Information, Institutions and Banking Sector Development in West Africa

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Abstract
Using a new panel dataset for banks in eight West African countries, we explore the factors that determine banks’ loans to assets ratios and the level of bank assets. Loan default rates in the region are high and are found to reduce both the loans to assets ratio and the volume of assets. However, the size of the effects is sensitive to bank age and ownership structure, with younger, private, domestically owned banks being most affected. This suggests that such banks face the most severe informational disadvantages. Improvements in the quality of governance are found to increase the loans to assets ratio and to promote asset growth.

JEL classification: G21, O16
Key words: Africa, Banking, Default, Institutions, Liquidity

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1. Introduction

Banks and other financial intermediaries can perform an important developmental function, especially in Africa, where alternative sources of finance are limited or non-existent. By providing firms with essential finance, they help them to take advantage of productive investment opportunities which may not otherwise materialise. By screening loan applicants, they can help to address adverse selection in the credit market and channel funds towards productive uses. By monitoring borrowers, they can contain moral hazard behaviour, for example, excessively risky investment activity that could undermine a borrower’s ability to repay a loan. Through long-term bank-borrower relationships, well established banks can address both adverse selection and moral hazard. This not only helps banks to remain solvent but also ensures that bank finance is channelled towards productive and sound investments.

There is a large body of empirical evidence which suggests that the development of banking systems goes hand in hand with economic development (see for example Levine, 2004). Although the evidence on causality is mixed (see, for example, Demetriades and Hussein, 1996), there is broad consensus that well functioning banking systems can and do promote economic growth (Demetriades and Andrianova, 2005). It is, therefore, a puzzle that so many countries remain financially under-developed. This is particularly true of Sub-Saharan Africa, which remains one of the most financially under-developed regions in the world. A recent study by the World Bank has shown that African banking systems lack depth compared to other regions in the world but are also excessively liquid (Honohan and Beck, 2007). According to the World Bank, banks themselves complain that there is a lack of creditworthy borrowers while at the same time households and firms find finance to be a major constraint. The evidence presented by the World Bank also suggests that the least developed banking systems are also the most liquid, suggesting that excess liquidity is a common feature of financial under-development.

This paper aims to shed light on these features of financial under-development in Africa, utilising a panel data set comprising the banks operating in the West African Economic and Monetary Union (UEMOA) during 2000-2005. The UEMOA provides a uniform financial system across eight countries; the structure of this system has changed little in the last 15 years. Therefore, we can be sure that the variations in bank behaviour we observe within the UEMOA are not due to variations in the nature of public financial institutions which the banks face. This makes feasible the identification of the institutional sources of the variations in bank behaviour, which are not correlated with variations in the quality of public financial institutions.
Our dataset includes balance sheet information on each bank in the UEMOA, including bank characteristics such as age and ownership type, profitability and the number of urban and rural branches. We also utilise country level data on loan defaults, which provides information on the average quality of borrowers; we use this as a proxy for the severity of information problems faced by banks in the credit market. We combine this information with macroeconomic data including institutional quality indices constructed by the World Bank. Our dataset enables us to examine the extent to which informational and institutional factors, and interactions between different factors, can explain a bank’s loans to assets ratio, which is an inverse measure of bank liquidity. Our dataset is also used to examine the microeconomic and macroeconomic determinants of the total volume of assets of an individual bank, which is a good micro-level indicator of banking development.

Our results suggest that financial under development, including excess liquidity and low banking development, can to a large extent be attributed to severe informational problems. These problems are particularly acute for younger banks, while the more established banks are less affected. Thus our results highlight the critical importance of information capital in both developing banking systems and reducing excess liquidity. Our results suggest that it is not so much the lack of credit worthy borrowers that is the obstacle for financial development, but the lack of a developed infrastructure that would enable new banks to screen and monitor borrowers. This result is consistent with evidence on the importance of credit registries in reducing credit constraints (Galindo and Miller, 2001). Our results also suggest that bank development in Africa does indeed follow economic development, but it is also particularly sensitive to political stability and rule of law.

The paper is structured as follows. Section 2 reviews the institutional setting within which commercial banks in the UEMOA operate, and provides the conceptual background for our analysis. Section 3 describes the data and modelling strategy. Section 4 presents and discusses the empirical findings. Section 5 summarises and concludes.

2. Commercial Banking in the UEMOA
The UEMOA is a monetary union arising from the final phase of French colonialism in West Africa (1948-1962), and encompasses most of France’s former colonies in the area. The current member states are Benin, Burkina Faso, Cote d’Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo. It forms part of the Franc Zone, the other main component of which is a

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1 Guinea-Bissau is a small, relatively underdeveloped former Portuguese colony. It joined the UEMOA in 1985.
second monetary union, the Economic and Monetary Community of Central Africa (CEMAC). The cornerstone of the Franc Zone is the use of currencies that the French Treasury guarantees to exchange for Euros at a fixed rate. (Rather confusingly, the UEMOA currency and the CEMAC currency are both called the CFA Franc, although they are two entirely different currencies. The arrangements that the two monetary unions have with the French Treasury are parallel but entirely independent of each other.)

The enduring institutional link with the former colonial power gives the UEMOA countries an unusually high level of financial stability, compared to other African countries with similar levels of economic development. The institutional framework is defined by a constitutional accord dating from the period in which the colonies became fully independent (1960-1962), and preserving many of the features of the financial system of post-war French colonial Africa. The main features are as follows.

(i) Guaranteed convertibility. Article 1 of the accord stipulates that France will help UEMOA member states to ensure the free convertibility of their currency. In practice, this means that the French Treasury will exchange CFA Francs for Euros on demand. Lending by the BCEAO (the UEMOA central bank) to domestic governments and to the private sector is now limited by rules designed to prevent free-riding on the French guarantee.

(ii) A fixed exchange rate. Up until 1994, Article 2 of the accord stipulated a fixed rate of 50 CFA Francs to one French Franc. The rate has been changed only once, to 100:1, in January 1994. The entry of France into the European Monetary Union means that the rate is now defined in terms of Euros, but the current Euro rate (655.957:1) is equivalent to 100:1 against the French Franc.

(iii) Free transferability. Article 6 of the accord describes the ‘freedom of financial relations between France and members of the Union’. This obligation on the part of the African states is not without qualification, and the practice of member states has not always been in harmony with the principle. International capital transfers are taxed, and occasionally (especially during the run-up to the devaluation in 1993) the transferability has been suspended. Nevertheless, there is usually a reasonable degree of capital mobility between the UEMOA and France.

2 CFA originally stood for Colonies Françaises en Afrique. It now stands for Communauté Financière Africaine (for the UEMOA currency) and Cooperation Financière en Afrique (for the CEMAC currency).
(iv) **Harmonization of rules governing currency exchange.** Article 6 of the accord notes that the ‘uniform regulation of the external financial relations of member states ... will be maintained in harmony with that of the French Republic’. These regulations cover such things as the remittance of salaries abroad (that is, outside the Franc Zone), foreign investment and borrowing from abroad.

(v) **A common regulatory framework.** Regulation of the banking system is the responsibility of the UEMOA Banking Commission, which was created in 1990 with French technical support. The commission has oversight over the day-to-day activities of all banks and other financial institutions in the UEMOA, and has the power to intervene in the operations of individual banks when its rules are infringed. In the case of serious infractions, the commission can impose disciplinary sanctions of differing degrees of severity, ranging from a formal warning to the dismissal of senior bank officials and suspension of a bank’s activities. Commission staff produce regular reports on the extent of compliance with UEMOA banking regulations; the loan default data used in this paper are taken from statistics compiled by the Banking Commission.

The financial stability provided by these institutions means that commercial banks in the UEMOA are free from some of the uncertainties facing financial institutions in other parts of Africa; the same is true of depositors. However, other risks remain. Firstly, many banks face a serious adverse selection problem arising from a low average level of borrowers’ creditworthiness. In our sample, the average rate of default on bank loans exceeds 10%, which is very high by international standards. In theory, this should depress the equilibrium volume of loans (Stiglitz and Weiss, 1981, 1983), particularly in markets where credit bureaus are in their infancy like in most of Africa. Existing evidence indicates that the magnitude of the problem varies considerably across countries and over time (e.g. Fuentes and Maquiera, 2001; Koopman *et al*., 2005). In our own sample, the default rate sometimes dips below 5%, while it occasionally exceeds 30%. Secondly, corruption could make loans less profitable, if it means that banks are forced to ignore the commercial worth and riskiness of projects they finance for the political elite. Direct evidence of such corruption in Kenya is discussed by Bigsten and Moene (1996), and evidence for a link between the corruption of bank officials and the productivity of investments is discussed by Beck *et al*. (2005). Such corruption may reduce the loans-assets ratio, and may also depress asset and liability growth.

Moreover, the quality of contract enforcement and overall political stability in the country could affect the extent of moral hazard that banks face when making loans.
Institutions promoting the rule of law are likely to enhance banks’ ability to enforce loan contracts and may therefore increase a bank’s willingness to lend and its ability to grow (Messick, 1999), even at low levels of average borrower quality. These institutions could act as a deterrent to moral hazard behaviour by borrowers, helping to limit the number as well as the cost of bad loans. Governments of some UEMOA countries have enacted legislation to facilitate the recovery of bad debts of individual banks (for example, the BHM in Mali); however, such support for banks is by no means universal.

These factors must be interpreted bearing in mind that many of the banks in our sample are very young. For 25% of our observations, the age of the bank is seven years or less. For very young banks, raising deposits is likely to be easier than identifying creditworthy borrowers. Older banks are likely to have more information capital so that their ability to screen loan applicants is likely to be better than that of younger banks. The adverse selection problem is likely to be more acute for younger banks, at any given average quality of borrowers. Very young banks may therefore opt to channel most of their resources into building up their deposit base, while their liabilities might in the first instance be transformed into foreign assets or claims on government and other domestic financial institutions rather than into business loans. Therefore, we expect that very young banks will have a lower loans-assets ratio than older, more established banks, *ceteris paribus*. We might also expect younger banks to exhibit more sensitivity to borrowers’ propensity to default than older banks: a higher national default rate imposes more of a cost for younger banks who find it more difficult to screen customers.

Age is not the only factor that might affect banks’ sensitivity to the propensity to default. Banks owned (or partly owned) by the government might have access to better ways to screen potential customers, as might foreign-owned banks. Banks that are operating intensively in provincial areas outside the financial capital of the country, where infrastructure of all kinds is likely to be weaker, may find customers more difficult to screen effectively. It is also possible that some of the idiosyncratic variation in screening efficiency is correlated with observable bank characteristics, such as profitability.

Higher levels of risk are one explanation for a relatively low ratio of loans to assets in Africa, and risk represents one channel through which corruption, rule of law and political stability could affect banking performance. Of course, it is not the only channel. For example, Barth *et al.* (2004) indicate that there is a positive association between a high level of government corruption and the existence of excessively strong supervisory agencies, severe restrictions on bank activities and barriers to entry that limit banking competition. However,
all of these effects reinforce the mechanisms we have already described, either by reducing the profitability of loans or by creating a monopolistic incentive for banks to limit the quantity of loans in order to increase profits.

All of these factors are relevant to most African countries. However, in most African countries they are correlated with financial or monetary stability, and are therefore difficult to identify precisely. This is less of a problem in our sample as we restrict our attention to banks in the member states of the UEMOA in the period 2000-2005, where the quality of the financial system is uniform over time: there has been no major revision of UEMOA legislation in this period. It is also uniform across countries: there is a single authority – the Banking Commission – responsible for regulating all banks in the monetary union. We can therefore be confident that the effects we identify are not due to variations in financial or monetary stability but to variations in the quality of governance.

3. Data and Methodology

3.1 Data

The loans and assets data used in our econometric model are taken from the annual BCEAO publication *Bilans des Banques et Etablissements Financiers*. These data are used to construct two dependent variables for bank \(i\) in year \(t\): the loans-assets ratio \((RATIO_{it})\) and the logarithm of real assets \((\text{ASSET}_{S_{it}})\). Annual data are available for 113 banks in the UEMOA over the period 2000-2005: 15 in Benin, 14 in Burkina Faso, 27 in Cote d’Ivoire, two in Guinea-Bissau, 16 in Mali, 11 in Niger, 17 in Senegal and 11 in Togo. This is not a balanced panel, because some banks came into existence during the sample period; with lags and differencing, 87 banks remain in the sample. \(RATIO_{it}\) is constructed as the ratio of commercial loans (“créances sur la clientele”) to total assets (“total de l’actif”). \(\text{ln}(\text{ASSET}_{S_{it}})\) is constructed as the log of total assets deflated by the consumer price index reported in the BCEAO *Annuaire Statistique*.

The econometric model also incorporates a number of explanatory variables, as follows. The countrywide default rate facing a bank in country \(j\) in year \(t\) \((\text{DEFAULT}_{jt})\) is the ratio of the total bad debt of all commercial banks in the country to the total commercial

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3 Other international studies of banking sector performance have used data sources different from ours, for example the *Doing Business* indicators of the World Bank or the dataset of Barth et al. (2001). However, for our countries the *Doing Business* data are available in 2004 at the earliest, and in some cases not until 2008; the Barth et al. (2001) dataset does not contain any francophone developing countries.

4 All publications mentioned in this section are available online at www.bceao.int.
lending of those banks. The figures for bad debt (“crédits en souffrance”) are taken from the UEMOA Banking Commission’s Rapport Annuel. Data on the fraction of bank capital owned by the government \( (\text{GOVERNMENT}_a) \) and foreigners \( (\text{FOREIGN}_a) \), and on the number of years each bank has been in operation by year \( t \) \( (\text{AGE}_a) \), are taken from the BCEAO publication Annuaire des Banques et Etablissements Financiers de l’UEMOA, as are data on the number of branches outside the financial capital \( (\text{PROVINCIAL}_a) \). Data on bank profitability \( (\text{PROFITABILITY}_a) \), measured as the ratio of profits to turnover, are taken from the Bilans des Banques et Etablissements Financiers.\textsuperscript{5}

Data on the log of total real GDP in the country in which a bank is operating \( (\text{GDP}_j) \) are taken from the Annuaire Statistique; this is likely to be a correlate of the total asset volume of the banks of the country, since higher income will induce higher asset demand.

In order to capture the effects of variation in country-specific institutions that may impact on contract enforcement relevant for lending, we make use of the indicators reported in the World Bank World Governance Indicators. These indicators are described and discussed in Kaufmann et al. (2007). Our measure of the extent to which a country is corruption-free is the “control of corruption” index in World Governance Indicators. There are several different governance indicators that may be associated with ease of contract enforcement: “rule of law” “voice and accountability”, “political stability”, government effectiveness” and “regulatory quality”. These indicators are quite highly correlated with each other, so it does not make sense to include them all in a single regression equation. However, there are no strong \textit{a priori} grounds for supposing that one particular indicator is an especially good measure of the extent to which banks are protected from moral hazard effects. The methodology section that follows explains how we deal with the multicollinearity of the governance indicators.

Descriptive statistics for the variables in our model are presented in Table 1, while Figures 1-3 depict some of our key variables. Note that the governance variables are normalised so that the mean of each is equal to zero across a worldwide sample. Negative means in our sample indicate that the UEMOA countries perform below the worldwide average in terms of governance, despite their financial stability.

On average, the ratio of loans to assets is 56.7%, which is low by international standards, and the ratio of defaults to total loans is 14.3%, which is high by international standards. The standard deviations around these two means are quite high, providing useful

\textsuperscript{5} It makes no significant difference to the results if profits are measured as a fraction of total bank assets.
variation in the data. Correspondingly, the range of both variables is substantial: 0.00-0.96 for the loans to assets ratio and 0.05-0.42 for the default rate. The variation in the two dependent variables is shown in the histograms in Figures 1-2. It can be seen from Figure 1 that a majority of banks lend between 40% and 70% of their assets. However, there is also a substantial fraction lending over 80%, and some lending less than 20%. Figure 2 shows a similarly wide dispersion in asset levels.

There is substantial variation in the bank ownership variables: some banks are wholly government or foreign owned while others are owned by the domestic private sector. Somewhat surprisingly, there is also substantial variability in the governance indicators over time, as shown in Figure 3. Annual changes in individual governance variables are often a large fraction of one unit (the worldwide variance in each of the variables). Political stability is the most variable governance indicator, but annual changes in the others are not always trivially small.

3.2 Methodology
The discussion in section 2 suggests that banks’ willingness to lend depends on aggregate credit market conditions, particularly borrower credit worthiness and the quality of contract enforcement, and on individual bank characteristics that capture a bank’s informational capital, such as bank age and the location of its branches. We conjecture that the loans-assets ratio (RATIO) is decreasing in the loan default rate in a country (DEFAULT), and increasing in the quality of governance (as captured by the governance indicators), bank profitability (PROFITABILITY) and bank age (AGE). Age and other bank characteristics (GOVERNMENT; FOREIGN; PROVINCIAL) may also affect the impact of borrower credit worthiness, so various interaction terms in DEFAULT are included in our RATIO regression equation. Because we are using panel data, we also allow for both fixed and time effects as well as persistence in the dependent variable. Given that the governance indicators are quite highly correlated with each other (see Table 1), we avoid fitting a model with more than one such indicator. Since we have no strong a priori view on which of these indicators best captures the contract enforcement effect, we report results with all six indicators entered one at a time in the model. Thus, our model for the loan to assets ratio is as follows:

\[ RATIO_{it} = \alpha_t + \beta_i + \rho \cdot RATIO_{it-1} + \gamma \cdot AGE_{it} + \delta \cdot PROFITABILITY_{it} + \phi \cdot GOVERNANCE_{jt} + [ \eta_0 + \eta_1 \cdot AGE_{it} + \eta_2 \cdot GOVERNMENT_{it} + \eta_3 \cdot FOREIGN_{it} + \eta_4 \cdot PROVINCIAL_{it}] \cdot DEFAULT_{jt} + u_{it} \] (1)
Here, \( i \in j \) indicates the \( i^{th} \) bank in the \( j^{th} \) country, and \( t \) indicates the year. The \( \alpha \) and \( \beta \) parameters capture time and bank fixed effects, and \( u \) is a regression residual.\(^6\)

\textit{GOVERNANCE} is measured by one of the six governance indicators. Note that \textit{GOVERNMENT}, \textit{FOREIGN} and \textit{PROVINCIAL} appear only in interaction terms, not as linearly separable effects. This is because in our sample they do not exhibit any substantial variation over time, and so are collinear with the bank fixed effects.\(^7\)

Our second model is designed to explain variations in the logarithm of real assets. Our modelling strategy is similar to the one above, but the assets model contains one additional effect: we control for the size of the economy in which a bank is operating, as measured by \( \ln(GDP) \). However, interaction terms in \textit{GOVERNMENT}, \textit{FOREIGN} and \textit{PROVINCIAL} are never statistically significant in the assets regressions, and are excluded from the models reported below; the same is true of \textit{PROFITABILITY}. Our assets regressions take the following form:

\[
\ln(\text{ASSETS})_{it} = \alpha_t + \beta_i + \rho \cdot \ln(\text{ASSETS})_{it-1} + \gamma \cdot \frac{\text{AGE}_{it}}{\text{GOVERNANCE}_{jt}} + \phi \cdot \text{GOVERNANCE}_{jt} + \eta_0 + \eta_1 \cdot \frac{\text{AGE}_{it}}{\text{DEFAULT}_{jt}} + \text{DEFAULT}_{jt} + u_{it}
\]

Since equations (1-2) represent dynamic panel models, we must allow for the endogeneity of the lagged dependent variable. We should also allow for the fact that \textit{DEFAULT} and \textit{PROFITABILITY} may be endogenous to \textit{RATIO} or \( \ln(\text{ASSETS}) \). Our parameter estimates are generated using the two-step GMM estimator of Blundell and Bond (1998), which uses differences of the variables to allow for fixed effects and employs an instrument set made up of orthogonality conditions on higher order lags of the endogenous variables and \( u_{it} \). Because we have a relatively large number of time periods in our data set for the application of this type of method, the lag order on the GMM instruments used to fit equation (1) is restricted to two for the dependent variable and one for \textit{DEFAULT} and \textit{PROFITABILITY}. When fitting equation (2), which has fewer explanatory variables, the maximum lag orders are three and two respectively. Otherwise, there is a risk of fitting a spuriously high fraction of the

\[^6\] There will be some heterogeneity in the performance of banks that is difficult to measure or observe. Some banks lend almost exclusively to firms in a specific sector; for example, a number of agricultural banks in the Sahelian countries are highly exposed to the cotton-producing sector.

\[^7\] When an interaction term in \textit{DEFAULT} and \textit{PROFITABILITY} is included, the effect is statistically insignificant. Also, it was not possible to find any robust significant interaction effects in \textit{GOVERNANCE}.\[^8\]
variation in the endogenous regressors. Appendix 1 details the Stata commands used to implement the Blundell-Bond estimator.

4. Empirical Results

Tables 2-3 contain the main empirical results of the paper: Table 2 reports the results of fitting equation (1) to our data and Table 3 reports the results of fitting equation (2).

The diagnostic statistics in Table 2 provide evidence of the appropriateness of the estimator and the validity of the instruments used. The Sargan test does not reject the over-identification restrictions. The residual autocorrelation tests reject the null of no first order serial correlation but do not reject the null of no second order serial correlation, confirming that the residual series prior to differencing are white noise processes.

In Table 2, the lagged dependent variable is positive and highly significant, suggesting considerable persistence and underlining the appropriateness of a dynamic panel model. The coefficients on the lagged dependent variable (in the range 0.7-0.75) indicate that the half-life of a temporary shock to the loans to assets ratio is about two years. When the following paragraphs mention coefficient magnitudes, these indicate the immediate impact of each explanatory variable. With a lagged dependent variable coefficient of 0.75, the eventual effect of a permanent change in an explanatory variable would be four times higher.

There is strong evidence that default rates represent a major obstacle to bank lending in the UEMOA. Estimates of the $\eta_0$ coefficient in equation (1) are negative and significant in all six versions of the model (one for each governance indicator). This coefficient indicates the effect of the default rate on the loans to assets ratio of a privately owned bank in its first year of operation with branches only in the financial capital of its country. The coefficient is very large: estimates of $\eta_0$ range from -1.51 to -1.22. If the default rate increases by one percentage point, then the loans to assets ratio decreases by somewhat more than one percentage point. The various interaction terms suggest that the effects of loan defaults (i) diminish with bank age (ii) increase with the number of provincial branches and (iii) are much smaller for government owned or foreign owned banks.

Because so many of the interaction terms in Table 2 are statistically significant, individual default coefficients are not in themselves very meaningful. For this reason, Figures 4-5 summarise some of the default effects. Figure 4 shows the partial derivative of the loans to assets ratio with respect to the default rate as a function of bank age, for a completely privately owned bank with no provincial branches. The figure is based on the coefficients in the regression incorporating regulatory quality, but would not differ substantially if another
governance variable were used instead. At $AGE = 0$ the derivative is -1.22 and (as noted above) significantly below zero. The magnitude of the effect declines with age, albeit at a very slow rate. By $AGE = 38$, the effect is insignificantly different from zero; for $AGE \geq 50$, the effect is positive but insignificant. Figure 5 depicts the same derivative for $PROVINCIAL = 35$ (the maximum sample value, indicating a bank operating intensively in provincial areas). The magnitude of the effect is much larger, nearly twice that of a bank with no provincial branches. Even at $AGE = 50$, the default derivative is still -1.25, significantly less than zero.

For the sake of space, we omit the figures showing $DEFAULT$ derivatives for positive values of $GOVERNMENT$ and $FOREIGN$. Because the $GOVERNMENT$ and $FOREIGN$ interaction terms have positive coefficients, the derivative is positive for very old banks with a very high share of government or foreign ownership. For a bank owned completely by the government, or for a bank with at least a 70% foreign ownership share, the $DEFAULT$ derivative is significantly greater than zero at $AGE = 50$. In other words, there may be some banks which increase their loans to assets ratio in the presence of high default rates, although most do not. A riskier environment deters most banks from lending a large share of their assets to domestic customers, but there are a few banks – perhaps the ones with most informational capital – which partially fill the resulting vacuum in the market.

As anticipated, all of the governance indicators have a positive and highly significant effect. The coefficients are range from 0.04 (political stability) to 0.09 (government effectiveness). That is, a unit increase in the indicator is associated with an increase in the loans to assets ratio of between four and nine percentage points. One unit corresponds to one standard deviation in the worldwide sample, although the standard deviations in our sample are a little smaller.

The impact of age on the loans to assets ratio depends on the value of $DEFAULT$. Again we omit the relevant figure to save space, but at the minimum sample default rate (5%), the derivative with respect to age is insignificantly different from zero; at the maximum sample value of $DEFAULT$ (42%), the derivative is slightly below 0.01, and significantly greater than zero. Age matters only when default rates are high. At the highest default rates, one extra year of bank life is associated with a loans to assets ratio that is just under one percentage point higher.

When we use government effectiveness to measure governance, profitability is significantly greater than zero at the 10% level, and using regulatory quality instead increases
the significance level to 5%. Otherwise, the effect of profitability is insignificantly different from zero, so we have no robust evidence that more profitable banks tend to lend more to domestic customers, ceteris paribus.\(^8\)

Table 3 presents results for the models of the total real volume of assets. In this case, the Sargan test rejects the over identification restrictions at the 5% level in one model (the one using regulatory quality); it also rejects the restrictions at the 10% level in three other models. Relaxing some of the orthogonality conditions used to identify the model reduces these significance levels, but also reduces the precision of our estimates somewhat. The most reliable results are the ones using political stability or rule of law to measure governance, for which the Sargan test statistics are insignificant at the 10% level. The residual autocorrelation tests are uniformly satisfactory, indicating first-order but not second-order serial correlation in all six cases. Again, the lagged dependent variable is positive and highly significant, and takes a value of just less than 0.9 (implying a half-life of around five years). Therefore, if there were any permanent change in an explanatory variable, the eventual impact on asset volumes would be an order of magnitude greater than the immediate effect indicated below.

Table 3 provides additional evidence that high loan defaults are a major obstacle to financial development in the region. It shows that a higher default rate is associated with a significantly lower level of total assets. This means that the impact of default on the total volume of loans is even larger than what is suggested by Table 2. The coefficient on the default rate in Table 3 is negative and highly significant, ranging from -1.25 to -1.98. Once again, the negative effect of loan defaults is mitigated by bank age. In Figure 6 (which is based on the model that uses political stability to measure governance), we see that although a one percentage point increase in the default rate reduces the loan volume of a very young bank by nearly 2%, it increases the loan volume of a 50-year old bank by over 1%. Both effects are statistically significant. The tipping point is at about 35 years of age. Again, some of the reduction in the asset volumes of younger banks is offset by the expansion of older banks, which raise not only their loans to assets ratio, but also their total asset base.

All the governance indicators have a positive and significant effect on total asset volumes. The coefficient itself ranges from 0.10 (regulatory quality) to 0.22 (rule of law).

There is only one model in which GDP per capita is statistically significant, namely the model with political stability, in which case the coefficient is positive, as anticipated; the elasticity is just under 0.08.

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\(^8\) All of our other results are qualitatively similar if the profitability coefficient is set to zero.
5. Concluding Remarks

Our results suggest that a major factor explaining why banks in Africa choose to remain excessively liquid is a high default rate among borrowers. The same factor appears to be a serious obstacle to the growth of bank balance sheets. Our results also suggest that older banks suffer less from this problem, which is consistent with an information capital story which involves banks without sufficient information capital being unwilling to lend and unable to grow their assets. To the extent that financial development is expected to come from the emergence and growth of new banks with little or no information capital, this calls for the development of credit bureaus and other mechanisms that improve information on prospective borrowers (IMF, 2001; Sacerdoti, 2005).

Our findings also suggest that good governance, however measured, has a uniformly positive on both banks’ willingness to lend and their ability to grow their balance sheets. While all aspects of governance are important, government effectiveness appears to have the largest economic impact on the loans to assets ratio, closely followed by control of corruption. Rule of law, on the other hand, appears to have by far the largest impact on the volume of bank business, while political stability appears to have the second largest effect, albeit substantially behind the first.

Our results relate to a region of Africa across which there is a high degree of homogeneity in financial and monetary systems. This makes it relatively straightforward to identify the impact of variations in governance and default rates on bank behaviour. Future research might examine the extent to which these results are more widely applicable in the rest of Africa, and also in other developing regions where default rates are high. However, such research will need to deal with the challenge of identifying the effects of governance and credit risk when there is also substantial variation in financial and monetary systems.
References


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Table 1: Descriptive Statistics

(i) Univariate Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>obs.</th>
<th>mean</th>
<th>s.d.</th>
<th>min.</th>
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</tr>
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<td>ln(ASSETS)</td>
<td>487</td>
<td>5.515</td>
<td>1.577</td>
<td>1.43</td>
<td>8.37</td>
</tr>
<tr>
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<td>588</td>
<td>17.306</td>
<td>16.075</td>
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<td>106.00</td>
</tr>
<tr>
<td>PROFITABILITY</td>
<td>392</td>
<td>0.076</td>
<td>0.103</td>
<td>0.00</td>
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</tr>
<tr>
<td>DEFAULT</td>
<td>588</td>
<td>0.143</td>
<td>0.085</td>
<td>0.05</td>
<td>0.42</td>
</tr>
<tr>
<td>GOVERNMENT</td>
<td>582</td>
<td>0.159</td>
<td>0.250</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>FOREIGN</td>
<td>582</td>
<td>0.544</td>
<td>0.360</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>PROVINCIAL</td>
<td>522</td>
<td>3.736</td>
<td>6.355</td>
<td>0.00</td>
<td>35.00</td>
</tr>
<tr>
<td>VOICE &amp; ACCOUNTABILITY</td>
<td>588</td>
<td>-0.447</td>
<td>0.654</td>
<td>-1.54</td>
<td>0.41</td>
</tr>
<tr>
<td>POLITICAL STABILITY</td>
<td>588</td>
<td>-0.448</td>
<td>0.821</td>
<td>-2.45</td>
<td>0.71</td>
</tr>
<tr>
<td>GOVERNMENT EFFECTIVENESS</td>
<td>588</td>
<td>-0.678</td>
<td>0.401</td>
<td>-1.44</td>
<td>0.04</td>
</tr>
<tr>
<td>REGUALTORY QUALITY</td>
<td>588</td>
<td>-0.444</td>
<td>0.245</td>
<td>-1.00</td>
<td>-0.06</td>
</tr>
<tr>
<td>RULE OF LAW</td>
<td>588</td>
<td>-0.669</td>
<td>0.436</td>
<td>-1.57</td>
<td>-0.04</td>
</tr>
<tr>
<td>CONTROL OF CORRUPTION</td>
<td>588</td>
<td>-0.565</td>
<td>0.369</td>
<td>-1.24</td>
<td>0.12</td>
</tr>
</tbody>
</table>

(ii) Weighted Correlation Coefficients for the Governance Variables
(with Weights for the Number of Banks in each Country)

<table>
<thead>
<tr>
<th>Variable</th>
<th>VOICE &amp; ACCOUNTABILITY</th>
<th>POLITICAL STABILITY</th>
<th>GOVERNMENT EFFECTIVENESS</th>
<th>REGUALTORY QUALITY</th>
<th>RULE OF LAW</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLITICAL STABILITY</td>
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<td></td>
</tr>
<tr>
<td>GOVERNMENT EFFECTIVENESS</td>
<td>0.81</td>
<td>0.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REGUALTORY QUALITY</td>
<td>0.65</td>
<td>0.57</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RULE OF LAW</td>
<td>0.88</td>
<td>0.83</td>
<td>0.84</td>
<td>0.73</td>
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</tr>
<tr>
<td>CONTROL OF CORRUPTION</td>
<td>0.47</td>
<td>0.49</td>
<td>0.63</td>
<td>0.79</td>
<td>0.68</td>
</tr>
</tbody>
</table>
Table 2: Dynamic Panel Estimation of the Loans-Assets Ratio ($RATIO$) of 87 West African Banks

<table>
<thead>
<tr>
<th>GOVERNANCE INDICATOR</th>
<th>VOICE &amp; ACCOUNTABILITY</th>
<th>POLITICAL STABILITY</th>
<th>GOVERNMENT EFFECTIVENESS</th>
<th>REGULATORY QUALITY</th>
<th>RULE OF LAW</th>
<th>CONTROL OF CORRUPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>$RATIO_t$</td>
<td>0.7259***</td>
<td>0.7126***</td>
<td>0.7457***</td>
<td>0.7428***</td>
<td>0.7435***</td>
<td>0.7426***</td>
</tr>
<tr>
<td></td>
<td>0.0576</td>
<td>0.0479</td>
<td>0.0525</td>
<td>0.0493</td>
<td>0.0508</td>
<td>0.0520</td>
</tr>
<tr>
<td>AGE</td>
<td>-0.0014***</td>
<td>-0.0011**</td>
<td>-0.0009**</td>
<td>-0.0013***</td>
<td>-0.0011**</td>
<td>-0.0013***</td>
</tr>
<tr>
<td></td>
<td>0.0004</td>
<td>0.0005</td>
<td>0.0004</td>
<td>0.0004</td>
<td>0.0005</td>
<td>0.0005</td>
</tr>
<tr>
<td>GOVERNANCE</td>
<td>0.0538***</td>
<td>0.0356***</td>
<td>0.0878***</td>
<td>0.0754*</td>
<td>0.0493***</td>
<td>0.0600***</td>
</tr>
<tr>
<td></td>
<td>0.0117</td>
<td>0.0080</td>
<td>0.0178</td>
<td>0.0397</td>
<td>0.0133</td>
<td>0.0166</td>
</tr>
<tr>
<td>PROFITABILITY</td>
<td>0.0214</td>
<td>0.0463</td>
<td>0.0679*</td>
<td>0.0942**</td>
<td>0.0600</td>
<td>0.0789*</td>
</tr>
<tr>
<td></td>
<td>0.0436</td>
<td>0.0416</td>
<td>0.0396</td>
<td>0.0393</td>
<td>0.0411</td>
<td>0.0409</td>
</tr>
<tr>
<td>DEFAULT</td>
<td>-1.5077***</td>
<td>-1.4427***</td>
<td>-1.2174***</td>
<td>-1.2249***</td>
<td>-1.3437***</td>
<td>-1.3040***</td>
</tr>
<tr>
<td></td>
<td>0.1587</td>
<td>0.1542</td>
<td>0.1522</td>
<td>0.1467</td>
<td>0.1523</td>
<td>0.1505</td>
</tr>
<tr>
<td>DEFAULT × AGE</td>
<td>0.0308***</td>
<td>0.0292***</td>
<td>0.0252***</td>
<td>0.0270***</td>
<td>0.0272***</td>
<td>0.0292***</td>
</tr>
<tr>
<td></td>
<td>0.0049</td>
<td>0.0047</td>
<td>0.0050</td>
<td>0.0046</td>
<td>0.0051</td>
<td>0.0051</td>
</tr>
<tr>
<td>DEFAULT × GOVERNMENT</td>
<td>0.5920***</td>
<td>0.4611***</td>
<td>0.5308***</td>
<td>0.4264***</td>
<td>0.4709***</td>
<td>0.3952***</td>
</tr>
<tr>
<td></td>
<td>0.1682</td>
<td>0.1601</td>
<td>0.1455</td>
<td>0.1566</td>
<td>0.1457</td>
<td>0.1280</td>
</tr>
<tr>
<td>DEFAULT × FOREIGN</td>
<td>0.5321***</td>
<td>0.4085***</td>
<td>0.4524***</td>
<td>0.2810*</td>
<td>0.3647**</td>
<td>0.2224</td>
</tr>
<tr>
<td></td>
<td>0.1667</td>
<td>0.1529</td>
<td>0.1521</td>
<td>0.1489</td>
<td>0.1563</td>
<td>0.1610</td>
</tr>
<tr>
<td>DEFAULT × PROVINCIAL</td>
<td>-0.0340***</td>
<td>-0.0345***</td>
<td>-0.0328***</td>
<td>-0.0362***</td>
<td>-0.0357***</td>
<td>-0.0427***</td>
</tr>
<tr>
<td></td>
<td>0.0070</td>
<td>0.0070</td>
<td>0.0064</td>
<td>0.0060</td>
<td>0.0068</td>
<td>0.0059</td>
</tr>
</tbody>
</table>

Notes: Standard errors are in italics. Estimates are obtained using the xtdpd command in Stata 10.0; full details are in Appendix 1. Three, two and one asterisk(s) indicate statistical significance at the 1*, 5% and 10% levels, respectively. A full set of time dummies is included but not shown to save space.
Table 3: Dynamic Panel Estimation of the Log of Real Assets (ln(ASSETS)) of 87 West African Banks

<table>
<thead>
<tr>
<th>Governance Indicator</th>
<th>ln(ASSETS)</th>
<th>AGE</th>
<th>GOVERNANCE</th>
<th>ln(GDP)</th>
<th>DEFAULT</th>
<th>DEFAULT x AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice &amp; Accountability</td>
<td>0.8693***</td>
<td>-0.0105***</td>
<td>0.1038***</td>
<td>0.295</td>
<td>-1.6472***</td>
<td>0.0596***</td>
</tr>
<tr>
<td>Political Stability</td>
<td>0.8669***</td>
<td>-0.0103***</td>
<td>0.1374***</td>
<td>0.0774**</td>
<td>-1.9750***</td>
<td>0.0723***</td>
</tr>
<tr>
<td>Government Effectiveness</td>
<td>0.8773***</td>
<td>-0.0088***</td>
<td>0.0934**</td>
<td>-0.0335</td>
<td>-1.4257***</td>
<td>0.0431***</td>
</tr>
<tr>
<td>Regulatory Quality</td>
<td>0.8835***</td>
<td>-0.0090***</td>
<td>0.1001**</td>
<td>-0.0116</td>
<td>-1.2531***</td>
<td>0.0418***</td>
</tr>
<tr>
<td>Rule of Law</td>
<td>0.8996***</td>
<td>-0.0081***</td>
<td>0.2208***</td>
<td>-0.0116</td>
<td>-1.4708***</td>
<td>0.0466***</td>
</tr>
<tr>
<td>Control of Corruption</td>
<td>0.8895***</td>
<td>-0.0086***</td>
<td>0.1061**</td>
<td>-0.0122</td>
<td>-1.2550***</td>
<td>0.0381***</td>
</tr>
</tbody>
</table>

Notes: Standard errors are in italics. Estimates are obtained using the `xtdpd` command in Stata 10.0; full details are in Appendix 1. Three, two and one asterisk(s) indicate statistical significance at the 1*, 5% and 10% levels, respectively. A full set of time dummies is included but not shown to save space.
Figure 1: Distribution of $RATIO$

Figure 2: Distribution of $\ln(\text{ASSETS})$
Figure 3: Annual Changes in Governance Variables

Key: voice & accountability ◆ political stability ◆ government effectiveness ▲
regulatory quality ▲ rule of law ● control of corruption ●

Benin

Burkina Faso

Côte d'Ivoire

Mali

Niger

Senegal

Togo
Figure 4: Derivative of \( RATIO \) with Respect to \( DEFAULT \) as a Function of \( AGE \) when \( PROVINCIAL = 0 \) (Grey bands show the 95% confidence interval)

Figure 5: Derivative of \( RATIO \) with Respect to \( DEFAULT \) as a Function of \( AGE \) when \( PROVINCIAL = 35 \) (Grey bands show the 95% confidence interval)

Figure 6: Derivative of \( \ln(ASSETS) \) with Respect to \( DEFAULT \) as a Function of \( AGE \) (Grey bands show the 95% confidence interval)
Appendix 1: Stata Commands

The results in Table 2 of the main text were produced with the following Stata 10.0 command:

```
XTDPD L(0/1).RATIO YEAR_3-YEAR_5 [GVN] AGE PROFITABILITY DEFAULT DEFAGE DEFGOV DEFFOR DEFPRO,
DIV(YEAR_3-YEAR_5 [GVN] AGE) DG(RATIO, LAG(2 2))
DG(PROFITABILITY DEFAULT DEFAGE DEFGOV DEFFOR DEFPRO, LAG(1 1))
LG(RATIO PROFITABILITY DEFAULT DEFAGE DEFGOV DEFFOR DEFPRO)
ARTESTS(2) TWO HASCONS
```

where [GVN] indicates one of the six governance variables in the table, YEAR_n indicates a time dummy for the n-th year of the sample, DEFAGE = DEFAULT × AGE, DEFGOV = DEFAULT × GOVERNMENT, DEFFOR = DEFAULT × FOREIGN, and DEFFPRO = DEFAULT × PROVINCIAL.

The results in Table 3 of the main text were produced with the following Stata 10.0 command:

```
XTDPD L(0/1).LNASSETS YEAR_3-YEAR_5 [GVN] AGE LNGDP DEFAULT DEFAGE,
DIV(YEAR_3-YEAR_5 [GVN] AGE LNGDP) DG(LNASSETS, LAG(2 3))
DG(DEFAULT DEFAULTAGE, LAG(1 2))
LG(LNASSETS DEFAULT DEFAGE)
ARTESTS(2) TWO HASCONS
```