

# Diversification and Growth



The presentation in the previous chapter has painted a varied picture of the results of Africa's efforts to diversify its economies. At the same time, regional differences between Africa, Asia and Latin America were compared. The question then becomes why some countries or regions achieved breakthrough in their diversification efforts while others did not? Identifying the determinants of diversification is one part of solving this puzzle. Linking these policy instruments to growth and development outcomes through growth is the other part of the puzzle. This chapter is about fitting both parts of the puzzle together.

In discussing the empirical evidence on determinants of diversification for Africa, the underlying motivation is to deepen diversification through the use of appropriate policies. The policy options open could be economic or non-economic. In this regard, the presentation emphasizes physical, policy, macroeconomic and institutional factors that influence diversification outcomes. Those that could deepen diversification are separated from the policy options which, rather than deepening diversification, lead to specialization.

The second part of the chapter addresses the second part of the puzzle. It focuses on the evidence that links diversification to economic growth. Through total factor productivity (TFP) growth, countries will be able to deepen international trade capacity, but also significantly reduce poverty by raising their economic growth rates. The chapter concludes by tying national diversification regimes to the established link between diversification and economic growth.

*“Diversification and policy variables constitute a two-way process in that diversification not only influences policy outcomes, but is itself influenced by policy variables”*

## 5.1 Determinants of diversification in Africa

Diversification and policy variables constitute a two-way process in that diversification not only influences policy outcomes, but is itself influenced by policy variables. This proposition naturally leads to the search for those economic and non-economic policy actions that are likely to affect the level and rate of diversification in a country. What evidence is there that links economic and non-economic variables with national capacity to diversify?

Do more investments and higher income deepen diversification? Does the diversification process in Africa follow the two stages described in Imbs and Wacziarg (2003), suggesting that there is a turning point where diversification deepens as investment

and income rise and economic specialization sets in? Are increases in trade and promotion of industrial products also significant determinants of diversification? Given the centrality of macroeconomic stability in the policy discourse over the last three decades, do macroeconomic variables such as competitive exchange rates deepen diversification? What about the balance on government budget and inflation?

Obviously, the answer to these questions depend to a large extent on whether the deficit is driven by expenditure that has a direct impact on the productive capacity of the economy. On the other hand, where deficits result from recurrent spending such as fiscal policy they could undermine the diversification process. What are the results for African countries with regard to this? In terms of inflation, a key question is whether its level falls within that band where it is not injurious to growth. Moderate but stable inflation might not slow down diversification. Is it also possible that political violence and civil conflicts have proved counter-productive by slowing down economic growth, and therefore impeding diversification? How much does good governance and a good investment climate help in deepening diversification? Table A5.1 shows results obtained from aggregate African data in seeking answers to these questions (see Ben Hammouda et al. 2006a for details). The key findings are discussed below.

### **Investment is vital for an economy to diversify**

The inverse relationship between investment and the diversification index shown in table A5.1 indicates that as the level of investments increases, there is a tendency for economies to become more diversified. The smaller the diversification index gets, the more diversified an economy becomes, and vice-versa for specialization. Unless a country commits a sufficient portion of its national income to building capital stock, it is unlikely to be able to diversify. Investment as measured by gross fixed capital formation turns out to be a key determinant to Africa's diversification results.

In other words, the totality of public and private investments in accumulating capital stock is vital to the process of diversification. Although total investment has a positive impact on diversification, this is only possible if public investment crowds in rather than crowds out private investment.<sup>1</sup> It is important to emphasize this caveat because it may not be the case at the country level that public investment crowds in private investment. Where fiscal policy rather than monetary policy is the major driver of the mix between public and private investment, the expected outcome of investment leading to deepening diversification may not always be guaranteed if public investment is not supportive of the productive sectors.

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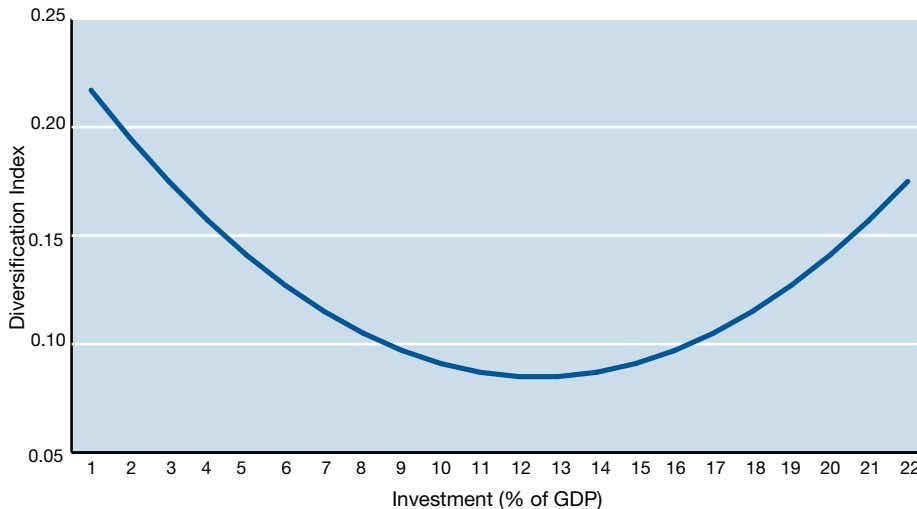
<sup>1</sup> There is abundant empirical evidence that public investments have a crowding-in effect on private investments. The crowding-out factor is a concern usually when there is competition for domestic credit between the public and private sectors.

