

Financial Development in Sub-Saharan Africa

Promoting Inclusive and Sustainable Growth

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African Department

Financial Development in Sub-Saharan Africa

Promoting Inclusive and Sustainable Growth

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International Monetary Fund

Cataloging-in-Publication Data

Joint Bank-Fund Library

Names: A team lead by Montfort Mlachila and composed of Larry Cui, Ahmat Jidoud, Monique Newiak, Bozena Radzewicz-Bak, Misa Takebe, Yanmin Ye, and Jiayi Zhang

Title: Financial Development in Sub-Saharan Africa – Promoting Inclusive and Sustainable Growth

Identifiers: ISBN

Subjects: Financial Development, Financial Inclusion, Sustainable Growth, Income Inequality

Classification: G1, G2, G17, O1, O15

ISBN: 978-1-47553-240-1

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Preface

This paper provides a comprehensive review of financial development in sub-Saharan Africa and discusses how financial development can boost economic growth and make it more inclusive and less volatile. Building on a chapter in the April 2016 *Regional Economic Outlook* for sub-Saharan Africa, this paper provides an up-to-date panorama of various facets of financial development and how it has evolved over the past few decades. It draws on both country-specific and cross-country work undertaken in the African Department of the IMF, and also undertakes in-depth empirical analysis on issues such as the macroeconomic impact of financial development and its drivers. The analysis highlights how the region is performing compared with its peers—in areas where the region is doing particularly well such as the adoption of mobile banking technologies, as well as in areas where it is falling short. Finally, the paper also provides a detailed set of policy recommendations.

Why should we care about financial development? There are many reasons why deeper financial development—the increase in deposits and loans but also their accessibility and improved financial sector efficiency—is good for sustainable growth in sub-Saharan Africa. For one, it helps mobilize savings and direct funds into productive uses, for example by providing startup capital for the next innovative enterprise. This in turn facilitates a more efficient allocation of resources and increases overall productivity. It also supports the creation of a larger variety of products and services, improves the management of risks, makes payments easier, and helps lenders better monitor their clients. In addition, it provides instruments, such as insurance packages, and information that can help households and firms cope with negative events, ensuring more stable consumption and investment.

To fully appreciate the potential for further financial development, take a look at the encouraging progress sub-Saharan African countries have made over the past decades:

- The financial sector has deepened—the region’s median ratio of private sector credit to GDP has doubled from its 1995 level. However, with the exception of the region’s middle-income countries, financial market depth and institutional development are also still much lower than in other regions.
- The region has led the world in innovative financial services based on mobile telephony, especially in East Africa. The fast spread of systems such as M-Pesa, M-Shwari, and

M-Kopa in Kenya has helped reduce transaction costs and facilitate personal transactions even in the absence of traditional financial infrastructure. Microfinance has also grown rapidly, providing services to customers at the lower end of the income distribution, and large parts of the population now have access to financial services more generally. But financial inclusion still lags well behind that of other developing regions of the world. For instance, as cellphone ownership continues to grow among the poor, the less well educated, and women, there is much potential to fully exploit mobile payments to compensate for the shortcomings of traditional methods of providing financial services to the most underserved.

- Third, Pan-African banks now have a presence in the vast majority of sub-Saharan African countries. Their expansion has filled gaps in services left by European and U.S. banks, promoted greater economic integration, and made the sector more competitive. But as is often the case with new and rapidly growing financial institutions, Pan-African banks also bring a number of challenges, in particular they stretch the supervisory capacity of home and host supervisors, and add complexity to the oversight process.

How much more financial development could sub-Saharan African countries realistically achieve? This publication highlights the substantial gap between the level of financial development at which many sub-Saharan African countries are currently operating, and what they could reach when compared to other regions with similar structural characteristics. The impact of filling the gap is about 1½ percentage points of additional annual growth for the median sub-Saharan African country, albeit with variations across country groups. In addition, higher financial development can reduce the volatility of growth, especially if financial development is initially relatively low, as is the case for the vast majority of countries in the region. Here, more financial development relaxes credit constraints and provides instruments to withstand adverse shocks. However, as the sector deepens, its contribution to reducing volatility beyond a certain threshold declines because financial depth also increases the propagation and amplification of shocks.

But countries also need to be vigilant about risks to the financial system and spillovers of these risks to the economy. As regulations in most countries are not yet fully in line with global best practices, and their implementation remains weak, improving the regulatory framework and strengthening supervisory capacity and enforcement powers are essential. Among many other reforms, the harmonization of regulations and supervisory procedures to avoid regulatory arbitrage and establishing an appropriate mechanism for resolving nonviable financial institutions are high priorities. Financial supervisors should monitor carefully the risk related to mobile money transactions as they become increasingly popular in the low-income

segment of the population—ensuring households' funds are safe while allowing them to enjoy making transactions more easily, saving for worse times, or taking out a loan to start a business.

Anne-Marie Gulde-Wolf
Deputy Director, African Department
International Monetary Fund
Washington, DC

Executive Summary

It is well established in both theoretical and empirical literature that financial development is generally good for growth. It entails the wider use of existing financial instruments as well as the creation and adoption of new ones for intermediating funds and managing risk (Chami, Fullenkamp, and Sharma 2010). For sub-Saharan Africa, with external demand and financing conditions significantly worsening, and a much less favorable growth outlook for the region, identifying untapped or underutilized sources of growth and reducing the volatility of that growth have become even more urgent. While debates have revolved around whether financial development is an engine for growth or just a lubricant, any factor that can significantly ameliorate growth prospects for the region is worth examining in detail.

Theoretically, financial development positively affects growth through several channels that are important for sub-Saharan Africa. First, it helps catalyze savings into more usable forms, and supports efficient allocation of capital and enhancement of total factor productivity. Second, it supports diversification and management of risk. Third, it reduces information asymmetries, and transaction and monitoring costs. Fourth, it can reduce volatility of the economy by providing a variety of instruments and information to help households and firms cope with adverse shocks through consumption and investment smoothing. Levine (2005), in a comprehensive review of the literature, finds a robust linkage between financial development and growth.

This publication considers three questions to gauge the role of financial development in sub-Saharan Africa's sustainable growth:

1. How has sub-Saharan Africa's financial sector developed in the past few decades, compared with other regions?
2. With the changes over the past decades, is the financial sector now able to make a more positive contribution to growth and reduce its volatility?
3. What will it take to draw further benefits from the financial sector, and what role can policies play in the process?

Our main findings are as follows:

Sub-Saharan African countries have made substantial progress in financial development over the past decade, but there is still considerable scope for further development, especially compared with other regions. Indeed, until a decade or so ago, the level of financial development in a large number of sub-Saharan African countries had actually regressed relative to the early 1980s. With the exception of the region's middle-income countries, both financial market depth and institutional development are lower than in other developing regions.

The region has led the world in innovative financial services based on mobile telephony, but there remains scope to increase financial inclusion further. The development of mobile-telephone-based systems has helped to incorporate a large share of the population into the financial system, especially in East Africa. Nonetheless, there is a large untapped potential in this area in other countries, and this can compensate for some of the infrastructure and other shortcomings that most countries face. At the same time, microfinance has grown rapidly, providing services to customers at the lower end of the income distribution. However, all new and rapid financial developments also pose potential financial stability risks.

Pan-African banks have been a driver for homegrown financial development, but they also bring a number of challenges. Their expansion has promoted greater economic integration, and has contributed to improving competition and financial inclusion. These banks have increasingly filled the gap left by European and U.S. banks, which traditionally had dominated the financial landscape in Africa before the global financial crisis. However, their rapid growth also poses risks, the most important of which is related to the lack of adequate supervisory oversight on a consolidated basis and relatively weak internal governance frameworks. These vulnerabilities, if they are not addressed, may raise systemic risks that could endanger financial development.

Empirical estimates suggest that financial development has supported growth and reduced its volatility in sub-Saharan Africa, although the level of financial development in the region is below its benchmark. Financial development has helped mobilize and allocate financial resources, and facilitated other economic policies in enhancing growth and stabilizing the economy. While the literature has suggested that there is a threshold beyond which financial development can have an adverse impact on growth and its volatility (Sahay and others 2015b), all of the region's countries are well below this threshold. Given that the region's level of financial development is below the benchmark, raising the median financial development index to this benchmark level is associated with an increase in growth by about 1.5 percentage

points. The results on the growth impact confirm the salutary impact on reducing the volatility of growth and other macroeconomic variables. However, countries need to be vigilant about the emerging macro-financial risks in order to effectively manage the risks associated with financial development.

The following chapters will highlight policies that, if appropriately calibrated for sub-Saharan Africa, could accelerate financial development, and therefore increase growth and reduce its volatility. These include the following policies:

- *Providing strong legal and institutional frameworks and promoting sound corporate governance* (Gulde and others 2006). Strengthening legal and institutional frameworks, including protecting the interests of minority shareholders and fostering contract enforcement and judicial independence, is critical for creating an environment in which the financial sector can develop and thrive. Improving corporate governance and information disclosure, especially by aligning standards in accounting, auditing, and financial reporting with international best practices, would help to reduce the negative gap to the financial development benchmark.
- *Strengthening supervision, including cross-border oversight and on a consolidated basis.* Since enforcement of prudential standards remains weak in some countries, providing supervisors with more enforcement power and strengthening capacity of the supervisory agencies should come to the fore of the agenda. Rapid expansion of Pan-African banks calls for enhancing cross-border oversight and doing so on a consolidated basis, which should be done by improving cross-country collaboration among home and host supervisors and inter-institutional cooperation within countries. Expediting harmonization of regulations and supervisory procedures and closing gaps in crisis management should also be timely addressed. Establishing an appropriate mechanism for resolving unviable institutions (for example, through a special resolution regime) and ensuring adequate functioning of deposit insurance schemes would become critical in mitigating potential risks of spillovers.
- *Introducing an enabling regulatory environment to broaden financial inclusion.* As indicated by recent evidence, particularly in mobile banking, low transaction costs and technological innovations play a particularly important role in bringing large shares of the population into the financial system, particularly in East Africa. At the same time, the risks related to rapid growth of mobile money transactions and increasing complexity of these transactions should be monitored carefully by regulators. While consumer protection is important for the population in general, mobile money transactions become increasingly

popular in the low-income segment of population, for whom it is particularly important to strengthen protection of scarce funds. Supporting bank competition is also essential for making financial services more affordable, and positively contributes to higher efficiency of the financial system. Since the main drivers of competition are policies related to entry (regulations on licensing) and exit (resolution regimes), introducing policies that allow the entry of well-capitalized and well-managed institutions and the timely exit of insolvent ones are important preconditions for creating a competitive environment in the sector (World Bank 2012). As indicated by empirical studies, fostering competition may in fact require more regulation, particularly in the early stages of financial development (Chami, Fullenkamp, and Sharma 2010).

