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Are Policy Reform and Growth in Africa Sustainable?

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ARE POLICY REFORM AND GROWTH IN AFRICA SUSTAINABLE?

Jean-Louis ARCAND*, Patrick GUILLAUMONT**
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Abstract

This paper, relying on the results of several cross-sectionnal growth regressions, examines the factors determining the sustainability of policy reforms and growth in Africa. Five structural factors are considered as determinants of policy: 1) ethno-linguistic fragmentation, which influences growth directly rather than through policy, 2) human capital, which due to its low level is an impediment to good policy, although its effect is in all likelihood waning, 3) vulnerability to external shocks, possibly dampened thanks to better management and democratization, 4) political factors, mainly political instability and violence, which themselves partly depend on the previous factors, 5) foreign aid which could be allocated and "conditionned" so as to be more conducive to policy reform and growth. A simplified structural model of growth and policy, estimated in first differences and by GMM, and supplemented by an estimate of a political instability function, summarizes the main lines of our arguments.

Résumé

Cet article examine, en s'appuyant sur les résultats de plusieurs analyses transversales de la croissance, les facteurs de soutenabilité des réformes et de la croissance en Afrique. Il s'interroge sur cinq déterminants structurels de la politique économique : 1) la fragmentation ethno-linguistique, qui semble agir directement sur la croissance et non par l'intermédiaire de la politique économique, 2) le capital humain dont le faible niveau exerce sur la politique des effets négatifs mais vraisemblablement déclinants, 3) la vulnérabilité aux chocs extérieurs, éventuellement atténuée grâce à une meilleure gestion et à la démocratisation, 4) les facteurs spécifiquement politiques, en particulier l'instabilité politique et la violence, qui elles-mêmes dépendent en partie des facteurs précédents, 5) l'aide extérieure, dont les principes d'allocation et la conditionnalité pourraient être conçus de façon à en améliorer l'impact sur la croissance et la politique. Un modèle structurel simplifié de la croissance et de la politique économique, estimé en première différence et en GMM, puis complété par l'estimation d'une fonction d'instabilité politique, résume l'ensemble des arguments présentés.

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Introduction

During the past decades, Sub-Saharan Africa (henceforth SSA) has suffered from extremely low rates of economic growth. This stagnation, and sometimes decline, in GDP per capita has been the focus of a plethora of studies leading to several competing interpretations (see e.g. Collier and Gunning 1999b, 1999c). As the putative causes for Africa's stagnation were being identified, some of them appearing to be insurmountable, Africa experienced a resurgence in growth. Indeed, by the mid-90s, the average (unweighted) growth rate of GDP per capita in SSA was higher than it was in other developing countries (Ndulu and O'Connell, 1999, see also Figure 1). However, since 1999-2000 the average rate of growth has fallen, reversing once again the position of Africa relative to the rest of the world.

Was this new spurt of growth but a short-term phenomenon linked to the international environment? Was it at best associated with convergence and catching-up effects? Or did it mean that SSA was finally reaping the benefits of twenty years of painful structural reforms and emerging onto a stable growth path? Figure 2 shows that several scalar measures of economic policy have improved significantly over the past 15 years. Typical examples for instance include the composite indicator of macropolicy developed by Burnside and Dollar, 1997, or the indicator of structural reform proposed by Bonaglia, Goldstein and Richaud, 2000).

While numerous studies have utilized cross-sectional (or panel) econometrics to analyze the causes of SSA's stagnation, very few have considered the sustainability of the current resurgence in SSA's growth using the same tools, though several papers have recently been concerned with the future perspectives for African growth (they are summarized in Hugon and Sudrie, 2000)[1]. The last World Bank Report (2000) on Africa, covering a large set of issues, is itself, as shown by its title –*Can Africa Claim The 21st Century*- looks for the perspectives of African growth. But it does not directly question the reasons why African growth is so fragile and why growth episodes have become so short.

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[1] Charles C. Soludo (2000) has rightly insisted that the good growth performance of sub-Saharan Africa does not allow one to make direct inferences concerning its sustainability. He has suggested a number of structural indicators which, by comparison with the Asian economies (or higher growth African economies), should allow one to assess sustainability. Neither the pertinence of these indicators, nor their relative weighting, has, however, been assessed empirically.

In the context of the OECD Development Center research project on "Emerging Africa" Guillaumont, Guillaumont Jeanneney and Varadoukis, 1999a, 1999b, have constructed an indicator of the sustainability of growth, and used it to identify 14 African countries that might conceivably "emerge" in the near future. They then examined the potential growth of these countries if (i) they were to implement policies as "good" as those of the fastest-growing African countries and (ii) if the external environment remained similar to what it had been on average). This study has thus shown that the sustainability of growth in Africa strongly depends on how long lasting the improvement in economic policy is. It has not, however, considered how exogenous factors affect policies themselves. In a recent paper, produced within the same OECD project, Berthélemy and Söderling (2001) underline the role of capital accumulation and economic diversification as key elements of sustained growth in Africa and offer a tested explanation of capital deepening, but not of diversification. Both elements are of course dependent on policies, which themselves remained to be explained.

The purpose of the present paper is precisely to consider how exogenous factors affect policies. Indeed, it can be argued that the sustainability of growth in SSA largely depends upon the sustainability of good policies that are, in turn, influenced by various exogenous factors. This means that a number of exogenous factors that have been identified in the literature as affecting growth may do so both directly and, may be, even more through their impact on policies which, indirectly, affect growth.

Cross-sectional econometric analysis is a powerful tool that may be of invaluable use in identifying those factors that are conducive to the adoption of good economic policies. It does, however, have its limits (see e.g. Temple, 1999). This is particularly true for SSA where it rapidly becomes obvious that sample size is determined by those variables that one wishes to include in a given regression. Whether one is working with a sample constituted of developing countries or a sample constituted exclusively of SSA countries, missing data is, more often than not, associated with SSA countries that have experienced serious difficulties. This implicit sample selection bias can lead to inappropriate statistical inference. It is therefore crucial to supplement cross-sectional analysis of those factors that lie behind the process of reform in SSA with country-specific studies.

In what follows, and in light of existing results stemming from the cross-sectional empirical literature, we consider the sustainability of reforms and growth in SSA. We do so through the

analytical lenses provided by the leading explanations for Africa's poor growth performance in the past, with an emphasis on those hypotheses that stress the interactions between structural determinants of growth and economic policies.

The analysis that follows is in large part based on the estimation of a simple structural model in which a growth equation is coupled with a macroeconomic policy equation (the latter being captured by the Burnside and Dollar (1997) policy index). This model, estimated on a panel of four nine-year periods, allows for country-specific effects (through first-differencing) and accounts for the endogeneity of a number of explanatory variables (through the use of a GMM procedure). The most notable result is that improved growth performance is seen to be a direct result of an exogenous improvement in policies during the 1989-97 period.

As such, we begin by considering the role of ethno-linguistic fragmentation, which is particularly severe in many African states, and which, it has been argued, has led to poor policy choices. While acknowledging the importance of ethnic factors in Africa, we argue that they do not affect growth through policy choices and do not, therefore, constitute an insurmountable obstacle to African growth. We then show that low initial levels of human capital do indeed constitute an important fetter on growth, and that this factor operates through several different channels. One such mechanism, which has been neglected in the literature, involves the effect of human capital on policies. Through, among various factors, foreign aid, a sustained improvement in levels of human capital may thus lead to an improvement in the policy environment.

We then re-examine the hypothesis according to which the high degree of exposure of SSA to exogenous shocks (in international prices, exports, or the climate) lowers the growth rate of GDP per capita through its impact on policies. While exposure to such shocks remains problematic, it would appear that SSA states have improved their capacity to deal with them, and may improve even upon their recent successes even further. Besides such *exogenous* shocks, we also consider the impact of authoritarianism, political instability, and armed conflicts, which arguably constitute the main danger faced by SSA states today. Identifying the factors that lie behind these internal dangers would appear to be essential in the context of assessing the sustainability of reforms and growth in SSA.

Singling out the determinants of economic policy allows one to grasp the manner through which foreign aid can contribute to sustainable growth in SSA. Given that difficulties with the implementation of policies are partly attributable to the structural environment, aid can be seen as a manner of weakening structural constraints that affect policy-making and therefore economic growth.

Ethnicity and policy

Ethnolinguistic fragmentation has sometimes been identified as an important causal factor behind poor macroeconomic policies in SSA and therefore as being a root cause of SSA's poor growth performance (Easterly and Levine, 1997). If this were the case, ethnolinguistic fragmentation would constitute an almost insurmountable obstacle to reform and growth in SSA. This interpretation has been contested in terms of the robustness of the econometric evidence (Arcand, Guillaumont, Guillaumont Jeanneney, 2000a).

