Explaining the WAEMU Growth Spurt

The Role of Financial Deepening and Macro Policy

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Abstract

Most countries of the West African Economic and Monetary Union (WAEMU) experienced a growth acceleration in 2011–17. This paper identifies the determinants of this growth by combining country-specific information with the results of a cross-country regression model. Growth was characterized by capital accumulation and driven by structural factors, including financial deepening and infrastructure development. What sets WAEMU countries apart

from other African countries is the very sharp increase in private sector credit supporting private investment. This was facilitated by a prudent and accommodative regional monetary policy and improved financial regulation. Pro-cyclical fiscal policies supported public infrastructure investment but led to a buildup of public debt. Going forward, growth may lose some steam, given the renewed policy emphasis on fiscal consolidation and monetary tightening.

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Explaining the WAEMU Growth Spurt – The Role of Financial Deepening and Macro Policy

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1. Introduction

Countries of the West African Economic and Monetary Union (WAEMU)¹ experienced relatively high growth in 2011-2017 while growth in Africa was decelerating sharply (Annex Figure 1). The aggregate growth rate has consistently exceeded 6 percent (3.2 percent per capita) since 2011, supported by the growth acceleration in Côte d'Ivoire – the largest economy of the Union. Most other members have also registered solid growth, surpassing 5 percent, including Senegal, Burkina Faso, and Niger. By contrast, WAEMU growth averaged less than 3 percent in the 1990s and 2000s. Recent performance also compares favorably with the aggregate slowdown in Sub-Saharan Africa (SSA). Growth in SSA declined sharply in 2015-2017 to about 2.3 percent (-0.5 percent per capita), from 5.5 percent during the 2000s, reflecting a slowdown in the three large economies (Angola, Nigeria, and South Africa).

This paper identifies the determinants of recent WAEMU growth by combining country-specific information with the results of a cross-country regression model. Systematic investigation of past growth is a critical step toward understanding the key factors that could affect the growth momentum. Country-specific factors are analyzed using national account decompositions, growth accounting (Solow), and structural change analysis (Shapley). The main workhorse of the paper is a cross-country regression model originally set up by Loayza *et al.* (2005) to explain long-term growth in Latin America and recently adapted by Moller and Wacker (2017) for Ethiopia.² This paper examines the extent to which growth was driven by 'good policies' (structural and stabilization factors), 'good luck' (external factors) or both. Specifically, the determinants are grouped into three categories: structural factors (infrastructure, financial deepening, education, trade openness, government size, and institutions); stabilization policies (inflation, real exchange rate), and external factors (commodity prices and terms of trade). Our main findings are summarized as follows.

The growth process was characterized by capital accumulation while productivity gains were modest. Total investment increased from 15 percent of GDP in 2000-2010 to 20 percent in 2011-2016, with 4 of the 8 countries experiencing an increase of more than 5 percent of GDP. The private sector contributed by about two-thirds to this rise with the remainder coming from public investment. Growth accounting shows that the increased capital stock accounts for at least 40 percent of growth with the residual coming from increased labor supply (owing to demographics). Productivity growth was largely absent, both in terms of Total Factor Productivity growth (the Solow residual) and labor productivity growth (output per worker). The modest productivity gain was largely due to static structural transformation with within-sector productivity growth remaining limited, except for Senegal. Demand-side decomposition indicates that investment was one of the main contributors to growth (Annex Figure 5). Overall, this suggests a pattern of growth similar to what was observed across Africa, with a somewhat faster capital formation.

What sets WAEMU apart from peers is the very sharp increase in private sector credit since 2011, which helped support private investment. Regression results reveal that the main factors correlated with growth in other countries can also explain the WAEMU performance quite well. Structural factors explain more than half of the 2011-17 per capita growth. The key structural factor was an expansion of credit to the private sector (financial deepening) and infrastructure growth. Private sector credit increased from 13.6 percent of GDP during 2000-2010 to 22.1 percent in 2011-2016

¹Members of the Union are Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo.

²While cross-country growth regressions may have their own limitations, their insights should not be neglected. Although some strands of the literature dismiss them altogether, we view them as a useful approach to gain insights into the policy drivers of growth (see also Durlauf, 2009), especially in countries such as ours where data are relatively scarce. Furthermore, our econometric approach addresses the most conventional methodological issues that can arise in cross-country growth regressions. For our purpose, it is also not necessary to interpret the estimated parameters in a strictly causal sense. Our analysis could as well be seen as an investigation of macroeconomic factors that correlated with growth in a broad range of countries and an evaluation of whether the development of those factors in the WAEMU countries is consistent with their recent growth pickup.

(Annex Figure 1.4). This led to an increase in private investment from 9.5 percent of GDP in 2000-2010 to 12.5 percent in 2011-2016, with 4 of the 8 countries experiencing an increase of more than 3 percent of GDP (Annex Figure 2.6). By contrast, private sector credit fell in the Africa region from 57 to 47 percent over the same period holding back regional growth. Infrastructure expansion was also quite important for WAEMU growth, but not to an extent similar to the rest of Africa.

Financial deepening, in turn, was facilitated by a prudent, but accommodative monetary policy, and improved financial sector regulation. Monetary policy, conducted by the regional Central Bank (BCEAO), was largely accommodative, with the benchmark interest rate steadily falling from 3.8 to 2.5 percent between 2008 and 2017. Real money growth also increased from 9.5 percent in 2005-2010 to 11.8 percent in 2011-2016 (Annex Figure 2.1). Nonetheless, inflation remains very low at 0.8 percent. The amendment in 2011 of the OHADA Uniform Act on Secured Transactions helped improve the legal administrative basis of collateral. The key objective of this regulatory reform has been to facilitate access to credit by providing new collateral mechanisms. This reform is estimated to have had a substantial positive impact on private sector credit in WAEMU countries (Islam *et al.*, 2018).

Pro-cyclical fiscal policies supported public infrastructure investment, but led to a gradual build-up of public debt. Public investment-to-GDP ratio in WAEMU increased from 5.3 percent in 2000-2010 to 7.7 percent in 2011-2016 (Annex Figure 2.4). Most countries have experienced a considerable increase in public investment, ranging from a cumulative increase of 3 percent of GDP in Burkina Faso, Côte d'Ivoire, and Niger (between 2000-2010 and 2011-2016) to 6 percent in Togo. As fiscal revenues were unchanged, the expansion in public investment resulted in an increase in the fiscal deficit (including grants) from 3.3 percent of GDP in 2014 to 4.7 percent in 2017. Public debt increased from 40.9 percent of GDP in 2011 to 48.2 percent in 2017. The risk of external debt distress remained 'moderate' in most countries.