This publication is organized as follows. Chapter 1 gives an overview of the progress in financial deepening as well as broader financial development in the region, including by examining the expansion of Pan-African banks. Chapter 2 highlights the positive impact of further financial development on growth and its mitigating effects on the volatility of output and investment in sub-Saharan Africa. Chapter 3 empirically identifies the structural and policy drivers of financial development in the region. Chapter 4 zooms in on various aspects of financial inclusion, highlighting mobile payments and mobile banking as innovative services, examining the role of microfinance in reaching out to low-income populations, and assessing the impact of gaps in financial access on income inequality. Chapter 5 gives an overview of financial stability developments in the region, including through an analysis of the effects of commodity price shocks on indicators of financial stability. Chapter 6 concludes with a set of policies for supporting financial development and stability.

1

Tracking Financial Development

In most sub-Saharan African countries, financial development has progressed over the past four decades. However, with the exception of the region's middle-income countries, both financial markets and financial institutions are less developed than in other developing regions.

The expansion of Pan-African banks has promoted greater economic integration and has increasingly filled the gap left by European and U.S. banks, but it also poses challenges. These include inadequate supervisory oversight on a consolidated basis and relatively weak internal governance frameworks.

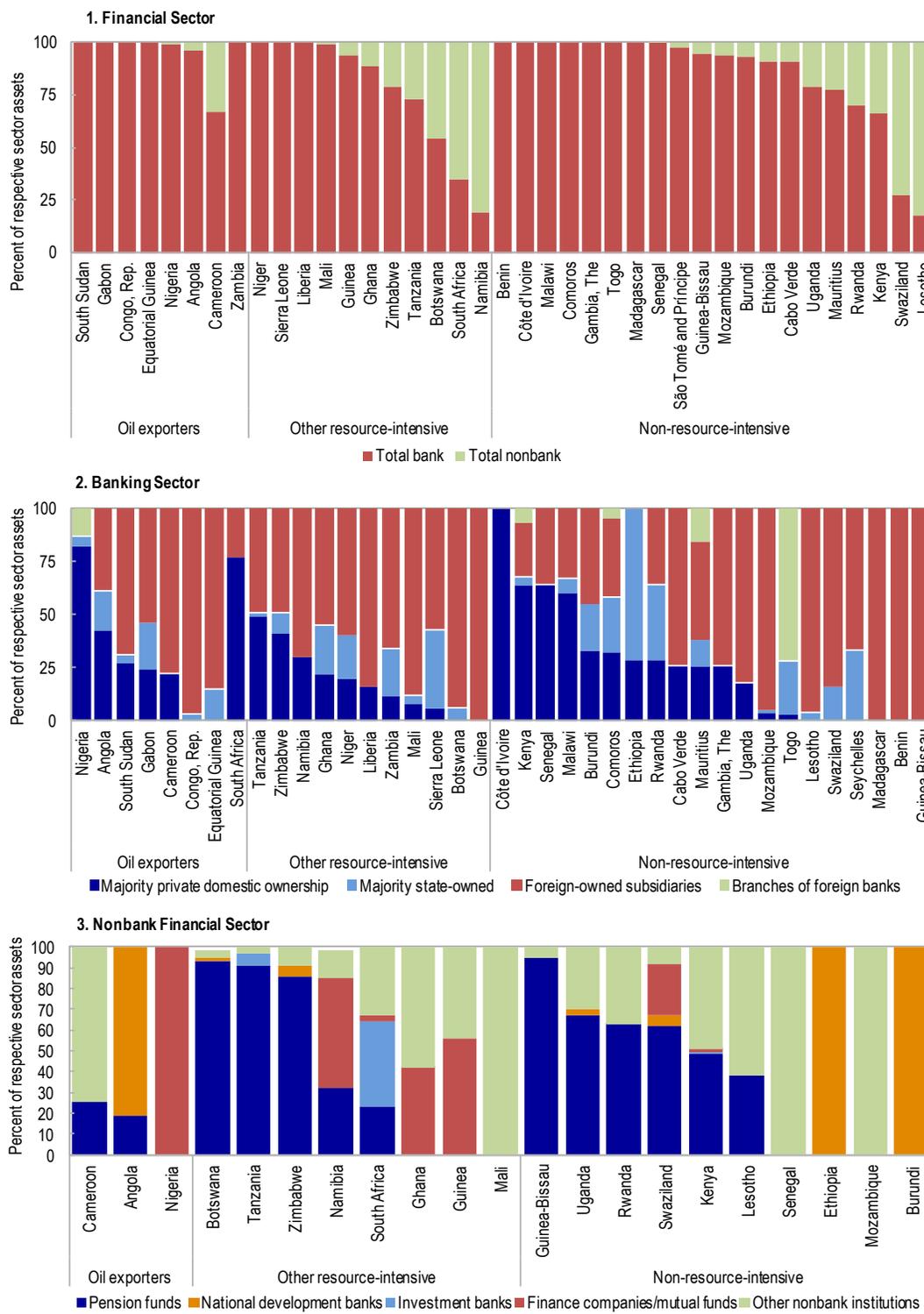
Improving Financial Sector Depth

The banking system dominates the financial landscape in most countries (Figure 1). The banking sector accounts for the biggest share of assets in most countries, with the exception of middle-income countries. For instance, nonbank assets account for more than 50 percent of financial sector assets in Lesotho, Namibia, Swaziland, and South Africa. Within the banking system, foreign-owned subsidiaries account for the major share of assets across all country groups, particularly in some fragile countries (Guinea, Guinea-Bissau, Madagascar, São Tomé and Príncipe), while the contribution of foreign branches is minor. In several countries, state-owned banks' assets are sizable (Ethiopia, Rwanda, Seychelles, Sierra Leone). Within the nonbank financial sector, pension funds contribute most significantly to the systems' assets, while stock exchanges are generally underdeveloped and illiquid (they are present in less than 60 percent of the region's countries).

A look at the development of the financial sector over time reveals that financial depth has increased in sub-Saharan Africa but has generally not caught up with that of other developing countries, in part reflecting lower average income levels in sub-Saharan Africa (Figure 2). The region's median ratio of private sector credit to GDP has increased by almost 10 percentage points since 1995, to about 21 percent in 2014. However, it remains only about half the size of that in the Middle East and North Africa, East Asia, and Latin America and the Caribbean, driven by sub-Saharan Africa's relatively high number of low-income countries in which the median level of credit to the private sector is similar to that of other low-income countries. Trends in the

depth of the banking sector paint a similar picture as banking sector assets, at an average of 57 percent of GDP in 2014, are half the size of those in other regions.

Figure 1. Sub-Saharan Africa: Distribution of Financial Sector Assets



Source: IMF, African Department Financial Sector Profiles.

- The index combines an assessment of countries' financial institutions (banks, insurance companies, mutual funds, and pension funds) and financial markets (stock and bond markets). It therefore captures the fact that financial services are provided by a multitude of financial institutions, and that markets have developed in a way that allows individuals and firms to diversify their savings, and that allows enterprises to raise capital beyond bank loans. As financial markets are relatively underdeveloped and institutions are dominated by banks in many countries of the region, the index therefore captures the gap in financial services better than a one-dimensional measure such as private credit to GDP.
- Both financial institutions and markets are assessed based on depth (size and liquidity of markets), access (ability of individuals and companies to access financial services), and efficiency (ability of financial institutions to provide financial services at low cost and with sustainable revenues, and at the level of activity of capital markets). By including indicators of profitability, the efficiency dimension of the index captures that, despite strong growth in assets, the financial system in sub-Saharan Africa still lags behind other regions in terms of competition (World Bank 2012). This dimension, along with the aspect of access, therefore gives an indication of the quality of the financial sector.

This composite index suggests that financial development in sub-Saharan Africa has been lackluster over the past three decades, although there has been some modest acceleration over

Box 1. Measuring Financial Development and Inclusion

The financial development index (Sahay and others 2015b; Sviryzdenka 2016) combines subindices on financial institutions and markets along the dimensions of financial depth, access, and efficiency. The list of indicators below highlights which dimensions of development and inclusion enter into the index.

Financial Institutions

- *Depth*: Private sector credit to GDP, pension fund assets to GDP, mutual fund assets to GDP, and life and non-life insurance premiums to GDP.
- *Access*: Commercial bank branches per 100,000 adults, and ATMs per 100,000 adults.
- *Efficiency*: Net interest margin, lending-deposit spread, non-interest income to total income, overhead costs to total assets, return on assets, and return on equity.

Financial markets

- *Depth*: In percent of GDP: Stock market capitalization, stock market turnover, international government debt securities outstanding, and total debt securities outstanding of private nonfinancial corporations.
- *Access*: Percent of stock market capitalization outside of top 10 largest companies, total number of debt security issuers (domestic and external, nonfinancial corporations, financial corporations).
- *Efficiency*: Stock market turnover ratio (stock market turnover/capitalization).

The underlying series and subindices are combined in a linear manner, with weights being determined by principal component analysis. Financial depth has a relatively large weight in the financial institutions and markets subindices. However, for the overall index, financial markets and institutions enter with equal weights.

the past 15 years. Figure 3 depicts the level of financial development for different country groups. While some middle-income countries (Mauritius, Namibia, Seychelles, South Africa) have seen rapid financial development since the 1980s, progress has been slower in other groups of the region. In some cases (Central African Republic, Cameroon, Chad, Sierra Leone), the current financial development levels are actually lower than they were in the 1980s, partly reflecting civil wars and conflicts or the changed importance of state-owned enterprises. For some countries in East Africa, such as Kenya, however, the index may understate actual financial development, since the index does not fully capture mobile payments systems, which we explore in more detail in Chapter 4. In most sub-Saharan African countries, the level of financial development is significantly lower than that in other developing regions.

