trade liberalization which has led to substantial openness in the African economies has failed to catalyse technological spillovers which otherwise would lead to increases in the share of TFP to growth? Apparently these results could be pointing to the possibility that openness in Africa, especially in terms of imports, have resulted mainly in non-technology enhancing imports. The imports compression that the liberalization aimed at addressing was undone leading probably to the importation of final consumption goods rather than capital and intermediate imports which have embodied technologies that would have led to positive and significant influence on the TFP.

Financial deepening has also failed to catalyze increase in TFP. The same logic of argument as in the case of openness could be attributed to the results with regard to financial deepening. Firstly, it is important to note that in some countries, as the money markets were liberalized, the interest rates spread remained significantly high, meaning that the intermediation role of the commercial banks that would have been expected to channel savings to the private sector leading to investments that would raise TFP failed to materialize. In the same vein, it is possible that investment opportunities in majority of these African countries are thin and the private sector credit growth that has been witnessed as the financial sector has been liberalized has been directed at personal consumption rather than to investments by private firms towards renewing their technologies or investing in research and development. In deed, financial deepening as measured by credit expansion to the private sector was significant only in Model III whose diagnostics pointed to less robust results. And in the preferred Model I, financial deepening indicator that includes credit to the public sector was found to be insignificant. Just as personal consumption rather than private investments could have dominated credit expansion to the private sector, it is probable that credit expansion to the public sector could have financed net material consumption by government in form of salaries for instance, rather than public investments that would have had a positive impact on the TFP.

6.3. Diversification regimes: A further link to productivity

The previous section empirically explored the link between growth and diversification via the TFP as the transmission path. This section will deepen the understanding of this link by revisiting the diversification regimes that were discussed in Chapter 4. The econometric estimations using pooled panel data in the

previous section hide useful insights that could be derived by asking the question, is there a clear link between the diversification regimes and the total factor productivity contribution to growth? We therefore analyze the sources of growth of a few African countries and relate them to the different diversification regimes that were identified and discussed in Section 4.4 (Diversification regimes in Africa).

The first diversification regime was described as those countries with little economic diversification. The study found that many African countries belong to this regime. From Table 6.3, the examples of countries in this regime are Benin, Burkina Faso, and Malawi. It can be observed that these countries have on average positive growth for the period 1981-2000. Benin, Burkina Faso and Malawi have average annual growth rates of 3.8 percent, 3.7 percent and 3.0 percent, respectively. The main source of growth is the factor accumulation rather than the TFP. However, it is interesting to note that the contribution of productivity to growth in these countries is positive in almost all but one period, even though they have not diversified much. However, even though the growth in these countries are positive over the 20 year period under observation, their growths are not in the level where their economies can take off as compared to the high growth performing economies of the NIEs in East Asia.

The second regime composed of those countries that started the process of diversification but have not made any significant breakthroughs. From Table 3, the examples of these countries are Kenya, Senegal and Zimbabwe. It may be observed that all the three countries have shown a slowing down trend in production from the period 1981-2000, except for Senegal, which has recovered in 1996-2000. However, growths are positive despite of the setbacks. Kenya is growing at an annual average of 2.9 percent; Senegal is growing at 3.3 percent while Zimbabwe is growing at 3.1 percent. Again, the main source of growth is the factor accumulation rather than the TFP. It is noted, however, that the average contribution of TFP to growth in Senegal and Zimbabwe is positive. The main question is the following. Could it be that these countries experience slackening of growth due to the fact that they have failed to deepen their diversification process and remained in their level for a long time?

Table 6. 3. Growth accounting for selected African countries

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of TFP
Regime 1: Little Economic Diversification				
Benin				
1981-1985	4.66	1.44	2.73	0.50
1986-1990	0.89	1.55	1.86	-2.52
1991-1995	4.25	1.76	2.36	0.13
1996-2000	5.34	1.72	2.81	0.81
Burkina Faso				
1981-1985	4.18	1.19	0.58	2.41
1986-1990	2.64	1.12	0.77	0.75
1991-1995	3.84	1.14	0.73	1.97
1996-2000	4.32	1.21	1.80	1.31
Malawi				
1981-1985	2.17	1.82	0.21	0.14
1986-1990	2.32	1.83	-0.02	0.51
1991-1995	3.52	0.78	-0.07	2.81
1996-2000	3.92	1.28	-0.92	3.56
Regime 2: Early Diversification but no major breakthrough				
Kenya				
1981-1985	2.53	2.31	0.86	-0.64
1986-1990	5.64	2.10	1.07	2.47
1991-1995	1.61	2.14	0.86	-1.39
1996-2000	1.79	1.90	1.01	-1.11
Senegal				
1981-1985	3.23	1.56	-0.01	1.68
1986-1990	3.22	1.56	0.28	1.37
1991-1995	1.53	1.55	0.71	-0.74
1996-2000	5.30	1.50	1.59	2.21
Zimbabwe				
1981-1985	4.36	2.55	-0.07	1.88
1986-1990	4.60	2.34	0.67	1.59
1991-1995	1.39	1.33	1.79	-1.73
1996-2000	2.07	1.18	0.27	0.62
Regime 3: Deepened Diversification Process				
Mauritius				
1981-1985	4.33	1.51	1.09	1.73
1986-1990	7.39	1.31	2.66	3.42
1991-1995	5.13	1.08	3.05	0.99
1996-2000	5.27	1.01	2.55	1.70

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of TFP
South Africa				
1981-1985	0.91	1.74	1.42	-2.25
1986-1990	1.81	1.62	0.30	-0.11
1991-1995	0.89	1.44	0.18	-0.73
1996-2000	2.65	1.63	0.70	0.32

Source: Authors' calculation. *Sekkat (2003 p.9.)

The third regime is the regime with countries of deepened diversification process. Countries like Mauritius, Morocco, Tunisia and South Africa exemplify this regime. For example, Tunisia has managed to achieve horizontal diversification into higher-value exports. Mauritius on the other hand has achieved deep vertical diversification, which has led to more textiles related exports.

Tunisia*				
1981-1990	3.72	1.28	2.48	-0.04
1991-1997	4.30	1.36	2.12	0.82
Regime 4:Backsliders in the diversification process				
Gabon				
1981-1985	2.56	1.46	1.33	-0.24
1986-1990	1.73	1.50	0.06	0.16
1991-1995	3.13	1.49	0.09	1.55
1996-2000	1.76	1.10	0.69	-0.02
Nigeria				
1981-1985	-2.75	1.70	2.83	-7.29
1986-1990	5.42	1.55	0.85	3.02
1991-1995	2.50	1.66	1.59	-0.75
1996-2000	2.84	1.64	0.14	1.05
Regime 5: Conflict and Post-Conflict Countries				
Congo, D.R.				
1981-1985	1.86	1.46	1.63	-1.22
1986-1990	0.01	1.57	0.71	-2.27
1991-1995	-7.12	2.05	-1.83	-7.33
1996-2000	-3.93	0.80	-1.89	-2.85
Liberia				
1981-1985	-1.88	1.70	-0.28	-3.30
1986-1990	-1.79	1.59	-1.24	-2.15
1991-1995	-1.51	1.45	-1.72	-1.24
1996-2000	-1.53	1.30	-1.98	-0.85

Meanwhile, the countries in this regime are characterized with relatively high growth, except South Africa, whose growth has since picked up with the dawn of a new political dispensation. Mauritius and Tunisia in particular have grown an average of 5.5 percent and four percent per annum, respectively for the period 1981-2000. In both of these countries, it may be observed that the contribution of capital is much higher than the contribution of labour. Moreover, in Mauritius, the contribution of the total factor productivity to economic growth is positive with an annual average of two percent, a relatively high figure for an African country[64].

The fourth regime is composed of countries that registered early positive diversification gains but later tended to specialize in few products. Countries like Nigeria and Gabon exemplify this regime. These countries are both rich in oil; hence this product dominates their exports. As for their growth performance, both countries GDP growths, although mostly positive were characterized by fluctuations over the period 1981-2000. On average, Nigeria is growing at two percent per annum while Gabon is growing at 2.3 percent per annum. As most of the African economies, they are also labour intensive with a minimal contribution of total factor productivity. Nigeria's TFP contribution to growth on average is even negative for the period under study. On average their economic growths are relatively low compared to the countries in the third regime such as Mauritius and Tunisia.

The fifth group is those countries within the conflict and post-conflict regime. The countries that belong to this regime are neither diversified nor highly specialized. Examples are Liberia and Democratic Republic of Congo. Economic growth in these countries was stunted by wars and conflict and therefore, expected to be negative. Consequently, the contribution of TFP to economic growth is also negative. These countries depend much on their labour force for production as the contribution of capital to growth is also deteriorating.

6.4 Conclusions

This chapter sought to establish empirically the presence and significance of a link between diversification and economic growth for African economies. The results have shown that deepening diversification leads to improvements in total factor productivity among other determinants in African economies. The significance of the link between diversification and economic growth in the case of African economies cannot be gainsaid. It means that African countries can scale up their economies' growth by raising their total factor productivity through pursuing policies that enhance diversification.

Noting that in this study it has been established, at least at the continental level, that there are clear determinants of diversification, the key conclusion is that pursuing economic and non-economic policies that lead to exports diversification can go a long way to overcoming the growth constraints emanating

64 The highest contribution of TFP to growth in the data set is in Uganda with 3.36 %, followed by Botswana with 2.2 % and then Mauritius.

from factor accumulation. African countries should aim at raising their levels of investments, improving governance, eliminating conflicts, adopting non-conservative fiscal policies and ensuring macroeconomic stability in addition to pursuing industrial and trade policies that foster economic diversification. The overall results of such policies will be to enhance exports diversification, which will eventually lead to increasing contribution of TFP to economic growth.

Chapter 7
Policies for Diversification

There are two key reasons that can be deduced from the analytical and empirical evidence discussed in the foregoing chapters of this study, as to why diversification should be a central pillar in the development efforts in Africa. Firstly, diversification is important in order to strengthen growth in Africa. That diversification is important to economic growth is no longer in doubt based on the empirical evidence presented in this report. Since the second half of 1980s, Africa's growth is accounted mostly by factor accumulation. Yet, factor accumulation becomes binding beyond a certain point or under certain demographic and physical conditions making other sources of growth critical. Consequently, the positive contribution of diversification to total factor productivity is central to any efforts to achieve higher and sustainable growth in Africa.

Besides the need for diversification in order to strengthen growth, the second key reason why diversification is necessary is the available evidence that Africa has failed to optimally reap benefits from preferences and globalization. This points to the need for a new paradigm on diversification to enable African countries to benefit from preferences and trade liberalization. In this study, evidence has been cited regarding the inability of African countries to fully benefit from preferences at the international and regional level. It is also notable that while other developing countries have increased their share in global trade, Africa has seen its share decline even as global trade liberalization has progressed. The significance of this failure to maximize gains from preference utilization and trade liberalization is an important issue especially given emerging evidence that the future gains likely to accrue to African countries from current trade liberalization efforts will be marginal. Essentially, with the current economic structures, many studies indicate that the African countries will not be able to maximize gains from trade liberalization (see Hammouda et al. 2004, Hammouda et al. 2005, ECA 2004, Mold 2005 and Karingi et al. 2005) propagating historical failures to assure benefits from global trade reforms. In addition, apart from the sub-optimal nature of the expected gains from trade liberalization, there is possibility that there will be increased marginalization for Africa, as the same studies have shown that the gains will be unevenly distributed among the developing countries. Therefore, there is a strong case for a new paradigm for diversification in order to help African countries assure benefits from preferential schemes such as AGOA, EBA and even the duty-free quota-free (DFQF) market access promised in the Doha Round for LDCs and the subsequent trade liberalization in agriculture, NAMA and services under the WTO and EPAs agenda.

Several key policies and recommendations emerge from this research. These recommendations will strengthen growth in Africa and constitute the elements of a new paradigm for diversification. It will

also enable African countries to benefit from preferences and on-going liberalization efforts at bilateral, regional, and multilateral level. These are discussed in the remainder of this chapter.

7.1 Policy recommendations

The diversification policies that are recommended can be seen at three levels. The first level is the need for macroeconomic policies that support diversification. The second level are new economic policies that Africa needs if it is to deepen diversification. And at the third level, Africa needs to pursue policies aimed at strengthening institutions in support of diversification efforts.

Macroeconomic policies for diversification – the need for pragmatism over orthodoxy

A key recommendation that has emerged clearly from this study is the need for pragmatic macroeconomic policies if African economies are to be able to diversify. Why is this pragmatism important? While macroeconomic stability is important for the diversification of an economy to take root, it has emerged that not all components of the macroeconomic framework need to be rigid. Stability alone through conservative fiscal and monetary policies is not enough to assure the deepening of diversification. A conservative fiscal policy rather than contributing to stability alone may end up limiting the necessary fiscal space to boost investment. Such constrained fiscal space as the empirical results show, undermines diversification efforts. Therefore, given that diversification for majority of African countries is both a necessary and an almost sufficient condition for high and sustained growth, pragmatism in designing macroeconomic policies is an imperative. Therefore, for optimal results in the diversification efforts, it is important then for countries to realize that while macroeconomic stability is important, some of the elements of the macroeconomic framework underpinning a diversification and/or growth strategy need to be sufficiently flexible on the fiscal side. This requires a departure from the typical stability-focused macroeconomic frameworks. On the contrary, flexible fiscal space can be integrated within such frameworks that would in turn enable a country to boost investments. Investments have been shown to be key determinants of diversification.

New economic policies for diversification – returning to the basics

Another key recommendation that can be derived from this study relates to the role of economic policies aimed at diversification. Evidently, there was a significant marginalization of economic policies in the 1980s as most of the energies in economic management shifted towards macroeconomic policies. This led to the neglect of sector-oriented policies, and necessary microeconomic reforms at the sector level were pushed to the periphery. This marginalization played a part in extinguishing the gains that countries were starting to make in deepening their diversification as witnessed in late 1970s. Nonetheless, it is important to note that the shift in the balance of the set of policies in favour of macroeconomic policies was founded on legitimate concerns—the need to address the economic crises of the early 1980s. However, rather than

have a pragmatic shift that recognized existence of valid justification for the objectives that underpinned the economic policies at the time, a radical shift occurred which ended up curtailing the progress that many African countries were making in diversifying and transforming their economies.

Suffice to add that, while in the majority of cases the concentration on macroeconomic issues at the expense of sectoral issues led to stagnation and in some cases weakening of diversification efforts, there are a few cases where dependence on oil led to reversal of diversification gains. Yet the number of countries where reversal in diversification gains occurred due to discovery and subsequent reliance on oil are few compared to the number of countries that witnessed poor diversification as a result of the marginalization of economic policies. Therefore, there is need for more proactive economic policies that are evenly balanced with the macroeconomic policies. In particular, on the basis of the results regarding the determinants of diversification as established in this study, proactive economic policies on trade; finance; industry and research are important.

In the design of the proposed proactive economic policies, African experiences accumulated to date will be important. Thus, in the case of proactive trade policies, the key should be to avoid the two extremes which have both failed in enabling trade policies achieve their expected outcomes. On the one hand, trade policies in support of diversification should not be ones that are focused on protecting domestic markets. Such policies have been tried in the past and caused considerable distortions in African economies leading to misallocation of resources and weak growth and productivity. But on the other hand, trade policies for diversification should not be the orthodox liberal trade policies that aim at uncontrolled opening up of African economies to external markets. African countries should use trade policies in a strategic way aimed at specific diversification and by extension growth and development outcomes. Such strategic trade policies would be proactive, dynamic, adaptable and differentiated between sectors and between the various segments of a given sector in order to enable diversification contribute effectively to development efforts (see ECA 2004b).

It is important to recall that in this study, openness was found to not necessarily lead to diversification. However, it was also indicated that openness could have indirect influence on the impact of other diversification determinants such as per capita income through interaction effects. Given the results that in a direct way openness could lead to specialization rather than diversification and also given the indirect effects of openness on diversification through interaction effects, strategic trade policies calls for discriminating against policies that have mutually exclusive options in terms of liberalization and protection. The Asian experience is an example of how a strategic trade policy cannot be limited to a choice between liberalization and protection. Rather, a strategic trade policy is one that can be used in a dynamic and adaptable way to support specific development choices. Therefore, in order to realize the benefits of diversification, countries in Africa should use trade policies as dynamic instruments towards chosen diversification ends.

As diversification is an important route to economic development through growth, the recommendations in ECA (2004b) on how trade policy tools can be used to address development priorities and options apply. In this regard, African countries should therefore pursue dynamic trade policies and these are policies that best fit into proactive diversification strategies. But most importantly, if proactive and dynamic trade policies are to help countries achieve their diversification choices, it is imperative to recall some essential features that such policies should have. First, it is important to note that trade policies are dynamic and as a result develop over time. Second, such policies are likely to be diverse from sector to sector and even require differentiation not only among sectors but also within the same sector. Therefore, achieving vertical diversification in one sector calls for different trade policies to those for achieving the same vertical diversification objective in another sector.

On financial sector policies, the starting point is the clear empirical link between investment and diversification this study has shown. The role of private sector in investments contribution to positive diversification outcomes cannot be gainsaid. In that respect, the financial sector and its role in financing private sector contribution to diversification is very critical. Hitherto the African experience on the financial sector reforms has been almost similar to the trade liberalization results. The failure of the financial sector liberalization to achieve the results expected can be explained from two angles. On the one hand is the failure of the liberalization to result in an efficient financial sector that is able to play in an optimal way its expected intermediation role for both short and long-term credit. On the other hand, was the failure to see reductions in interest rates as was expected, given that interest costs are a major cost of doing business for many private sector firms. These two points are elaborated in turn here in order to point to the need for a rethink in the financial sector architecture both in terms of policy and institutional framework so that proactive financial sector policies can contribute to the deepening of the diversification efforts.

In regard to the institutional structure of the sector, financial liberalization in Africa failed to achieve the desired outcomes as a catalyst for financial sector deepening. The key reason here is that in the same way that trade policies were never seen as part of an integrated whole, the financial sector liberalization tended to treat the sector in a compartmentalized manner to the extent that there was unbalanced focus on some components such as commercial banking neglecting significance of other rudiments such as development finance institutions or other components that are so key to capital markets deepening. The results were financial sectors that were not integrated and ones that focused on short-term credit issues rather than development finance and capital markets development, which would be more relevant to diversification efforts. In this respect, given the importance of the financial sector in diversification, it is important that the African countries seek for a proactive financial sector policy that aims for an integrated development of the whole sector that can effectively and efficiently mobilize in a sustainable way long term capital necessary for financing diversification programmes and by extension, long term development.