Going forward, the growth impetus may wane given tighter fiscal and monetary conditions as countries aim to build reserves and rein in the rising public debt. A key policy challenge for WAEMU is to maintain sufficient international reserves to sustain the exchange rate regime. Reserves stood at 4.2 months of import at end-2017, down from around 6.0 in 2011. Containing rising public debt is also important. To that effect, members are embarking on fiscal consolidation, supported by country-level IMF programs, aimed at achieving a fiscal deficit target of 3 percent by 2019. In a similar vein, the Central Bank of West African States (BCEAO) has tightened monetary policy since end-2016 by raising interest rates and limited banks' access to its credit facility. Tighter macro policy is expected to reduce medium-term growth.

The rest of the paper is organized as follows: Section 2 depicts the key characteristics of growth in WAEMU countries over 2011-2017. Section 3 discusses the data and outlines the methodology. Section 4 uses regression model results to explain growth distinguishing between structural, stabilization, and external factors. Section 5 examines model accuracy and robustness. Section 6 discusses the role of macroeconomic policy. Section 7 concludes.

2. Growth Characteristics

Structural break analysis *à la* Hausmann *et al.* (2005) indicates that several WAEMU countries moved onto higher growth trajectories in the early 2010s. The analysis uses univariate as well as multivariate statistical procedures to identify and test for trend breaks in growth rates. An algorithm searching for breaks developed by Doornik *et al.* (2013) and Hungnes (2010) was used to determine

the existence, timing, as well as the significance of breaks in mean growth rates.³ Econometric tests identified a break in WAEMU's GDP growth in 2011 (Annex Figure 3).⁴ This reflects the fact that growth surged from an average of 3.1 percent in 2000-2010 to 6.4 percent in 2011-2017. This includes the rapid growth turnaround in Côte d'Ivoire, from less than a half percent to over 9 percent over this period. Similarly, Senegal, Togo, and Mali experienced a statistically significant shift in their growth paths. Niger, Benin and Guinea-Bissau maintained solid growth rates although no structural breaks were identified.

The services sector led growth in most WAEMU countries, followed by agriculture in some economies and by industry in others. The services sector accounts for the largest portion of year-on-year variations in real GDP growth in Benin, Côte d'Ivoire, Mali, and Senegal (Annex Figure 4). Fast-growing sectors, such as finance, transport and communications have underpinned the rapid expansion in services. Industry contributed strongly in some countries (Benin, Burkina Faso, Senegal) mainly reflecting construction booms linked to infrastructure investment. Agriculture has made a significant contribution in Guinea-Bissau, Mali, and Togo. However, in some countries (including Benin, Burkina Faso, and Senegal), the growth contribution of agriculture declined, despite the sector's prominent role in the 2000s (excluding drought years).

Recent growth can be traced to increased capital accumulation while TFP growth has generally made a modest contribution. Growth can occur either due to the use of increased amounts of factors of production or a more efficient combination of resources to produce more output for a given input level. Annex Figure 6 decomposes growth into three sources: capital accumulation, labor supply, and TFP growth. Three-fourths of growth in WAEMU was due to factor accumulation, while the rest was accounted for by TFP growth. This is broadly similar to the SSA experience, but SSA, on average, experienced negative TFP growth over 2011-2016. Capital accumulation explains at least 40 percent of GDP growth in WAEMU economies, except for Côte d'Ivoire and Guinea-Bissau. Total investment increased from about 15 percent of GDP in 2000-2010 to 20 percent in 2011-2016 with two-thirds of this increase coming from the private sector. TFP growth played a significant role only in Côte d'Ivoire, reflecting recovery from the productivity loss during the decade-long political crisis that took a heavy toll on the economy.

Glanced through a structural transformation lens, growth was driven by static structural change and within-sector productivity growth.⁵ Productivity growth occurs either due to improvements within sectors or resource reallocation from low to high-productivity activities. Annex Figure 7 decomposes GDP per capita growth into within-sector changes and structural change (as well as the static and dynamic subcomponents). In Senegal and Benin, 'within' gains accounted for the bulk of per capita growth, although static structural change made a significant contribution. Unlike 2005-10, the contribution of within-sector productivity changes to Benin's growth turned negative in 2010-15. Structural change played a substantial positive role in Burkina Faso, while a decline in within-sector productivity and lower employment held back growth. Similarly, a third of Côte d'Ivoire's growth in recent years was due to structural change (Haile, 2018). WAEMU trends are thus consistent with those of Sub-Saharan Africa (Timmer *et al.*, 2014).

³We follow the definitions of Hausmann *et al.* (2005): (a) a growth acceleration should be sustained for at least 5 years and the change in growth rate has to be at least 2 ppts; (b) a country can have more than one instance of growth acceleration as long as the dates are more than 5 years apart; (c) trend breaks were selected at the 1% level of significance ($\alpha = 0.01$) in the *Autometrics* options in the software package OxMetrics 7 (Doomik *et al.*, 2013). The results are robust to changes in these specifications.

⁴ Annex Figure 7 presents growth trends only for countries that have experienced significant shifts in mean growth rates.

⁵Static effects refer to productivity changes due to reallocation of workers from below- to above-average productivity level sectors; dynamic effects refer to productivity growth arising from labor shift from below- to above-average productivity growth sectors.

3. Data and Methodology

Our analysis is mainly based on previous studies investigating the determinants of growth in developing countries. The analysis uses the cross-country regression model in Brueckner (2014), who built on the seminal contribution by Loayza *et al.* (2005) to identify the key engines of growth in the past. It draws upon the results of Moller and Wacker (2017) to shed light on what is driving WAEMU's growth acceleration. We distinguish between three groups of growth determinants—structural, stabilization and external factors—as explained below.

Structural factors comprise a wide array of fundamental determinants of growth. Our empirical model includes variables representing infrastructure, human capital, financial development, trade openness, government size, and institutions. The level of human capital development is controlled for using secondary school enrollment, which is commonly used in the growth literature (e.g. Mankiw *et al.* (1992); Loayza *et al.* (2005)). Although measures of educational achievements would be preferable, data on such variables are scanty. The share of domestic credit to the private sector in GDP serves as an indicator for the potential role of financial deepening in spurring economic growth. Trade-to-GDP ratio accounts for the growth impacts of openness to international trade. In addition, institutional quality may have a significant bearing on growth, as it supposedly affects capital formation and allocative efficiency. The well-known Polity index controls for this effect.