We do not deny that ethnolinguistic fragmentation plays a particularly important role in SSA, on the one hand because ethnolinguistic fragmentation is greater on average in SSA than in other regions of the world, and on the other because its marginal impact on growth would appear to be greater in SSA than elsewhere. But the econometric evidence does not support the claim that ethnolinguistic fragmentation affects growth indirectly through its impact on economic policy, which would thus, because of the high degree of ethnolinguistic fragmentation in SSA, be particularly poor there. Rather, ethnolinguistic fragmentation would appear to impact growth directly through its effect on the microeconomic behavior of agents that determines the efficiency of the allocation of resources. Moreover, this direct effect of ethnolinguistic fragmentation on growth would appear to be particularly severe in countries where communications costs are high (associated with high rates of illiteracy and low population density, for example), which is typical of countries in SSA (Arcand, Guillaumont, Guillaumont Jeanneney 1999, 2000b). Another hypothesis that has recently been subjected to empirical testing is that ethnolinguistic fragmentation increases the risk of conflict, but that this effect is mitigated by a greater degree of democracy (Collier, 2000, Elbadawi and Sambanis, 2000). A further point that has been stressed by the recent literature is the non-linearity of the effects of ethnic fragmentation, which suggests that *polarization* into a small number of ethnic groups may be more dangerous than fragmentation per se which

can (when human capital levels are high) become an asset (cf. for instance Arcand and alii 2000a, 2000b, Collier 2000, Elbadawi and Sambanis, 2000).

The upshot of these different papers concerning ethnolinguistic fragmentation and SSA is therefore less gloomy than one was at first led to believe. Ethnolinguistic fragmentation does not constitute an insurmountable obstacle to growth in SSA, and its deleterious effects can be reduced through literacy campaigns and a greater degree of democracy. It then even may become an advantage.

Human capital and policy

The impact of human capital (education and health) on growth remains poorly understood in the context of cross-sectional empirical work, and this is particularly true for Africa, despite what *a priori* should be a key role (see Arcand, Guillaumont, Guillaumont Jeanneney 2001, O'Connell and Ndulu, 2000, Schultz 1999).   There would appear to be three reasons behind this paradox. First, it is difficult to adequately measure human capital, be it education or health, and the latter is often neglected in empirical work. Second, it is not easy, in theoretical terms, to properly specify the relationship linking growth with human capital. In particular, it is often not clear whether human capital should enter in levels or in growth rates, and empirical counterparts to either are often ambiguous in nature. Third, human capital is likely to be an endogenous variable in any growth equation and it is notoriously difficult to come up with appropriate admissible instruments that should not be already included in the specification (Arcand, 2000).

An important effect of human capital that has been less emphasized in the literature than its direct effect on factor productivity is its probable impact on economic policy. Human capital increases the capacity to formulate and implement appropriate economic policies because a well-educated (and healthy) body of politicians and bureaucrats increases the speed, quality and implementation of economic policy-making. Moreover, a well-educated population increases the ease with which policies can be explained and understood and, one may hope, accepted.

Several other reasons suggest that the quality of policies is affected by the level of human capital. When the level of human capital is low, there is great pressure to increase it. This pressure is felt in the realm of public finance: deficits may obtain or, in order to avoid this, taxation may be unduly heavy. More generally, the aforementioned pressures may lead policymakers to shun policy reforms that, at least in the short run, involve high budgetary costs (liberalizing foreign trade, for example). This effect is particularly strong in SSA both because of high rates of demographic growth and because the relative price of education, and probably of health as well, is especially great. The consequence is that achieving a given level of educational attainment through public schooling implies higher levels of public expenditures devoted to education than elsewhere (Calipel and Guillaumont, 1995). It is possible empirically to identify the impact of the average number of years of schooling in the population on the quality of macroeconomic policy through its effect on a combination of different indicators such as the rate of inflation, the budget deficit and the degree of openness (Guillaumont and Chauvet, 1999, 2001).

What conclusions can be drawn regarding the sustainability of reforms and growth in SSA? The level of human capital is manifestly low in SSA, both in absolute terms and also once one controls for its structural determinants (Schultz 1999). Should one conclude that the low level of human capital therefore constitutes a durable obstacle to good policies in SSA? Without underestimating its importance, there are at least three good reasons for one to be optimistic. First, school enrollment rates, which fell during the 1980s, appear to be on the rise again. Second, the real depreciation of numerous currencies in the region (in particular, the CFA Franc) has reduced the relative price of investment in human capital (in particular in education) because this form of expenditure involves an important labor component. Third, foreign aid has been increasingly directed toward reinforcing human capital, be it in the form of the emphasis on capacity building over several years, the initiative aimed at reducing the level of indebtedness of Highly Indebted Poor Countries (HIPC), or the new IMF Poverty Reduction and Growth Facility (PRGF) relying on the Poverty Reduction Strategy Papers (PRSP) which consider specifically objectives in terms of health and education. On the other hand, a major deterioration in human capital is to be expected from the AIDS epidemic (which chiefly affects prime-age adults and especially those who are relatively well-educated) which will also increase the dependency ratio (already very high in Africa).

Vulnerability to external shocks and the sustainability of policies

Casual observation of the economic cycle in SSA reveals that it is intimately related to the terms of trade. Recently, Deaton (1999) has underscored this relationship (see Figure 4). A striking illustration is given by Ivorian GDP per capita, which is clearly highly correlated with the prices of coffee and cocoa.

Countries in SSA are particularly vulnerable to external shocks for two reasons. First, a large fraction of their exports are still constituted by primary products whose prices exhibit large fluctuations. Second, their small size (in demographic terms) implies that exports constitute (for structural reasons) an important portion of their GDPs, which is therefore more vulnerable to variations in export earnings[2].

The international environment and domestic policies are often seen as substitutes in the context of cross-sectional analyses of growth, in the sense that good policies are seen as having the potential to compensate for a poor international environment and *vice versa*. But vulnerability to external shocks obtains precisely, and this is especially the case in Africa, because external shocks affect policies themselves. Assessing the permanent or transitory nature of a given shock can be difficult and the appropriate policy response is therefore often not identified. Public expenditures and external indebtedness often rise during booms, and are well-nigh impossible to reverse during a bust, since the boom is expected to continue, but does not. The exchange rate is often maintained during a recession, again in the expectation of a boom that does not materialize. Conversely, the currency may be depreciated in response to the slightest external shock, although the latter may be transitory, with the usual consequences in terms of inflation. Stop and go policies in terms of trade liberalization may also obtain, leading to the inevitable loss in credibility.

Alongside the vast literature on external shocks dealing with several SSA countries (Collier, Gunning and Associates, 1999), cross-sectional econometrics has also identified the general link that ties policies to external shocks. For example, O'Connell and Ndulu (2000) note that the introduction of economic policy variables into a growth regression (based on a pooled

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[2] It has to be recalled that economic vulnerability has been recognized by the Committee for Development Policy and by ECOSOC as one of the criteria relevant to identify the least developed countries, a major part of which are African countries (on the vulnerability issue, see Guillaumont 2000)

sample of five-year averages) leads to a fall in the statistical significance of the coefficient associated with the variation in the terms of trade. In an earlier article we have shown that instability in the terms of trade leads to instability in the investment rate and the real exchange rate, the latter two variables being identified as "intermediate" policy variables that, in turn, are significant determinants of growth (Guillaumont, Guillaumont Jeanneney and Brun, 1999).

The relationships linking external shocks and economic policies reflect the past behavior of states, leading us to ask what one can conclude concerning the sustainability of reform and growth in SSA on the basis of the previous arguments. It is too much to expect a fall in the near future in the magnitude of the external shocks faced by SSA countries (markets for primary commodities will remain unstable, partly because of the current instability of financial and foreign exchange markets; rates of export diversification are low in SSA, openness of these countries to international trade is growing).

On the other hand, it may be reasonable to expect an attenuation in the deleterious impact of negative external shocks on policy, for several reasons. First, many SSA countries, faced with the disastrous consequences of their poor policy choices in the past, have learnt to manage the impact of shocks more skillfully. This has been fostered by the conditionality attached to foreign aid, as well as by the increasing level of competence of officials and the diffusion of know-how. Second, if one believes that the authoritarian and predatory behavior of many regimes has, in the past, contributed to the poor management of external shocks (Ndulu and O'Connell, 1999), the increasing degree of democratization that is observed should be good news. Third, the responsibility for managing external shocks has in many cases been transferred from the public to the private sector. Fourth, the international banking system, which through the provision of cheap credit has, in the past, contributed to poor economic policies has, for the moment at least, become more cautious in its lending policies. Finally progress in regional initiatives in Africa (such as the UEMOA in West Africa) may diminish the risk of seeing policy reforms reversed, at least in the areas of monetary and trade policy, thanks to the dampening effect on shocks that these arrangements have had, as well as through peers control.

Political regimes, political instability and policy

Apart from the aforementioned determinants of economic policy in SSA, it is clear that the nature of the political regimes in power also plays a significant role (Ndulu and O'Connell, 1999). An important fraction of SSA countries have either experienced or are currently under the sway of non-democratic regimes that vary in their degree of authoritarianism (Bratton and van de Walle, 1997). Besides the correlation between authoritarianism and poor governance, it is worth pointing out that the slide into authoritarianism is itself affected by the structural factors alluded to above. Ethno-linguistic fragmentation, high rates of illiteracy and external shocks have either contributed to the establishment of authoritarian regimes or served as a justification for their maintenance, along with low levels of economic development.[3]

Authoritarianism in Africa has been singled out as leading to poor public policies and low rates of growth for two main reasons (Adam and O'Connell, 1999, O'Connell and Ndulu, 1999). First, authoritarianism leads to the private appropriation of collective resources (through excessive taxation that transfers resources to a privileged minority) and increases transaction costs in the private sector (through increased corruption). Second, authoritarianism often leads to political instability which itself hinders growth.