The significance of proactive financial sector policies compared to what has been the practice can be found in the results that were achieved in the past on interest rates regimes. In many African countries, the financial sector liberalization became characterized by wide interest rates spreads. Thus, instead of the liberalization resulting in more efficient financial sectors, the results were interest rates regimes where the lending rates rose and remained high over long periods of time while the deposits/savings rates fell and in many cases were negative in real terms. This discouraged the private sector from undertaking productive investments, such as those, required for deepening diversification. The inability by the private sector in Africa to access cheap credit meant that it was not possible to undertake initiatives that would lead to both horizontal and vertical diversification. The high interest rates after the liberalization also had the negative effect of raising the interest costs of servicing existing debt. This resulted in the reduction in the profitability of most of these firms. And given that retained earnings also forms a significant component of financing diversification efforts in the private sector in most African economies, the financial sector liberalization had the indirect effect of limiting these diversification efforts.

With regard to industrial policies, it helps to recall that economic transformation is both a necessary and sufficient condition for industrialization. But economic transformation cannot take place unless diversification takes root. Given the correlation between diversification and economic transformation, industrial policies are as a consequence part and parcel of the new economic policies for diversification that Africa needs. This is particularly the case given that it has also been established in this study that industrial policy is critical to the ability of a country to deepen diversification. Therefore, like in the case of trade policies, there is need for more proactive industrial policies. This calls for strategic use of industrial policies where diversification efforts can be targeted to those sectors that are aligned to the overall industrialization strategy.

ECA 2004b also has much to say about the way to go about designing proactive industrial policies. It recalls that the import substitution strategies enabled Africa to achieve high levels of economic development in the late 1960s and particularly in the 1970s, the same period where diversification gains were evident across many African countries. However, it notes that these industrial strategies failed as early as 1970s due to reasons ranging from the lack of internal structuring of industries concerned, weaknesses in internal markets and their inability to provide significant markets for new industries, the reduced availability of financing for the developing countries to the poor productivity of new enterprises. The response to the failure of this domestic-market oriented development model via reorientation towards external market failed to yield the expected results in Africa. In a similar fashion akin to the role of strategic trade policies, it is also necessary for African countries to have strategic and more dynamic industrial policies that are based on well thought out choices for diversification and by extension economic transformation paths. Such policies may include adoption of sector-by-sector bottom-up strategy, from downstream to upstream, in order to deepen horizontal diversification in the sectors of intermediate goods up to capital goods as indicated in ECA 2004b. Applying this strategy to diversification might make it possible for countries to develop vertical diversification paths by building connections between internal markets and

exports. Downstream industrial segments would be export oriented while the intermediate sectors would be oriented towards internal markets. Eventually, the multiple optima comparative advantages would evolve and export competitiveness would gradually reach intermediate and capital goods sectors.

The other major area where new economic policies for diversification are required is in research. Majority of African countries since the demise of diversification gains resorted to relying on factor accumulation as the main source of economic growth. Yet, both historical and empirical evidence has shown that the industrialized and newly industrialized countries were able to achieve development leaps when dramatic changes in total factor productivity took place. And as this study has shown, a link exists between economic growth and diversification through total factor productivity. However improvements in total factor productivity are almost always a manifestation of innovativeness in a given economy. Financing research and development stands out as a clear way that African countries could improve the level of innovation and hence raise the level of contribution of total factor productivity in economic growth. This would then enable these countries reap maximum benefits from their diversification efforts.

Strengthening of institutions is a prerequisite to positive diversification outcomes

For the macroeconomic policies and the new economic policies to achieve optimal diversification results, it will be important for countries to strengthen their institutions. As this research has shown, conflict and governance have very substantial implications on diversification. Conflict always undermines diversification while good governance (broadly defined) was empirically shown to lead to desirable diversification results. In this regard, the clear policy recommendations that flow from these results is that it is important that countries invest in peace building and peace promoting institutions that can proactively deal with threats of conflict flare-up or resurgence.

Where conflict exists, be it at the national level or across borders between countries in a given sub-region, it will be important to have effective institutions to address the conflict. Having conflict prevention and resolution as a key feature of institutions within regional economic communities is one way that diversification efforts could be deepened. Countries that aim to deepen diversification will also need to invest in good governance structures and institution. Governance institutions that countries would have to strengthen should cut across rule of law, public order, and a judiciary that effectively deals with commercial disputes, tax administration institutions that contribute to a predictable investment climate among other areas.

References

Acemoglu, D. and Zilibotti, F., 1997, "Was Prometheus unbound by chance? Risk diversification and growth", *Journal of Political Economy* 105, pp.709-751.

Adelman, M., 1969, "Comment on the 'H' concentration Measure as a numbers-equivalent", Review of Economics and Statistics 51(1), pp. 99-101

Al-Marhubi, F. 2000, "Export diversification and growth: an empirical investigation", Applied Economics Letters 7, pp. 559-562.

Ali, Ridwan, Alwang, Jeffrey, and Siegel, Paul 1991, "Is Export Diversification the Best Way to Achieve Export Growth and Stability? A Look at Three African Countries, The World Bank Policy Working Papers, No. 729

Attaran, M. and M. Zwick (1987), "Entropy and other measures of industrial diversification", *Quarterly Journal of Business and Economics* 26(1), pp 17-34.

Berthelemy, J. C. and Chauvin, S., 2000, Structural Changes in Asia and Growth Prospects after the Crisis, Working Paper No.00-09, CEPII.

Berthelemy, J. and L. Soderling, 2001, The role of capital accumulation, adjustment and structural change for economic take-off: empirical evidence from African growth episodes, *World Development,* 29(2), pp. 323-343.

Berthelemy, J. C. and Varoudakis, A., 1996, "Financial Development Policies and Growth", OECD, Development Centre Study (Long-Term Growth Series), Paris.

Charlton H. A. and J.E. Stiglitz, 2005, A development-friendly prioritization of Doha Round proposals, *The World Economy,* 28(3), pp.293-312

Cline R. William, 2004, *Trade Policy and Global Poverty,* Center for Global Development and Institute for International Economics, Washington D.C

Economic and Social Commission for Asia and the Pacific, 2004, Export Diversification and Economic Growth: The Experience of Selected Least Developed Countries, Development Papers, No. 24

Economic Commission for Africa, 2004, "Trade Liberalization under the Doha Development Agenda: Options and Consequences for Africa", Addis Ababa, Ethiopia, *ATPC Work in Progress Paper Series*, African Trade Policy Centre, Economic Commission for Africa.

Economic Commission for Africa, 2004b, "Trade Liberalization and Development: Lessons for Africa", Addis Ababa, Ethiopia, *ATPC Work in Progress Paper Series No. 6*, African Trade Policy Centre, Economic Commission for Africa.

Fernandez de Cordoba, S.F., S. Laird, and D. Vanzetti, 2005, Trick or treat? Development opportunities and challenges in the WTO negotiations on industrial tariffs, *The World Economy,* 28(10), pp. 1375-1400.

Fingleton, B., 2005, 'Beyond Neoclassical Orthodoxy: A View Based on the New Economic Geography and UK Regional Wage Data", *Papers in Regional Science,* 84(3), pp. 352-375.

Frenken, K., 2003, Entropy and information theory, in Horst Hanush and Andreas Pyka (eds.), *The Elgar Companion to Neo-Schumpeterian Economics*.

Gutierrez de Pineres, S.A. and M. Ferrantino, M., 1997, "Export diversification and structural dynamics in the growth process: the case of Chile", *Journal of Development Economics*, Vol. 52, pp. 375-391.

Hammouda, H., Karingi S.N., and Sadni-Jallab M., "Non-agricultural market access negotiations in WTO: Modalities for a positive post Hong Kong African agenda", *Journal of World Trade*, Forthcoming

Hammouda, H., Karingi S.N., and Perez R., 2005, 'Unrestricted market access for sub-Saharan Africa: Important benefits with little cost to the QUAD', Addis Ababa, Ethiopia, *ATPC Work in Progress Paper Series* No. 11, African Trade Policy Centre, Economic Commission for Africa.

Hammouda, H., Sadni-Jallab M., Oulmane, N., Lang R. et Perez R., 2004, 'Exclure l'Afrique des marchés ? Evaluation de l'accès aux marches pour les Africains.' *CAPC Travail en Cours* No. 8, Centre africain de Politique Commerciale.

Hirschman, A., 1964, "The Paternity of an Index", American Economic Review 54(4-6), pp 761-762.

Imbs, J. and R. Wacziarg, 2003, 'Stages of Diversification', *The American Economic Review,* 93(1), pp. 63 – 86.

Karingi S.N., Lang R., Oulmane N., Perez R., Sadni-Jallab M. and Ben Hammouda H., 2005, "Economic and Welfare Impacts of the EU-Africa Economic Partnership Agreements", Addis Ababa, Ethiopia, *ATPC Work in Progress Paper Series* No. 10, African Trade Policy Centre, Economic Commission for Africa.

Kelly, W., 1981, "A generalized interpretation of the Herfindahl index", Southern Economic Journal 48(1), pp.50-7.

Kingston, J., 1976, "Export concentration and export performance in developing countries, 1954-67, "Journal of Development Studies 12, pp. 311-319.

MacBean, A., and Nguyen, D., 1980, "Commodity concentration and export earnings instability: A mathematical analysis", Economic Journal 90, pp.354-62.

Massell, B., 1970, "Export Instability and Economic Structure", American Economic Review 60(4), pp. 618-630.

Mold A., 2005, "Trade Preferences and Africa - The state of play and the issues at stake", Addis Ababa, Ethiopia, *ATPC Work in Progress Paper Series* No. 12, African Trade Policy Centre, Economic Commission for Africa.

Olarreaga, M. and C. Ozden, 2005, AGOA and apparel: who captures the tariff rent in the presence of preferential market access? *The World Economy,* 28(1), pp. 63-77.

Quantitative Macro Software 2004 *EViews 5 Users Guide*.

Rodrik, D., 1997, 'Trade Policy and Economic Performance in sub-Saharan Africa', *mimeo*, Kennedy School of Government, Harvard University.

Rodrik, D., 2002, 'Trade Policy Reform as Institutional Reform', in, Bernard Hoekmann, Anditya Mattoo and Philip English (eds), *Development, Trade and the WTO: A Handbook,* World Bank, Washington.

Rodrik, D. and Francisco Rodriguez (1999), "Trade policy and economic growth: a sceptic's guide to the cross- national evidence", Working paper 7081, National Bureau of Economic Research, April 1999.

Rodriguez, D. and Rodrik, D., 1999, 'Trade Policy and Economic Growth: A Skeptic's Guide to the Cross National Evidence,' Working Paper 7081, National Bureau of Economic Research (NBER), New York.

Romer, P., 1990, "Endogenous technological Change", *Journal of Political Economy* 98(5), S71-S102.

Saint-Paul, G., 1992, 'Technological Choice, Financial Markets, and Economic Development', *European Economic Review,* 36(4), pp. 763-81.

Sekkat, K. 2003, The Sources of Growth in Morrocco: An Empirical Analysis in a Regional Perspective, Dulbea, University of Brussels and the ERF, mimeo.

Svedberg, P., 1991, "The export performance of sub-Saharan Africa" 39(3), pp. 549-566.

Tahari, A, D. Ghura, B. Akitoby, and E. Brou Aka, 2004, "Sources of Growth in sub-Saharan Africa", IMF Working Paper W/04/176.

UNCTAD 2004, Handbook of Statistics, UNCTAD.

Wooldridge, G.M., 2002, *Econometric Analysis of Cross-Section and Panel Data*, Cambridge, MA: The MIT Press

World Bank, 1999, *Can Africa Claim the 21st Century*, Oxford University Press.

World Bank, 2004, *Global Economic Prospects and the Developing Countries: Making the World Trade for the World's Poor,* The World Bank, Washington, D.C.

World Bank, 2005, Global Economic Prospects: Trade Regionalism and Development, The World Bank, Washington, D.C.

Appendix A. Description of Data

I1 Normalized-Hirschman index, calculated using UNCTAD data on exports products at the 3-digit SITC classification, 1996-2001 3-year averages.

Source of basic data: UNCTAD CD-ROM 2004

GCF Gross Capital Formation (GCF) as percent of Gross Domestic Product (GDP) (In percent), 1996-2001 3-year averages

Source: World Bank Indicators (WBI) CD-ROM 2004

GDPCA GDP per capita (In constant 1995 US$) 1996-2001 3-year averages

Source: WBI CD-ROM 2004

Trade Trade openness: Exports plus Imports of goods and non-factor services as percent of GDP (In percent), 1996-2001 3-year averages

Source: World Bank African Data Base CD-ROM 2004

Indprod Index of industrial production on manufacturing industry. This excludes mining, electricity, gas and water. 1996-2001 3-year averages

Source: UN Commodity Trade Statistics (UN comtrade) http://milleniumindicators.un.org/unsd/comtrade

MVAGr Manufacturing value added growth (In percent).

Source: WBI CD-ROM 2004

Inflate Changes in consumer prices (in percent), 1996-2001 3-year averages

Source: International Financial Statistics – IMF CD-ROM 2003

ExRate Real effective exchange rate index: nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs. 1996-2001 3-year averages (Index, 1990 = 100)65

Source: World Bank African Data Base CD-ROM 2004

FBalance Government deficit/surplus (including grants). It represents the net financing requirement of the consolidated government. This indicator is shown as a percentage of current GDP in national currency. (In percent), 1996-2001 3-year averages

Source: World Bank African Data Base CD-ROM 2004

Govern *Governance* can be broadly defined as the set of traditions and institutions by which authority in a country is exercised. This includes (1) the process by which governments are selected, monitored and replaced, (2) the capacity of the government to effectively formulate and implement sound policies, and (3) the respect of citizens and the state for the institutions that govern economic and social interactions among them. The six dimensions of Governance are: Voice and Accountability; Political Stability and Absence of Violence; Government Effectiveness; Regulatory Quality; Rule of Law; and Control of Corruption. (WB Institute: http://info.worldbank.org/wbi/governance/govdata/index.html). The actual data used is the average of the six dimensions of governance.

CRISK ICRG classification, which was created in 1980. The system is based on a set of 22 components grouped into three major categories of risk: political, financial, and economic, with political risk comprising 12 components (and 15 subcomponents), and financial and economic risk each comprising five components. Each component is assigned a maximum numerical value (risk points), with the highest number of points indicating the lowest potential risk for that component and the lowest number (0) indicating the highest potential risk. The maximum points able to be awarded to any particular risk component is pre-set within the system and depends on the importance (weighting) of that component to the overall risk of a country.

Source:http://www.icrgonline.com/page.aspx?page=icrgmethods#Background_of_the_ICRG_Rating_System.

65 Data on constant 1995 prices are not available for most African countries.

Conflict	Dummy variable: conflict = 1 if there is a presence of conflict or war during the period; conflict = 0 otherwise.

Appendix B. Results of Alternative Models

Table B.1: Determinants of diversification in Africa: Panel estimation results 2

	Variable	Coefficient value
Constant	Constant	0.171 (0.217)
Physical variables	Gross fixed capital formation (% of GDP)	-0.022*** (0.002)
	Gross fixed capital formation (quadratic)	0.001*** (0.001)
	GDP per capita (US$ 1995)	-0.0002*** (0.000)
	GDP per capita (quadratic)	0.00000005*** (0.000)
Policy variables	Trade openness ((X+M) as % of GDP)	0.003*** (0.0002)
	Industrial production	-0.001*** (0.001)
Macro stability	Inflation (%)	0.003*** (0.000)
	Exchange rate (real effective exchange rate)	0.002*** (0.0004)
	Fiscal balance (% of GDP)	- -
Institutional variables	Governance	-0.282*** (0.000)
	Conflict	0.128** (0.032)
Model diagnostics	R-squared (weighted) Number of observations	0.88 52

The figures in parentheses are p-values.

*** Significance at 1%; ** Significant at 5 %; *Significant at 10 %

Table B.2: Determinants of diversification based on the regional African model 2

Variable	East Africa	West Africa	North Africa
Constant	1.565*** (0.0002)	0.739*** (0.000)	0.165 (0.7402)
Gross fixed capital formation (% of GDP)	0.005 (0.695)	0.017** (0.011)	-0.021 (0.4897)
Gross fixed capital formation (quadratic)	-0.0004 (0.246)	-0.0004*** (0.009)	0.00049 (0.4005)
GDP per capita (US$ 1995)	-0.008*** (0.003)	-0.002*** (0.000)	0.0002 (0.3566)
GDP per capita (quadratic)	0.00001** (0.016)	0.000002*** (0.000)	-3.8E-08 (0.414)
Trade openness ((X+M) as % of GDP)	0.0008 (0.555)	0.001** (0.05)	-0.002*** (0.0087)
Growth in manufacturing value added	0.005** (0.017)	-0.0003 (0.709)	0.0003 (0.6224)
Inflation (%)	0.0006 (0.265)	0.002*** (0.001)	0.008 (0.2054)
Exchange rate (real effective exchange rate)	0.0005 (0.311)	0.0002 (0.381)	0.001** (0.0383)
Fiscal balance (% of GDP)	0.0005 (0.888)	0.004 (0.15)	0.0069** (0.0376)
Country risk	-0.002 (0.235)	-0.001 (0.48)	0.0004 (0.7149)
Conflict	0.195*** (0.0001)	0.011 (0.554)	0.1905** (0.0338)
R-squared (weighted) Number of cross-sections Number of observations Durbin-Watson stat	0.76 6 89 0.57	0.64 9 121 1.05	0.618 4 72 0.72

The figures in parentheses are p-values.

*** Significance at 1%; ** Significant at 5 %; *Significant at 10 %

Table B.3: Determinants of diversification at sub-regional level

Variable	East Africa	West Africa	North Africa
Constant	1.686 (0.000)	0.8 (0.000)	0.428*** (0.0001)
Gross fixed capital formation (% of GDP)	-0.007** (0.0269)	--	0.008*** (0.0000)
Gross fixed capital formation (quadratic)	--	--	--
GDP per capita (US$ 1995)	-0.009*** (0.000)	0.0002*** (0.000)	0.0001*** (0.000)
GDP per capita (quadratic)	0.000014*** (0.0001)	--	--
Trade openness ((X+M) as % of GDP)	--	-0.001*** (0.0007)	-0.006*** (0.000)
Industrial production	--	--	-0.0018*** (0.000)
Growth in manufacturing value added	0.005*** (0.007)	--	--
Inflation (%)	--	--	--
Exchange rate (real effective exchange rate)	0.001*** (0.004)	--	--
Fiscal balance (% of GDP)	--	--	0.007*** (0.000)
Governance	--	--	-0.138*** (0.000)
Country risk	-0.001 (0.381)	-0.002* (0.0852)	--
Conflict	0.189*** (0.000)	-0.035 (0.1274)	
R-squared (weighted) Number of cross-sections Number of observations Durbin-Watson stat	0.709 6 93 0.58	0.695 12 201 0.74	0.99 4 28 1.669

The figures in parentheses are p-values.

*** Significance at 1%; ** Significant at 5 %; *Significant at 10 %

Appendix C. Residual Plots

Figure C.1: Residual plot for continental model.