## Insufficient investments in Africa have hindered the deepening of diversification

Using the results for Africa shown in table A5.1, it is possible to compute what one could call a turning point in the relationship between investment and diversification. This turning point ought to occur at that point of the diversification measure where the index is lowest. It is important to recall that the lower the index, the deeper the diversification. Therefore, a country ought to undertake investment in such a way that this turning point occurs where deep diversification has been attained. From the results seen, this turning point occurs at an index point that is not sufficient for deep diversification to be achieved and sustained. The low level of investment that African countries have undertaken over the last two decades and a half explain these unsatisfactory results. As figure 5.1 shows, the turning point for an average African economy occurs at an investment point of only 12.5 per cent of GDP. This level of investment has not been sufficient to shift the turning point to a deep enough diversification level.

“ Deepening diversification may not always be guaranteed if public investment is not supportive of the productive sectors ”

**Figure 5.1**  
*Empirical relationship between diversification and investment in African economies*



**Source:** Ben Hammouda et al. 2006a.

Only a very low proportion of income has been invested to lead to an early turning point in the two-stage diversification process for African countries. This early turning point coincides with the failure to attain deep diversification in Africa. The South-East Asian economies on the other hand, have been investing more than twice the average level of investment by African economies. This has not only supported their galloping economic growth rates in the 1980s to the present but explain why

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the Asian NIEs are more diversified than those in Africa. The African economies need to invest more on the basis of these results so that the relationship between diversification and investment in figure 5.1 could be shifted both downwards and to the right, allowing the turning point to occur when deeper diversification has been achieved.

While increasing the level of investment helps promote diversification, the sectoral allocation of investment is also crucial. To boost diversification, governments should therefore design incentive mechanisms to encourage investment in new activities. At the same time, public investment in infrastructure must receive priority, which will in turn crowd in private investment.

### **Faster economic growth could assist in diversification efforts**

The results for Africa, shown in table A5.1, suggest further that as income per capita increases, there is a tendency for African economies to experience improvement in their diversification processes. This is a very significant result and it 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. African countries also fit into this theory of the U-shaped stages of diversification.

The results in table A5.1 related to income provide some evidence that African countries have shown consistency with the two stages of diversification. The first stage is one of increased diversification and is explained in the same way portfolio theories in finance are used to explain the character of investors, who diversify their portfolio holdings in order to minimize risk exposure (Acemoglu and Zilibotti 1997). In the same way, economies through the first stage of diversification would be expected to minimize the effects of possible shocks to the economy by avoiding over-reliance on one particular sector. For this first stage to be beneficial to the economy in the long run, it must result in deep diversification. Only after attainment of deep diversification would the second stage that tends towards specialization not lock an economy into a low-income equilibrium.

Unfortunately, the transition point between the two stages for African countries has been at a low per capita income equilibrium. Other studies (e.g. Imbs and Wacziarg 2003) report the turning points of other countries. These points are all higher than the one estimated for Africa. For example, Singapore's occurred at \$2,500 per capita income, while for Cyprus it occurred at \$5,800. Ireland on the other hand experienced this turning point at a per capita income of \$7,000. All these countries are now considered developed countries. Indeed, for meaningful results, the benchmark per capita income is approximately \$9,000 if the two-stage diversification process is to yield lasting and positive development results.

It is not surprising then that the turning point for Africa at a mere \$ 1,667 did not occur at a point when deep diversification had been achieved.<sup>2</sup> If the diversification process in Africa is to lead to sustainable development, sustained high levels of economic growth that shift the U-curve downwards and to the right must be achieved. In making this argument, it is also recognized that the causal relationship between per capita income and diversification goes both ways.

### **There can be little diversification without an optimal trade policy**

The trade policy question and its role in economic growth and development continues to dominate much of the debate in this era of globalization. This debate has intensified since evidence from various authors have queried, for instance, the role of trade liberalization in economic growth in developing countries (see Rodrik and Rodriguez 1999). Such debate is relevant for Africa because the evidence in table A5.1 suggests that trade openness does not necessarily lead to deepening of diversification. Is it possible that trade openness, rather than encouraging Africa to diversify, actually supports a concentration or specialization process? As conventional trade theory postulates, in a world where there are no barriers, countries would specialize in those goods and services for which they have comparative advantage. Thus, countries would have export concentration rather than diversification.