Regardless of the form taken by African regimes, the risk of political violence and conflicts represents, today, a major threat to the sustainability of reforms and growth in SSA. It would appear that political instability has been greater during the past twenty years in SSA than in the rest of the developing world. Of course, political instability takes many forms, but regardless of the indicator that is chosen, be it coups, disturbances and looting, or civil and foreign wars, SSA would appear to be more prone to political instability than the rest of the developing world (see Figure 5).[4]

The direct impact on growth of war or violent disturbances is obvious in that economic activity is impaired and the capital stock is destroyed. But in the case of more circumscribed forms of political instability, the effect is probably felt through policies. Political instability may lead to the emigration of a portion of the competent elites, which may feel threatened. It may entail problems in the realm of public finance as security expenditures soar or as

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[3] On the relationship between democracy and GDP per capita, see Barro 1999.

propitiatory payments are made to guarantee the support of the party loyal or to quell a vocal opposition. Political instability may also put the brakes on structural reforms which might endanger the rents accruing to elites whose support might therefore slacken. Finally, it may discourage potential investors who may doubt the regime's capacity to pursue sound policies within a stable institutional framework in which property rights and the rule of law are respected. In the aforementioned article (Guillaumont, Guillaumont Jeanneney, Brun, 1999), we found that political instability had a statistically significant and negative impact on economic growth even when controlling for instability in the terms of trade and climatic shocks, and that its impact is mediated through the investment rate and the real exchange rate.

In order to assess the effect of political instability on the sustainability of reforms and growth in SSA, it should be noted that, as with the nature of the political regime, political instability is not independent of three exogenous determinants of policy that we have so far considered. Ethno-linguistic fragmentation and external shocks increase political instability, whereas human capital reduces it. While the former two remain high and the latter is low in SSA, Collier (2000) has noted that the effect of many structural factors that determine the probability of conflicts and wars is reduced as the process of democratization progresses.

External aid, sustainability and growth

A final factor that may affect reform in SSA as well as its sustainability is, of course, foreign aid. Apart from the potential direct impact of aid on policies, aid may affect policy indirectly through its impact on the determinants of policy identified above.

Doubts regarding the impact of aid on policies in SSA have been raised based upon the failure of conditionality and the inappropriate nature of policy, as revealed by the disguised nature of the instruments and the reversibility of their use (Guillaumont P. and S., 1994, Collier, Guillaumont, Guillaumont Jeanneney and Gunning, 1997). More systematically some authors have argued that the amount of aid had no effect on the quality of policy, an hypothesis they consider as supported by econometric tests (Burnside and Dollar, 1997, 2000). Recently however, the World Bank has commissioned a series of case studies concerning the relationship between aid and reform. The results are subject to a good deal of nuance

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[4] According to CERDI data (for the 1970s and 1980s, see Guillaumont, Guillaumont Jeanneney and Brun, 1999).

(Devarajan and Holmgren, 2001). Aid is not without effect on the process of reform, but its impact is a function of the circumstances faced by a given country as well as of the manner in which the aid is allocated. Conditionality, as it was practiced, was apparently more appropriate for authoritarian regimes than for democracies (see, e.g., the case study on Mali by Guillaumont and alii, 2001).

It seems to us that aid can contribute to a sustainable improvement in policies and in growth if it is allocated according to performance, i.e. to outcomes purged of (or adjusted for) exogenous factor, instead of being tied to specific policy measures (which becomes less sustainable as a country becomes more democratic) (Collier, Guillaumont, Guillaumont Jeanneney, Gunning, 1997, Guillaumont P. and S., 1994, Guillaumont and Chauvet, 1999, 2001, Gunning, 2000). The proof is in the pudding: performance reveals the quality of those policies that were implemented, and the responsibility for the choice of instruments must lie with the recipients themselves. Aid can therefore allow countries to more fully appropriate the reform process –surely one of the conditions for sustainable growth.

Second, to the extent that it can be targeted, aid should be directed towards the structural determinants of policy identified above. Aid should foster increases in human capital. It should help by compensating for the negative impact of external shocks and should foster domestic mechanisms that improve the capacity to respond to such shocks. Finally, aid can affect those factors that reduce the risk of conflict, mainly democratization and regional integration, the latter also leading to less reversibility in the reform process.

Finally, independently from its effect on policy itself, aid has an impact on growth which depends on the vulnerability of the recipient to external shocks: aid is more efficient in more vulnerable countries (Guillaumont and Chauvet, 1999, 2001).[5] Aid indeed lessens the economic uncertainty resulting from vulnerability and avoids growth collapses after negative shocks. Then and not only because vulnerability has a deleterious impact on policy, in order to sustain growth in SSA (where many countries are vulnerable), a priority is to be given in aid allocation to those countries which are most vulnerable. This conclusion is consistent with

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[5] This argument differs from that of Burnside and Dollar 1997, 2000 for whom aid contributes to growth only when economic policies are sound, but has no impact on policy itself. According to our estimate the impact of aid is more conditioned by vulnerability than by policy.

a criterion of aid allocation according "performance", since for a given outcome the performance will be judged better when vulnerability is higher[6].

It remains to be seen whether the level of aid will continue along the rapid decline that began in the mid-90s, which has brought net public transfers, as a percentage of GDP of the African recipient countries, to what they were a quarter of a century ago (see Figure 6).

Some preliminary empirical results concerning the sustainability of reforms and growth in Africa

The preceding analyses were based on recent empirical work, including our own, our goal being to summarize those factors that determine the durability of the reform process in Africa and therefore its growth. Diagram 1 provides a schematic representation of our arguments.

We have begun empirical testing of the principal hypotheses formulated in this paper through the estimation of a simple structural model which combines a growth equation and a policy equation (the dependent variable in the latter being the index used by Burnside and Dollar, 1997). Prior to discussing the empirical results associated with this approach, it is worthwhile examining some empirical results that are typical of the current literature.

In table 1, columns 1, 2 and 3 present simple pooling results in which the dependent variable is the annual growth rate of GDP per capita during the four nine-year periods into which 1965-1997 may be divided. Apart from the usual (conditional) convergence effects, two continent dummies and two time period dummies (insufficient observations are available on the first time period, 1965-1973, to allow one to estimate its impact precisely), all three columns highlight the importance of economic policies as a determinant of growth performance. In column 1, we include the initial level of schooling, but this significantly reduces the number of observations, particularly from Sub-Saharan Africa. In column 3, we include ethnic fragmentation which takes the usual negative sign (Easterly and Levine). Notice that, in column 2, political instability also appears as a significant determinant of the growth rate of per capita GDP, although this result is "fragile" in the sense that inclusion of human capital or ethnic diversity renders its effects insignificant. As will be argued below

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[6] The implication of this competing hypothesis in terms of aid allocation are very much different from that of

this fragility is not serious, and stems essentially from an endogeneity problem that is not adequately accounted for in the simple pooling results.

Interesting as they may be, results based on a simple pooling of observations based on different time periods fails to account for other, country-specific sources of heterogeneity in growth performance that may not be adequately be captured by the explanatory variables included in the specification. In order to assess the impact of controling for country-specific unobserved heterogeneity, column 4 presents results obtained through estimation with country-specific fixed effects (random effects are soundly rejected by the usual Hausman test, the p-value of which is presented at the bottom of the table). As should be obvious, the inclusion of country-specific fixed effects significantly reduces the statistical significance of economic policies and political instability.

As mentioned earlier, endogeneity of economic policies and political instability is a potentially important issue. In column 5 we therefore present instrumental variable estimates in which political instability, at least is allowed to be endogenous. The instrumental variables used in this procedure include the urbanization rate as well as educational expenditures as a percentage of GDP which, as shall be demonstrated below are significant determinants in cross-country differences in political instability. As should be obvious from the results, political instability now becomes stastically significant, and a test of the overidentifying restrictions fails to reject the null hypothesis of their validity. Taken together, the results of the instrumental variables procedure and the country-specific fixed effects approach suggest that (i) endogeneity and (ii) unobserved, country-specific heterogeneity, constitute important statistical issues that must be adequately addressed if the true link between economic growth, political instability, and economic policy is to be uncovered (more on this below).

In table 2, columns 1 and 2 present results stemming from the estimation of an economic policy regression. In column 1, the most important covariate of the economic policy index is export instability (which significantly worsens economic policy), as well as the growth rate of GDP per capita (which significantly improves it). In column 2, we implement a procedure which includes country-specific fixed effects, in order to control for unobserved differences in economic policy that may be accounted for by a country's intrinsic characteristics. The

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Burnside and Dollar, 1997 and World Bank, 1998.

explanatory power of the regression is significantly improved (going from 0.36 in column 1 to 0.76 in column 2), and the exogenous improvement in economic policy associated with the 1989-1997 period is strengthened. This result, which is common to columns 1 and 2, is particularly important with respect to the sustainability of economic growth in Sub-Saharan Africa, as it reveals that a world-wide improvement in economic policies was afoot during this latter period. Of course, given the inclusion of the growth rate of GDP per capita in the regression (and given the inclusion of economic policy in the growth rate equations presented in Table 1) all of these results remain subject to the caveat that they do not adequately account for simultaneity bias.

