Economic Commission for Africa

Growth and macroeconomic Convergence in West Africa:

Factor Endowments, Policies and Institutions

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Growth and Macroeconomic Convergence in West-Africa. Factor Endowments, Policies and Institutions

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Executive summary

- Western Africa is a poor region even by comparison with the rest of sub-Saharan Africa. On average, per-capita income in west Africa has stagnated over the last 5 decades. There have been differences, Burkina Faso grew since independence. In Niger per capita income is now at half the level it was at the time of independence. Cote d'Ivoire, after a promising early start, has come back to the independence level.

- Comparison with US levels in 1970 and then in 2004 shows that, despite the very low initial ratios, only Cape verde and Ghana improved their relative position. In 1960 Guinea was by far the richest ECOWAS country, followed by Senegal, Cape Verde and Cote d'Ivoire. In 2004 Cape Verde ranked first, Cote d'Ivoire was third after Guinea and preceded Benin. Senegal, initially the 2nd-richest country, in 2004 ranked 5th. Despite the increase in oil prices per capita income in Nigeria has not increased relative to the rest of ECOWAS.

- Cross country distribution of inflation highlights the relative monetary stability in WAEMU and the persistence of substantial inflation differentials relative to the rest of ECOWAS. Monetary stability is difficult to achieve in countries like Nigeria, Gambia, Ghana and Guinea.

- WAEMU membership does not enforce uniform fiscal discipline. Large differences are documented also for non-WAEMU countries.

- Current structural cross-country differences concerning economic and socio-politico-institutional variables are clearly detectable.

- Trade openness is a common feature in the region. However, substantial differences still persist. The openness index ranges from about 30% (Burkina Faso) to almost 100% (Mauritania, Ghana, Cape Verde).

- Even if the share of intra-ECOWAS trade increased consistently from the date of creation, the level of intra regional trade is relatively low. It increased from 3% in 1970 to almost 11% in 2008. Trade integration is more pronounced among WAEMU countries following the creation of a custom union in the late nineties.

- ECOWAS countries are quite heterogeneous in their governments size, ranging from values around 8% (Guinea) to almost 25% (Mauritania and Nigeria). These data

obviously suggest a great heterogeneity in the basic structure of the national economic systems.

- The region is characterised by strong ethnic fractionalisation, which is typically an index of polarisation and potentially unresolved and endemic conflict. The greater fractionalisation documented for some countries maps into higher values for an index that measures socio-political instability.

- Institutions are often regarded as an important pre-requisite for growth. Considering the Polity score, an index of quality of government action, we observe substantial differences, with some countries ranking relatively well (Senegal, Mali, Ghana and Benin). The Polity index for Mauritania, Gambia, Togo and Guinea is instead poor.The indexes of civil liberties and political rights also highlight important differences. Finally we consider the Corruption Perception. Corruption is endemic in the region, and is strongly associated with poor civil liberties, worse political rights and high level of ethnic fractionalisation.

- There is a strong cyclical correlation of output in the region which seems to be partly explained by macroeconomic coordination and partly by the common effect on terms of trade shocks.

- Formal tests of convergence show that there is only a mild evidence of output convergence, restricted to WAEMU countries.

- Considering convergence in in macroeconomic policy variables (inflation and budget deficits and government expenditure) the results show even a weaker partial convergence.

- Empirical analysis suggests that poorer countries have grown at a faster rate than richer ones, but this has not achieved a reduction in dispersion of per-capita incomes, which are ultimately driven towards country-specific steady states. Our analysis of country-specific effects suggests that social conflict could be an important factor. As an example considering the frequency of wars between 1960 and 2008, out of the 16 members, only two had no experience of war. By contrast, Guinea Bissau Liberia, Sierra Leone and Senegal were plagued by wars during more than 20% of the sample period. We also found that ethnic fractionalisation has a negative effect on growth convergence.

Recommendations

- In the past, great emphasis has been put on (monetary and economic) integration as a prerequisite for stimulating growth. The conclusion reached here is that integration is still way ahead, just like growth is an unaccomplished mission.

- It would be tempting to draw a comparison with the long-lasting collective effort that transformed post world-war-II Europe into the current European Union. The key objective of EU founders was to create a peacefully integrated economic zone that would gradually develop into a fully-fledged union. European countries were characterised by democracy and a stock of human capital of excellent quality. Trade openness (especially in the manufacturing sector) and proper use of external aid allowed the recovery of the physical capital lost with the war. Since then, European countries went through

several stages of integration, following a piece-meal approach. In ECOWAS emphasis on monetary convergence has always been very strong, and seems to have been assigned primacy relative to other stages of integration. In the meantime, conflicts among ECOWAS members have persisted, either in open or latent form.

- Looking at future perspectives, the issue obviously is which growth strategies should be pursued. The academic debate on growth prerequisites - institutions vs policies - is still open. For practical policy purposes, the key insight is that growth episodes often started with weak political institutions and became sustainable as they triggered a virtuous evolution of institutions over time. Emphasis on area-wide objectives such as macroeconomic stability, has achieved some important, hopefully lasting results. This strategy, however, has begun to produce "decreasing returns", where growth did not materialise despite increasing macroeconomic discipline.

- Promoting convergence and, above all, growth in this region requires a deeper understanding of country-specific features and focus on the "most binding constraints" to growth, as outlined in the "growth diagnostics" approach.

1 Introduction

This report describes macroeconomic convergence in Western Africa. West African countries have a long-standing tradition of gathering into groups whose institutional objective is fostering cooperation and economic integration. ECOWAS, the Economic Community of West African States, was founded in 1975 to promote a regional-based scheme of development in West Africa, through the creation of a common trade market and the adoption of macroeconomic policies enabling a sustained development. In particular its mission is to promote economic integration in "all fields of economic activity, particularly industry, transport, telecommunications, energy, agriculture, natural resources, commerce, monetary and financial questions, social and cultural matters .....". [1]

The above mentioned goals should be achieved through the implementation of a free trade area and a custom union (elimination of custom duties, quantitative and administrative restrictions to trade; establishment of a common external tariff), the creation of a common market (elimination of all obstacles to the free movement of persons, capital and services), and the creation of an economic union (harmonisation of economic, agricultural industrial and monetary policies, establishment of a fund for cooperation end development).

During the last 35 years ECOWAS has made important steps towards the achievement of these goals: tariffs on intra regional trade have been consistently reduced. Free movement of designated goods, reduction of custom duties and ECOWAS passport / travelling documents have also been adopted. The achievement of free movement of labour is still far from being completed even if some steps have been made also in this direction.

Within ECOWAS, WAEMU - West African Economic and Monetary Union - gathers Benin, Burkina Faso, Cote d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo. Its external exchange rate is pegged to the euro and is guaranteed by the French Treasury. The West African Monetary Zone (WAMZ) was formed in 2000 among the anglophone members of ECOWAS, plus Guinea (which is French speaking). The goal is to merge with WAEMU, giving West Africa a single stable currency. However, several of the WAMZ's countries suffer from weak currencies and chronic budget deficits. The launch of the single currency in WAMZ has been repeatedly postponed.

The quest for regional integration stems from a desire to minimise the cost of trade between nations and facilitate market access and growth for the region's industries, as well as to strengthen the economic power of the combined member states vis-à-vis third parties. For Africa, integration is also a developmental necessity in relation to trade, economic performance and strengthening of policy credibility and effectiveness. With organisational and institutional initiatives towards regional integration, there is scope to increase intra-regional trade, develop regional infrastructure, improve administrative efficiency, facilitate higher levels of investment and industrialisation and reduce political contamination of macroeconomic policies.

Specific to the goal of macroeconomic policy convergence, it should be noted that this concept is typically defined with reference to price stability and to budget deficits consistent with sustainable debt-to-GDP ratios. Price stability allows to limit the distortionary effects of inflation. These are defined with reference to relative price distortions, higher transaction costs, redistributive effects at the expenses of poorer segments of the population (Brauman, 2001). Sustainable debt-to-GDP ratios are traditionally defined with reference

[1] Members of the ECOWAS are: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Sierra-Leone, Senegal and Togo. Mauritania, originally a member of the ECOWAS, left the group in 2000, but there are occasional rumours of a possible comeback. For this reason we include Mauritania in our analysis.

to the distortionary taxation necessary to finance debt service. For our purposes, Reinhart et al. (2003) provide a far more poignant definition of the concept. In fact, they show that sustainable debt levels may prove drastically lower in developing countries, where the stock of public debt is mostly held by foreign investors. Exceeding "sustainable" debt thresholds may expose countries to the risk of sudden capital flows reversals and to dramatic output losses. Weak fiscal systems and a history of macroeconomic instability typically characterise countries subject to such "debt intolerance". Given the final objective of macroeconomic stability, the notion of macroeconomic policy convergence has an additional interpretation, as it accounts for the gradual elimination of policy shocks and has the potential to cause similarity of shocks, reducing the costs of monetary unification.

In the report, the analysis of macroeconomic policy convergence comes after a preliminary discussion of two key issues, that is, the role of "institutions" in shaping economic outcomes and economic convergence in ECOWAS countries. This choice requires some discussion. First, the modern empirical growth literature increasingly points to "soft" factors, such as institutions, corruption, and governance, as crucial to explain cross-country differences in per capita incomes. Second, Acemoglu et al. (2003) have shown that slow growth and macroeconomic volatility in developing countries in the postwar period are better explained by a number of institutional factors, such as political institutions that do not constrain politicians and political elites, ineffective enforcement of property rights, corruption and political instability. Once the role of these variables is accounted for, measures of macroeconomic policy distortions, such as the average size of public consumption[2], inflation, and real exchange rate overvaluation, have only a minor impact on volatility and crises. In their framework, "bad" policies are the symptom rather than the cause of the disease. To analyse macroeconomic policies and their convergence, it is therefore crucial to assess the underlying institutional structure that characterises Ecowas countries. By the same token, macroeconomic policy recommendations should be crafted taking into account the institutional background. Second, monetary unification and the associated convergence criteria have marked an ongoing effort to constrain policymakers towards greater economic integration. By definition, successful integration should generate convergence to similar per-capita incomes and growth paths in the long run. Analysis of economic convergence should therefore signal the degree of success of this integration-promoting strategy. Further, macroeconomic policy strategies should be designed conditionally to the actual degree of convergence in the economic structure.

The remainder of the report is organised as follows: section 2 presents a bird's eye view of the economic and institutional features of the region, section 3 analyses the economic convergence, section 4 discusses convergence in policies, section 5 presents a set of future policy options, finally section 6 concludes. All figures and some tables are relegated in the Appendix.

2 ECOWAS economic performance and institutional features: a bird's eye view

Western Africa is a poor region even by comparison with the rest of sub-Saharan Africa. On average, per-capita incomes has stagnated over the last 5 decades. There have been differences (see our country-specific figures in the Appendix): for instance, Burkina Faso grew since independence. In Niger per capita income is now at half the level it was at

[2]To support intuition, their result implies that, even though high levels of public consumption are generally associated with a poor macroeconomic performance, in countries characterized by "good" institutions a high level of public consumption does not imply adverse effects on macroeconomic performance.

the time of independence. Cote d'Ivoire after a promising early start, has come back to per-capita income of the independence level.

2.1 Macroeconomic variables

In figures 5 and 6 we compare the cross-country distribution of per capita incomes normalised with respect to the US levels in 1970 with the one in 2004. It is easy to see that, despite the very low initial ratios, only Cape Verde and Ghana improved their position relative to the US.[3] In 1960 Guinea was by far the richest ECOWAS country, followed by Senegal, Cape verde and Cote d'Ivoire. In 2004 Cape Verde ranked first, Cote d'Ivoire was third after Guinea and preceded Benin. Senegal, initially the 2nd-richest country, in 2004 ranked 5th. Despite the oil bonanza per capita incomes in Nigeria have not increased relative to the rest of ECOWAS.

In figures 7-11 we present the cross-country distribution of some key statistics over the period 2000-04 (GDP growth, inflation, openness[4], public expenditure and deficit as ratios of GDP, life expectancy[5]). For most countries, growth has been rather strong by historical standards, especially in Sierra Leone. Liberia has suffered from a severe crisis, while Cote d'Ivoire and Guinea Bissau have stagnated. Cross country distribution of inflation highlights the relative monetary stability in WAEMU and the persistence of substantial inflation differentials relative to the rest of ECOWAS.[6] Monetary stability is difficult to achieve in countries like Nigeria, Gambia, Ghana and Guinea. WAEMU membership does not enforce uniform fiscal discipline (see for instance the big differences between Senegal, Togo and Guinea-Bissau). Large differences are documented also for non-WAEMU countries. Substantial trade openness is a common feature in the region. However, relevant differences do exist. The openness index ranges from about 30% (Burkina Faso) to almost 100% (Mauritania, Ghana, Cape Verde). Openness is probably better explained by productive specialisation in commodity exports than by sheer size.[7] Just like the rest of sub-Saharan Africa, life expectancy is relatively short in the region, but we observe important cross-country differences. ECOWAS countries are quite heterogeneous in their governments size, ranging from values around 8% (Guinea) to almost 25% (Mauritania and Nigeria). These data obviously suggest a great heterogeneity in the basic structure of the national economic systems.

2.2 A brief review of historical developments

Looking and macroeconomic variables in retrospective, the period between the early 70s and the end of the 90s was characterised by a dismal economic performance of the region. In table 1 we report growth for ECOWAS, WAEMU and WAMZ countries (10-year subperiods but for the 2000-2004 spell) The phase between the mid-70s and the end of the 90s was marred by the difficult adjustment to the oil shocks and the subsequent debt crisis. The early part of the new century has been characterised by a recovery, mostly outside WAEMU.

With respect to external developments, as one would expect for poor countries, the region has consistently run current account deficits. These peaked in the '80s, when the

[3]The US income level is the standard reference for relative comparisons in the analysis of long-term growth.

[4]Openness is measured here as the total volume internationally traded as a ratio to real GDP.

[5]All variables are averages over the 2000-04 period.

[6]In the figures WAEMU countries are identified by a star.

[7]For instance, Nigeria is almost as open as Cape Verde.

debt service to exports ratio also reached a maximum.[8] During the first years of the new century WAEMU countries are characterized by a smaller external deficit and a lower debt service to exports ratio. Given the limited access of the private sector to external finance, we interpret this as a consequence of the discipline induced by the fiscal surveillance criteria (see section 4). In figure 3 it is shown the time pattern of two indicators of openness: trade and capital account openness.[9] Trade openness constantly increases over the sample period, with non WAEMU countries being consistently more open than WAEMU countries (figure 9 shows the country distribution over 200-04 period). On the contrary WAEMU countries display lower capital account restrictions until the end of the eighties but the pattern is reversed in recent years. From figure 17 we can see that this reversal is mainly due to the effect of capital account liberalization in Liberia and Gambia.

In Table 1 we take the ratio of domestic credit to GDP as a measure of financial markets development. The observed average values testify of the underdevelopment of domestic financial markets. Furthermore, observed trends signal (if possible) a worsening pattern. WAEMU countries do not seem to have benefited from the low inflation environment, while credit in the WAMZ subregion has been consistently lower than in the rest of ECOWAS.

2.3 Institutional variables

Figure 12 shows that the region is characterised by strong ethnic fractionalization, which is typically an index of polarisation and potentially unresolved and endemic conflict. In figure 13 we document the cross-country distribution of an index of socio-political risk and instability.[10] This will turn out a key variable in limiting growth convergence (see section 3.3 below). It is easy to see that the greater fractionalisation documented for Liberia, Sierra Leone, Nigeria and Cote d'Ivoire maps into greater exposure to socio-political instability.

The following figures documents some "institutional" differences.[11] We start by presenting the well known Polity score,[12] (figure 14) a variable that measures constraints placed on the executive and is an index of quality of government action.[13] Once more, we observe substantial differences, with some countries ranking relatively well (Senegal, Mali, Ghana and Benin). The Polity index for Mauritania, Gambia, Togo and Guinea is instead poor.[14]

Next we consider the indexes of civil liberties and political rights constructed by Freedom House.[15] These indexes range from 1 (best evaluation) to 7 (worst evaluation) and

[8]This was the time of the debt crisis that affected several ECOWAS countries as well as the majority of developing countries.

[9]The latter index is constructed by Chinn and Ito (2006) applying principal component analysis on several indicators of financial openness taken from the IMF Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). These indicators measure: i) the presence of multiple exchange rates; ii) restrictions on current account transactions; iii) restrictions on capital account transactions; iv) the requirement of the surrender of export proceeds.

[10]This index, is a weighted average of the following variables: i) assassinations; ii) general strikes; iii) guerrilla warfare; iv) government crises v) purges; vi) riots: vii) revolutions; viii) anti-government demonstrations. Source CNTS.

[11]The role of these variables in explaining long-term growth and convergence is documented in section 3.3 below.

[12]Constructed by the Polity IV Project, details of the source in the appendix. The index captures this regime authority spectrum on a 21 point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). It is composed of six component measures that record key qualities of executive recruitment, constraints on executive authority, and political competition.

[13]The Polity variable is one of the most frequently used characterisation of institutions. See for instance Acemoglu et al. (2001).

[14]The Polity index is not available for Cape Verde, while the value for Liberia is 0.

[15]The indexes are composed of seven subcategories, drawn from the Universal Declaration of Human Rights, represent the fundamental components of freedom, including an individual's ability to: i) participate

Table 1: Relevant macroeconomic variables

	Inflation				Growth		
Period	Waemu	Wamz	Total	Period	Waemu	Wamz	Total
1960-69	3.5	4.0	3.8	1960-69	1.1	1.6	1.4
1970-79	9.6	16.5	11.9	1970-79	0.6	0.9	0.5
1980-89	12.1	36.7	18.9	1980-89	−0.3	−0.5	−0.5
1990-99	9.5	23.7	13.6	1990-99	−0.1	−0.7	−0.4
2000-04	1.9	11.0	5.3	2000-04	0.1	2.4	0.7
Total	8.6	20.5	12.4	Total	0.3	0.5	0.2
	M2/GDP				Curr. Acc./GDP		
Period	Waemu	Wamz	Total	Period	Waemu	Wamz	Total
1960-69	9.7	14.5	10.9	1960-69	.	.	.
1970-79	16.7	17.6	16.8	1970-79	−6.6	−6.9	−7.3
1980-89	22.9	20.6	22.5	1980-89	−11.1	−3.3	−8.4
1990-99	22.1	15.6	37.9	1990-99	−7.9	−4.0	−6.1
2000-04	25.0	22.6	25.3	2000-04	−5.7	−2.1	−4.7
Total	19.2	17.9	23.9	Total	−8.4	−3.7	−6.9
	Dom. Cred./GDP				Debt service/Exports		
Period	Waemu	Wamz	Total	Period	Waemu	Wamz	Total
1960-69	10.3	7.5	8.9	1960-69			
1970-79	19.1	9.1	16.0	1970-79	7.0	6.0	8.5
1980-89	24.4	10.7	19.6	1980-89	15.6	13.8	14.2
1990-99	14.8	7.2	16.9	1990-99	12.4	17.5	14.7
2000-04	12.9	9.8	13.3	2000-04	9.2	12.1	10.2
Total	16.9	8.7	15.6	Total	12.1	14.1	13.0

Source: World Development Indicators

are represented in figure 15; we detect important differences in the distribution of political rights and civil liberties. Finally we consider the Corruption Perception Index constructed by Transparency International;[16] it ranges from 0 to 10 with a higher score meaning less (perceived) corruption (see figure 16). Government quality is crucially affected by the extent of corruption, moreover several studies have documented the potentially devastating effect of corruption on growth (Mauro, 1995). A comparison of the figures reveals that corruption is strongly associated with poor civil liberties, worse political rights and high level of ethnic fractionalization. In fact, with the exception of Guinea the five countries with the highest value of the index of fractionalization are also the countries with the worst score of the corruption index (Liberia, Sierra Leone, Cote d'Ivoire Guinea-Bissau and Nigeria), analogously the same countries score the worst ranking in civil liberties.

2.4 Interpreting cross-country differences in governments size

Explaining cross-country differences in government size has attracted a considerable amount of academic research. Per-capita income levels, external risks (Rodrik, 1998), distorted political incentives (Persson and Tabellini 2003, 2004; Tornell and Lane (1999)) are theoretical and empirically documented determinants of government size. In figures 19-22 we present some prima facie evidence of the cross-country correlations between government size and economic and institutional variables.[17]

With the exception of outliers such as Mauritania, Nigeria and Cape Verde, there is a clear, negative relation between public expenditure and per capita income.[18] This is somewhat surprising, and points at the alleged inefficiency of public policy in the region. A similar conclusion obtains if one looks at the seemingly uncorrelated patterns of public expenditures and life expectancy.

Public expenditure grows with openness. It is less easy to relate public expenditure to socio-political instability. This casts doubts on the applicability in this context of the celebrated Rodik's argument that the positive relation between openness and government size is determined by the greater reliance on public insurance mechanisms when countries are more open.

Unlike former studies (Persson and Tabellini 2003, Persson et. al. 2007) we cannot document any positive correlation between public expenditure and the constraints on the executive (polity index). It should be noted, however, that in several countries substantial improvements in the polity index where achieved over the last few years, and it might take some time before this affects expenditures.

Finally the figures show the scatter diagram of public expenditure and the index of corruption and fractionalisation. Following the arguments outlined in the previous paragraphs we should expect a positive relationship in both cases. The figures are not supporting this interpretation, if any relationship can be detected it seems to be negative instead of positive. In fact other forces may be at work: higher fractionalisation may limit the ability of the government to use public spending, hence the negative relationship; similarly corruption can be a proxy for the inability of the government to raise taxes resulting correlated with lower

freely in the political process; ii) vote freely in legitimate elections; iii) have representatives that are accountable to them; iv) Exercise freedoms of expression and belief; v) be able to freely assemble and associate; vi) have access to an established and equitable system of rule of law; vii) have social and economic freedoms, including equal access to economic opportunities and the right to hold private property.

[16] The index considers 16 different polls and surveys from 10 independent institutions.

[17] These scatter diagrams are constructed using averages of the relevant variables over the period 2000-2004.

[18] In fact, in section 3.3 below we document the adverse effect of public expenditures on per-capita incomes.

expenditure. While being beyond the scope of this report, further research on this issue is certainly needed.

2.5 Trade integration

As stated in the introduction one of the major economic objective of ECOWAS has been the promotion of internal trade through the creation of a custom union. The share of intra-ECOWAS trade increased consistently from the date of creation rising from 3% in 1970 to almost 11% in 2008. This figure is similar to those of other African regional trade agreements such as COMESA and SADC; however the road to reach level of integration similar to those achieved in Europe (60% of intra-European trade) is still long. The low level of regional trade integration is documented by the fact that in ECOWAS, over the period 1996-2005 the average annual growth rate of intra-regional export did not exceed the growth rate of total exports (13%). The poor level of trade integration achieved in ECOWAS is the result of the slow progress in trade liberalisation both *de jure* and *de facto*. On the institutional side trade liberalisation made slow progresses until the beginning of the nineties. After the 1993 Cotonou revision of the treaty and the devaluation of the CFA Franc in 1994 a two speed strategy emerged among ECOWAS countries. WAEMU countries, with the aim of boosting regional integration and policy effectiveness, made a decisive step towards stronger trade integration by creating a custom union. The other countries in the region pursued a looser form of trade integration. The WAEMU custom union has been implemented in two steps: in 1996 member countries removed tariffs and quantitative restrictions on intra-regional trade creating a free trade area; in 2000 they adopted a common external tariff creating effectively a custom union. However while *de jure* a custom union is in place *de facto* there are still several factors that are constraining its effective implementation: some countries are not fully implementing WAEMU rules of origins,[19] several national trade regulations conflict with WAEMU rules (the presence of minimum levels of imports and exports are equivalent to quantitative restrictions), finally administrative inefficiencies severely hamper the effective functioning of the custom union.

Despite these difficulties the level of intra-regional trade in WAEMU is higher than in any other region in Africa. Moreover the slow but steady progresses in implementing trade liberalisation in the region attracted other ECOWAS countries to join the process both for reaping the benefits of higher trade and for avoiding to be penalised by the trade diversion effect that is embedded in any free trade area. In fact during the last years trade between WAEMU and ECOWAS countries was subject to substantial trade barriers. Goods imported from ECOWAS were subject to the common WAEMU external tariff; by contrast exports from WAEMU to ECOWAS were subject to country specific import tariffs. In order to reduce these inefficiencies and obstacles to trade integration, ECOWAS countries decided at the beginning of 2006 to adopt the WAEMU common external tariff with the aim of extending the custom union to the entire economic area. Notwithstanding the initial ambitious target of end 2007 the implementation date has been repeatedly postponed until June 2009.

In addition to the WAEMU experience a second element is shaping in a decisive way ECOWAS trade policy: its relations with the EU. During the last decades commercial relations between ECOWAS and the EU have been conducted within the frame of the partnership agreements signed by the EU with the African, Caribbean and Pacific Countries (ACP), with the Lomè (1975) and Cotonou (2000) agreement. It is well known that these agreements are not complying to WTO rules because they are not reciprocal (ACP countries have a better

[19] A common nomenclature has been adopted only recently.

access to the EU market than EU countries have to ACP markets) and most importantly they are discriminatory against non ACP countries. The Cotonou agreements temporarily prolong the existing agreements opening a new phase of negotiation of new WTO compliant agreements. These new agreements between ACP countries and the EU are called Economic Partnership Agreements (EPA), are conducted in parallel with six regional groups (one of these is ECOWAS) and have the final goal of creating a free trade area with the EU by 2020. An assessment of the likely impact of EPA on ECOWAS trade is beyond the scope of the present report[20], however it is important to stress that discussions on EPA has boosted the interest of ECOWAS countries to the creation of the custom union.

More formally the potential increase in ECOWAS trade following the implementation of the custom union can be assessed using the trade complementarity index[21]

$$TC_{ij} = 100 - \sum_k \frac{|M_{jk} - X_{ik}|}{2}$$

where X_{ik} is country i's total export of product k and M_{jk} is country j's imports of product k. The index ranges from 0 (no complementarity) to 100 (full complementarity).

Table 22 reports the complementarity index for ECOWAS countries. First there is higher trade complementarity among WAEMU countries than among non WAEMU countries. This could be the result of the endogeneity of the complementarity itself: the implemented custom union tends to enhance intra regional trade determining a reorientation of imports and exports. However there are country pairs among WAEMU and NON-WAEMU countries showing significant trade complementarities, Cape Verde is a clear example but also Ghana and Cote d'Ivoire showing trade complementarities ranging from 24.8 to 39.3. Overall the value of the index where WAEMU countries are exporters and other ECOWAS countries are importers is 29%. Considering that a level of 25% is generally estimated to indicate strong potential for enhancing trade we can conclude that there is room for significant increase in intra-regional trade following the completion of the liberalisation process.

Table 2 compares export shares by destination between 1996 and 2008. A number of factors emerge. First the general pattern for ECOWAS hides important cross country differences: several countries increased consistently the share of intra-ECOWAS exports; Burkina Faso moved from 19 to 93%, Benin from 5 to 24%, Ghana from 4 to 32%, Senegal from 16 to 37% and Togo from 8 to 60%. The only countries that reduced their share of exports towards ECOWAS are Mali (from 52 to 24%) and Nigeria (from 6 to 4%). Second the share of exports toward European countries dropped sharply over the sample years from 49% in 1996 to 24% in 2008. This in spite of the Everything But Arms initiative and other trade initiatives implemented by EU to African economies.[22] By contrast there has been a steady increase in the share of Asian exports (mainly China and India) and American exports due on the one hand to the Africa Growth and Opportunity Act and on the other hand to the increased exports of oil. The modest growth in intra-ECOWAS trade displayed by table 2 is partially the result also of the rise in commodity prices (mainly oil) since the beginning of the new century that inflated the value of exports to non African countries, mainly the US.

This raises another crucial issue in ECOWAS trade: its high concentration in commodities. In 2004 oil was representing 80% of the value of ECOWAS exports, while cocoa almost 10%. For some countries, notably Benin Burkina Faso, Mali and Togo, cotton is the major

[20] See Goretti and Weisfeld (2008), Lang (2006) and Nielsen and Zouhon-Bi (2007) for a more detailed analysis.

[21] See Goretti and Weisfeld (2008)

[22] It has to be stressed that several partnership agreements linked to the EBA initiative were signed in 2007 and are not reflected in the data presented in the table.

source of export revenues. The high dependence on commodity trade entails several problems. First high export concentration means lack of diversification and higher exposure to sectoral shocks. Table 3 shows the export concentration index[23] of ECOWAS countries. The index is higher than other African trade agreements (COMESA and SADC) and more than the double with respect to MERCOSUR in Latin America. Moreover while there has been a tendency in developing countries for increasing the degree of export diversification, in ECOWAS the pattern is reversed showing more concentration. Note that, as stressed by Ben Hammouda et al. (2006) during the mid seventies, ECOWAS was one of the most diversified regions in Africa, however, starting from the mid eighties "...the economies of the subregion started to become more concentrated, and within 25 years, the diversification gains that had already been made were eroded." Two major factors are behind this process: on the one hand ECOWAS economies were unable to use the gains deriving from the increase in commodity prices observed during the last ten years to invest in production and export diversification; on the other hand political instability played an important role in eroding the gains from diversification.

The fact that ECOWAS exports countries are particularly concentrated in commodities exposes them to the high level of volatility in commodity prices, as testified by the experience of recent years. It follows that exposure to terms of trade shocks is one of the major factor of vulnerability for ECOWAS countries. The exchange rate contributes to exacerbate terms of trade shocks. Being heavily commodity based, ECOWAS exports are almost entirely denominated in Dollars whereas the weight of the Euro in imports tend to be higher. In recent years the Euro appreciation has increased import prices while decreasing export prices. This effect is particularly pronounced in WAEMU countries that share a common currency pegged to the Euro.