The inconclusive results could be explained by the interaction between per capita income and openness in influencing the turning point in the two stages of diversification.<sup>3</sup> The lesson from these results is that at a certain stage in the diversification process, the portfolio motive for diversification ceases to dominate the comparative advantage considerations.

The key lesson from these results is that trade openness has affected diversification in Africa and there is merit in having an optimal trade policy. The results suggest that rapid liberalization may actually limit an economy's capacity to diversify. This then raises the possibility that for strategic reasons, the speed towards openness could be dictated by whether a country is seeking a more diversified or a more specialized economy. This should not be surprising as the decomposition of the components of openness is made up of two opposing effects. First, there are exports that favour specialization. Second, there is the imports competition component, which would be more supportive of the diversification process. Consequently, the evidence seen for African countries indicates that the export growth effect leading to specialization more than offsets the diversification process that import competition would support.

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2 As Imbs and Wacziarg (2003) have empirically shown, the turning point also depends on interaction effects of income and factors such as openness.

3 See Imbs and Wacziarg (2003) for further discussion of this interaction effect.

## **The development model should determine the optimal trade policy**

The two-stage diversification process from economic history has been registered both in open and closed economies. The difference between the two is that the turning point after reasonable and sustainable development has been achieved occurs at a much earlier point for open economies compared to the case for closed economies. In fact, countries that went through a minimum level of specialization relatively early tended to be substantially more open to trade, on average by 15 percentage points (Imbs and Wacziarg 2003). They showed that the turning point occurred at a per capita income level of \$5,405 for an average openness of 78 per cent for open economies while it occurs much later in the development process at a per capita income of \$9,161 for an average openness of 47.4 per cent for closed economies. Thus, depending on which 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 turning point more optimal and as such be comfortable with an aggressive trade-openness policy.

Hence, these results simply add weight to the arguments made by proponents of gradualism in trade liberalization, especially for 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 to pursue policies conducive to diversification through industrialization. This argument is even more relevant for those economies that are commodities-dependent in their export base. These results reinforce to some extent the argument that calling for policy space is a good approach. Calls for such space from multilaterally imposed policies are not misplaced when viewed in the context of strategic trade policy.

## **Industrialization strategies still have a place in Africa**

Industrial production at the continental level was found to lead to deepening of diversification. Taking industrial production as a proxy for industrialization, this fits within the established theoretical development process whereby a country moves from specialization through industrial deepening before starting to specialize again.

## **Macroeconomic stance is crucial to diversification outcomes**

An important aspect of the diversification debate and of Africa's experience has to do with the role that macroeconomic policy plays. This has also been investigated at

the continental level in the results that are presented in table A5.1. Two important indicators of macroeconomic stability, depending on the macroeconomic policy in operation, are inflation and real effective exchange rates and these are found to be among the most critical determinants of diversification outcomes in Africa.

### ***High levels of inflation damage diversification***

High levels of inflation damage diversification prospects and the tendency under such circumstances is for increased concentration with little opening-up to new export sectors. This 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 the competition on 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 fosters other determinants of diversification so that they have significant impact. Ordinarily, it is reasonable to expect that high inflation could lead to diversification as an economy diversifies away from sector-specific income shocks. Due to incomplete markets, economies can be led to diversify for insurance purposes, and to specialize again as financial markets deepen (Saint-Paul 1992).

### ***Effects of the exchange rate depend on existing export potential***

The exchange rate affects diversification prospects as there is a significant relationship between the two. The positive relationship between the exchange rate and the diversification index suggests that a depreciating currency is not always supportive of diversification efforts. These results might appear to be counter-productive in the sense that depreciation underpinned by appropriate macroeconomic fundamentals should support increases in existing exports and ease potential exportables into new markets. Such a result supposes two elements. First, it pre-supposes that the country already has this export potential and that the depreciation has the price effect of making the exports cheaper for the foreign markets. It further assumes price-elastic export demand. 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. The positive relationship between the two 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 create an environment that is not conducive for diversification. The implication of the results for

“ Depreciation does not lead to deepening of diversification ”

inflation and the exchange rate is that macroeconomic stability is crucial for the emergence of a diversified economy.

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*Macro stability plays a role for the success of diversification efforts*  
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### **Fiscal space is critical for diversification**

The positive but insignificant result for the impact of fiscal balance on diversification shows that macro stability plays a role for the success of diversification efforts. At the same time, a proactive fiscal policy, especially in terms of promoting public investment, can support efforts towards diversification. In that respect, the results with regard to fiscal balances and diversification suggest that a conservative economic policy, or fiscal conservatism for that matter, may not be good for a country that is planning to achieve a diversified economy. It should be noted that expansionary fiscal policies are only as good for diversification as the absorptive capacity of the economy and the requisite fiscal discipline that ensures that fiscal spending is directed at building economic production capacities.