In columns 4 and 5, we present results corresponding to the estimation of a political instability equation. In column 4, which stems from a simple pooling specification, the covariates of political instability include the urbanization rate, which is found to operate in a U-shaped manner on political instability, as well as the relative importance of educational expenditures, which presumably reduce political instability by mitigating student unrest. This effect is not robust to the inclusion of country-specific fixed effects, as shown by the results presented in column 5, which also result in a significant weakening of the quadratic impact of the urbanization rate. Again, these results must be taken with a grain of salt as the inclusion of the growth rate of GDP per capita may be a source of significant simultaneity bias.

In order to achieve results which, at least from the statistical perspective, are robust to the aforementioned critiques, we therefore resort to a GMM procedure (which eliminates endogeneity problems), estimated in first differences (which eliminates bias stemming from unobserved, country-specific heterogeneity).[7] The GMM procedure uses lagged values of the explanatory variables themselves as instruments, as well as any exclusion restrictions that stem from the specification of the structural system of equations. Note that the growth equation and the economic policy equations were estimated simultaneously, and that the corresponding Sargan test of the overidentifying restrictions (which does not reject the null hypothesis of the validity of the set of instruments) applies to this *system* of equations. The political instability equation, for its part, was estimated separately.

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[7] In contrast to the fixed effects procedure, country-specific heterogeneity is allowed to vary over time, and is only assumed to be constant in contiguous time periods --the two procedure would be identical in the case of two periods. Note that we also account for serial correlation in the GMM procedure.

Results corresponding to these procedures are presented in column 6 of table 1 for the growth rate regression, and columns 3 and 6 of table 2 for the economic policy and political instability, respectively. Our results show, apart from the standard conditional convergence effect that remains significant in the growth equation, that economic policies and political instability are key determinants of economic growth. It is also apparent that improvements in economic policy stem from higher rates of growth and reductions in export instability. Moreover, an exogenous improvement in policy is associated with the 1989-1997 period, as indicated by the positive and statistically significant dummy, which may be attributed (one hopes) to a durable improvement in policy. This confirms the earlier finding of the simpler econometric procedures presented in columns 1 to 3 of table 2.

In the political instability equation, we find that growth reduces political instability, increasing urbanization raises it (with the characteristic quadratic relationship uncovered earlier), while public spending on education reduces it. As with the growth policy equation, there is an exogenous variation in political instability in the last time period, though in this case the move is towards greater political instability. Diagram 2 provides a visual illustration of these empirical results.

This model must, of course, be refined, in particular through the use of appropriate empirical methods for the political instability equation. But our point has, we hope, been made: it is impossible to consider the sustainability of reforms and growth in Africa without dealing simultaneously with the determinants of political instability and conflict, which remain, to our mind, as one of the major threats to the continued economic expansion of the continent.

Concluding remarks

This analysis of the sustainability of African growth can be summarized in five propositions.

1. The sustainability of growth depends upon the sustainability of policy reforms.

2. The sustainability of policy reform itself depends to a large extent on structural factors, in particular on the level of human capital (although it is difficult to test this effect empirically because of the slow rate of change, and small cross-country variations, particularly within Africa, of conventionally used measures of human capital), and on the vulnerability of countries to external shocks and political instability.

3. Political instability is itself influenced by the aforementioned structural factors (human capital and external shocks) as well as by the rate of urbanization.

4. The impact of these various structural factors has been dampened in the last decade though the political will of the countries in question and may be even more so in the future.

5. The impact of these structural factors could also be dampened by by foreign aid allocated according to the "performance" of countries, i.e., taking simultaneously into account their structural vulnerability and the quality of their economic policies.
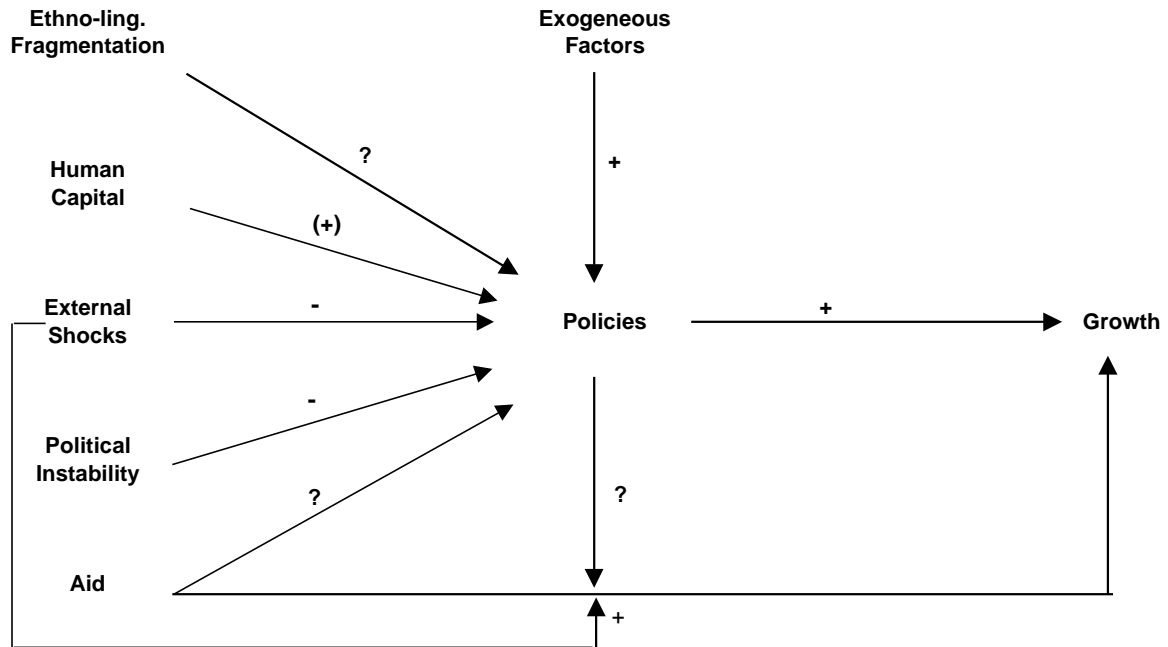
1. References

Adam C. and O'Connell S.A. (1999), "Aid, Taxation and Development in Sub Saharan Africa", *Economics and Politics*, vol. 11, n° 3, November, p. 225-253.

Arcand J-L. (2000), *Malnutrition and Growth : The Efficiency Cost of Hunger*, FAO of the United Nations, forthcoming, 2001.

Arcand J-L., Guillaumont P., Guillaumont Jeanneney S. (2001), "Les modalités d'action du capital humain sur le développement : à la recherche de la cohérence entre mesure et théorie", in *Le rôle du capital humain dans le développement*, Karthala, forthcoming.

Arcand J-L., Guillaumont P., Guillaumont Jeanneney S. (2000a), "How to Make a Tragedy: on the Alleged Effect of Ethnicity on Growth", *Journal of International Development*, 12, p. 925-938.

Arcand J-L., Guillaumont P., Guillaumont Jeanneney S. (2000b), "Ethnicity, Communication and Growth", CERDI, *Etudes et Documents*.

Barro R.J. (1999), "Determinants of Democracy", *Journal of Political Economy*, vol. 107, n°6, part.2, december, p. 158-183.

Berthélemy J.-C. and L. Söderling (2001), "The Role of Capital Accumulation, Adjustment and Structural Change for Economic Take-Off: Empirical Evidence from African Growth Episodes", *World Development*, vol. 29 (2), February, p. 323-343.

Bonaglia F., Goldstein A., Richaud C. (2000), "Le processus de réforme en Afrique : une tentative de quantification", provisional document, OECD Development Center.

Bratton M. and van de Walle H. (1997), *Democratic Experiments in Africa*, Cambridge University Press.

Burnside C. and Dollar D. (1997), "Aid, Policies and Growth", *World Bank Policy Research Paper*, n° 1777, June (now published in *The American Economic Review,* 2000).

Calipel S. and Guillaumont P. (1995), "Politique économique, dépenses publiques et scolarisation", *Ajustement, Education, Emploi*, M. Vernières ed., Economica, novembre, p. 51-68.

Collier P. (2000), "Implications of Ethnic Diversity", World Bank and CEPR, 31st Economic Policy panel meeting, Lisbon, April.

Collier P. and Gunning J. W. and associates (1999), *Trade Shocks in Developing Countries* (vol. 1 - Africa), Oxford University Press.

Collier P. and Gunning J. (1999b), "Why Has Africa Grown Slowly ?", *Journal of Economic Perspectives*, vol. 13, n° 3, Summer, p. 3-22.

Collier P. and Gunning J. (1999a), "Explaining African Economic Performance", *Journal of Economic Literature*, vol. XXXVII, March, p. 64-111.