2.6 Economic integration and exchange rate policy

Looking at more cyclical aspects table 19 displays the pairwise correlation in inflation rates across ECOWAS countries after 1990. WAEMU countries are identified by bold fonts; a star identifies correlations significant at the 5% level. Tables 20 and 21 perform the same analysis on the cyclical component of output and of terms of trade.[24]

The tables offer several suggestions: first the correlation of inflation rates is clearly higher among WAEMU countries, as one should expect. Second the cyclical components of output are also highly correlated, even among non WAEMU countries. This is suggestive of the fact that additional factors, other than the coordination of macroeconomic policies, may be at work. A potential candidate are external shocks - i.e. commodity price shocks - that can considerably affect economic performance. Table 21 shows that the cyclical components of terms of trade are highly correlated even among non WAEMU countries confirming the importance of terms of trade shocks for macroeconomic volatility. In figure 2 we plot a scatter diagram of the standard deviation of the cyclical component of output and the standard deviation of the cyclical component of terms of trade. There is a clear positive relation between the two variables suggesting that volatility in terms of trade is a clear determinant of output volatility. It seems that the high cyclical correlations of output in the region can be explained partly by macroeconomic coordination and partly by the common effect on terms of trade shocks.

An important question is the relationship that economic integration has with monetary integration through the exchange rate mechanism. Given that half of ECOWAS member

[23] This index is the well known Herfindahl index of constructed using the value of exports in 3 digit sectors.
[24] The cyclical component has been calculated by applying to the original serie the Hodrick-Prescott filter.

Table 2: Exports by destination, share over total

		ECOWAS	Africa	Europe	America	Asia
Burkina Faso	1996	19.48	25.11	43.78	0.61	30.50
	2008	93.68	94.53	4.89	0.29	0.28
Benin	1996	5.12	16.00	29.63	24.42	29.75
	2008	24.93	31.50	22.05	10.71	27.48
Cote Ivoire	1996	18.99	23.37	60.52	10.69	4.24
	2008	28.66	37.53	46.09	7.18	5.71
Cape Verde	1996	1.78	1.96	91.11	3.61	0.02
	2008	14.85	17.21	65.39	4.22	3.27
Ghana	1996	3.64	4.39	85.78	4.07	5.56
	2008	32.08	43.27	41.88	5.35	8.02
Gambia	1996	10.75	11.34	69.21	0.31	19.14
	2008	26.46	35.45	60.68	1.84	2.02
Guinea	1996	9.50	12.95	50.74	35.42	0.89
	2008	10.12	41.07	79.12	3.66	4.95
Guinea Bissau	1996	0.09	0.09	6.49	0.00	93.41
	2008	0.14	0.15	3.42	0.19	96.23
Mali	1996	51.99	57.49	27.07	1.13	14.31
	2008	23.69	94.32	4.76	0.42	0.44
Niger	1996	32.02	33.71	46.63	0.57	18.29
	2008	31.35	34.73	63.74	0.48	0.97
Nigeria	1996	6.08	8.46	41.03	41.35	9.14
	2008	4.23	7.85	18.26	55.82	11.82
Sierra Leone	1996	34.50	35.86	59.44	1.29	3.41
	2008	47.42	48.65	25.70	1.13	23.71
Senegal	1996	15.81	22.95	43.82	1.93	22.36
	2008	37.50	46.44	32.23	1.92	12.38
Togo	1996	7.89	17.80	21.70	26.46	33.33
	2008	59.96	63.51	5.20	1.95	16.71
ECOWAS	1996	8.64	11.56	49.11	37.89	9.76
	2008	10.84	16.77	24.57	51.01	12.20

Source: ECOWAS trade statistics. WAEMU countries in bold letters.

Table 3: Exports concentration index

Country	1995	2006-2008
Benin	51.73	62.28
Burkina Faso	57.31	58.04
Cape Verde	39.17	47.52
Cote Ivoire	.	.
Gambia	31.37	50.55
Ghana	44.43	44.15
Guinea	64.38	65.70
Guinea-Bissau	54.30	74.93
Liberia	.	.
Mali	58.55	73.90
Niger	55.18	47.19
Nigeria	95.06	85.15
Senegal	28.82	24.73
Sierra Leone	55.41	53.86
Togo	32.67	28.93
ECOWAS	46.75	53.51
COMESA	48.36	43.72
SADC	47.59	45.09
MERCOSUR	17.88	19.21

Source: World Bank World Trade Indicators. WAEMU countries in bold letters.

share a common currency it is interesting to investigate this issue more thoroughly.

The literature identifies several channels through which the use of a fixed exchange rate/ common currency can affect trade and economic activity:

- The presence of fixed exchange rates, by reducing the volatility associated with nominal exchange rates, should reduce the risks involved in international relations, boosting trade
- Following the increase in trade the role of aggregate shocks should be enhanced, increasing the degree of synchronicity of business cycle fluctuations
- The common currency/fixed exchange rate implies a strong coordination of monetary policies that should strengthen business cycle correlations.

The fact that in ECOWAS there are example of countries sharing a common currency as well as countries with fixed exchange rates and independent currencies provides a natural experiment for testing the trade and economic integration effect of the adoption of a common currency. The literature (see above all Rose 2000 and the debate that followed) shows that in particular the trade effect could be large.

If one needs to isolate the effect of the common currency on trade and output integration, it is important to condition measures of GDP correlation to monetary policy shocks. In fact two countries belonging to two different currency arrangements, could display low level of output correlation simply because they follow different monetary policies. Moreover two countries belonging to the same monetary union could display high output correlation simply because they are subject to the same monetary shocks. In the case of ECOWAS countries, following what underlined previously, it is important to control also for terms of trade shocks.

The high degree of output correlation that we observe is certainly affected by the fact that, being commodity exporters, ECOWAS countries are subject to similar terms of trade shocks.

Fielding and Shields (2005), controlling for monetary and terms of trade shocks, are able to estimate the effect of i) the adoption of a fixed exchange rate and ii) the use of a common currency, on trade and economic integration in West Africa. They conclude that there is strong evidence that membership to the Franc Zone increased trade (among member countries); there is a positive fixed exchange rate effect, but the single currency effect is higher. Moreover the order of magnitude is large, similar to the estimates by Rose (2000).[25] With regard to business cycle synchronisation there is a significant fixed exchange rate effect on business cycle correlations in the seventies, however this effect declines over time and is not longer significant in the nineties. This result confirms the findings by Carmignani (2009) of a weak effect of the currency area in CEMAC due to weak channels of transmission, resulting in low intra-regional trade and non convergence in macroeconomic policies across union members.

3 Long-term income convergence

In this section we discuss the issue of per-capita income convergence among ECOWAS countries. Traditionally, the analysis of convergence is an investigation of whether poor countries are set on a convergence path, that is, whether they will eventually catch up with rich ones. The topic has attracted considerable attention and a vast amount of academic literature is available (Sala-i-Martin, 2002; Islam, 2003; Abreu, de Groot and Florax, 2005 provide excellent surveys of the key results). As pointed out in the introduction, the focus here is different. In fact, convergence in per-capital incomes within West Africa cannot *per se* be a goal that subregion, simply because all countries are stranded in low per-capita income trap. Analysis of economic convergence allows to cross-check the success of policies designed to promote long-run integration.

3.1 Measures of convergence

In what follows we review the key measures of convergence adopted in the literature and then apply them to ECOWAS countries.

3.1.1 Beta convergence

The starting point can be found in the following equation

$$\Delta \ln Y_{i;t,T} = \beta_0 - \beta \left(\ln Y_{i;t} - \ln Y_i^* \right) \tag{1}$$

where $\Delta Y_{i;t,T}$ denotes the log difference of contry i's per capita income over the period $T - t$, where Y_i^* denotes per capita income in the country's steady state. If countries are characterised by a common steady state, $Y_i^* = Y^*$, and testing for convergence boils down to an estimate of:

$$\Delta \ln Y_{i;t,T} = \Omega - \widehat{\beta} \ln Y_{i;t} + \varepsilon_{i,t} \tag{2}$$

[25] It has to be stressed that even if the estimated impact of currency union on trade is large, the starting level of trade integration in ECOWAS economies, as documented in the previous sections, is low. Therefore the overall impact is necessarily limited.

where $\Omega = \beta_0 + \beta \ln Y^*$. If $\widehat{\beta} > 0$ then the conclusion is that growth is inversely related to initial income levels and poorer countries grow faster than rich ones. This will eventually generate convergence to a unique steady state in per capita incomes.

If, instead, it is accepted that countries may be characterised by different steady states, one may test for conditional convergence

$$\Delta \ln Y_{i;t,T} = \widehat{\beta_0} - \widehat{\beta} \ln Y_{i;t} + \delta X_{i,t} + \varepsilon_{i,t} \tag{3}$$

where $X_{i,t}$ is a vector of variables proxying for country-specific steady states. The steady state income level may be characterised as a function of the rates of investment in human and physical capital, the human and physical capital income shares, and the respective depreciation rates (Mankiw et al. 1992) . Other relevant variables for the characterisation of country-specific steady states include

- fiscal policy variables (taxes and government spending),
- trade and price distortions (openness, tariffs, and the black market premium),
- measures of financial market development,
- political indicators (coups and revolutions, civil war dummies and the democracy index,
- social variables (health indicators, such as life expectancy, and demography variables,
- geography variables refer to variables such as latitude, landlocked dummies, distance to the nearest coast, and the average temperature.

3.1.2 Sigma convergence

Dispersion of per capita income levels is another measure of convergence. Obviously, the income gap cannot be narrowed unless the initially poorer grow faster than the initially richer. Thus, beta-convergence is a necessary condition for sigma convergence. However, since this is not a sufficient condition for observing a reduction in income dispersion,[26] sigma convergence provides some additional information to beta convergence.

3.1.3 Convergence to a common stochastic trend

Convergence between two series requires that their difference cannot be characterised by a boundless drift. If variables are non-stationary, this statement implies that two series converge when they share a common stochastic trend. This, in turn, means that there is convergence if the difference between the GDP of two countries evolves towards a stationary process (Carmignani, 2006, 2007).

The implementation of the econometric tests associated with this notion of income convergence is based on the following equation

$$(\ln Y_{i;t} - \ln Y_{B,t}) = \varphi (\ln Y_{i;t-1} - \ln Y_{B,t-1}) + \varepsilon_t \tag{4}$$

where Y_B denotes the benchmark income level. Formally, the convergence test amounts to a unit root test on $(\ln Y_{i;t} - \ln Y_{B,t})$, i.e. $(\varphi = 1)$.

[26] Suppose that countries are bound to converge to different steady states which are more dispersed than initial conditions. In this case sigma convergence cannot be observed despite conditional beta convergence.

3.2 Key results from the convergence literature

Data typically reject absolute convergence. By contrast, tests of conditional convergence report a rate of β convergence of about 2% which has been found under a variety of different conditions. According to Sala-i-Martin (2002), the initial level of income is the most important and robust variable, and conditional convergence is the most robust empirical fact in the data. This obviously raises the issue of which variables determine country-specific steady states and prevent absolute convergence. According to Sala-i-Martin:

- The size of the government does not appear to matter as much as the "quality of government"
- Human capital has a relatively weak impact on growth
- Physical capital plays a rather important role.
- Some measures of health, such as life expectancy are significantly correlated with growth.
- Institutions are important for growth.

This latter point deserves some further qualification. The role of institutions has been widely debated among economists. The traditional approach was to take market-supporting institutions as given and to focus on the role of markets, i.e. the allocative functions played by relative prices. Macroeconomic stability, privatisation and price liberalisations – in external trade, in product and labour markets, in the financial markets - have for a long time been the cornerstones of economic development strategies. However, as pointed out in Rodrik (2000), economic incentives might not work or even generate perverse results in the absence of adequate institutions. Quoting North (1992), institutions are the rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction. Political institutions shape political incentives and determine the political decision making process. Economic institutions, which are fundamentally determined by political decisions, shape economic incentives.

Rodrik (2000) identifies five types of market-supporting institutions: property rights, regulatory institutions, institutions for macroeconomic stabilisation, institutions for social insurance; and institutions of conflict management.

Property rights.These are a prerequisite for entrepreneurs to accumulate and innovate. Rodrik (2000) emphasises the importance of "control" rights as opposed to formal "ownership" rights. Furthermore, he points out that each society should strike a balance between individual protection and preservation of a a greater public purpose. For instance intellectual property rights in the United States enjoy far greater protection than in most developing countries but individual property rights are (relatively) restricted by environmental legislation.

Regulatory institutions. Market failures may arise due to fraudulent or anti-competitive behaviour, to non-pecuniary externalities, to incomplete information. All developed market economies are characterised by institutions that regulate firms' behaviour in virtually all markets. Again, the most developed economies combine freer markets with tough antitrust legislation. Episodes of financial crisis typically follow waves of unregulated liberalisation, the current predicament of the world economy probably is the best case in point.

Macroeconomic stabilisation. Since the mid-eighties, advanced economies have been characterised by independent central banks that actively stabilise the macroeconomy over the business cycle while remaining tightly committed to a low inflation regime. These central

banks also act as the lender-of-last resort, a crucial prerequisite to avoid self-fulfilling financial crises. In addition to monetary policies, the New Keynesian models typically identify a beneficial role for fiscal stabilisation policies. (Andres et al. (2008)). A sanguine view of fiscal policy is also behind Rodrik's (1998) celebrated interpretation of the link between trade openness and government size. By contrast, several political economy models point out that distorted policymakers' incentives inflate public expenditure (Persson and Tabellini 2003 and 2004) and adversely affect the business cycle. (Tornell and Lane, 1999). In this regard, empirical evidence suggests that, unlike OECD countries, fiscal policies in less developed countries are plagued by a procyclical bias.[27]

Welfare systems. National welfare systems in developed economies are thought of as an insurance mechanism against individual-specific (idiosyncratic) risk to incomes, surrogating financial markets plagued by moral hazard and adverse selection problems. Rodrik (1998) interprets the post-World War II widespread increase in national governments size as a reaction to the risks posed by the corresponding surge in international trade. The introduction of a market-oriented system without adequate social insurance schemes is seen as a threat to the long term sustainability of market-oriented reforms. Critics argue that even though public insurance renders a market economy compatible with social stability and social cohesion, it may degenerate into an inefficient system for securing political consensus. For this reason welfare systems in developed countries have come under attack. Recent developments, however, suggest that we might observe a revival of government policies in traditional free market economies such as the US and, more generally, the Anglo-Saxon world, where the continental Europe model is being reconsidered. In any case, institutional quality remains a key ingredient of a successful and efficient welfare system.

Conflict management. Ethnic or income divisions hamper social cooperation, generate political and social instability, discouraging entrepreneurs from undertaking profitable but risky initiatives. Furthermore, underlying social conflict is associated with inefficient use of resources which have to devoted to preserve stability, group protection and safeguard of individual rights. Alesina and Drazen (1991) provide a seminal contribution on the costs that may arise when different social groups fail to agree on mutually beneficial outcomes. In this regard, "good institutions" should limit the gains appropriable by potential winners and simultaneously reduce obstacles to cooperation (Rodrik 1998)

3.2.1 Institutions vs policies

Acemoglu et al. (2003) offer an illuminating discussion and compelling empirical evidence on the role of institutions. The postwar macroeconomic performance of many less developed countries has been characterised by episodes of severe crisis, high volatility and slow growth. Economists and international institutions have long blamed the implementation of *wrong policies* (excessive money supply growth, distortionary price and trade policies, overvalued exchange rates, excessive and inefficient public expenditures....). Acemoglu et al. (2003) suggest that it is probably an excessive and a misleading simplification to assume that politicians do not understand the undesired implications of their choices. They suggest instead that such policies probably are the best option available due to the institutional constraints politicians are confronted with. Their key point is that good institutions should constrain the discretionary power of political élites, in order to limit "the willingness of various groups to fight in order to gain power, and ....to exploit their position, sometimes with disastrous consequences, when they come to power". Thus they introduce a key distinction between "institutions of private property, which protect the property rights of a broad seg-

[27] See Ilzetzki and Vegh (2008).

ment of society, and extractive institutions, which lack constraints on élites and politicians". As an example they present narrative evidence of post-colonial policy management in Ghana (one of the countries considered in this study), where distortionary policies were adopted because of poor institutional constraints. "one may suspect that in the Ghanaian example, even without the overvalued exchange rate, macroeconomic performance would have been volatile because with the institutions and the social structure Ghana inherited from the British colonists, there was no way of constraining politicians, ensuring adequate enforcement of contracts and property rights, and preventing various social groups from engaging in chronic political fights to take control of the society's resources. Through one channel or another, the major producers in Ghana, the cocoa farmers, were going to be expropriated by the politicians and urban interests. Overvalued exchange rates were simply one of the ways of expropriating the producers. Moreover, given the weak constraints on politicians and political élites, there were substantial gains to be had from political power, and these gains created considerable political and economic instability in Ghana, as different groups fought to achieve and retain power." (Acemoglu et al. 2003 p. 51)

Empirical analyses of the effects of policies and (measures) of institutions [28] on macroeconomic outcomes (in their case growth volatility) must typically address the issue of joint endogeneity for both sets of regressors: institutions are weak when policies are bad and vice versa. To solve the problem, Acemoglu et al. (2003) instrument institutions in their sample of less developed countries with the settlers' mortality rates. Their theoretical prior is that today's institutions in these countries reflect the legacy of their colonial past and were largely shaped by the attitudes of the early settlers. Therefore, they predict the formation of extractive institutions in regions where the adverse local environment was not favourable to long-term settlement for European colonists, and they also expect that these extractive institutions persist today. Their results document that societies where European settlers faced high mortality rates in the 19th century are much more volatile and prone to crises. Furthermore, the autonomous effect of macroeconomic policies appears to be rather limited once the effect of institutions is properly accounted for. This result is quite important for our purposes because their data set includes 11 out of the 16 ECOWAS countries, and 9 of them feature a very high settler's mortality rate (see figure 1 reported from Acemoglu et al. (2001)). This implies that the colonial legacy was particularly penalising for Western Africa, at least in comparison with other regions.

Glaeser et al. (2004) focus on a specific aspect on the debate on institutions, that is, whether the establishment of democracy is a prerequisite for setting the economy on a faster growth path. They suggest instead that growth and human capital accumulation are a prerequisite to democracy.[29] The bottom line in their contribution is that poor countries get out of poverty through good policies, often pursued by dictators, and subsequently improve their political institutions. The standard case in point in their analysis is the divergent growth path of North and South Korea, that were part of the same country up to the '50s and were both characterised by authoritarian governments (had similar ranks in the polity score index). Another example is the evolution of China from Mao to Deng, where the latter ignited a long lasting process of economic growth.

The contribution by Glaeser et al. (2004) is that institutional quality is important to obtain growth-friendly policies, but that it is by no means a necessary condition. One of

[28] Their index of institutional quality is the cross country series measuring constraints placed on the executive, as measured in the Polity IV data set.

[29] They also criticise the work of Acemoglu et al (2003) by claiming that their celebrated instrument for institutional quality could simply be a proxy for the initial human and physical capital brought in by the early colonists.

APPENDIX TABLE A2—DATA ON MORTALITY

Former colonies	Abbreviated name used in graphs	Log GDP per capita (PPP) in 1995	Average protection against expropriation risk 1985–1995	Main mortality estimate	Former colonies	Abbreviated name used in graphs	Log GDP per capita (PPP) in 1995	Average protection against expropriation risk 1985–1995	Main mortality estimate
Algeria	DZA	8.39	6.50	78.2	Jamaica	JAM	8.19	7.09	130
Angola	AGO	7.77	5.36	280	Kenya	KEN	7.06	6.05	145
Argentina	ARG	9.13	6.39	68.9	Madagascar	MDG	6.84	4.45	536.04
Australia	AUS	9.90	9.32	8.55	Malaysia	MYS	8.89	7.95	17.7
Bahamas	BHS	9.29	7.50	85	Mali	MLI	6.57	4.00	2940
Bangladesh	BGD	6.88	5.14	71.41	Malta	MLT	9.43	7.23	16.3
Bolivia	BOL	7.93	5.64	71	Mexico	MEX	8.94	7.50	71
Brazil	BRA	8.73	7.91	71	Morocco	MAR	8.04	7.09	78.2
Burkina Faso	BFA	6.85	4.45	280	New Zealand	NZL	9.76	9.73	8.55
Cameroon	CMR	7.50	6.45	280	Nicaragua	NIC	7.54	5.23	163.3
Canada	CAN	9.99	9.73	16.1	Niger	NER	6.73	5.00	400
Chile	CHL	9.34	7.82	68.9	Nigeria	NGA	6.81	5.55	2004
Colombia	COL	8.81	7.32	71	Pakistan	PAK	7.35	6.05	36.99
Congo (Brazzaville)	COG	7.42	4.68	240	Panama	PAN	8.84	5.91	163.3
Costa Rica	CRI	8.79	7.05	78.1	Paraguay	PRY	8.21	6.95	78.1
Côte d'Ivoire	CIV	7.44	7.00	668	Peru	PER	8.40	5.77	71
Dominican Republic	DOM	8.36	6.18	130	Senegal	SEN	7.40	6.00	164.66
Ecuador	ECU	8.47	6.55	71	Sierra Leone	SLE	6.25	5.82	483
Egypt	EGY	7.95	6.77	67.8	Singapore	SGP	10.15	9.32	17.7
El Salvador	SLV	7.95	5.00	78.1	South Africa	ZAF	8.89	6.86	15.5
Ethiopia	ETH	6.11	5.73	26	Sri Lanka	LKA	7.73	6.05	69.8
Gabon	GAB	8.90	7.82	280	Sudan	SDN	7.31	4.00	88.2
Gambia	GMB	7.27	8.27	1470	Tanzania	TZA	6.25	6.64	145
Ghana	GHA	7.37	6.27	668	Togo	TGO	7.22	6.91	668
Guatemala	GTM	8.29	5.14	71	Trinidad and Tobago	TTO	8.77	7.45	85
Guinea	GIN	7.49	6.55	483	Tunisia	TUN	8.48	6.45	63
Guyana	GUY	7.90	5.89	32.18	Uganda	UGA	6.97	4.45	280
Haiti	HTI	7.15	3.73	130	Uruguay	URY	9.03	7.00	71
Honduras	HND	7.69	5.32	78.1	USA	USA	10.22	10.00	15
Hong Kong	HKG	10.05	8.14	14.9	Venezuela	VEN	9.07	7.14	78.1
India	IND	7.33	8.27	48.63	Vietnam	VNM	7.28	6.41	140
Indonesia	IDN	8.07	7.59	170	Zaire	ZAR	6.87	3.50	240

the main policy implications is that, from the perspective goal of economic development, democratisation and constraints on government need not come first. In fact there are examples of good policies implemented by dictators, whereas there are very few cases of well working democracies in countries characterised by low levels of human capital. It should be emphasised, however, that several poor countries appear to be penalised by bad policies which are the consequence of a) veto powers in the hands of privileged groups; b) internal conflicts due to equally powerful factions trapped in a deadlock. In this cases "illuminated" or benevolent dictators/policies cannot to emerge due to "poor institutions". In this regard it is hard to find a substantial disagreement between the two views outlined here. The real difference probably lies in the proposed institutional reform. Acemoglu et al. take the radical view that democracy is the necessary prerequisite, According to Glaeser et al. institutional design should focus on the effectiveness of the specific institutions that ensure security of property rights and the working of markets.

In this regard, Rodrik's contributions (2002, 2003) on different varieties of capitalism is intriguing. He argues that first economic principles should be carved into institutional designs that are sensitive to local opportunities and constraints. Successful countries are those that have used this room wisely. Therefore emphasis on institutional reform should not be combined with a "one-size-fits-all" approach. It should be noted instead that generally agreed principles of good economic management, do not map into unique institutional arrangements or set of policy prescriptions. For instance, protection of property rights should not imply the adoption of the US-British system of corporate governance in all countries at all times. Nor *de jure* independent central banks are a prerequisite for sound monetary policies. In fact they may be de facto dependent on distorted political incentives (See Cukierman, Webb and Neyapti 1992)

3.3 Convergence in practice: ECOWAS countries

The debate on on convergence emphasises the role of factor accumulation and institutional "diversity" in shaping national differences in income steady states. Our analysis here follows a similar approach, and is meant to pinpoint the key constraints to the achievement of faster growth. Instead of referring to the academic debate on alternative theories of long-term growth, the results presented here are meant to stimulate further analysis on practical opportunities for policymakers to enhance growth and convergence.

3.3.1 Existing contributions to the analysis of convergence in ECOWAS

In their study of macroeconomic convergence within Africa's Regional Economic Communities[30], the United Nations find very limited support for the convergence hypothesis among ECOWAS countries, using techniques similar to those implemented in this work. Wane (2004) investigates convergence and dynamic effects of human and physical capital on growth, in WAEMU countries. Using recently developed models for panel data and a growth accounting model, he finds a growth-enhancing role for changes in literacy rates and factor accumulation. By contrast, total factor productivity has limited importance. He is also able to identify some policy-related determinants of total factor productivity. In fact government spending, credit to the private sector, and openness are positive determinants, whereas the impact of government deficits is negative. Furthermore, per capita income levels are found to converge when economic policies are similar.

[30]See Assessing regional Integration in Africa III http://www.uneca.org/aria3/

3.3.2 Results

Figure 26 displays the relationship between initial income levels and the subsequent growth over the sample period 1960-2004. It is somehow suggestive of absolute convergence. Countries like Gambia, Guinea Bissau, Mali, Burkina Faso started with relatively low income levels and then experienced relatively faster growth. The opposite conclusion holds for Liberia. A formal test of eq. (2), where the growth variable $\Delta \ln Y_{i;t,T}$ is measured over 5-year periods, rejects the unconditional convergence hypothesis.

Graphical analysis of sigma convergence detects a non monotonic behaviour of per-capita income dispersion, which reaches a minimum in the mid-70s and sharply increases since the early 90s up to the end-of-sample maximum. We investigated sigma convergence for (partly overlapping) subsets of countries, in figure 27. Note that non-WAEMU countries closely follow the regional dispersion pattern. A similar result holds for countries that display negative average growth over the sample period. The subset of countries characterized by positive growth over the sample period exhibit a strong, monotonic trend in income dispersion. WAEMU countries are characterized by a growing dispersion trend up to the early 90s, sharply reversed thereafter, when the economic and monetary union begun to operate.

In tables 4 and 6 we present unit-root tests based on equation 4. More precisely we perform an Augmented Dickey-Fuller test based on the following: let $x_t = \ln Y_{i,t} - \ln Y_{B,t}$, then we can define the transformed equation:

$$\Delta x_t = \alpha x_{t-1} + \sum_{i=2}^{n} x_{t-i} + \epsilon_t \tag{5}$$

Table 4: ADF test

Country	Output	Inflation	Gov.Spend.	Deficit
Benin	−0.311	−1.402**	−0.165	−0.381
Burkina Faso	−0.174	−0.396	−0.395	−1.307
Cape Verde	−0.107	−0.843	0.540	−0.217
Cote Ivoire	−0.084	−0.303	−0.146	−0.379
Gambia	−0.881***	−0.694*	−0.502	−1.029
Ghana	−0.400	−0.470	−0.140	−0.402
Guinea	−0.100	−0.344	−1.740**	−1.444
Guinea-Bissau	−0.960**	−0.408	−0.117	−0.251
Liberia	−0.221	−0.326		
Mali	−0.290**	−0.614	−0.404	−0.233
Mauritania	−0.214	−0.484	−0.204	−0.486
Niger	−0.231	−0.343	−0.254	−0.816
Nigeria	−0.267	−0.619	−0.659**	−0.878
Senegal	−0.162	−0.535	−0.233	−0.533
Sierra Leone	−0.168	−0.252	−0.214	−0.640
Togo	−0.235	−0.377	−0.405	−0.479

Testing for unit root in (4) is equivalent of testing for $\alpha < 0$ in (5) (in fact $\alpha = \phi - 1$). Tables 4 and 6 report the value of α and the associated level of significance calculated using the ADF critical values.[31] Table 4 differs from 6 in the choice of the group mean ($\ln Y_{B,t}$):

[31] Equations have been estimated including a trend and using 2 lags.

Table 5: KPSS test

Country	Output	Inflation	Gov.Spend.	Deficit
Benin	0.227	**0.099**	0.222	0.163
Burkina Faso	0.305	0.238	0.141	**0.100**
Cape Verde	0.319	0.171	0.169	0.169
Cote Ivoire	0.278	0.191	0.264	**0.110**
Gambia, The	**0.043**	**0.056**	**0.110**	**0.111**
Ghana	0.172	0.149	0.248	0.157
Guinea	0.349	0.153	**0.053**	**0.056**
Guinea-Bissau	**0.060**	0.256	0.212	0.234
Liberia	0.124	0.246		
Mali	0.311	0.235	0.135	0.226
Mauritania	0.174	0.215	**0.111**	0.157
Niger	0.120	0.219	0.164	**0.099**
Nigeria	0.135	**0.069**	**0.080**	0.129
Senegal	0.309	0.180	0.274	0.132
Sierra Leone	0.272	0.210	0.321	0.159
Togo	0.160	0.213	0.249	0.179

Table 6: ADF test, waemu countries

Country	Output	Inflation	Gov.Spend.	Deficit
Benin	-0.495^{**}	-1.828^{***}	-0.146	-1.669^{*}
Burkina Faso	-0.199	-0.717	-0.362^{*}	-0.541
Cote Ivoire	-0.134	-0.601	-0.218	-0.559
Guinea-Bissau	-0.961^{***}	-0.362	-0.095	-0.246
Mali	-0.356^{**}	-0.794	-0.510	-0.194
Niger	-0.238	-0.464	-0.270	-1.300
Senegal	-0.256	-0.829	-0.274	-0.375
Togo	-0.191	-0.763	-0.616	-0.533

Table 7: KPSS test, Waemu countries

Country	Output	Inflation	Gov.Spend.	Deficit
Benin	**0.096**	**0.053**	0.272	**0.086**
Burkina Faso	0.245	0.174	0.181	0.138
Cote Ivoire	0.363	**0.111**	0.227	**0.113**
Guinea-Bissau	**0.117**	0.260	0.217	0.237
Liberia				
Mali	0.288	0.224	0.151	0.236
Niger	**0.102**	0.203	0.217	**0.091**
Senegal	0.293	**0.104**	0.256	0.203
Togo	0.223	0.169	0.162	0.162

Table 8: Panel unit root test

	Constant	Constant trend
x_t, ECOWAS	0.9	0.2
x_t, WAEMU	0.6	-0.4
Δx_t, ECOWAS	-11***	-10.4***
Δx_t, WAEMU	-9.1***	-9.3***

in the former the mean is the average output of ECOWAS countries, in the latter it is the average of WAEMU countries. The tables report results for the same exercise conducted on other variables (inflation, government spending and budget balance); we will comment these results in the following paragraphs. In addition to the ADF test tables 5 and 7 report the KPSS test (Kwiatkowski et al. 1992), often used to investigate the possibility that a series is fractionally integrated (that is, neither I(1) nor I(0)). The tables report the critical values of the test under the null of stationarity; values in bold indicate failure to reject the null of stationarity.