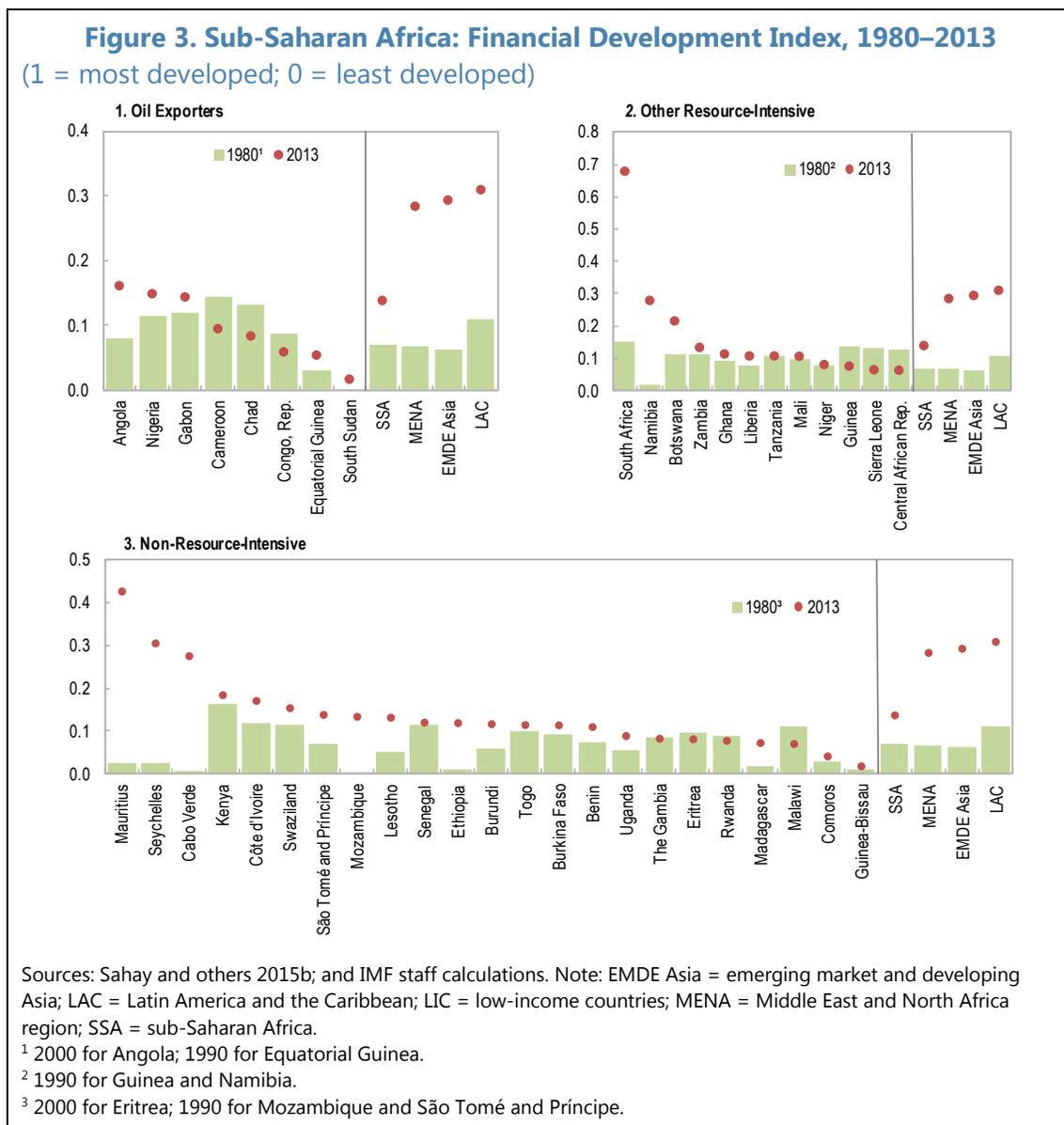
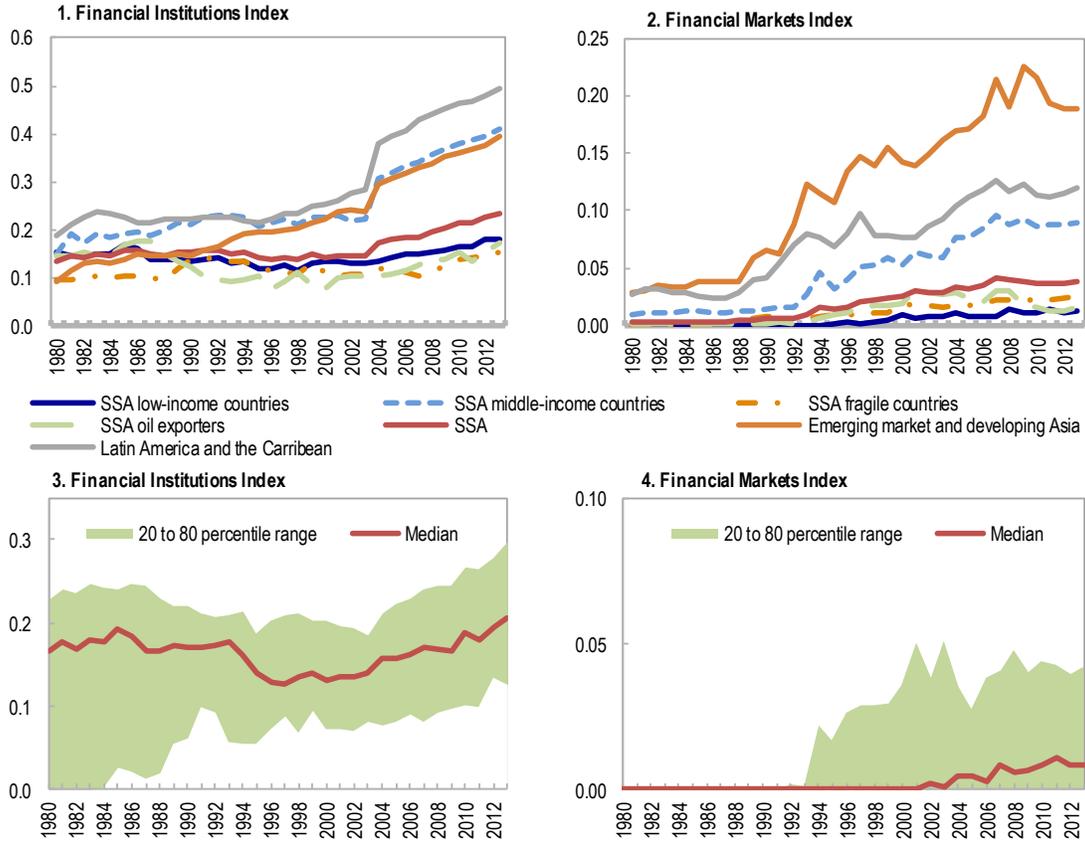


Figure 4. Sub-Saharan Africa: Dimensions of Financial Development
(1 = highest development)



Sources: Sahay and others 2015b; and IMF staff calculations.
Note: SSA = sub-Saharan Africa.

Where financial development has been fast, it typically occurred through both financial institutions and financial markets (Figure 4). This development has been supported by the banking and the nonbank financial sector. For instance, in Botswana, a multitude of financial institutions exist, and the Botswana Stock Exchange's share and institutional investors' share in the financial system have both grown rapidly in the first decade of the millennium (World Bank and IMF 2008). In Namibia, similarly, both the banking sector and nonfinancial institutions have grown rapidly within the past two years, with pension funds and insurance companies combined exceeding the share of commercial banks in total financial assets (Marchettini 2015; IMF 2007). Moreover, as elaborated in the next section, the rise of Pan-African banks has affected the region's financial sector landscape significantly.

Homegrown Banks

The expansion of Pan-African banks (PABs) is contributing to financial development. The banks and their subsidiaries have grown rapidly in the past few years: the scale of their operations in Africa has become larger than that of traditional European and American banks, as African banks increasingly fill the gap left after the retrenchment of European and American banks in the aftermath of the global financial crisis. As a result, they have become systemically important in several countries in Africa and are frequently among the three largest banks in these countries. Their broad geographical reach in sub-Saharan Africa makes their cross-border operations important: out of six PABs domiciled in the region, all have a presence in at least 10 countries, while some are represented in more than 30 countries. The expansion of PABs took place mainly by establishing subsidiaries in host countries, operating under the host countries' regulations and supervision. Some PABs, however, entered other activities that go beyond traditional bank intermediation. These include operations in capital markets, insurance, pensions, money transfers, microfinance, leasing, and even nonfinancial transactions.

The growth in PABs' operations has contributed to stronger competition for loans and deposits. The banks' clients include not only well-established large domestic and multinational entities, but also, increasingly, underserved small and medium enterprises (SMEs) and individuals. Many banks are committed to deploying mobile banking services and web-based technologies. They have become progressively more involved in the provision of syndicated loans for infrastructure projects, where the region still faces large financing needs. Although this has required the banks to broaden their funding sources (by including longer-term financing through bond issuance, capital augmentations, and, in some cases, resorting to financing from international financial institutions), it has given them the opportunity to expand their financial instruments and products, and therefore contribute to economic growth and development. In fact, many PABs report higher profitability and improved cost-to-income ratios (Stijns 2015).

But the rapid expansion of PABs also poses a number of challenges, including those stemming from their cross-sectoral and cross-border exposures. This increases the potential risk of spillovers from other segments (such as nonbank activities) and vulnerability to exogenous financial shocks. Risks are elevated by the fact that the supervisory capacity is already stretched by the limited number of highly skilled professionals, while oversight of interconnected and cross-border banks brings another layer of complexity to the supervision process and puts a premium on cross-institutional and cross-country collaboration. The supervisory challenges also include a lack of fully unified reporting standards in the region (many countries have moved toward adopting the International Financial Reporting Standards, but full compliance with the

reporting standards and high-quality reporting are sometimes missing). The situation is complicated by national secrecy laws, which often prevent the publication of detailed reporting, or the sharing of financial data with the supervisory authorities in other (host) jurisdictions.

Moreover, implementation of Basel accords (such as Basel II and Basel III) remains uneven across the region, with higher standards adopted in only a few countries (Kenya, Malawi, Mauritius, Mozambique, South Africa). The situation is further complicated by underdeveloped crisis management arrangements and the general lack of financial safety nets (with the exception of a few countries: Kenya, Nigeria, Tanzania, Uganda, Zimbabwe, and Economic and Monetary Community of Central Africa—CEMAC—zone countries). For example, there is a lack of clarity about the resolution powers in West African Economic and Monetary Union (WAEMU) countries, where the resolution of banks is a joint responsibility of national and regional authorities, but there is no clear and time-bound procedure to resolve a failed bank. This makes dealing with problem banks in these countries particularly complicated, and the resolution of banks is often delayed and challenged by national authorities (IMF 2016b). This also contributes to regulatory forbearance that can sometimes last for years. Even where deposit insurance schemes exist, there are concerns that many of them remain underfunded, and, in a situation of financial distress, they would not be ready to cover 80 percent of the retail deposits in systemic banks. This limits domestic buffers to respond to potential financial shocks transmitted through cross-border exposures of Pan-African banks, and puts a premium on cross-border collaboration.

Despite recent signs that efforts to strengthen cross-border cooperation are on the rise in the region, there is still considerable scope to further enhance consolidated and cross-border supervisory practices. Noteworthy progress has been achieved in Nigeria, where authorities require a Memorandum of Understanding with the foreign supervisory authority as a precondition to license a bank from a new jurisdiction, and in Kenya, where joint examination is being pursued by Kenyan and East African Community supervisors, as is the establishment of new supervisory colleges to exchange information among supervisors.