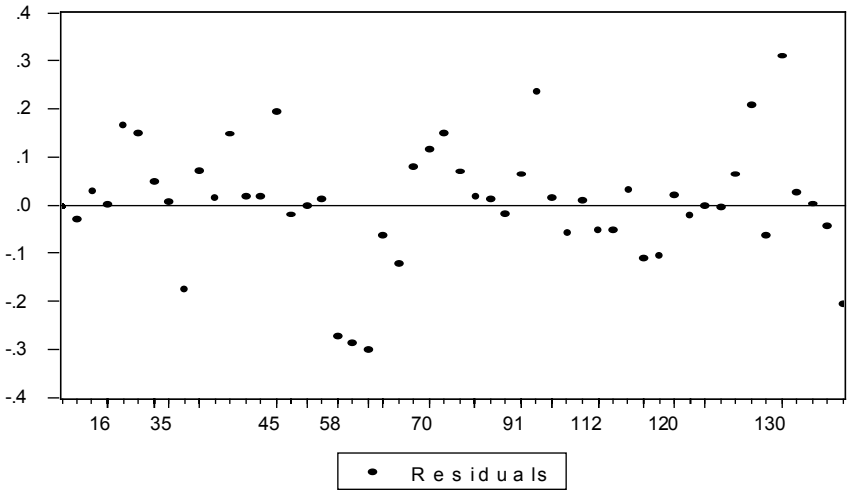
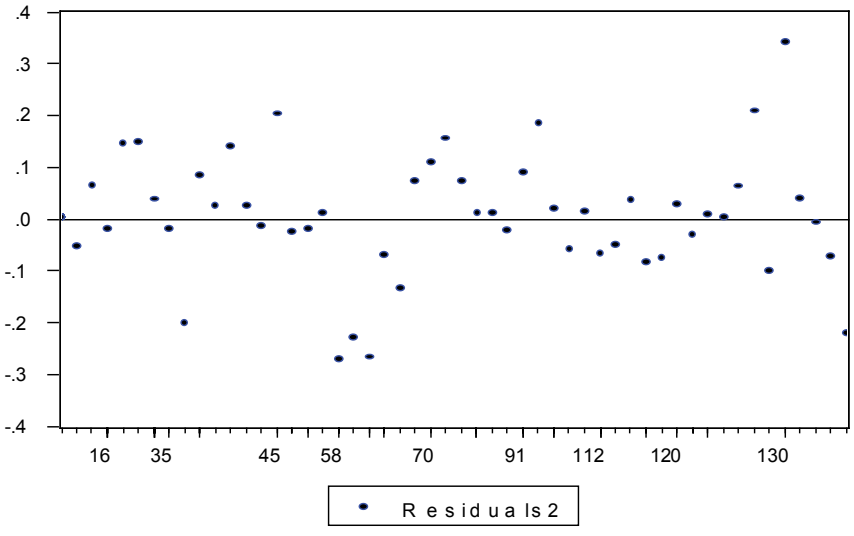
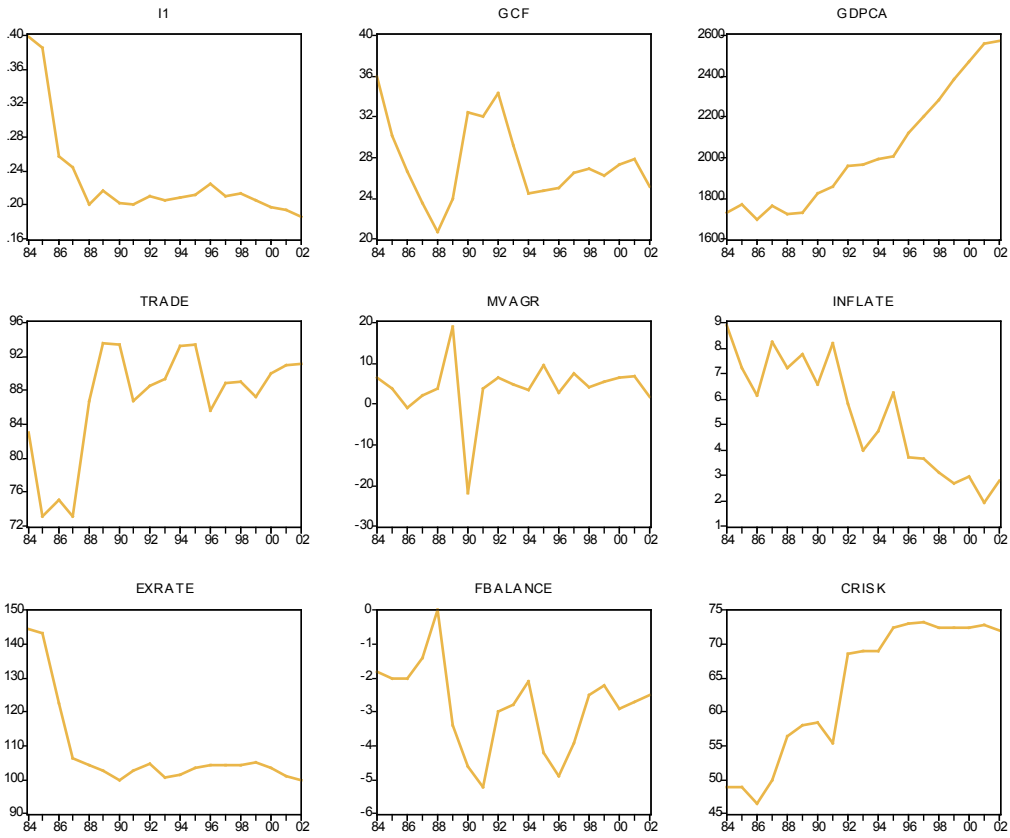


Figure C.2: Residual plot for alternative continental model

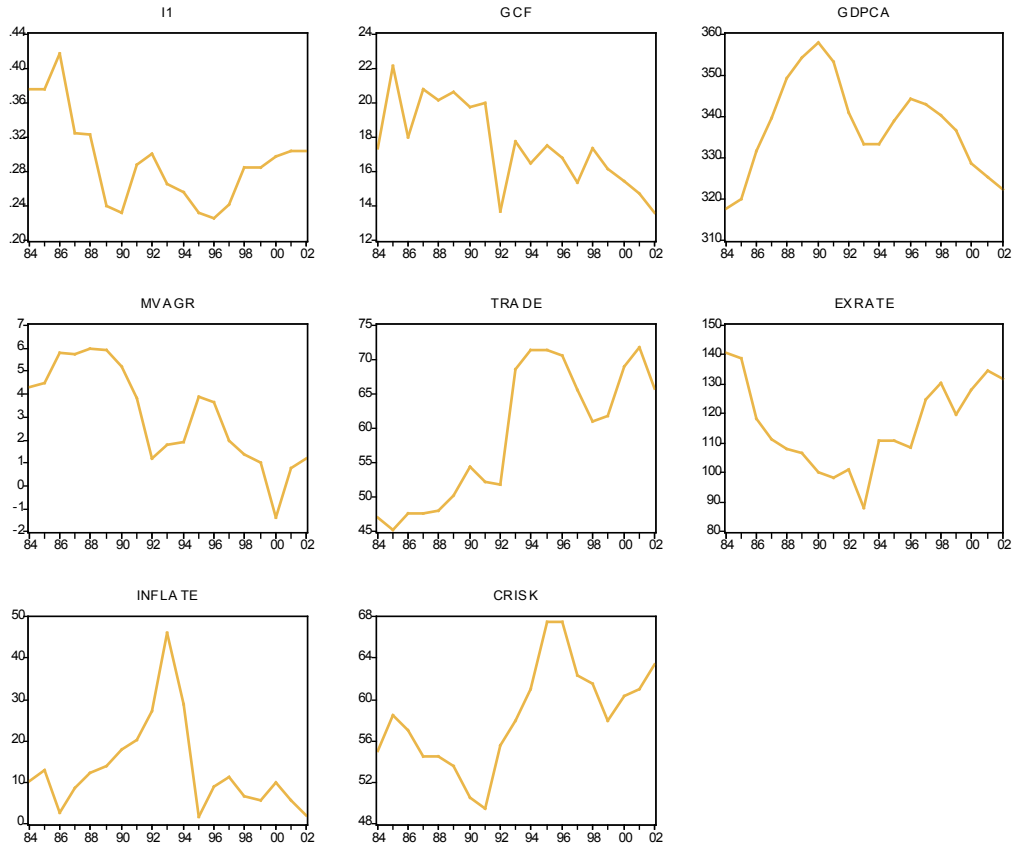


Appendix D: Plots of data for Tunisia, Nigeria, Kenya, Burkina Faso and Sudan

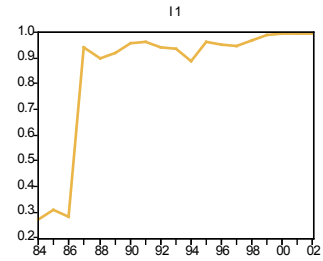
a. Tunisia

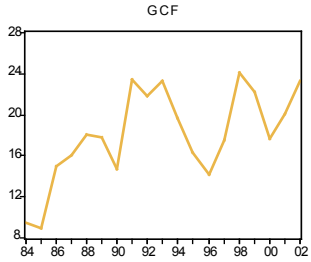


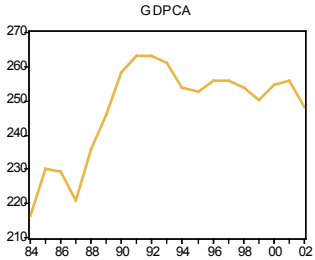
b. Kenya

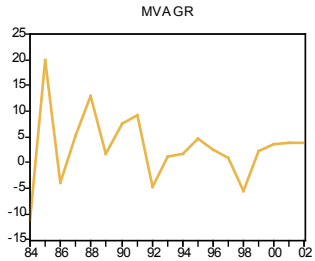


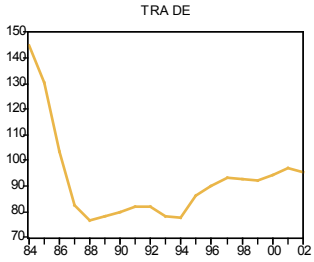
c. Nigeria

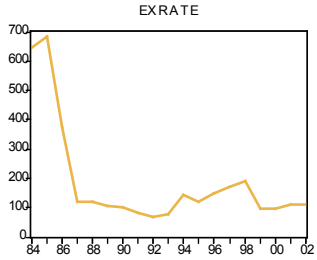

I1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
84 86 88 90 92 94 96 98 00 02

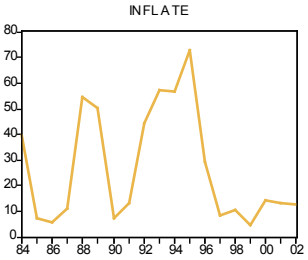

GCF
28
24
20
16
12
8
84 86 88 90 92 94 96 98 00 02

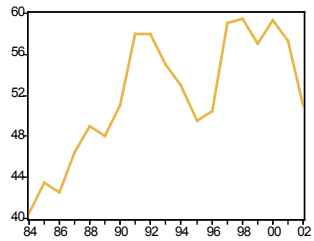

GDPCA
270
260
250
240
230
220
210
84 86 88 90 92 94 96 98 00 02


MVAGR
25
20
15
10
5
0
-5
-10
-15
84 86 88 90 92 94 96 98 00 02

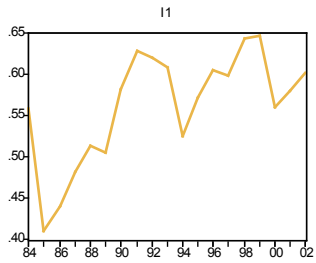

TRADE
150
140
130
120
110
100
90
80
70
84 86 88 90 92 94 96 98 00 02

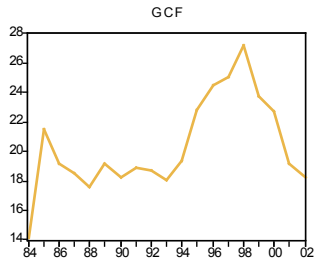

EXRATE
700
600
500
400
300
200
100
0
84 86 88 90 92 94 96 98 00 02

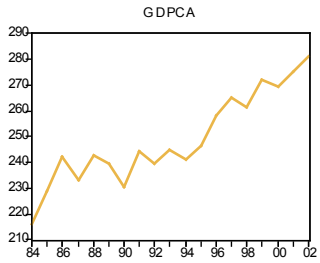

INFLATE
80
70
60
50
40
30
20
10
0
84 86 88 90 92 94 96 98 00 02

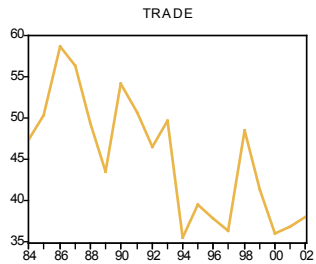

CRISK
60
56
52
48
44
40
84 86 88 90 92 94 96 98 00 02

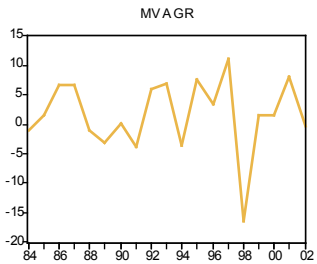
d. Burkina Faso

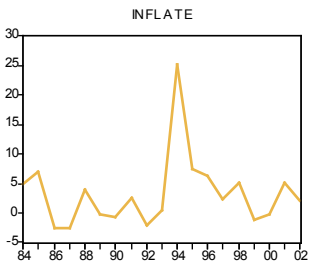


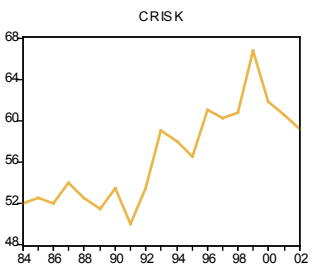




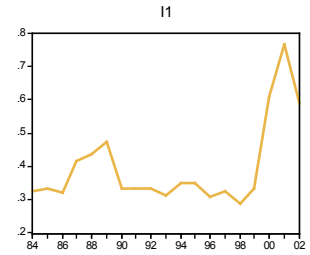


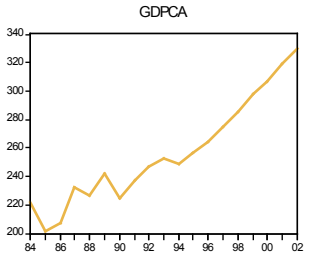


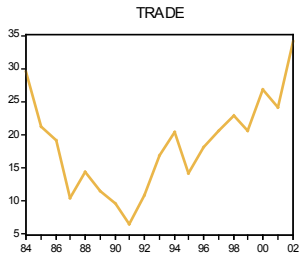


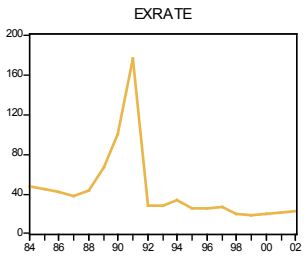


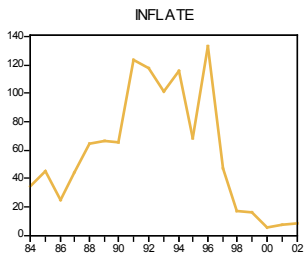
e. Sudan

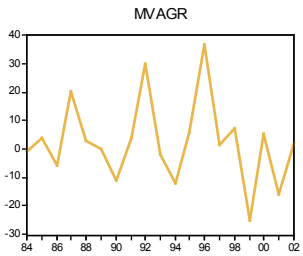

I1
.8
.7
.6
.5
.4
.3
.2
84 86 88 90 92 94 96 98 00 02

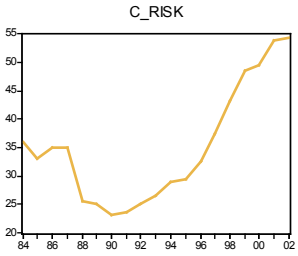

GDPCA
340
320
300
280
260
240
220
200
84 86 88 90 92 94 96 98 00 02


TRADE
35
30
25
20
15
10
5
84 86 88 90 92 94 96 98 00 02


EXRATE
200
160
120
80
40
0
84 86 88 90 92 94 96 98 00 02


INFLATE
140
120
100
80
60
40
20
0
84 86 88 90 92 94 96 98 00 02


MVAGR
40
30
20
10
0
-10
-20
-30
84 86 88 90 92 94 96 98 00 02


C_RISK
55
50
45
40
35
30
25
20
84 86 88 90 92 94 96 98 00 02

Appendix E. Growth Accounting Results

Table E.1: Growth Accounting for sub-Saharan African Countries

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of Total Factor Productivity Growth
Angola				
1986-1990	3.28	1.11	0.35	1.82
1991-1995	-3.78	1.61	1.67	-7.06
1996-2000	6.46	1.61	3.14	1.72
Benin				
1981-1985	4.66	1.44	2.73	0.50
1986-1990	0.89	1.55	1.86	-2.52
1991-1995	4.25	1.76	2.36	0.13
1996-2000	5.34	1.72	2.81	0.81
Botswana				
1981-1985	10.01	2.18	4.01	3.82
1986-1990	11.87	2.04	5.35	4.47
1991-1995	4.07	2.08	3.31	-1.33
1996-2000	6.28	1.51	2.86	1.91
Burkina Faso				
1981-1985	4.18	1.19	0.58	2.41
1986-1990	2.64	1.12	0.77	0.75
1991-1995	3.84	1.14	0.73	1.97
1996-2000	4.32	1.21	1.80	1.31
Burundi				
1981-1985	5.35	1.57	3.76	0.03
1986-1990	3.73	1.59	1.88	0.25
1991-1995	-2.23	1.33	1.03	-4.59
1996-2000	-1.02	1.55	1.58	-4.15
Cameroon				
1981-1985	9.40	1.48	4.94	2.99
1986-1990	-2.22	1.56	1.57	-5.35
1991-1995	-1.86	1.79	-0.27	-3.38
1996-2000	4.75	1.56	0.03	3.16
Cape Verde				
1986-1990	3.50	1.97	2.66	-1.12
1991-1995	5.23	2.07	2.10	1.07
1996-2000	6.40	2.22	0.56	3.62

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of Total Factor Productivity Growth
Central African Republic				
1981-1985	2.29	1.27	-0.42	1.44
1986-1990	0.04	0.86	0.29	-1.12
1991-1995	1.09	1.45	0.12	-0.49
1996-2000	0.40	1.59	-0.31	-0.88
Chad				
1981-1985	9.18	1.46	-0.12	7.84
1986-1990	1.94	1.40	2.10	-1.56
1991-1995	2.36	1.72	1.10	-0.46
1996-2000	2.28	1.97	2.45	-2.14
Comoros				
1981-1985	4.29	1.42	2.30	0.58
1986-1990	1.62	1.51	1.52	-1.41
1991-1995	0.89	1.73	1.44	-2.27
1996-2000	0.97	1.71	0.00	-0.74
Congo, Dem. Rep. of				
1981-1985	1.86	1.46	1.63	-1.22
1986-1990	0.01	1.57	0.71	-2.27
1991-1995	-7.12	2.05	-1.83	-7.33
1996-2000	-3.93	0.80	-1.89	-2.85
Congo Rep. of				
1981-1985	10.57	1.93	2.62	6.03
1986-1990	-0.26	1.98	2.06	-4.30
1991-1995	0.70	1.86	2.34	-3.50
1996-2000	2.52	1.95	0.91	-0.34
Cote d'Ivoire				
1981-1985	0.32	1.96	1.34	-2.98
1986-1990	1.18	1.84	0.71	-1.37
1991-1995	1.51	2.50	0.22	-1.21
1996-2000	3.46	1.81	1.32	0.33
Equatorial Guinea				
1986-1990				
1991-1995	1.36	1.21	1.03	-0.88
1996-2000	7.05	1.39	5.08	0.58
	35.74	1.61	11.42	22.72
Eritrea				
1996-2000	1.15	1.72	3.37	-3.94