Overall the results show very little sign of convergence: with the exception of Gambia, Guinea-Bissau and Mali there is no sign of stationarity in mean deviations in output. When we restrict the analysis to the group of WAEMU countries the same countries show convergence in output. The tests applied so far are performed on individual series; one may wonder if these results hold also when we test a joint hypothesis of convergence. This is done performing a panel unit root test (table 8).[32] The test confirms the lack of stationarity of the output deviations from the group mean both in ECOWAS and in WAEMU countries (the series are stationary only in first differences).[33]

An alternative approach for testing convergence would be to estimate a cointegrating relationship between the relevant variables of different countries. Given n different series (countries), finding evidence of a single cointegrating vector is evidence of convergence to a single common stochastic trend. Rejecting the presence of at least one co-integrating is as rejecting vector is evidence of non convergence. Finally finding evidence of $1 > m > (n-1)$ co-integrating vectors would suggest that convergence is only partial (i.e. some countries are converging while others are not).

Given the results presented in tables 4 and 6 we performed the cointegration analysis only to WAEMU countries. Table 9 reports the number of cointegrating vectors at 5% confidence level of the trace statistic.[34] The test is performed using different assumptions about model selection: in the first column the model includes an unrestricted constant, in the second column it includes a linear trend in the cointegrating equation, finally in the third column both trend and constant are excluded from the model. The results show that there is evidence of convergence to a single common stochastic trend for output in WAEMU countries, confirming output convergence for this sub-group of countries within ECOWAS.

Overall we can conclude that by looking at the time series evidence there is only a mild evidence of output convergence, restricted to WAEMU countries.

Finally, table 10 presents the conventional β-convergence analysis based on estimates of equation 3. This can be considered a formal test of conditional convergence. The table

[32] More precisely we perform the Pesaran test which is based on the null hypothesis that all the series are non stationary against the alternative that at least one serie is stationary. The test is based on the assumption that the panel is heterogeneous and that there is cross section dependence in the error term.

[33] See the appendix for details on the methodology.

[34] The number of lags used in the underlying VAR model is selected using the Schwarz Bayesian Information Criterion.

Table 9: Cointegration test

	Constant	Trend	None
Output	1	1	2
Inflation	4	6	5
Gov.spending	3	3	3

presents three sets of estimates: standard OLS, panel fixed effects, and dynamic panel estimates obtained using the system GMM estimator.[35]

It is well known (see Caselli et al. 1996) that standard OLS estimates of the speed of convergence are downward biased due to the omission of country-specific effects. It is in principle possible to overcome this problem by using a panel fixed effect estimator, which accounts for any possible unobservable country- specific variable that may affect the steady state. However panel fixed effect estimates suffer from two well known problems: on the one hand they do not allow the estimation of time invariant (or rarely changing) variables, such as institutional variables, on the other hand they do not properly address the issue of endogeneity of some relevant variables. Both these issues, in particular the endogeneity problem is addressed by the panel system GMM estimator.[36]

The results presented in table 10 are broadly in line with the literature: OLS estimates deliver a rate of convergence of 2.9%, which raises to 10% with fixed effects and reaches 32% with the system GMM estimator.[37] This pattern of increasing convergence with the different estimators is in line with what found in the literature (see Caselli et. al. 1996), although the results of GMM estimator should be taken with care due to the limited number of observations.

The notion of conditional convergence may seem problematic when applied to neighbouring countries characterised by relatively strong economic links and a similar colonial legacy. In fact, by investigating which variables determine country-specific steady states one may draw some insights on which factors may hamper absolute convergence to higher growth rates. We focused on the standard variables analysed by the literature gross investment and government expenditures (measured as gdp shares), population growth, life expectancy, the type of political regime, a weighted conflict index (mean of assassinations purges riots etc.). Investment as a share of Gdp has a positive impact on growth while public spending has a negative impact. Life expectancy is positive and significant (albeit only in the OLS regression). The standard interpretation of this variable is that it is positively related to long-term per capita income because it signals an increase in individual productive capability. Given the limited robustness of dynamic panel methods in our contest, it might well be the case that even the life expectancy variable is just capturing some country specific effect which deserves further investigation. The type of political regime does not seem to play any role.

[35] Alternatively it can be used a Hausman-Taylor estimator. This is an estimator which improves upon the standard FE estimator by allowing coefficient on time-invariant regressors to be estimated. It does so by imposing the stronger assumption that some specified regressors are uncorrelated with fixed effect. However the Hausman-Taylor estimator is ill suited in our setting since we have a dynamic panel data model. In this case both the FE estimator and the Hausman-Taylor estimator are inconsistent since they are unable to eliminate the correlation between the lag of the dependent variable and the error term. The same problem applies to the GLS estimator. The system-GMM is an IV estimator explicitly designed for tackling the dynamic panel problem resulting in a consistent and efficient estimator.

[36] Since the system GMM estimator is a difference estimator, it involves a great reduction in the number of observations used. For this reasons these results should be taken with care.

[37] Technically the speed of convergence λ can be derived from the estimated β in equation 3 by applying the following: $\beta = \frac{1-e^{\lambda T}}{T}$ where T in our case is 5.

Table 10: Growth regressions

	OLS	FE	GMM	OLS	OLS
Lagged gdp	-0.027*	-0.082***	-0.160***	-0.063**	-0.038**
	(0.01)	(0.02)	(0.03)	(0.03)	(0.02)
Investment	0.003*	0.003*	0.006**	0.002	0.002*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Public expenditure	-0.001**	-0.001	0.001	-0.001*	-0.002**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Life expectancy	0.067**	0.002	0.165	0.089	0.054
	(0.03)	(0.05)	(0.16)	(0.06)	(0.03)
Sprisk	-0.002*	-0.001	-0.002	-0.005**	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Polity	0.003	-0.009	0.002	0.006	-0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Pop. growth	-1.082*	-0.806*	-1.343***	-1.622***	-0.583
	(0.57)	(0.45)	(0.47)	(0.43)	(0.84)
Male educ.				-0.074	
				(0.05)	
Female educ.				0.146	
				(0.13)	
Etfrac					-0.147*
					(0.09)
Conflict index					-0.040*
					(0.02)
Implied λ	0.029	0.106	0.322	0.076	0.042
R-squared	0.30	0.32		0.37	0.38
No. of Obs.	118	118	64	69	118

Note: Dependent variable is growth rate of gdp over 5 years. All all explanatory variables are averaged over 5 years. Estimation is OLS (Col.1 and Col.4), panel fixed effects (Col.2), system GMM (Col.3), standard errors reported in parentheses. ***,**,* denote significance at the 1, 5 and 10 percent levels respectively. Time dummies included but not reported. Investment, public expenditure, life expectancy, population growth and education are lagged 1 period.

By contrast, the social conflict index has a negative influence on growth. Finally higher population growth has a standard negative impact on growth.[38] In column 4 of table 10 we include also measures of education; the two variables have the expected sign but are not statistically significant probably due to the limited number of observations.

Summarising, we find that poorer countries have grown at a faster rate than richer ones, but this has not achieved a reduction in dispersion of per-capita incomes. Our analysis of the controls that cause the dispersion of country-specific steady states unambiguously points to social conflict as a key factor. Investigating the determinants of social unrest in the area is beyond the scope of this research. However in figure 29 we present the dynamics of the mean value and of the standard deviation of the socio-political risk index. The mean value displays a lot of variability over the sample period but does not display any tendency to decrease. It seems that social unrest is one of the major sources of volatility in the region. To investigate this issue more thoroughly we construct a war index calculating the percentage of time that each country has passed being involved in a war (internal or external) between 1960 and 2008. Figure 28 is illuminating of the role played by wars in ECOWAS countries. Out of the 16 members, only two had no experience of war. By contrast, Guinea Bissau Liberia, Sierra Leone and Senegal were plagued by wars during more than 20% of the sample period. In column 5 of table 10 we explore these issues more formally by introducing ethnic fractionalisation and an indicator for the presence of conflict in our OLS estimates. Both variables have a significant and negative effect on growth stressing the importance of these factors in constraining economic development.

Beyond this, one is left with the elusive fixed effects explanation of country-specific steady states in a region which has been characterised by repeated attempts to proceed to closer integration as a means to achieve convergence and, above all, faster growth.

At this stage it is only possible to suggest that, in line with the literature, such fixed effects are better explained as either "institutions" or "policies". The analysis here is severely constrained by data availability.

Figures 29 and 30 present, for the whole region, the dynamic pattern of the polity score, of civil liberties and political rights. All variables are almost stationary until the beginning of the eighties, and then show a marked improvement thereafter. It is interesting to note that the dispersion of the polity index falls during the last part of the sample. The dispersion of civil liberties and political rights appears instead to be stationary. As individual country tables show, Gambia, Cote d'Ivoire, Nigeria and Togo are largely responsible for the variability of the civil liberties and political rights indexes.

The polity index measures constraints placed on presidents and dictators (or monarchies). In line with Acemoglu et al. (2001), we expect a society where élites and politicians are effectively constrained to experience less internal infighting, and to pursue more sustainable policies. Nevertheless, as pointed out in Acemoglu et al. (2001), a country might have adequate constraints on their executives, but suffer from corruption or weak property rights for other reasons.

The effect of democracy on growth is controversial. In fact individual freedom might be associated to "economic freedom" and therefore be beneficial, but could also open the door to greater social unrest and instability unless it is accompanied by institutional developments specifically devoted to deal with management of conflicts concerning income distribution and equal opportunities. In this regard, our country specific graphs do not convey a clear picture of the co-movements among these institutional variables. Sample averages show that

[38] With fixed effects estimates the results on life expectancy, socio political risk and government spending become not significant. This was expected since variables that display little variation over time tend to be absorbed in fixed effects by this estimator.

the social instability index, which seems to play an important role in determining growth in these countries, is unaffected by developments in democracy measures.

Table 11 provides an international comparison of the same institutional variables. The table shows that notwithstanding the improvement of the indexes over the sample period, West Africa countries score worse results not only compared to Latin American countries or industrialised countries, but also (with the exception of civil liberties) with respect to the average of the whole Africa.

Table 11: Institutional variables

			Polity	
Period	ECOWAS	Africa	Latin America	Ind. Countries
1970-79	−5.1	−5.1	−2.6	8.5
1980-89	−5.4	−5.4	2.0	9.8
1990-99	−1.5	−1.1	6.9	10.0
2000-04	1.8	0.8	7.6	10.0
Total	−3.2	−3.2	2.9	9.5
			Civil Liberties	
Period	ECOWAS	Africa	Latin America	Ind. Countries
1970-79	5.2	5.4	3.9	1.5
1980-89	5.4	5.6	3.5	1.4
1990-99	4.4	4.7	3.3	1.3
2000-04	3.9	4.3	2.9	1.2
Total	4.8	5.1	3.4	1.4
			Political Rights	
Period	ECOWAS	Africa	Latin America	Ind. Countries
1970-79	5.8	5.7	4.4	1.5
1980-89	5.8	5.7	3.3	1.1
1990-99	4.8	4.9	2.8	1.0
2000-04	4.0	4.5	2.6	1.0
Total	5.2	5.3	3.3	1.1

Source: Polity project, Freedom House.

3.3.3 Relating our growth convergence results to current research on West African economies

Imam and Salinas (2008) concentrate on episodes of growth accelerations, decelerations and collapses in West African countries. The driving forces of such episodes are estimated by analysing external shocks, political and institutional changes and economic reforms. Over the sample period 1960–2006, they find that *i)* growth accelerations are associated with external shocks (terms of trade changes and shocks to remittances), economic liberalisation, political stability; *ii)* decelerations occurred during short-lived regimes and when corruption indices weakened; *iii)* growth collapses are linked to external shocks (including civil wars, and other local conflicts) and falling domestic credit. Their results suggest that political stabilisation and market-oriented reforms can significantly increase the chances of acceleration. In the medium run reducing the importance of commodity price volatility in their terms of trade would also be important, reinforcing the argument made previously about

the virtues of export diversification. Institutional reform should target corruption control. Finally, strengthening the financial system would improve the possibility of consumption smoothing in the event of external shocks.

Johnson, Ostry and Subramanian (2007) take a dozen countries that had weak institutions in 1960 (just like many African countries nowadays) and yet managed to subsequently achieve sustained high rates of growth. [39] Data on their characteristics just before the growth process started are compared with the current situation in sub-Saharan Africa in order to identify the potential constraints that hamper growth. Their results are rather optimistic with regard to factors which are typically regarded as first-order problems— institutions, macroeconomic stability, trade openness, education, and inequality. However they also point out that ill-health, internal conflict, and fractionalization are persisting problems.

4 Macroeconomic policy convergence

This section investigates the convergence of macroeconomic stability indicators for ECOWAS countries, also distinguishing between WAEMU and non WAEMU members. Just like the ARIA III report[40], we postulate that evidence of macroeconomic convergence in the selected indicators could be a sign that policy coordination is achieving the desired macroeconomic outcomes. In this study, the results of monetary and fiscal policy outcomes are captured by inflation and fiscal balance measured as a ratio to GDP.

Before we look at the data, it is worth recalling the history of monetary and fiscal arrangements in the region, as outlined in Masson and Pattillo, 2004. Such arrangements are strongly influenced by the post-independence attitudes of the European countries, namely Britain and France. France exerted considerable influence to induce the former colonies to maintain a stable exchange rate as a mean to preserve economic integration (and political influence). As a result these countries, with the exception of Guinea and Mauritania, grouped into the West African Economic and Monetary Union, implementing a hard peg vis-à-vis the French Franc and, later on, the Euro. [41] Unlike France, Britain showed relatively little concern for the monetary policy regimes adopted by the former colonies. As a result, these created their own currencies and central banks.

4.1 WAEMU countries

When assessing WAEMU performance, it is important to bear in mind that it is composed of two elements, i.e, the internal currency union and the bilateral hard peg to the reference currency. The external peg has presumably helped to discipline domestic monetary policies, but has exposed the union to shocks due to swings in the French currency (the 1980s and early 1990s) swings between the Euro and the US Dollar. For instance, since the end of 2002 the CFA franc has appreciated by more than 30 percent in nominal terms against the U.S. dollar, exerting a strong upward pressure on WAEMU countries real effective exchange rates. WAEMU suffered a severe crisis in the early 1990, when, due to economic and political difficulties, institutional arrangements could not insulate monetary policy from political pressures, and the central bank was forced to indirectly finance budget deficits (Masson and

[39] 10 of these countries are manufacturing export-based models. China, Indonesia, Malaysia, Singapore, South Korea, Taiwan Province of China, Thailand, and Vietnam Tunisia and the Dominican Republic. The two remaining countries are Chile and Egypt.

[40] ARIA III Assessing Regional Integration in Africa III http://www.uneca.org/aria3/

[41] Note that Guinea-Bissau joined the WAEMU in 1997) and that Cape Verde pegs the exchange rate to the euro also producing exchange rate stability vis-à-vis WAEMU countries.

Pattillo, 2004). The 50% devaluation against the French franc in 1994 did, however, revive growth while avoiding significant inflation. Since then, stricter prohibition of direct monetary financing of government deficits was introduced along with convergence and surveillance criteria for national fiscal policies were implemented. In 1999, WAEMU members adopted a "Pact of Convergence, Stability, Growth, and Solidarity" based on a set of convergence indicators pertaining to public finances, the real sector, the balance of payments. [42] Ousmane and Masson (2002) review the experience of fiscal adjustment in WAEMU countries since 1994. They find effects of unfavourable business cycle and terms of trade developments in 1998-2001. They also find that fiscal convergence stalled even after controlling for these factors, suggesting that a higher revenue ratio and downward pressure on government wages would be necessary in the future. More recently, Olumuyiwa and Williams (2007) test the primary fiscal balance reaction function to a set of macroeconomic, institutional, and political variables. They find that the lagged debt was significant and positive, suggesting a significant effort to achieve debt control. However, they also find that terms of trade shocks have an unfavourable impact, and that such an impact is highly persistent. This, in turn, suggests that WAEMU fiscal positions are inherently volatile given the key role played by terms of trade shocks in determining the business cycle in these countries.

Currency unification is also typically conceived as a catalyst for further economic integration, notably trade and financial integration. As reported in section 2.5 Goretti and Weisfeld (2008) find that the union's current trade regime still suffers from non-tariff barriers and administrative weaknesses. They also report evidence of significant trade complementarities within the currency union, which imply potentially large benefits from further integration. Sy (2006) assesses WAEMU degree of financial integration finding that it is well advanced in some aspects concerning: *i)* common and foreign ownership of banks; *ii)* cross-border transactions in the government securities markets. Furthermore, common institutions helped to achieve a substantial similarity of rules. At a more formal level, however, they cannot find evidence of convergence across bank interest rates. In fact Beta and sigma convergence tests report increasing intercountry spreads.

4.2 Non-WAEMU countries

Recent classifications of *de facto* exchange rate regime (Levy-Yeyati and Sturzenegger 2002, Reinhart and Rogoff 2003) report that all these countries implement intermediate floats with the exception of Guinea and Cape Verde that peg their currency. The West African Monetary Zone (WAMZ) is a group of 5 countries in ECOWAS that plan to introduce a common currency, with the ultimate goal to merge with WAEMU. The 5 member states are Gambia, Ghana, Guinea, Nigeria and Sierra Leone. Liberia, has expressed an interest in joining. It should be noted, however, that the date for the establishment of a currency union among WAMZ countries has been repeatedly announced and postponed. Debrun, Masson and Pattillo (2005) analyse WAMZ perspectives and the possible implications of currency integration with WAEMU. They report that the position of Nigeria is a major stumbling block to successful integration. In fact Nigeria, by far the largest ECOWAS economy and a large oil exporter while all other countries are oil importers, creates the potential for major

[42] Primary criteria: basic fiscal balance to GDP must be in balance or in surplus; the ratio of outstanding domestic and foreign debt to nominal GDP must not exceed 70%;average annual inflation rate cannot exceed 3%. Secondary criteria: the ratio of the public wage bill to tax revenue cannot exceed 35%; the ratio of domestically financed public investment to tax revenue must be at least 20%; the ratio of external current account deficit, excluding grants to GDP, cannot exceed 5%; the tax-to-GDP ratio must be greater than or equal to 17%.

asymmetric terms of trade shocks. For similar reasons they are also critical of currency unification between WAEMU and WAMZ economies.

4.3 Results

Basically, the methods employed in this analysis have three main purposes. First, the series on inflation and fiscal balance are tested for convergence by analysing beta and sigma convergence. Second, we apply the unit root test as in (4), to check for convergence to the regional mean. Third, standard econometric tests of cointegration are used to examine long-run co-movement of the variables under consideration. In this regard, our contribution is akin to the analysis presented in chapter 5 of the ARIA III report.

To begin with, figures 31 and 32 provide preliminary evidence of dynamics for inflation and fiscal balance ratio to GDP in ECOWAS, WAEMU and WAMZ countries over the sample period 1960-2005 (since 1970 for the fiscal variable).

4.3.1 Inflation

ECOWAS average inflation begun to surge in the '70s, following the global inflation pattern. Divergence from the global inflation trend begun in the mid-80s, when ECOWAS inflation remained stubbornly high. The second half of the 90's is characterised by a marked and persistent improvement. During the last few years of the sample, average inflation is definitely low by historical standards, but still higher than in the 60's. Dispersion of ECOWAS inflation rates has followed a similar trend. WAEMU and non-WAEMU countries exhibit a similarly non-monotonic inflation trend, and the average WAEMU inflation rate is consistently lower but for the post-1994 devaluation period. In the last few years of the sample WAEMU countries exhibit great moderation, and the difference with non-WAEMU countries is quite substantial. Similar results obtain for the dispersion of national inflation rates. It is also worth noting that in WAEMU countries post-2000 inflation and its standard deviation are at historically low levels, whereas the opposite holds true for non-WAEMU countries. Finally, it is interesting to note that the process of inflation convergence is rather difficult in WAMZ countries, justifying the repeated postponement of currency unification among these countries. When interpreting these results it is important to bear in mind that WAEMU fixed external exchange rate means that inflation is determined in part by the strength of the Euro and by supply (basically terms of trade) shocks. For the remaining countries which are not pegging the exchange rate, domestic macroeconomic policies may play a larger role in determining inflation, although terms of trade volatility retain paramount importance.

4.3.2 Fiscal balance

Ever since the big deficit of 1975 (almost 30% of GDP), the budget deficit has been steadily improving up to the historical minimum of about 2.5% in 2005. The standard deviation of national deficits has similarly fallen. Data availability limits the relevance of comparison between WAEMU and non-WAEMU countries, as the data for the latter are available only after 1980. The ratio of public external debt to GDP has been declining.

In 2006 five WAEMU countries obtained international debt relief under the Multilateral Debt Relief Initiative (MDRI), which contributed to a substantial reduction in the average stock of public external debt. It is quite apparent, however, that in comparative terms the disciplining effect of currency unification on fiscal policies seems rather weak. In fact the post-2000 average deficit was higher in the WAEMU region than in the rest of ECOWAS. Similar results obtain for the standard deviation of budget deficit indicators. Improvement

in budget deficit ratios in WAMZ countries begun to falter and became increasingly volatile since the mid-90s.

Further information on WAEMU countries suggests that the post-2000 slow down in convergence has been generated by a surge in real spending (Olumuyiwa and Williams, 2007). In 2000 six countries violated the basic fiscal balance criterion, and by 2005, all eight members were non-complying.

4.4 Formal tests of convergence

Following the analysis of output convergence in tables 4 and 6 we present ADF tests based on equation 4. Overall the results of the table show that convergence in macroeconomic policy variables is even weaker than the signs of output convergence. With the exception of Benin there is no sign of convergence in inflation rates neither in ECOWAS nor in WAEMU. Similar results are obtained when testing convergence in fiscal policies whether represented by government spending or by budget deficit.

The cointegration tests[43] presented in 9 on WAEMU countries convey a similar message. There is some evidence of convergence but not to a common stochastic trend (as it is the case for output); instead several cointegrating vectors are detected suggesting partial convergence.

The formal tests conducted in this section somewhat contradict the results of the previous paragraphs stressing a tendency toward stronger macroeconomic convergence since the beginning of the nineties. We must consider that the tests we have conducted in tables 4 and 6 are ill suited for capturing such convergence pattern, given that yearly data limits considerably the number of observations.[44]

4.5 Recent evolution of macroeconomic policies

Tables 12 - 18 report the post- 2003 evolution of some key variables, including 2010-2011 projections. These variables are growth, inflation, trade balance, current account balance, debt- and fiscal-balance-to-GDP ratios.

The growth performance of WAEMU Countries has been generally lower than in WAMZ countries. Growth in this latter group of countries has been in line with the rest of sub-Saharan Africa. By contrast inflation has been far more moderate in WAEMU than in WAMZ countries. Again, the performance of WAMZ countries is much closer to the average of sub-Saharan Africa. Turning to the trade balance, we see that, with the notable exceptions of Nigeria and Cote d'Ivoire, all ECOWAS countries have been characterized by persistent deficits. This has been in sharp contrast with what happened in Sub-Saharan Africa. Current account deficits have been worse than trade balances, signalling persistent dependence on external financing. Analysis of the fiscal stance shows a generalized reduction in Debt-to-GDP ratios in ECOWAS countries. This testifies of a stronger disciplining effect of fiscal criteria in WAEMU countries if one takes into account the relatively poor growth performance of these countries. By contrast, debt reduction in WAMZ countries has been favoured by the relatively fast growth rate. Data on fiscal deficits including and excluding official grants highlights the crucial role played by external financing to enable the process of debt reduction.

To summarise, WAEMU and WAMZ countries have been characterised by substantial differences in growth performance. This may be due to the different sensitivity to commod-

[43] For a formal explanation see section 3.1.3 and the methodological appendix.

[44] It is well known in fact that the major problem that unit root tests have is their low statistical power that makes them to fail to reject the null of a unit root too often.

Table 12: Real GDP Growth (Annual percent change)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Benin	4.0	3.0	2.9	3.8	4.6	5.0	2.7	3.2	4.4	3.7
Burkina Faso	7.8	4.5	8.7	5.5	3.6	5.2	3.2	4.4	4.7	5.3
Cote Ivoire	−1.7	1.6	1.9	0.7	1.6	2.3	3.8	3.0	4.0	1.9
Guinea-Bissau	−3.5	3.1	5.0	2.2	0.3	3.5	3.0	3.5	4.3	2.4
Mali	7.2	1.2	6.1	6.1	4.2	4.9	4.5	5.1	6.3	5.1
Niger	7.1	−0.8	8.4	5.8	3.4	9.3	−0.9	4.4	3.8	4.5
Senegal	6.7	5.9	5.6	2.4	4.8	2.3	1.5	3.4	4.1	4.1
Togo	5.2	2.4	1.2	3.9	1.9	1.8	2.5	2.6	3.3	2.8
WAEMU	3.8	2.8	4.7	3.3	3.3	4.0	2.8	3.7	4.4	3.6
Gambia	6.9	7.0	5.1	6.5	6.3	6.1	4.6	4.8	5.0	5.8
Ghana	5.2	5.6	5.9	6.4	5.7	7.3	3.5	4.5	20.1	7.1
Guinea	1.2	2.3	3.0	2.5	1.8	4.9	−0.3	3.0	3.6	2.4
Cape Verde	4.7	4.3	6.5	10.8	7.8	5.9	4.1	5.0	5.5	6.1
Liberia	−31.3	2.6	5.3	7.8	9.4	7.1	4.6	5.9	9.0	2.3
Nigeria	10.3	10.6	5.4	6.2	7.0	6.0	5.6	7.0	7.3	7.3
Sierra Leone	9.5	7.4	7.2	7.3	6.4	5.5	4.0	4.8	5.5	6.4
Sub-Saharan Africa	5.0	7.1	6.3	6.5	7.0	5.6	2.1	4.7	5.8	5.6

Source: IMF African Regional Economic Outlook

Table 13: Inflation

	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Benin	1.5	0.9	5.4	3.8	1.3	8.0	2.2	2.5	2.8	3.2
Burkina Faso	2.0	−0.4	6.4	2.4	−0.2	10.7	2.6	2.3	2.0	3.1
Cote Ivoire	3.3	1.5	3.9	2.5	1.9	6.3	1.0	1.4	2.5	2.7
Guinea-Bissau	−3.5	0.8	3.3	0.7	4.6	10.4	−1.7	2.5	2.5	2.2
Mali	−1.2	−3.1	6.4	1.5	1.5	9.1	2.2	2.1	2.6	2.3
Niger	−1.8	0.4	7.8	0.1	0.1	11.3	4.3	8.4	2.0	3.6
Senegal	0.0	0.5	1.7	2.1	5.9	5.8	−1.1	1.6	2.1	2.1
Togo	−0.9	0.4	6.8	2.2	1.0	8.7	2.0	2.1	2.6	2.8
WAEMU	1.1	0.3	4.7	2.2	2.0	8.0	1.4	2.4	2.4	2.7
Cape Verde	1.2	−1.9	0.4	4.8	4.4	6.8	1.2	1.4	2.0	2.3
Gambia	17.0	14.3	5.0	2.1	5.4	4.5	4.6	3.9	5.0	6.9
Ghana	26.7	12.6	15.1	10.2	10.7	16.5	19.3	10.6	8.9	14.5
Guinea	11.0	17.5	31.4	34.7	22.9	18.4	4.7	16.6	12.3	18.8
Liberia	10.3	3.6	6.9	7.2	13.7	17.5	7.4	7.2	4.3	8.7
Nigeria	14.0	15.0	17.9	8.2	5.4	11.6	12.4	11.5	9.5	11.7
Sierra Leone	7.5	14.2	12.0	9.5	11.6	14.8	9.2	15.5	7.8	11.3
Sub-Saharan Africa	10.8	7.6	8.9	7.2	7.1	11.6	10.5	7.9	6.9	8.7

Source: IMF African Regional Economic Outlook

Table 14: Trade Balance % of GDP

	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Benin	−11.3	−11.0	−8.7	−10.3	−13.6	−12.0	−12.6	−12.7	−12.1	−11.6
Burkina Faso	−9.1	−9.6	−10.2	−8.0	−8.8	−10.9	−6.9	−7.8	−6.9	−8.7
Cote Ivoire	18.5	16.6	14.6	17.5	12.9	14.0	18.1	18.7	16.6	16.4
Guinea-Bissau	−2.2	0.8	−0.9	−8.8	−4.1	−2.6	−3.6	−3.1	−3.4	−3.1
Mali	−1.4	−2.5	−3.2	0.8	−3.3	−5.2	−5.2	−4.9	−2.7	−3.1
Niger	−5.0	−5.3	−8.7	−6.6	−5.4	−7.8	−9.7	−9.5	−9.1	−7.5
Senegal	−11.8	−12.3	−15.1	−17.1	−22.1	−25.7	−19.3	−19.1	−18.9	−17.9
Togo	−10.5	−13.9	−3.9	−9.0	−11.6	−13.4	−14.5	−16.3	−16.1	−12.1
WAEMU	1.5	0.3	−0.9	0.1	−3.6	−4.5	−1.8	−1.8	−1.9	−1.4
Cape Verde	−38.1	−41.3	−35.0	−38.9	−43.9	−40.9	−41.9	−45.9	−43.8	−41.1
Gambia	−10.0	−26.4	−30.9	−27.2	−26.3	−27.0	−27.2	−26.6	−26.2	−25.3
Ghana	−10.3	−17.0	−23.7	−23.8	−25.9	−30.0	−14.2	−21.6	−10.9	−19.7
Guinea	6.8	3.1	5.4	4.2	−2.5	−2.9	−2.5	−4.6	−3.4	0.4
Liberia	−12.5	−37.4	−36.7	−45.7	−39.0	−53.5	−45.5	−53.2	−60.0	−42.6
Nigeria	10.1	20.6	22.0	23.9	21.8	22.8	10.2	16.2	16.3	18.2
Sierra Leone	−14.9	−8.2	−11.9	−6.6	−5.7	−10.4	−9.6	−9.0	−9.0	−9.5
Sub-Saharan Africa	3.3	4.9	6.8	8.0	7.4	8.5	2.1	4.5	4.9	5.6