Collier P., Guillaumont P., Guillaumont Jeanneney S. and Gunning J., (1997), "Redesigning Conditionality", *World Development*, vol. 25, n° 9, september, p. 1399-1407.

Collier P. and Hoeffler A. (1998), "On the Economic Causes of Civil Wars", *Oxford Economic Papers*, vol. 50, p. 563-573.

Combes J.L. and Guillaumont P.(2000), Commodity Price Volatility, Vulnerability and Development, CERDI, *Etudes et Documents*, n° 15, August, 21 p.

Deaton A. (1999), "Commodity prices and Growth in Africa", *The Journal of Economic Perspectives*, vol. 13, n°3, Summer, p. 23-40.

Devarajan S. and Holmgren T. Eds (2001), *Aid and Reform in Africa: A Report from Ten Countries,* The World Bank, forthcoming.

Easterly W. and Levine R. (1997), "Africa's Growth Tragedy: Policy and Ethnic Divisions", *Quarterly Journal of Economics*, vol. 112 (4), november, p. 1203-1250.

Elbadawi I. and Sambanis N. (2000), "Why Are There So Many Civil Wars in Africa? Understanding and Preventing Violent Conflict", *Journal of African Economies*, vol. 9, N°3, October, p. 244-269.

Guillaumont P. (2000), "On the Economic Vulnerability of Low Income Countries", CERDI, *Etudes et Documents*, n° 16, August, 31 p.

Guillaumont P. and S., eds. (1994), *Adjustment and Development. The Experience of the ACP Countries, Africa, Caribbean, Pacific*, in collaboration with the European Commission, Economica, 364 p.

Guillaumont P., Chauvet L. (1999), "Aid and Performance: a Reassessment", CERDI, *Etudes et Documents*, or (2001), forthcoming in the *Journal of Development Studies*,

Guillaumont P., Guillaumont Jeanneney S., Brun J-F. (1999), "How Instability Lowers African Growth", *Journal of African Economies*, vol. 8 (1).

Guillaumont P., Guillaumont Jeanneney S., Varoudakis A. (1999a), "Economic Policy Reform and Growth Prospects in Emerging African Economies", OECD, Development Center, *Technical Paper*, (ou1999b) version résumée "Politique économique et perspectives de croissance dans les économies émergentes d'Afrique", *Revue économique*, vol. 50, n° 3, mai, p. 511-521.

Guillaumont P., Guillaumont Jeanneney S., Sidibe Ch., and Amprou J. (2001) , "Mali", in Devarajan S. and Holmgren T. (see supra), forthcoming.

Gunning J.W. (2000), "Rethinking Aid", 12th ABCDE, World Bank, April.

Hugon Ph. and Sudrie O. (2000), "Un bilan des travaux prospectifs sur l'Afrique", mimeo.

Ndulu B.J. and O'Connell S.A. (1999), "Governance and Growth in Sub-Saharan Africa", *Journal of Economic Perspectives*, vol. 13, n° 3, Summer, p. 41-66.

O'Connell S.A. and Ndulu B.J. (2000), "Africa's Growth Experience. A Focus on Sources of Growth", *Working Paper*.

Schultz T.P. (1999), "Health and Schooling Investments in Africa", *The Journal of Economic Perspectives*, vol. 13, n° 3, Summer, pp. 67-88.

Soludo Charles C. (2000), "Monitoring Economic Performance in Africa: Towards the Construction of Performance, Policy Stance, and Sustainability Indices", Draft of *Background Paper for the Construction of ECA Performance, Sustainability and Policy Stance Indices*, mimeo.

Temple J. (1999), "The New Growth Evidence", *Journal of Economic Literature*, March, pp. 112-156.

World Bank (1998), *Assessing Aid, What Works. What doesn't and Why,* Washington.

World Bank (2000), *Can Africa Claim the 21st Century?,* Washington.

Diagram 1: basic relationships
of sustainability of growth in Africa

***

Main assumptions discussed

***

Ethno-ling.
Fragmentation

?

Exogeneous
Factors

+

Human
Capital

(+)

External
Shocks

-

Policies

+

Growth

-

Political
Instability

?

?