The success of an expansionary fiscal policy, assuming an optimal tax regime, depends to a large extent on the way the deficit is financed.<sup>4</sup> Financing options such as domestic borrowing (assuming an illiquid money market) or using credit from the central bank are likely to have the undesirable effect of putting pressure on domestic interest rates. This situation would undermine the investments that are important to diversification. Yet, where domestic money markets are liquid with minimal risk of crowding out private investments, public investment expenditure can be expanded through domestic borrowing that allows for higher fiscal deficits without any detrimental effects on the economy.

### **It is not just a matter of policy as institutions matter in diversification efforts**

Governance is one of the variables that capture the part that institutions play and it emerges as strongly significant. In fact, in absolute terms, looked at from the regional level, governance has stronger marginal effects compared to other variables in our investigations. 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. The interaction of governance and other variables such as per capita income and investments may drive the diversification process more than individual effects. Just as openness can interact with per capita income to determine the turning point in the two stages of diversification, it is also possible that the interaction of governance and the other variables is critical.

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<sup>4</sup> 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).

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 in determining the extent of diversification. It is not surprising that conflict, which is associated with deterioration in governance, stifles diversification (box 5.1). The relationship between conflict and diversification, even though weakly significant, indicates a critical influence on diversification. Intuitively, one would expect the impact of conflict on diversification to imply that escalation of conflict leads to reduced capacity to diversify and this is what the continental assessment indicates.

“ Good governance enables economies to deepen diversification ”

### Box 5.1

#### *Conflict and diversification: the cases of Burundi and Rwanda*

The cases of Burundi and Rwanda offer a clear illustration of the various channels through which conflict undermines economic diversification. These countries have experienced several episodes of civil wars, the most devastating being the 1994 genocide in Rwanda and the war that erupted after the bloody military coup of October 1993 in Burundi. These two countries illustrate the extent to which conflict not only causes an immediate collapse of the production base but also has severe long-term negative effects on the country's diversification process.

Conflict undermines diversification through various channels. First, conflict destroys economic activity in all sectors, especially trade-oriented activities and those that are heavily dependent on skilled labour and technology, such as manufacturing. Both in Burundi and Rwanda, the manufacturing sector suffered large declines in the conflict years: a staggering 39.7 per cent in Rwanda in 1994 and 18 per cent in Burundi in 1993. The already narrow production base was severely eroded due to the conflicts in both countries.

Second, conflict retards the diversification process by destroying public infrastructure. During conflict, not only existing infrastructure is destroyed or not maintained, but also the capacity of the government to invest in new infrastructure is severely curtailed. Third, conflict creates a fiscal crisis both by causing government revenue to shrink and by displacing public expenditure from productive investment (including infrastructure) to military and security sectors. In Rwanda, government revenue as a share of GDP declined by 56.8 per cent in 1994, most of the decline coming from trade taxes, which dropped by 72 per cent (as a percentage of total trade). In Burundi, government capital expenditures declined by 9.5 per cent in 1993. The fiscal crisis of the State explains the severe shortages in public infrastructure, water, and energy supply that the countries have experienced in the post-conflict eras. These shortages constitute a severe constraint to investment in new activities.

Fourth, by increasing uncertainty, conflict causes investors and lenders to shy away from long-term activities, such as in the industrial sector, and focus on short-term and speculative activities such as commerce. In Burundi, the share of industry in total credit declined from 16 per cent in 1980-94 to 3.8 per cent in 2003-05 while that of commerce increased from 43 per cent to 72 per cent during the same period. At the same time, the share of long-term bank credit has declined systematically from 17 per cent of total credit in 1993 to a meager 2.5 per cent in 2004. The shift of resources away from long-term activities retards economic diversification, undermines post-conflict economic recovery, and makes it harder for the countries to achieve and sustain high rates of economic growth.

**Sources:** Ndikumana 2004; Bank of Burundi (various reports).

## The results vary by diversification regime

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In Kenya,  
per capita  
income was a  
strong determinant  
of diversification  
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At this point, it is worthwhile to recall the five diversification regimes: 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. This report suggests that belonging to a particular regime has more to do with policy and institutional factors at the country level. Consequently, there are different determinants when the discussion is brought to the country level (see table A5.2 for correlation results).

The results for selected African countries represent the different diversification regimes, namely, for Tunisia, Kenya, Nigeria, Burkina Faso and Sudan. Tunisia, representing a regime with deepened diversification, shows significant results in relation to investment, inflation and exchange rate while it is negatively and significantly related with income per capita, trade and country risk. Tunisia follows the more general African results with respect to the influence of per capita income, inflation, exchange rate and country risk on diversification. Nonetheless, two factors, level of investment and openness, have opposite directions in relationships from the general continental evidence.