State-Owned Banks

While most banks in sub-Saharan Africa have become privately owned, state-owned banks still allocate substantial credit in some countries, achieving mixed results. These banks are typically created to overcome perceived gaps in credit allocation. While in the past the region was dominated by such banks, it now has the second highest share of foreign-owned banks, surpassed only by the transition economies of Eastern Europe and Central Asia, but state-

owned banks still allocate about 10 percent of total credit on average in Africa (World Bank 2012). Limited success of such banks has been reported in a few developing countries (e.g., Botswana, Chile, and Korea) in which the banks received clear mandates and acquired sufficient independence from political interference and capacity for performance measurement (Beck and Maimbo 2013). In contrast, most African countries set no clear goals or performance measures for these banks (Honohan and Beck 2007; Beck and Maimbo 2013). Instead, driven by relatively weak governance and capacity constraints, the banks often allocate credit to politically-connected groups, lend to cover losses of sometimes inefficient public enterprises, or to finance central government deficits. Many of these banks have therefore failed financially without achieving the intended objectives but have been kept in operation with heavy fiscal costs (Beck and Maimbo 2013; IMF 2013; World Bank 2012), undermining efficient credit allocation.

How Much Room Is There to Catch Up?

The level of financial development in many of sub-Saharan African countries is below the statistical benchmark (Figure 5).

- An empirical analysis of 152 countries from 1980 to 2013 helps obtain the benchmark levels of financial development consistent with individual countries' structural characteristics, that is factors that cannot be changed in the short-term.¹ The next section explores the factors that could be driving the gaps between benchmarks and actual levels.
- The results suggest that financial development in the region is generally below the benchmark level. Relatively fast financial development over the past decade has led to a catch-up or even surpassing of the benchmark only in middle-income countries that expanded financial institutions beyond the banking sector (Cabo Verde, Mauritius, South Africa), Côte d'Ivoire, and large oil exporters (Angola, Chad, Nigeria). For the latter group, benchmark levels are typically comparatively low because oil production is often self-financed or from offshore sources, as shown by particularly low predicted value in the case

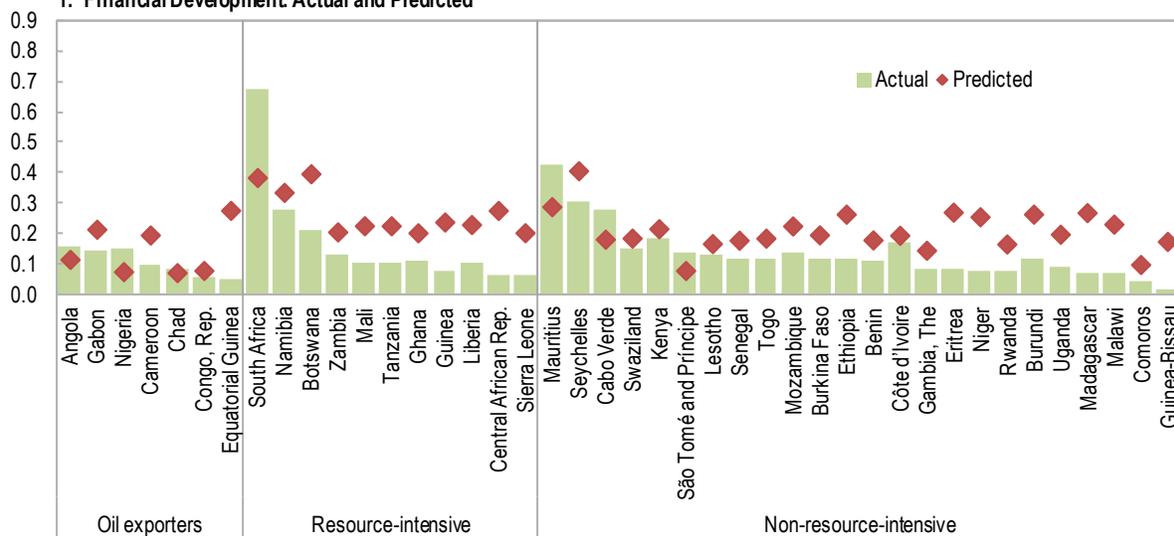
¹ Dependent variable: overall index of financial development and index of financial institutions (see Box 1). The explanatory variables include: log of real GDP per capita and its square term to account for non-linearities, population, population density, the age-dependency ratio to account for different savings behaviors across income groups, dummies for oil exporters and legal origin, and time dummies to capture the global macroeconomic environment. IMF (2015b) follows a similar approach with a different financial development index. Barajas and others (2013) used similarly structured regression to benchmark countries' private sector credit-to-GDP ratios against a statistical benchmark, which has been applied to specific country groups in various cases (for example, Alter and Yontcheva 2015; Newiak and Awad 2015). Similar results were obtained when examining financial institutions and financial markets separately.

of Nigeria. As a result, the sector contributes less on average to financial sector development than other sectors. Among other countries, Angola has seen particularly rapid development, with bank deposits increasing from 21 to 49 percent of GDP, and bank loans rising from 5 to 24 percent of GDP between 2005 and 2013, and has consequently surpassed the benchmark level. A similar exercise, which creates a benchmark for the financial institutions component of the index, yields very similar results.

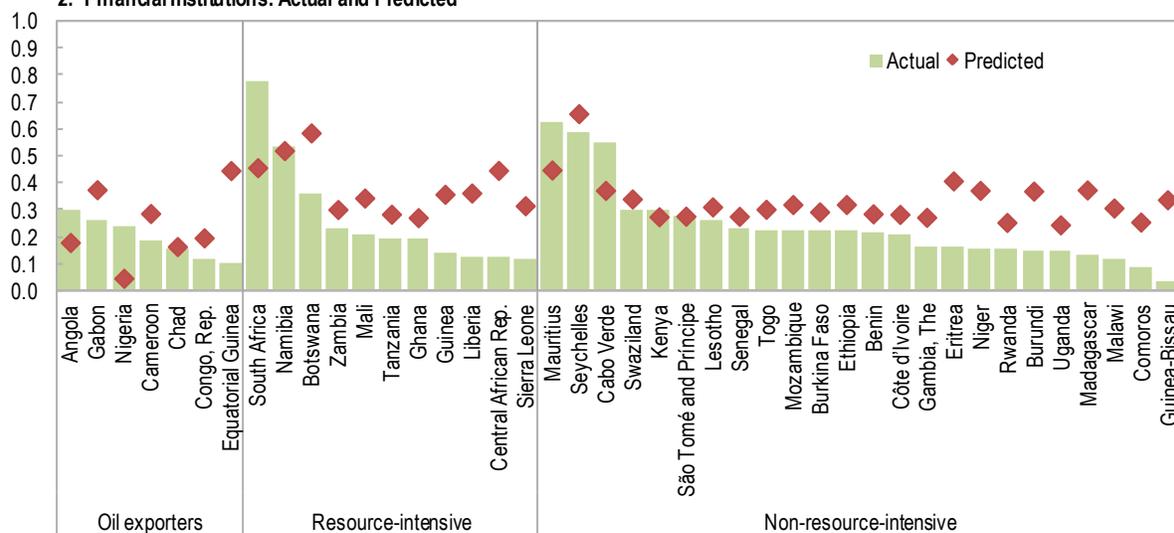
Figure 5. Sub-Saharan Africa: Actual and Predicted Financial Development, 2013

(1 = most developed; 0 = least developed)

1. Financial Development: Actual and Predicted



2. Financial Institutions: Actual and Predicted



Sources: Sahay and others 2015b, and IMF staff estimations.

2

Financial Development, Growth, and Volatility

Empirical estimates suggest that financial development has supported growth and reduced its volatility in sub-Saharan Africa. It has facilitated other economic policies in enhancing growth and stabilizing the economy. However, further financial development could yield additional gains for the region: raising the median financial development index to its benchmark value, as discussed in the last chapter, would be associated with an increase in growth by about 1.5 percentage points and lower its volatility further. The results thus confirm the salutary impact of financial development on reducing the volatility of growth and other macroeconomic variables. However, countries need to be vigilant about the emerging macro-financial risks in order to effectively manage the risks in financial development.

Financial development affects growth through several channels that are important for sub-Saharan Africa. First, it mobilizes savings from domestic and foreign sources, supports efficient allocations of capital (Acemoglu and Zilibotti 1997; Rajan and Zingales 1998), and increases total factor productivity (King and Levine 1993). Second, it eases the exchange of goods and services (Greenwood and Smith 1996). Third, it supports better risk management (Obstfeld 1994). Fourth, it facilitates information and enhances corporate governance (Grossman and Hart 1980; Shleifer and Vishny 1997). Financial development reduces information asymmetries, transaction and monitoring costs and allows risk diversification while improving the allocation of resources across different investment projects (Levine 1997). In addition, it increases the resilience of the economy by providing a variety of instruments that households and firms can employ to withstand adverse shocks. Sound financial systems can also strengthen the transmission mechanism of monetary and fiscal policies, through more information sharing and diversification of instruments. Finally, an important aspect of financial development—financial inclusion—reduces inequality of opportunity and mitigates the adverse effects of inequality on the level and durability of growth (Ostry, Berg, and Tsangarides 2014; World Bank 2014a; IMF 2015b). In particular, microeconomic and sociological studies show that women’s financial inclusion helps produce better welfare results in society.

Confirming the above arguments, the empirical evidence in the literature indeed suggests that financial development supports growth, especially at lower levels of financial development, although the effect on volatility is more mixed. Many studies find a positive impact, but suggest the existence of a threshold beyond which financial development is detrimental to growth (Arcand, Berkes, and Panizza 2012; Cecchetti and Kharoubi 2015; Sahay and others 2015b). This threshold effect is not relevant for sub-Saharan Africa, as all countries in the region are well below the threshold for exhibiting adverse growth effects.² The literature has also shown that financial development helps dampen the impact of adverse shocks by alleviating firms' and households' borrowing constraints (Caballero and Krishnamurty 2001), and promoting diversification and management of risk (Acemoglu and Zilibotti 1997). However, the financial accelerator mechanism may propagate and amplify the impact of real shocks in an environment with credit market imperfections (Bernanke, Gertler, and Gilchrist 1999).

Building on this theoretical and empirical evidence, this chapter shows that deeper financial development is indeed associated with higher growth in sub-Saharan African countries, with the size of the effect varying across countries. In particular, this chapter assesses the impact of financial development on growth³ in sub-Saharan Africa following Sahay and others (2015b), and includes factors specific to the region, such as the effect of aid flows and of the share of the agricultural sector as a proxy for the primary and informal sectors.⁴ As the results show a positive impact (Table 1), there is further scope for financial deepening in the region to better support growth, given that most sub-Saharan African countries are well below the inflection point for potential adverse effects.⁵ In particular, raising the median financial development index to its benchmark value is associated with an increase in growth by about 1.5 percentage points.

We find that the impact on growth tends to be stronger for countries at a lower level of financial development. For low-income countries, with larger estimated gaps to the benchmark, the potential boost to growth is about 1.9 percentage points, while the growth boost for oil

² Evidence from Arcand, Berkes, and Panizza (2012) shows an adverse impact of finance on growth above a private credit-to-GDP threshold of 100 percent, far above the actual level of sub-Saharan African countries.

³ As identified in the literature on finance and growth (for example, Levine 2005 and Beck 2008), the empirical analysis faces significant endogeneity issues. Following the literature, our analysis uses the panel generalized method of moments (GMM) estimator that uses lagged variables as instruments to minimize the problem.