Aid

+

**Diagram 2: basic relationships
of sustainability of growth in Africa**

**Assumptions significantly tested
in a simple structural model**

**Exogenous
Factors**

**Initial GDP p.c
(convergence)**

+

-

**External
Shocks**

-

+

+

Policies

Growth

**Pub. Expendit.
on education**

-

-

-

**Political
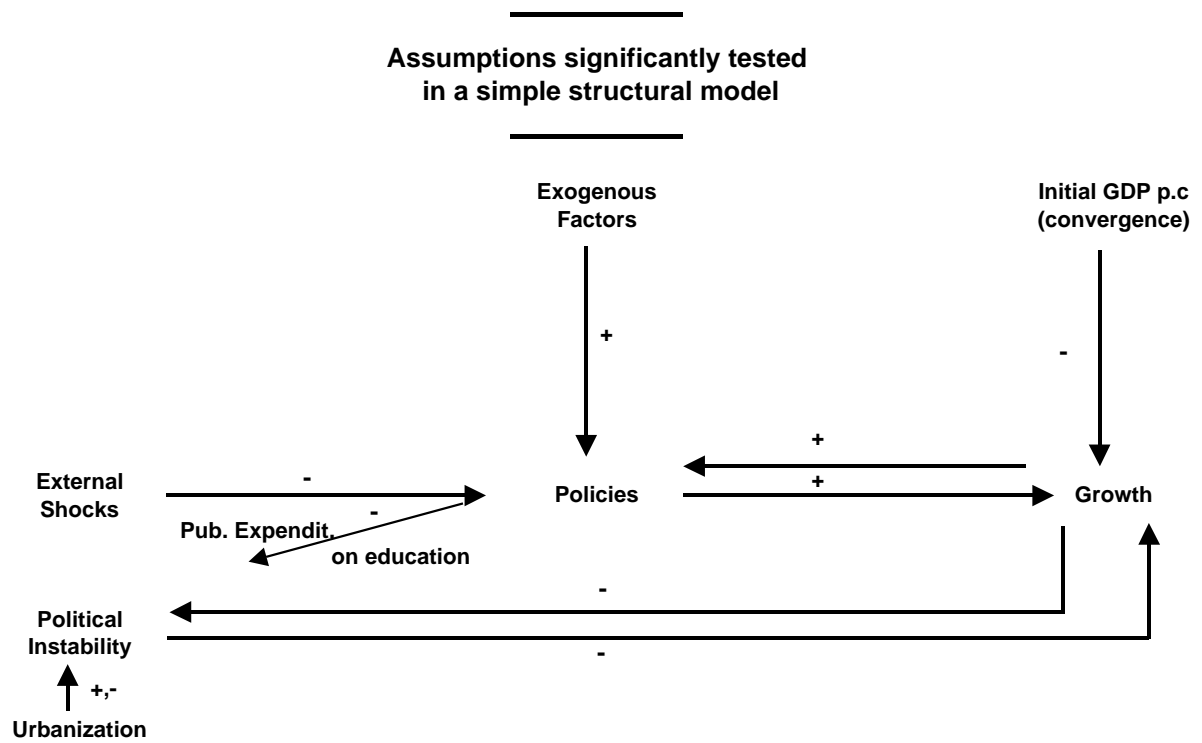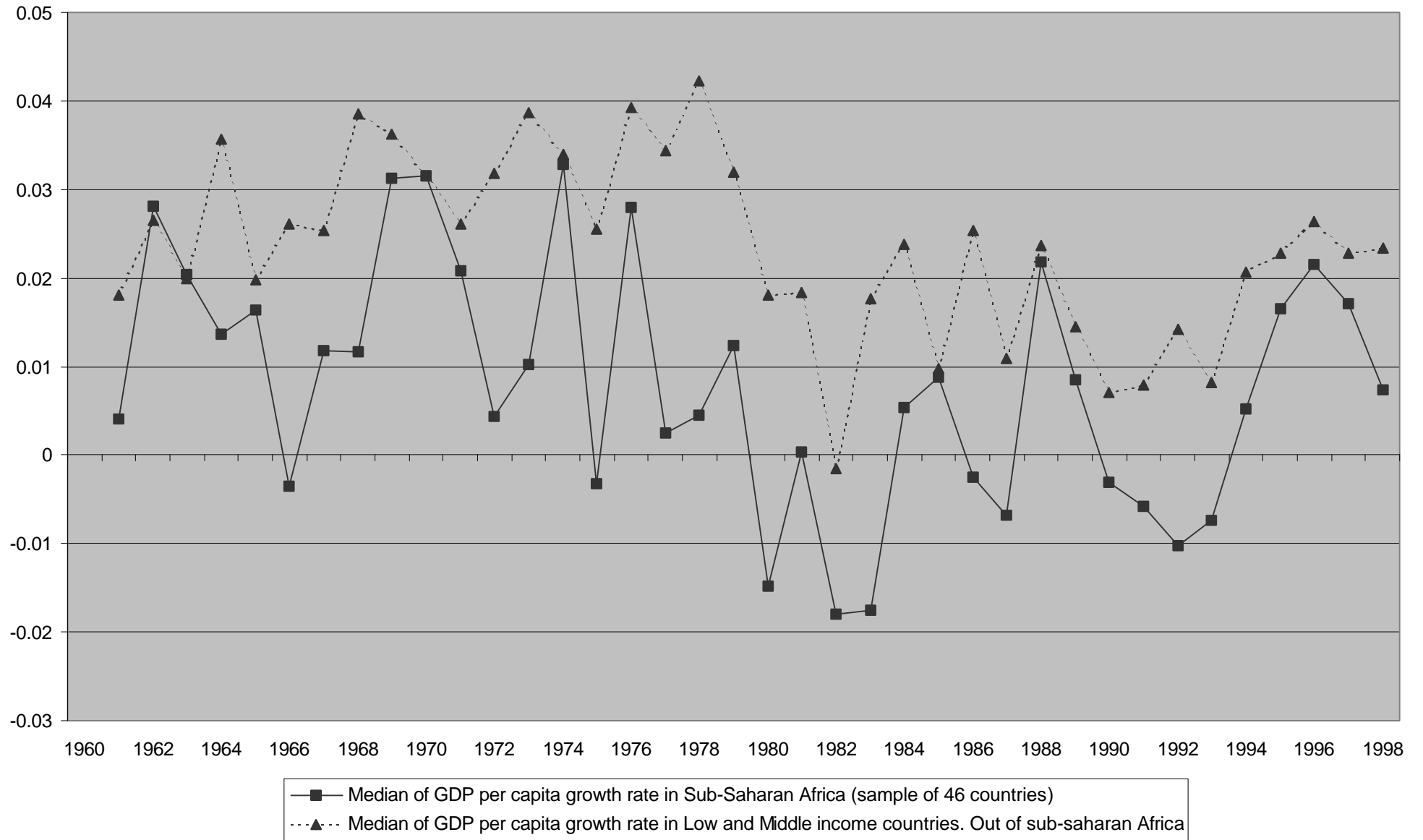Instability**

-

+,-

Urbanization

Table 1
Growth regressions: 1965-1997
Dependent variable: Annual growth rate of GDP per capita
t-statistics below coefficients

Estimation method	pooling	pooling	pooling	country-specific fixed effects	instrumental variables	GMM in first differences
	1	2	3	4	5	6
log Initial GDP per capita	-0.62	-0.28	-0.07	-2.83	-0.27	-4.94
	-1.56	-1.01	-0.25	-2.49	-0.63	-4.75
Political instability	-0.11	-0.13	-0.09	0.07	-1.02	-1.40
	-1.34	-1.81	-0.91	0.54	-2.41	-1.89
Average years of education of population over 15	0.29					
	1.98					
Economic policy index	1.02	1.04	1.09	0.29	0.31	2.19
	4.81	5.23	5.76	0.85	0.78	2.86
Ethnic diversity			-1.48			
			-1.93			
Dummy 1981-1989	-1.21	-1.18	-1.50	-0.04	-0.61	
	-2.44	-2.60	-3.42	-0.05	-0.78	
Dummy 1989-1997	-1.07	-1.02	-1.49	1.53	-0.32	
	-1.71	-1.81	-2.64	1.24	-0.36	
Latin America	-1.40	-1.39	-1.59		-2.21	
	-2.60	-2.75	-2.93		-2.64	
Sub-Saharan Africa	-1.83	-2.21	-1.54		-3.95	
	-3.18	-4.51	-3.01		-3.93	
Intercept	5.40	4.15	3.14		6.60	
	2.24	2.16	1.56		2.20	
adjusted R-squared	0.34	0.34	0.38	0.54	0.16	n.a.
s	2.39	2.33	2.17	1.93	3.21	n.a.
No. Observations	141	159	148	159	140	114
No. Observations from Sub-Saharan Africa	38	53	53	53	46	32
Test of overidentifying restrictions: p-value	n.a.	n.a.	n.a.	n.a.	[0.221]	[0.438]
Hausman test: random effect *vs* fixed effects : p-value	n.a.	n.a.	n.a.	[0.011]	n.a.	n.a.

Table 2
Economic policy index and political instability: 1965-1997
t-statistics below coefficients

Dependent variable	Economic Policy Index			Political Instability		
Estimation method	pooling	country-specific fixed effects	GMM in first differences	pooling	country-specific fixed effects	GMM in first differences
	1	2	3	4	5	6
Annual growth rate of GDP per capita	0.10	0.06	0.10	-0.16	-0.08	-0.26
	4.15	3.09	2.50	-3.60	-1.49	-5.95
Export instability	-0.04	-0.02	-0.01			
	-3.56	-1.64	-2.21			
Ethnic diversity						
Urbanization rate				0.05	-0.06	0.18
				1.80	-1.01	3.47
Urbanization rate, squared				-0.001	0.001	-0.22
				-1.91	1.79	-2.16
Education expenditures (% of GDP)				-0.14	-0.04	-0.22
				-1.63	-0.36	-3.12
Dummy 1973-1981	-0.03	-0.02		-0.12	-0.06	
	-0.19	-0.16		-0.27	-0.19	
Dummy 1981-1989	-0.08	0.01		0.71	0.56	
	-0.49	0.09		1.64	1.39	
Dummy 1989-1997	0.38	0.76	0.66	-0.21	0.41	0.8
	2.17	6.12	5.91	-0.44	0.74	5.56
Latin America	-0.94			-0.92		
	-6.62			-2.37		
Sub-Saharan Africa	-0.70			-0.82		
	-4.44			-2.11		
Intercept	2.21			1.46		
	12.25			2.12		
adjusted R-squared	0.36	0.76	n.a.	0.07	0.62	n.a.
SEE	0.93	0.57	n.a.	2.72	1.75	n.a.
No. Observations	282	282	114	337	337	149
No. Observations from SSA	74	74	31	105	105	42
Sargan test of overidentifying restrictions	n.a.	n.a.	[0.438]	n.a.	n.a.	[0.235]
Hausman test: random effect vs fixed effects : p-value	n.a.	[0.002]	n.a.	n.a.	[0.0002]	n.a.

FIGURE 1

GDP PER CAPITA GROWTH RATE : MEDIAN VALUES IN SUB-SAHARAN AFRICA AND OTHER DEVELOPING COUNTRIES

— ■ — Median of GDP per capita growth rate in Sub-Saharan Africa (sample of 46 countries)

··· ▲ ··· Median of GDP per capita growth rate in Low and Middle income countries. Out of sub-saharan Africa

Source: World Development indicators, 2000

FIGURE 1B
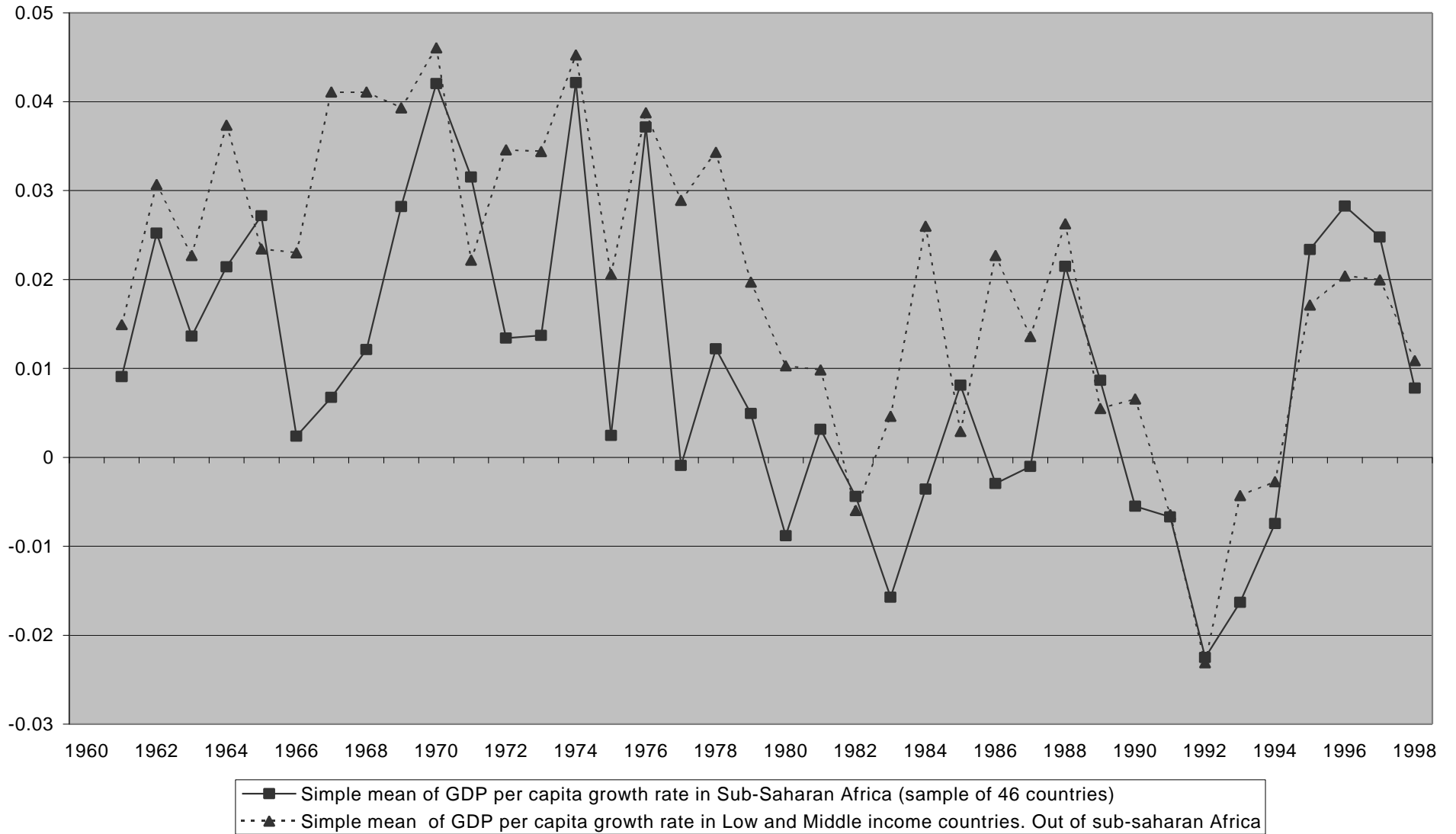**GDP PER CAPITA GROWTH: AVERAGE IN SUB-SAHARAN AFRICA AND IN OTHER DEVELOPING COUNTRIES**