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of Total Factor Productivity Growth
Ethiopia				
1986-1990	5.32	2.00	1.78	1.54
1991-1995	1.53	0.99	0.61	-0.07
1996-2000	5.27	1.36	1.76	2.15
Gabon				
1981-1985	2.56	1.46	1.33	-0.24
1986-1990	1.73	1.50	0.06	0.16
1991-1995	3.13	1.49	0.09	1.55
1996-2000	1.76	1.10	0.69	-0.02
Gambia				
1981-1985	3.23	1.87	3.99	-2.62
1986-1990	4.10	2.50	1.02	0.57
1991-1995	2.11	2.36	1.33	-1.59
1996-2000	4.80	1.88	1.33	1.60
Ghana				
1981-1985	-0.25	2.12	0.19	-2.57
1986-1990	4.81	1.69	7.37	-4.25
1991-1995	4.28	1.73	5.37	-2.82
1996-2000	4.32	1.54	2.73	0.05
Guinea				
1991-1995	3.74	1.29	2.70	0.19
1996-2000	4.18	1.15	0.51	0.19
Guinea-Bissau				
1981-1985	6.45	1.15	0.51	4.79
1986-1990	3.78	1.32	0.48	1.98
1991-1995	3.18	1.76	0.48	0.95
1996-2000	1.06	1.64	-0.65	0.07
Kenya				
1981-1985	2.53	2.31	0.86	-0.64
1986-1990	5.64	2.10	1.07	2.47
1991-1995	1.61	2.14	0.86	-1.39
1996-2000	1.79	1.90	1.01	-1.11
Lesotho				
1981-1985	3.16	1.22	4.26	-2.32
1986-1990	5.86	0.79	3.61	1.45
1991-1995	3.96	0.80	4.33	-1.17
1996-2000	3.01	0.78	2.40	-0.17

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of Total Factor Productivity Growth
Liberia				
1981-1985	-1.88	1.70	-0.28	-3.30
1986-1990	-1.79	1.59	-1.24	-2.15
1991-1995	-1.51	1.45	-1.72	-1.24
1996-2000	-1.53	1.30	-1.98	-0.85
Madagascar				
1981-1985	-1.55	1.38	-0.36	-2.58
1986-1990	2.75	1.47	0.64	0.64
1991-1995	-0.28	1.60	0.27	-2.15
1996-2000	3.84	2.02	1.89	-0.08
Malawi				
1981-1985	2.17	1.82	0.21	0.14
1986-1990	2.32	1.83	-0.02	0.51
1991-1995	3.52	0.78	-0.07	2.81
1996-2000	3.92	1.28	-0.92	3.56
Mali				
1981-1985	-2.25	1.26	0.54	-4.05
1986-1990	3.86	1.52	3.66	-1.31
1991-1995	2.99	1.30	2.16	-0.48
1996-2000	3.88	1.37	1.66	0.85
Mauritius				
1981-1985	4.33	1.51	1.09	1.73
1986-1990	7.39	1.31	2.66	3.42
1991-1995	5.13	1.08	3.05	0.99
1996-2000	5.27	1.01	2.55	1.70
Mozambique				
1981-1985	-4.62	1.12	1.12	-6.86
1986-1990	5.62	0.27	1.65	3.70
1991-1995	3.46	1.17	1.72	0.57
1996-2000	7.98	1.31	3.55	3.12
Namibia				
1981-1985	-0.19	1.15	1.34	-2.69
1986-1990	2.68	2.33	0.48	-0.13
1991-1995	4.96	1.83	1.50	1.62
1996-2000	3.48	1.70	1.81	-0.03
Niger				
1981-1985	-2.32	1.77	0.45	-4.54
1986-1990	2.60	1.78	-0.18	1.00
1991-1995	0.81	1.78	-0.83	-0.14
1996-2000	2.92	1.98	0.20	0.75

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of Total Factor Productivity Growth
Nigeria				
1981-1985	-2.75	1.70	2.83	-7.29
1986-1990	5.42	1.55	0.85	3.02
1991-1995	2.50	1.66	1.59	-0.75
1996-2000	2.84	1.64	0.14	1.05
Rwanda				
1981-1985	2.68	2.10	3.82	-3.24
1986-1990	1.50	1.81	1.98	-2.29
1991-1995	-3.96	-1.48	0.61	-3.09
1996-2000	9.80	4.32	0.94	4.54
Senegal				
1981-1985	3.23	1.56	-0.01	1.68
1986-1990	3.22	1.56	0.28	1.37
1991-1995	1.53	1.55	0.71	-0.74
1996-2000	5.30	1.50	1.59	2.21
Sierra Leone				
1981-1985	0.87	1.03	0.94	-1.10
1986-1990	1.09	1.13	-0.26	0.23
1991-1995	-5.05	1.44	-1.07	-5.42
1996-2000	-3.33	1.37	-1.34	-3.35
South Africa				
1981-1985	0.91	1.74	1.42	-2.25
1986-1990	1.81	1.62	0.30	-0.11
1991-1995	0.89	1.44	0.18	-0.73
1996-2000	2.65	1.63	0.70	0.32
Swaziland				
1981-1985	2.61	1.61	4.26	-3.27
1986-1990	11.15	1.62	3.32	6.21
1991-1995	2.83	2.45	2.28	-1.90
1996-2000	3.30	2.23	-0.77	1.84
Tanzania				
1991-1995	1.80	1.82	2.56	-2.58
1996-2000	4.22	1.59	1.06	1.57
Togo				
1981-1985	-0.24	1.80	0.11	-2.15
1986-1990	2.51	1.59	0.92	0.00
1991-1995	0.61	1.23	-0.46	-0.16
1996-2000	2.29	2.02	0.27	0.00

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of Total Factor Productivity Growth
Uganda				
1986-1990	5.09	2.10	0.28	2.72
1991-1995	7.05	1.69	0.88	4.47
1996-2000	6.49	1.42	2.18	2.90
Zambia				
1981-1985	0.53	1.78	-0.70	-0.55
1986-1990	1.64	1.71	-0.94	0.86
1991-1995	-1.28	1.77	-1.37	-1.69
1996-2000	2.84	1.64	-0.94	2.14
Zimbabwe				
1981-1985	4.36	2.55	-0.07	1.88
1986-1990	4.60	2.34	0.67	1.59
1991-1995	1.39	1.33	1.79	-1.73
1996-2000	2.07	1.18	0.27	0.62

Table E.2: Proportion of the Contribution of labour, capital and TFP in African economies growth

Countries	Growth in GDP	Proportion of Labour contribution over growth	Proportion of Capital contribution over growth	Proportion of Total Factor Productivity contribution over growth
Angola				
1986-1990	3.28	33.99	10.68	55.33
1991-1995	-3.78	-42.52	-44.19	186.71
1996-2000	6.46	24.88	48.57	26.56
Benin				
1981-1985	4.66	30.87	58.50	10.63
1986-1990	0.89	174.82	209.58	-284.40
1991-1995	4.25	41.35	55.53	3.12
1996-2000	5.34	32.25	52.65	15.11
Botswana				
1981-1985	10.01	21.78	40.05	38.18
1986-1990	11.87	17.23	45.09	37.67
1991-1995	4.07	51.10	81.52	-32.61
1996-2000	6.28	24.09	45.54	30.36
Burkina Faso				
1981-1985	4.18	28.39	13.96	57.66
1986-1990	2.64	42.47	29.07	28.47
1991-1995	3.84	29.67	19.03	51.30
1996-2000	4.32	28.09	41.64	30.27
Burundi				
1981-1985	5.35	29.27	70.19	0.54
1986-1990	3.73	42.76	50.53	6.71
1991-1995	-2.23	-59.66	-46.29	205.94
1996-2000	-1.02	-153.09	-155.97	409.06
Cameroon				
1981-1985	9.40	15.72	52.51	31.77
1986-1990	-2.22	-70.14	-70.36	240.50
1991-1995	-1.86	96	-14.70	-181.31
1996-2000	4.75	32.84	0.58	66.58
Cape Verde				
1986-1990	3.50	56.14	75.89	-32.03
1991-1995	5.23	39.51	40.09	20.40
1996-2000	6.40	34.72	8.79	56.49

Countries	Growth in GDP	Proportion of Labour contribution over growth	Proportion of Capital contribution over growth	Proportion of Total Factor Productivity contribution over growth
Central African Republic				
1981-1985	2.29	55.43	-18.33	62.90
1986-1990	0.04	2418.71	814.47	-3133.18
1991-1995	1.09	133.23	11.23	-44.46
1996-2000	0.40	395.06	-76.52	-218.55
Chad				
1981-1985	9.18	15.89	-1.29	85.40
1986-1990	1.94	72.29	108.15	-80.43
1991-1995	2.36	72.83	46.90	-19.73
1996-2000	2.28	86.43	107.47	-93.90
Comoros				
1981-1985	4.29	32.99	53.53	13.48
1986-1990	1.62	92.88	93.81	-86.70
1991-1995	0.89	193.43	160.46	-253.89
1996-2000	0.97	176.98	0.07	-77.05
Congo, Dem. Rep. of				
1981-1985	1.86	78.32	87.39	-65.71
1986-1990	0.01	27179.75	12246.59	-39326.34
1991-1995	-7.12	-28.77	25.76	103.01
1996-2000	-3.93	-20.45	47.99	72.46
Congo Rep. of				
1981-1985	10.57	18.22	24.75	57.03
1986-1990	-0.26	-759.88	-788.46	1648.34
1991-1995	0.70	266.29	334.14	-500.43
1996-2000	2.52	77.27	36.15	-13.41
Cote d'Ivoire				
1981-1985	0.32	612.77	418.74	- 931.51
1986-1990	1.18	155.60	60.44	- 116.04
1991-1995	1.51	165.95	14.55	- 80.50
1996-2000	3.46	52.30	38.17	9.52
Equatorial Guinea				
1986-1990				
1991-1995	1.36	89.07	75.78	-64.85
1996-2000	7.05	19.80	72.04	8.17
	35.74	4.49	31.95	63.56
Eritrea				
1996-2000	1.15	148.86	292.34	-341.20

Countries	Growth in GDP	Proportion of Labour contribution over growth	Proportion of Capital contribution over growth	Proportion of Total Factor Productivity contribution over growth
Ethiopia				
1986-1990	5.32	37.66	33.42	28.92
1991-1995	1.53	64.77	39.69	-4.46
1996-2000	5.27	25.70	33.43	40.87
Gabon				
1981-1985	2.56	57.24	52.19	-9.43
1986-1990	1.73	87.02	3.58	9.41
1991-1995	3.13	47.69	2.83	49.48
1996-2000	1.76	62.31	39.06	-1.37
Gambia				
1981-1985	3.23	57.79	123.35	-81.15
1986-1990	4.10	61.04	24.98	13.98
1991-1995	2.11	112.14	63.27	-75.41
1996-2000	4.80	39.07	27.69	33.24
Ghana				
1981-1985	-0.25	-849.09	-76.31	1025.39
1986-1990	4.81	35.10	153.28	-88.38
1991-1995	4.28	40.39	125.35	-65.74
1996-2000	4.32	35.74	63.11	1.15
Guinea				
1991-1995	3.74	37.38	57.56	5.06
1996-2000	4.18	30.84	64.67	4.49
Guinea-Bissau				
1981-1985	6.45	17.84	7.94	74.23
1986-1990	3.78	34.98	12.64	52.38
1991-1995	3.18	55.29	14.96	29.74
1996-2000	1.06	155.20	-61.78	6.59
Kenya				
1981-1985	2.53	91.17	34.19	-25.36
1986-1990	5.64	37.20	19	43.81
1991-1995	1.61	133.18	53.55	-86.73
1996-2000	1.79	105.63	56.28	-61.92
Lesotho				
1981-1985	3.16	38.50	134.72	-73.22
1986-1990	5.86	13.55	61.66	24.79
1991-1995	3.96	20.08	109.39	-29.47
1996-2000	3.01	25.81	79.98	-5.79

Countries	Growth in GDP	Proportion of Labour contribution over growth	Proportion of Capital contribution over growth	Proportion of Total Factor Productivity contribution over growth
Liberia				
1981-1985	-1.88	-90.22	14.73	175.48
1986-1990	-1.79	-88.88	68.98	119.90
1991-1995	-1.51	-96.31	113.94	82.37
1996-2000	-1.53	-84.60	129.32	55.28
Madagascar				
1981-1985	-1.55	-89.26	22.98	166.28
1986-1990	2.75	53.33	23.43	23.24
1991-1995	-0.28	-578.39	-96.61	775
1996-2000	3.84	52.64	49.33	-1.96
Malawi				
1981-1985	2.17	83.93	9.45	6.62
1986-1990	2.32	78.93	-1.04	22.11
1991-1995	3.52	22.16	-2.11	79.95
1996-2000	3.92	32.62	-23.50	90.87
Mali				
1981-1985	-2.25	-55.99	-24.02	180.01
1986-1990	3.86	39.26	94.78	-34.04
1991-1995	2.99	43.58	72.34	-15.92
1996-2000	3.88	35.22	42.78	22.01
Mauritius				
1981-1985	4.33	34.84	25.26	39.90
1986-1990	7.39	17.77	35.99	46.25
1991-1995	5.13	21.15	59.56	19.29
1996-2000	5.27	19.17	48.48	32.35
Mozambique				
1981-1985	-4.62	-24.26	-24.30	148.56
1986-1990	5.62	4.80	29.34	65.85
1991-1995	3.46	33.74	49.76	16.51
1996-2000	7.98	16.47	44.45	39.08
Namibia				
1981-1985	-0.19	-608.04	-708.56	1416.60
1986-1990	2.68	86.97	17.82	-4.78
1991-1995	4.96	37.02	30.26	32.73
1996-2000	3.48	48.83	52.16	-0.99
Niger				
1981-1985	-2.32	-76.03	-19.19	195.22
1986-1990	2.60	68.42	-6.86	38.44
1991-1995	0.81	220.21	-102.67	-17.54
1996-2000	2.92	67.64	6.84	25.52

Countries	Growth in GDP	Proportion of Labour contribution over growth	Proportion of Capital contribution over growth	Proportion of Total Factor Productivity contribution over growth
Nigeria				
1981-1985	-2.75	-61.69	-102.79	264.48
1986-1990	5.42	28.64	15.60	55.76
1991-1995	2.50	66.46	63.60	-30.06
1996-2000	2.84	57.87	5.11	37.01
Rwanda				
1981-1985	2.68	78.24	142.68	-120.92
1986-1990	1.50	120.21	132.10	-152.31
1991-1995	-3.96	37.36	-15.42	78.06
1996-2000	9.80	44.10	9.61	46.29
Senegal				
1981-1985	3.23	48.24	-0.36	52.12
1986-1990	3.22	48.53	8.83	42.64
1991-1995	1.53	101.63	46.79	-48.42
1996-2000	5.30	28.31	29.96	41.73
Sierra Leone				
1981-1985	0.87	118.81	108.34	-127.15
1986-1990	1.09	103.57	-24.22	20.65
1991-1995	-5.05	-28.59	21.15	107.44
1996-2000	-3.33	-41.03	40.34	100.69
South Africa				
1981-1985	0.91	191.79	155.79	-247.58
1986-1990	1.81	89.15	16.71	-5.85
1991-1995	0.89	162.32	20.17	-82.49
1996-2000	2.65	61.63	26.30	12.07
Swaziland				
1981-1985	2.61	61.87	163.54	-125.41
1986-1990	11.15	14.56	29.77	55.66
1991-1995	2.83	86.70	80.64	-67.33
1996-2000	3.30	67.72	-23.49	55.77
Tanzania				
1991-1995	1.80	101.30	142.09	-143.40
1996-2000	4.22	37.60	25.11	37.29
Togo				
1981-1985	-0.24	-749.01	-46.58	895.59
1986-1990	2.51	63.41	36.72	-0.13
1991-1995	0.61	202.02	-75.28	-26.74
1996-2000	2.29	88.33	11.67	0.01

Countries	Growth in GDP	Proportion of Labour contribution over growth	Proportion of Capital contribution over growth	Proportion of Total Factor Productivity contribution over growth
Uganda				
1986-1990	5.09	41.16	5.49	53.35
1991-1995	7.05	24.02	12.55	63.43
1996-2000	6.49	21.83	33.49	44.68
Zambia				
1981-1985	0.53	333.18	-130.68	-102.49
1986-1990	1.64	104.55	-57.22	52.67
1991-1995	-1.28	-138.20	-106.52	131.68
1996-2000	2.84	57.63	-33.04	75.41
Zimbabwe				
1981-1985	4.36	58.49	-1.72	43.23
1986-1990	4.60	50.79	14.62	34.59
1991-1995	1.39	95.63	128.60	-124.23
1996-2000	2.07	57.19	12.84	29.98