Source: IMF African Regional Economic Outlook

Table 15: External Current Account, Excl.Grants, % of GDP)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Benin	−11.6	−10.4	−7.5	−7.5	−12.3	−9.4	−11.0	−9.8	−9.0	−9.8
Burkina Faso	−13.3	−14.1	−14.9	−12.0	−12.5	−15.1	−10.8	−12.0	−11.3	−12.9
Cote Ivoire	1.9	1.7	0.4	3.0	−1.5	1.0	5.1	4.3	2.4	2.0
Guinea-Bissau	−6.0	−2.4	−4.1	−12.4	−5.0	−4.1	−6.4	−5.9	−5.4	−5.7
Mali	−8.9	−10.4	−10.7	−6.8	−9.6	−9.6	−12.0	−11.6	−11.3	−10.1
Niger	−10.3	−10.5	−12.2	−10.9	−9.9	−15.3	−23.3	−24.0	−23.0	−15.5
Senegal	−7.9	−7.8	−9.1	−10.0	−12.8	−14.9	−9.4	−9.3	−9.4	−10.1
Togo	−4.8	−3.7	4.2	−4.4	−8.0	−8.9	−8.8	−9.6	−10.7	−6.1
WAEMU	−5.4	−5.6	−6.1	−5.0	−8.0	−8.0	−6.3	−6.7	−7.1	−6.5
Cape Verde	−17.3	−20.2	−8.0	−9.1	−12.9	−18.4	−21.6	−25.8	−25.2	−17.6
Gambia	−13.0	−14.7	−20.2	−14.7	−13.5	−17.3	−19.0	−19.3	−18.3	−16.7
Ghana	−5.7	−8.9	−12.6	−13.0	−15.8	−22.7	−9.6	−17.1	−11.4	−13.0
Guinea	−0.8	−2.6	−0.5	−2.3	−9.0	−11.9	−10.6	−10.2	−8.5	−6.3
Liberia	−99.9	−183.6	−181.2	−199.6	−177.9	−185.7	−138.5	−148.6	−136.1	−161.2
Nigeria	−5.9	5.6	6.5	26.4	18.7	20.4	11.6	12.4	12.0	12.0
Sierra Leone	−10.8	−12.9	−13.9	−10.9	−9.0	−14.1	−13.0	−13.2	−12.4	−12.2
Sub-Saharan Africa	−3.9	−2.3	−1.0	3.7	0.5	0.2	−2.9	−2.2	−2.6	−1.2

Source: IMF African Regional Economic Outlook

Table 16: External Current Account, Incl.Grants, % of GDP)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	Average
Benin	−8.3	−7.2	−5.5	−4.5	−9.4	−6.4	−7.0	−7.3	−6.6	−6.9
Burkina Faso	−9.0	−11.0	−11.6	−9.1	−8.2	−11.7	−6.3	−7.7	−7.1	−9.1
Cote Ivoire	2.1	1.6	0.2	2.8	−0.7	2.4	7.3	4.4	3.2	2.6
Togo	−4.2	−3.0	5.3	−3.0	−6.2	−7.4	−5.7	−6.9	−6.4	−4.2
Guinea-Bissau	−2.6	3.5	−0.2	−5.5	5.3	2.3	1.6	−1.3	−0.2	0.3
Mali	−6.3	−8.5	−8.6	−4.2	−7.8	−7.9	−9.7	−9.4	−9.2	−8.0
Niger	−7.5	−7.3	−8.9	−8.6	−7.8	−13.2	−22.3	−22.6	−20.6	−13.2
Senegal	−6.1	−6.1	−7.7	−9.5	−11.8	−14.3	−8.7	−8.7	−9.0	−9.1
WAEMU	−3.6	−4.1	−4.7	−3.7	−6.1	−6.2	−3.9	−5.2	−5.3	−4.8
Cape Verde	−11.2	−14.4	−3.4	−5.0	−8.7	−12.4	−19.4	−25.1	−24.3	−13.8
Gambia	−4.9	−10.1	−18.5	−13.4	−12.3	−16.0	−14.3	−14.4	−13.6	−13.1
Ghana	−1.6	−4.0	−8.3	−9.9	−12.0	−18.7	−5.1	−12.8	−8.1	−8.9
Guinea	−0.8	−2.8	−0.4	−2.2	−8.8	−11.4	−10.2	−10.0	−8.4	−6.1
Liberia	−34.2	−33.4	−38.3	−13.7	−31.2	−57.8	−23.9	−41.6	−43.2	−35.3
Nigeria	−6.0	5.5	6.5	26.5	18.8	20.4	11.6	12.4	12.0	12.0
Sierra Leone	−4.8	−5.7	−7.0	−5.6	−5.5	−11.7	−8.4	−9.6	−9.0	−7.5
Sub-Saharan Africa	−2.9	−1.5	−0.3	4.5	1.3	1.1	−1.9	−1.5	−1.9	−0.3

Source: IMF African Regional Economic Outlook

Table 17: Government Debt, % of GDP)

	2003	2004	2005	2006	2007	2008	2009	~~Average~~
Benin	37.2	35.1	42.9	15.3	21.5	25.0	26.7	−28.2
Burkina Faso	44.6	45.8	44.1	21.7	21.9	24.4	27.9	−37.4
Cote Ivoire	13.9	12.5	12.8	12.8	10.8	11.1	10.6	−23.7
Guinea-Bissau	225.1	209.4	160.3	145.7	140.1	122.4	107.8	−52.1
Mali	50.4	49.2	55.2	20.4	21.9	24.0	24.0	−52.4
Niger	69.9	58.8	51.6	15.8	15.9	13.9	16.3	−76.7
Senegal	56.8	53.4	49.4	23.0	24.5	25.1	32.1	−43.5
Togo	125.7	119.7	115.3	109.5	101.5	85.8	77.7	−38.2
WAEMU	45.4	42.8	42.4	23.9	24.0	24.0	25.4	−44.1
Cape Verde	88.7	92.5	93.4	80.6	65.5	62.2	66.6	−24.9
Gambia	204.8	174.5	162.6	167.5	72.0	79.5	72.9	−64.4
Ghana	120.8	93.8	77.5	42.0	51.2	57.6	60.4	−50.0
Guinea	112.6	119.8	150.2	137.1	92.4	89.0	85.9	−23.7
Liberia					537.2	347.8	136.3	
Nigeria	63.9	52.7	28.6	11.8	12.8	11.6	15.1	−76.4
Sierra Leone	95.1	73.7	60.3	46.2	18.5	18.0	14.3	−85.0
Sub-Saharan Africa	60.8	53.8	44.4	31.6	27.1	26.0	28.9	−52.5

Source: IMF African Regional Economic Outlook

Table 18: Overall Fiscal Balance, Incl.Grants, % of GDP)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	Av.incl. grants	Av.excl. grants
Benin	−0.2	−0.1	−1.5	0.5	0.3	−0.1	−3.2	−2.5	−2.2	−1.0	−3.5
Burkina Faso	−2.0	−4.7	−5.5	15.5	−5.6	−4.1	−4.7	−3.5	−3.1	−2.0	−9.7
Cote Ivoire	−2.8	−2.6	−2.8	−2.4	−1.3	−2.3	−2.1	−2.5	−3.9	−2.5	−3.4
Guinea-Bissau	−6.1	−7.6	−6.0	−4.6	−5.8	−3.8	1.8	−3.2	−1.2	−4.1	−12.9
Mali	−1.3	−2.6	−3.1	31.3	−3.2	−2.2	−4.7	−4.7	−3.9	0.6	−7.3
Niger	−2.9	−3.5	−2.0	40.3	−1.0	1.5	−5.6	−4.0	−2.6	2.2	−8.1
Senegal	−1.8	−2.1	−2.9	−5.6	−3.9	−4.3	−5.1	−4.3	−4.1	−3.8	−6.5
Togo	2.4	1.0	−3.5	−3.8	−1.9	−0.9	−2.6	−4.0	−2.4	−1.7	−3.6
Cape Verde	−4.3	−3.8	−6.4	−5.0	−0.7	−1.2	−5.0	−10.0	−10.1	−5.2	−10.8
Gambia	−4.9	−5.8	−7.9	−6.6	0.6	−1.6	−2.2	−1.2	−0.7	−3.4	−3.4
Ghana	−4.9	−5.0	−4.6	−7.5	−9.2	−14.5	−9.7	−8.0	−4.0	−7.5	−12.7
Guinea	−6.4	−5.3	−1.6	−3.1	0.3	−1.3	−7.2	−1.0	−0.4	−2.9	−3.9
Liberia	1.0	0.0	0.0	5.9	3.8	90.4	222.5	57.8	−2.1	42.1	−1.0
Nigeria	−3.3	8.1	9.3	7.0	−1.1	3.7	−10.1	−7.5	−2.3	0.4	0.4
Sierra Leone	−6.5	−3.2	−2.0	−2.3	25.7	−4.8	−3.2	−4.5	−4.7	−0.6	−10.8
WAEMU	−1.9	−2.5	−3.1	7.6	−2.6	−2.3	−3.7	−3.5	−3.4	−1.7	−6.0
Sub-Saharan Africa	−2.6	0.5	1.7	4.7	0.8	0.2	−5.9	−4.6	−2.9	−0.9	−2.6

Source: IMF African Regional Economic Outlook

ity price dynamics, especially up to 2008. It should be noted that in relative terms WAEMU membership enforced monetary discipline. In other terms, one might be tempted to argue that the fixed external exchange rate constrained growth in the monetary union area, but WAMZ countries could not resist inflation pressures in a period of fast growth. Thus ECOWAS countries continue to face the dilemma between sacrificing flexibility in order to enforce (some) monetary discipline and foregoing price stability in order to retain flexibility. The important reduction in debt-to-GDP ratios is certainly welcome, but its fragility is apparent if one takes into account the important contribution from official grants to the financing of public expenditures.

5 Policy options

In the past, great emphasis has been put on monetary integration as a prerequisite for stimulating growth. The conclusion reached here is that integration is still way ahead, just like growth is an unaccomplished mission. One of the strongest results presented in this report is that cross-country differences in sociopolitical instability explain different levels of per-capita income. This conclusion is reinforced if one takes into account the endemic conflicts and the wars that plagued this region.

It would be tempting to draw a comparison with the long-lasting collective effort that transformed post world-war-II Europe into the current European Union. The key objective of EU founders was to create a peacefully integrated economic zone that would gradually develop into a fully fledged union. European countries were characterised by democracy and by a stock of human capital of excellent quality. Trade openness (especially in the manufacturing sector) and proper use of external aid allowed the recovery of the physical capital lost with the war. Since then, European countries went through several stages of integra-

tion, following a piecemeal approach. In ECOWAS emphasis on monetary convergence and unification has always been very strong, and seems to have been assigned primacy relative to other stages of integration. In the meantime, conflicts among ECOWAS members have persisted, either in open or latent form.

The analysis of policy options should focus on four key questions: i) is the emphasis on macroeconomic stability appropriate?; ii) is monetary unification for the whole ECOWAS region an appropriate target? iii) is there room for widening policy space? iv) which growth strategies should be pursued and what is their connection with the macroeconomic policy regime?

Macroeconomic stability. As pointed out in the introduction moderate inflation may preserve incomes of the poorest segment of the population. This is particularly true in a sub-regional context where the informal economy plays an important role. At the same time, limiting external debt is crucial to avoid capital flows shocks. When commenting the "macroeconomic stability" prescription, a basic principle should be borne in mind: both inflation increases and debt (public or private) accumulation can buy growth, but such stronger growth cannot be sustained indefinitely unless supply constraints are overcome. Our analysis has shown that such constraints strongly bind in the ECOWAS subregion, despite some success in introducing reforms.

It should be noted, however, that reforms *per se* often amount to macroeconomic shocks. In this regard, both monetary and fiscal policies can play an important role in limiting adjustment costs, including adverse redistributive effects. Achieving macroeconomic stability is a necessary prerequisite for obtaining the necessary policy space.

Monetary unification and policy space. The report has documented the persistent asymmetries amongst ECOWAS countries. Such asymmetries refer to economic structures, to the political institutions, to the domestic social dimensions. This has happened despite the long-lasting emphasis on macroeconomic convergence and monetary unification. Perhaps it is time to acknowledge that, despite some substantial progress and its political appeal, this strategy has now entered a phase of diminishing returns. An important distinction should be drawn between Waemu and WAMZ countries. The former are a *de facto* EMU subregion. Given the obvious structural differences with respect to EMU, these countries are subject to fluctuations of the Euro and have no monetary space. Despite the gradual strengthening of inflation control, it is dubious that the institutional features of the monetary union are robust to a loosening of the external nominal anchor. Thus the burden of stabilisation business cycle stabilisation should inevitably fall on fiscal policy. In this regard, the reduction in debt ratios certainly is good news. On the other hand, the contribution of official grants to the budget of WAEMU countries is so strong that very little room is left for discretionary actions, unless in the form of additional external support contracted to facilitate economic reforms. As for WAMZ countries, more policy space has been *de facto* available. The strategy of achieving macroeconomic stability trough monetary unification is hardly justified on purely economic grounds. Thus focus on macroeconomic stability should inspire country-specific combinations of fiscal and monetary policies, where exchange rate control should allow the necessary policy space.

Growth strategies and macroeconomic policies. Looking at future perspectives, the issue obviously is which growth strategies should be pursued. The academic debate on growth pre–requisites - institutions vs policies - is still open. For practical policy purposes, the key insight is that growth episodes often began with weak political institutions and became sustainable as they triggered a virtuous evolution of institutions over time. In this regard Johnson et al. (2007) emphasise the role of manufacturing exports in creating a middle class that favoured subsequent improvement of institutional quality. They also

warn that trade openness *per se* is not sufficient to trigger a virtuous cycle of growth and institutional improvement, it is also important that benefits from trade are not expropriated by dominant groups or small élites.

Access to financial markets seem to be an important prerequisite to mobilie domestic resources and soften supply constraints. The issue is particularly relevant with respect to the inclusion of the population share now relegated into the informal sector. La Porta and Shleifer (2008) group the determinants of the size of the unofficial economy into three broad categories: the cost of becoming formal, the cost of staying formal, and the benefits of being formal. Government intervention to affect them entails labour and goods markets regulation, supply of public goods, tax rules enforcement, preservation of property rights and, last but certainly not least, corruption control. Macroeconomic policies may prove crucial in facilitating reforms. In principle, an appropriate monetary stance (and exchange rate level) could facilitate the emergence of informal firms into the official sector, budgetary policies should deal with the redistributive aspects associated to changes in market regulation. Given the nominal external constraint, for WAEMU countries this requires an appropriate timing strategy, seeking to introduce reforms when monetary conditions in the Euro area are more favourable such as, for instance, in the current predicament.

6 Conclusion

This report has investigated convergence across ECOWAS economies. The analysis has focused both on per capita income growth and on macroeconomic policies, proxied by indicators such as inflation and deficit size. Descriptive statistics and formal tests reject the hypothesis of absolute convergence in long-term growth and in macroeconomic policies. This strongly supports the view that attempts to create an integrated economic area had limited success. Right from the outset in section 2 it was clear that ECOWAS economies still exhibit structural differences (government size, trade openness, institutional quality, measures of individual freedom).

One key message of the report is that, even if emphasis on area-wide objectives of monetary unification, this strategy now has begun to produce "decreasing returns". Our results do in fact testify that among ECOWAS countries substantial differences do exist both in the economic structure and in the quality of institutions. In this regard, corruption and the role of the informal economy are issues often neglected in the literature on growth and policy convergence in ECOWAS.

The report has also discussed macroeconomic policy options and their potential growth-promoting role, yet avoiding short-cuts that trade short-term benefits for a deterioration of macroeconomic fundamentals. Consistently with the criticism raised against some policy strategies implemented in the past, the report has avoided discussion of country-specific aspects. In fact, policy advice should avoid the temptation of one-size-fits-all recipes. Promoting convergence and, above all, growth in this region requires a deeper understanding of country-specific features and focus on the "most binding constraints" to growth, as outlined in Hausmann, Rodrik and Velasco (2005). The issue is left for future research.

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8 Methodology

8.1 Unit root test

Consider a simple AR(1) process:

$$y_t = \rho y_{t-1} + \beta x_t + \varepsilon_t \tag{6}$$

where x define other exogenous regressors (i.e. a constant or a constant and a trend), ε is the error term assumed to be white noise. In equation (6) if $|\rho| \geq 1$, then y is non stationary and its variance increases with time; on the contrary if $|\rho| < 1$then y is stationary. The unit root test consist of testing whether y is stationary and this boils down to testing whether the absolute value of ρ is less than 1.

The Augmented Dickey-Fuller (ADF) Test

It is possible to modify equation (6) as follows:

$$\Delta y_t = \alpha y_{t-1} + \beta x_t + \varepsilon_t$$

Where $\alpha = \rho - 1$. In this case we can write the null of unit root as follows:

$$\begin{aligned} H_0 &: \alpha = 0 \\ H_1 &: \alpha < 0 \end{aligned}$$

And we can construct a t ratio for α

$$t_\alpha \frac{\widehat{\alpha}}{se(\widehat{\alpha})}$$

Where $\widehat{\alpha}$ is the estimate of α and $se(.)$ is the standard error of the estimated coefficient.

As shown by Dickey and Fuller (1979), under the null of a unit root, this statistic does not follow the conventional Student's t-distribution. Dickey and Fuller and later MacKinnon (1991, 1996) derive asymptotic results and critical values. In the example above, if the the series is correlated at higher order lags, the assumption of ε following a white noise is violated. The Augmented Dickey-Fuller (ADF) test implements a correction for higher-order correlation; with n lags:

$$\Delta y_t = \alpha y_{t-1} + \beta x_t + \delta_1 \Delta y_{t-1} + ... + \delta_n \Delta y_{t-n} + v_t$$

Where again the ADF test is performed on α. It is possible to show that the ADF test is robust to the number of lagged first differences included and also to the presence of moving average component provided that sufficient lagged difference terms are included in the test regression.

8.2 Panel Unit Root Test

It is possible to extend the unit root tests also to a panel setting. Consider the equivalent of equation (6) in a panel:

$$y_{it} = \rho_i y_{i,t-1} + \beta_i X_{it} + \varepsilon_{it}$$

Where i identifies cross sectional units.

In this case the test of unit root boils down to the test of $|\rho_i| < 1$. In this case two different assumptions can be made about the autoregressive coefficients ρ_i: a) parameters are common across cross-sections $\rho_i = \rho \forall i$ or b) ρ_i are allowed to vary across cross-sections. The Peasaran test used in this report follows this second assumption. It specifies a separate ADF regression for each cross section:

$$\Delta y_{it} = \alpha y_{i,t-1} + \sum_{j=1}^{p_i} \beta_{ij} \Delta y_{it-j} + X'_{it}\delta + \varepsilon_{it}$$

The null hypothesis may be written as,

$$H_0 : \alpha_i = 0, \forall i$$

while the alternative hypothesis is given by:

$$H_1 : \begin{cases} \alpha_i = 0 & \text{for } i = 1, 2, ...N_1 \\ \alpha_i < 0 & \text{for } i = N+1, N+2, ...N \end{cases}$$

which may be interpreted as a non-zero fraction of the individual processes is stationary.

After estimating the separate ADF regressions, it is possible to construct a t-statistics as the average of t derived from the individual ADF regressions.

8.3 Cointegration

The seminal work of Engle and Granger (1987) spurred the development of the theory of non-stationary time series analysis. They showed that two or more non-stationary series may have a linear combination that is stationary. If such a combination exists, then the non-stationary time series are said to be *cointegrated*. This combination is called the cointegrating equation and may be interpreted as a long-run equilibrium relationship among the variables.

The cointegration test is constructed so to determine whether a group of non-stationary series are cointegrated or not. The methodology has been developed by Johansen (1991, 1995).

Consider a VAR of order p:

$$y_t = A_1 y_{t-1} + ... + A_p y_{t-p} + Bx_t + \varepsilon_t \tag{7}$$

where y is a k vector of non stationary variables (integrated of order 1 - I(1)), x is a vector of deterministic variables and ε ia a vector of error terms. Analogously for equation (6) we may rewrite (7) as follows:

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + Bx_t + \varepsilon_t$$

where

$$\Pi = \sum_{i=1}^{p} A_i - I_i \qquad \Gamma_i = -\sum_{j=i+1}^{p} A_j$$

Granger's representation theorem states that if the matrix of the coefficients Π has reduced rank $r < k$, then there exist $k \times r$ matrices α and β each with rank r such that $\Pi = \alpha\beta'$ and $\beta' y_t$ is stationary [I(0)]. r is the number of cointegrating relations (the cointegrating rank) and each column of β is the cointegrating vector. The elements of α are known as the adjustment parameters in the vector error correction model. Johansen's method is to estimate the matrix Π from an unrestricted VAR and to test whether we can reject the restrictions implied by the reduced rank of Π.

The test for the number of cointegrating relations is performed using the trace statistics. The trace statistic tests the null hypothesis of r cointegrating relations against the alternative of k cointegrating relations, where k is the number of endogenous variables, for $r = 1, 2, ..., k-1$. The alternative of k cointegrating relations corresponds to the case where none of the series has a unit root and a stationary VAR may be specified in terms of the levels of all of the series. The trace statistic for the null hypothesis of r cointegrating relations is computed as:

$$LR_{tr}(r|k) = -T \sum_{i=r+1}^{k} \log(1 - \lambda_i)$$

where λ_i is the i-largest eigenvalue of the Π matrix.

9 Appendix

Dataset References

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Table 19: Pairwise correlations: inflation rate

	Cape V.	**Benin**	Gambia	Ghana	**Guinea-B**	Guinea	**Cote Ivo.**	Liberia	**Mali**	Maurit.	**Niger**	Nigeria	**Senegal**	Sierra L.	**Togo**	**B.Faso**
Cape Verde	1															
Benin	0.0092	1														
Gambia	-0.0351	-0.3273	1													
Ghana	0.4701	0.2005	-0.1148	1												
Guinea-Bissau	0.6450*	0.0087	-0.0565	0.3048	1											
Guinea	0.046	-0.1239	0.2967	-0.1986	0.3073	1										
Cote Ivoire	0.0189	0.9760*	-0.2746	0.2607	0.0029	-0.2006	1									
Liberia	0.479	0.0667	-0.0352	0.1704	0.1542	-0.1871	0.114	1								
Mali	0.1417	0.8597*	-0.391	0.4285	-0.0959	-0.2563	0.8635*	0.2326	1							
Mauritania	-0.154	-0.1798	0.3411	-0.3043	0.1345	0.6930*	-0.1704	-0.4147	-0.2552	1						
Niger	-0.1016	0.9368*	-0.4101	0.2432	-0.1984	-0.1723	0.9126*	0.0228	0.8996*	-0.186	1					
Nigeria	0.1865	0.5820*	-0.0734	0.4366	0.4484	0.1976	0.6612*	0.1268	0.5144*	0.206	0.4696	1				
Senegal	-0.0169	0.9764*	-0.3171	0.1793	-0.1017	-0.145	0.9456*	0.0974	0.8621*	-0.2581	0.9554*	0.5098*	1			
Sierra Leone	0.6619*	-0.0874	0.2628	-0.0053	0.5366*	0.4324	-0.1764	0.0774	-0.1699	0.1501	-0.307	-0.0461	-0.1482	1		
Togo	0.0746	0.9726*	-0.3535	0.2808	0.014	-0.1465	0.9616*	0.0788	0.8870*	-0.2165	0.9491*	0.5579*	0.9688*	-0.1389	1	
Burkina Faso	0.0305	0.9334*	-0.3641	0.2319	-0.104	-0.2225	0.9116*	0.1422	0.9355*	-0.1969	0.9448*	0.4723	0.9378*	-0.1792	0.9312*	1

WAEMU countries in bold letters

Table 20: Pairwise correlations: cycle

	Cape V.	**Benin**	Gambia	Ghana	**Guinea-B**	Guinea	**Cote Ivo.**	Liberia	**Mali**	Maurit.	**Niger**	Nigeria	**Senegal**	Sierra L.	**Togo**	**B.Faso**
Cape Verde	1															
Benin	0.9980*	1														
Gambia	0.9833*	0.9839*	1													
Ghana	0.9956*	0.9965*	0.9867*	1												
Guinea-Bissau	0.1586	0.1683	0.1001	0.1686	1											
Guinea	0.9962*	0.9960*	0.9686*	0.9899*	0.1864	1										
Cote Ivoire	0.8689*	0.8686*	0.8046*	0.8470*	0.2433	0.9023*	1									
Liberia	0.5551*	0.5602*	0.5947*	0.5223*	-0.3101	0.5536*	0.5791*	1								
Mali	0.9839*	0.9871*	0.9914*	0.9866*	0.0808	0.9737*	0.8113*	0.6079*	1							
Mauritania	0.9838*	0.9808*	0.9760*	0.9886*	0.1978	0.9750*	0.8311*	0.4901	0.9744*	1						
Niger	0.9688*	0.9680*	0.9635*	0.9658*	0.0137	0.9627*	0.8417*	0.6564*	0.9763*	0.9520*	1					
Nigeria	0.9638*	0.9655*	0.9808*	0.9803*	0.141	0.9455*	0.7575*	0.5011*	0.9776*	0.9780*	0.9525*	1				
Senegal	0.9840*	0.9830*	0.9890*	0.9848*	0.0982	0.9732*	0.8330*	0.6231*	0.9925*	0.9800*	0.9823*	0.9797*	1			
Sierra Leone	0.1121	0.1145	0.2055	0.1558	-0.2739	0.0518	-0.2824	0.1045	0.232	0.1885	0.2381	0.3112	0.2275	1		
Togo	0.8951*	0.8964*	0.8598*	0.8812*	0.1869	0.9090*	0.9127*	0.6869*	0.8834*	0.8643*	0.9208*	0.8463*	0.9125*	0.0434	1	
Burkina Faso	0.9919*	0.9950*	0.9860*	0.9972*	0.1777	0.9866*	0.8460*	0.5448*	0.9888*	0.9874*	0.9708*	0.9809*	0.9868*	0.1776	0.8915*	1

WAEMU countries in bold letters

Table 21: Pairwise correlations: terms of trade, cyclical component

	Cape V.	**Benin**	Gambia	Ghana	**Guinea-B**	Guinea	**Cote Ivo.**	Liberia	**Mali**	Maurit.	**Niger**	Nigeria	**Senegal**	Sierra L.	**Togo**	**B.Faso**
Cape Verde	1															
Benin	0.7921*	1														
Gambia	-0.265	0.091	1													
Ghana	0.9305*	0.8410*	-0.0817	1												
Guinea-Bissau	0.8200*	0.6180*	-0.3014	0.7709*	1											
Guinea	0.5562*	0.375	-0.1155	0.4395	0.5911*	1										
Cote Ivoire	0.7220*	0.6630*	-0.2033	0.8356*	0.5942*	0.2318	1									
Liberia	.	.	.	.	.	.	.	.								
Mali	0.9421*	0.8583*	-0.1015	0.9124*	0.8273*	0.6134*	0.6475*	.	1							
Mauritania	-0.0678	0.1412	0.2719	-0.0242	-0.0444	0.1515	-0.0009	.	0.0322	1						
Niger	-0.7092*	-0.3686	0.4866	-0.6303	-0.7518*	0.0234	-0.8364*	.	-0.4836	0.3944	1					
Nigeria	0.7822*	0.5839*	-0.2962	0.6393*	0.7087*	0.4094	0.3684	.	0.7545*	0.2912	-0.0789	1				
Senegal	0.8578*	0.8399*	-0.0597	0.8341*	0.7418*	0.6713*	0.5489*	.	0.9487*	0.1715	-0.1809	0.7785*	1			
Sierra Leone	-0.6695	-0.6363	0.1582	-0.3825	0.0772	-0.1297	-0.4246	.	-0.6616	-0.6397	-0.0056	-0.3484	-0.6691	1		
Togo	0.0052	0.1581	0.1967	0.1977	0.0325	0.3781	0.0574	.	0.2443	0.4539	0.3376	0.3869	0.4039	-0.1476	1	
Burkina Faso	0.1846	0.496	0.073	0.3781	0.3344	0.3086	0.1415	.	0.5508*	0.0986	0.3931	0.4627	0.6204*	-0.176	0.4849	1