Our model is augmented with a composite indicator for infrastructure development. Although the baseline model in Brueckner (2014) uses fixed telephone lines per capita as an indicator for the level of infrastructure, this is a less plausible measure for WAEMU countries given that mobile phones have been much more widely used in the last decade and that it captures only one aspect of physical infrastructure. In countries with limited (fixed) telephone network like WAEMU countries, a variable capturing only telecommunications infrastructure might be a misleading indicator of overall infrastructure development. As infrastructure is inherently multi-dimensional, transcending several sectors like telecommunications, transport and energy, we pursue the approach suggested by Calderon *et al.* (2014) and construct a composite infrastructure index based on three individual indices capturing progress in power generation capacity, roads, and phone lines.⁶

Government consumption serves as measure of government size. Larger government consumption can reduce growth by crowding-out private investment by potentially leading to, among others, higher interest rates (where the public deficit is debt-financed), distortionary taxation, and bureaucratic inefficiencies. However, spending associated with the social sectors (such as health and education) is likely to bolster growth by enhancing human capital accumulation, among other channels. Note that the model squarely focuses on long-term growth and thus it does not pick up the short-term stimulative effects that government recurrent spending might have in times of economic downturns. In addition, as the model controls for human capital and infrastructure, some of the channels through which government consumption operates are already taken into account.

In addition to structural features, growth may be influenced by cyclical factors and stabilization policies. A country might stimulate short-run growth by pursuing lax monetary policy; however, concomitant inflationary pressures would likely distort economic incentives and result in less-optimal allocation of resources. Hence the critical importance of a stable macroeconomic environment in ensuring efficient resource allocation and fostering growth. The measures of macroeconomic stabilization policy we use in the regressions are standard in the literature: inflation

⁶Specifically, the composite infrastructure index is constructed as a weighted average of the three indices: $0.36 \cdot \ln(\text{phone lines}) + 0.35 \cdot \ln(\text{power generation capacity}) + 0.29 \cdot \ln(\text{road networks})$. Similarly, we constructed such index for WAEMU countries using these weights, which were originally computed by Calderon *et al.* (2014) for a sample of 88 countries. However, we test the robustness of the key results by changing the respective weights. The main conclusions from our empirical analysis were found to be sufficiently robust to alternative weighting.

rate, an indicator for exchange rate misalignment, and the occurrence of banking crises. Note that the analysis in Section 3.2 uses only the inflation rate and real effective exchange rate given that none of the WAEMU countries experienced a banking crisis over the period of analysis.⁷

External conditions constitute another potential growth driver. Akin to most SSA economies, WAEMU countries are vulnerable to fluctuations in global commodity prices. The analysis controls for externally induced economic shocks using terms of trade and commodity export prices. The role played by external factors is particularly important in light of the recent downward spiral in commodity prices. Commodity price fluctuations might entail only transitory growth effects; however, resource windfalls can also affect long-term aggregate supply by increasing capital accumulation and influencing institution building. To ensure consistency with the baseline model in Brueckner (2014), this paper constructed a commodity export price index for the WAEMU countries based on the procedure in Arezki and Brueckner (2012).

3.1 Empirical Model

The baseline cross-country regression model specifies real GDP as a function of several growth determinants and takes the following form⁸:

$$y_{i,t} = \beta_0 y_{i,t-1} + \beta_1 X_{i,t} + \eta_i + v_t + \varepsilon_{it} \quad (2)$$

where $y_{i,t}$ is the log of real GDP per capita of country i at time t ; $y_{i,t-1}$ stands for one-period lagged GDP per capita, with β_0 measuring the speed of convergence in income per capita; $X_{i,t}$ for variables capturing structural, stabilization and external effects; β_1 is the key parameter of interest and captures the effect of the variables on output per capita; η_i is a set of country fixed effects accounting for unobserved country-specific and time-invariant factors (such as geographical location, historical legacies, and legal origins) that may have significant impact on both income and the explanatory variables; v_t is a vector of time dummies capturing universal time trends; and finally, ε_{it} represents the error term. The original analysis is based on data for 126 countries spanning the period 1970-2010. Variable definitions and data sources are shown in Table 1 (Annex). To smooth out potential business cycle effects and reduce measurement error, the data are organized into five-year periods.⁹

The baseline model in Equation (2) is estimated using the System GMM. Endogeneity problems are circumvented by deploying suitably lagged values of the independent and dependent variables as instruments (Blundell and Bond, 1998). Araujo *et al.* (2014) and Moller and Wacker (2017) show that the baseline results are quite robust to a wide array of robustness checks, which include using: alternative instruments, alternative samples, alternative specifications, alternative variables, 10-year averaged data, balanced panel data, time-varying coefficients, unconditional models (to mitigate weak instruments), and more control variables. The key findings also stand up well to parameter heterogeneity (See Section 5).

The regression results show that movements in GDP per capita across the 126 countries in the sample were mainly due to changes in structural features and, to a limited extent, stabilization and external factors. See Table 1. Column 1 shows the baseline results while columns 2-4 report results from sensitivity analyses.¹⁰ The results are generally consistent with theoretical expectations. Structural

⁷Some WAEMU countries, including Togo, experienced banking crises in the 1980s.

⁸See Brueckner (2014) and Araujo *et al.* (2015) for more details on model specification.

⁹The dynamics of our model allows for longer-run effects beyond the five-year interval. The model formulation accommodates both contemporaneous impacts of changes in $X_{i,t-1}$ (captured by β_1) and lagged impacts on future income per capita (captured by the lagged dependent variable). Thus, the overall long-run effect is given by $\beta_1 / (1 - \beta_0)$.

¹⁰The robustness checks are discussed in more detail in Brueckner (2014) and Moller and Wacker (2017).

factors such as infrastructure, financial development, and trade openness turn out to be significant determinants of income per capita. In contrast, education and political institutions enter the regression insignificantly, perhaps suggesting that the five-year time span is too short for these variables to exhibit significant variation over time. It might also be the case that these variables operate through other channels or that the data are measured with error. Similarly, external conditions have a strong positive impact on real GDP. The impact of stabilization policies, however, is relatively smaller. The coefficient on institutions appears counterintuitive, albeit statistically insignificant. We mainly use these estimates to explain growth in the WAEMU region.

3.2 Calculating growth contributions in WAEMU countries

The contributions of the above-discussed explanatory variables to growth can be calculated by first-differencing Eq. (2)¹¹:

$$\Delta y_{i,t} = \beta_0(\Delta y_{i,t-1}) + \beta_1(\Delta X_{i,t-1}) + \Delta v_t + \Delta \varepsilon_{it} \quad (3)$$

where the country fixed effect cancels out as it is time-invariant. All variables are given in natural logarithms and their first differences represent growth rates. Growth can be explained by persistence effect, $\beta_0(\Delta y_{i,t-1})$; changes in the explanatory variables, $\beta_1(\Delta X_{i,t-1})$; and a period-specific global shock, Δv_t . The unexplained portion of growth is picked up by the residual, $\Delta \varepsilon_{it}$. The persistence parameter captures the lagged impacts of previous shocks or interventions over a five-year period.

The present paper extended the original data set from Brueckner (2014) by one additional five-year period, namely 2011-2016, based on fully consistent data sources. To facilitate understanding of the drivers of growth over the period 2000-2015, we follow Moller and Wacker (2017) and define four data points (t_0 , t_1 , t_2 , and t_3), each representing the average values of the sub-periods: 2001-2005, 2006-2010, and 2011-2015. See Figure 1. We hereafter refer to the gap between the averages for 2006-2010 and 2001-2005 as “Late 2000s” and for 2011-2016 and 2006-2010 as “Early 2010s”. For instance, the current growth effect of a one-off increase in human capital in the Early 2000s is measured by β_1^{hc} while the impact of this improvement on growth in the accompanying periods, say Late 2000s, is captured by $\beta_0\beta_1^{hc} < \beta_1^{hc}$, which eventually dies out over time.

Table 1: Baseline regression results

¹¹While the model in Eq. (2) uses telephone infrastructure as a proxy, we used a composite index consisting of telecom, transport, and power infrastructure to compute the growth contribution of infrastructure in Eq. (3). Data on power and transport infrastructure were not readily available for most of the countries included in Eq. (2). Nonetheless, using instead only telephone (fixed and mobile) would leave the main conclusions of the analysis unchanged. In fact, the growth contribution of infrastructure would have been larger if we used only telephone lines, as WAEMU countries have seen dramatic expansion of (mobile) telecom infrastructure in the past two decades. Moller and Wacker (2017) show that using both telecom and road infrastructure in Eq. (2) does not significantly change the estimate for infrastructure.

	(1)	(2)	(3)	(4)
Dependent variable: log of GDP per capita (in PPP)				
Persistence	0.781*** (0.057)	0.784*** (0.0563)	0.726*** (0.0491)	0.746*** (0.0392)
ln(exchange rate)	-0.064 (0.0404)	-0.0622 (0.0392)	-0.0553* (0.0332)	-0.0172 (0.0355)
ln(schooling)	0.0178 (0.0503)	0.0445 (0.0502)	0.0104 (0.0463)	-0.0266 (0.0452)
ln(credit/GDP)	0.0743** (0.0311)	0.0542 (0.0304)	0.0432* (0.221)	0.0238 (0.0245)
ln(trade/GDP)	0.0824 (0.0502)	0.0609 (0.0490)	0.0916*** (0.0359)	0.0968 (0.0584)
ln(gov. cons.)	-0.262*** (0.0442)	-0.259*** (0.0423)	-0.215*** (0.0359)	-0.127 (0.0810)
ln(tele lines)	0.141*** (0.0309)	0.129*** (0.0297)	0.0769*** (0.0216)	0.0816*** (0.02161)
ln(inflation)	-0.0113 (0.0118)	-0.0145 (0.0110)	-0.00523 (0.00886)	-0.0128 (0.112)
Δln(TOT change)	0.118*** (0.0286)	0.123*** (0.0277)	0.116*** (0.0264)	0.110*** (0.0339)
ln(bank crisis)	-0.0399 (0.0317)	-0.0430 (0.0314)	-0.0414 (0.0259)	-0.0461* (0.0236)
Δln(commodity prices)	10.48*** (2.686)	11.11*** (2.546)	7.507*** (2.391)	6.963 (4.943)
ln(institutions)	-0.00265 (0.0330)		0.00190 (0.0247)	-0.00549 (0.0255)
Constant	2.502*** (0.708)	2.829*** (0.465)	3.202*** (0.600)	2.469*** (0.453)
Observations	464	502	464	464
No of countries	126	141	126	126
Method	Sys-GMM	Sys-GMM	Sys-GMM	FE
Specification	Baseline	w/o Polity2	Lags 1-3 as instruments	baseline as FE
No of instruments	153	166	171	
AB(1)	0.023	0.024	0.033	
AB(2)	0.102	0.045	0.062	
Sargan test	0.131	0.017	0.001	

Note: Based on Brueckner (2014). Standard errors in parentheses. ***, **, and * indicate statistical significance on the 1, 5, and 10 percent level, respectively. AB(1) and AB(2) is the p -value of the Arellano and Bond test for first and second order autocorrelation, respectively. Sargan test reports p -values.

Source: Moller and Wacker (2017).

In addition, for some countries and/or some periods, data on some of the infrastructure indicators were scanty and thus we used alternative measures. There is paucity of data on road density and electricity production for some WAEMU countries and/or for more recent periods. Given the data are organized into five-year periods, data for the most recent year is taken as representative for the period. For instance, if data on road density were available only for 2011 and 2014, the average of the two would be taken to represent road coverage in 2011-2016. Similarly, electricity production data were not available for a few countries and thus we used alternative measures (such as electricity consumption) as a proxy. It should be noted upfront that we are fully aware of the problems with the

quality of infrastructure data for SSA countries. However, these are the very same data that are extensively used in the literature and thus we rely on the same imperfect figures.

4. Results¹²

In this section, we discuss the determinants of growth in WAEMU countries over 2011-2016. The analysis focuses on 2011-2016 because this period corresponds to WAEMU's growth acceleration episode. Results for 2000-10 are also presented in tables and graphs for comparison (See Annex Figures 8 and 9). The period before 2000 was not included in the analysis as data were incomplete for some countries and variables. Figures 2-7 show the predicted growth contributions of the determinants based on the parameter values shown in Table 1 and the observed changes in the variables between the respective data points.

Growth in WAEMU during 2011-2016 was mainly driven by improvements in structural factors. Structural factors contributed about 1.5 ppts of the average annual per capita growth rate of 2.5 percent, i.e. about two-thirds of predicted growth (Figure 2). This reflects the considerable progress WAEMU countries have made in financial deepening, infrastructure development, and trade openness. Structural improvements in WAEMU exceeded the SSA average. A stable macroeconomic framework also supported growth while external factors were unimportant.

Financial deepening and infrastructure were the main structural determinants of growth. Increased private sector credit and infrastructure contributed roughly 0.7 ppts and 0.4 ppts respectively, together accounting for three-quarters of growth due to structural factors. The largest increases in private sector credit (in percent of GDP) were registered by Togo (by about 19 ppts between 2000-10 and 2011-16), Senegal (12 ppts), and Burkina Faso (10 ppts). Several countries experienced a substantial increase in private investment (percent of GDP), with cumulative gains ranging from 2-4 ppts in 4 of the 8 countries to 11 ppts in Niger. As infrastructure coverage in WAEMU countries is low, the growth effect of narrowing the infrastructure gap is potentially large. Public investment also increased in most countries, with the cumulative gain ranging from about 2 ppts in 4 countries (between 2000-10 and 2011-16) to 6 ppts in Togo.

Growth was driven by domestic rather than external factors. External developments slightly reduced growth in the region, although this masks variations across member countries. The findings are consistent with the fact that WAEMU countries, unlike oil-exporting SSA economies, were much less affected by falling commodity prices. In the context of low energy prices, a few countries (including Côte d'Ivoire and Guinea-Bissau) gathered some growth momentum, albeit modest. By contrast, headwinds from lower commodity prices somewhat held back growth in relatively more resource-intensive countries (Benin, Burkina Faso, and Mali).

The monetary union has provided a stable macroeconomic framework for the growth process, although the observed (direct) effect on growth is marginal. Macroeconomic stability provides a conducive environment for sustained growth by, among others, helping countries anchor expectations and fostering long-term investment decisions (Berg *et al.*, 2012; Arizala *et al.*, 2017). WAEMU's robust growth in recent years coincided with relatively sound macroeconomic management. Member countries have achieved stronger outcomes than other SSA regions, with inflation remaining low at 0.8 percent, the real effective exchange rate in line with fundamentals, and external balance more or less stable (IMF, 2018). Recently adopted WAEMU convergence criteria have helped anchor fiscal policy to reduce fiscal excesses and foster financial stability. Studies show that the monetary union has positively contributed to price stability and fiscal outcomes

¹²The following weights based on real GDP (in PPP terms) were used to compute aggregate estimates for the WAEMU: Côte d'Ivoire (33.6 percent), Senegal (16 percent), Mali (15 percent), Burkina Faso (12.9 percent), Benin (9.4 percent), Niger (8 percent), Togo (4.5 percent) and Guinea-Bissau (1.5 percent).

(Agbor, 2012, Pattillo *et al.*, 2008; Bagnai, 2010). However, a strand of the literature contends that the euro peg may render adjustment to external shocks difficult because a fixed exchange precludes a key policy instrument for redressing a protracted recession (IMF, 2016; World Bank, 1994, 2008).

The results in this paper are comparable with the findings of a recent IMF paper, though our analysis underscores the role of financial deepening more strongly. Using a benchmarking and cross-country regression approach, IMF (2018b) finds that high growth in the WAEMU region coincided with increased investment, improved macroeconomic stability, enhanced institutional quality, improved terms of trade, and productivity gains. It is important to note, however, that only the benchmarking and structural break analyses in Section 2 of this paper are directly comparable with the approach adopted in IMF (2018b). A notable difference in results is our finding of the strong growth-facilitating role played by financial deepening.

5. Model Accuracy and Robustness

5.1 Model accuracy

In general, the model predicts actual growth in WAEMU very well, although it under-predicts growth for some countries. Annex Figure 10 compares actual per capita growth with the predictions from the model. Predictions for Côte d'Ivoire are the least precise in absolute terms, although the model 'error' is modest proportionally. This perhaps suggests that our model may not be a good fit in explaining what happens in the aftermath of a deep recession such as Côte d'Ivoire's during the 2000s. In general, prediction errors could arise from shortcomings of some of the model variables. For instance, institutional quality is proxied by the Polity IV index, which exhibits limited variability over the short-term. It may also be due to factors that remained unaccounted for by the model. Having said that, discrepancies for country-specific results derived from cross-country studies are not exceptional in the literature (see results for LAC countries in Araujo *et al.* (2016), for Ethiopia in Moller and Wacker (2017), and for Tanzania in Haile (2016)).

5.2 Robustness

The original model by Brueckner (2014) has already passed several robustness checks. For example, it was shown (by testing the relevant first-stage relationship) that the instruments in the GMM regression are sufficiently strong. The main results are also robust to taking 10-year non-overlapping panel data, balanced panel data, time-varying coefficients, or alternative specifications. Furthermore, unconditional models were estimated variable by variable as this limits the weak-instrument problem in the case where various instruments appear strong in isolation but are highly correlated so that they are weak when used together (Dollar and Kraay, 2003).

In addition, Moller and Wacker (2017) estimate three other specifications (see columns 1 to 4 in Table 1). Column (2) shows the results when the Polity IV variable, which had a counter-intuitive sign in the baseline specification, is excluded. The results are almost identical to the baseline model in column (1). Column (3) expands the instrument set by allowing for first-, second-, and third-order differences (as opposed to including only the first lag). The findings indicate that the baseline estimates do not likely suffer from too few instruments. The coefficient estimates are again similar to the baseline, though the infrastructure parameter is smaller but still significant and large. Column (4) reports fixed-effect (FE) estimates, again with similar results but a somewhat smaller (but positive and significant) infrastructure parameter. The coefficient on the lagged dependent variable is somewhat smaller than in the baseline. This confirms that our baseline model is well-specified because of the downward bias of this parameter in fixed effect estimation (Nickell, 1981).

Figure 2. Key growth drivers in WAEMU and SSA (2011-2016)

Source: Authors' estimates based on data described in Section 3.

Figure 3. Key growth drivers in WAEMU and SSA (2000-2010)

Source: Authors' estimates based on data described in Section 3.

Figure 4. WAEMU and SSA: Structural drivers of growth (2011-2016)

Source: Authors' estimates based on data described in Section 3.

Figure 5. WAEMU and SSA: Structural drivers of growth (2000-2010)

Source: Authors' estimates based on data described in Section 3.

Figure 6. Key growth drivers in WAEMU countries (2011-2016)

Source: Authors' estimates based on data described in Section 3.

Figure 7. Structural drivers of growth in WAEMU countries (2011-2016)

Source: Authors' estimates based on data described in Section 3.

Furthermore, the baseline sample is re-specified to include only countries that were below the median or mean of GDP per capita in 1995 (Annex Table 2). This is important, as the baseline model includes

high-income countries. The results are shown in columns (3) and (4). For the smaller sample, there are some differences in the magnitudes of the estimated coefficients. For instance, the effects of the exchange rate and credit-to-GDP ratio seem somewhat larger.¹³ In this case, the hypothesis that the two estimated coefficients are equal cannot be rejected only at the 10 percent level of statistical significance. Column (5) re-estimates the model for SSA countries only. Although this dramatically decreases the sample size and a particularly worrying Sargan and AB(1) statistic, the results are generally in line with our baseline model.

Given the importance of infrastructure in explaining growth, it is important to check the robustness of the key results to using alternative measures. The results shown in Table 1 use fixed telephone line coverage as an indicator for infrastructure development. We used two alternative infrastructure variables, namely mobile phone subscriptions and road coverage, and found nearly identical results.¹⁴ Both alternative infrastructure variables have a strong positive impact on growth, although the effect of roads is only borderline significant. Note that the three types of infrastructure considered in our analysis are provided mostly by the public sector in the case of WAEMU countries, strengthening our inference on the nexus between public infrastructure development and growth.

In sum, our model is robust to a wide range of alternative specifications. Where results differ in magnitude, this difference is rarely statistically significant and thus often reflects random sample effects. The only case where infrastructure is statistically insignificant arises in a considerably reduced sample, although the quantitative result is still in line with parameter estimates from other robustness checks. The robustness checks suggest that our estimate for infrastructure in the baseline model may be on the higher side. However, we find no strong evidence that any of these alternative models would be more appropriate to capture recent growth in WAEMU countries. Moreover, even if we used one of the lower parameter values, the associated contribution of infrastructure to would still be substantial.

6. What Was the Role of Macroeconomic Policy?

Recent growth in WAEMU has largely been a structural phenomenon. To what extent is growth driven by structural factors and/or reactions to the economic cycle? Figures 11-14 (Annex) present historical trends in potential and actual growth for the WAEMU average and individual countries over 2000-2017. Potential growth is computed as a function of changes in capital stock, labor force, and TFP along the lines of Solow decomposition. Alternatively, we use the Hodrick-Prescott (HP) filter¹⁵ to disentangle structural from cyclical components of growth.¹⁶ In WAEMU, potential growth has steadily increased, above its long-term average rate, partly reflecting increases in investment (capital deepening), and rising labor inputs (favorable demographics). Results from the HP filter also confirm that structural factors were dominant. Capital growth has been high in recent years, reflecting large infrastructure investments and faster rates of private investment.

Cyclical factors also contributed to the growth acceleration. WAEMU countries stimulated short-run growth by pursuing an accommodative monetary policy. A key cyclical factor is related to the rapid growth in domestic credit to the private sector. In addition, the construction booms in some countries (notably Benin, Burkina Faso, and Togo) were partly funded through a pre-financing arrangement—

¹³However, the null hypothesis that these estimates are statistically different from the baseline results (column 1 of Table A.2) has been rejected.

¹⁴See Moller and Wacker (2017).

¹⁵The HP filter is a statistical technique used to produce a smoothed measure of real GDP, which is then taken to represent an economy's underlying potential. Deviations from this trend represent unsustainable temporary deviations from potential.

¹⁶Although these methods are admittedly imperfect, they can shed light on whether a growth acceleration is more due to structural or cyclical factors.

which represented a cyclical phenomenon—where governments provided selected private firms with a guarantee to borrow from domestic banks. For instance, in Togo, the size of pre-financing contracts averaged 7 percent of GDP annually over 2013-2016, peaking at 10.5 percent in 2015. Other cyclical drivers of growth included recovery from crisis (e.g. Côte d’Ivoire), global commodity prices and regional trade spillovers (e.g. Benin, Burkina Faso, Mali), and political instability and/or security problems (Guinea-Bissau, Mali, Niger).

Growth has been supported by procyclical monetary policy. Monetary policy has been accommodative in WAEMU during recent years, as evidenced by the increase in real money growth from an average of 8.9 percent in 2005-10 to 12.5 percent in 2011-16 (Annex Figure 2.1). Most countries have experienced a substantial increase in money growth, ranging from 3-4 ppts in Côte d’Ivoire and Senegal to 12 ppts in Niger. This is consistent with the fact that the benchmark interest rate of the BCEAO steadily declined from 6 percent in 2000 to 3.3 percent in 2010 and to 2.5 percent in 2017 (Annex Figure 2.2). Gross international reserves have steeply decreased over the past few years, from 6.5 months of imports in 2010 to 4.2 in 2017 (Annex Figure 2.3). Reserve coverage has rebounded somewhat to 4.2 months of imports by end-2017 supported by the Eurobond issuances of Côte d’Ivoire, Senegal and the West African Development Bank.

Expansionary monetary policy contributed to the sharp credit growth in recent years, which in turn led to an increase in private investment. BCEAO has made large liquidity injections by cutting the policy and refinancing rates in 2012 and had kept them unchanged until end-2016. Monetary policy was tightened in December 2016, as BCEAO raised the marginal lending facility rate from 3.5 to 4.5 percent, although this was slightly loosened as the reserve requirement was reduced from 5 to 3 percent. Partly as a result of the lax monetary policy, domestic credit to the private sector surged from about 14 percent of GDP in 2000-10 to 22 percent in 2011-16 (Annex Figure 1.4). All member states of the Union have witnessed high credit growth, with 4 of the 8 countries experiencing an increase of more than 3 percent of GDP.

Credit growth has been supported by the amendment in 2011 of the OHADA¹⁷ Uniform Act on Secured Transactions, which helped improve the legal administrative basis of collateral (Islam *et al.*, 2018). The key objective of the OHADA regulatory reform has been to facilitate access to credit by providing new collateral mechanisms. The reforms took effect in May 2011 and involved several measures, which encompassed expanding the type of eligible collaterals to also include future assets, public domain lands, funds held in escrow accounts, receivables, and intellectual property rights. The amended act has been made effective in all OHADA member states. The reforms are estimated to have had a substantial positive impact on private sector credit in WAEMU countries (*Ibid.*). Islam *et al.* show that this reform is associated with an increase in private sector credit of roughly 6 percent of GDP in Senegal, 7 percent in Burkina Faso, 15 percent in Togo, and nearly 4 percent in Mali.

Expansionary fiscal policy has also underpinned the growth acceleration. WAEMU countries have seen a sustained increase in public investment in recent years to address infrastructure gaps. Government investment increased from an average of 5 percent of GDP in 2000-10 to 7.7 percent in 2011-16. Of the 8 countries in the Union, 5 of them saw an increase in public investment of at least 3 percent of GDP over the same period. The expansionary fiscal stance partly reflected restrained government consumption spending, which remained flat, on average, at 15 percent of GDP between 2000-10 and 2011-16 (Annex Figure 2.5). This holds true for all countries except Togo and Senegal, which witnessed a marginal increase. The increase in public investment, combined with stagnant fiscal revenue, meant that the fiscal deficit worsened from 3.1 to 4.7 percent GDP between 2010 and 2017. The higher investment rate was partly supported by an increase in gross savings, from 13 to

¹⁷OHADA is an initiative in francophone Africa which provides a uniform legal and regulatory framework for accounting standards, arbitration, commercial law, company and insolvency law, and transactions secured by collateral. By harmonizing business regulations among its 17 member states, OHADA aims to facilitate economic integration and promote economies of scale. See Islam *et al.* (2018) for more details.

17 percent of GDP over 2000-2016 (Annex Figure 1.5). The savings rate rose by 2-3 ppts in Benin and Guinea-Bissau, and 5-8 ppts in Burkina Faso, Côte d'Ivoire, and Niger.

7. Conclusion

This paper aimed to explain WAEMU's relatively high growth in recent years. We find that growth was largely driven by improvements in deep structural factors in the context of a conducive macroeconomic policy framework. External factors played a negligible role, suggesting that WAEMU countries, unlike oil-exporting African economies, were much less affected by falling commodity prices and vice versa. WAEMU's growth trajectory has its own unique features compared to the SSA experience. Growth has been weak in resource-intensive SSA countries, largely owing to falling commodity prices. Whereas non-resource-intensive economies achieved solid growth on the back of high public investment, financial disintermediation and/or policy slippages slightly reduced growth.

Specifically, financial deepening and infrastructure were the most important structural drivers of growth. Many WAEMU countries have been undertaking large infrastructure investments, albeit from a low base. However, the region's infrastructure network (notably energy and transport) remains poor. Infrastructure development tops the list of recommendations for growth acceleration (Growth Commission Report, 2008). Continued investment in key infrastructure would be required to bolster WAEMU's long-term growth. Although many countries have little fiscal space to further raise public investment, there is a scope to mobilize domestic resources and to reallocate resources from less productive purposes. Tax revenue as a share of GDP remains low and stagnant and could be increased by 1-2 percent of GDP (IMF, 2018).

There were, nonetheless, some idiosyncrasies among WAEMU countries in terms of growth drivers. Infrastructure played a stronger role in Côte d'Ivoire, while financial deepening dominated in the remaining countries. Countries affected by political instabilities and/or security problems (Guinea-Bissau, Mali, Niger) witnessed relatively smaller infrastructure improvements. Although financial deepening was the key growth engine in all WAEMU economies, Togo and Niger saw the largest growth contribution due to credit growth. Trade made a significant contribution to growth only in Burkina Faso, Benin, and Niger. Falling commodity prices slightly reduced growth in more resource-intensive economies (Mali, Burkina Faso, Benin), while improved terms-of-trade provided some growth impetus in others.

Structural reforms are needed to improve productivity growth. Recent growth occurred on the back of a rapidly growing services sector. Sustaining high growth based on a service-driven model is, however, challenging for several reasons. First, the rapidly expanding services activities are largely informal and unproductive. Second, although some modern service industries (such as finance and IT) tend to be high-productivity and tradable, they are skill- and capital-intensive. Third, most of the remaining services activities either lack technological dynamism or are inherently non-tradable. Further, WAEMU's *static* structural change was partly offset by a *dynamic* loss, indicating the importance of unleashing productivity growth in the fast-growing sectors. Productivity-enhancing structural reforms are needed to promote diversification and private investment (such as improving energy and transport infrastructure, enhancing human capital, and removing trade barriers), and to raise productivity in the informal sectors.

Given the main drivers of WAEMU's growth (credit expansion and public investment) may lose some steam going forward, boosting TFP growth would be critical to maintain the growth momentum. In the absence of productivity-enhancing structural reforms, growth could slow in the coming decade, partly driven by a slowdown in capital growth. These reforms include improving the efficiency of spending and quality of public investment, boosting revenue mobilization, reforming

the energy sector, improving the business environment, and advancing economic diversification. IMF (2016) estimates show that a scenario where those reforms are delayed is associated with lower domestic investment growth. This scenario would lower WAEMU's growth by about 1-1.5 ppts compared to the baseline scenario.

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Annex

Table 1. Description of Variables

Variable	Description	Source
Growth Rate of GDP per capita	The change in the natural logarithm of real PPP GDP per capita between period t and $t-1$.	PWT 7.1
Schooling	The natural logarithm of the secondary school enrolment rate.	WDI (2013)
Private Credit/GDP	The natural logarithm of the ratio of domestic credit to the private sector divided by GDP. Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment.	WDI (2013)
Trade Openness	The natural logarithm of the ratio of exports plus imports over PPP GDP adjusted for countries' population size.	PWT 7.1
Telephone Lines	The natural logarithm of main telephone lines per capita. Telephone lines are fixed telephone lines that connect a subscriber's terminal equipment to the public switched telephone network and that have a port on a telephone exchange. Integrated services digital network channels and fixed wireless subscribers are included.	WDI (2013)
Mobile Phones	The natural logarithm of mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service using cellular technology, which provide access to the public switched telephone network. Post-paid and prepaid subscriptions are included.	WDI (2013)
Road Density	Road density (km of road per 100 sq. km of land area). Road density is the ratio of the length of the country's total road network to the country's land area. The road network includes all roads in the country: motorways, highways, main or national roads, secondary or regional roads, and other urban and rural roads.	ADI (2016) and reports/studies.
Electricity production (kWh)	Electricity production is measured at the terminals of all alternator sets in a station. In addition to hydropower, coal, oil, gas, and nuclear power generation, it covers generation by geothermal, solar, wind, and tide and wave energy, as well as that from combustible renewables and waste. Production includes the output of electricity plants that are designed to produce electricity only as well as that of combined heat and power plants.	WDI (2016), ADI (2016), and reports/studies.
Government Size	The logarithm of the ratio of government consumption expenditures over GDP.	PWT 7.1
Polity2	The polity2 score measures the degree of political constraints, political competition, and executive recruitment. It ranges between -10 to 10 with higher values denoting more democratic institutions.	Polity IV (2012)
CPI Inflation	The natural logarithm of 100+consumer price inflation rate. CPI inflation reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services.	WDI (2013)
Real Exchange Rate	The natural logarithm of the GDP price level divided by the nominal exchange rate.	PWT 7.1
Banking Crisis	Indicator Variable that is unity in period t if the country experienced a banking crisis.	Reinhart and Rogoff (2011)
Terms of Trade Growth	The change in the natural logarithm of the net barter terms of trade index. The net barter terms of trade index is calculated as the percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year 2000.	WDI (2013)
ComPI Growth	The change in an international commodity export price index. The index is constructed as	Arezki and Brueckner (2012)

$$ComPI_{ct} = \prod_{i \in I} ComPrice_{it}^{\theta_{ic}}$$

where $ComPrice_{it}$ is the international price of commodity i in year t , and θ_{ic} is the average (time-invariant) value of exports of commodity i in the GDP of country c . Data on international commodity prices are from UNCTAD Commodity Statistics and data on the value of commodity exports are from the NBER-United Nations Trade Database (Feenstra *et al.*, 2004). The commodities included in the index are aluminum, beef, coffee, cocoa, copper, cotton, gold, iron, maize, oil, rice, rubber, sugar, tea, tobacco, wheat, and wood.

Source: Moller and Wacker (2017).

Table 2. Additional Robustness Checks

Variables	log of GDP per capita (in PPP)					
	(1)	(2)	(3)	(4)	(5)	(6)
Persistence	0.781*** (0.0569)	0.782*** (0.0570)	0.835*** (0.0743)	0.772*** (0.0558)	0.688*** (0.107)	0.932*** (0.160)
$\Delta \ln(\text{exch rate})$	-0.0640 (0.0404)	-0.0640 (0.0404)	-0.109** (0.0501)	-0.0700* (0.0412)	-0.117*** (0.0405)	0.0655 (0.122)
$\Delta \ln(\text{schooling})$	0.0178 (0.0503)	0.0156 (0.0506)	-0.00496 (0.0674)	-0.0200 (0.0536)	0.0412 (0.0596)	0.00999 (0.0838)
$\Delta \ln(\text{credit/GDP})$	0.0743** (0.0311)	0.0723** (0.0310)	0.119*** (0.0425)	0.0699** (0.0323)	0.0669** (0.0285)	0.0546 (0.0609)
$\Delta \ln(\text{trade/GDP})$	0.0824 (0.0502)	0.0845* (0.0507)	0.0901 (0.0661)	0.121** (0.0534)	0.0312 (0.0631)	-0.0172 (0.0707)
$\Delta \ln(\text{govt C})$	-0.262*** (0.0442)	-0.263*** (0.0444)	-0.224*** (0.0558)	-0.250*** (0.0452)	-0.205*** (0.0680)	-0.0618 (0.122)
$\Delta \ln(\text{tele lines})$	0.141*** (0.0309)	0.142*** (0.0311)	0.0762** (0.0376)	0.109*** (0.0322)	0.0757 (0.0496)	0.131* (0.0740)
$\Delta \ln(\text{inflation})$	-0.0113 (0.0118)	-0.0120 (0.0119)	0.00388 (0.0160)	-0.0139 (0.0124)	-0.0197 (0.0151)	-0.00407 (0.0245)
$\Delta \ln(\text{TOT change})$	0.118*** (0.0286)	0.116*** (0.0287)	0.104*** (0.0393)	0.0963*** (0.0312)	0.109*** (0.0370)	0.0100 (0.0682)
$\Delta \text{ bank crisis}$	-0.0399 (0.0317)	-0.0393 (0.0318)	0.0729 (0.0567)	-0.00325 (0.0381)	-0.0402 (0.0780)	-0.0702 (0.0828)
$\Delta \ln(\text{commodity prices})$	10.48*** (2.686)	10.53*** (2.691)	15.64*** (4.312)	12.38*** (3.260)	3.690 (2.603)	21.93* (11.85)
$\Delta \ln(\text{institutions})$	-0.00265 (0.0330)	-0.000649 (0.0330)	-0.0399 (0.0418)	-0.0202 (0.0325)	0.0222 (0.0359)	0.00459 (0.0517)
Constant	2.502*** (0.708)	2.503*** (0.709)	2.149*** (0.729)	2.643*** (0.547)	2.917*** (0.768)	-0.0774 (1.393)
Observations	464	461	275	384	130	85
Number of ccode	126	125	66	93	33	25
Estimation	SysGMM	SysGMM	SysGMM	SysGMM	SysGMM	SysGMM
Sample	Baseline	w/o ETH	GDP < median	GDP < mean	SSA	landlocked
No of instruments	153	152	93	120	59	52
AB(1)	0.023	0.024	0.038	0.028	0.629	0.043
AB(2)	0.102	0.108	0.178	0.116	0.184	0.786
Sargan	0.131	0.125	0.090	0.193	0.007	0.387

Note: Based on Brueckner (2013). Standard errors in parentheses. ***, **, and * indicate statistical significance on the 1, 5, and 10 percent level, respectively. AB(1) and AB(2) is the p-value of the Arellano and Bond test for first and second order autocorrelation, respectively. Sargan test reports p-values.

Source: Moller and Wacker (2017).

Figure 1. WAEMU: Selected Economic Trends

Figure 2. WAEMU: Selected Economic Trends (Continued)

1. Average real money growth (2005-2010 versus 2011-2016)

Source: World Bank MFMOD.

2. WAEMU Benchmark interest rate (2000-2016)

Source: World Bank MFMOD.

3. WAEMU Reserves (in months of imports) 2010-2017

Source: World Bank.

4. WAEMU: Government investment (2000-2017)

Source: World Bank.

5. WAEMU Countries: Government consumption spending (% of GDP)

Source: World Bank.

6. WAEMU Countries: Private investment (% of GDP)

Source: World Bank.

Figure 3. WAEMU Countries: Structural Breaks in Real GDP Growth (2000-2016)

Source: Authors' estimates.

Note: Structural breaks determined by Step-Indicator Saturation (SIS) and Impulse-Indicator Saturation (IIS) (with breaks selected at $\alpha = 0.01$) (Doornik *et al.* (2013)).

Figure 4. Real GDP Growth 2000-2016: Supply Side Decomposition

Figure 5. Real GDP Growth 2000-2016: Demand Side Decomposition

Figure 6. WAEMU Countries: Growth Accounting (2000-2016)

Figure 7. WAEMU Countries: Shapley Decomposition of GDP per capita growth

Figure 8. Key growth drivers in WAEMU countries (2000-2010)

Source: Authors' estimates based on the data described in Section 3.

Figure 9. Structural Drivers of Growth in WAEMU Countries (2000-2010)

Source: Authors' estimates based on the data described in Section 3.

Figure 10. Prediction performance of the model

Source: Authors' estimates based on the data described in Section 3.

Figure 11. WAEMU Region: Potential and Actual GDP Growth

Figure 12. WAEMU: Real GDP - Cyclical and Trend Components

Figure 13. WAEMU Countries: Real GDP - Cyclical and Trend Components

Figure 12. WAEMU Countries: Potential and Actual GDP Growth