⁴ See Annex 1 for details on data and the econometric specification.

⁵ We report only the results for our most parsimonious model, as the results show that the parameter on the square term of financial development is not significant.

producers is at about 0.5 percentage point. For instance, raising the financial development index of Niger (0.08) to the level of Kenya (0.18) generates a positive growth impact of 1.9

percentage points, while a further increase to the level of Namibia (0.28) adds 1 percentage point.⁶ The results also show that for a median sub-Saharan African country, most of the growth effect is from the support of financial institutions, while that from financial markets is positive but not significant, likely undermined by the lack of financial infrastructure and competition. The results are illustrative and should be taken with caution, given that data are available for only about 40 sub-Saharan African countries. Moreover, the financial market index has little dispersion given the short history of financial market development outside of the banking sector among most of these countries.

The findings of recent micro-founded studies corroborate the salutary growth impact of relaxing structural financial constraints. IMF (2015b) summarizes the benefits of removing the most binding constraints to financial inclusion on GDP, total factor productivity (TFP), and inequality in a set of countries (Kenya, Mozambique, Nigeria, Uganda, Zambia) and two monetary unions using the general equilibrium framework by Dabla-Norris and others (2015). The study identified borrowing constraints—limited enforcement of contracts and asymmetric information that results in high collateral and smaller leverage ratios—as the most relevant

Table 1. Sub-Saharan Africa: GMM Estimation Results of Impact of Financial Development on Growth

	Model 1	Model 2
Financial development index	27.00 ** (11.6)	
Financial development index (squared)	-33.83 * (19.9)	
Financial institution index		9.956 *** (3.51)
Financial market index		0.794 (19.19)
Financial institution index * financial market index		-19.590 (24.82)
Observations	216	216
Number of countries	39	39

Source: IMF staff estimates.

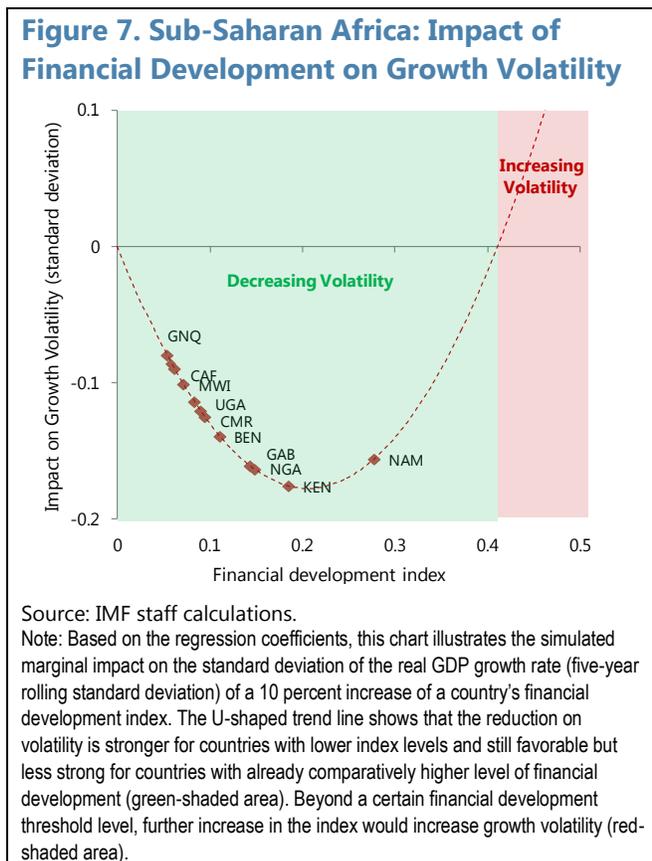
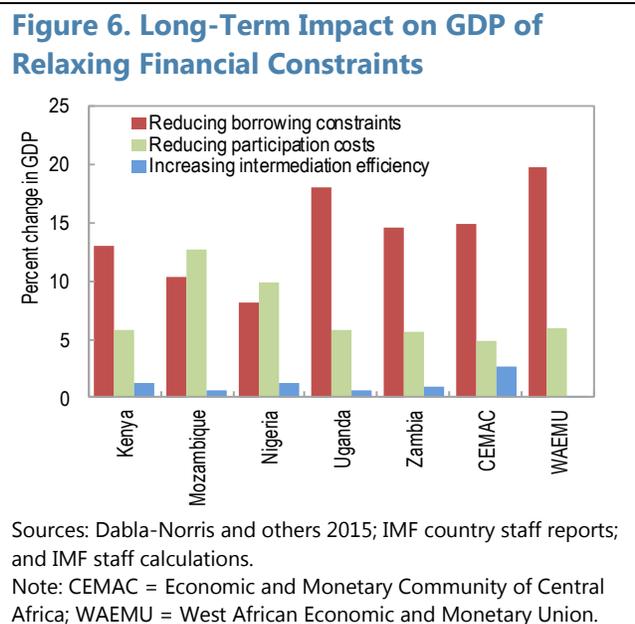
Note: Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variable is real GDP growth, averaged over non-overlapping five-year periods. Data cover over all sub-Saharan African countries (SSA), but availability varies by variables. Following Sahay and others (2015b), additional control variables include initial per capita GDP, education enrollment, and share of government consumption in GDP. The share of agriculture in GDP is added to better reflect its significance in SSA. Given the weak coefficient on the square terms, and that most SSA countries are at the relatively low level of financial development below the threshold to exhibit negative growth impact as discussed in the text, the model on the component index is run in level only in favor of parsimony. Model 1 represents the overall effect of financial development; model 2 represents the effect of dimensions of financial development. GMM = general method of moments.

⁶ To obtain the growth impact from increasing the baseline financial development level to a higher one—while holding other conditions equal—we calculate a new growth rate by using the new index and coefficients in Table 1, while the baseline growth rate is calculated using the existing index. Thus the difference between the two growth rates can be considered as a one-off impact owing to the improvement of the financial development index. The estimates for country groups are based on a median index for the corresponding group.

hurdles to firms' access to finance. Relaxing these borrowing constraints could increase GDP levels by 8 to 20 percent through a substantial improvement in TFP over the long term (Figure

6). Lowering participation costs—factors limiting access to credit such as distance to banks or ATMs, documentation required to apply for a loan—could also modestly contribute to growth.

The relationship between financial development and growth volatility appears to be nonlinear in the vast majority of countries in the region. Following Sahay and others (2015b) and including region-specific control variables, we find that the relationship between financial development and volatility is nonlinear in sub-Saharan African countries (Table 2), similar to findings in other regions. Financial development initially smoothens growth volatility by relaxing credit constraints on firms and households, and providing them with a variety of instruments to withstand adverse shocks. However, as the financial sector deepens, its contribution in reducing volatility declines because a deeper financial sector increases the propagation and amplification of shocks. However, this nonlinearity does not imply that further financial development exacerbates volatility in the region: as seen in Figure 7, sub-Saharan African economies are below the threshold (estimated at about 0.4) beyond which financial development starts increasing growth volatility. In other words, our empirical analysis suggests that—under



the current institutional setting and structural characteristics—this threshold is lower for sub-Saharan Africa than for other countries.

This presumably reflects the insufficiency of the region’s legal and institutional frameworks required to fully reap the benefits of deeper financial systems. Moreover, shocks that this region is subject to—especially those related to international commodity prices—are more frequent and of greater magnitude than others.

We also extended the analysis to examine the effect of financial development on investment volatility, including by using different components of financial development. The results suggest that financial development reduces overall growth volatility but only up to a certain point for sub-Saharan African countries, although it deepens investment fluctuations in other regions of the world (Table 2). The pronounced reduction of investment volatility may be attributed to the greater access to credit for large firms, which account for the bulk of investment in developing countries. Both financial institutions and financial markets are found to dampen growth volatility, but financial institutions are found to play a prominent role, consistent with their level of development in sub-Saharan African countries (Chapter 1).

Table 2. Sub-Saharan Africa: Estimation Results of Impact of Financial Development on Growth Volatility

Dependent variable: volatility of	GDP growth		Investment-to-GDP growth	
Financial development index	-7.589 ***		157.1 ***	
	(1.118)		(2.741)	
Financial development index (squared term)	3.739 ***		-280.1 ***	
	(1.318)		(3.519)	
Financial institution index		-5.236 ***		-24.67 ***
		(0.664)		(0.768)
Financial institution index (squared term)		5.03 ***		
		(0.910)		
Financial market index		-2.967 *		-38.80 ***
		(1.529)		(1.024)
Financial market index (squared term)		-0.106		
		(1.688)		
SSA* financial development	-9.706 ***		-246.3 ***	
	(1.963)		(10.06)	
SSA* financial development (squared term)	16.31 ***		404.6 ***	
	(2.679)		(51.59)	
SSA* financial institution index		-4.592 ***		-9.052 ***
		(1.265)		(3.253)
SSA* financial institution index (squared term)		7.187 ***		
		(1.970)		
SSA* financial market index		-2.290		32.65 ***
		(4.228)		(8.731)
SSA* financial market index (squared term)		2.373		
		(7.077)		
Observations	1,173	1,173	1,083	1,083
Number of countries	95	95	89	89

Sources: Sahay and others 2015b; and IMF staff estimates.

Note: Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Dependent variable: five-year rolling standard deviation of real GDP growth and growth of investment-to-GDP ratio. Additional control variables: five-year lags of GDP per capita, trade and financial openness, energy exports (percent of GDP), volatility of foreign growth, gross capital inflows in the region excluding country in question, terms-of-trade changes, polity index, growth in GDP per capita, government balance, and aid to GDP growth volatility for 1995–2013. The high magnitude of financial development variables’ coefficients on investment volatility could be explained by the substantial volatility of investment across countries and over time. In addition, although the aggregate coefficient is positive for the global sample, the financial development coefficient for sub-Saharan African countries (FD + FDxSSA) is statistically significant and negative while the coefficient on the square term is statistically significant and positive at the 5 percent level.¹

More Vigilance against Macro-financial Risks

The previous sections highlighted that further financial sector development in sub-Saharan Africa could yield significant macroeconomic gains. However, such development promotes a sector that, if excessive risks are taken, could pose a risk of substantial spillovers to the economy, highlighting the need to be vigilant about macro-financial risks.

Recent country studies on sub-Saharan African economies underscore a number of emerging macro-financial risks.

- In the WAEMU, a combination of widening fiscal imbalances and accommodative monetary policy by the regional central bank (BCEAO) has allowed banks to significantly increase holdings of government securities to take advantage of the interest rate margin of government bonds over the low BCEAO refinancing rate, raising the sovereign financial risk (IMF 2015g).⁷
- In Malawi, insufficient fiscal adjustment led to the accumulation of domestic payment arrears and more recourse to domestic financing, resulting in increased nonperforming loans and elevated financial sector exposure to government risks and thus heightened economic uncertainty (IMF 2015d).
- In Namibia, a booming housing market has been posing a great risk to banks and could potentially lead to a fiscal risk.
- In the CEMAC, Namibia, and Uganda, banks' credit growth has been accompanied by significant concentration risks (IMF 2015c, 2015e, 2015f). Moreover, in Uganda, high dollarization in loans and deposits poses potential credit risks due to possible currency mismatches in borrowers' balance sheets.