WAEMU countries in bold letters

Table 22: Trade complementarity index

	Exporter														
Importer	Benin	Burkina F.	Cote I.	Mali	Niger	Senegal	Togo	WAEMU	Cape V.	Gambia	Ghana	Guinea	Nigeria	Sierra L.	Non-WAEMU
Benin		27.1	43.1	31.0	27.0	48.9	43.0		34.7	26.3	21.2	8.0	16.5	7.7	19.1
Burkina Faso	17.4		35.7	24.8	15.9	50.3	33.6		38.2	19.4	17.8	8.0	24.0	8.4	19.3
Cote Ivoire	18.1	19.0		25.6	15.9	56.9	33.1		40.7	23.6	24.8	10.8	23.9	8.3	22.0
Mali	14.0	17.1	37.2		13.8	49.5	36.4		37.6	18.7	18.7	9.9	22.3	9.4	19.5
Niger	24.5	26.2	41.8	28.7		50.2	37.4		31.9	32.2	21.7	9.6	16.5	9.0	20.2
Senegal	19.9	21.7	38.9	26.3	15.9		36.3		37.4	21.5	21.6	10.7	23.9	9.2	20.7
Togo	19.3	21.9	38.5	23.9	20.4	51.6			40.9	24.9	20.7	8.4	22.9	7.5	20.9
WAEMU									37.4	23.8	20.9	9.3	21.4	8.5	20.2
Cape Verde	21.6	20.7	34.9	26.2	16.7	35.2	40.6	28.0		24.0	23.9	9.4	10.1	10.4	
Gambia	21.9	25.0	38.5	25.6	23.1	43.7	37.6	30.8	27.5		22.4	11.0	14.5	10.3	
Ghana	18.6	20.2	39.3	26.2	18.4	47.8	35.2	29.4	32.2	24.7		11.7	15.4	8.5	
Guinea	19.5	21.9	37.2	25.6	18.4	51.2	35.9	30.0	38.5	24.2	18.1		23.8	8.6	
Nigeria	14.4	17.1	29.9	24.4	15.0	38.9	37.9	25.4	25.5	20.8	23.1	12.3		9.5	
Sierra Leone	24.6	25.1	37.6	27.3	17.1	47.0	37.1	30.8	53.2	20.8	18.7	7.7	41.7		
Non-WAEMU	20.1	21.7	36.2	25.9	18.1	44.0	37.4	29.0							

Source: Goretti and Weisfeld (2008)

Figure 2:

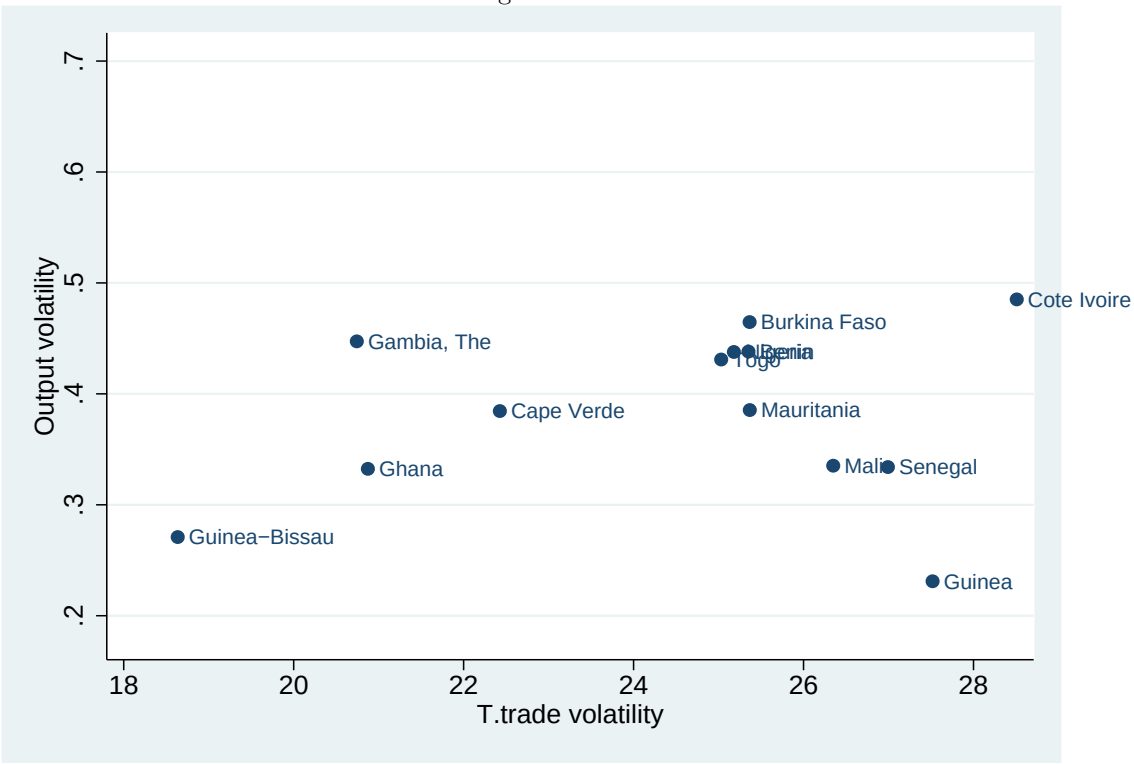


Figure 3: Capital account and trade openness

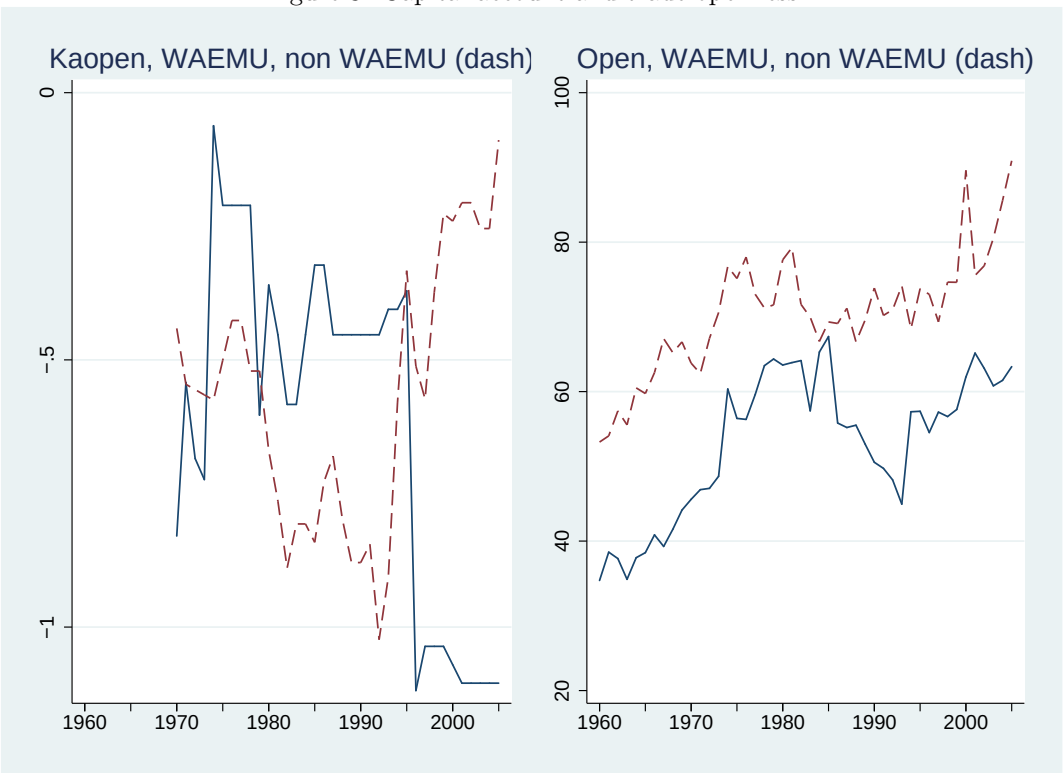


Figure 4: Gdp per capita

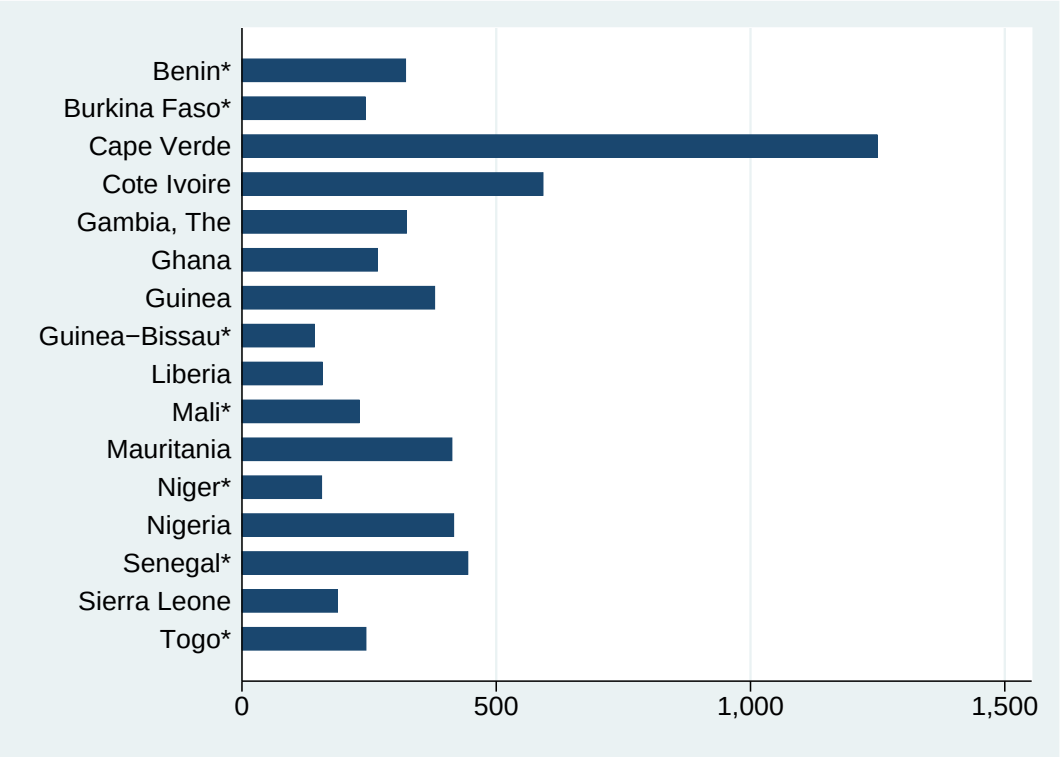


Figure 5: Gdp per capita normalised by US 1970

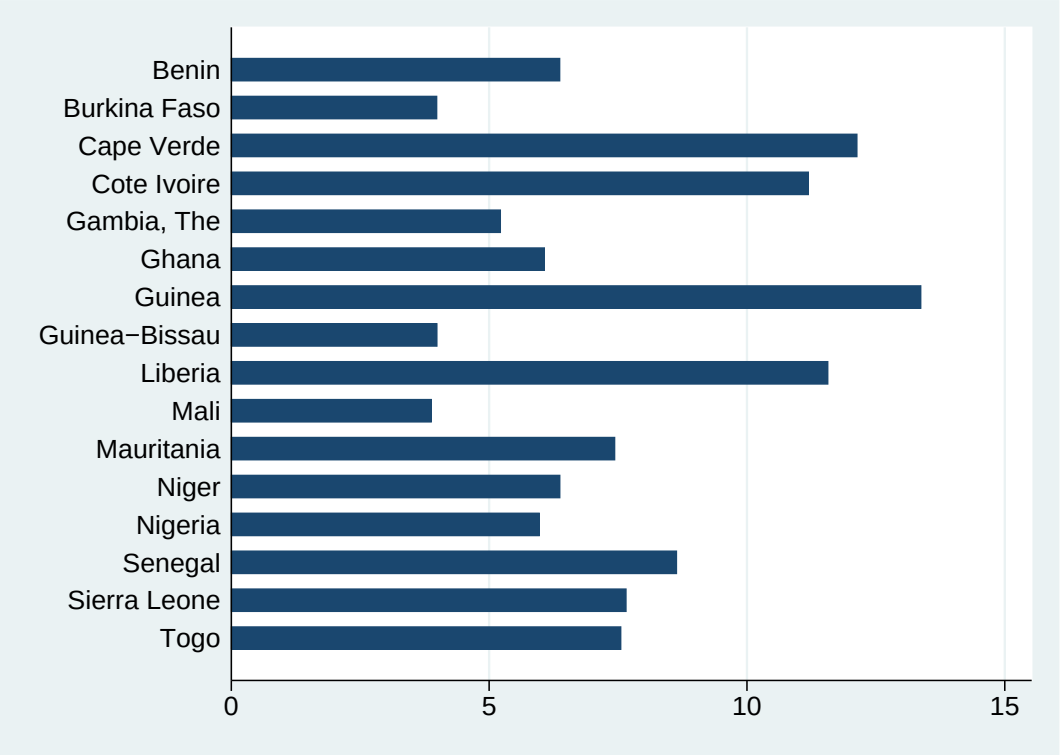


Figure 6: Gdp per capita normalised by US 2004

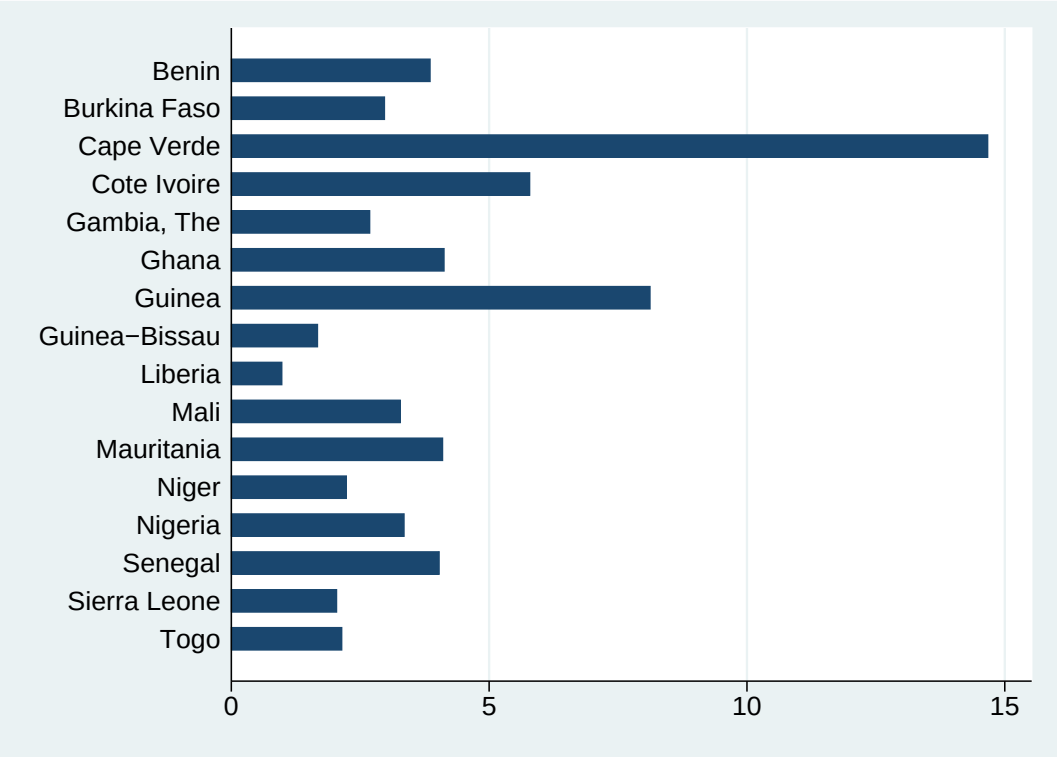


Figure 7: Inflation

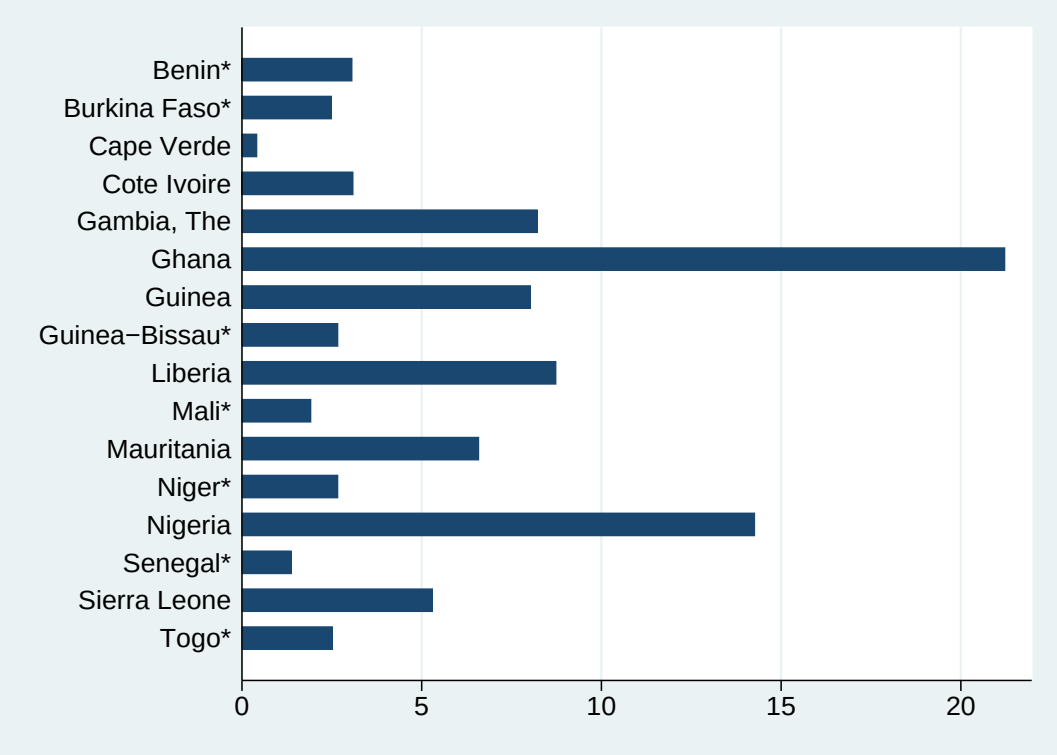


Figure 8: Gdp growth

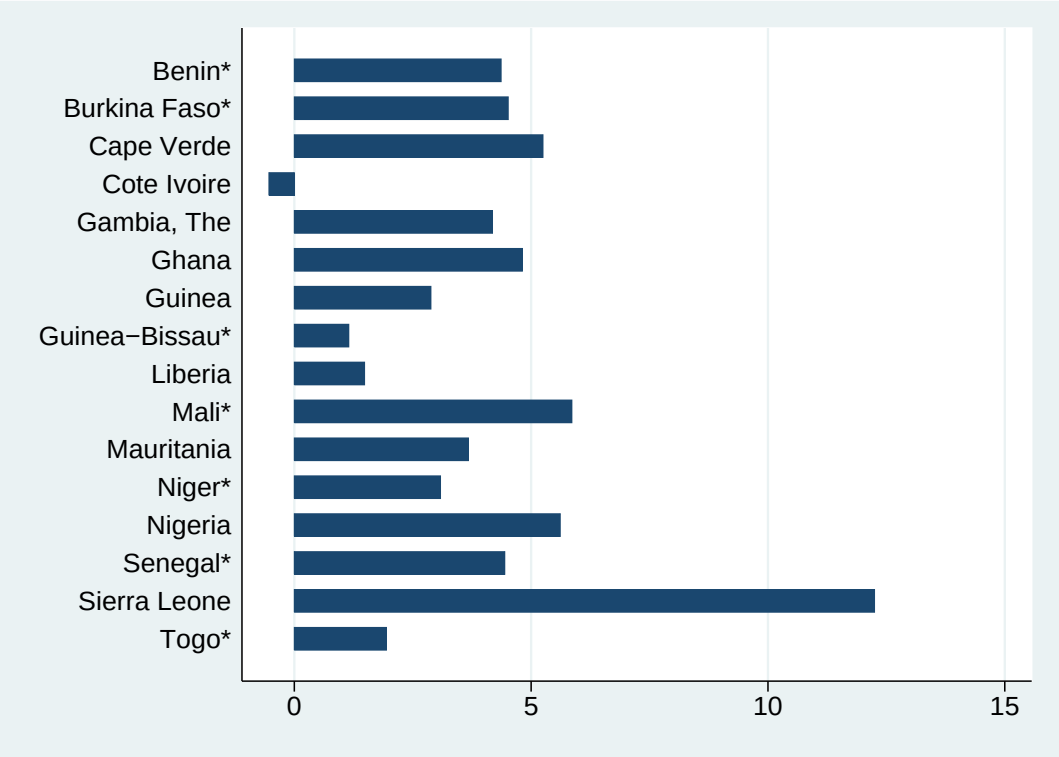


Figure 9: Open

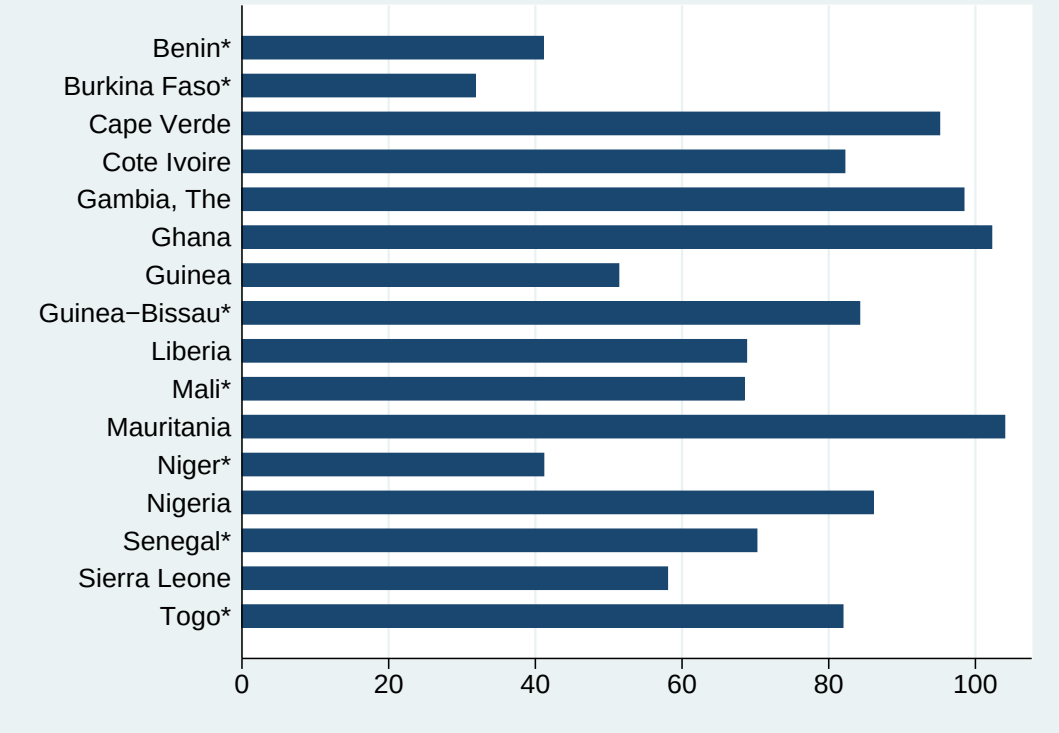


Figure 10: Gov. Spending

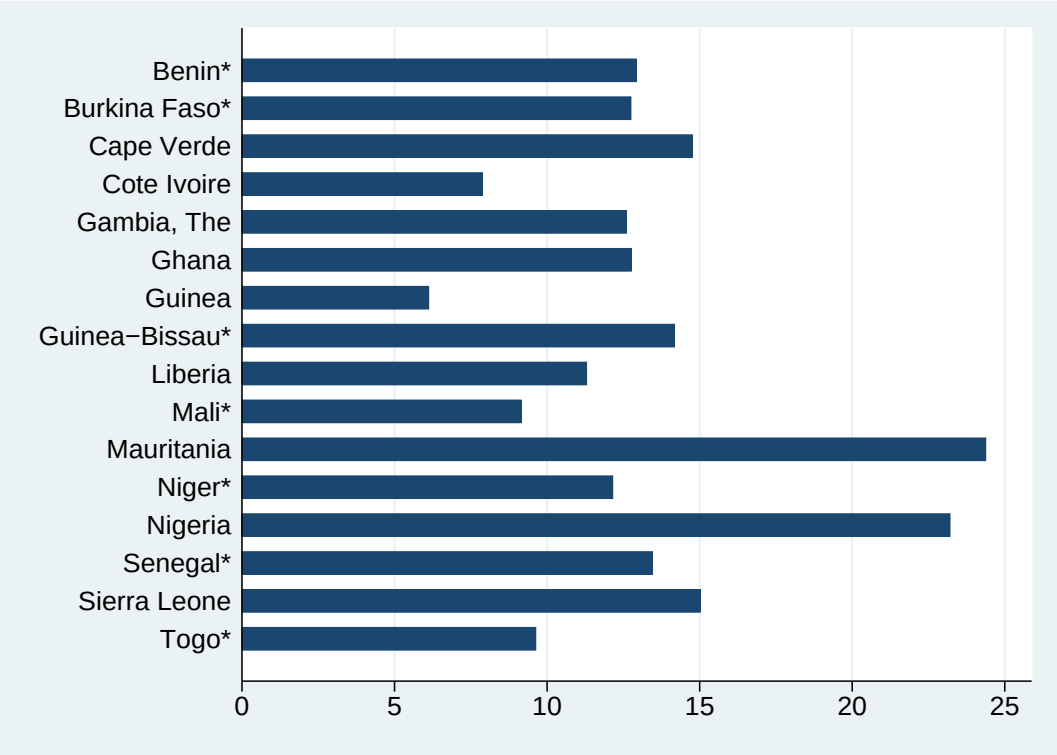


Figure 11: Deficit

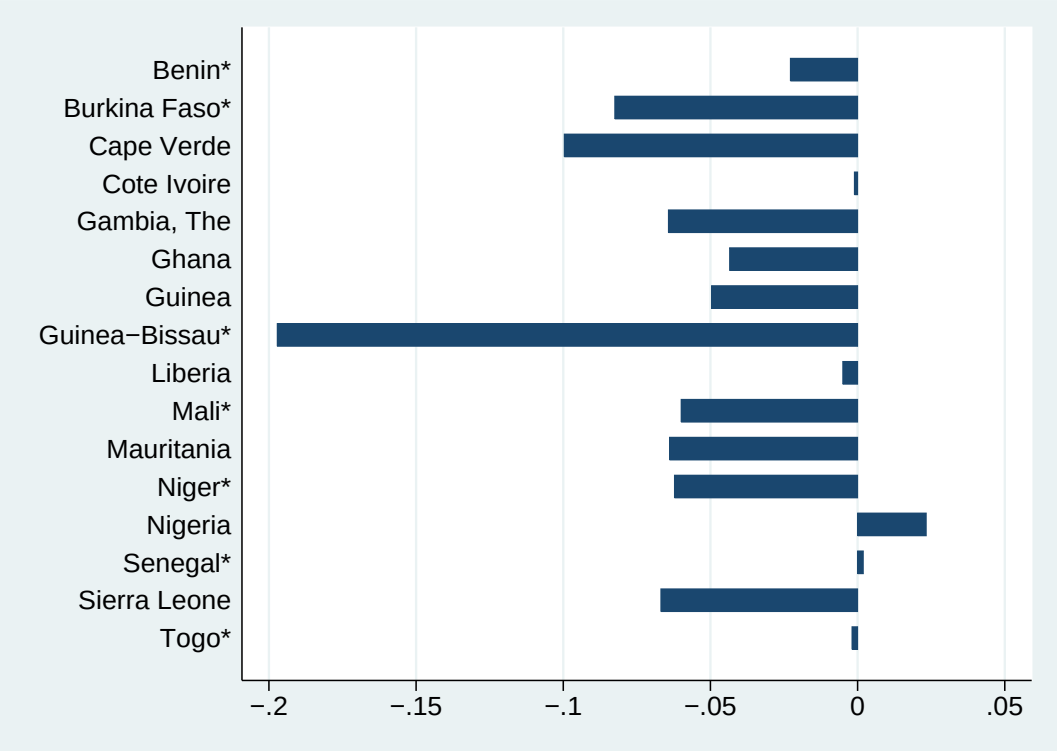


Figure 12: Ethnic fractionalization

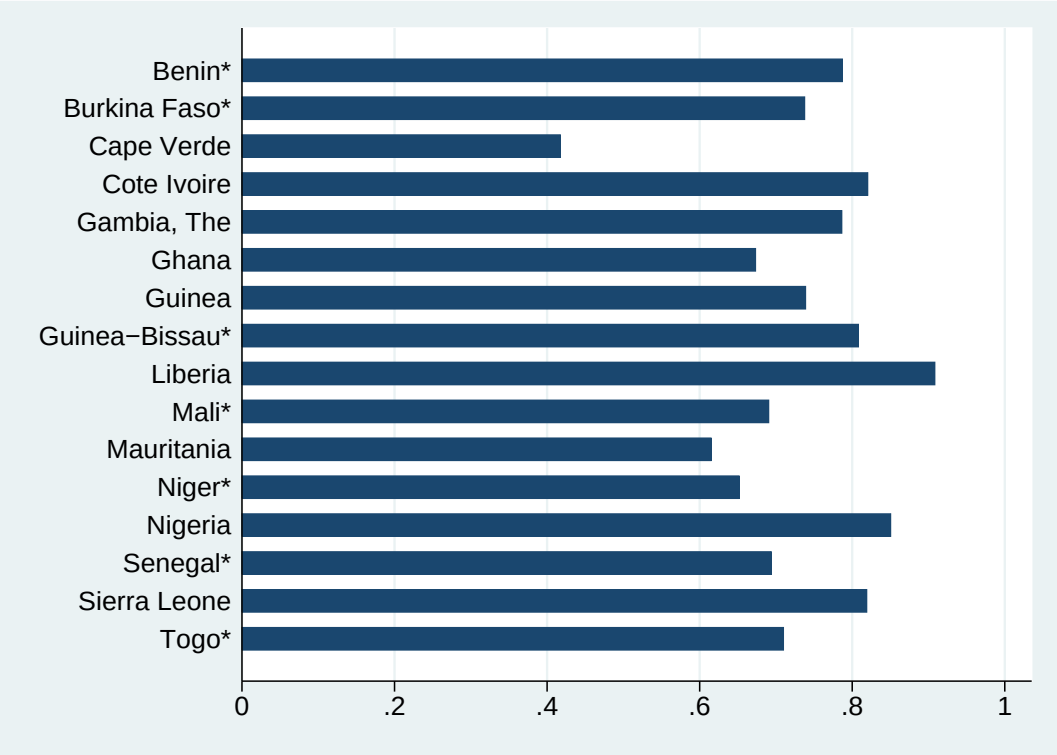


Figure 13: Sprisk

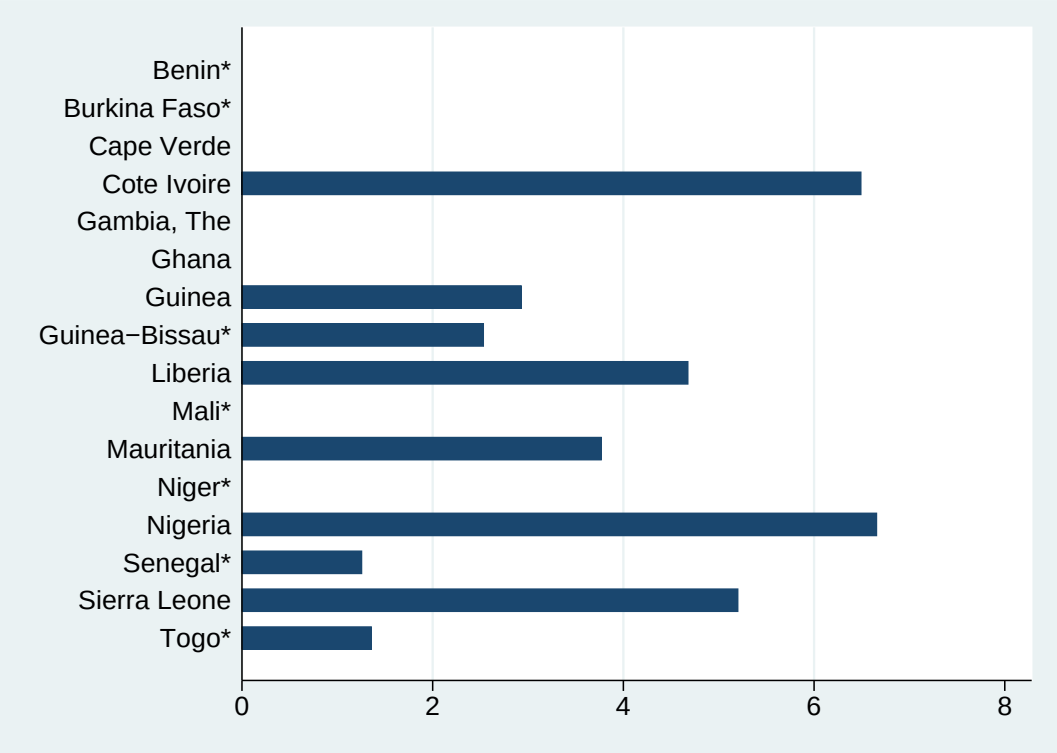


Figure 14: Polity

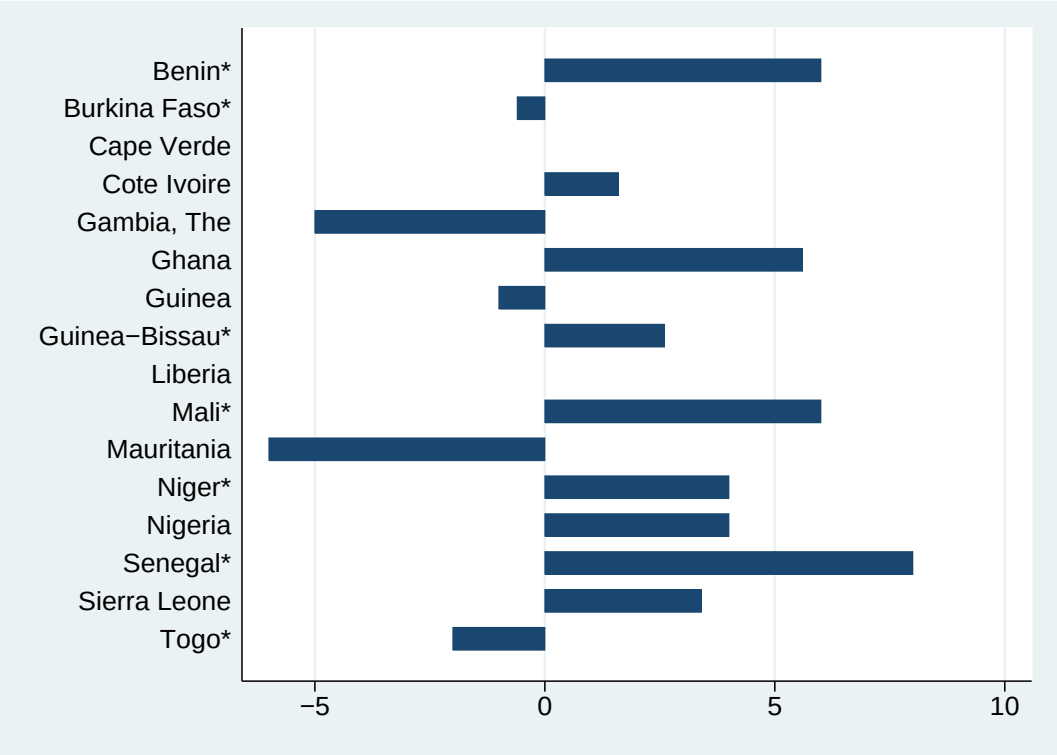


Figure 15: Civil lib and pol rights

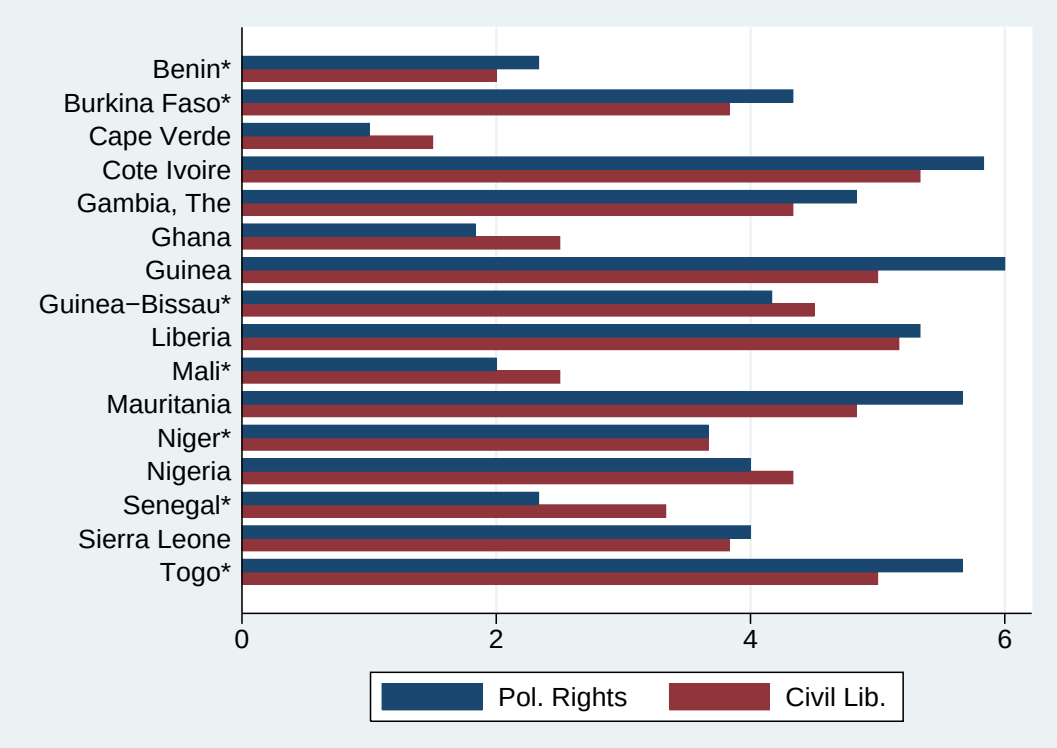


Figure 16: Perceived corruption index

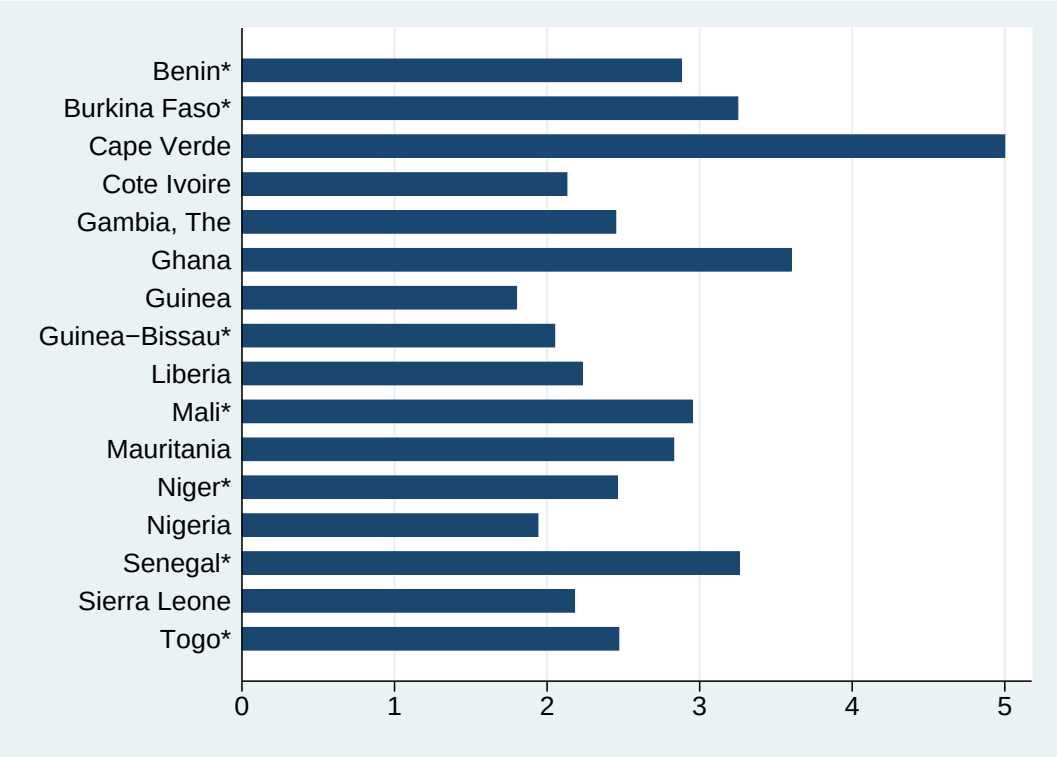


Figure 17: Capital account openness

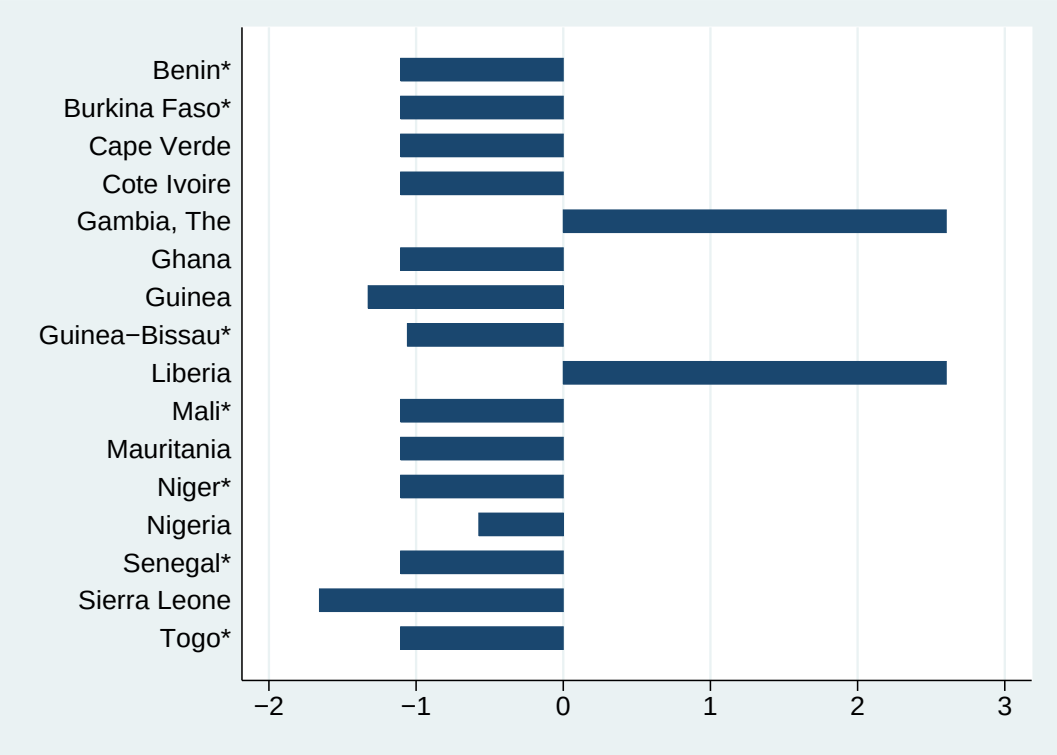
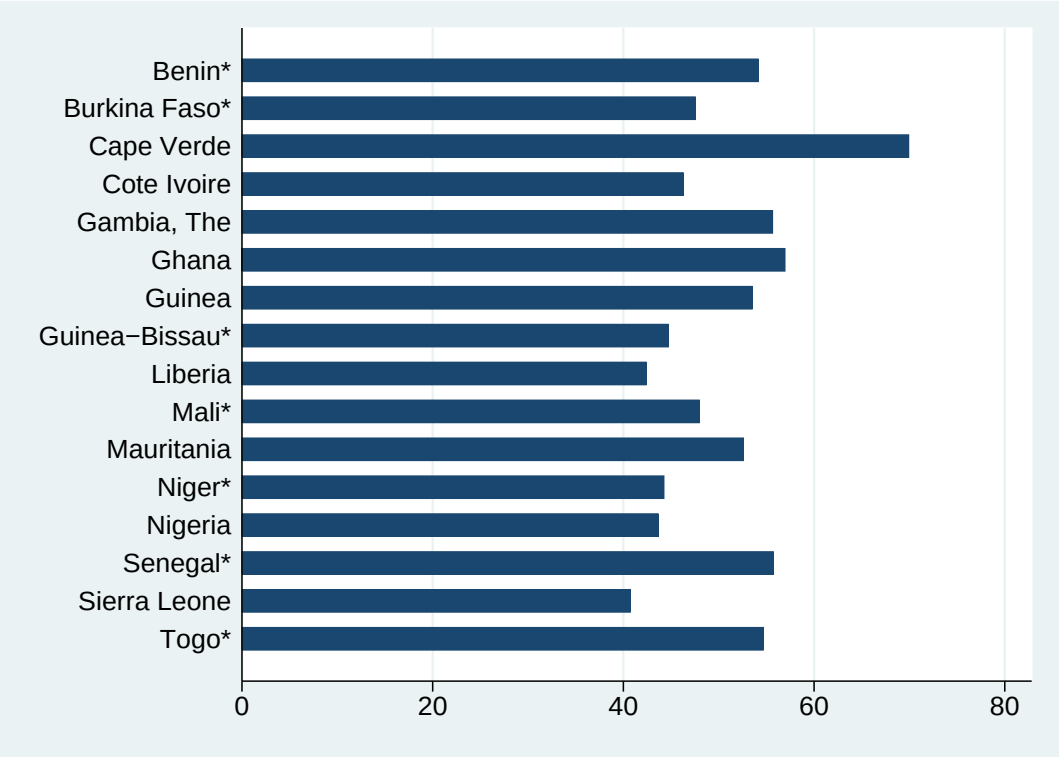


Figure 18: Life expectancy



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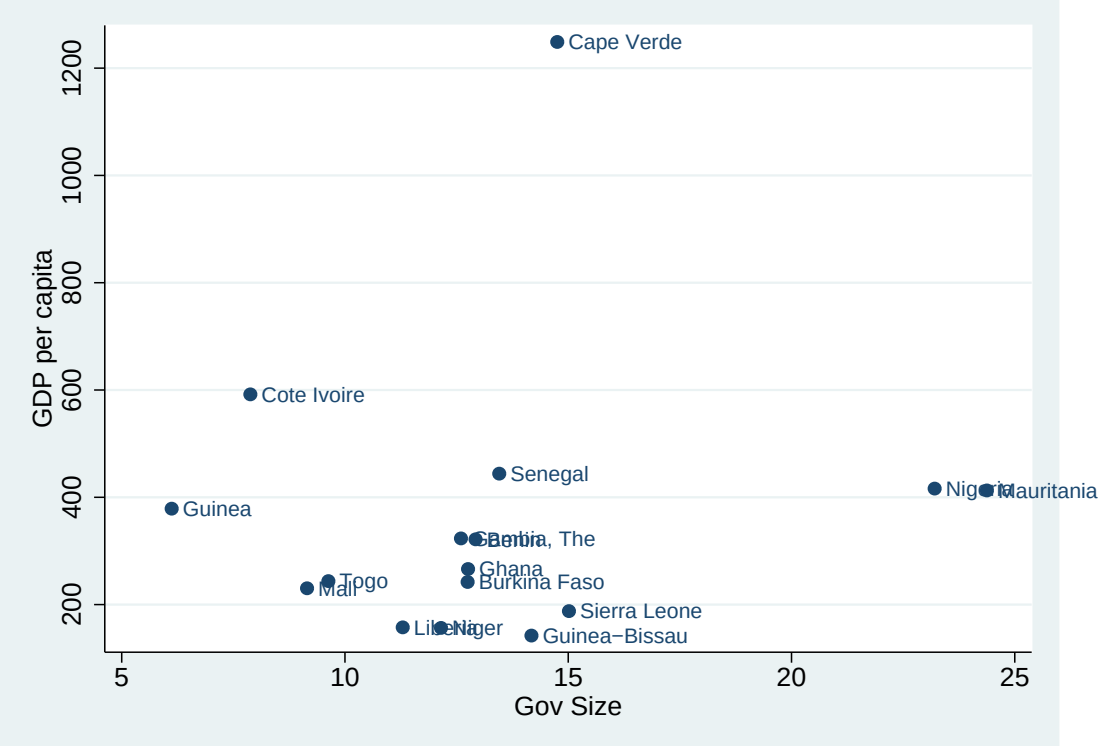

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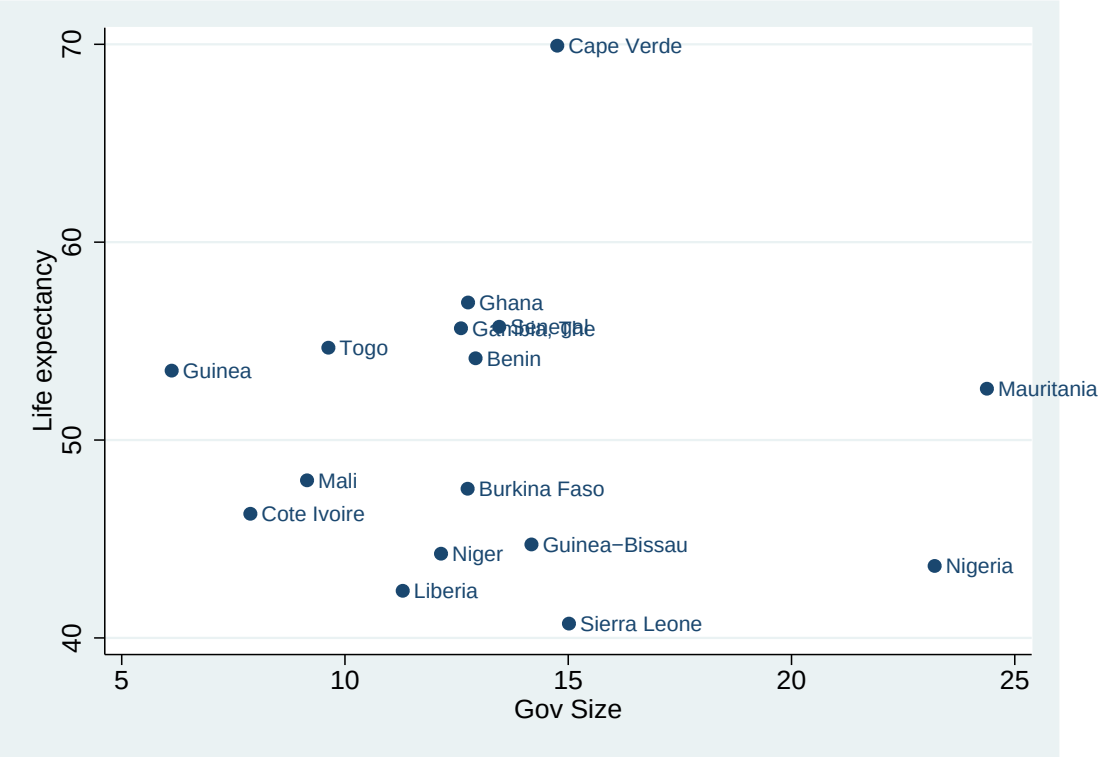
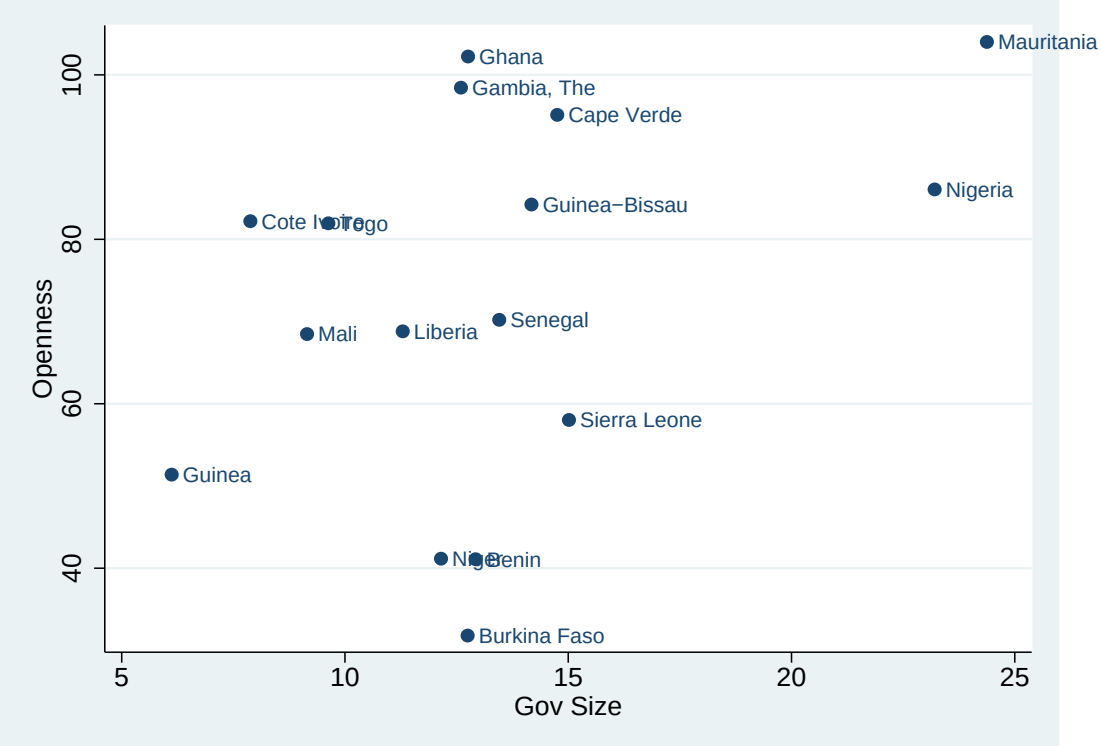


Figure 21:



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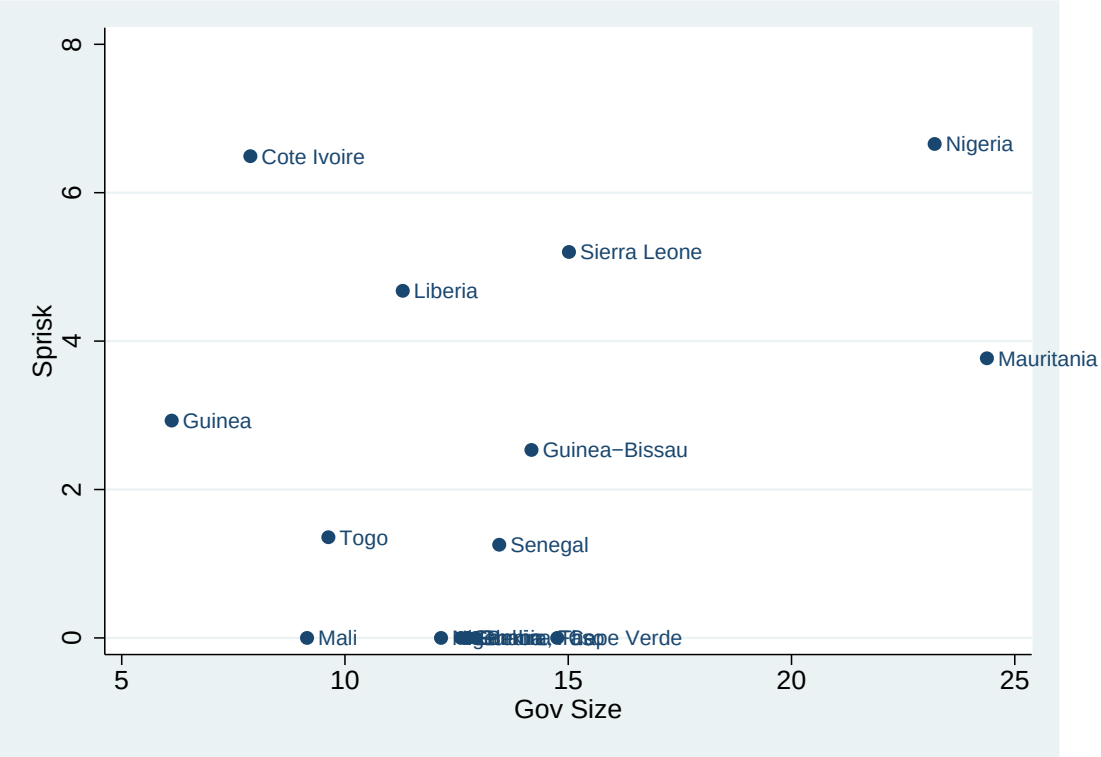
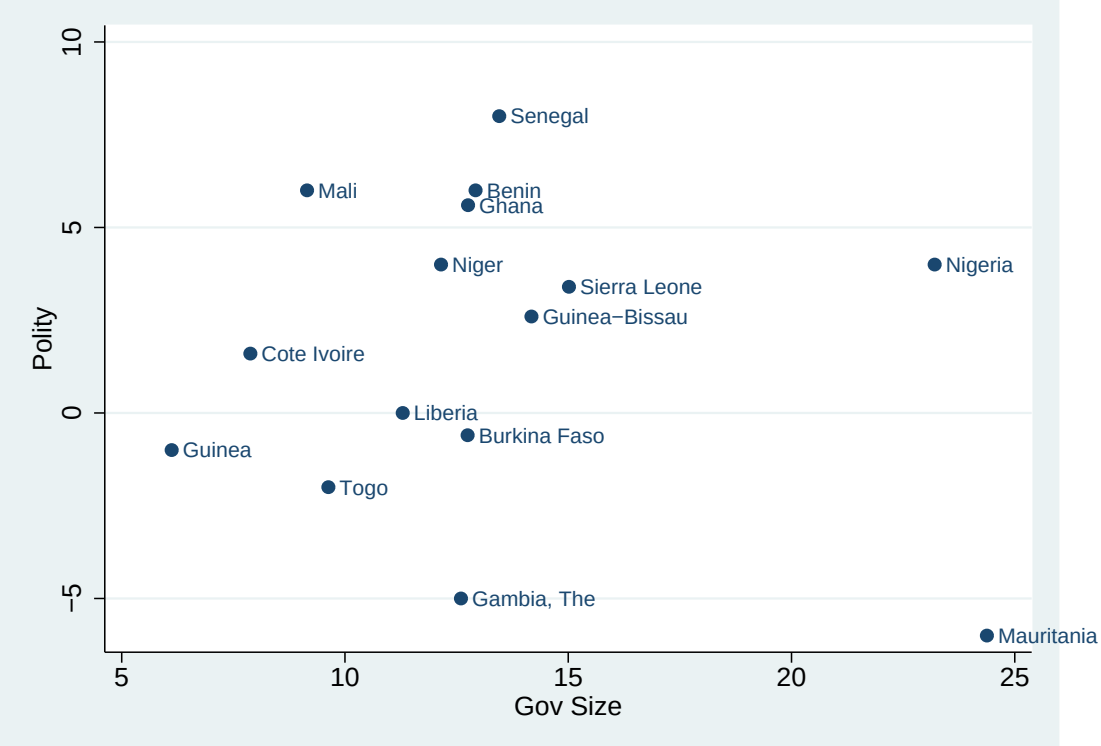


Figure 23:



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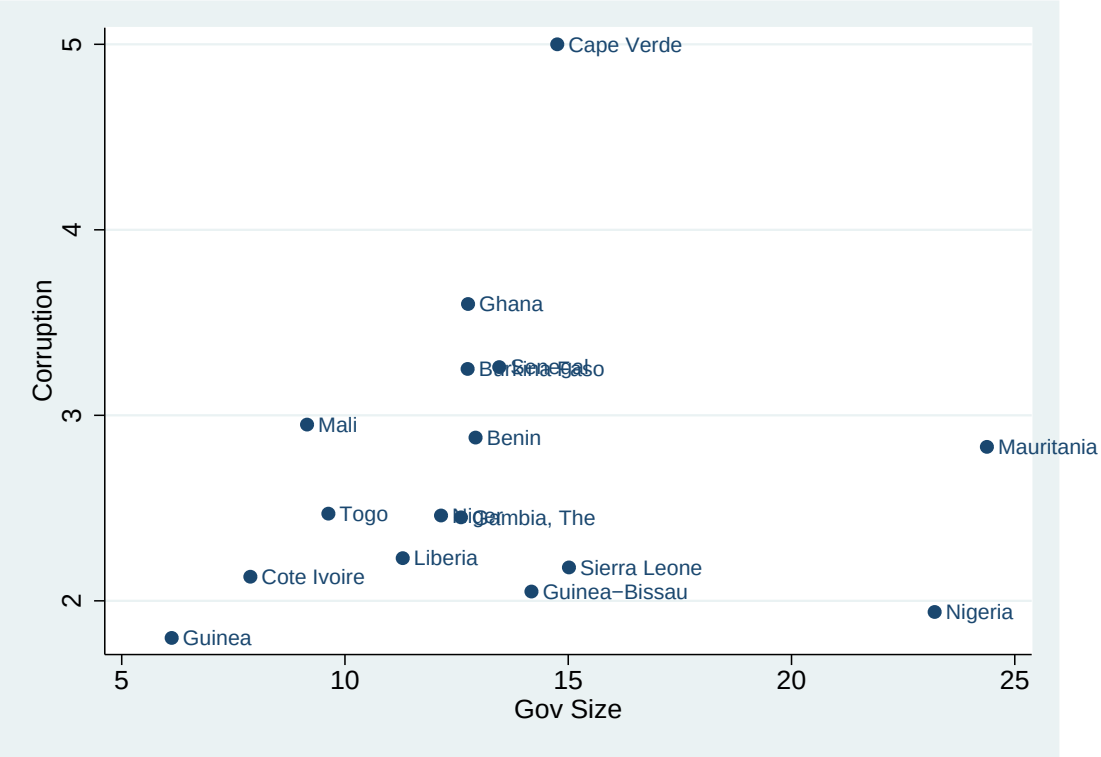