Appendix F. Data

1. Model 1. Determinants of Diversification in Africa (Continental)

Countries	Period	I1	GCF	GDPCA	Indprod	Trade	Inflate	Exrate	FBAL.	Govern	Conflict
Algeria	1996-1997	0.56	24.47	1517.65	85.50	54.52	12.21	58.49	2.66	-1.12	1
Algeria	1998-1999	0.57	28.25	1578.70	89.00	55.19	3.80	61.60	-2.20	-1.22	1
Algeria	2000-2001	0.57	24.88	1615.55	86.40	59.08	2.29	58.37	8.16	-0.96	1
Cameroon	1996-1997	0.36	15.77	615.31	118.90	52.14	4.35	66.22	-1.43	-0.95	0
Cameroon	1998-1999	0.48	17.89	645.38	120.75	59.25	2.36	69.68	-2.46	-0.70	0
Cameroon	2000-2001	0.47	17.12	674.38	122.45	60.80	1.23	64.82	1.43	-0.71	0
Côte d'Ivoire	1996-1997	0.36	13.27	840.74	112.90	71.59	3.25	70.43	-1.39	-0.11	1
Côte d'Ivoire	1998-1999	0.36	13.23	865.92	139.55	70.63	2.74	73.77	-1.72	-0.37	1
Côte d'Ivoire	2000-2001	0.32	10.79	814.00	124.20	66.68	3.37	69.31	-0.24	-0.83	1
Egypt	1996-1997	0.29	17.38	1084.45	127.20	47.55	6.27	129.05	-0.52	-0.20	0
Egypt	1998-1999	0.24	20.82	1155.60	139.25	45.07	3.48	159.25	-2.07	-0.13	0
Egypt	2000-2001	0.37	17.64	1226.30	126.25	44.39	2.48	172.88	-3.85	-0.16	0
Gabon	1996-1997	0.79	26.46	4640.80	112.00	95.43	2.33	54.12	2.59	-0.58	0
Gabon	1998-1999	0.76	32.66	4491.15	118.75	89.80	-0.25	54.33	-7.90	-0.45	0
Gabon	2000-2001	0.81	28.34	4284.65	117.90	84.56	0.50	49.81	1.41	-0.44	0
Ghana	1996-1997	0.43	23.00	378.25	98.25	79.36	37.23	82.36	-9.48	-0.18	0
Ghana	1998-1999	0.40	22.06	394.93	96.35	88.10	13.52	91.89	-7.34	-0.13	0
Ghana	2000-2001	0.39	25.30	412.16	101.70	78.47	29.05	59.60	-9.00	-0.06	0
Kenya	1996-1997	0.23	16.07	343.64	107.85	68.12	10.11	116.53	-0.71	-0.67	0
Kenya	1998-1999	0.28	16.73	338.39	114.70	61.48	6.23	125.20	8.85	-0.78	0
Kenya	2000-2001	0.30	15.03	326.82	106.95	70.37	7.86	131.28	5.30	-0.79	0
Madagascar	1996-1997	0.26	12.23	235.93	110.55	56.68	12.13	98.80	-5.26	-0.20	0
Madagascar	1998-1999	0.21	14.85	240.14	127.75	56.23	8.07	93.17	-4.30	-0.39	0
Madagascar	2000-2001	0.42	16.77	249.38	154.60	66.61	9.49	106.43	-3.57	-0.23	0
Malawi	1996-1997	0.63	11.88	163.53	101.85	84.97	23.37	87.55	-4.63	-0.39	0

Countries	Period	I1	GCF	GDPCA	Indprod	Trade	Inflate	Exrate	FBAL.	Govern	Conflict
Malawi	1998-1999	0.62	14.14	167.85	87.80	81.61	37.28	67.10	-5.54	-0.25	0
Malawi	2000-2001	0.59	5.30	162.56	74.15	73.73	28.41	69.03	-6.22	-0.31	0
Morocco	1996-1997	0.18	20.14	1351.95	105.35	57.05	2.02	114.24	-3.42	-0.06	0
Morocco	1998-1999	0.18	22.64	1390.95	111.45	65.58	1.72	118.11	-3.69	0.11	0
Morocco	2000-2001	0.17	23.30	1401.00	118.50	69.33	1.26	119.53	-3.51	0.07	0
Nigeria	1996-1997	0.95	15.81	255.96	101.40	91.62	18.75	161.54	5.08	-1.23	0
Nigeria	1998-1999	0.98	23.19	252.11	97.70	92.44	7.54	142.70	-8.24	-1.06	0
Nigeria	2000-2001	1.00	18.88	255.33	..	95.57	13.74	103.81	2.67	-1.01	0
Senegal	1996-1997	0.33	18.19	556.95	94.45	72.81	2.17	62.04	0.23	-0.38	0
Senegal	1998-1999	0.26	20.20	584.78	99.85	77.99	1.00	60.50	-0.87	-0.36	0
Senegal	2000-2001	0.25	18.32	617.18	90.85	72.58	1.90	56.72	-0.96	-0.21	0
South Africa	1996-1997	0.15	17.03	3946.90	105.00	47.71	8.18	94.19	-4.96	0.21	0
South Africa	1998-1999	0.12	16.24	3882.85	102.50	47.79	5.90	85.84	-2.34	0.25	0
South Africa	2000-2001	0.16	15.34	3931.25	107.50	48.22	5.04	77.00	-1.79	0.38	0
Tanzania	1996-1997	0.38	15.77	180.93	103.85	45.93	18.54	121.94	-0.06	-0.58	0
Tanzania	1998-1999	0.30	14.69	184.65	117.30	49.18	10.35	135.53	0.28	-0.25	0
Tanzania	2000-2001	0.41	17.32	195.36	139.80	54.03	5.53	121.22	-1.35	-0.37	0
Tunisia	1996-1997	0.22	25.76	2161.00	105.05	87.20	3.69	104.36	-4.38	0.10	0
Tunisia	1998-1999	0.21	26.60	2332.90	119.20	88.15	2.91	104.74	-2.35	0.30	0
Tunisia	2000-2001	0.20	27.57	2514.70	138.65	90.54	2.43	102.20	-2.79	0.38	0
Uganda	1996-1997	0.49	16.43	305.44	128.50	36.62	7.08	91.75	-1.63	-0.52	1
Uganda	1998-1999	0.56	17.83	323.09	159.30	36.57	3.17	80.96	-0.88	-0.40	1
Uganda	2000-2001	0.30	19.97	342.43	166.25	36.36	2.42	73.53	-5.96	-0.65	1
Zambia	1996-1997	0.83	13.71	411.58	93.20	74.49	33.75	107.64	-0.36	-0.36	0
Zambia	1998-1999	0.51	16.98	397.62	84.75	83.24	26.63	105.98	-2.80	-0.25	0
Zambia	2000-2001	0.48	19.36	409.79	93.65	74.55	23.70	110.54	-6.11	-0.42	0
Zimbabwe	1996-1997	0.29	18.34	673.18	112.95	76.53	20.09	80.64	-7.65	-0.35	0
Zimbabwe	1998-1999	0.31	16.63	672.67	107.85	90.47	45.17	73.84	-6.08	-0.60	0
Zimbabwe	2000-2001	0.39	10.20	588.58	93.00	81.34	66.29	..	-16.34	-1.16	0

2. Model 2. Sub-Regional Levels (Original Model)

Countries	Period	I1	GCF	GDPCA	Trade	Indprod	Inflate	Exrate	Fbal.	Govern	Conflict
A. East Africa											
Kenya	1996	0.23	16.77	344.32	70.67	104.50	8.86	108.50	0.30	-0.63	0
Kenya	1997	0.24	15.37	342.96	65.58	111.20	11.36	124.60	-1.80	-0.71	0
Kenya	1998	0.29	17.30	340.23	61.12	121.20	6.72	130.50	-0.70	-0.79	0
Kenya	1999	0.28	16.16	336.54	61.83	108.20	5.74	119.90	18.40	-0.78	0
Kenya	2000	0.30	15.39	328.44	68.89	106.60	9.98	128.00	2.90	-0.77	0
Kenya	2001	0.30	14.68	325.20	71.85	107.30	5.74	134.60	7.70	-0.80	0
Kenya	2002	0.30	13.59	322.16	65.87	108.60	1.96	131.80	1.30	-0.84	0
Madagascar	1996	0.26	11.64	235.29	56.94	99.00	19.77	104.10	-8.10	-0.12	0
Madagascar	1997	0.27	12.81	236.57	56.43	122.10	4.49	93.60	-2.40	-0.28	0
Madagascar	1998	0.23	14.78	238.39	54.91	124.50	6.21	94.50	-5.80	-0.43	0
Madagascar	1999	0.20	14.92	241.89	57.54	131.00	9.93	91.90	-2.80	-0.35	0
Madagascar	2000	0.35	15.05	245.70	65.53	148.30	12.03	101.20	-2.80	-0.27	0
Madagascar	2001	0.48	18.50	253.05	67.70	160.90	6.94	111.60	-4.30	-0.19	0
Madagascar	2002	0.31	14.26	214.71	49.81	162.00	15.93	120.60	-5.50	-0.11	0
Malawi	1996	0.62	11.56	162.41	80.45	103.50	37.60	83.00	-3.70	-0.44	0
Malawi	1997	0.63	12.19	164.64	89.49	100.20	9.14	92.10	-5.50	-0.34	0
Malawi	1998	0.64	13.46	166.32	82.94	94.40	29.75	67.00	-6.60	-0.24	0
Malawi	1999	0.60	14.82	169.37	80.28	81.20	44.80	67.20	-4.50	-0.25	0
Malawi	2000	0.61	9.56	167.73	69.38	80.20	29.58	67.90	-4.90	-0.26	0
Malawi	2001	0.58	1.04	157.38	78.08	68.10	27.24	70.20	-7.60	-0.36	0
Malawi	2002	0.61	12.40	157.01	83.12	68.20	..	69.30	-7.70	-0.45	0
Tanzania	1996	0.44	16.64	180.23	53.86	101.00	20.98	118.30	-1.90	-0.70	0
Tanzania	1997	0.33	14.90	181.62	37.99	106.70	16.09	125.60	1.80	-0.46	0
Tanzania	1998	0.28	13.85	183.60	47.29	115.40	12.80	135.50	0.20	-0.23	0
Tanzania	1999	0.33	15.54	185.70	51.06	119.20	7.89	135.50	0.40	-0.28	0
Tanzania	2000	0.35	17.63	191.75	51.39	137.00	5.92	120.60	-1.20	-0.32	0

Tanzania	2001	0.46	17.00	198.96	56.67	142.60	5.13	121.80	-1.50	-0.42	0
Tanzania	2002	0.59	16.70	207.14	54.93	162.00	4.57	121.80	-1.40	-0.52	0
Uganda	1996	0.54	16.07	301.88	35.34	119.10	7.22	88.60	-1.90	-0.58	1
Uganda	1997	0.44	16.80	309.00	37.89	137.90	6.93	94.90	-1.40	-0.46	1
Uganda	1998	0.55	16.23	315.40	34.33	153.50	-0.02	84.00	-0.50	-0.33	1
Uganda	1999	0.56	19.44	330.78	38.80	165.10	6.35	78.00	-1.30	-0.48	1
Uganda	2000	0.33	19.80	338.89	35.92	164.40	2.83	74.60	-9.70	-0.62	1
Uganda	2001	0.28	20.13	345.97	36.81	168.10	2.00	72.50	-2.20	-0.67	1
Uganda	2002	0.29	21.67	359.06	39.90	196.80	-0.32	68.10	-5.70	-0.72	1

Countries	**Period**	**I1**	**GCF**	**GDPCA**	**Trade**	**Indprod**	**Inflate**	**Exrate**	**Fbal.**	**Govern**	**Conflict**
B. West Africa											
Côte d'Ivoire	1996	0.37	12.11	829.04	70.78	106.60	2.48	71.00	-1.40	-0.07	1
Côte d'Ivoire	1997	0.35	14.42	852.43	72.39	119.20	4.02	69.90	-1.40	-0.16	1
Côte d'Ivoire	1998	0.36	13.34	869.80	71.06	139.50	4.69	74.50	-1.50	-0.25	1
Côte d'Ivoire	1999	0.35	13.12	862.04	70.20	139.60	0.79	73.00	-2.00	-0.49	1
Côte d'Ivoire	2000	0.32	10.62	821.49	66.09	126.90	2.46	68.10	-1.30	-0.74	1
Côte d'Ivoire	2001	0.32	10.96	806.51	67.26	121.50	4.28	70.50	0.90	-0.93	1
Côte d'Ivoire	2002	0.43	10.47	775.74	65.84	107.00	3.11	73.30	-1.60	-1.11	1
Ghana	1996	0.44	21.20	375.22	73.36	104.60	46.56	80.00	-9.50	-0.18	0
Ghana	1997	0.41	24.81	381.28	85.36	91.90	27.89	84.70	-9.40	-0.17	0
Ghana	1998	0.44	23.11	390.34	85.13	94.30	14.62	91.70	-6.50	-0.16	0
Ghana	1999	0.35	21.00	399.52	91.07	98.40	12.41	92.10	-8.20	-0.10	0
Ghana	2000	0.39	24.00	407.20	78.40	101.70	25.19	59.40	-7.90	-0.04	0
Ghana	2001	0.39	26.60	417.11	78.53	..	32.91	59.80	-10.10	-0.08	0
Ghana	2002	0.39	19.70	428.57	72.72	..	14.82	59.40	-4.00	-0.12	0
Nigeria	1996	0.95	14.17	256.06	89.85	101.20	29.29	150.40	9.10	-1.27	0
Nigeria	1997	0.95	17.45	255.85	93.39	101.60	8.21	172.70	1.00	-1.19	0
Nigeria	1998	0.97	24.11	253.90	92.65	97.70	10.32	189.40	-9.30	-1.10	0
Nigeria	1999	0.99	22.27	250.31	92.23	..	4.76	96.00	-7.10	-1.02	0

Countries	Period	I1	GCF	GDPCA	Trade	Indprod	Inflate	Exrate	Fbal.	Govern	Conflict
Nigeria	2000	1.00	17.70	254.63	94.35	..	14.52	98.40	6.80	-0.94	0
Nigeria	2001	1.00	20.06	256.03	96.78	..	12.96	109.20	-1.50	-1.07	0
Nigeria	2002	1.00	23.30	248.17	95.60	..	12.88	109.80	-5.80	-1.21	0
Senegal	1996	0.32	18.53	550.77	70.71	94.40	2.75	64.20	-0.10	-0.37	0
Senegal	1997	0.34	17.85	563.12	74.90	94.50	1.58	59.90	0.50	-0.39	0
Senegal	1998	0.27	19.77	578.60	79.48	100.10	1.16	61.20	-0.30	-0.40	0
Senegal	1999	0.24	20.64	590.95	76.49	99.60	0.83	59.80	-1.40	-0.31	0
Senegal	2000	0.26	18.52	608.06	73.03	91.70	0.73	56.20	0.10	-0.22	0
Senegal	2001	0.25	18.12	626.30	72.12	90.00	3.07	57.30	-2.00	-0.18	0
Senegal	2002	0.29	19.68	618.06	72.64	123.90	2.23	58.90	-1.30	-0.14	0

3. Model 2. Sub-Regional Data (Alternative Data Set)

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbal.	Crisk	Conflict
A. East Africa											
Kenya	1984	0.38	17.31	317.45	47.08	4.31	10.28	140.7	-3.1	55	0
Kenya	1985	0.38	22.14	319.88	45.24	4.49	13.01	138.6	-4	58.5	0
Kenya	1986	0.42	18.02	331.41	47.63	5.8	2.53	118.4	-4.8	57	0
Kenya	1987	0.32	20.77	339.62	47.72	5.72	8.64	111.5	-3.3	54.5	0
Kenya	1988	0.32	20.16	349.19	47.96	6	12.27	108.1	-2.8	54.5	0
Kenya	1989	0.24	20.61	354.22	50.2	5.9	13.79	106.9	-3.6	53.5	0
Kenya	1990	0.23	19.7	357.99	54.5	5.23	17.78	100	-6.5	50.5	0
Kenya	1991	0.29	19.97	353.14	52.27	3.8	20.08	98.4	-11.1	49.5	1
Kenya	1992	0.3	13.7	340.88	51.92	1.2	27.33	101.3	-1.4	55.5	1
Kenya	1993	0.27	17.71	333.08	68.57	1.8	45.98	88.2	-1.2	58	1
Kenya	1994	0.26	16.43	333.05	71.34	1.9	28.81	111	0.2	61	1
Kenya	1995	0.23	17.53	338.97	71.41	3.9	1.55	110.8	-1.4	67.5	1
Kenya	1996	0.23	16.77	344.32	70.67	3.67	8.86	108.5	0.3	67.5	0

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbal.	Crisk	Conflict
Kenya	1997	0.24	15.37	342.96	65.58	1.94	11.36	124.6	-1.8	62.3	0
Kenya	1998	0.29	17.3	340.23	61.12	1.4	6.72	130.5	-0.7	61.5	0
Kenya	1999	0.28	16.16	336.54	61.83	1	5.74	119.9	18.4	58	0
Kenya	2000	0.3	15.39	328.44	68.89	-1.4	9.98	128	2.9	60.3	0
Kenya	2001	0.3	14.68	325.2	71.85	0.8	5.74	134.6	7.7	61	0
Kenya	2002	0.3	13.59	322.16	65.87	1.19	1.96	131.8	1.3	63.4	0
Madagascar	1984	0.47	8.62	281.49	51.92	..	9.86	186.3	1.7	..	0
Madagascar	1985	0.44	8.55	277.12	55.41	-1.79	10.56	176.8	1	..	0
Madagascar	1986	0.49	9.04	274.89	49.04	2.68	14.5	167	1.4	..	0
Madagascar	1987	0.41	10.11	270.54	46.94	5.59	14.99	113.9	1.7	..	0
Madagascar	1988	0.34	13.29	272.04	43.82	0.72	26.85	99	0.5	..	0
Madagascar	1989	0.32	13.39	275.33	45.44	3.66	9.01	94.6	-2.9	..	0
Madagascar	1990	0.31	16.97	276.14	52.36	-1.74	11.78	100	2.9	53	0
Madagascar	1991	0.28	8.24	253.21	49.25	-3.35	8.54	87.3	-5.2	50.5	0
Madagascar	1992	0.29	11.21	249.76	48.95	-3.56	14.57	92.9	-6.9	46	0
Madagascar	1993	0.26	11.45	247.94	52.89	1.65	10.01	102.7	-7.6	51.5	0
Madagascar	1994	0.33	10.9	240.58	55.07	4.05	38.94	90.2	-8.7	50.5	0
Madagascar	1995	0.28	10.94	237.58	55.85	0.1	49.06	81.9	-5.3	52	0
Madagascar	1996	0.26	11.64	235.29	56.94	1.14	19.77	104.1	-8.1	54.5	0
Madagascar	1997	0.27	12.81	236.57	56.43	1.31	4.49	93.6	-2.4	61.8	0
Madagascar	1998	0.23	14.78	238.39	54.91	7.21	6.21	94.5	-5.8	65.5	0
Madagascar	1999	0.2	14.92	241.89	57.54	5.31	9.93	91.9	-2.8	64	0
Madagascar	2000	0.35	15.05	245.7	65.53	5.69	12.03	101.2	-2.8	63	0
Madagascar	2001	0.48	18.5	253.05	67.7	10.68	6.94	111.6	-4.3	67	0
Madagascar	2002	0.31	14.26	214.71	49.81	-18.32	15.93	120.6	-5.5	63.5	0
Malawi	1984	0.55	12.88	150.17	91.13	2.44	20.03	106.2	-6.4	52.5	0
Malawi	1985	0.48	18.59	151.88	100.68	3.18	10.52	106.4	-8.1	54	0
Malawi	1986	0.53	12.47	146.63	82.22	2.22	14.05	95.6	-10.2	53	0