These developments could initiate bank and sovereign risk feedback loops. When such a risk materializes, it could be easily exacerbated, given the lack of enforcement of prudential rules, the weak judiciary system, and weak crisis resolution frameworks in the region.

⁷ Government debt has increased from 18 percent to 22 percent of banks' total assets between 2011 and 2014 in the WAMEU region.

3

Boosting Financial Sector Development

Sound macroeconomic fundamentals have been driving financial development in sub-Saharan African countries, while weak institutional quality has been hindering it in many countries of the region. Improvements in legal frameworks and corporate governance seem to be the most promising avenues to boost financial development in the region.

A Summary Review of the Literature

Various past contributions to the literature investigated the factors that boost financial sector development.

- A first strand of the literature focuses on macroeconomic fundamentals as a driver for financial development. Early studies, such as Gurley and Shaw (1967) and Goldsmith (1969), show that economic growth encourages banking sector development as economic expansion boosts demand for financial services. Boyd, Levine, and Smith (2001) suggest that there is a significant negative relationship between inflation and financial development, given information asymmetries that intensify with higher inflation and prevent financial development.
- A second strand of the literature focuses on international integration as a driving force behind financial development. For instance, Svaleryd and Vlachos (2002) show that there is a positive relationship between financial development and liberal trade policies—with causation running in both directions. Klein and Olivei (2008) empirically confirm that countries with more open capital accounts exhibit a significantly higher increase in financial depth than others. Separately, Rajan and Zingales (2003) study the issue from a political economy perspective, and conclude that international trade and financial liberalization encourage financial development by weakening the power of incumbents, who are likely opposed to the liberalization on concerns over greater competition eroding their rents.
- A third strand of the literature focuses on institutional quality as a driving force. Acemoglu, Johnson, and Robinson (2004) claim that better economic institutions improve distribution of financial resources and help financial development. Along this line, Djankov, McLiesh, and Shleifer (2005) empirically show that better institutional frameworks—such as creditor protection—are positively related to higher ratios of private credit to GDP. More recently, Sahay and others (2015b) show that greater financial development is positively associated with better regulatory frameworks—especially those protecting property and creditor rights. Institutional quality has also been a point of focus in studies focusing on sub-Saharan Africa.

Gulde and others (2006) argue that the deficiency in property rights protection is one of the main impediments to the region's banking sector development. Anayiotos and Toroyan (2009) provide evidence that institutional factors affect financial depth and access to financial services in sub-Saharan Africa more than such commonly used explanatory variables as asset quality and profitability. Separately, Singh, Kpodar, and Ghura (2009) study the different level of financial development between the CFA (*Communauté Financière Africaine*) franc zone (WAEMU and CEMAC) and the rest of sub-Saharan African countries, and suggest that the difference in financial development can be attributed to a different quality of institutions. More recently, Mlachila, Park, and Yabara (2013) show that weak judicial enforcement is one of the major impediments to the region's banking system development.

Combining the second and the third strands mentioned above, David, Mlachila, and Moheput (2015) show that, in contrast to other developing countries, there is a weak link between international integration and financial development in the region, and this can be explained by relatively weak institutions in the region. Their research supports the evidence by Tressel and Detragiache (2008), who show that financial liberalization policies increase financial development only in the countries with well-developed political institutions and limited power of the executive, and Chinn and Ito (2005), who suggest that international financial integration contributes to financial development only when countries achieve a certain level of legal and institutional quality.

Macroeconomic Fundamentals Driving Financial Development⁸

We show that macroeconomic fundamentals are the main drivers of financial development in the region. Drawing on the existing literature, this section analyzes the drivers of financial development in developing countries, with a special focus on sub-Saharan Africa. In particular, following the literature highlighted above, we investigate the effects from two key aspects of globalization—trade and financial integration,⁹ with the following key findings (Table 3):

- *Macroeconomic fundamentals* have a positive impact on financial development in developing countries in general and sub-Saharan Africa in particular. High inflation—a proxy for macroeconomic instability—has a negative effect on financial development.¹⁰ In addition, we find that the income effect is significant, indicating more scope for financial development as the middle class starts to emerge in sub-Saharan African countries.

⁸ See Annex 2 for details on data and econometric specification.

⁹ The GMM estimation method was employed to mitigate the problems caused by variables' endogeneity. Nevertheless, the lack of consensus on the theory of the factors driving financial development suggests some uncertainty in model specification, and thus the results from this exploratory analysis should be interpreted with due caution.

¹⁰ While there are many other candidates for a proxy for macroeconomic stability, inflation is the most widely used measure of macroeconomic stability.

- *International trade integration*, measured by the share of total exports and imports of goods and services in GDP, positively affects financial development in developing countries. Contrasting the theory of financial development by Rajan and Zingales (2003), however, the effect almost disappears in sub-Saharan Africa.
- Similarly, *international financial integration*, measured by the share of international assets and liabilities as a share of GDP that reflects a country's de facto degree of capital account openness, positively affects financial development in developing countries—more in sub-Saharan African countries.
- Lower *country risk* appears to be conducive to financial development in developing countries, with a diminished effect in sub-Saharan Africa. This finding might suggest that financial market participants demand a higher risk premium in sub-Saharan African countries, even for the same risk rating. As a result, further institutional reform to address country-specific bottlenecks in financial market information infrastructure can further stimulate financial development.

Table 3. Sub-Saharan Africa: Drivers of Financial Development

	GMM
Financial development index ($t-1$)	0.549 *** [0.017]
Capital account openness (de facto index, $t-1$)	0.005 ** [0.002]
Trade openness index (total trade/GDP, $t-1$)	0.044 *** [0.006]
Real GDP per capita ($t-1$)	0.087 *** [0.007]
Inflation rate ($t-1$)	-0.021 *** [0.003]
ICRG country risk rating	0.123 *** [0.016]
SSA * capital account openness ($t-1$)	0.009 *** [0.003]
SSA * trade openness ($t-1$)	-0.042 *** [0.009]
SSA * inflation rate ($t-1$)	-0.017 [0.014]
SSA * ICRG country risk rating	-0.105 *** [0.033]
Constant	-0.714 *** [0.046]
Observations	1,809
Number of countries	82

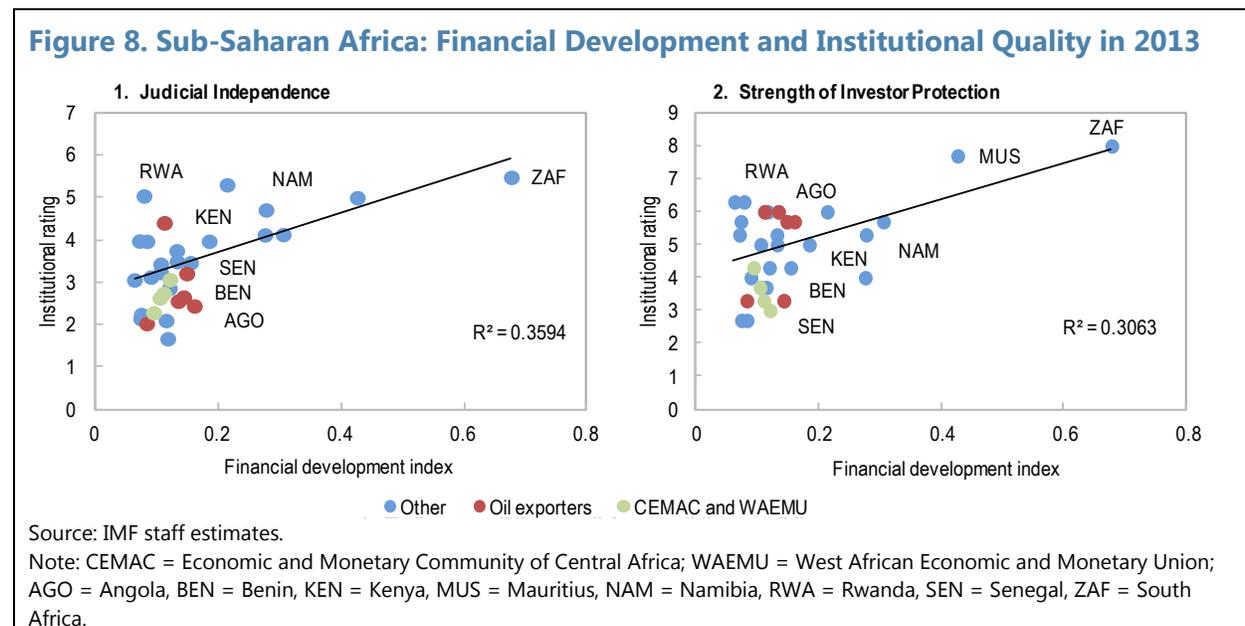
Source: IMF staff estimates.

Note: Based on panel regressions of data for 1980–2013 for about 90 developing countries (excluding oil exporters), although the number of observations vary depending on the variable. Interaction terms with sub-Saharan Africa (SSA) only show the incremental impact for the region's countries. In other words, the overall impact on sub-Saharan African countries should be evaluated by the sum of the coefficients for all developing countries and the coefficients on interaction terms. Including oil exporters does not qualitatively change the core results. ICRG = International country risk guide. Robust standard errors in brackets; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Weak Institutional Quality Inhibiting Financial Development

While we confirm above that macroeconomic fundamentals are the main drivers of financial development in the region, the level of financial development stays below the benchmark in many sub-Saharan African countries (as discussed in chapter 1). Although we find a diminished effect of institutional quality on financial development compared with other developing countries, recent studies suggested that institutional quality is one of the leading explanations.

We therefore examine the relationship between some key institutional quality measures and the overall financial development level using recent data. The results in Figure 8 highlight that some types of institutional indicators, such as judicial independence and strength of investor protection, are associated with financial development, suggesting that improving institutional quality helps countries catch up in financial development. However, other factors also play a role. For example, some of the oil exporters (Angola, Nigeria) outperform the benchmarks as inflows of oil revenues into the financial system may have induced financial development despite relatively weak institutional quality.