Simple mean of GDP per capita growth rate in Sub-Saharan Africa (sample of 46 countries)

Simple mean of GDP per capita growth rate in Low and Middle income countries. Out of sub-saharan Africa

FIGURE 2
ECONOMIC POLICY INDICES FOR SUB-SAHARAN AFRICA
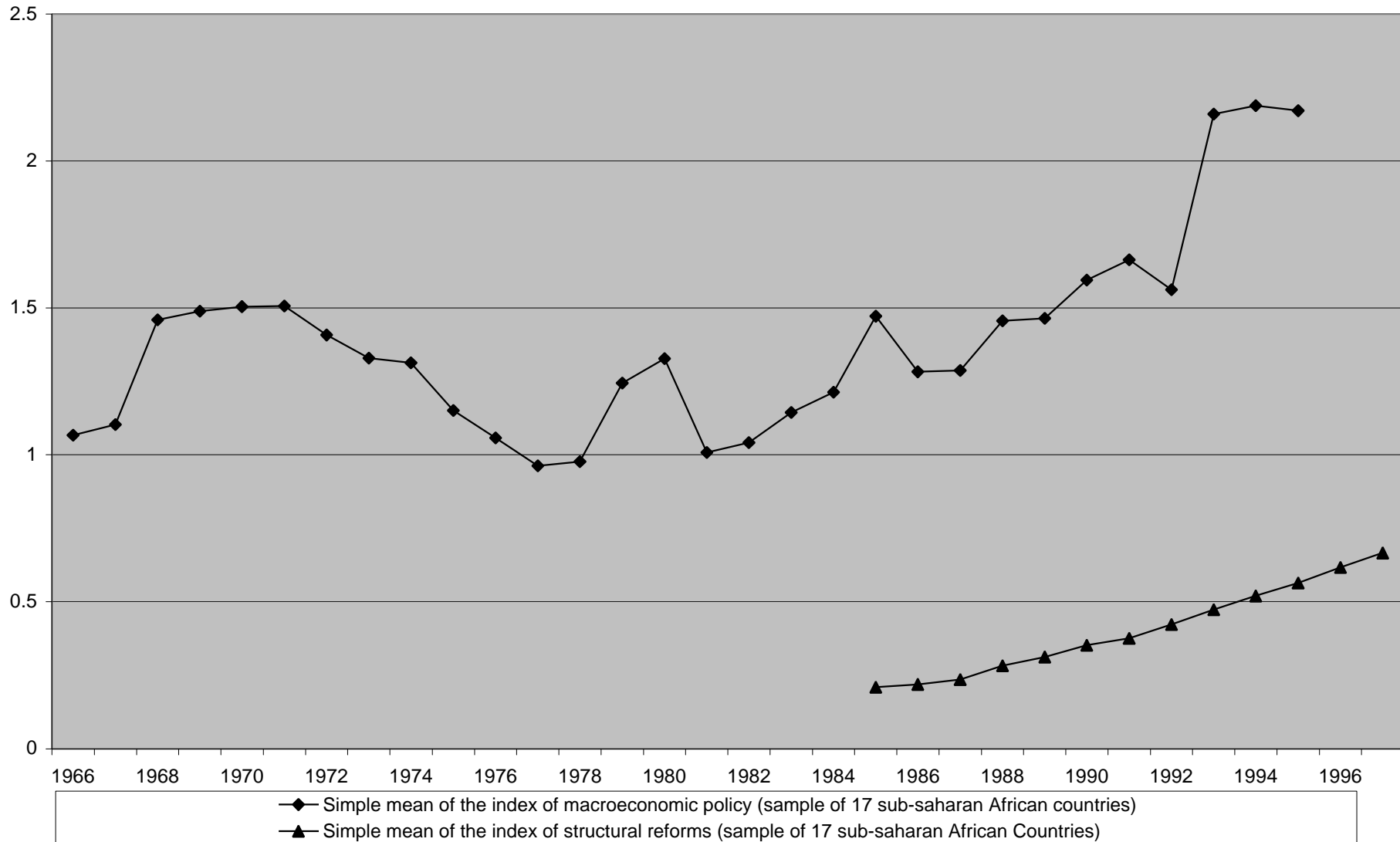
FIGURE 3A
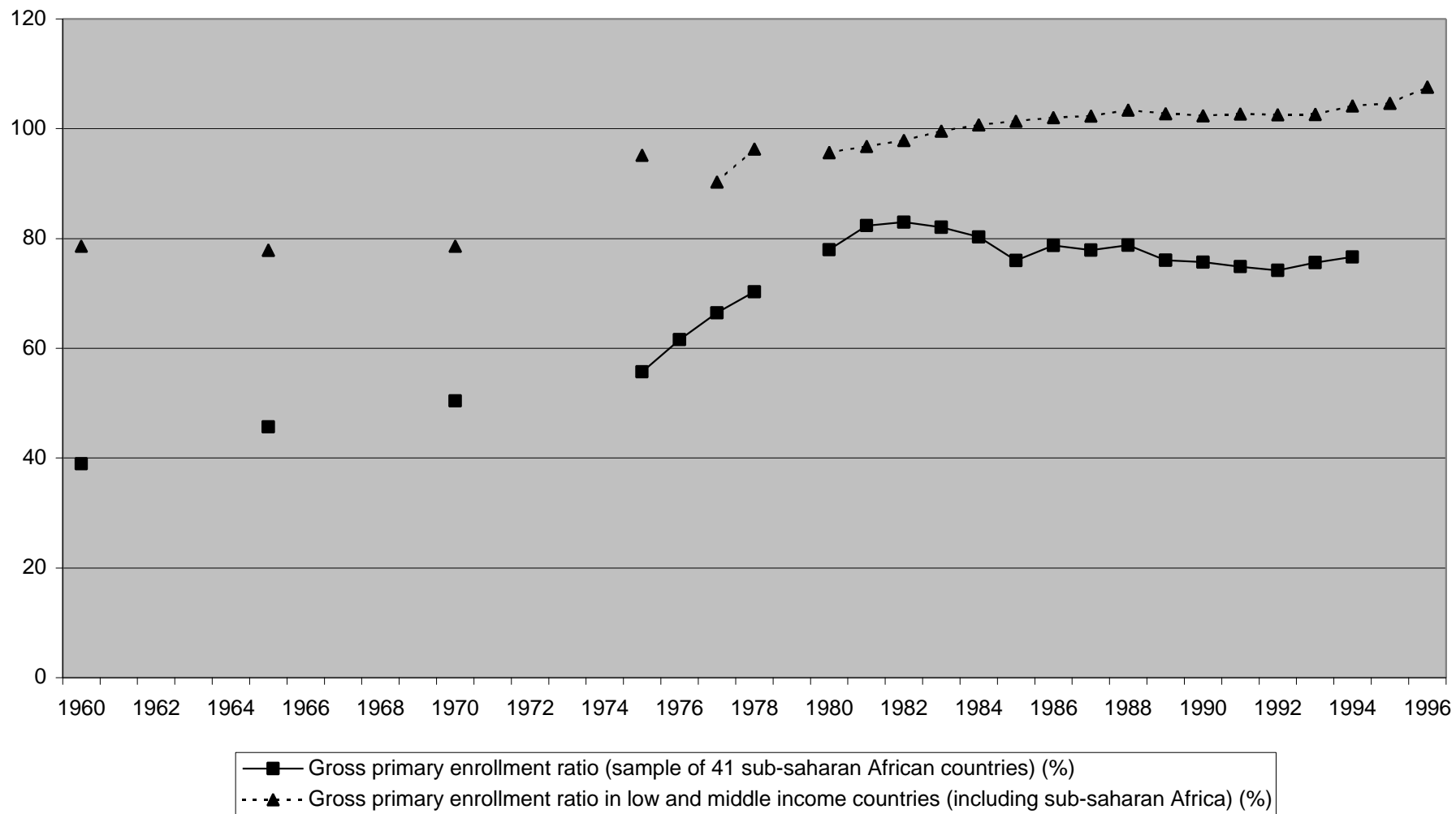**PRIMARY ENROLLMENT RATIO IN SUB-SAHARAN AFRICA AND IN DEVELOPING COUNTRIES**