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbal.	Crisk	Conflict
Malawi	1987	0.6	17.27	144.26	79.89	0.94	25.18	89.4	-7.6	52	0
Malawi	1988	0.63	21.42	144.15	87.45	3.27	33.88	95.4	-1.6	50	0
Malawi	1989	0.62	24.56	141.55	93.04	8.5	12.46	100.9	-2.1	53	0
Malawi	1990	0.67	23.04	145.02	96.29	11.25	11.81	100	-4	54.5	0
Malawi	1991	0.74	20.24	155.2	89.88	3	12.62	103.5	-3.3	53	0
Malawi	1992	0.66	19.94	141.54	105.49	2.98	23.75	95.4	-11.1	53.5	0
Malawi	1993	0.66	15.17	152.82	89.48	-10.45	22.77	97.3	-6.1	53	0
Malawi	1994	0.57	29.1	135.01	96.61	2.96	34.65	69.1	-17.4	53.5	0
Malawi	1995	0.66	17.01	155.12	76.75	5.52	83.33	60.3	-4.7	58.5	0
Malawi	1996	0.62	11.56	162.41	80.45	-0.6	37.6	83	-3.7	59.5	0
Malawi	1997	0.63	12.19	164.64	89.49	1.1	9.14	92.1	-5.5	66.5	0
Malawi	1998	0.64	13.46	166.32	82.94	0.27	29.75	67	-6.6	62.8	0
Malawi	1999	0.6	14.82	169.37	80.28	2.13	44.8	67.2	-4.5	64	0
Malawi	2000	0.61	9.56	167.73	69.38	-3.02	29.58	67.9	-4.9	56.8	0
Malawi	2001	0.58	1.04	157.38	78.08	-14.16	22.7	70.2	-7.6	60	0
Malawi	2002	0.61	12.4	157.01	83.12	-11.36	14.74	69.3	-7.7	57	0
Sudan	1984	0.32	8.54	221.55	29.58	-1.18	34.15	47.7	..	36	1
Sudan	1985	0.33	9.49	201.54	21.34	3.57	45.41	44.7	..	33	1
Sudan	1986	0.32	14.37	207.54	19.25	-5.71	24.45	42.6	..	35	1
Sudan	1987	0.41	15.09	232.05	10.38	20.5	..	37.9	..	35	1
Sudan	1988	0.44	..	226.75	14.38	3.05	64.7	43.4	..	25.5	1
Sudan	1989	0.47	..	242.42	11.51	0.07	66.72	66.9	..	25	1
Sudan	1990	0.33	..	224.99	9.72	-11.35	65.16	100	-10.5	23	1
Sudan	1991	0.33	..	237.06	6.49	3.72	123.6	176.9	-33.4	23.5	1
Sudan	1992	0.33	..	247.15	10.83	30	117.6	28.2	-10	25	1
Sudan	1993	0.31	..	252.36	16.97	-2.23	101.4	27.9	137.3	26.5	1
Sudan	1994	0.35	..	248.46	20.51	-12.04	115.4	33	-1.1	29	1
Sudan	1995	0.35	..	256.24	14.09	5.99	68.38	25.4	-0.7	29.5	1

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbal.	Crisk	Conflict
Sudan	1996	0.31	21.54	264.49	18.15	36.6	132.8	25.3	-1.1	32.5	1
Sudan	1997	0.32	20.36	274.52	20.54	1.5	46.65	26.2	-0.6	37.5	1
Sudan	1998	0.29	17.02	285.68	22.81	7.35	17.11	19.9	-0.5	43.3	1
Sudan	1999	0.33	15.79	297.81	20.65	-25.34	15.99	18.3	-0.7	48.5	1
Sudan	2000	0.61	17.72	307.11	26.93	5.26	5.69	20	-0.6	49.5	1
Sudan	2001	0.77	18.7	319.23	24.23	-16.18	7.2	21.6	-0.9	54	1
Sudan	2002	0.59	19.5	329.63	34.03	1.66	8.37	22	-0.7	54.15	1
Tanzania	1984	0.13	..	..	..	..	36.15	..	-6.6	46	0
Tanzania	1985	0.08	..	..	..	..	33.28	..	-5.8	45	0
Tanzania	1986	0.17	..	..	..	..	32.43	..	-7	49	0
Tanzania	1987	0.21	..	..	..	..	29.95	167.5	-2.6	47	0
Tanzania	1988	0.18	..	180.86	46.42	..	31.19	132	-2.8	53	0
Tanzania	1989	0.21	..	181.9	45.84	..	25.85	115.4	-0.2	51	0
Tanzania	1990	0.2	26.11	188.77	45.78	..	35.83	100	2.9	52.5	0
Tanzania	1991	0.18	26.34	186.76	44.42	1.86	28.7	98.8	2.5	54.5	0
Tanzania	1992	0.2	27.23	182.12	47.79	-4.05	21.85	86.8	3.2	57	0
Tanzania	1993	0.23	25.13	178.78	54.76	0.63	25.28	94	-1.4	61	0
Tanzania	1994	0.29	24.65	176.23	53.86	-0.19	33.09	93.6	1.6	60	0
Tanzania	1995	0.38	19.79	177.27	59.34	1.63	28.38	97.7	-3.4	62.5	0
Tanzania	1996	0.44	16.64	180.23	53.86	4.82	20.98	118.3	-1.9	62.5	0
Tanzania	1997	0.33	14.9	181.62	37.99	5	16.09	125.6	1.8	63.3	0
Tanzania	1998	0.28	13.85	183.6	47.29	8	12.8	135.5	0.2	60.8	0
Tanzania	1999	0.33	15.54	185.7	51.06	3.63	7.89	135.5	0.4	58.5	0
Tanzania	2000	0.35	17.63	191.75	51.39	4.8	5.92	120.6	-1.2	59.5	0
Tanzania	2001	0.46	17	198.96	56.67	4.96	5.13	121.8	-1.5	57.5	0
Tanzania	2002	0.59	16.7	207.14	54.93	7.99	4.57	121.8	-1.4	57.65	0
Uganda	1984	0.57	8.14	234.25	28.09	6.93	42.73	119.3	-2.1	33	1
Uganda	1985	0.59	8.73	220.43	28.66	-5.48	157.7	155.8	-3.9	31.5	1

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbal.	Crisk	Conflict
Uganda	1986	0.75	8.45	214.76	29.32	-5.78	161	163.9	-3.2	32.5	1
Uganda	1987	0.91	9.72	216.09	31.27	3.48	200	212.1	-3.8	43.5	1
Uganda	1988	0.9	10.79	225.82	31.42	18.41	196.1	193.6	-3.9	44.5	1
Uganda	1989	0.9	11.14	231.19	29.6	9.05	61.44	163.4	-3.2	37	1
Uganda	1990	0.75	12.7	236.3	27.99	6.72	33.12	100	-4.4	34.5	1
Uganda	1991	0.6	15.17	240.22	25.2	7.49	28.07	73.7	-3.7	31.5	1
Uganda	1992	0.57	15.94	240.04	25.36	15.27	52.44	68.4	-7.3	37	1
Uganda	1993	0.53	15.25	252.09	22.53	7.34	6.08	73	-3.2	50.5	1
Uganda	1994	0.75	14.68	260.89	25.17	16.61	9.73	90.8	-3.8	54.5	1
Uganda	1995	0.65	16.42	283.91	32.62	17.33	8.59	88.8	-2.6	55.5	1
Uganda	1996	0.54	16.07	301.88	35.34	19.71	7.22	88.6	-1.9	58.5	1
Uganda	1997	0.44	16.8	309	37.89	13.45	6.93	94.9	-1.4	63.5	1
Uganda	1998	0.55	16.23	315.4	34.33	14.4	-0.02	84	-0.5	64	1
Uganda	1999	0.56	19.44	330.78	38.8	14.07	6.35	78	-1.3	62.3	1
Uganda	2000	0.33	19.8	338.89	35.92	3.87	2.83	74.6	-9.7	64.3	1
Uganda	2001	0.28	20.13	345.97	36.81	8.71	2	72.5	-2.2	62.5	1
Uganda	2002	0.29	21.67	359.06	39.9	5.29	-0.32	68.1	-5.7	62.4	1

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbalance	Crisk	Conflict
B. West Africa											
Côte d'Ivoire	1984	0.22	11.65	969.98	133.84	-1.01	4.28	75.8	..	..	0
Côte d'Ivoire	1985	0.38	12.95	977	132.8	33.84	1.86	75.8	2.6	..	0
Côte d'Ivoire	1986	0.22	12.06	972.8	129.1	-2.63	9.68	91.1	-3.5	66	0
Côte d'Ivoire	1987	0.41	12.32	935.18	124.12	1.44	6.94	102.2	-7.7	63	0
Côte d'Ivoire	1988	0.33	12.65	912.71	116.91	3.56	6.93	104.7	-13.3	59.5	0
Côte d'Ivoire	1989	0.4	8.9	907.22	119.34	3.25	1.05	98.8	-15.1	62	0
Côte d'Ivoire	1990	0.32	6.69	866.63	120.34	-5.41	-0.81	100	-11.3	57.5	0
Côte d'Ivoire	1991	0.35	7.36	838.01	118.43	0.12	1.68	96.5	-11.7	60	0
Côte d'Ivoire	1992	0.37	6.92	808.67	120.67	2.02	4.23	100.7	-10.4	59	0

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbalance	Crisk	Conflict
Côte d'Ivoire	1993	0.37	9.79	781.3	63.16	1.01	2.16	99.3	-11.2	59	0
Côte d'Ivoire	1994	0.41	13.72	763.05	67.86	1.84	26.08	61.2	-5.9	58	0
Côte d'Ivoire	1995	0.33	15.6	792.52	76.21	11.15	14.3	70.7	-3.1	59.5	0
Côte d'Ivoire	1996	0.37	12.11	829.04	70.78	7.54	2.48	71	-1.4	64	1
Côte d'Ivoire	1997	0.35	14.42	852.43	72.39	19.53	4.02	69.9	-1.4	63.8	1
Côte d'Ivoire	1998	0.36	13.34	869.8	71.06	-1.08	4.69	74.5	-1.5	65.8	1
Côte d'Ivoire	1999	0.35	13.12	862.04	70.2	0.82	0.79	73	-2	64.8	1
Côte d'Ivoire	2000	0.32	10.62	821.49	66.09	-7.23	2.46	68.1	-1.3	54	1
Côte d'Ivoire	2001	0.32	10.96	806.51	67.26	-3.14	4.28	70.5	0.9	57.5	1
Côte d'Ivoire	2002	0.43	10.47	775.74	65.84	-6.47	3.11	73.3	-1.6	56.65	1
Gambia, The	1984	0.46	18.31	391.82	159.52	20.43	22.1	121.6	-15.5	..	0
Gambia, The	1985	0.43	15.09	374.68	128.96	10.05	18.32	130.3	-0.4	..	0
Gambia, The	1986	0.45	16.6	375.05	109.05	-3.45	56.56	93.7	5.3	..	0
Gambia, The	1987	0.37	17.13	369.15	108.7	2.52	23.53	99.8	4.5	..	0
Gambia, The	1988	0.24	16.36	369.77	108.82	13.42	11.69	109	6.3	..	0
Gambia, The	1989	0.29	20.37	374.8	120.34	6.5	8.28	104.7	3.2	..	0
Gambia, The	1990	0.24	22.34	370.99	131.49	1.88	12.17	100	-0.1	61	0
Gambia, The	1991	0.2	21.89	366.71	138.58	2.15	8.64	95.6	1.1	60.5	0
Gambia, The	1992	0.5	22.17	364.06	138.76	-0.3	9.49	97.7	1.3	65.5	0
Gambia, The	1993	0.42	21	361.74	132.98	0.9	6.46	105.7	1.3	69.5	0
Gambia, The	1994	0.32	18.12	350.24	102.7	1.49	1.71	98.1	-1.1	58.5	0
Gambia, The	1995	0.31	20.19	342.55	121.96	0	6.98	95.1	-6.3	57	0
Gambia, The	1996	0.36	21.57	339.22	110.4	-1.03	1.1	94.1	-10	64.5	0
Gambia, The	1997	0.2	17.2	344.76	102.93	1.5	2.78	98.2	-6.5	71.5	0
Gambia, The	1998	0.5	18.4	350.15	117.68	1.5	1.11	96.6	-2.4	69.5	0
Gambia, The	1999	0.37	17.8	360.23	106.6	3	3.81	94.5	-3.5	69.3	0
Gambia, The	2000	0.46	17	367.94	110.26	4	0.84	89.9	-1.4	66.3	0
Gambia, The	2001	0.46	17.7	377.76	128.94	6	..	78.9	-6.3	68.8	0

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbalance	Crisk	Conflict
Gambia, The	2002	0.46	21.5	356.3	125.67	6	..	65	-4.8	67.9	0
Ghana	1984	0.49	6.88	309.8	40.56	12.84	39.67	344.4	-2.3	41.5	0
Ghana	1985	0.32	9.57	313.33	43.34	24.32	10.31	248.9	-3	48.5	0
Ghana	1986	0.34	9.36	318.24	47.71	10.95	24.57	143.1	-3.3	47	0
Ghana	1987	0.49	10.43	322.95	52.13	10.01	39.82	111.3	-2.4	49	0
Ghana	1988	0.5	11.3	331.4	50.19	5.06	31.36	107	-2.8	56.5	0
Ghana	1989	0.44	13.21	339.34	51.44	0.59	25.22	100.5	-2.1	58.5	0
Ghana	1990	0.52	14.44	342.74	52.58	5.88	37.26	100	-3.1	56.5	0
Ghana	1991	0.47	15.88	352.2	54.8	1.05	18.03	102.2	3.3	57	0
Ghana	1992	0.47	12.8	356.55	55.4	3.5	10.06	90.3	-4	61	0
Ghana	1993	0.47	22.21	363.76	61.79	-44.77	24.96	79.3	-3.1	62.5	0
Ghana	1994	0.36	23.96	365.1	57.82	1.65	24.87	63.8	-8.9	62.5	0
Ghana	1995	0.37	20.02	368.79	57.42	1.63	59.46	73.4	-6.4	63	0
Ghana	1996	0.44	21.2	375.22	73.36	3.47	46.56	80	-9.5	62	0
Ghana	1997	0.41	24.81	381.28	85.36	7.47	27.89	84.7	-9.4	63.5	0
Ghana	1998	0.44	23.11	390.34	85.13	4.08	14.62	91.7	-6.5	62.5	0
Ghana	1999	0.35	21	399.52	91.07	5.99	12.41	92.1	-8.2	58.3	0
Ghana	2000	0.39	24	407.2	78.4	3.91	25.19	59.4	-7.9	53.8	0
Ghana	2001	0.39	26.6	417.11	78.53	6.07	32.91	59.8	-10.1	59.5	0
Ghana	2002	0.39	19.7	428.57	72.72	0	14.82	59.4	-4	61.15	0
Guinea-Bissau	1984	0.36	37.73	203.43	89.28	..	..	..	-33.1	..	1
Guinea-Bissau	1985	0.42	35.1	202.87	85.83	..	..	..	-39.8	..	1
Guinea-Bissau	1986	0.43	23.78	193.86	85.65	..	..	..	2.2	..	0
Guinea-Bissau	1987	0.4	35.21	193.01	58.34	-28.31	..	100	-6.2	..	0
Guinea-Bissau	1988	0.49	44.7	196.75	62.56	45.88	60.28	..	-15.3	..	0
Guinea-Bissau	1989	0.48	38.98	204.58	67.07	7.06	80.79	..	-13	..	0
Guinea-Bissau	1990	0.48	29.93	213.85	56.91	10.87	33	100	-6.3	41.5	0
Guinea-Bissau	1991	0.63	30.99	216.86	62.32	-0.98	57.6	91.2	-17.5	43	0

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbalance	Crisk	Conflict
Guinea-Bissau	1992	0.4	48.4	212.19	61.84	-5.34	69.58	75.8	-21.7	40.5	0
Guinea-Bissau	1993	0.49	30.86	210.08	49.56	11.95	48.11	80.8	-13	37.5	0
Guinea-Bissau	1994	0.52	21.77	210.61	55.03	11.15	15.18	71.8	-8.4	37	0
Guinea-Bissau	1995	0.88	22.3	213.41	46.78	3.84	45.37	66.4	-1.4	44.5	0
Guinea-Bissau	1996	0.54	23.04	231.36	39.42	2.26	50.73	69.6	-12.2	44	0
Guinea-Bissau	1997	0.54	21.8	239.75	55.94	3.28	49.1	78.2	-5	43.8	0
Guinea-Bissau	1998	0.46	11.38	167.72	54.4	-40	6.5	81.3	-16.4	47	0
Guinea-Bissau	1999	0.58	16.8	176.04	69.96	1.28	-0.7	77.2	-10.1	43.3	0
Guinea-Bissau	2000	0.61	16	183.98	85.84	2.24	8.64	80.9	-10.9	45	0
Guinea-Bissau	2001	0.78	19.7	179.23	94.21	5.88	3.35	78.5	-11.7	48	0
Guinea-Bissau	2002	0.59	14.7	161.62	89.99	14.36	3.75	..	-12	47.25	0
Niger	1984	0.33	3.15	234.41	74.17		8.36	..	-4.9	..	0
Niger	1985	0.24	12.75	244.74	77.47		-0.92	..	-4.7	..	0
Niger	1986	0.26	11.6	252.28	56.45	1.75	-3.21	..	-4.7	..	0
Niger	1987	0.85	11.65	244.7	65.78	-20.99	-6.71	114.9	-3.7	..	0
Niger	1988	0.14	19.05	253.46	56.18	-2.42	-1.39	108	-5.1	..	0
Niger	1989	0.52	13.68	247.85	54.34	8.17	-2.81	101.1	-5.9	..	0
Niger	1990	0.59	8.1	236.99	53.34	8.92	-0.81	100	-7	47.5	0
Niger	1991	0.67	7.48	235.86	44.81	-4.41	-7.8	87.4	-3.6	46	1
Niger	1992	0.22	6.93	213.4	46.2	-2.64	-4.48	82.8	-4.7	45.5	1
Niger	1993	0.22	6.4	209.14	44.24	2.26	-1.22	79.3	-3.8	48	1
Niger	1994	0.78	10.39	210.02	41.25	0.74	36.04	55.2	-6.7	46.5	1
Niger	1995	0.55	7.32	208.14	41.47	4.09	10.56	62.1	-2.7	50	1
Niger	1996	0.39	9.65	207.88	43.36	4.42	5.29	65.5	-0.2	52.5	1
Niger	1997	0.4	10.86	206.11	41.41	4.64	2.93	65.7	-2.7	55.5	1
Niger	1998	0.4	11.26	219.69	43.9	3.66	4.55	67.2	-4.2	55.25	1
Niger	1999	0.38	10.22	211.06	37.43	4.46	-2.3	63.2	-5.1	59.3	1
Niger	2000	0.32	10.78	201.41	..	3.2	2.9	61.8	-2.7	61.8	1