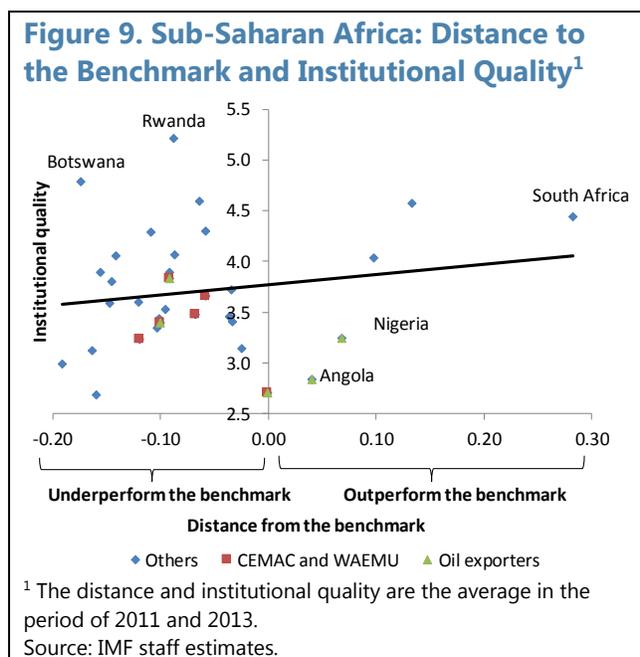
Some Institutions Seem to Matter More Than Others

Sub-Saharan African countries could reap the benefits by focusing on improving legal frameworks and corporate governance. To assess why some countries are facing larger gaps in financial development relative to the benchmark, we assess whether institutional quality can explain countries' distance to the financial benchmark level. The results highlight that *overall* institutional quality appears to be only weakly related to the degree of underdevelopment

(Figure 9).¹¹ While the overall level of institutions may not be strongly associated with the distance to the benchmark, specific aspects of institutional quality may matter for the degree of financial underdevelopment.

To test for this hypothesis and to derive more specific policy implications, we analyze the effect of different institutional indicators in more detail.¹² The results reveal that many indicators of institutional quality can help reduce the degree of underdevelopment (that is, the distance to the benchmark) (Table 4). In particular, they suggest that sub-Saharan African countries could reduce the degree of financial underdevelopment by improving legal frameworks and corporate governance.

More specifically, in the area of legal frameworks, protecting minority shareholders' interests and strengthening judicial independence and investor protection are important for achieving a country's benchmark level of financial development. In the area of corporate governance, strengthening of auditing and reporting standards appears essential, and individual country studies support this finding. For example, Cui, Dieterich, and Maino (2016) and Newiak and Awad (2015) find that specific constraints in financial market infrastructure, such as high collateral requirements and the lack of property registry, have impeded financial deepening and inclusion in West Africa. Drawing on the above findings, the next section presents the opportunities related to Islamic finance.



¹¹ The institutional quality index was obtained from the Global Competitiveness Index's Pillar 1 (Institution) by the World Economic Forum. Using alternative indicators, such as the World Bank Country Policy and Institutional Assessment index of the World Bank's *Doing Business* indicators, yields similar results.

¹² The same exercise was conducted with the World Bank's *Doing Business* indicators, and the institutional indices of Polity IV. The results are similar but less robust than those from the Global Competitiveness Index.

Table 4. Sub-Saharan Africa: Top Ranking of Coefficients between the Distance to the Benchmark and Detailed Institutional Quality

Detailed institutional quality	Coefficient with the distance to the benchmark	R-squared	Ranking of coefficient ^{1/}
Protection of minority shareholders' interests	0.0614 **	0.153	1
Strength of auditing and reporting standards	0.0468 **	0.158	2
Efficiency of legal framework in challenging regs.	0.0424	0.073	3
Efficiency of legal framework in settling disputes	0.0400	0.079	4
Transparency of government policymaking	0.0385	0.044	5
Efficacy of corporate boards	0.0379	0.040	6
Property rights	0.0346	0.072	7
Judicial independence	0.0343 **	0.119	8
Intellectual property protection	0.0326	0.064	9
Irregular payments and bribes	0.0326	0.079	9
Ethical behavior of firms	0.0309	0.032	11
Strength of investor protection	0.0251 *	0.118	12

Source: IMF staff estimates.

¹ Coefficients are ranked from high to low, as higher coefficients help to improve financial development in a more efficient way.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Increasing the Potential of Islamic Finance

The previous section shows that some aspects of institutional weaknesses appear to be a stumbling block for sub-Saharan Africa's financial development. In this context, Islamic finance is attracting increasing attention as a potential way to help mitigate the institutional barriers and promote financial development in the region.

In simple terms, Islamic finance refers to the provision of financial services in line with Islamic ethical principles and law (*Shari'ah*). Accordingly, Islamic financial products are geared to financing productive and job-creating activities, excluding activities that are deemed harmful to society, such as through excessive uncertainty. Islamic financial products can be classified in three main categories: (1) debt-like financing in the form of sales or deferred payments, (2) equity-like financing in the form of profit-and-loss sharing, and (3) financial services.¹³

Over the past two decades, the share of Islamic finance has remained low in sub-Saharan Africa. Islamic financial products took up only about 15 percent of total financial assets in sub-Saharan Africa at the end of 2014, and the region accounts for only 1 percent of global Islamic finance assets (Figure 10). The relatively small size of Islamic finance compared with conventional finance points to great growth potential. Moreover, it appears that there is a negative correlation between financial inclusion and the size of the Muslim population (Figure 11). In this context, Islamic finance is particularly expected to increase access to financial services for

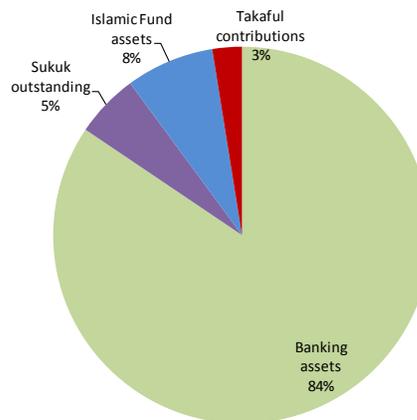
¹³ Refer to Kammer and others (2005) for a comprehensive description of Islamic finance products.

Muslim populations currently underserved by conventional finance—only 24 percent of Muslims have a bank account compared with 44 percent for non-Muslims (Demircuc-Kunt, Klapper, and Randall 2013).

Recent empirical work indicates that Islamic banking is conducive to economic growth and financial inclusion in low- and middle-income countries, including in sub-Saharan Africa (Imam and Kpodar 2015; Kammer and others 2015). The Islamic finance principles of risk-sharing and asset-based financing (that is, the strong link of credit to collateral) are considered to help promoting macroeconomic and financial stability through better risk management by both financial institutions and their customers. Particularly, *Sukuks*, the Islamic bonds that are structurally similar to asset-backed securities, are considered to be well-suited for infrastructure financing, thereby supporting long-term growth and economic development.¹⁴ Islamic finance principles are also considered to serve SME financing well, thereby promoting inclusive growth.

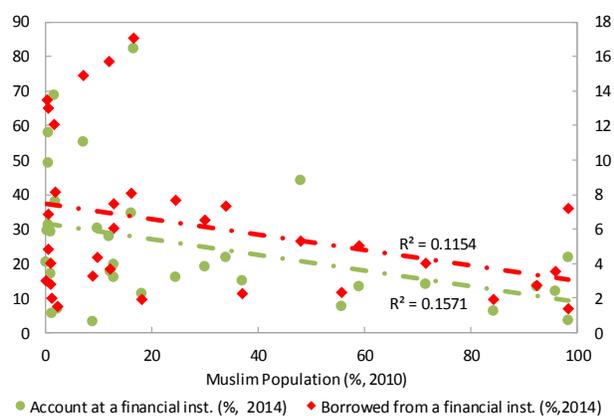
Nonetheless, Islamic finance poses particular challenges in terms of regulation, supervision, and monetary policy owing to the specific feature of its transactions. For example, the regulation and supervision frameworks should take into consideration Islamic finance specificities such as profit-sharing investment accounts and Shari'ah governance.

Figure 10. Sub-Saharan Africa: Breakdown of Islamic Finance Assets
(Percent of total assets, end-2014)



Source: *Islamic Financial Services Industry Stability Report 2015*.

Figure 11: Access to Financial Services



Source: World Bank (2014b) *Global Findex 2014*; and Pew Research Center.

¹⁴ Senegal and Côte d'Ivoire have recently issued Sukuks of US\$164 million and US\$246 million, respectively, to finance infrastructure projects, while South Africa issued US\$500 million with the aim to become the Islamic finance hub for sub-Saharan Africa's infrastructure financing.

4

Promoting Financial Inclusion

Access to traditional financial services in sub-Saharan Africa remains low relative to other regions, in particular for the poor, the uneducated, and women. Closing gaps in financial inclusion, in particular along gender lines, could reduce income inequality. Novel financial services, such as mobile payment systems and mobile banking, have compensated for these shortcomings to some extent. But while the region, in particular East Africa, has led the world in the expansion of mobile financial services, there is still room to expand them to a larger share of the population and the region more generally. Similarly, microfinance institutions play an important role by providing services to low-income populations, smoothing their income and consumption expenditure.

Overview

Access to traditional financial services in sub-Saharan African countries remains low, in particular, for certain demographic groups (Figure 12). The share of the population having an account at, or borrowing from, a financial institution is low compared with other regions, with only the region's middle-income countries coming close to peers' levels. Insufficient information on borrowers (such as credit history and credit risk), the lack of collateral registries, and difficult contract enforcement constrain bank lending to the private sector in many cases. In fragile countries, access to financial services is particularly limited because of the scarce provision of financial infrastructure—as evidenced by less than seven ATMs and less than three financial branches per 100,000 persons (Central African Republic, Comoros, Guinea-Bissau). In all of the region's country groups, access to financial services is higher by large margins for the more educated, the top 60 percent earners, and men. Access is particularly low in rural areas because branches are mostly concentrated in urban centers (Mlachila, Park, and Yabara 2013). The region suffers from considerable gender inequality in various aspects of financial inclusion. Indeed, the next section shows that greater financial inclusion for women is associated with lower income inequality (see also Sahay and others 2015a).