Kenya is an example of a country where diversification took off but was not able to go very far. In this case, per capita income was a strong determinant of diversification. The exchange rate was also significant to diversification results in the country. This is also consistent with the continental results. Like Tunisia, Kenya's openness tended to deepen diversification rather than restrain it. Investment, growth in manufacturing value added, inflation and country risk have not played significant roles in the diversification outcomes for Kenya.

Nigeria is an example of an African country where oil dominates exports. Hence, Nigeria is a highly specialized economy in terms of export products. Nigeria's oil exports account for 98 per cent of its total export value. These results are inconsistent with the continental results, especially with regard to the influence of investment, income, trade, exchange rate and country risk. However, the diversification question is dominated by the oil factor in Nigeria's export products.

In the case of Burkina Faso and Sudan, countries representing the regimes of limited diversification and of conflict, respectively, the relationships shown by the correlations do not indicate any plausible economic inferences and the data plots have no clear patterns. In both cases, no clear relationship between the different economic variables and diversification allowed reasonable conclusions to be drawn regarding countries in these regimes.

## 5.2 Growth, productivity and diversification

There is abundant literature that suggests that there is a two-way relationship between exports and growth. However, an important aspect of this evidence is that it is not just the level of exports that leads to growth but also the level of diversified exports or products. There are two important channels of how diversification may influence growth or income. First, diversification may be considered as an input (a production factor) that increases the productivity of the other factors of production (Romer 1990). The second route is that diversification may increase income by expanding the possibilities to spread investment risks over a wider portfolio of economic sectors (Acemoglu and Zilibotti 1997). This argument suggests that diversification is pivotal to sustaining high economic growth rates and to reducing growth volatility.

In the remainder of this chapter, the relationships between economic growth, productivity and diversification in Africa that form the second piece of the puzzle mentioned in the introduction are discussed. First, the sources of growth in Africa are examined. Some growth accounting exercise results are discussed to indicate the relative contribution of capital, labour and TFP in the economic growth of African countries. Then, there is actual discussion of the relationship between the TFP and diversification, on the basis of the first route suggested, that diversification contributes to economic growth.

### **Is it factor accumulation or total factor productivity that drives growth in Africa?**

To investigate the link between growth and diversification, it was important to first quantify the contribution of TFP to economic growth. This section analyses the sources of growth for African countries using the standard growth accounting method, making it possible to disaggregate the shares of growth contributed by TFP, capital and labour. Growth in output is the sum of the growth in capital, labour and TFP. Capital accumulation is an essential element in the growth process, as it enlarges the economy's capacity to produce. Increases in labour or labour force have traditionally been considered a positive factor in stimulating economic growth.

Technical progress through TFP is also important and is the main factor in the growth process. Advances in technology continue to stimulate growth in the rich industrial countries, especially as their population growth rates are close to replacement levels. In Africa on the other hand, there is accumulating evidence that it is factor accumulation that drives economic growth, with below-average contribution by TFP growth. Diversification is expected to have a positive contribution to TFP growth, and by extension, to economic growth. This report has identified the determinants of diversification and suggests that it may be possible to influence the

*Diversification may increase income by expanding the possibilities to spread investment risks over a wider portfolio of economic sectors*

“ Economic growth in Africa is driven by accumulation of the factors of production ”

rate at which TFP contributes to diversification and growth, by influencing these determinants.

Before decomposing the contribution of capital, labour and TFP to growth, it was necessary to find out the historical shares of capital and labour in Africa's output. As in other studies on Africa, the share of capital was found to be 0.39 and that of labour to be 0.61. Estimation of these shares allows us to see the growth that is not accounted for by labour or capital but by TFP.

Some results were derived from the growth accounting for individual countries for five-year averages from 1981 to 2000 (see Ben Hammouda et al. 2006a). The results confirmed that economic growth in Africa is driven by accumulation of the factors of production. The average contribution of TFP to growth is negative for the majority of 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 result is that in the majority of countries, the contribution of TFP growth to growth was positive in the 1980s, especially for the period 1981-1985. By the early 1990s, most of them experienced negative contributions from TFP. Even for a country such as Botswana, the first half of the 1990s saw a negative TFP contribution. There was therefore a reversal in the sources of growth across 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 per cent of the growth, and in some cases, more than half of the total growth. This clearly changed especially at 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 contributed more than one-third of the growth. For Burkina Faso, in 1981-1985 and 1991-1995, TFP contributed half of the growth. Another important observation worth pointing out is that the period 1996-2000 witnessed a return to positive contribution to growth by TFP, although lower than its contribution in the 1981-1985 period.

How can one explain the transition of TFP contribution to economic growth from positive to negative? As indicated, it was in the late 1980s and early 1990s that the transition to negative TFP contribution occurred. To understand the causes of this transition, it is worth recalling that the stylized facts of African economic diversification indicate that the diversification efforts of the 1970s yielded favourable results as Africa entered the 1980s. The favourable though fragile results of the diversification efforts in the early 1980s correlated with the favourable growth results of the same period. Thus, the positive and significant contribution of 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 second is the fact that the adjustment measures addressing these crises had some constraining consequences.