Figure 25:

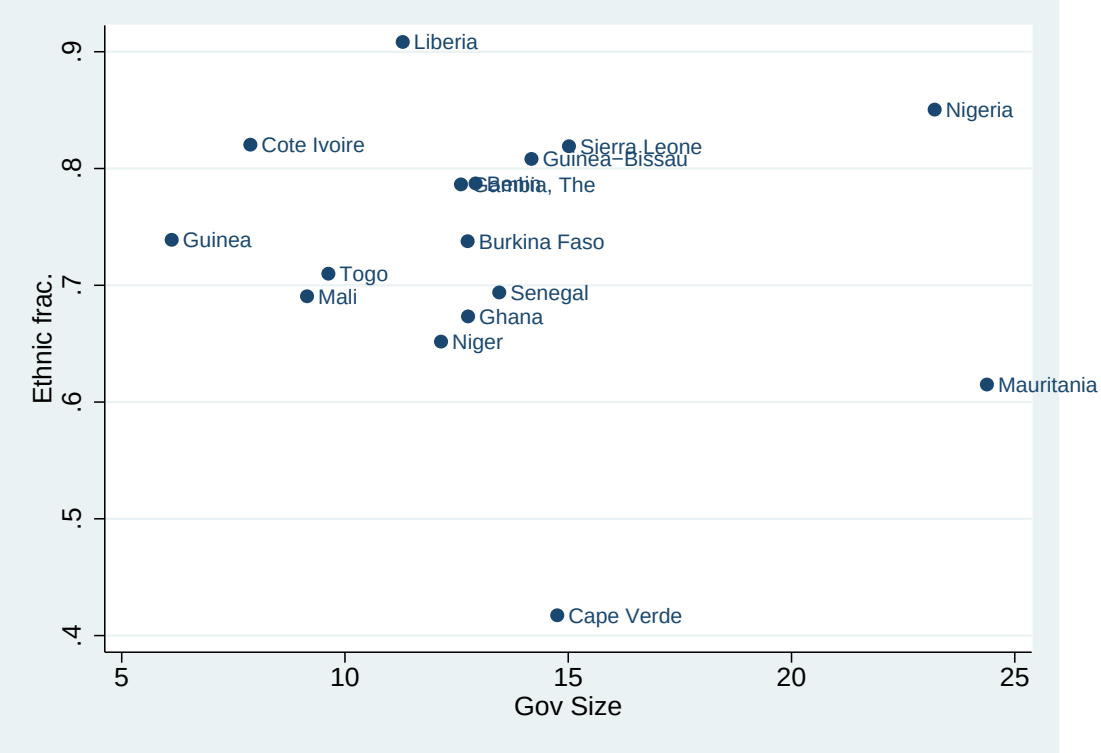


Figure 26: Scatter initial gdp over average growth

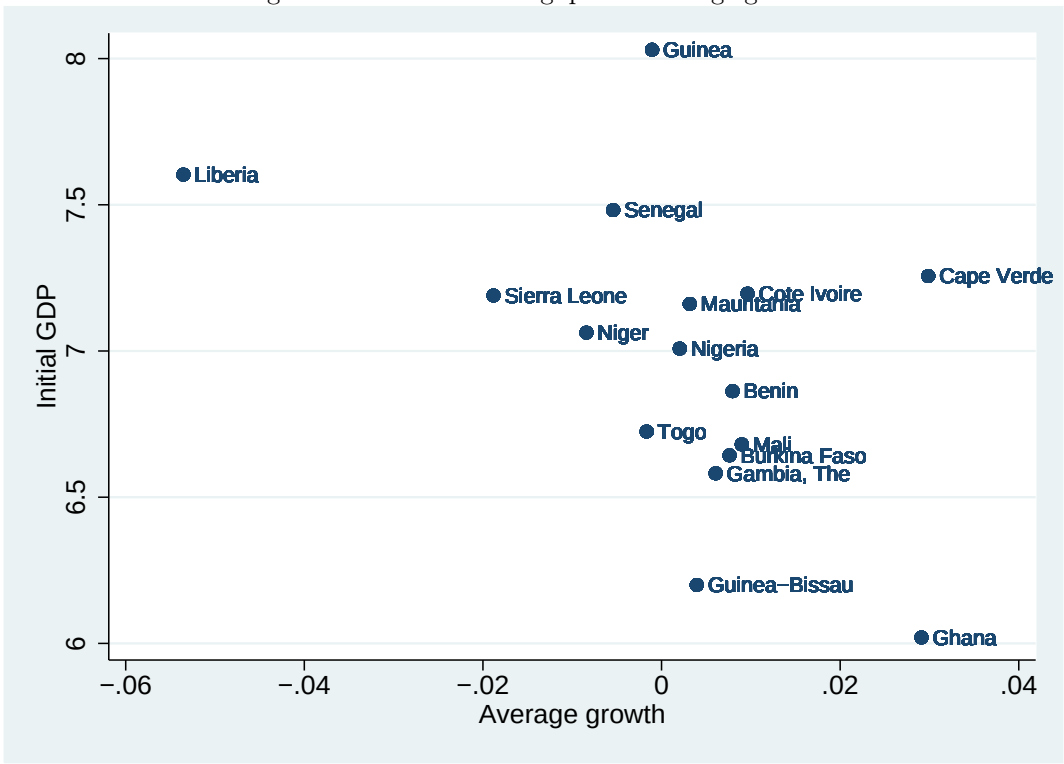


Figure 27: Standard deviation of output over time

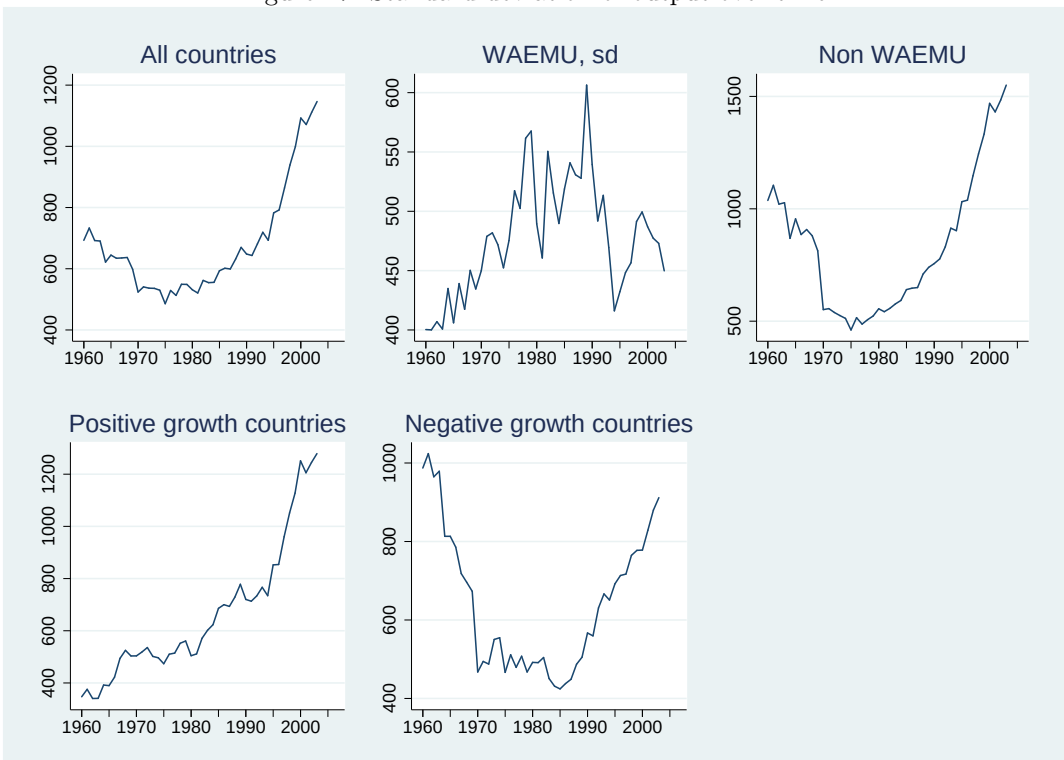


Figure 28: War frequency (percentage years in war 1960-2008)

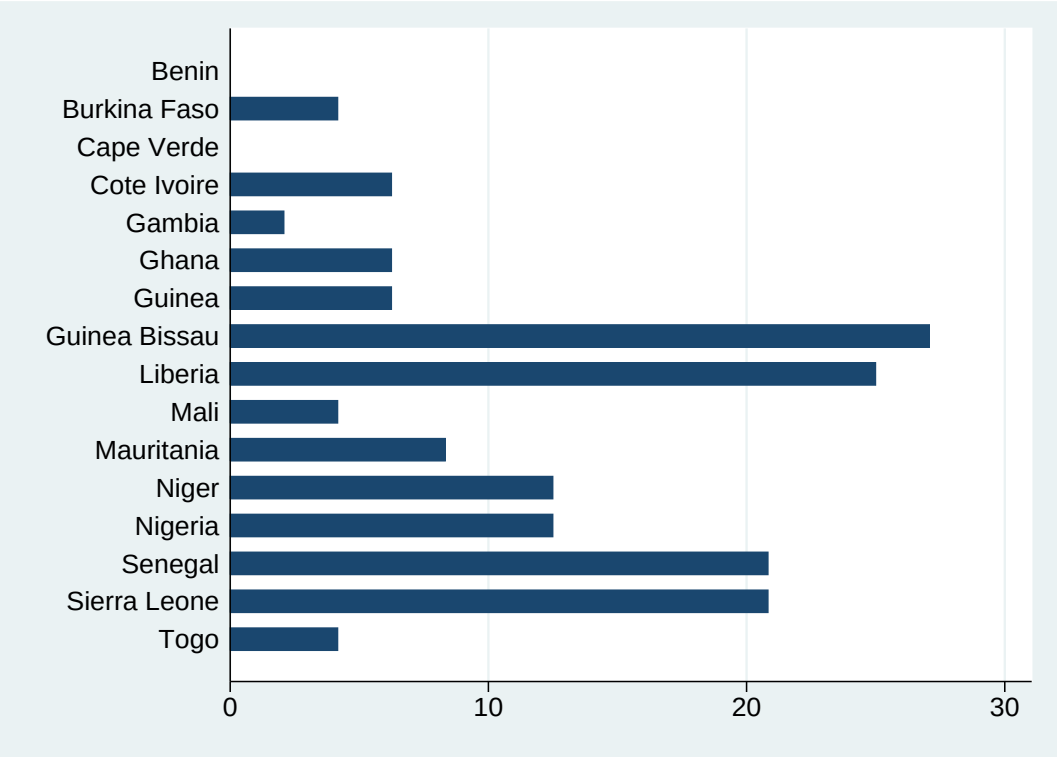


Figure 29: Selected variables

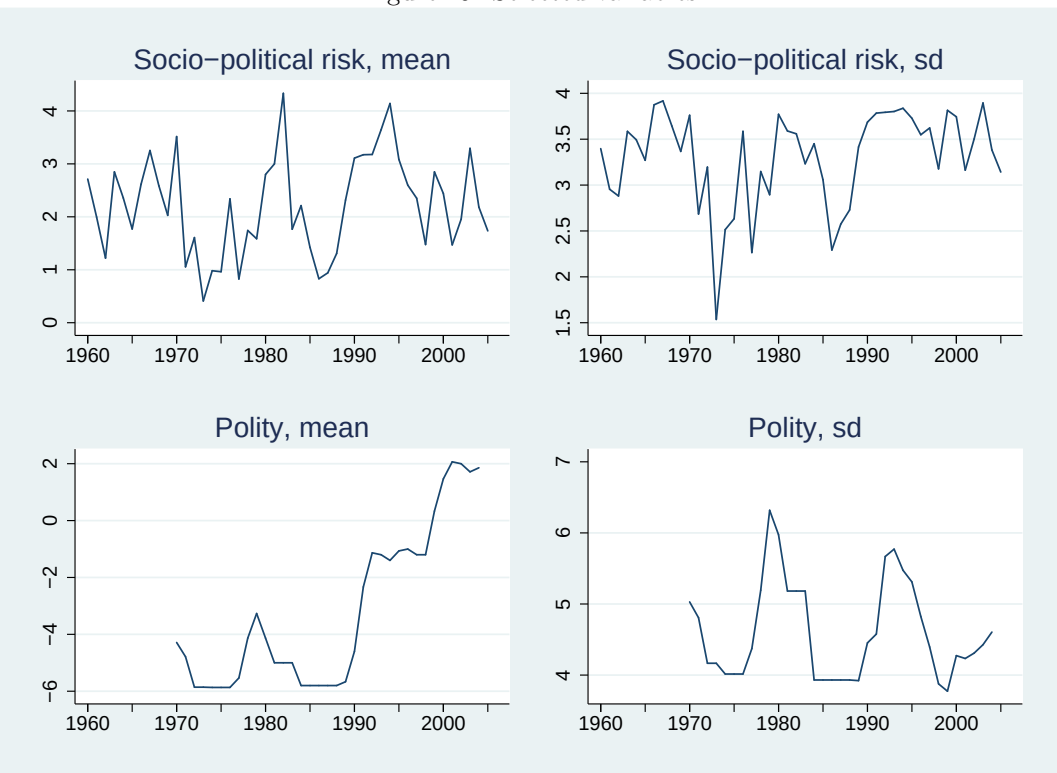


Figure 30: Selected variables

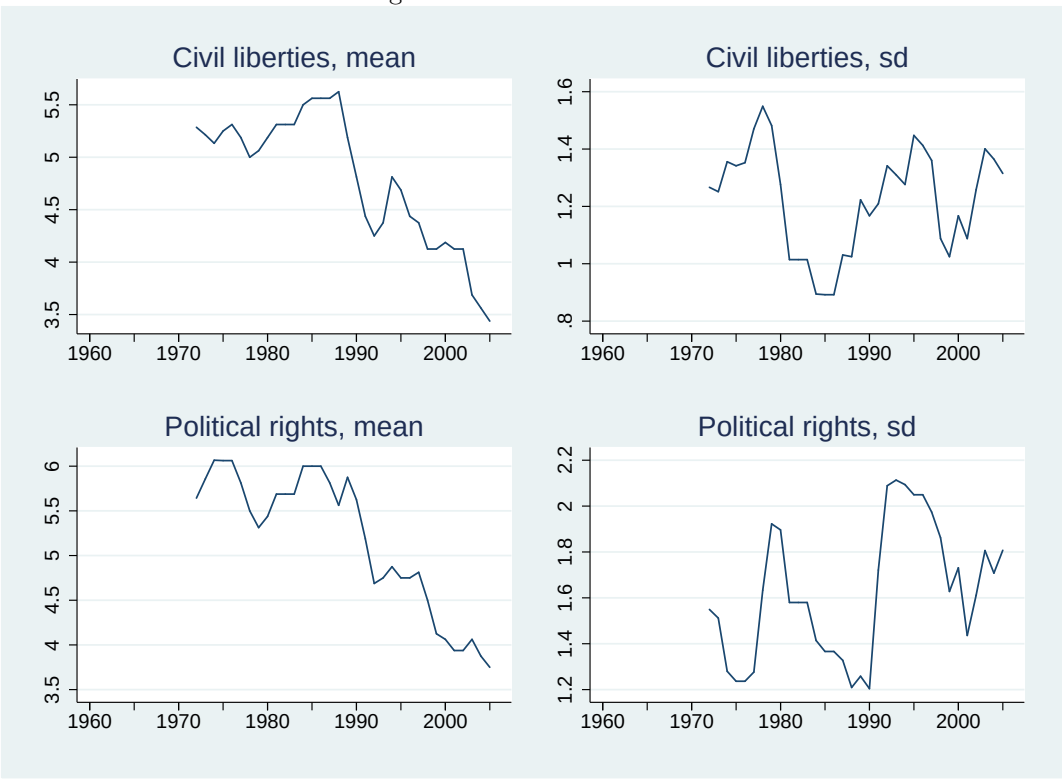


Figure 31: Inflation, mean and standard deviation by country groups

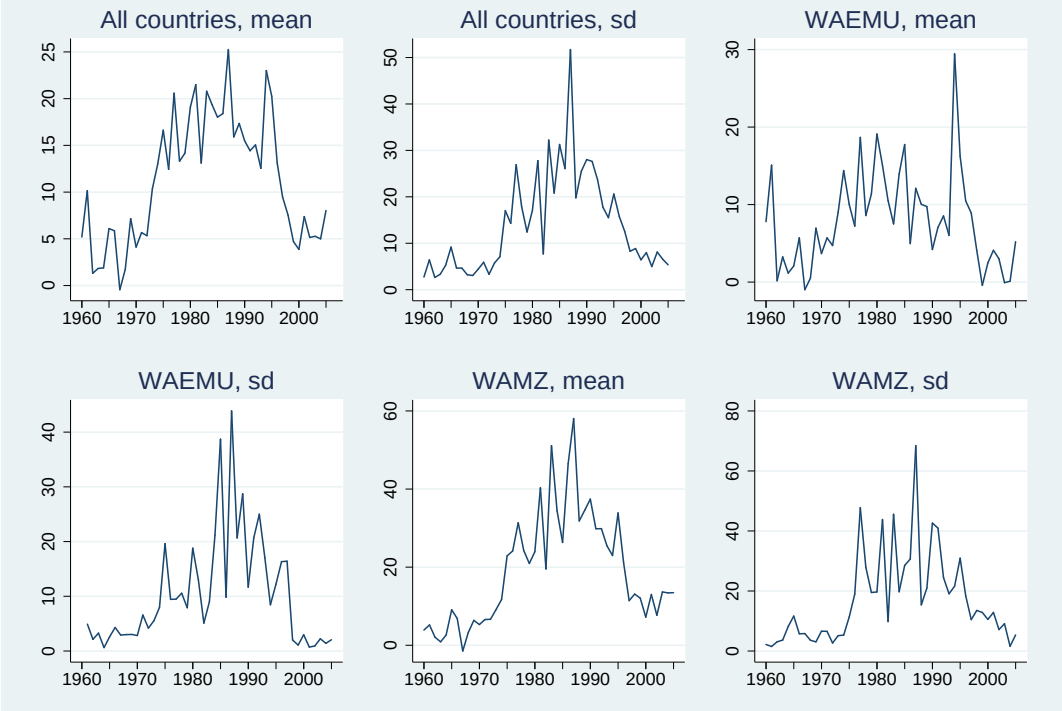


Figure 32: Budget defict, mean and standard deviation by country groups

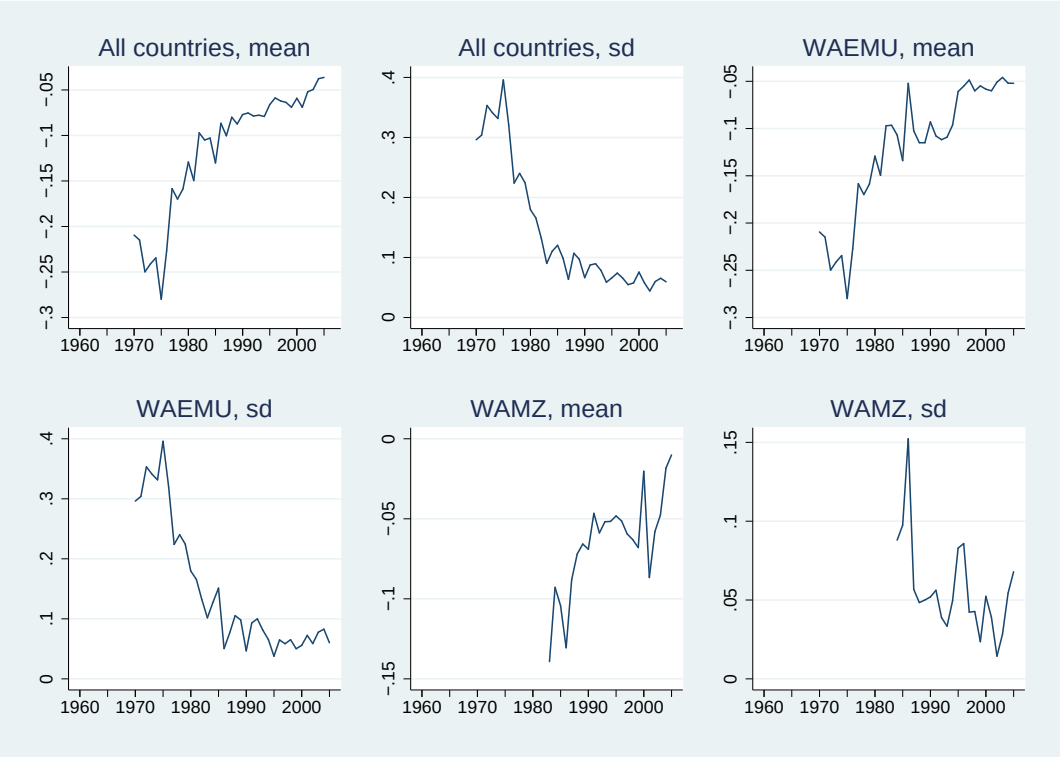


Figure 33:

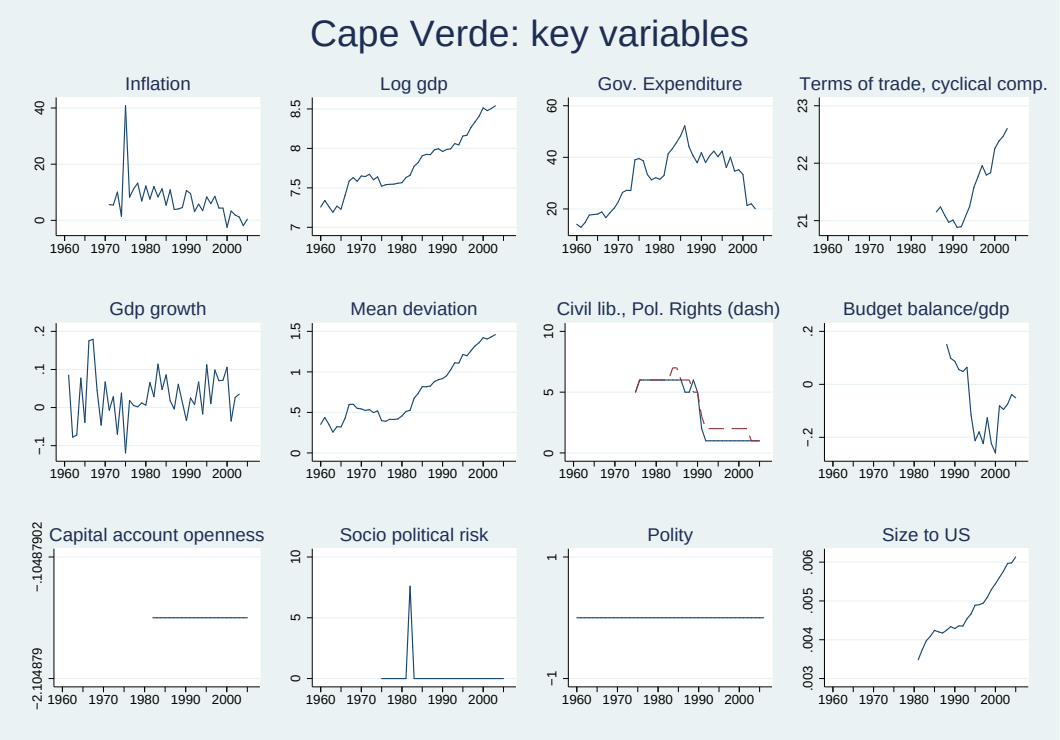
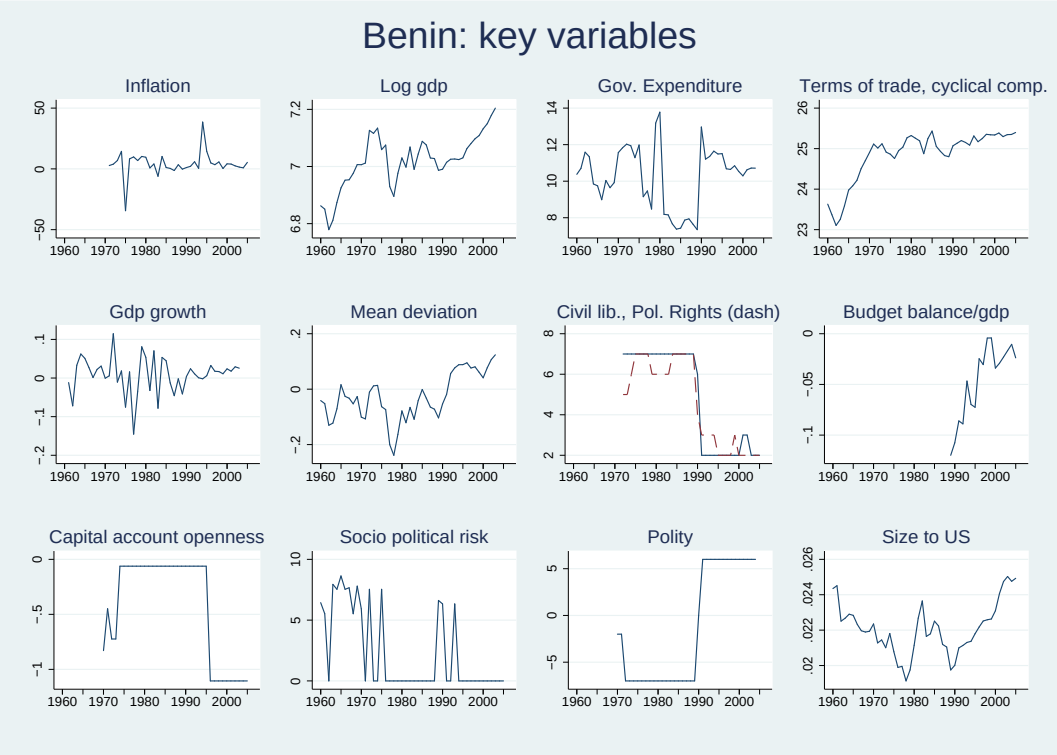


Figure 34:



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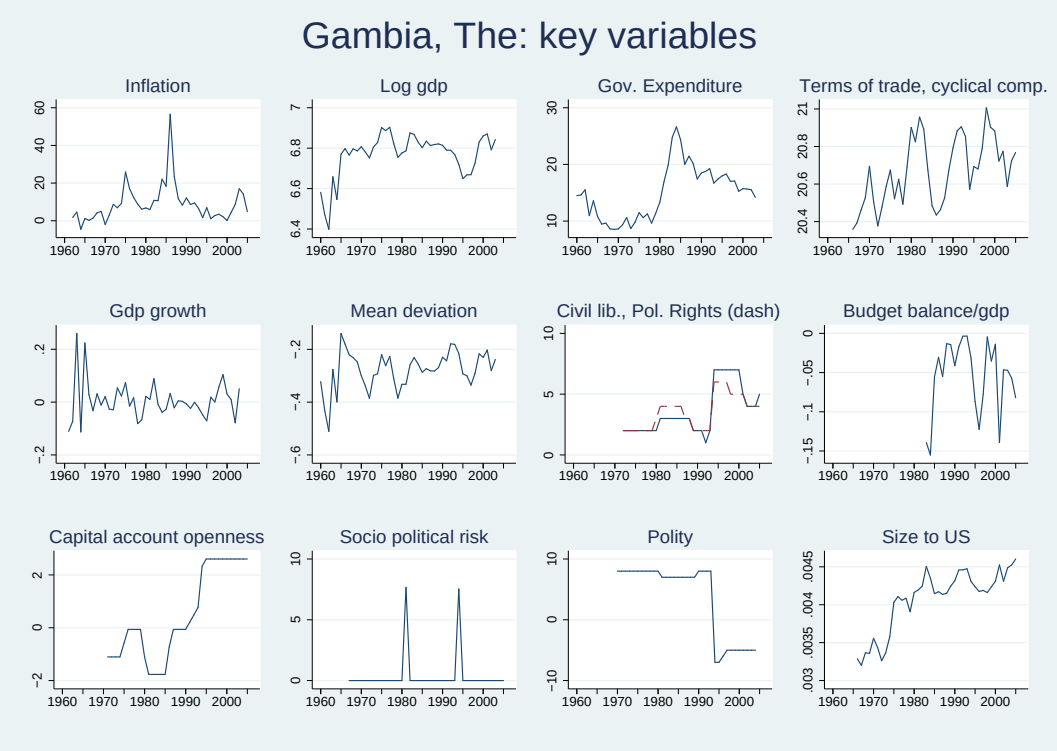