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbalance	Crisk	Conflict
Niger	2001	0.6	11.51	209.04	..	3.45	4.01	..	-2.4	59.5	1
Niger	2002	0.47	12.76	208.86	..	3.33	2.63	..	-5.3	57.5	1
Nigeria	1984	0.27	9.53	216.44	144.66	-11.23	39.58	646.3	..	40.5	0
Nigeria	1985	0.31	8.97	230.32	130.28	19.85	7.44	686.1	..	43.5	0
Nigeria	1986	0.28	15.03	229.16	103.35	-3.9	5.72	374.5	..	42.5	0
Nigeria	1987	0.94	15.98	220.97	82.42	5.09	11.29	120.3	..	46.5	0
Nigeria	1988	0.9	18.01	235.92	76.7	12.85	54.51	121	..	49	0
Nigeria	1989	0.92	17.73	245.77	78.44	1.65	50.47	107.7	..	48	0
Nigeria	1990	0.96	14.74	258.45	79.73	7.62	7.36	100	..	51	0
Nigeria	1991	0.96	23.43	263.14	82.1	9.31	13.01	85.1	..	58	1
Nigeria	1992	0.94	21.8	263.11	81.95	-4.83	44.59	70.6	..	58	1
Nigeria	1993	0.94	23.29	261.18	78.1	1.16	57.17	77.3	..	55	1
Nigeria	1994	0.89	19.64	253.89	77.66	1.64	57.03	143.5	1.9	53	1
Nigeria	1995	0.97	16.34	252.62	86.47	4.59	72.81	121.6	9.9	49.5	1
Nigeria	1996	0.95	14.17	256.06	89.85	2.38	29.29	150.4	9.1	50.5	0
Nigeria	1997	0.95	17.45	255.85	93.39	0.93	8.21	172.7	1	59	0
Nigeria	1998	0.97	24.11	253.9	92.65	-5.43	10.32	189.4	-9.3	59.5	0
Nigeria	1999	0.99	22.27	250.31	92.23	2.14	4.76	96	-7.1	57	0
Nigeria	2000	1	17.7	254.63	94.35	3.54	14.52	98.4	6.8	59.3	0
Nigeria	2001	1	20.06	256.03	96.78	3.78	12.96	109.2	-1.5	57.3	0
Nigeria	2002	1	23.3	248.17	95.6		12.88	109.8	-5.8	51	0
Senegal	1984	0.24	12.85	552.28	84.14	-0.16	11.78	96.6	-4.4	55.5	1
Senegal	1985	0.24	10.47	557.15	72.96	1.71	13	105.7	-3.3	55	1
Senegal	1986	0.24	11.4	566.07	76.64	5.41	6.18	116.1	-2.2	55.5	1
Senegal	1987	0.24	12.47	572.25	74.6	8.93	-4.14	110.7	-1.4	58.5	1
Senegal	1988	0.3	12.72	584.54	72.32	9.93	-1.83	103.8	-1.1	61	1
Senegal	1989	0.23	11.85	560.19	76.03	-2.24	0.45	97.9	-2.1	56	1
Senegal	1990	0.25	13.8	567.21	75.76	3.86	0.33	100	-3	56.5	1

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbalance	Crisk	Conflict
Senegal	1991	0.28	12.52	549.2	73.95	-2.23	-1.75	93.7	2	57	0
Senegal	1992	0.24	14.41	547.16	71.68	4.45	-0.11	93.3	-1.8	58	0
Senegal	1993	0.21	13.66	521.58	70.66	-2.18	-0.59	91	-3.1	58.5	0
Senegal	1994	0.26	18.46	523.21	70.69	-4.78	32.29	58.8	-1.9	54	0
Senegal	1995	0.29	16.71	539.37	74.62	17.25	7.86	63.7	0	60.5	0
Senegal	1996	0.32	18.53	550.77	70.71	3.83	2.75	64.2	-0.1	61.5	0
Senegal	1997	0.34	17.85	563.12	74.9	3.3	1.58	59.9	0.5	63.75	0
Senegal	1998	0.27	19.77	578.6	79.48	7.78	1.16	61.2	-0.3	63.25	0
Senegal	1999	0.24	20.64	590.95	76.49	4.44	0.83	59.8	-1.4	62.5	0
Senegal	2000	0.26	18.52	608.06	73.03	6.73	0.73	56.2	0.1	62.5	0
Senegal	2001	0.25	18.12	626.3	72.12	5.13	3.07	57.3	-2	66.3	0
Senegal	2002	0.29	19.68	618.06	72.64	10.14	2.23	58.9	-1.3	65.5	0
Sierra Leone	1984	0.42	12.71	351.8	42.12	..	66.57	..	..	..	0
Sierra Leone	1985	0.29	10.92	326.23	47.3	..	76.58	..	-21	47.5	0
Sierra Leone	1986	0.38	10.64	323.32	55.53	..	80.87	..	-34.3	48.5	0
Sierra Leone	1987	0.5	10.19	339.28	46.3	..	178.7	132.4	-16.3	48	0
Sierra Leone	1988	0.65	5.89	308.41	37.96	..	34.29	154.6	-11.7	44.5	0
Sierra Leone	1989	0.65	8.33	303.75	52.24	..	60.8	134.2	-13	45	0
Sierra Leone	1990	0.75	10.03	306.86	39.2	..	111	100	-14.5	45	0
Sierra Leone	1991	0.7	9.33	306.86	54.09	-20.66	102.7	101.3	-10.4	33	1
Sierra Leone	1992	0.56	8.28	242.71	62.04	27.74	65.5	92.3	-9.1	26.5	1
Sierra Leone	1993	0.6	7.7	240.22	55.45	16.27	22.21	102.8	-7.4	33	1
Sierra Leone	1994	0.47	7.8	229.86	47.74	0.86	24.2	117.5	-5.5	34.5	1
Sierra Leone	1995	0.28	5.24	206.27	42.22	-2.96	25.99	106.1	-9.2	35.5	1
Sierra Leone	1996	0.54	8.96	213.67	49.24	1.40	23.14	107.1	-5.1	45	1
Sierra Leone	1997	0.79	5.01	172.08	28.74	..	14.95	122.8	-7	43.75	1
Sierra Leone	1998	0.78	5.6	166.89	9.25	..	35.53	105.4	-10.4	31	1
Sierra Leone	1999	0.45	4.35	150.24	6.71	..	34.09	123.2	-9.5	31	1

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbalance	Crisk	Conflict
Sierra Leone	2000	0.78	7.97	152.89	10.8	..	-0.84	111	-9.3	37.8	1
Sierra Leone	2001	0.9	6.06	157.94	15.81	..	2.09	122.9	-11.4	48.5	1
Sierra Leone	2002	0.86	8.77	164.62	19.47	..	-3.29	99.8	-10	52.3	1
Togo	1984	0.46	15.04	380.92	91.45	-18.25	-3.53	105.3	-2	50.5	0
Togo	1985	0.42	16.63	388.02	97.49	9.82	-1.81	100.8	-1.6	53.5	0
Togo	1986	0.51	18.83	380.61	109.95	4.88	4.12	108.6	-3.5	52	1
Togo	1987	0.47	17.64	369.94	107.61	0.78	0.05	109.4	-6.8	51	1
Togo	1988	0.51	16.03	382.39	110.5	6.14	-0.15	104.1	-3.3	53	1
Togo	1989	0.54	16.52	387.19	95.92	16.89	-0.84	96.7	-3.5	53	1
Togo	1990	0.47	26.57	377.52	94.91	13.78	1.02	100	-2.9	54.5	1
Togo	1991	0.51	17.11	366.5	91.45	5.22	0.39	95.1	-6.8	50.5	0
Togo	1992	0.48	15.71	344.03	80.88	2.82	1.39	96.6	-4.2	49	0
Togo	1993	0.45	7.48	285.54	74.7	-37.93	-1.01	93.2	-15.5	43	0
Togo	1994	0.5	15.04	320.94	60.11	24.45	39.16	62.1	-11.5	50	0
Togo	1995	0.33	16.13	338.43	69.85	24.38	16.43	72	-6.4	53	0
Togo	1996	0.3	18.77	358.87	79.14	2.67	4.69	73.7	-4.5	58	0
Togo	1997	0.31	16.29	363.25	79.56	2.85	8.25	75.4	0.8	59	0
Togo	1998	0.36	20.76	344.08	84.56	6.26	0.97	78.5	-5.2	60.25	0
Togo	1999	0.29	18.89	339.65	77.75	-0.93	-0.07	75.5	-3.4	60.3	0
Togo	2000	0.33	20.9	320.16	77.68	21.7	1.89	70.9	-5.4	58.5	0
Togo	2001	0.34	20.72	312.76	80.03	5.81	3.91	73.2	-2.1	61	0
Togo	2002	0.32	21.66	320.32	80.2	0.73	3.07	75.9	-1.6	59.3	0

4. Data for North Africa's Model

Countries	Period	I1	GCF	GDPCA	Trade	Indprod	Inflate	Exrate	Fbal.	Govern	Conflict	PPUI	GPRI
Table 5.2 and Table 5.3													
Algeria	1996	0.56	25.13	1522.00	53.64	88.7	18.68	55.8	2.9	-1.06	1	6.80	18.10
Algeria	1997	0.56	23.81	1513.30	55.41	82.3	5.73	61.2	2.4	-1.18	1	7.30	17.40
Algeria	1998	0.57	28.69	1565.60	55.00	89.7	4.95	64.2	-3.9	-1.29	1	7.60	19.00
Algeria	1999	0.57	27.81	1591.80	55.39	88.3	2.65	59.0	-0.5	-1.14	1	5.90	20.10
Algeria	2000	0.58	22.86	1606.70	57.99	86.8	0.34	57.6	9.9	-1.00	1	8.00	13.50
Algeria	2001	0.56	26.90	1624.40	60.16	86.0	4.23	59.2	6.4	-0.92	1	0.00	24.60
Algeria	2002	0.58	30.59	1664.80	61.43	84.5	1.42	54.6	5.3	-0.85	1	0.00	19.20
Egypt	1996	0.30	16.60	1065.80	48.31	120.4	..	126.9	-0.7	-0.22	0	5.50	10.50
Egypt	1997	0.28	18.16	1103.10	46.78	134.0	..	131.2	-0.3	-0.18	0	10.60	12.10
Egypt	1998	0.22	21.11	1131.40	45.54	144.7	..	156.3	-0.5	-0.15	0	11.30	12.30
Egypt	1999	0.27	20.52	1179.80	44.61	133.8	..	162.2	-3.6	-0.12	0	9.80	13.00
Egypt	2000	0.46	18.34	1216.60	44.93	127.3	..	174.1	-3.3	-0.08	0	7.50	14.10
Egypt	2001	0.29	16.94	1236.00	43.85	125.2	..	171.7	-4.5	-0.24	0	6.40	14.40
Egypt	2002	0.25	16.93	1250.20	44.68	125.2	..	166.7	-4.3	-0.39	0	6.10	16.10
Morocco	1996	0.18	19.58	1378.70	53.92	103.2	2.99	113.7	-3.5	-0.11	0	6.80	16.30
Morocco	1997	0.18	20.70	1325.20	60.19	107.5	1.04	114.7	-3.4	-0.01	0	7.10	17.30
Morocco	1998	0.18	22.16	1403.00	63.92	110.2	2.75	117.5	-2.7	0.10	0	6.50	19.30
Morocco	1999	0.18	23.12	1378.90	67.23	112.7	0.68	118.7	-4.7	0.11	0	..	20.70
Morocco	2000	0.17	23.70	1369.50	70.86	116.6	1.89	122.0	-6.2	0.11	0	..	20.70
Morocco	2001	0.17	22.89	1432.50	67.80	120.4	0.62	117.0	-0.8	0.02	0	..	21.20
Morocco	2002	0.16	22.71	1454.70	67.55	124.0	2.80	116.7	-3.4	-0.07	0	..	21.70
Tunisia	1996	0.23	25.06	2118.60	85.59	101.9	3.73	104.4	-4.9	0.05	0	11.00	12.20
Tunisia	1997	0.21	26.45	2203.40	88.81	108.2	3.65	104.3	-3.9	0.15	0	11.90	12.70
Tunisia	1998	0.21	26.91	2279.60	89.08	115.9	3.13	104.2	-2.5	0.25	0	11.60	13.20
Tunisia	1999	0.21	26.29	2386.20	87.22	122.5	2.69	105.3	-2.2	0.35	0	12.40	12.90
Tunisia	2000	0.20	27.28	2469.40	90.06	133.2	2.93	103.5	-2.9	0.46	0	12.50	13.80
Tunisia	2001	0.19	27.85	2560.00	91.01	144.1	1.92	100.9	-2.7	0.30	0	0.00	23.70
Tunisia	2002	0.19	25.20	2574.50	91.16	143.0	2.77	99.7	-2.5	0.14	0	0.00	24.20

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbal.	Crisk	Conflict
Aternative Model (Table B.2)											
Algeria	1984	0.54	35.16	1805.40	83.94	9.70	8.12	188.29	-8.8	55.0	0
Algeria	1985	0.54	34.57	1814.40	84.86	2.10	10.48	202.80	-9.7	59.0	0
Algeria	1986	0.54	33.56	1770.90	70.94	5.90	12.37	187.27	-12.8	55.0	1
Algeria	1987	0.56	27.56	1709.60	58.99	-0.20	7.44	166.79	-8.2	58.0	1
Algeria	1988	0.54	27.64	1648.00	60.87	-1.40	5.91	137.86	-13.7	53.0	1
Algeria	1989	0.55	30.07	1677.20	65.99	-4.90	9.30	118.15	-1.7	55.0	1
Algeria	1990	0.57	28.59	1647.90	62.44	3.50	16.62	100.00	3.6	59.5	1
Algeria	1991	0.55	31.84	1588.70	56.44	-0.70	25.89	59.59	1.7	58.5	1
Algeria	1992	0.55	30.76	1578.60	57.81	-5.60	31.67	60.82	-1.2	52.0	1
Algeria	1993	0.55	29.09	1509.60	56.42	-1.30	20.54	73.83	-8.6	53.5	1
Algeria	1994	0.56	31.20	1463.30	57.80	-4.40	29.05	64.64	-4.4	52.5	1
Algeria	1995	0.55	31.77	1488.40	57.90	-1.40	29.78	53.66	-1.4	54.5	1
Algeria	1996	0.56	25.13	1522.00	53.64	-8.70	18.68	55.77	2.9	59.0	1
Algeria	1997	0.56	23.81	1513.30	55.41	-3.80	5.73	61.22	2.4	60.5	1
Algeria	1998	0.57	28.69	1565.60	55.00	8.40	4.95	64.15	-3.9	56.5	1
Algeria	1999	0.57	27.81	1591.80	55.39	1.60	2.65	59.04	-0.5	52.5	1
Algeria	2000	0.58	22.86	1606.70	57.99	1.40	0.34	57.56	9.9	59.0	1
Algeria	2001	0.56	26.90	1624.40	60.16	-9.80	4.23	59.18	6.4	62.3	1
Algeria	2002	0.58	30.59	1664.80	61.43	5.30	1.42	54.59	5.3	63.8	1
Egypt	1984	0.48	27.48	856.97	63.58	..	17.04	..	..	52.0	0
Egypt	1985	0.55	26.68	890.33	61.60	..	12.11	..	..	49.5	0
Egypt	1986	0.42	23.71	891.19	54.58	..	23.86	..	..	41.0	0
Egypt	1987	0.33	26.08	891.46	48.52	..	19.69	137.00	-14.1	43.5	0
Egypt	1988	0.30	34.92	916.46	48.83	7.55	17.66	87.13	-15.0	43.5	0
Egypt	1989	0.28	31.78	939.75	49.90	6.88	21.26	90.00	-13.1	46.5	0
Egypt	1990	0.24	28.81	970.89	49.60	6.79	16.76	100.00	-12.1	47.5	0
Egypt	1991	0.44	21.17	959.85	50.09	5.84	19.75	96.29	-12.5	59.0	0
Egypt	1992	0.36	18.19	981.13	49.27	1.50	13.64	101.42	-3.1	65.5	0
Egypt	1993	0.40	16.22	988.64	51.54	2.90	12.09	108.68	-2.3	70.0	0
Egypt	1994	0.27	16.57	1007.30	48.98	4.18	8.15	112.56	-0.9	72.0	0
Egypt	1995	0.24	17.21	1034.00	49.95	7.69	15.74	118.87	-0.3	71.0	0
Egypt	1996	0.30	16.60	1065.80	48.31	7.51	7.19	126.87	-0.7	67.5	0
Egypt	1997	0.28	18.16	1103.10	46.78	8.37	4.63	131.23	-0.3	69.8	0
Egypt	1998	0.22	21.11	1131.40	45.54	7.84	4.18	156.26	-0.5	70.8	0
Egypt	1999	0.27	20.52	1179.80	44.61	9.67	3.08	162.25	-3.6	68.3	0
Egypt	2000	0.46	18.34	1216.60	44.93	7.85	2.68	174.09	-3.3	69.3	0
Egypt	2001	0.29	16.94	1236.00	43.85	4.48	2.27	171.68	-4.5	68.8	0
Egypt	2002	0.25	16.93	1250.20	44.68	4.18	2.74	166.68	-4.3	67.5	0
Morocco	1984	0.28	25.29	1127.30	42.29	4.31	12.45	123.69	-10.8	47.5	0