The adjustment measures instituted to deal with the economic crises required stringent macroeconomic policies, which took the form of fiscal and monetary conservativeness. This meant, on the fiscal front, that countries had to make hard choices, such as cutting development expenditure and curtailing the rate of growth of private sector credit. Reduced development spending by the public sector and weak private sector investment might have led to the weakened TFP contribution to growth.

The tight macroeconomic policies reduced the flexibility to pursue diversification-enhancing programmes. This may have contributed to the transition from positive to negative TFP contribution to growth. In the next section, the link between diversification and growth through the TFP is explored and discussed further. The significance of this transmission mechanism is that it can validate the proposition 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.

“Adjustment measures in the 1980s had some constraining consequences for diversification”

## **Economic growth and diversification: exploration of the TFP link in Africa**

In this section, the link between TFP and diversification is explored further. The motivation is the 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 risk or by risk minimization through spreading of investment portfolios. The focus of this section is on the TFP link, while recognizing that the standard neoclassical growth model and its competing endogenous growth model are one and the same, to some extent, in that the latter attempts to disaggregate the potential components of TFP. Risk minimization and its influence on growth, leading to diversified exports, could reasonably be captured through the influence on TFP.

Whether there is a significant link between diversification and the factors or variables that affect TFP had to be investigated. The variables that were investigated included diversification, human capital, and selected policy and institutional variables such as openness, financial development and conflict. The level of diversification was expected to have a significant influence on the productivity of capital and labour in an economy. As for human capital, in the literature on endogenous growth, it is assumed to be different from other forms of capital. As a result, the level of investment in human capital in a country is expected to have a bearing on the productivity of both labour and capital in the economy. The level of enrolment in secondary schools can be used to measure human capital.

“ *Financial deepening has a significant influence on TFP in the case of African countries* ”

Openness is thought to have an influence on TFP through external effects such as exposure to foreign competition, transfer of technology, economies of scale, and also to some extent, an increased speed of convergence towards richer countries. As has been discussed so far, it is obvious that the level of openness depends on the kind of trade policy a country pursues. Different countries apply different weights to the significance of trade liberalization in promoting growth.

Financial development may influence growth positively in two ways. First, a more developed financial structure allows for better mobilization of savings and thus supports more investment. Second, within a more developed financial sector, available information on investment projects is treated more efficiently to boost investments in productive sectors. The lack of access to credit has been identified as one of the impediments to investment and growth in Africa. The arguments in favour of financial markets liberalization are mainly based on the premise that the binding capital constraint to African economies can be undone by liberalizing not just the money markets but also the financial markets, in a broad sense. Thus, the full potential of the banking, insurance, development finance, stock and bond markets need to be unleashed by dismantling the restrictive controls that hamper development and deepening of the financial sector. It was instructive to find out that financial deepening has a significant influence on TFP in the case of African countries.

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. Indeed, in recent times, most studies have been considered incomplete if they fail to take account of conflict. Weak growth can be attributed to the presence of conflict in a country. Conflict can influence this growth performance either directly or indirectly. In the more direct route, adverse effects on populations (hence on the labour force) and capital destruction undermine the obvious sources of growth through factor accumulation. In the more indirect route, conflict affects TFP, leading to its decline and inability to contribute to growth.

What did the investigation of these factors in determining TFP in Africa reveal? Essentially, that an increasing level of diversification leads to higher TFP. It was also found that as an economy moves from a high level of specialization to becoming more diversified the total productivity of both labour and capital rises. Diversification was found to drive growth significantly in terms of TFP. In other words, a significant link between diversification and growth does indeed exist in African economies via the TFP. Table A5.3 shows the results of the different specifications that were used to examine this link.

### **Diversification-deepening policies raise growth and TFP**

What then do these results imply? They mean that pursuing diversification-deepening policies could help accelerate growth. Important policy implications of this link arise with respect to the determinants of diversification that were discussed earlier in

the chapter. In that discussion, it was noted that key determinants of diversification were per capita income, investment, trade and industrial policies, macroeconomic stability especially the fiscal policy stance, and institutional variables such as governance and conflict. The significance of the results in table A5.3 is that they suggest that even for African economies, if capital and labour are binding, countries can unlock growth potential by pursuing diversification-enhancing policies. Since diversification raises TFP, then African countries can capitalize on the potential of TFP as a source of economic growth.

While the main objective here is to establish the significance of the empirical link between diversification and growth via TFP, further discussion of the results is required. Building human capital matters. Thus, while economic policies can be oriented to deepening diversification through the determinants already discussed, social policy that dictates higher investments in human capital also has to be defined. Diversification and human capital orientations in economic and social policies would complement each other by enhancing TFP and by extension, economic growth.

Conflict has a negative and significant influence on TFP. It was suggested above that conflict could affect economic growth either directly through destruction of the factors of production, or indirectly through their combined productivity. The results in table A5.3 imply that the indirect link through TFP is also significant. Policies aimed at enhancing growth by deepening diversification that would be transmitted through 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. Does this mean that the trade liberalization that has led to substantial openness in the African economies has failed to catalyse technological spillovers which could have led to increases in the contribution of TFP to growth? These results 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 to the importation of final consumption goods rather than capital and intermediate imports with accompanying technologies that could have led to positive and significant influence on the TFP.

Financial deepening has also failed to catalyse an increase in TFP. The same logic as in the case of openness could be attributed to the results with regard to financial deepening. First, it is important to note that, in some countries, as the money markets are liberalized, the interest rate spread remained significantly high, meaning that the intermediation role of commercial banks in channelling savings to the private sector for investments that would raise TFP failed to materialize. In the same vein, investment opportunities in the majority of African countries are thin and the private sector credit growth witnessed as the financial sector was liberalized has been directed at personal consumption and to short-term activities rather than to investments by private firms in renewing their technologies in research and develop-

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ment. Just as personal consumption rather than private investment dominated credit expansion to the private sector, credit expansion to the public sector financed net material consumption by government in the form of salaries for instance, rather than public investments that would have had a positive impact on TFP.

“ Tunisia has managed to achieve horizontal diversification into higher-value exports ”

### **Africa's diversification regimes revisited: A further link to productivity**

So, there is a link between growth and diversification via the TFP as the transmission path in Africa. How does this link relate to the diversification regimes that have been seen to characterize African economies? Is there a clear correlation between the diversification regimes and the TFP contribution to growth? To answer these questions, analysis of the sources of growth of a few African countries is related to the different diversification regimes.

The first diversification regime was described as those countries with little economic diversification. The study found that many African countries belong to this regime, including Benin, Burkina Faso, and Malawi. It can be observed from table A5.4 that these countries have positive growth on average for the period 1981-2000. Benin, Burkina Faso and Malawi have average annual growth rates of 3.8 per cent, 3.7 per cent and 3.0 per cent, 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 growth in these countries was positive over the 20-year period under observation, their growth rates were not on the level at which their economies could take off, as compared to the high growth-performing economies of the NIEs in East Asia.

The second regime comprised those countries that started the process of diversification but did not make any significant breakthroughs. From table A5.4, the examples of these countries are Kenya, Senegal and Zimbabwe. It may be observed that all three countries have shown a slowing-down trend in production during the period 1981-2000, except for Senegal, which recovered during 1996-2000. However, the growth trends are positive despite the setbacks. Kenya grew at an annual average of 2.9 per cent; Senegal at 3.3 per cent while Zimbabwe was growing at 3.1 per cent. Again, the main source of growth was factor accumulation rather than TFP. It is noted, however, that the average TFP contribution to growth in Senegal and Zimbabwe is positive. The main question is, could it be that these countries experienced slackening of growth because they failed to deepen their diversification process and have remained at the same level for a long time?

The third regime is that of countries with a deepened diversification process. Countries such as Mauritius, Morocco, South Africa and Tunisia exemplify this regime. 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. The countries in this regime are characterized by 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 registered growth rates of 5.5 per cent and 4 per cent per annum on average, respectively, for the period 1981-2000. In both these countries, it may be observed that the contribution of capital is much higher than the contribution of labour. Moreover, in Mauritius, the TFP contribution to economic growth is positive with an annual average of 2 per cent, a relatively high figure for an African country.<sup>5</sup>

The fourth regime is composed of countries that registered early positive diversification gains but later tended to specialize in a few products. Countries such as Gabon and Nigeria exemplify this regime. These countries are both rich in oil; hence, this product dominates their exports. As for their growth performance, the GDP growth rates of both countries, although mostly positive, were characterized by fluctuations over the period 1981-2000. On average, Nigeria is growing at 2 per cent per annum while Gabon is growing at 2.3 per cent per annum. As with most of the African economies, their economies are also labour-intensive with a minimal TFP contribution. Nigeria's TFP contribution to growth, on average, is even negative for the period under study. The economic growth of countries in this regime is relatively low compared to such countries in the third regime as Mauritius and Tunisia.

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

### 5.3 Conclusion

This chapter has shown that there are clear and measurable determinants of diversification in Africa at the continental, subregional and country level. Despite the inadequacy of African data, it may be said that, at least at the continental level, the diversification process is highly influenced by investment, per capita income, level of openness, macroeconomic policy stances, governance, and conflict. 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 that there are two stages to the pattern. Initially, increasing investment and per capita income lead to diversification and after a given level, a turning point is reached where further increases lead to specialization.