— ■ — Gross primary enrollment ratio (sample of 41 sub-saharan African countries) (%)

- - ▲ - - Gross primary enrollment ratio in low and middle income countries (including sub-saharan Africa) (%)

FIGURE 4
TERMS OF TRADE AND GDP PER CAPITA GROWTH RATE IN SUB-SAHARAN AFRICA

— ■ — Simple moving average of GDP per capita growth rate (sample of 28 sub-saharan Africa countries)

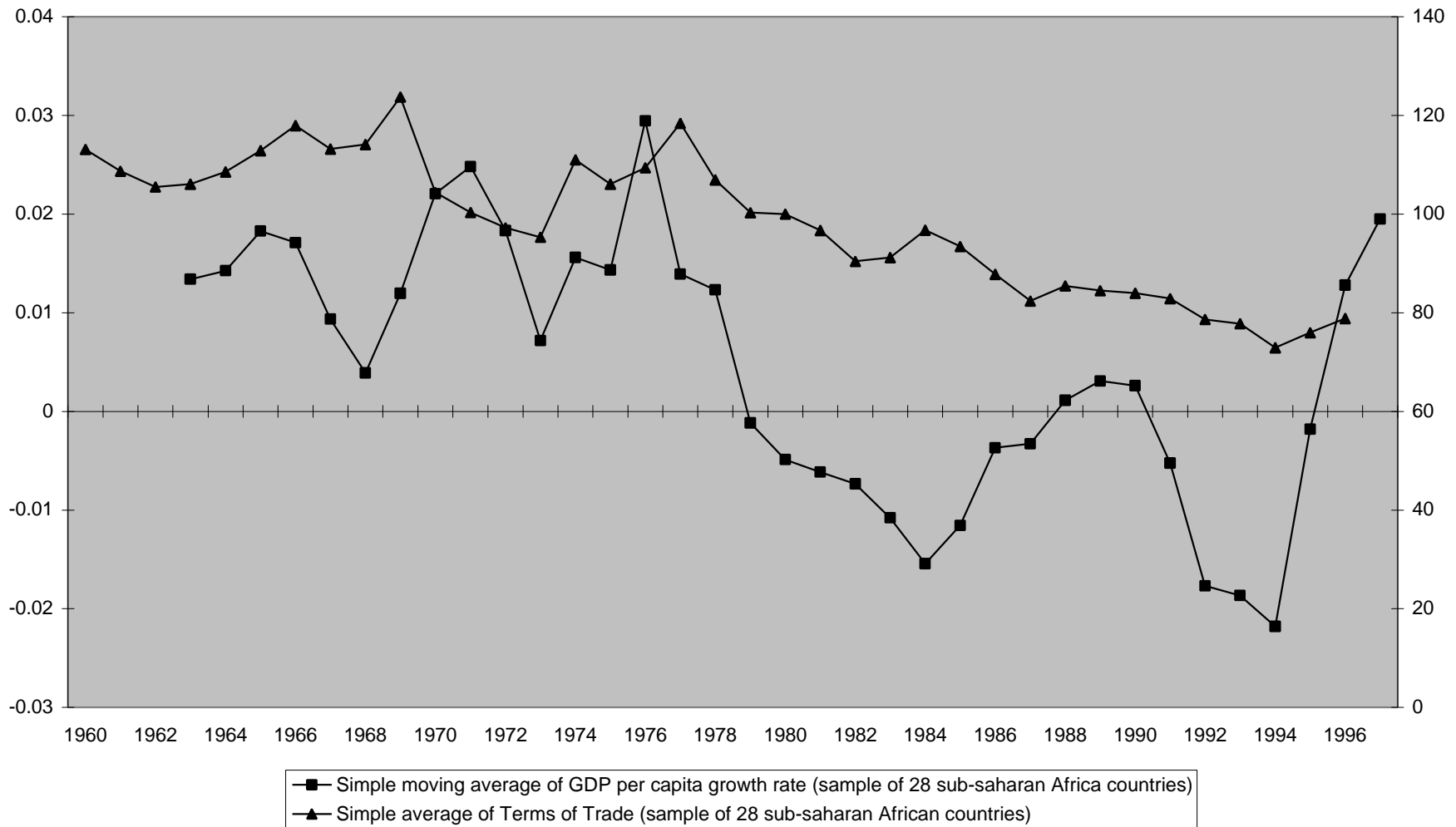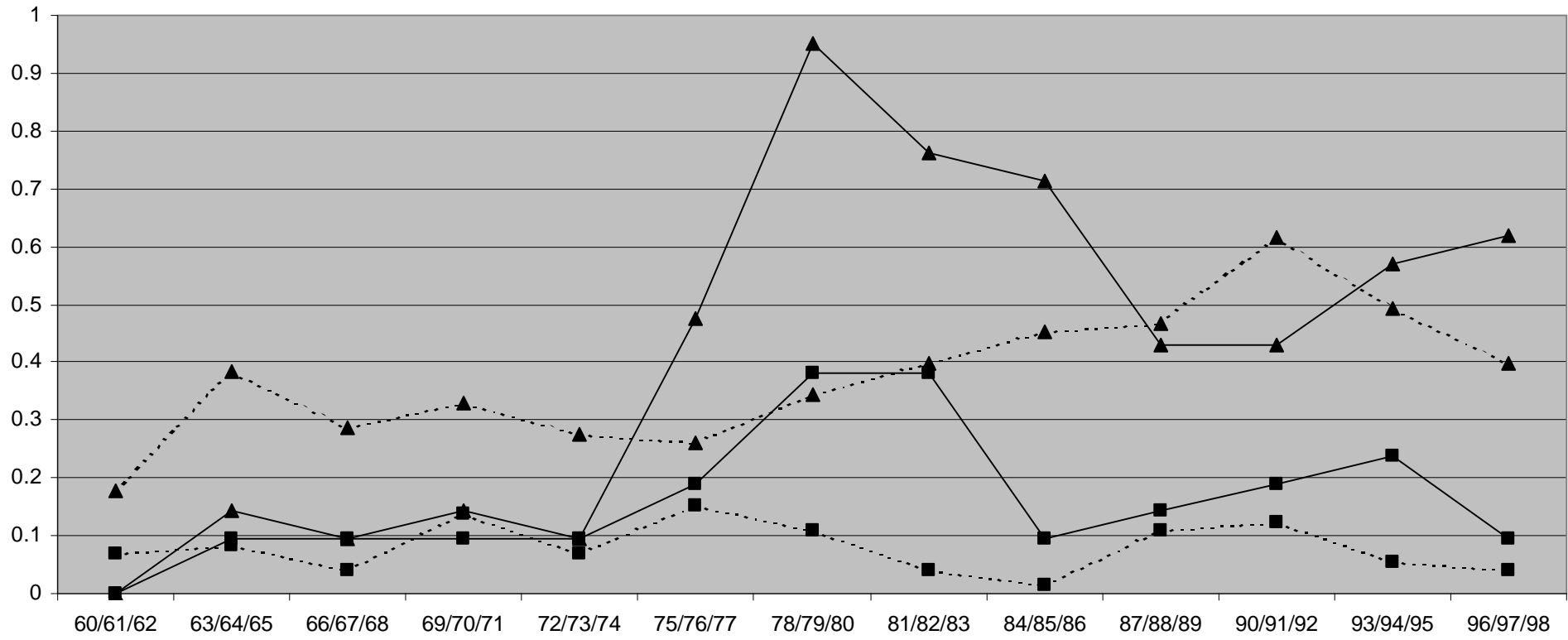— ▲ — Simple average of Terms of Trade (sample of 28 sub-saharan African countries)

FIGURE 5
POLITICAL INSTABILITY IN SUB-SAHARAN AFRICA AND IN OTHER DEVELOPING COUNTRIES
Coups, external and domestic events

- ···■··· Mean number of coups in a sample of 73 developing countries out of sub-saharan Africa (simple mean of 3 years)
- —■— Mean number of coups in a sample of 21 countries in sub-saharan Africa (simple mean of 3 years)
- ···▲··· Mean number of coups and external and domestic events in a sample of 73 developing countries out of sub-saharan Africa (simple mean of 3 years)
- —▲— Mean number of coups and external and domestic event in a sample of 21 sub-saharan countries (simple mean of 3 years)

FIGURE 6
**OFFICIAL DEVELOPMENT ASSISTANCE AND PUBLIC NET TRANSFERS
IN SUB-SAHARAN AFRICA**

Legend:
- ■ Simple mean of Public Net Transfers (% of GDP, sample of 43 countries)
- ▲ Simple mean of Official Development Assistance (% of GDP, sample of 43 countries)