Countries	Period	I1	GCF	GDPCA	Trade	MVAgr	Inflate	Exrate	Fbal.	Crisk	Conflict
Morocco	1985	0.25	27.12	1172.70	41.50	7.08	7.73	115.49	-7.3	44.0	0
Morocco	1986	0.21	22.80	1242.90	39.32	1.20	8.73	110.36	-5.6	44.0	1
Morocco	1987	0.20	21.09	1185.80	42.52	3.08	2.70	107.36	-5.7	46.0	1
Morocco	1988	0.21	21.00	1282.10	45.67	5.95	2.37	105.90	-4.0	54.0	1
Morocco	1989	0.17	23.68	1285.60	45.88	-0.62	3.14	106.08	-6.0	57.0	1
Morocco	1990	0.16	25.29	1310.40	50.18	11.41	6.91	100.00	-0.6	55.5	1
Morocco	1991	0.17	22.62	1373.40	49.44	3.16	7.99	102.35	-1.0	55.5	0
Morocco	1992	0.16	23.21	1292.90	56.11	2.69	5.74	103.04	-2.3	68.5	0
Morocco	1993	0.16	22.46	1256.20	57.00	-0.94	5.18	105.91	-2.9	71.5	0
Morocco	1994	0.17	21.35	1361.90	52.81	3.79	5.14	109.26	-3.8	73.5	0
Morocco	1995	0.17	20.73	1250.10	61.50	3.70	6.12	112.80	-5.4	70.5	0
Morocco	1996	0.18	19.58	1378.70	53.92	2.93	2.99	113.73	-3.5	71.5	0
Morocco	1997	0.18	20.70	1325.20	60.19	3.39	1.04	114.74	-3.4	69.5	0
Morocco	1998	0.18	22.16	1403.00	63.92	2.07	2.75	117.51	-2.7	72.5	0
Morocco	1999	0.18	23.12	1378.90	67.23	2.70	0.68	118.72	-4.7	72.0	0
Morocco	2000	0.17	23.70	1369.50	70.86	3.51	1.89	122.04	-6.2	67.8	0
Morocco	2001	0.17	22.89	1432.50	67.80	4.23	0.62	117.02	-0.8	71.8	0
Morocco	2002	0.16	22.71	1454.70	67.55	3.29	2.80	116.66	-3.4	72.8	0
Tunisia	1984	0.40	35.90	1728.70	83.05	6.52	8.90	144.44	-1.8	49.0	0
Tunisia	1985	0.39	30.16	1771.70	73.24	3.88	7.25	143.44	-2.0	49.0	0
Tunisia	1986	0.26	26.60	1691.80	75.07	-0.91	6.16	122.70	-2.0	46.5	0
Tunisia	1987	0.24	23.48	1760.10	73.13	2.29	8.23	106.15	-1.4	50.0	0
Tunisia	1988	0.20	20.71	1722.60	86.74	3.91	7.20	104.19	0.0	56.5	0
Tunisia	1989	0.22	23.91	1730.40	93.64	19.06	7.74	102.83	-3.4	58.0	0
Tunisia	1990	0.20	32.50	1823.30	93.46	-21.90	6.55	100.00	-4.6	58.5	0
Tunisia	1991	0.20	32.06	1857.10	86.83	3.94	8.19	102.49	-5.2	55.5	0
Tunisia	1992	0.21	34.30	1961.50	88.60	6.46	5.82	104.63	-3.0	68.5	0
Tunisia	1993	0.21	29.25	1965.90	89.33	4.93	3.97	100.72	-2.8	69.0	0
Tunisia	1994	0.21	24.50	1994.30	93.28	3.42	4.73	101.47	-2.1	69.0	0
Tunisia	1995	0.21	24.77	2007.90	93.38	9.57	6.24	103.73	-4.2	72.5	0
Tunisia	1996	0.23	25.06	2118.60	85.59	2.78	3.73	104.41	-4.9	73.0	0
Tunisia	1997	0.21	26.45	2203.40	88.81	7.49	3.65	104.30	-3.9	73.3	0
Tunisia	1998	0.21	26.91	2279.60	89.08	4.30	3.13	104.21	-2.5	72.5	0
Tunisia	1999	0.21	26.29	2386.20	87.22	5.64	2.69	105.27	-2.2	72.5	0
Tunisia	2000	0.20	27.28	2469.40	90.06	6.60	2.93	103.46	-2.9	72.5	0
Tunisia	2001	0.19	27.85	2560.00	91.01	6.91	1.92	100.94	-2.7	72.8	0
Tunisia	2002	0.19	25.20	2574.50	91.16	1.88	2.77	99.73	-2.5	72.0	0

5. Growth Accounting and TFP Models

Countries	Period	GDP	Labour	TFP	I1	Human	Exports	Credit1	Credit2	Conflict
Benin	1981-1985	429.73	1.78	27.40	0.35	18.16	93.41	28.65	27.95	0
Benin	1986-1990	481.37	2.01	25.71	0.47	11.89	73.82	25.14	26.56	0
Benin	1991-1995	556.08	2.31	24.67	0.60	14.06	90.80	11.37	12.14	0
Benin	1996-2000	708.49	2.65	25.36	0.60	19.98	92.04	9.02	8.07	0
Botswana	1981-1985	4.84	0.44	4.05	..	29.02	3.01	12.25	..	0
Botswana	1986-1990	8.14	0.52	4.98	..	42.73	5.17	7.85	..	0
Botswana	1991-1995	11.36	0.62	5.08	..	55.74	5.67	13.26	..	0
Botswana	1996-2000	14.59	0.71	5.22	..	70.49	7.49	12.45	..	0
Burkina Faso	1981-1985	696.20	4.03	15.89	0.48	4.45	78.69	12.91	12.41	0
Burkina Faso	1986-1990	836.19	4.43	17.44	0.50	7.16	80.92	15.00	10.99	0
Burkina Faso	1991-1995	964.10	4.86	18.31	0.59	8.24	87.87	9.26	7.96	0
Burkina Faso	1996-2000	1183.90	5.35	19.94	0.61	9.69	90.76	10.20	11.48	0
Burundi	1981-1985	96.42	2.45	6.76	0.54	3.57	11.76	10.65	23.96	0
Burundi	1986-1990	120.02	2.79	6.83	0.74	5.62	12.31	11.21	24.61	0
Burundi	1991-1995	126.78	3.14	6.30	0.67	6.49	17.87	17.57	20.89	0
Burundi	1996-2000	106.97	3.53	4.70	0.79	8.05	25.15	19.96	28.55	1
Cameroon	1981-1985	1913.12	3.94	26.93	0.29	22.84	589.52	28.28	24.93	0
Cameroon	1986-1990	2163.16	4.46	24.40	0.42	27.96	676.71	25.29	26.64	0
Cameroon	1991-1995	1793.64	5.13	18.45	0.39	27.47	620.22	14.15	26.39	0
Cameroon	1996-2000	2056.22	5.87	19.72	0.43	25.89	797.11	8.34	16.71	0
Cape Verde	1981-1985	6.81	0.10	6.38	0.52	13.37	..	..	..	0
Cape Verde	1986-1990	8.92	0.12	6.27	0.64	20.60	..	16.59	32.02	0
Cape Verde	1991-1995	10.80	0.14	6.28	0.47	30.99	..	23.48	49.98	0
Cape Verde	1996-2000	14.62	0.17	7.19	0.43	59.78	..	30.50	57.89	0
CAR	1981-1985	346.63	1.29	22.14	0.38	16.05	..	11.51	20.08	0
CAR	1986-1990	373.01	1.41	22.39	0.47	11.74	..	7.66	13.39	0
CAR	1991-1995	361.36	1.54	20.45	0.50	9.92	..	4.71	13.56	1
CAR	1996-2000	362.35	1.58	20.43	0.52	9.81	..	4.22	12.68	0
Chad	1981-1985	479.60	2.40	27.22	0.84	6.19	94.09	11.94	14.97	1
Chad	1986-1990	626.08	2.70	30.44	0.78	7.82	128.52	12.79	16.87	1
Chad	1991-1995	710.88	3.06	29.90	0.79	8.97	131.17	4.95	12.59	0
Chad	1996-2000	784.76	3.57	27.73	0.80	10.59	136.06	3.47	10.72	0
Comoros	1981-1985	58.58	0.16	29.40	0.75	28.15	7.15	12.55	16.76	1
Comoros	1986-1990	65.80	0.18	27.56	0.69	17.50	10.14	12.96	16.82	1
Comoros	1991-1995	69.03	0.21	24.93	0.76	18.97	15.77	14.66	19.30	1
Comoros	1996-2000	72.96	0.24	23.70	0.73	23.85	12.04	11.91	14.88	0
Congo, R.	1981-1985	381.26	0.84	27.71	0.65	75.39	146.76	18.89	21.27	0
Congo, R.	1986-1990	397.74	0.98	23.43	0.78	52.95	173.21	21.08	30.63	0

Countries	Period	GDP	Labour	TFP	I1	Human	Exports	Credit1	Credit2	Conflict
Congo, R.	1991-1995	420.70	1.14	20.39	0.88	54.21	179.49	11.25	23.17	0
Congo, R.	1996-2000	450.80	1.34	18.43	0.73	51.74	255.71	8.17	16.33	1
Côte d'Ivoire	1981-1985	5042.30	3.61	82.78	0.33	19.68	1530.24	39.12	45.81	0
Côte d'Ivoire	1986-1990	5293.20	4.21	75.07	0.33	22.04	1651.16	36.30	44.98	0
Côte d'Ivoire	1991-1995	5438.34	5.06	68.50	0.37	22.92	1687.80	26.75	37.65	0
Côte d'Ivoire	1996-2000	6690.24	5.99	72.00	0.35	23.12	1950.72	15.81	24.14	1
Ethiopia	1981-1985	10.81	18.37	0.61	..	12.63	1.15	13.85	43.61	1
Ethiopia	1986-1990	12.29	21.32	0.59	..	14.25	1.38	16.89	56.17	1
Ethiopia	1991-1995	12.35	23.99	0.53	..	11.46	1.13	13.36	54.64	1
Ethiopia	1996-2000	16.18	26.47	0.61	..	14.08	1.85	25.18	53.04	1
Gabon	1981-1985	1304.50	0.39	77.54	0.62	..	480.22	17.19	16.48	0
Gabon	1986-1990	1304.04	0.44	69.77	0.63	..	538.84	20.74	30.64	0
Gabon	1991-1995	1548.12	0.50	76.71	0.86	..	801.94	10.13	19.72	0
Gabon	1996-2000	1820.76	0.55	82.71	0.78	47.21	848.14	9.03	17.82	0
Gambia	1981-1985	1.39	0.36	1.54	0.47	16.19	1.00	23.88	61.22	0
Gambia	1986-1990	1.65	0.43	1.50	0.32	18.81	0.87	12.18	13.68	0
Gambia	1991-1995	1.93	0.53	1.46	0.35	22.68	1.07	10.33	5.87	0
Gambia	1996-2000	2.25	0.62	1.45	0.38	31.02	1.07	11.34	11.11	0
Ghana	1981-1985	5.13	5.79	0.12	0.40	39.55	0.51	2.10	20.84	0
Ghana	1986-1990	6.29	6.79	0.11	0.46	36.44	0.66	4.14	22.31	0
Ghana	1991-1995	7.83	7.74	0.09	0.42	35.90	0.97	4.75	19.12	0
Ghana	1996-2000	9.64	8.90	0.09	0.41	35.43	1.67	10.02	28.05	0
Guinea-Bis.	1981-1985	0.70	0.42	0.13	0.38	9.04	0.05	..	..	1
Guinea-Bis.	1986-1990	0.82	0.47	0.14	0.45	9.28	0.05	18.54	40.53	0
Guinea-Bis.	1991-1995	0.99	0.53	0.15	0.58	11.42	0.09	11.67	9.33	0
Guinea-Bis.	1996-2000	1.07	0.61	0.15	0.55	14.35	0.18	7.83	10.63	0
Kenya	1981-1985	71.78	8.78	1.82	0.36	21.27	17.47	30.16	46.99	0
Kenya	1986-1990	90.58	10.48	1.97	0.31	24.12	22.68	30.68	50.59	0
Kenya	1991-1995	102.40	12.44	1.92	0.27	26.04	32.47	33.39	53.96	1
Kenya	1996-2000	115.60	14.62	1.87	0.27	28.61	31.75	31.96	50.50	0
Lesotho	1981-1985	1.92	0.57	1.83	..	23.28	0.29	13.57	30.27	0
Lesotho	1986-1990	2.43	0.62	1.86	..	25.30	0.40	14.87	36.77	0
Lesotho	1991-1995	3.14	0.66	1.88	..	27.48	0.61	19.18	8.51	0
Lesotho	1996-2000	3.86	0.70	1.91	..	31.46	1.03	16.99	..	0
Liberia	1981-1985	1.21	0.86	0.85	0.57	..	..	8.44	46.49	1
Liberia	1986-1990	1.19	0.88	0.86	0.48	..	..	8.09	52.18	1
Liberia	1991-1995	1.17	0.91	0.90	0.59	..	..	8.39	58.06	1
Liberia	1996-2000	1.15	0.92	0.96	0.73	..	..	8.26	64.39	1
Madagascar	1981-1985	1682.00	4.62	28.52	0.44	..	233.16	18.98	41.89	0
Madagascar	1986-1990	1842.56	5.20	29.04	0.37	18.05	247.50	17.63	34.54	0

Countries	Period	GDP	Labour	TFP	I1	Human	Exports	Credit1	Credit2	Conflict
Madagascar	1991-1995	1886.12	5.88	26.86	0.29	16.04	303.65	15.46	27.25	0
Madagascar	1996-2000	2140.14	6.86	26.58	0.26	14.99	363.25	9.27	15.04	0
Malawi	1981-1985	8.53	3.40	1.17	0.52	6.02	2.23	17.65	42.01	0
Malawi	1986-1990	9.73	3.95	1.22	0.61	7.74	2.62	10.28	28.61	0
Malawi	1991-1995	11.14	4.35	1.30	0.66	11.71	2.96	10.91	24.26	0
Malawi	1996-2000	13.85	4.76	1.59	0.62	17.29	3.86	6.18	10.33	0
Mali	1981-1985	572.78	3.60	20.42	0.56	6.33	78.83	18.08	31.15	0
Mali	1986-1990	611.54	4.05	18.09	0.66	6.96	99.78	14.35	19.28	0
Mali	1991-1995	702.55	4.54	16.94	0.65	9.20	139.32	11.41	12.23	0
Mali	1996-2000	858.80	5.06	17.69	0.65	12.62	233.52	15.70	13.76	0
Mauritius	1981-1985	39.91	0.37	15.36	0.53	48.58	18.03	24.60	64.33	0
Mauritius	1986-1990	54.75	0.41	18.06	0.39	52.90	32.22	33.06	52.10	0
Mauritius	1991-1995	72.59	0.46	19.39	0.32	58.54	44.46	43.23	61.33	0
Mauritius	1996-2000	93.36	0.50	20.82	0.31	71.32	58.79	56.36	75.24	0
Mozambique	1981-1985	15695.00	7.11	181.82	0.22	7.25	1792.44	55.63	80.85	1
Mozambique	1986-1990	16392.60	7.44	173.60	0.29	7.63	1319.68	25.93	33.11	1
Mozambique	1991-1995	19412.80	7.90	182.55	0.39	7.03	2648.06	13.91	7.48	0
Mozambique	1996-2000	27670.80	8.81	215.10	0.39	10.01	4779.24	14.68	4.97	0
Namibia	1981-1985	8.82	0.46	4.34	..	..	3.95	..	..	1
Namibia	1986-1990	9.61	0.54	4.22	..	43.79	4.49	22.57	20.29	1
Namibia	1991-1995	11.74	0.65	4.40	..	58.15	5.70	38.93	43.24	0
Namibia	1996-2000	14.11	0.74	4.45	..	60.16	6.40	46.09	50.34	1
Niger	1981-1985	677.06	3.04	19.73	0.39	5.40	154.86	16.93	19.46	0
Niger	1986-1990	699.60	3.51	19.00	0.47	6.61	132.84	14.91	17.68	0
Niger	1991-1995	715.36	4.05	18.28	0.49	6.56	130.14	9.23	12.46	1
Niger	1996-2000	828.65	4.74	19.47	0.38	6.64	160.95	4.05	9.36	1
Nigeria	1981-1985	104.70	32.11	1.05	0.29	34.00	30.69	16.74	42.61	0
Nigeria	1986-1990	121.05	36.61	1.04	0.80	24.88	34.79	13.47	33.20	0
Nigeria	1991-1995	151.59	41.71	1.14	0.94	30.24	44.34	10.45	27.52	1
Nigeria	1996-2000	171.29	47.83	1.13	0.97	30.30	57.48	11.87	14.70	0
Rwanda	1981-1985	477.48	2.92	29.97	0.55	6.28	52.33	6.45	7.39	0
Rwanda	1986-1990	532.73	3.44	26.28	0.71	8.00	63.98	8.19	14.15	0
Rwanda	1991-1995	432.15	3.48	19.99	0.60	12.74	36.02	7.08	17.51	1
Rwanda	1996-2000	468.34	3.78	20.17	0.51	12.41	34.43	8.59	12.35	1
Senegal	1981-1985	1220.84	2.74	29.24	0.26	13.86	304.07	39.95	51.95	1
Senegal	1986-1990	1416.70	3.12	31.22	0.25	16.24	349.99	28.98	39.12	1
Senegal	1991-1995	1520.62	3.54	30.18	0.25	16.17	385.28	22.61	29.37	0
Senegal	1996-2000	1872.84	4.01	32.49	0.28	16.56	549.44	17.39	23.59	0
Sierra Leone	1981-1985	95.49	1.31	9.69	0.35	17.78	25.29	5.80	47.96	0
Sierra Leone	1986-1990	96.93	1.44	9.30	0.59	17.31	25.82	3.95	30.26	0

Countries	Period	GDP	Labour	TFP	I1	Human	Exports	Credit1	Credit2	Conflict
Sierra Leone	1991-1995	84.12	1.60	7.81	0.52	17.12	25.10	3.08	36.76	1
Sierra Leone	1996-2000	66.01	1.80	6.09	0.67	16.51	4.43	2.53	53.60	1
South Africa	1981-1985	486.66	11.26	7.14	0.43	..	84.53	66.70	88.64	1
South Africa	1986-1990	508.63	12.94	6.66	0.34	74.29	94.25	76.05	95.02	1
South Africa	1991-1995	524.57	14.59	6.32	0.36	86.31	111.05	111.06	131.46	1
South Africa	1996-2000	595.50	16.55	6.47	0.13	89.99	149.10	126.15	146.57	0
Swaziland	1981-1985	0.75	0.22	1.42	..	39.25	0.47	23.11	20.09	0
Swaziland	1986-1990	1.08	0.25	1.64	..	44.27	0.83	17.88	12.01	0
Swaziland	1991-1995	1.41	0.30	1.65	..	50.86	1.04	22.63	6.08	0
Swaziland	1996-2000	1.67	0.36	1.72	..	54.42	1.28	15.67	..	0
Togo	1981-1985	189.73	1.20	11.10	0.45	21.16	98.48	23.65	26.51	0
Togo	1986-1990	214.00	1.38	11.30	0.50	23.56	108.84	24.02	24.24	1
Togo	1991-1995	210.54	1.54	10.24	0.45	24.27	88.95	23.66	23.99	0
Togo	1996-2000	251.71	1.76	11.42	0.32	32.42	105.47	17.96	24.34	0
Zambia	1981-1985	2164.94	2.62	93.94	0.43	19.47	860.17	18.51	70.73	0
Zambia	1986-1990	2292.70	3.01	94.50	0.77	24.08	736.69	9.55	57.02	0
Zambia	1991-1995	2300.02	3.49	93.02	0.82	26.35	726.08	6.69	58.91	0
Zambia	1996-2000	2400.98	3.99	94.80	0.62	25.59	844.83	8.09	60.18	1
Zimbabwe	1981-1985	16.30	3.63	1.78	0.25	41.63	3.62	21.03	43.14	0
Zimbabwe	1986-1990	19.20	4.43	1.84	0.25	49.53	4.53	18.27	40.76	0
Zimbabwe	1991-1995	21.95	5.10	1.79	0.30	47.43	6.91	29.40	45.13	0
Zimbabwe	1996-2000	25.84	5.62	1.91	0.30	44.84	10.52	32.41	54.33	0

Notes: GDP = Gross domestic product in local currency units (1995=100, in Billions), WDI 2004
Labour = Labour force, numbers in Millions, WDI 2004; TFP = Total factor Productivity (derived)
I1 = Normalized Hircshman Index; Human = Secondary School Enrollment (% Gross), WDI 2004
Exports =exports of goods and services, in local currency unit (1995=100, in Billions), WDI 2004
Credit1= Domestic credit to private sector (% of GDP), WDI 2004
Credit2 = Domestic credit provided by banking sector (% of GDP), WDI 2004