<sup>5</sup> The highest contribution of TFP to growth in the data set is in Uganda with 3.36 per cent, followed by Botswana with 2.2 per cent and then Mauritius.

“ The diversification process is highly influenced by investment, per capita income, level of openness, macroeconomic policy stances, governance, and conflict ”

“ Pursuing policies that lead to export diversification can go a long way to overcoming growth constraints ”

Another important conclusion from our discussion is that trade liberalization in Africa could have led to more specialization rather than to diversification. The specialization forces that led African countries to optimize their comparative advantages as they became more open have, on average, overshadowed the important motivation for diversification, which is to shield the economy from shocks.

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 clearly emerged as countering diversification forces. Besides macroeconomic policy stances, conflicts undermine diversification while good governance promotes diversification.

Another issue that has been discussed in this chapter is that related to the link between diversification and economic growth. The analyses have shown that deepening diversification leads to improvements in TFP, among other determinants. 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 economic growth and raise their TFP by pursuing policies that enhance diversification.

Given the clear determinants of diversification, the key conclusion is that pursuing economic and non-economic policies that lead to export diversification can go a long way to overcoming the growth constraints emanating from factor accumulation (box 5.2). 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 are enhanced export diversification and, eventually, increased contribution of TFP to economic growth.

## Box 5.2

### *Diversification in Ethiopia: a story of booming horticulture and textile exports*

Ethiopia, like most low-income countries in SSA, has relied on traditional exports such as coffee, oil-seeds, hides and skin, pulses and other export crops to earn foreign exchange. For instance, during the period 1980-1990, the share of traditional exports in total exports was close to 95 per cent. This has begun to change in recent years, however. The share of non-traditional exports, such as flowers, textile and garments, honey, and natural rubbers have begun to play an important role as sources of foreign exchange and employment generation in Ethiopia. In the late 2000, the share of non-traditional exports reached a record level of about 11 per cent, more than double what it was in the 1990s.

This dramatic increase in non-traditional exports is partly explainable by the overall policy stance and stable macroeconomic environment that characterized the Ethiopian economy over the last decade and half. Since 1994, Ethiopia embarked on an Economic Reform Programme designed to achieve macroeconomic stability and long-term growth through its Export-led Industrialization Programme, which emphasized export diversification and import substitution. Greater accord was given to the private sector to lead the country's industrialization effort. This has led to significant changes in the structure of the Ethiopian economy in recent periods. Exports as a percentage of GDP almost doubled from 9 per cent in 1994 to 19 per cent in 2004. In addition, the country's position in attracting FDI improved greatly during the decade, from a paltry 0.3 per cent of GDP in 1994 to 7 per cent in 2004.

An important element of the surge in private investment and non-traditional exports is the incentive package that the Government introduced to foreign as well as national investors in the export sector. From the point of entry up to exit investors receive preferential treatment in accessing suitable sites, basic infrastructure, duty-free privileges for importation of key capital goods and raw-materials, credit facilities and repatriation of profits and a number of other supports necessary for the creation of a secure environment for private businesses. It is expected that these measures will contribute to developing an industrial base that paves the way for substantial economic transformation and sustainable growth.

**Source:** *The Ethiopian Customs Authority. Various official documents.*

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# Appendix

**Table A5.1**  
**Determinants of diversification in Africa**

	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)	0.88
	Number of observations	52

**Source:** Ben Hammouda et al. 2006a.

**Notes:** The figures in parentheses are *p*-values. Results are based on a panel of 18 African countries.

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

**Table A5.2**

*Correlation between diversification and different economic variables for Burkina Faso, Kenya, Nigeria, Sudan and Tunisia*

Variables	Tunisia	Kenya	Diversification		
			Nigeria	Burkina Faso	Sudan
Investment	0.433**	0.166	0.702***	0.295	--
Income	-0.468**	-0.586***	0.720***	0.496**	0.644**
Trade	-0.632***	-0.613***	-0.801***	-0.384*	0.399**
Industrialization	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***

**Source:** Ben Hammouda et al. 2006a.

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

**Table A5.3**

*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)	0.99	0.99	0.99
Number of cross-sections	26	26	28
Number of observations	98	98	105
Durbin-Watson stat	1.71	1.68	1.47

**Source:** Ben Hammouda et al. 2006a.

**Notes:** The figures in parentheses are p-values.

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

**Table A5.4*****Diversification regimes and TFP contribution to growth***

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of TFP
<b>Regime 1: Little economic diversification</b>				
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
<b>Regime 2: Early Diversification but no major breakthrough</b>				
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
<b>Regime 3: Deepened diversification process</b>				
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
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
Tunisia*				
1981-1990	3.72	1.28	2.48	-0.04
1991-1997	4.30	1.36	2.12	0.82

Countries	Growth in GDP	Contribution of Labour	Contribution of Capital	Contribution of TFP
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

**Source:** Ben Hammouda et al. 2006a.