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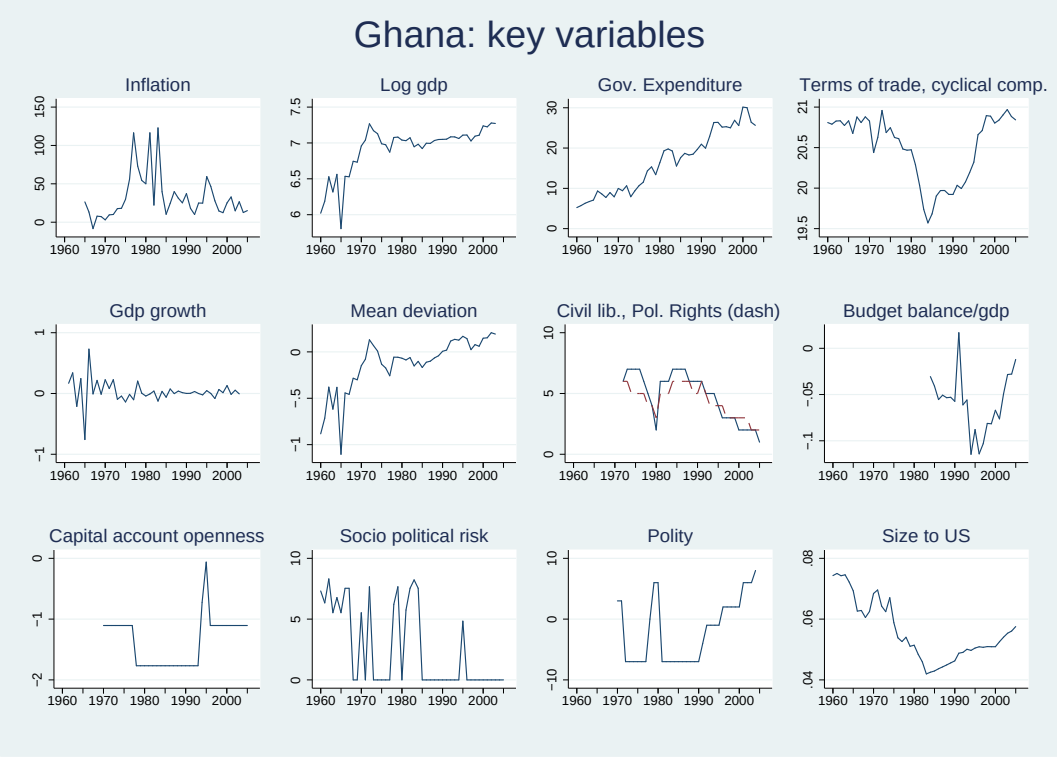

Ghana: key variables
Inflation
Log gdp
Gov. Expenditure
Terms of trade, cyclical comp.
Gdp growth
Mean deviation
Civil lib., Pol. Rights (dash)
Budget balance/gdp
Capital account openness
Socio political risk
Polity
Size to US

Figure 37:

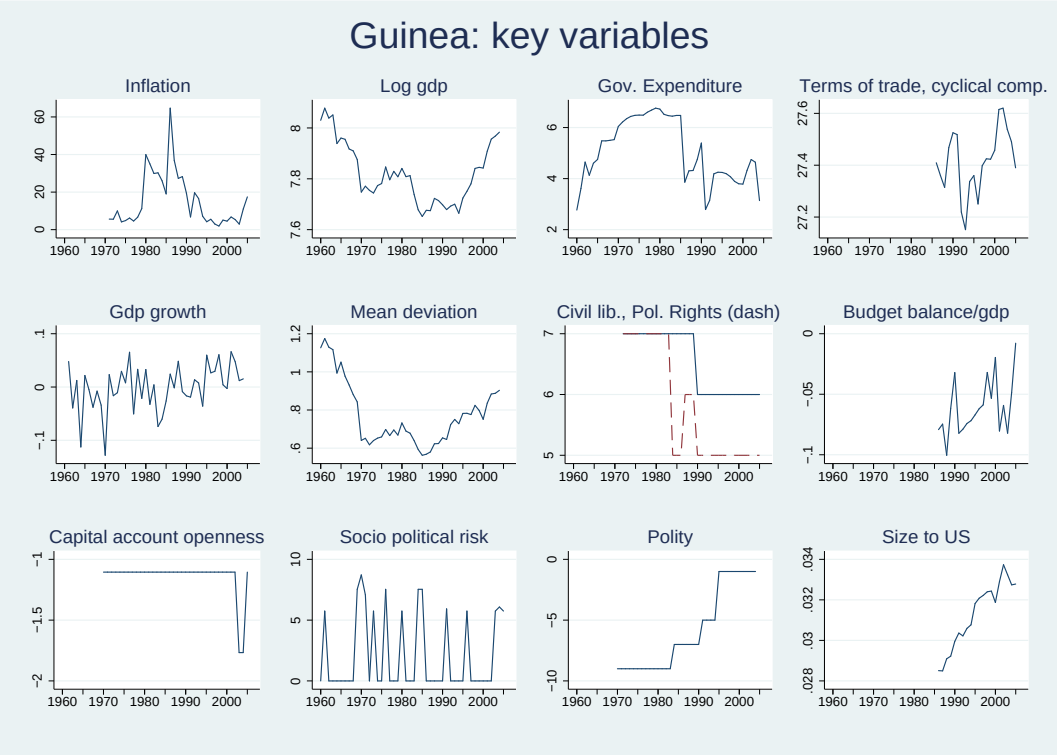


Figure 38:

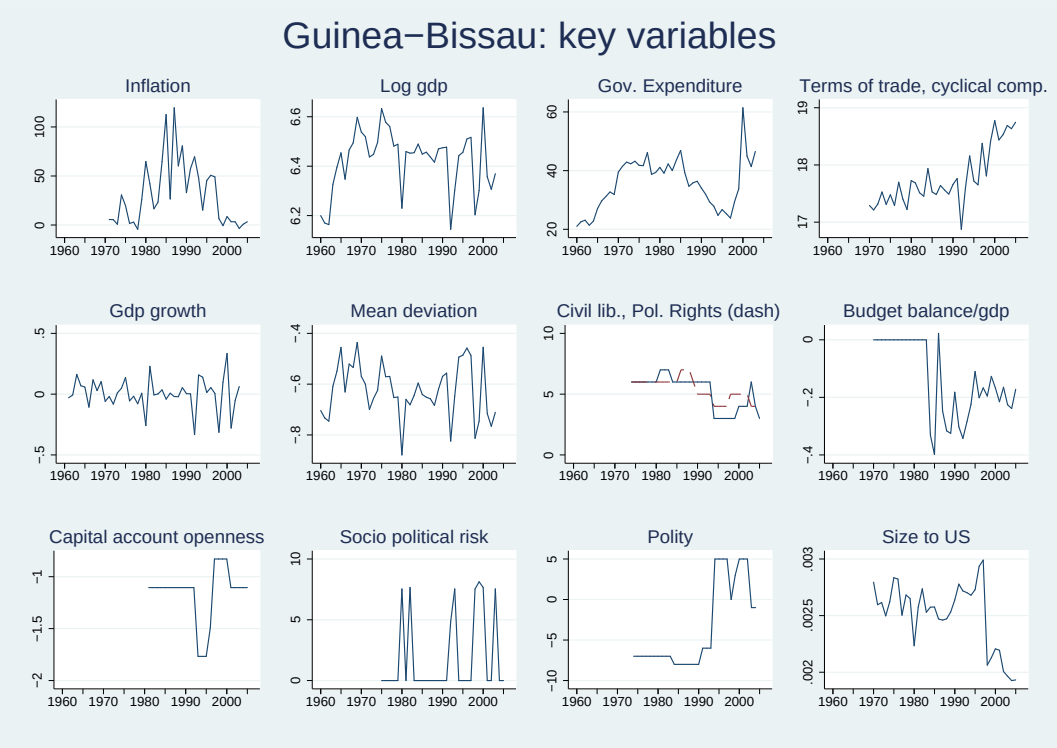


Figure 39:

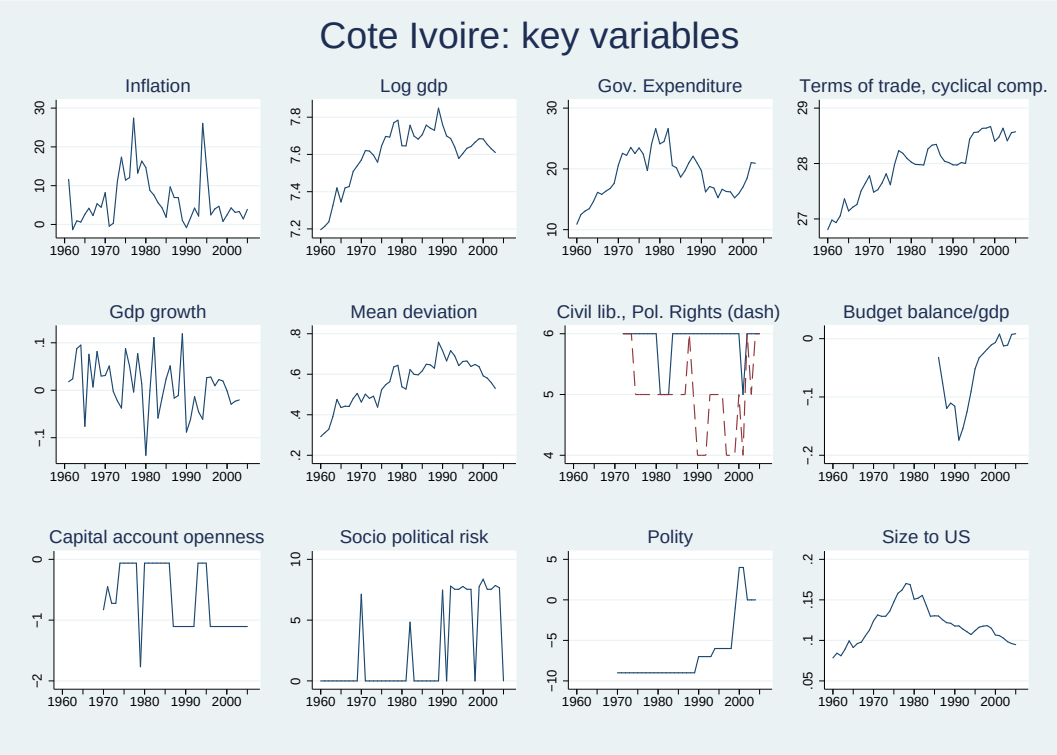
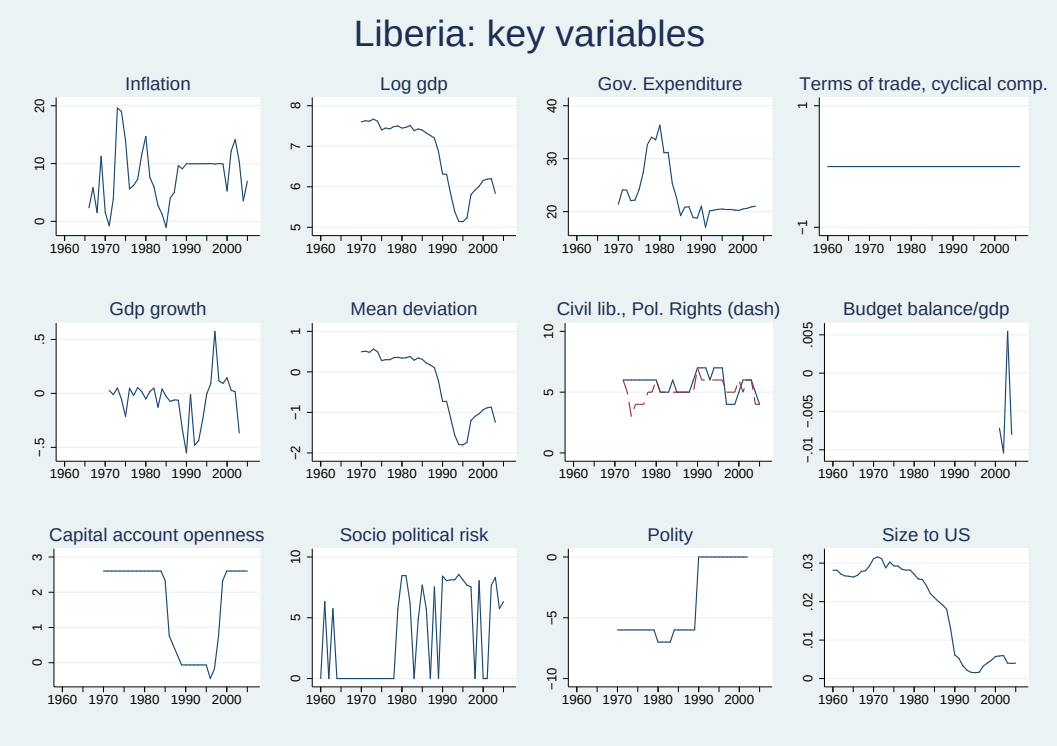


Figure 40:



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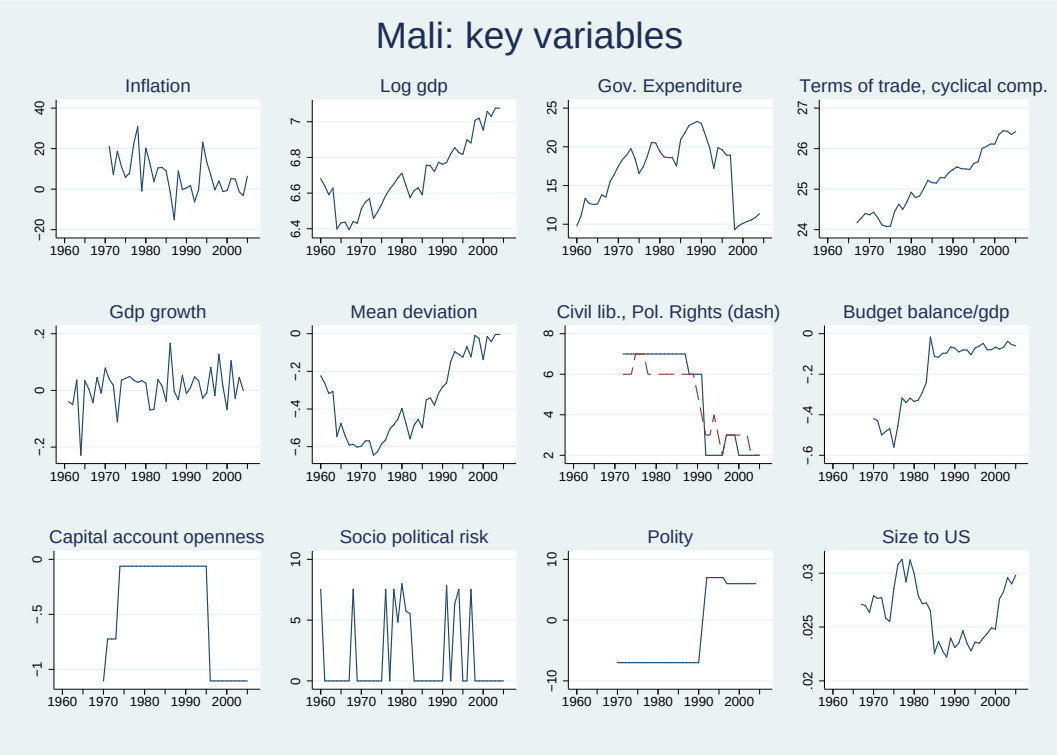

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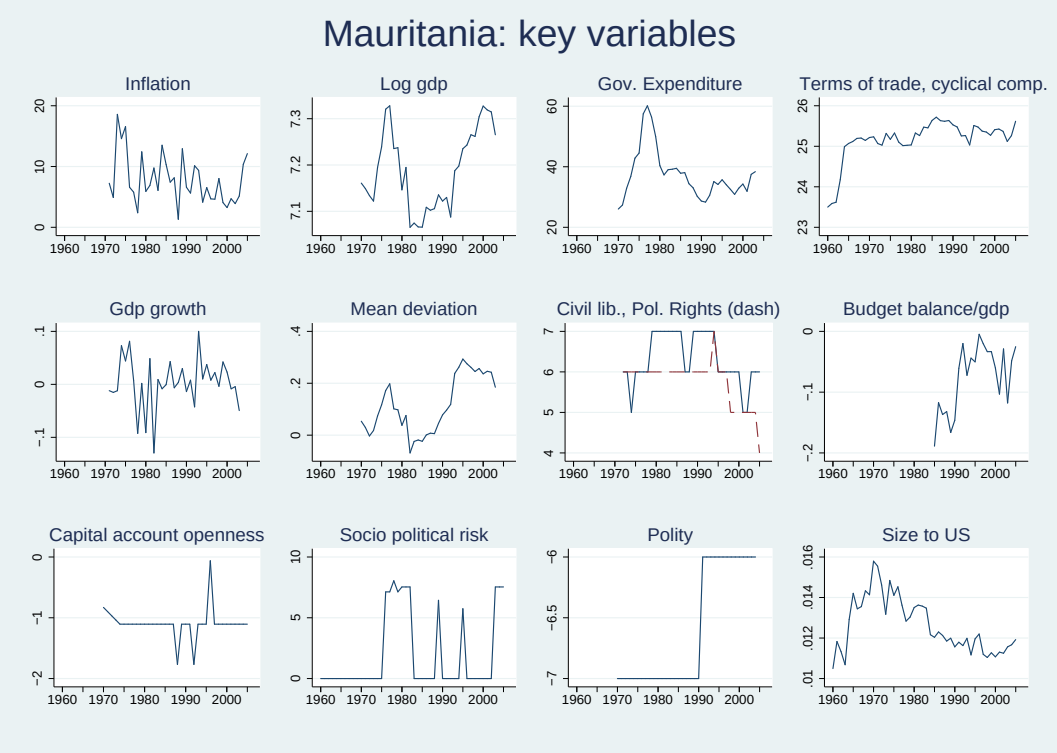
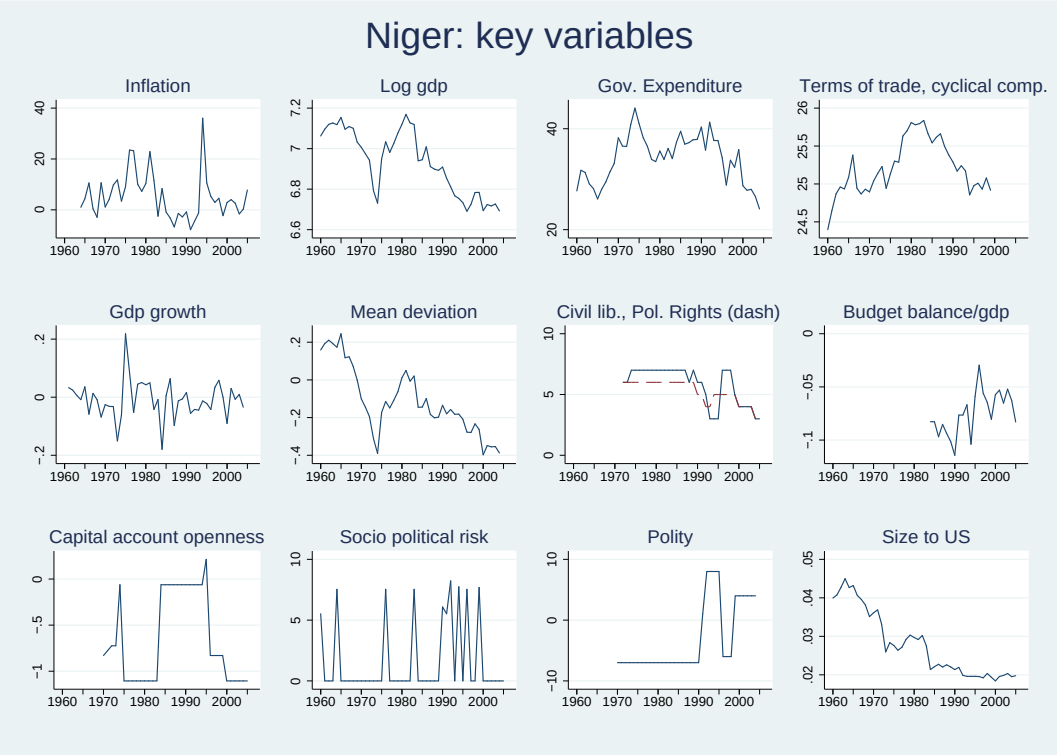


Figure 43:



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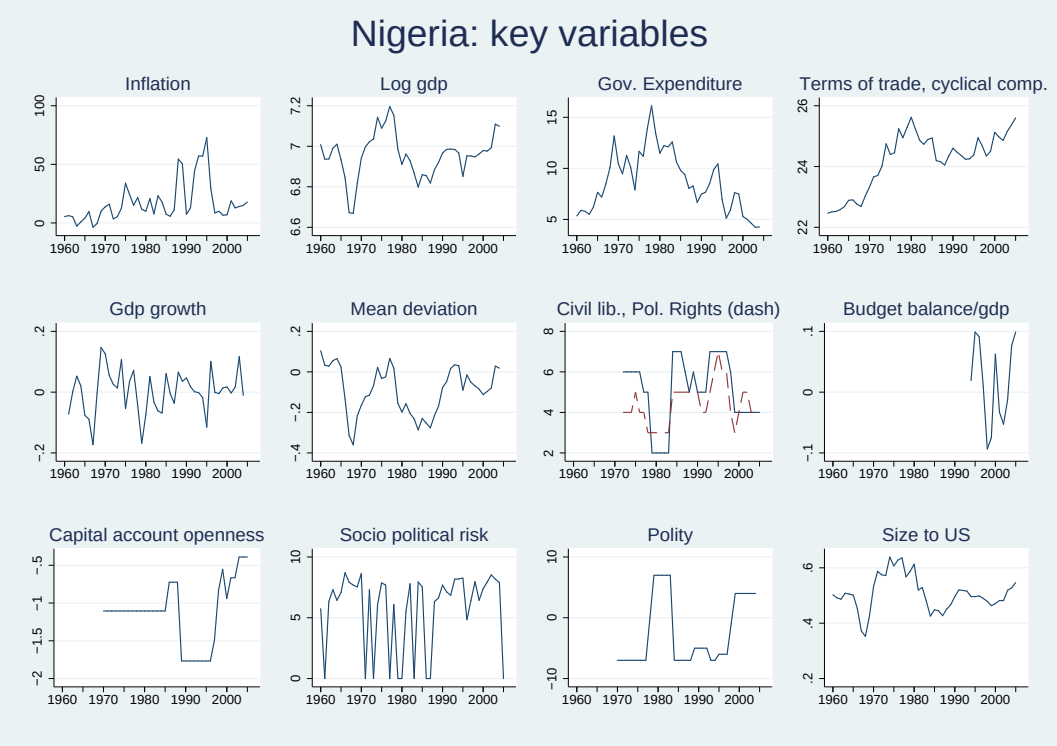

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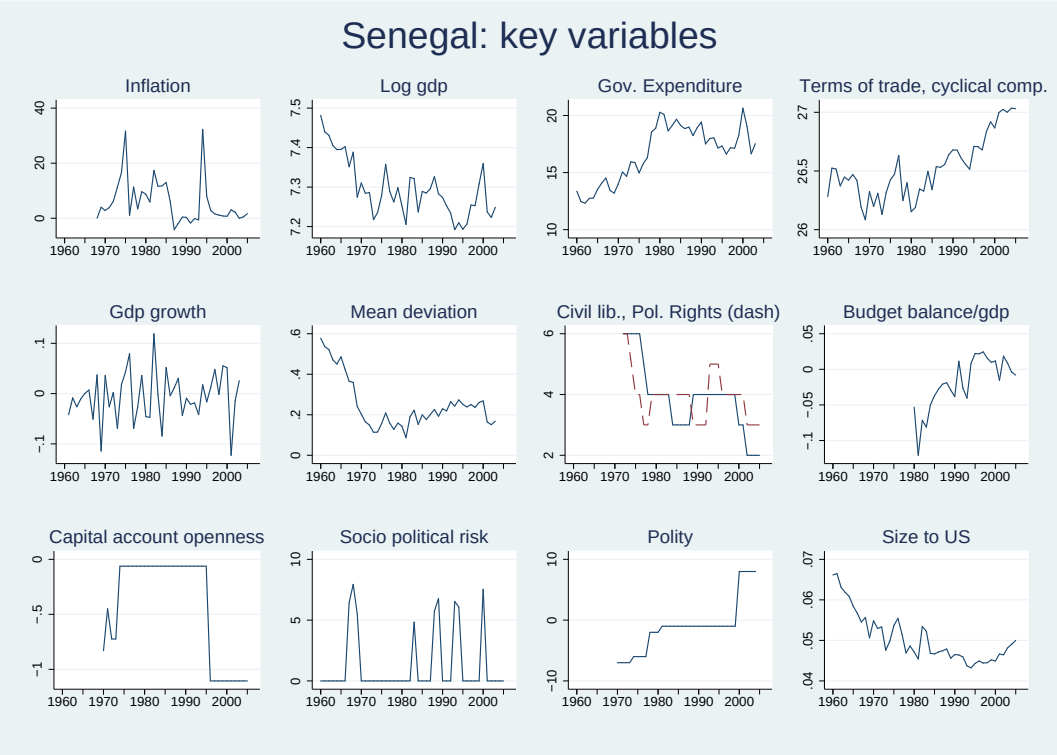

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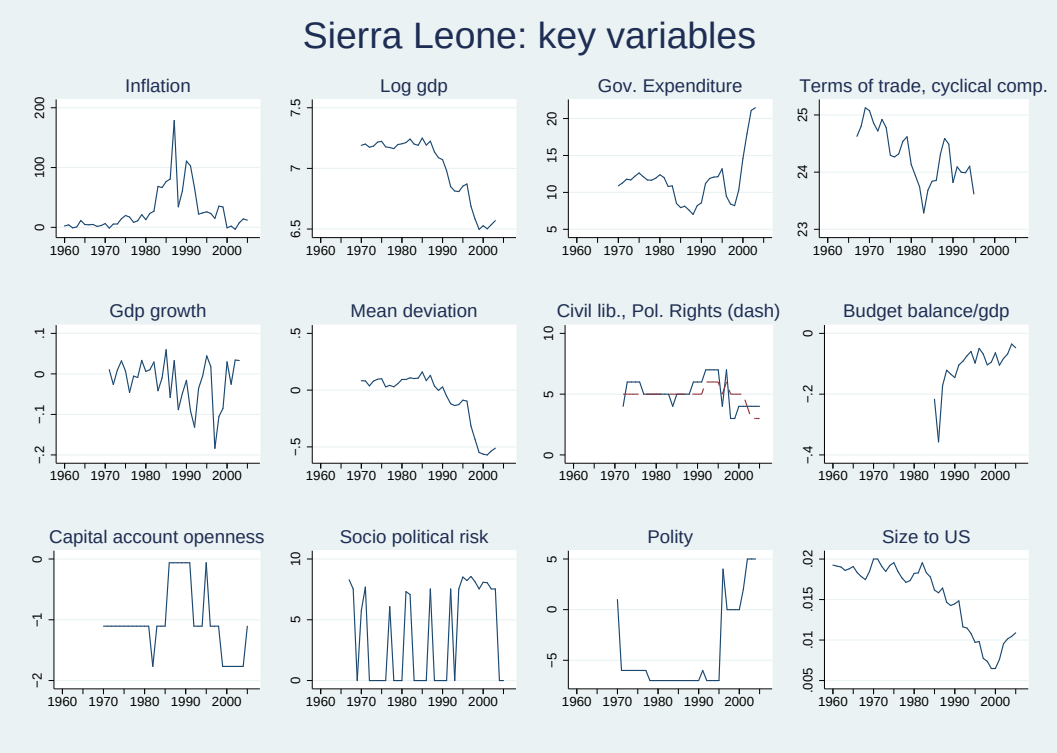

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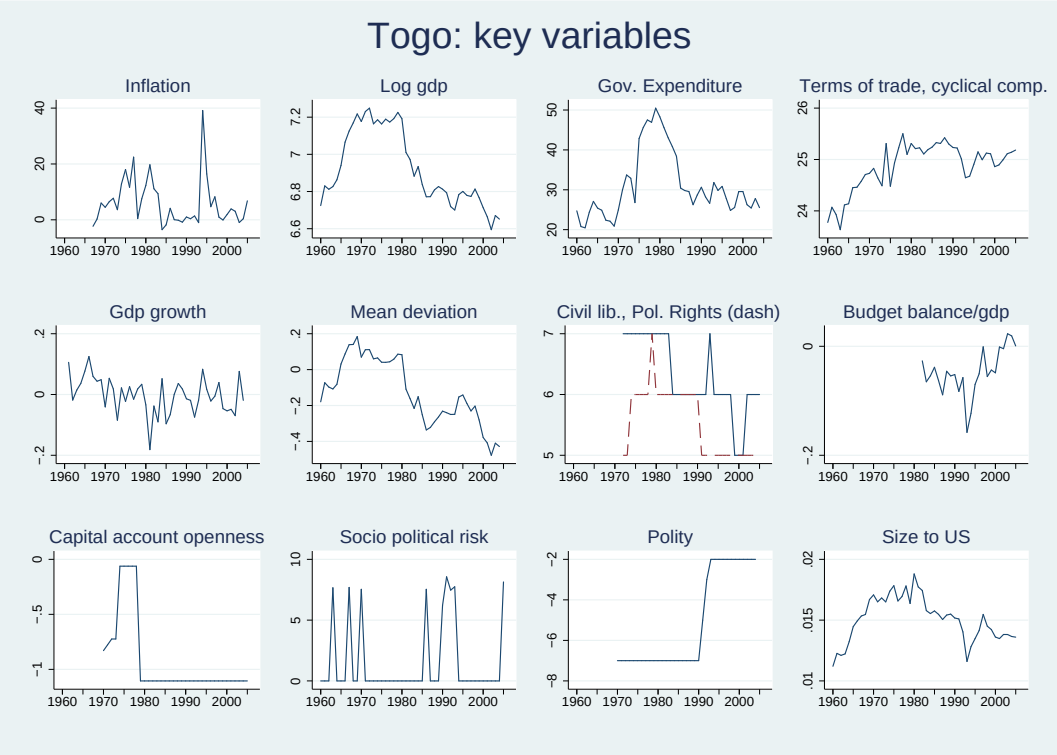

Figure 48: