

# Banking in Africa

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## Abstract

This paper takes stock of the current state of banking systems across Sub-Saharan Africa and discusses recent developments including innovations that might help Africa leapfrog more traditional banking models. Using an array of different data, the paper documents that African banking systems are shallow but stable. African banks are well capitalized and over-liquid, but lend less to the private sector than banks in non-African developing

countries. African enterprises and households are less likely to use financial services than their peers in other developing countries. The paper also describes a number of financial innovations across the continent that can help overcome different barriers to financial inclusion and have helped to expand the bankable and the banked population.

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# **Banking in Africa**

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## **1. Introduction**

Banking in Africa has undergone dramatic changes over the past 20 years. While dominated by government-owned banks in the 1980s and subject to restrictive regulation – including interest rate ceilings and credit quotas – financial liberalization, institutional and regulatory upgrades and globalization have changed the face of financial systems across the region. Today, most countries have deeper and more stable financial systems, though challenges of concentration and limited competition, high costs, short maturities, and limited inclusion persist.

This paper takes stock of the current state of banking systems across Sub-Saharan Africa and discusses recent developments including innovations that might help Africa leapfrog more traditional banking models. We use an array of different data sources to document different dimensions of the development of African banking systems, highlighting variation within the region and changes over time. We compare Africa’s banking systems to those of comparable low- and lower-middle income countries outside the region, and gauge whether there is an “Africa-specific” element to banking development. We also discuss progress in policies and institutions underpinning financial deepening and the results of specific innovations, including innovative branch expansion programs, mobile banking and new financial products to reach out to previously unbanked population segments. Overall, we will show a picture of achievements and challenges, with progress along some fronts but other challenges persisting and new ones arising.

When talking about financial systems in Africa, one has to take into account the enormous variation within the region.<sup>i</sup> On the one hand, South Africa and Mauritius have fairly developed banking systems and capital markets. On the other hand, smaller and poorer countries, such as the Central African Republic or South Sudan have shallow banking systems offering only the most rudimentary financial services, with few if any non-bank

financial institutions or capital markets. In spite of the variation within the region, however, there are four specific characteristics that make banking in Africa more difficult than in other regions of the developing world and most of those apply to many, if not all, African economies (see Honohan and Beck, 2007 and Beck et al., 2011).

First, the small size of many economies does not allow financial service providers to reap the benefits of scale economies. The limited demand for savings, insurance, credit, or even simple payment transactions means that large parts of the population of African economies are not commercially viable customers. The dispersion of population in many African countries means that financial service provision outside urban centers is not cost-effective. Second, large parts of the economy and a large share of all economic agents operate in the informal sector and do not have the necessary formal documentation that facilitates financial transactions, such as enterprise registration, land titles, or even formal addresses. This increases the costs and risks for financial institutions and excludes large segments of the population from formal financial services. Third, volatility increases costs and undermines risk management. At the individual level, volatility is related to informality and the consequent fluctuations in the income streams of many microenterprises and households. This means these agents are less attractive for financial institutions. At the aggregate level, volatility refers to the dependence of many African economies on commodity exports, which makes economies vulnerable to the large price swings characteristic of commodities, as well as to political and social unrest, from which Africa has suffered over the past 50 years of independence. Finally, governance problems continue to plague many private and government institutions throughout the continent and undermine not only the market-based provision of financial services, but also reform attempts and government interventions aimed at fixing market failures.

As we will discuss below, these characteristics make banking in Africa more challenging and increase the need for innovative solutions. Technology can reduce transaction costs and risks, thus enabling the processing of smaller transactions, turning more households and enterprises into commercially viable clients. Innovative products and delivery channels can address the constraints discussed above. Critically, these interventions and policy reforms have to work both on the supply and demand side. Below, we will discuss several examples of such innovative approaches to financial inclusion.

The recent crisis in the developed world has shed doubt on the positive impact that the development of the banking system can have on economic development, in contrast to an extensive literature illustrating a positive finance-growth relationship (Levine, 2005). Consumer credit booms in the U.S. and several European countries, fueled by a combination of the liquidity glut linked to the global macroeconomic imbalances, regulatory neglect and the feeling that “this time is different” have ended in the global financial crisis. If there is a lesson to be learnt for Africa’s banking systems from the crisis, it seems that the growth benefits of financial deepening can only be reaped in a stable macroeconomic environment and with the appropriate safeguards framework, both in terms of external regulation and supervision and internal bank governance. Notwithstanding the recent negative experience in countries with the deepest financial sectors, banking systems in Africa can and must play a critical role in the economic development process of the region.

The remainder of this paper is structured as follows. Section 2 documents financial development across different dimensions, in international comparison, but also illustrating variation within the region and over time. Section 3 discusses recent evidence on policies and interventions that can help deepen and broaden financial systems in Africa. Section 4 concludes with a discussion of policy challenges for the region going forward.

## **2. Stock-taking: Where Does Africa Stand?**

Earlier stock-taking exercises of banking and finance in Africa suffered from a lack of data for a broad cross-section of countries in the region (Honohan and Beck, 2007). Most cross-country studies on financial development included only a few larger African financial markets and their focus was on other developing and emerging regions of the world. This situation has changed over the past five years, with data available for a large part of the region and several segments of the financial system. Global data collection efforts on the depth, outreach, stability and efficiency of financial systems have been much more successful in collecting data on African financial systems.<sup>ii</sup> Aggregate data have been complemented with a number of enterprise surveys, and surveys for some countries now have a panel dimension (i.e. firms being surveyed at several points in time). Similarly, household surveys specialized on financial services, such as the Finscope and Finaccess surveys in several African countries, have provided important insights into individual and household access to and use of formal and informal financial services. In the following, we will therefore use an array of databases and other sources to document the development and structure of banking systems across the region.

### **2.1. Aggregate financial development in Africa in international comparison**

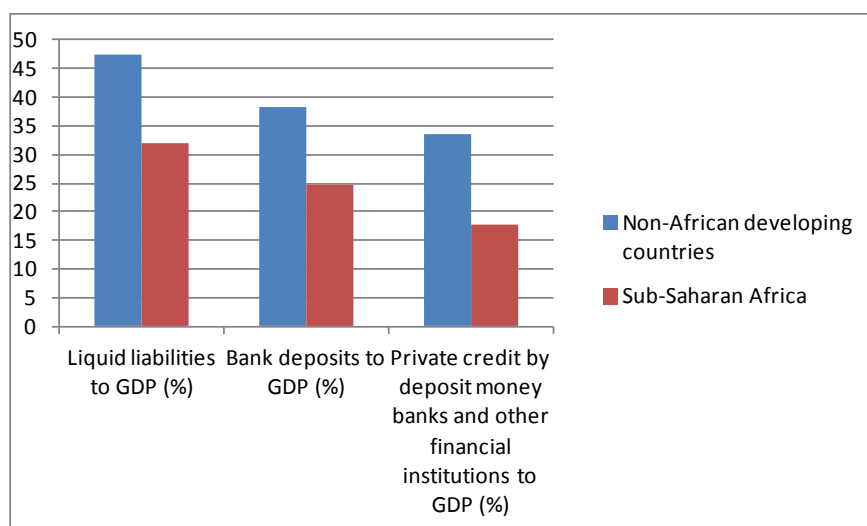
Africa's banking systems are small, costly, and focused on the short-term end of the yield curve as we will illustrate in the following. However, we will also document the progress Africa's banking systems have made over the past decade.

To compare banking systems in Africa to a proper benchmark, we limit our sample to low- and lower-middle income countries in Sub-Saharan Africa and compare the median for this group to the median country across a sample of low- and lower-middle income countries outside Africa. We thus explicitly drop several upper-middle income African countries in our

statistical comparison, although we will include them in the discussion on infra-regional variation below.<sup>iii</sup>

Figure 1 shows that the median African country has a significantly shallower financial system than the median non-African country. We present three standard indicators of financial development: Liquid Liabilities to GDP, Bank Deposits to GDP and Private Credit to GDP, using data for 2011. While the median non-African developing country has Liquid Liabilities of 47 percent of GDP, the median African country has only 32 percent. Similarly, the median deposit to GDP ratio outside Africa is 38, compared to 25 percent in Africa, while the median Private Credit to GDP ratio is 34 percent outside Africa, but only 18 percent inside Africa. Comparing the African gap between deposit and credit data also shows that African banks are less effective in intermediating society's savings, a topic we will return to below.

**Figure 1: Aggregate Financial Development in International Comparison**



Source: Global Financial Development Indicators, World Bank

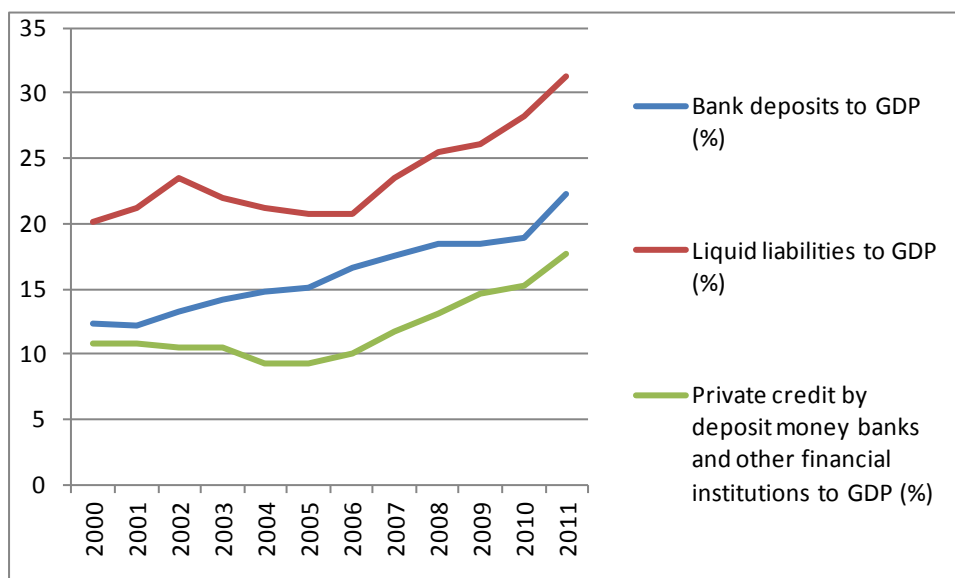
It is important to note that behind the median there is wide variation across Africa. Even excluding the most financially developed African economies, such as Mauritius and South Africa, there is a wide range in Private Credit to GDP across the low- and lower-



middle income countries of the region, from 5 percent in Chad to 61 percent in Cape Verde. This compares to 141 percent in South Africa and 87 percent in Mauritius.

While Africa’s financial systems are shallow in international comparison, there have been marked improvements over the past decade, as documented in Figure 2. All three standard indicators of financial development have substantially improved over the period 2000 to 2011.<sup>iv</sup> The median value for Liquid Liabilities to GDP increased from 20 to 31 percent, while that for Deposits to GDP increased from 12 to 22 percent. Median Private Credit to GDP increased from 11 percent to 18 percent. And this improvement has been broad based. If one considers the 25<sup>th</sup>, 50<sup>th</sup> and 75<sup>th</sup> percentiles of Private Credit to GDP over the same period, it is evident that countries at different points of the distribution have all witnessed improvements.

**Figure 2: Financial deepening in Africa over the past decade**

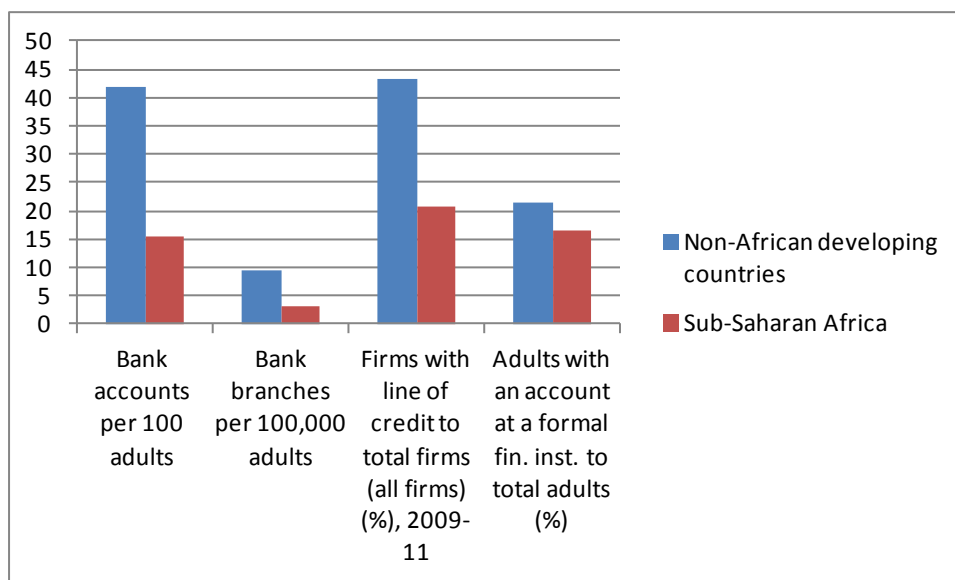


Source: Global Financial Development Indicators, World Bank

Africa’s banking systems are not only shallower than banking systems in non-African developing countries, they are also less inclusive (Figure 3). Here we present four indicators of access to and use of financial services. First, we present two aggregate indicators: bank

accounts per 10,000 adults and bank branches per 100,000 adults. Both indicators are substantially lower in the median African country than in the median non-African developing country. Specifically, there are only 15 bank accounts for every 100 adults in the median African country, while there are 42 outside Africa. There are 3.1 branches per 100,000 adults in Africa, while there are 9.6 outside Africa. Second, the more limited outreach of Africa's banking systems is also reflected in indicators of use of formal finance by enterprises and households. While in the median African country, only 21 percent of firms indicate that they have a line of credit or loan from a formal financial institution, this share is 43 percent outside Africa.<sup>v</sup> Similarly, 16.5 percent of adults in the median African country indicate that they have an account with a formal financial institution, while this share is 21 percent outside Africa.

**Figure 3: Access to and Use of Financial Services in International Comparison**



Source: Global Financial Development Indicators, World Bank

Africa's banks are, on average, less efficient, but more profitable and operate in less competitive environments. Net interest margins in the median African country stood at 5.9 percent in 2011, while they stood at 4.7 percent outside Africa. Similarly, the interest rate

spread between lending and deposit rate was 10.3 percent in Africa and 8.2 percent outside. While there are many reasons that spreads and margins are higher in Africa, as we will discuss below, one important reason is higher operating costs. Specifically, overhead costs in the median African financial system stood at 5.5 percent of total assets, while they were 3.4 percent outside Africa. On the other hand, African banks are also more profitable than banks outside Africa. The return on assets (ROA) stood at 2.1 percent in the median African country, while it was 1.5 percent outside Africa. We will revisit this issue below with bank-level data.

The higher interest rate spreads go hand in hand with greater concentration and lower competitiveness in African banking markets. While the share of the five largest banks was 81 percent in the median African country in 2011, it was 64 percent outside Africa. While there are countries in Africa where aggregate data point to five banks making up the whole or almost the whole banking system (Cape Verde, Gambia, Lesotho, Swaziland and Togo), there are only a few such countries among the much larger group of non-African developing countries. Greater concentration can also partly explain the lower degree of competition within African banking system. The median Lerner index, which is the mark-up between marginal revenue and costs, is 30 percent in the median African country, while it is 25 percent outside Africa. It is important to note that the correlation between concentration and the Lerner index of market power is relatively low within Africa, at only 11 percent, suggesting that market structure is only one, and maybe not the most important, determinant of the lack of competition within Africa, consistent with cross-country evidence (Claessens and Laeven, 2004).

Africa's banking systems focus mostly on the short-end of the yield curve, as illustrated by the maturity structure on both the asset and liability sides of African banks' balance sheets (Beck et al., 2011). More than 80 percent of deposits are sight deposits or

deposits with a maturity of less than one year and less than two percent of deposits have a maturity of more than 10 years. There is a similar, though not as extreme, bias towards the short-end on the lending side. Almost 60 percent of loans are for less than one year, and less than 2 percent of loans are for more than 10 years. This maturity distribution is consistent with the dearth of non-bank long-term financial instruments, including the limited development of contractual savings institutions, such as insurance companies, pension funds, and mutual funds. Fewer than half of the countries in the region have stock exchanges and few of them are liquid. Another indication for the short-term nature of African banking is the dearth of mortgage finance. While mortgage depth to GDP in the median African country was below one percent, it was above two percent outside Africa (Badev et al., 2013). These aggregate numbers match with anecdotal evidence that mortgage systems in many smaller African countries comprise just a few hundred mortgages, concentrated among wealthy individuals.

While shallow, Africa's banking systems have also proven stable and resilient over the past years. The shallowness of Africa's banking systems appears to have helped them weather the Global Financial Crisis of 2008 better than some other regions of the world, with the impact of the crisis on Africa mostly working through real sector channels, such as lower demand for export goods, or through lower foreign direct investment. Given the limited integration with global financial markets and exposure to "toxic" assets, financial institutions across the region largely evaded the direct impact of the global financial crisis.

Greater stability is also illustrated in the aggregate balance sheet indicators of African banks. In 2011, the capital to risk-weighted asset ratio was 19 percent in the median African country, compared to 17 percent outside Africa. On the systemic level, Africa has suffered few banking crises since the bout of systemic fragility in the 1980s and 90s (Laeven and

Valencia, 2012). Notwithstanding these positive headline indicators, pockets of (hidden) fragility continue to exist, often related to political crisis and/or governance deficiencies.

The shallowness of African financial markets is not surprising given the region's low levels of economic development and the four characteristics – small size, informality, volatility and governance – discussed above. However, many of the non-African low and lower-middle income countries suffer from similar problems. Is there an Africa-specific element to financial underdevelopment? We address this issue next, before documenting in more detail specific dimensions of African banking, including the structure and efficiency of banking system, enterprise and household access to financial services, and the development of the microfinance sector.

## **2.2. Benchmarking Africa's banking systems**

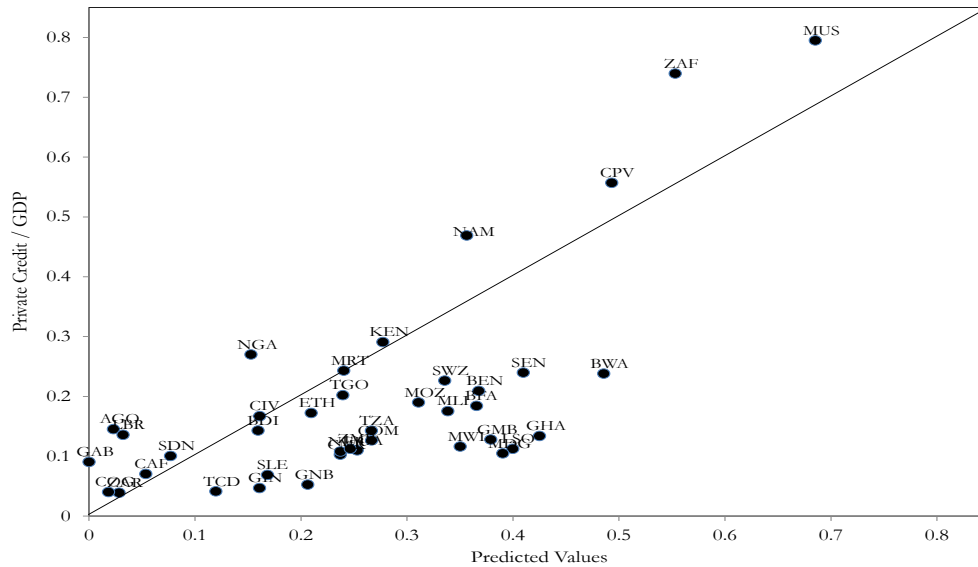
The level of financial development in Africa is low compared to other parts of the developing world, but it is also low relative to what would be predicted based on underlying factors that drive financial development. Allen et al. (2012b) use cross-country regressions to benchmark African financial development based on its correlates in other developing countries, revealing a substantial gap between predicted and actual levels of African financial development. In addition, both country-level and firm-level tests indicate that the determinants of banking development in Africa differ from the rest of the world. For example, measures of the quality of macroeconomic management (inflation and the current account balance) are not correlated with African financial development as they are in other developing countries. Measures of institutional development (such as adherence to rule of law) are positively linked to African financial development, though substantially less strongly than in other parts of the developing world.

Perhaps the most striking difference is that population density is more strongly linked to financial development in Africa than elsewhere. Population density is also more closely linked to bank branch penetration in Africa than in other developing economies, and both are more strongly linked to firm-level access to external finance in Africa than elsewhere (Allen et al., 2012b). Presumably, bank branch penetration figures remain low in Africa because of difficulties in achieving minimum viable scale in sparsely populated, low-income areas, though below we discuss financial institutions, strategies, and technological innovations that are rising to meet that challenge.

Those benchmarking exercises show that predicted 2001-2006 levels of private credit/GDP based on the correlates of financial development from developing countries outside of Africa tended to be 10-15 percentage points higher for African countries than their actual levels. Only rarely did actual levels of financial development exceed predicted levels, and then only for countries that are not particularly reflective of Sub-Saharan Africa such as Cape Verde and Mauritius. The same set of authors recently re-did that benchmarking exercise for 2007-2011 (Figure 4), which shows some improvement over the past handful of years in achieving predicted private credit levels for countries such as Nigeria (“NGA” in Figure 4), Kenya (KEN), and Namibia (NAM). Cape Verde and Mauritius continue to exceed predicted financial development levels as does South Africa (ZAF), which was not part of the 2001-2006 analysis. Most African countries, however, continue to fall short of predicted development levels though the gap has narrowed a bit.

**Figure 4: Private credit / GDP in African countries 2007-11, actual vs. predicted values**

Predicted values of banking sector development, measured by credit to the private sector extended by deposit money banks/GDP, come from OLS regressions that control for a set of country-level variables including endowment (population and resources), macroeconomics, institutions, banking structure and other variables. Note that negative predicted values are replaced by zero. Source: Allen et al., 2013.



Moreover, demand-side evidence from the Global Financial Inclusion Index (Global Findex) indicates that the credit extended by financial institutions is not spread evenly across the population. The predicted share of Findex respondents that had a loan from a financial institution (again based on regression models from other developing countries) exceeds the actual share in almost all cases (including South Africa), and by a noticeably wider margin than for Private Credit to GDP in many cases. Though crude tools, the benchmarking regressions indicate that private credit provision in Africa, though improving somewhat, lags behind what fundamentals would predict, and that the allocation of what credit there is does not extend deeply into the population. To a lesser extent, there are also development gaps on the savings side. Predicted liquid liabilities/GDP levels exceed actual levels for most countries, though the gap has narrowed since 2001-6, and the share of individuals age fifteen or over with an account at a formal institution actually exceeds predicted levels in many countries (Allen et al, 2013). Indeed, most African countries are near predicted levels on that metric, and about the same number fall above and below the prediction line.

### 2.3. Drilling deeper – bank-level evidence

While the aggregate data already give us some indication of the shallowness of African banking systems, bank-level data provide more detailed insights. Comparing a sample of 307 banks from low and lower-middle income countries in Africa and 720 banks from non-African developing countries shows significantly higher liquidity ratios for African banks. Specifically, the ratio of liquid assets to short-term funding and deposits is 42.9% for African banks, as compared to 29.3% for non-African banks. Similarly, African banks are better capitalized, with an equity-asset ratio of 14.3%, compared to 13.3% for non-African banks. These comparisons give a picture of African banks that are well capitalized, over-liquid and provide only limited lending to the real economy, as highlighted previously by Honohan and Beck (2007) and Beck et al. (2011).

As discussed above, African banks are less efficient than banks in other developing regions of the world and financial services are therefore more expensive. A lot of discussion in this context has focused on interest rate spreads and margins, i.e. the difference between lending and deposit interest rates. But what drives high interest rate spreads in Africa? There are two different ways to analyze spreads and margins; one is a decomposition of spreads into the different components, while the other analyzes the relevant underlying bank-, industry-, and country-level traits.

**Table 1: Decomposition of interest rate spreads in Uganda in 2008**

	All Banks	Domestic	Foreign
Average Lending Rate	16.72	18.44	15.24
Average Deposit Rate	1.97	2.31	1.90
Spread	14.75	16.13	13.34
Overhead Costs	4.66	2.74	6.22
Loan-loss Provisions	0.72	0.38	1.01
Reserve Requirements	0.22	0.26	0.21
Taxes	2.51	3.34	1.64
Profit Margin	6.65	9.42	4.26

Source: Cull and Trandafir (2010).



Table 1 presents a decomposition of interest rate spreads for Uganda and shows that high operating costs are one important factor, while loan loss provisions reflecting loan losses and reserve requirements are rather minor components of the interest rate spread. The highest component of interest rate spreads, however, is the high profit margin, consistent with limited competition, but also a high risk premium. Comparing domestically- and foreign-owned banks, we see that domestic banks show much higher spreads, due to higher lending rates, which most likely reflect a riskier loan portfolio. The spread decompositions indicate that domestic banks generate high profit margins from a group of borrowers that repay their loans at a higher rate than clients of foreign banks. The relatively high overhead costs and low profit margins for the foreign banks could be consistent with the idea that they deal with a set of “blue-chip” clients whose projects are more costly to evaluate and maintain. In addition, higher wages might add to their costs, though, higher costs could also result from foreign banks’ propensity to invest more, including in IT and technology to develop new products.<sup>vi</sup>

**Table 2: Explaining Overhead Costs in Africa**

	Overhead costs
African banks	605
Rest of World banks	451
<b>Difference</b>	<b>154</b>
Of which: Contractual framework	12
Non-interest income	93
Bank size	18
Equity-asset ratio	5
Other bank characteristics	-3
Inflation	11
Africa residual	18

Source: Authors’ calculations using data from Bankscope.

Table 2 uses regression analysis to relate bank-level variation in overhead costs to bank- and country-level characteristics and compares banks in Africa with banks in non-African developing countries. As overhead costs is one of the major components of interest rate spreads, we regress overhead costs in 2011 for a cross-country sample of banks on (i) the

share of non-interest income, (ii) the equity-asset ratio, (iii) the liquidity ratio, (iv) loan growth over previous year, (v) the log of total assets, (vi) inflation rate and (vii) the Kaufman, Kraay and Mastruzzi indicator of Rule of Law. The results in Table 2 indicate the extent to which these different factors contribute to substantially higher overhead costs of banks in Africa (6.05%) than in banks outside Africa (4.51%). Relatively high reliance by African banks on non-interest income and their smaller size can explain 93 and 18 basis points, respectively, of the difference in overhead costs. Higher inflation in African countries and less efficient contractual frameworks can explain 11 and 12 basis points, respectively. Even after accounting for these bank and country characteristics, there is still an unexplained Africa residual of 18 basis points.

As discussed earlier, the ownership structure of Africa's banking systems has undergone significant changes over the past decades, with a larger number of countries dominated by foreign banks and only few banking systems with mainly government-owned banks, a result of the privatization wave in Africa in the 1980s and 1990s. While foreign bank penetration has increased from already high levels over the past decade, the composition of the foreign bank population has changed substantially. Long dominated by European banks, banks from emerging markets and – critically – from inside Africa have gained importance over the past years. After the end of Apartheid, several South African banks, most notably Standard Bank and ABSA, started expanding through the continent. More recently, two West African banks – Ecobank and Bank of Africa – have begun expanding throughout Sub-Saharan Africa. Similarly, Moroccan banks have started to expand South. Finally, and as consequence of the recent consolidation wave in Nigeria, Nigerian banks started expanding throughout West Africa, but increasingly also throughout the rest of the continent.

What has been the effect of the increase in foreign bank ownership on the development, efficiency, stability, and outreach of African banking?<sup>vii</sup> Foreign bank entry

seems to have several advantages that are specific to Africa: international banks can help foster governance; they can bring in much-needed technology and experience that should translate into increased efficiency in financial intermediation; and they can help exploit scale economies in small host countries. Nonetheless, especially in Africa, with its many small, risky, and opaque enterprises, the dark side of foreign bank entry can become obvious, even more so in countries in which foreign banks have captured almost 100 percent of the banking market. Specifically, the greater reliance of foreign banks on hard information about borrowers as opposed to soft information can have negative repercussions for riskier and more opaque borrowers if foreign banks crowd out domestic banks. The absence of a sound contractual and informational framework reduces the feasibility of small business lending further and thus the positive effect of foreign bank entry (Claessens and van Horen, 2014). Finally, the small size of many financial markets in Sub-Saharan Africa may make foreign banks reluctant to incur the fixed costs of introducing new products and technologies.

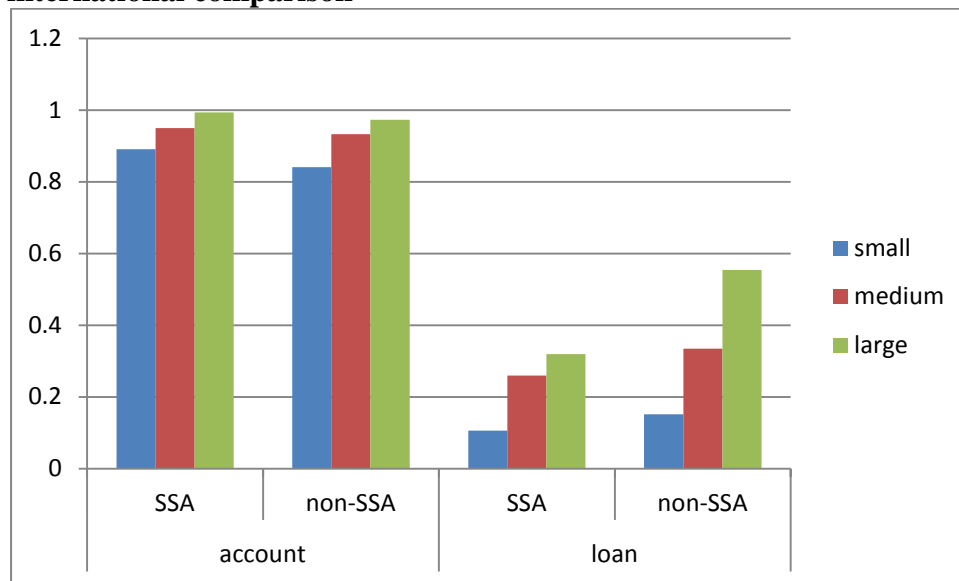
While there is limited quantitative evidence across the region, country-specific analysis points to an overall positive effect of private bank ownership and foreign bank entry. Beck, Cull and Jerome (2005) show for Nigeria that the privatization of state-owned banks led to performance improvements, although those authors also found that maintaining a substantial minority government ownership share was detrimental to privatized banks' performance. In Uganda, UCB, the largest government-owned bank – and also the largest bank in the system – was successfully privatized in the second attempt to the South African Standard Bank. Although an agreement not to close any branches was in place for two years following sale of UCB, Standard Bank kept all branches in place and opened even new ones. It also introduced new products and increased agricultural lending (Clarke, Cull and Fuchs, 2009). In Tanzania, the National Bank of Commerce was privatized after splitting it into a commercial bank that assumed most of the original bank's assets and liabilities, and the

National Microfinance Bank, which assumed most of the branch network and the mandate to foster access to financial services. The new National Bank of Commerce's profitability and portfolio quality improved although credit growth was initially slow. Although finding a buyer for the National Microfinance Bank proved difficult, profitability eventually improved and lending grew, while the share of non-performing loans remained low (Cull and Spreng, 2011).

#### **2.4. Enterprise access to finance in international comparison**

As documented above, access to formal financial services is lower in the median African country than in the median non-African developing country (Figure 5). These aggregate indicators are based on Enterprise Surveys conducted across countries. The Enterprise Survey data, however, also allow us to dig deeper and distinguish between firms of different sizes. Figure 5 shows that there is only a small gap across firms of different sizes in the use of formal account services in both African and non-African developing countries. On the loan side, on the other hand, there is a stark difference across small, medium-sized and large enterprises, though the size gap is actually smaller within than outside Africa. However, across all three size groups, enterprises within Africa are less likely to have a loan than outside Africa, with large firms in Africa as likely to have a loan as mid-sized firms outside Africa.

**Figure 5: Use of formal account and loan services across firm size groups in international comparison**



Source: authors' calculations based on Enterprise Surveys ([www.enterprisesurveys.org](http://www.enterprisesurveys.org))

Enterprise survey data also allow an exploration of the reasons why enterprises do not have loans with formal financial institutions. Specifically, enterprises are asked for the reason that they did not apply for a loan with a formal financial institution over the past year. The share of enterprises that quote lack of demand is significantly lower in Africa (43%) than in other developing countries (62%), suggesting that lack of demand is a less important factor in Africa than elsewhere. High interest rates were also mentioned as a reason for not applying for loans (14% in Africa vs. 10% in other developing countries), which could indicate that the return on investment projects is too low. On the other hand, and as noted by many observers of African finance, the high cost of credit might impede the use of bank finance. As discussed above, interest rate spreads and thus lending rates are significantly higher in Africa than in non-African developing countries. Those high costs of credit can be explained not only by the lack of competition noted above, but also by monetary and socio-political instability resulting in high risk premia. The importance of monetary and socio-political stability can be appreciated when considering that the share of non-applicants due to high interest rates is especially high in DRC and Zimbabwe. Even more striking is the difference in the share of

respondents indicating that application procedures are the reason for not applying: 16% of non-applicant enterprises in Africa as opposed to 7% in other developing countries. Collateral requirements also seem to be a greater impediment in Africa than in other regions of the developing world (9% vs. 4%), as is the need for bribes (4% vs. 2%). These data point to a large array of barriers both on the macroeconomic but also the bank-specific level for enterprises in Africa to access formal sources of external finance.

The financing of small and medium-sized enterprises thus continues to pose a significant challenge, and not only for African financial systems. However, it is important to distinguish between segments within this group of enterprises that have different financing needs and profiles. A large share of the enterprises in Africa is informal microenterprises whose establishment often stems from the lack of alternative economic opportunities. Not being able to produce formal financial accounts or formal guarantees, it is hard to see this segment of the enterprise population becoming bankable over the medium- to long-term, at least not for credit services. They seem a natural target group for microcredit institutions and rely more heavily than other enterprises on informal finance providers. A second segment is medium-sized enterprises, often well established and export-oriented companies. In most cases they have access to bank finance, but struggle to get access to equity finance, including through financial markets. Finally, there are small formal enterprises, some of which might have high growth potential. These firms – often also referred to as the missing middle – are usually too big for microfinance institutions, but not formal or established enough for banks. It is especially this last segment that seems to be affected by shallow financial markets. This is also illustrated in Figure 5, where there is only a small difference in the use of formal loans between mid-sized and large enterprises (26% vs. 32%), with a much smaller share of small enterprises using such loans (11%).

## **2.5. Household access to finance in international comparison**

As discussed above, the share of households with a formal bank account is lower in Africa than in developing countries outside Africa. Behind this low median, however, there is substantial variation within the region. While in Kenya, 42 percent of households use a formal account, this share is below 5 percent in DRC, Guinea, the Central African Republic and Niger. The share is even greater in upper-middle income countries, such as South Africa (54 percent) and Mauritius (80 percent).

The Global Findex survey not only allows an aggregate picture of the share of households using formal financial services, but also a more detailed look into who uses what kind of financial services. One striking finding is that the gender gap in the use of formal financial services is larger in Africa than outside Africa. While men are more likely to use a formal financial account than women across the developing world, the gap is significantly larger inside Africa than outside. It is important to note, however, that these are unconditional comparisons. Using more detailed financial sector surveys for a number of Eastern and Southern African countries, Aterido, Beck and Iacovone (2013) show that when key observable characteristics of individuals are taken into account the gender gap disappears. The lower use of formal financial services by women can be explained by gender gaps in other dimensions related to the use of financial services, such as their lower level of income and education, and by their household and employment status.

Household data on the use of financial services reconfirm the importance of leap-frogging with the help of technology. While the share of households with a formal account is larger outside than inside Africa, the share of households that have used mobile phones for payment services is larger inside than outside Africa. Specifically, 5 percent of population in the median African country reported using mobile phones for payment services, compared to 3.8 percent in non-African developing countries.

Similar to the case of enterprise data, the Global Findex data also allow us to explore the reasons why households do not have accounts with formal financial institutions. In the median African country, 68 percent of the population cites lack of money as a reason for not having an account, while only 52 percent in non-African countries do. 25 percent of the population in the median African country cites high costs or lack of the necessary documentation, while 22 percent point to geographic barriers. Outside Africa, 18 percent of the population in the median developing country point to prohibitive costs, 13 percent to geographic barriers and 11 percent to lack of necessary documentation. Almost the same share of population cites lack of trust for not having an account (12 percent in Africa, 11 percent outside), while religious reasons are less prevalent in Africa (2 percent) than outside (4 percent). Finally, a smaller share of the population cites no need for an account in Africa (5 percent) than outside (9 percent). Overall, this points to similar barriers in Africa and other developing countries, though some of these barriers seem stronger in Sub-Saharan Africa.

## **2.6. The role of microfinance in Africa**

Like other developing regions, microfinance has grown rapidly in Sub-Saharan Africa. The number of borrowers served by the African microfinance institutions (MFIs) that report to the Microfinance Information eXchange (the MIX) increased from 1.6 million in 2003 to 8.5 million in 2009.<sup>viii</sup> A part of this increase is attributable to the MIX's efforts to expand the number of MFIs that report to them, but even among the 48 African MFIs that reported information to the MIX in all years between 2005 and 2009, the number of active borrowers increased from 2.3 million to 4.8 million.

The institutional presentation is quite similar in Africa and the rest of the developing world. For example, as of 2009, MFIs organized as banks represented 7 percent of the



institutions in Africa and elsewhere. In Africa, banks hold 42.1 percent of microfinance assets compared with 48.6 percent in the rest of the developing world (Table 3). NGOs actually comprise a smaller share of the institutions in Africa than outside Africa (26 vs. 35 percent), though the African NGOs hold a larger share of total microfinance assets (20.4 vs. 11.6 percent). Non-bank financial institutions (NBFIs) appear to play a somewhat more important role outside Africa, while credit unions and cooperatives play a larger role in Africa. In all, the range of institutions in Africa appears to be about as diverse as elsewhere, and the reliance on more commercially oriented forms of microfinance similar. That conclusion is further supported in that group liability loans typically favored by less commercialized institutions represented only 15 percent of microfinance assets and 26 percent of loans in Africa in 2009 based on the MIX data, compared with 15 percent of assets and 20 percent of total loans in the rest of the developing world. Beck et al. (2011) also note that African MFIs shifted away from the group liability lending mechanisms made famous in Bangladesh under Muhammad Yunus early in their development. In West Africa, they argue that only individual liability mechanisms were used.

**Table 3: Share of Microfinance Assets, By Institutional Type, 2009**

	<i>% of Assets, by MFI Type</i>			
	<i>Africa</i>		<i>Non-Africa</i>	
	<i># of institutions</i>	<i>% of Assets</i>	<i># of institutions</i>	<i>% of Assets</i>
Bank	12	42.06%	59	48.57%
Coops/Credit unions	39	23.71%	109	8.39%
NGO	44	20.42%	297	11.60%
NBFI	70	13.46%	320	29.68%
Rural bank	3	0.33%	55	1.65%

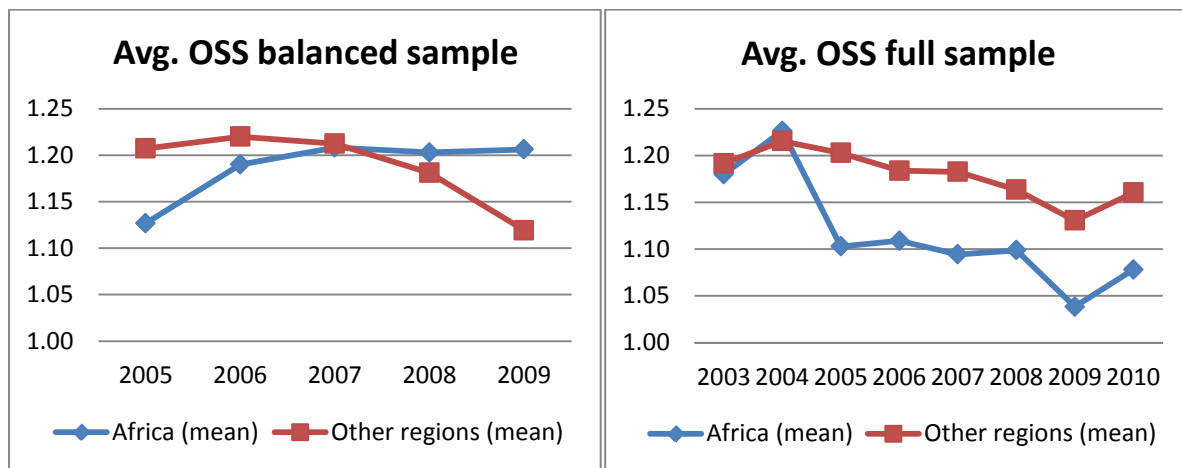
The growth in borrowers coincided with a declining trend in the financial performance of African MFIs as measured by the MIX's Operational Self-Sufficiency (OSS) index, a trend that was more pronounced than in other developing regions (Figure 6, panel B).<sup>ix</sup> In part, this reflects the arrival to the MIX of new African MFIs that were less profitable than existing

ones, but even the 50 African MFIs that reported profitability figures to the MIX in all years from 2005 to 2009 displayed a leveling off in terms of OSS (Figure 6, panel A). At the same time, the average loan size (relative to GDP per capita) increased more for African MFIs than others, for both the balanced panel that reported consistently to the MIX and the full sample (Figure 7). Similarly, but not shown, the share of women borrowers declined steadily among the consistent African reporters to the MIX. Within the full sample of African MFIs (panel B), the average share of lending to women was relatively stable, suggesting that new African entrants focused more on lending to women while better established MFIs were moving away from that market segment.

**Figure 6: Operational Self-Sufficiency of MFIs over Time**

**Panel A**

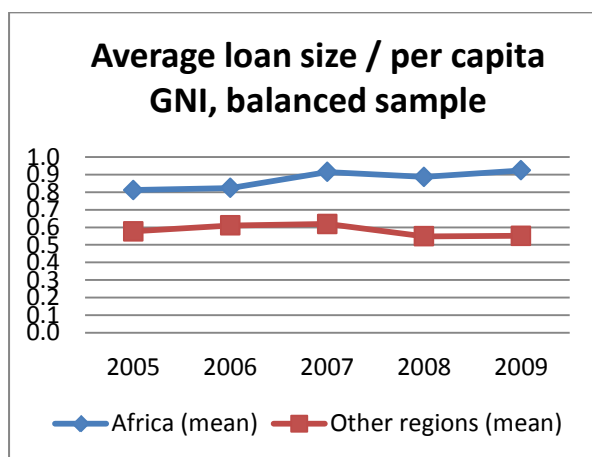
**Panel B**



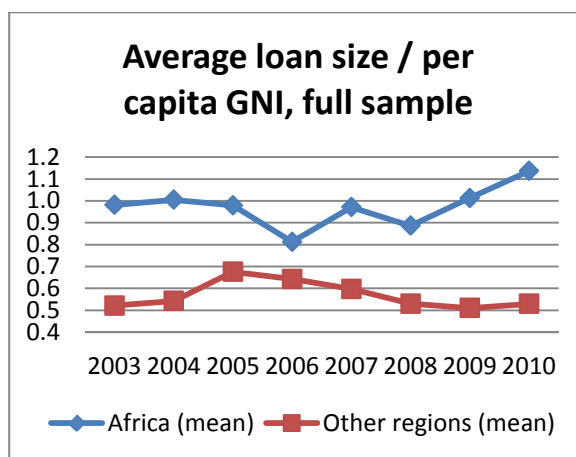
It seems plausible that the reach of MFIs in Africa will continue to expand, extending to much larger numbers of customers. At the same time, the figures presented here suggest that continued expansion could coincide with greater competitive pressure on MFI profitability and, perhaps, somewhat less focus on reaching the poorest. At the least, the explosive growth of microfinance in Africa since 2000 makes it a sub-sector that bears monitoring over the coming years.

**Figure 7: Average loan size of MFIs over Time**

**Panel A**



**Panel B**



### 3. Overcoming Barriers to Financial Inclusion: Branch Expansion, Field Experiments, and Technology

Africa has made substantial progress over the past years, not only in financial depth and inclusion, but also in the underlying macroeconomic stability, with few countries presenting double-digit inflation rates. Similarly, there has been some underlying institutional progress, including in creditor rights, contract enforcement and credit information sharing. Specifically, the average cost of property registration dropped from 13 to 9 percent of property value between 2004 and 2012, while creditor rights increased from an average of 4.2 to an average of 5.6 (out of a maximum of 10) over the same period. While in 2004, fewer than half of the countries had a public or private credit registry, in 2012 70 percent of countries in the region had one. On the other hand, the average cost of contract enforcement has remained high, barely decreasing from 56 percent of the average claim in 2004 to 54 percent in 2012.<sup>x</sup>

While macroeconomic management and institutional development have thus shown a certain degree of improvement, the benchmarking exercise discussed in section 2.2 suggests that these are necessary and not sufficient conditions for financial deepening in Sub-Saharan

Africa and that other barriers, including geographic disadvantages, hold back the further deepening of African banking systems. As also alluded to in the previous section, however, financial innovation, i.e. new delivery channels, new players and new products, can help overcome these barriers, especially geographic barriers. Africa has seen a lot of such innovation over the past years, as reported by Beck et al. (2011). Much of it comes from different financial institutions, banks, NGO, and MFIs, both domestic and foreign-owned, often with support from donors. In many countries, regulators have reacted flexibly, opening space for innovation within existing regulatory frameworks or adjusting them where necessary.

In this section, we report on different forms of financial innovation, summarizing research findings on the recent branch expansion by some banks into more sparsely populated areas and the potential for banks to use agent networks to further extend their reach. Agents are typically owners of small retail businesses that are trained by a formal financial institution (most often a bank) to collect deposits and process payments, including payments on small-scale loans. We also summarize results from recent field experiments in Africa that are beginning to shed light on the types of financial services that could benefit underserved market segments and overcome impediments to their uptake. Finally, we explore the role that technological innovation could play in bridging some of the geographic and informational divides that currently characterize the African financial landscape.

### **3.1. Bank branching**

In Kenya, the total number of bank branches increased from 576 in 2006 to 970 in 2009, while the share of the adult Kenyan population that had a bank account increased from 14 percent to 23 percent. While many Kenyan banks, including some state- and foreign-owned, expanded their branch footprints during this period, the expansion strategy of one

private domestic bank in particular, Equity Bank, stood out for its potential impact on outreach to underserved market segments. As part of its expansion strategy, Equity Bank emphasized that local languages be spoken in its branches, an important consideration since 30-40 percent of the people in central Kenya do not speak English or Swahili.

Allen et al. (2012 a, b) exploit the fact that Equity Bank's branching policy in Kenya favored minority-speaking districts more than other banks, and use instrumental variables and difference-in-differences techniques to identify the impact of Equity Bank's branch penetration on households' access to banking services. They find that the presence of Equity Bank branches has a positive and significant impact on households' use of bank accounts and bank credit.<sup>xi</sup> Across estimation techniques, Equity's presence was associated with a 4 to 9 percentage point increase in the probability of having a bank account. Similar regressions confirm that Equity's presence was associated with an increase in borrowing, though loan use increased less dramatically, from 2.9 percent of respondents in 2006 to 4.4 percent in 2009.

As noted above, another potential method for promoting financial inclusion in sparsely populated areas is agent banking.<sup>xii</sup> However, to our knowledge, there have been no rigorous studies of the effects of agent banking, and certainly none for Africa. However, a review of the Latin American experience suggests that agents have been effective in reaching the unbanked (Alliance for Financial Inclusion, 2012). In Kenya, Equity Bank has also moved forcefully into agent banking, expanding its number of agents from under 1,000 in early 2011 to over 6,000 by the end of 2012. These agents now account for over 30 percent of Equity Bank's total transactions.

In all, Equity Bank's experience in Kenya and those of a handful of banks in other developing countries suggest that it might be possible to generate sustainable profits with a business model focused on the provision of financial services to population segments that are typically ignored by commercial banks. At the same time, the number of studies is small (and

most are not from African countries) making it hard to identify the factors that lead to successful adaptation of those strategies.

### **3.2. Assessing tailored interventions with randomized field experiments**

Although the number of field experiments based on randomized controlled trials (RCTs) in Africa involving financial services is low, patterns are beginning to emerge that point to key impediments to broader financial inclusion. On the savings side, commitment devices that enable users to guard accumulated funds from outside demands (often from relatives and friends) have led to increased investment and more rapid growth of firms. For example, Dupas and Robinson (2013) show that female shopkeepers in Kenya were much more likely to take up non-interest-bearing bank accounts that were subject to high withdrawal fees (and thus less attractive than standard interest bearing accounts) than male business owners, and investment in those female-owned businesses was nearly double that of female business owners in the control group. Brune et. al. (2011) document changes in the production methods of tobacco farmers in Malawi who were offered a ‘commitment’ savings account that allowed the account holders to freeze their funds until a specified date (typically just prior to the planting season, thus preserving funds for purchases of farm inputs). Deposit and withdrawal activity spiked just prior to the planting season, land under cultivation increased by 9.8 percent, agricultural input use in that planting by 26.2 percent, crop output in the subsequent harvest by 22 percent, and household expenditures in the months immediately after harvest by 17.4 percent (all relative to the mean for the control group). Another study from western Kenya shows how a commitment savings device enabled farmers to increase their use of fertilizer (Duflo, Kremer, and Robinson, 2011).

There is less evidence from experiments involving African credit products than for savings products. But the evidence from micro-credit experiments in other parts of the

developing world suggests that effects are harder to identify than for savings. For example, one of the best-known studies of micro-credit finds no significant impact on income and consumption among poor households in Hyderabad, India (Banerjee et al., 2013), though multiple studies show modest impact on investment.<sup>xiii</sup> Critically, recent research has identified differential effects across different borrower groups, with entrepreneurial types increasing their investment when gaining access to external finance while non-entrepreneurial types increase consumption.

A key impediment to broader extension of credit in Africa is the lack of reliable methods for personal identification. Individuals who lack collateral and credit histories, which characterizes a large share of the African population, struggle to overcome informational asymmetries that make it almost impossible to access credit from formal sources. Establishing collateral and credit registries could help, but these can only function if people can be accurately identified. A field experiment among paprika farmers in Malawi tested whether biometric identification methods can improve the functioning of credit markets in a country where identity theft is common (Giné et al., 2013). Applicants for agricultural input loans from a state-owned bank were randomly assigned to a treatment group in which a fingerprint was collected from each member as part of the loan application, or to a control group in which no fingerprint was taken. Both treatment and control groups attended a training session on the importance of a credit history in ensuring future access to credit. For the subgroup of farmers identified as having high ex-ante default risk, fingerprinting led to a forty percent increase in repayment rates.<sup>xiv</sup>

As in other parts of the developing world, micro-insurance products could offer benefits in Africa, especially in agricultural areas. For example, rainfall insurance, which pays a set amount when rainfall falls below (or surpasses) a pre-determined threshold could be useful to African farmers.<sup>xv</sup> Yet, empirical studies of micro-insurance are rare. In Ghana,

Karlan et al. (2012) find that rainfall insurance counters farmers' risk aversion and improves decision making, though effects were largest when insurance was combined with subsidized capital. Farmers that received both increased their spending on agricultural chemical inputs by 47 percent, expanded their land under cultivation by 22 percent, and were less likely to report that their households suffered from hunger. But in another experiment in Malawi, Gine and Yang (2009) find that take-up rates for an agricultural loan product were somewhat *lower* when the loan was coupled with an insurance policy (priced at an actuarially fair rate) that paid off in the event of poor rainfall. In part, the reluctance to purchase the insurance product may have stemmed from farmers' belief that they only faced limited liability for their loans in the event of severe weather problems (and thus they already had a form of implicit insurance). In both experiments, the take-up rate for insurance products was puzzlingly low, suggesting a weak match between the insurance products and farmers' needs and/or farmers not fully understanding how these products could benefit them. More research in the insurance area is clearly warranted.

### **3.3. Technological innovation**

Mobile money transfer ("m-transfer") systems facilitate financial transactions via mobile phones allowing users to deposit and withdraw cash from an account that is accessible by mobile handset. Users can store value in the account and transfer value between users via text messages, menu commands, and personal identification numbers (Aker and Mbiti, 2010). M-transfer arrangements therefore enable users to make payments and transfer funds at relatively low cost across much wider geographic areas than is possible using localized informal payment solutions. Aker et al. (2011) report that, since 2005, m-transfer systems have been established in 80 developing countries in Africa, Asia, and Latin America.



M-Pesa, the mobile payments wallet launched in 2007 by Kenyan mobile network operator, Safaricom, had 15 million registered users, a network of 35,000 cash-in/cash-out agents, and a transaction volume of US\$665 million per month by early 2012 (Mark, 2012; Rotman, Ferrand, and Rasmussen, 2012). M-Pesa use has brought about a substantial decline in the costs of sending transfers and a substantial increase in their volume (especially remittances), a greater likelihood of being formally banked, and decreased use of informal savings mechanisms (Mbiti and Weill, 2011; Jack and Suri, 2011). At the same time, M-Pesa was rarely used for storing value for any significant period (most transactions were of the cash-in, immediate cash-out variety) and the vast majority of M-Pesa transactions was undertaken by relatively affluent Kenyans, though there were some indications of less intensive use by poorer population segments.<sup>xvi</sup>

The extent to which mobile payment services can facilitate spatial risk sharing within an economy is illustrated by Blumenstock, Eagle and Fafchamps (2011) who show that the Lake Kivu earthquake in 2008 in Rwanda caused individuals living outside the affected area to transfer a large and significant volume of airtime to people living close to the earthquake's epicenter. They also show that the transfers were consistent with reciprocal risk sharing rather than charity or altruistic motivations, suggesting that mobile payment services facilitate informal inter-personal insurance mechanisms, although it seems again that wealthier segments of the population benefitted most.

Another example comes from Niger, where an m-transfer system is providing a more cost-effective means of implementing a cash transfer program. While Bold, Porteous and Rotman (2012) argue that electronic payment methods for social cash transfers work best when piggy-backing upon existing payments infrastructure, the experience in Niger suggests that electronic cash transfer via an m-system could also work where more traditional payments infrastructure is lacking.<sup>xvii</sup>

An experiment comparing traditional cash transfers with transfers via an m-system called Zap was undertaken in 96 ‘food-deficit’ villages in Niger, meaning they had produced less than half of their consumption needs during the 2009 harvest (Aker et al., 2011). One-third of villages received traditional assistance in cash; another third received mobile phones and electronic transfers via Zap; while recipients in the remaining villages received a mobile phone, but continued to receive assistance in cash. Inclusion of the third group was designed to isolate the effects of mobile phone usage on financial and other outcomes from the effects of e-transfer. Zap substantially reduced the cost of distributing and obtaining the cash transfers, and households used their transfers to purchase a more diverse set of goods, increased the diversity of their diets, depleted fewer assets, and grew a wider variety of crops (including marginal crops typically grown by women). The authors speculate that lower costs, in particular the time savings to recipients of electronic transfers, and greater privacy in receiving those transfers (reducing obligations to share money within social networks) is driving the changes in household outcomes associated with Zap usage.

Though preliminary, the experimental results thus far suggest that financial products that can reach the poor at low cost (both to providers and to the poor themselves), and that incorporate elements that enable borrower/savers to protect funds to meet financial goals, hold promise for expanding financial inclusion in Africa.

#### **4. Conclusions and Looking Forward**

While we have documented achievements in deepening and broadening African financial systems, challenges remain. In this concluding section, we point to five areas where future research could support policy formulation. The first of these challenges refers to the short-term nature of finance across the region, as illustrated not only in the balance sheet structures of banks, but also in the limited development of contractual savings institutions and

financial markets. While financial inclusion has dominated the recent policy debate and research agenda, the need for long-term finance by households, enterprises and government is enormous. The cost of addressing Africa's physical infrastructure needs is estimated at US\$93 billion per year, some 15 percent of Africa's gross domestic product (GDP) (Foster and Briceño-Garmendia 2010). Demand for housing, especially in urban areas, continues to rise across the continent as Africa rapidly urbanizes. And firms continue to lack the necessary resources for long-term investment.

The long-term finance agenda is thus an extensive one, both for researchers and policy makers. First, there is still a dearth of data on long-term financing arrangements, including on corporate bond market structures and costs, insurance markets and private equity funds. Second, identifying positive examples and gauging interventions and policies will be critical, as will be expanding to Africa the small literature on equity funds and their effect on enterprises that exists for U.S. and Europe and (increasingly) for emerging markets. One important constraint mentioned in the context of long-term finance is the lack of risk mitigation tools. Partial credit guarantees can play an important role, but their design and actual impact has not been studied sufficiently yet.

A second challenge relates to small enterprises. Research on financial inclusion has identified policy levers to improve access to and use of financial services by households and microenterprises; looking forward, this research has to move beyond micro- to small enterprises, both in terms of supply- and demand-side constraints. The emphasis stems from the realization that job-intensive and transformational growth is more likely to come through formal than informal enterprises. While there is a large literature gauging financing constraints of firms of different size, there is less evidence on specific policies and interventions that have differential effects across firms of different sizes. While access to formal finance might be less of a (testable) challenge for small enterprises, the quality of

access is important, including maturity, choice of currency and collateral requirements. Assessing different lending techniques, delivery channels and organizational structures conducive to small business lending is important, as is assessing the interaction of firms' financing constraints with other constraints, including lack of managerial ability and financial literacy.

A third important agenda refers to regulatory reform. While global discussions and reform processes are driven and dominated by the recent Global Financial Crisis and the fragility concerns of economies with developed if not sophisticated financial markets, Africa's fragility concerns are different and its reform capacity lower. Some of the suggested or implemented reforms seem irrelevant for almost all African countries (such as centralizing over-the-counter trades) or might have substantially worse effects in the context of shallow financial markets than in sophisticated markets increasingly dominated by high frequency trading (such as securities trading taxes). This is not to argue that payments and clearing systems are less important in Africa than elsewhere, but that payment systems needs in Africa may be more basic. It also is somewhat surprising that research to date has focused on mobile payments in Africa rather than on broadening payments options (for direct deposit, direct debit for payments of consumer bills, business-to-business transactions, and other forms of e-commerce) using automated clearing house (ACH) solutions.

Kasakende et al. (2012) esteem the proposed Basel III reforms as not sufficient in the African context, and call for additional regulatory tools, including the possibility to impose restrictions on banks' asset exposures and regulations on loan concentration and foreign exchange exposure. In the context of regulatory reform, an approach of best fit would be more appropriate than a best practice approach that blindly adopts international standards. Prioritizing regulatory reforms according to risks and opportunity costs for financial deepening and inclusion is therefore critical.

In the context of regulatory reform, a fourth topic worth highlighting is globalization and cross-border bank regulation, partly informed by the experience of the Global Financial Crisis, partly driven by the increasing financial integration of Africa with emerging and developed countries but also intra-regionally. Identifying cross-border linkages between countries is critical, and the data set collected by Claessens and van Horen (2014) represents an important first step. Understanding the channels through which cross-border banking can help deepen financial systems and foster real integration, and the channels through which cross-border banks can threaten financial stability, is critical. In this context, the optimal design of cross-border cooperation between regulators and supervisors to minimize risks from cross-border banking while maximizing its benefits is important (Beck and Wagner, 2013).

A final important area, which we have not touched upon, is the political economy of financial sector reform. Politicians primarily maximize private interests, whether the interests of their voters or special interest groups. Short-term election cycles undermine the focus on long-term financial development objectives; objectives that maintain the dominant position of elites undermine the incentives of these elites to undertake reforms that can open up financial systems and, thus, dilute the dominant position of the elites. Path dependence in political structures and the underlying socioeconomic distribution of resources and power make the adoption of growth-enhancing policies, such as financial sector policies, difficult or impossible if the policies threaten to reduce the relative dominance of the incumbent elites. On the other hand, the financial sector is critical for an open, competitive, and contestable economy because it provides the necessary resources for new entrants and can thus support economic transformation. Better understanding the political constraints in financial sector reforms and identifying windows of opportunity are therefore important. Focusing on the

creation of broader groups with a stake in further financial deepening can help develop a dynamic process of financial sector reforms.

Research in these five areas will have to be supported by an array of new data and a variety of methodological approaches. Increased data availability has helped spur a rich research agenda on African finance over the past decade. Further advances will require expanding this data availability towards non-bank providers, such as equity funds, but also exploiting existing data sources better, including credit registry and central bank data sets. In addition to exploiting more extensive micro-level data sets, a variety of methodological approaches is called for. First, randomized experiments involving both households and micro- and small enterprises will shed light on specific technologies and products that can help overcome the barriers to financial inclusion in Africa. One of the challenges to overcome will be to include spill-over effects and thus move beyond partial equilibrium results to aggregate results. Second, further studies evaluating the effect of specific policy interventions can give insights into which policy reforms are most effective in enhancing sustainable financial deepening and positive real sector outcomes.

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<sup>i</sup> Please note that in the following, we will use the expressions Africa and Sub-Saharan African interchangeably. We do not include North African countries in our analysis.

<sup>ii</sup> Beck, Demirg-Kunt and Levine (2000, 2010), Demirguc-Kunt and Klapper (2012), Laeven and Valencia (2012).

<sup>iii</sup> The countries not included in the statistical comparison are: Botswana, Gabon, Mauritius, Namibia, Seychelles, and South Africa.

<sup>iv</sup> The median is computed over a balanced sample of 28 African countries, for which data were available over all 12 years.

<sup>v</sup> Unlike the previous comparisons, which are all for 2011, data for Enterprise Surveys were averaged over 2009 to 2011.

<sup>vi</sup> For a more detailed discussion, see Cull and Trandafir (2010) and Beck et al. (2011).

<sup>vii</sup> For a general overview of the literature on the effects of foreign bank entry, see Cull and Martínez Pería (2012).

<sup>viii</sup> We are very grateful to Blaine Stephens of the MIX and Scott Gaul (formerly of the MIX) for help in obtaining the data and advice on its use.

<sup>ix</sup> The operational sustainability ratio is financial revenue divided by the sum of financial expenses, net loan loss provision expenses, and operating expenses.

<sup>x</sup> These numbers are based on data from the Doing Business database ([www.doingbusiness.org](http://www.doingbusiness.org)).

<sup>xi</sup> For similar studies, see Bruhn and Love (2014) on the extension of Banco Azteca in Mexico, Burgess and Pandhe (2005) on an exogenous change in branching restrictions in India to identify the effects of increased branch penetration on poverty reduction, and Brown et al. (2013) documenting substantial gains in financial inclusion associated with the expansion of a major microfinance provider (ProCredit) in Albania, Bulgaria, Macedonia, and Serbia.

<sup>xii</sup> Anecdotal evidence suggests that agency banking allows overcoming not only geographic but also socio-cultural barriers that might prevent low-income population segments from entering formal bank offices.

<sup>xiii</sup> See Roodman (2012) and Bauchet et al. (2011) for summaries of evidence from randomized evaluations of microfinance. In their review of microfinance studies in Africa, Van Rooyen, Stewart, and De Wet (2012) find that micro-credit and micro-savings interventions have mixed effects on household income and accumulation of assets. In part, this could stem from the uneven quality of the studies they review.

<sup>xiv</sup> Moreover, a rough cost-benefit analysis suggests that the benefits from improved repayment greatly outweighed the cost of equipment and fingerprint collection.

<sup>xv</sup> Because farmers' behavior does not influence payments, rainfall insurance eliminates moral hazard problems and could therefore be a viable product for financial services providers.

<sup>xvi</sup> One potential explanation for limited time savings is that balances stored in an M-Pesa account accrued no interest (though that could change as M-Pesa teams up with banking partners to link M-Pesa accounts to mainstream bank accounts).

<sup>xvii</sup> In Niger, there is less than one bank per 100,000 residents.