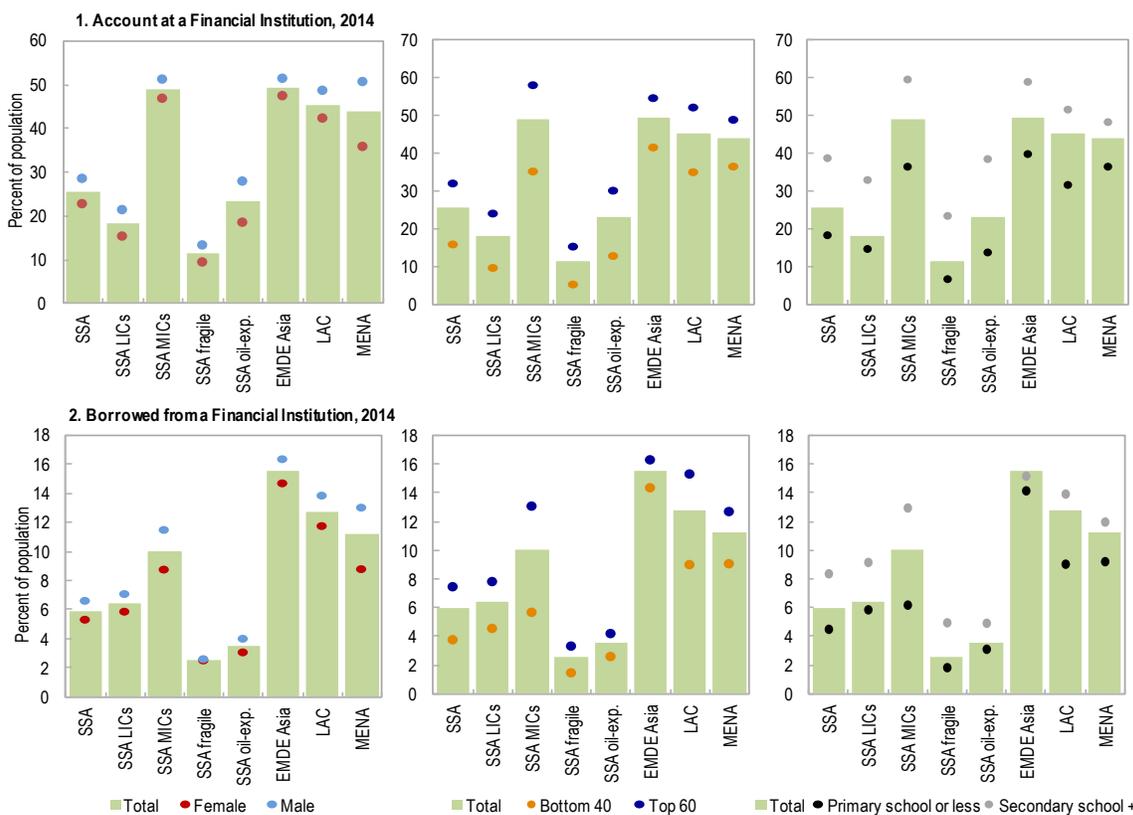
Novel innovative financial services have started compensating for some of these shortcomings in a number of countries. The development of mobile payment systems has helped to incorporate large shares of the population into the financial system, especially in East Africa. The fast spread of systems such as M-Pesa, M-Shwari, and M-Kopa in Kenya has helped reduce transaction costs, facilitated personal transactions, and contributed to the use of financial intermediation services (IMF 2012b).¹⁵ The successful experience in East Africa provides a useful

¹⁵ M-Shwari and M-Kesho are banking platforms that enable customers to save, earn interest and access small amounts of credit via mobile phone. M-Kopa—originally set up as a company that sold small solar panels to

model that could be adapted by other countries in sub-Saharan Africa—as shown in the next section of this chapter. An important lesson from East Africa is the need to have a flexible, enabling regulatory environment while taking into account supervisory challenges.

Microfinance offers an important avenue that can complement mobile banking to foster financial inclusion. Microfinance has grown rapidly, providing services to customers at the lower end of the income distribution. It is particularly well adapted to the poor with little or no collateral, including in rural areas, thereby significantly enhancing financial inclusion, through savings mobilization and, to a lesser extent, credit provision. While individual services in mobile payments and microfinance are expanding, both types of financial services so far have been complementary, with mobile payment systems facilitating mainly payment transactions, while microfinance has been relaxing financial constraints for poorer households—as shown in the following chapters.

Figure 12. Sub-Saharan Africa: Indicators of Financial Inclusion

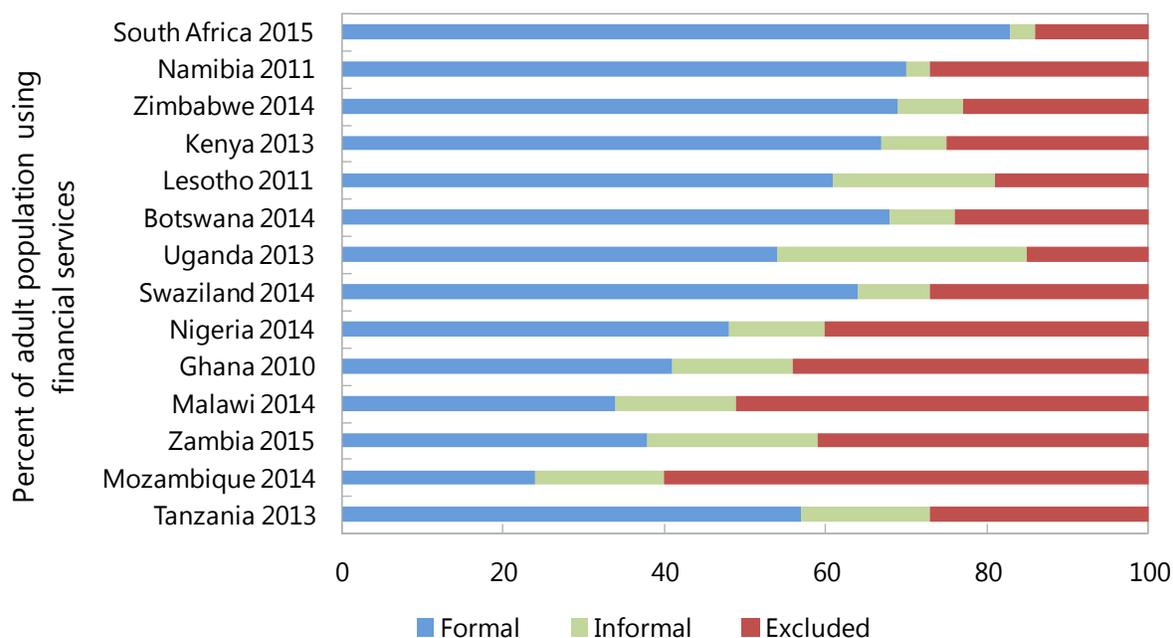


Sources: World Bank 2014b, Global Findex 2014; and IMF staff estimates.

Note: EMDE Asia = emerging market and developing Asia; LAC = Latin America and the Caribbean; LIC = low-income countries; MENA = Middle East and North Africa region; SSA = sub-Saharan Africa.

rural population for which it allowed customers to make daily micro-payments—overtime became a provider of mobile money services.

Figure 13. Sub-Saharan African Countries: Financial Inclusion



Source: Finmark Trust, Finscope Survey.

The Cost of Unequal Financial Access¹⁶

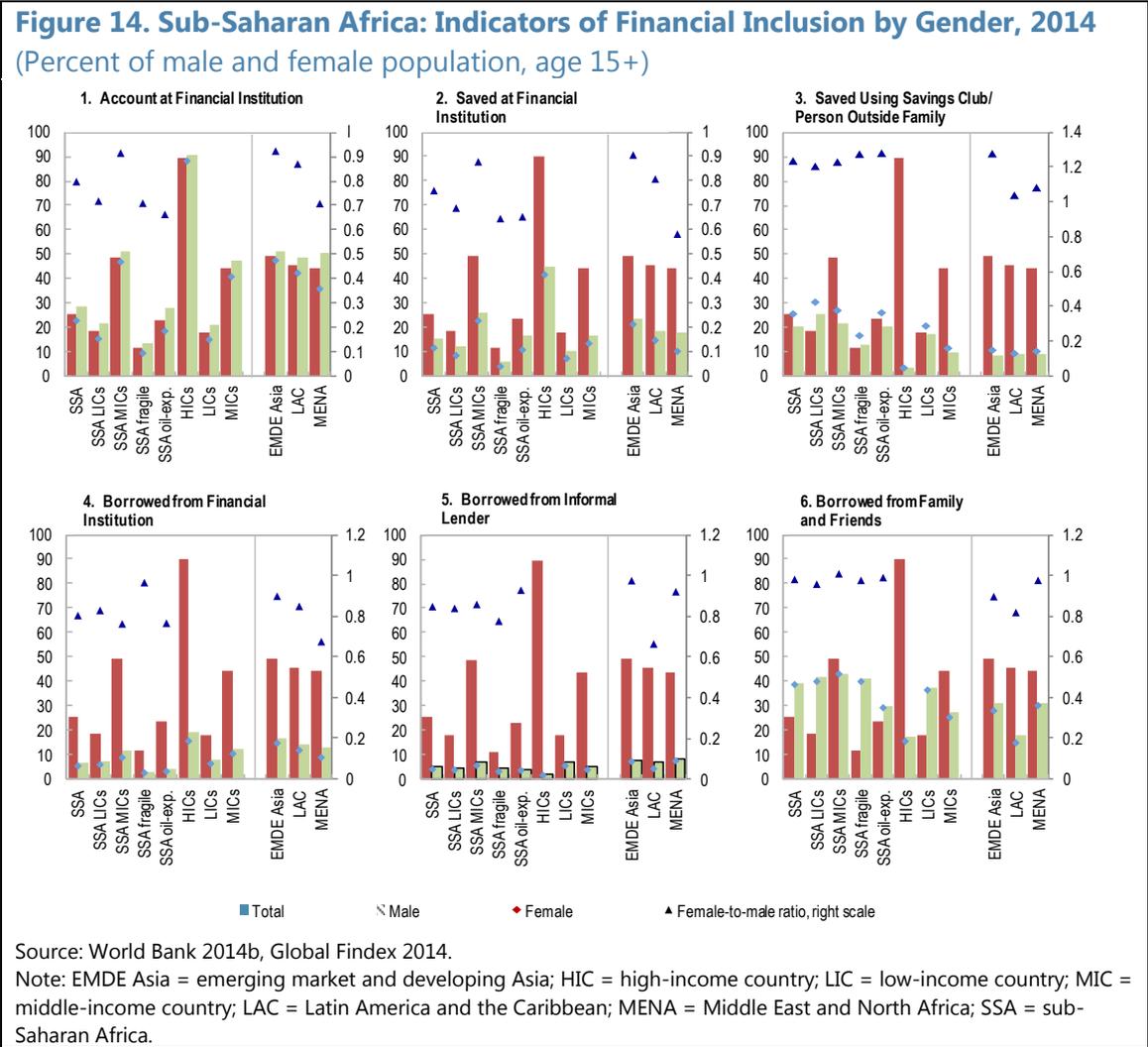
Gender inequality in various aspects of financial inclusion is high in sub-Saharan Africa, and it is highly associated higher income inequality, as shown in this section. That said, the empirical results should be interpreted with caution: the associations among different gender gaps, and between gender gaps and economic outcomes, are complex and further work, as well as more data on financial inclusion over time, would be needed to make more definitive statements about the direction of causality at the macroeconomic level.

Access to financial services is generally lower in sub-Saharan Africa, in particular in the region's fragile and low-income countries, compared with other developing regions. In addition, access is particularly low for women, with gender gaps in most of the region's country groups being higher than in emerging and developing Asia or Latin America and the Caribbean (Figure 14). The region's fragile states are an exception, but only because access levels are (equally) low for both genders. The gender gap is lower for informal activities, with more women than men saving in a savings club or with a person outside the family, and men and women appear equally likely to borrow from their family and friends.

Narrower gender gaps in financial inclusion are associated with higher development, as well as more equitable outcomes (Figure 15). Specifically:

¹⁶ This section is based on Deléchat, Newiak, and Yang (forthcoming).

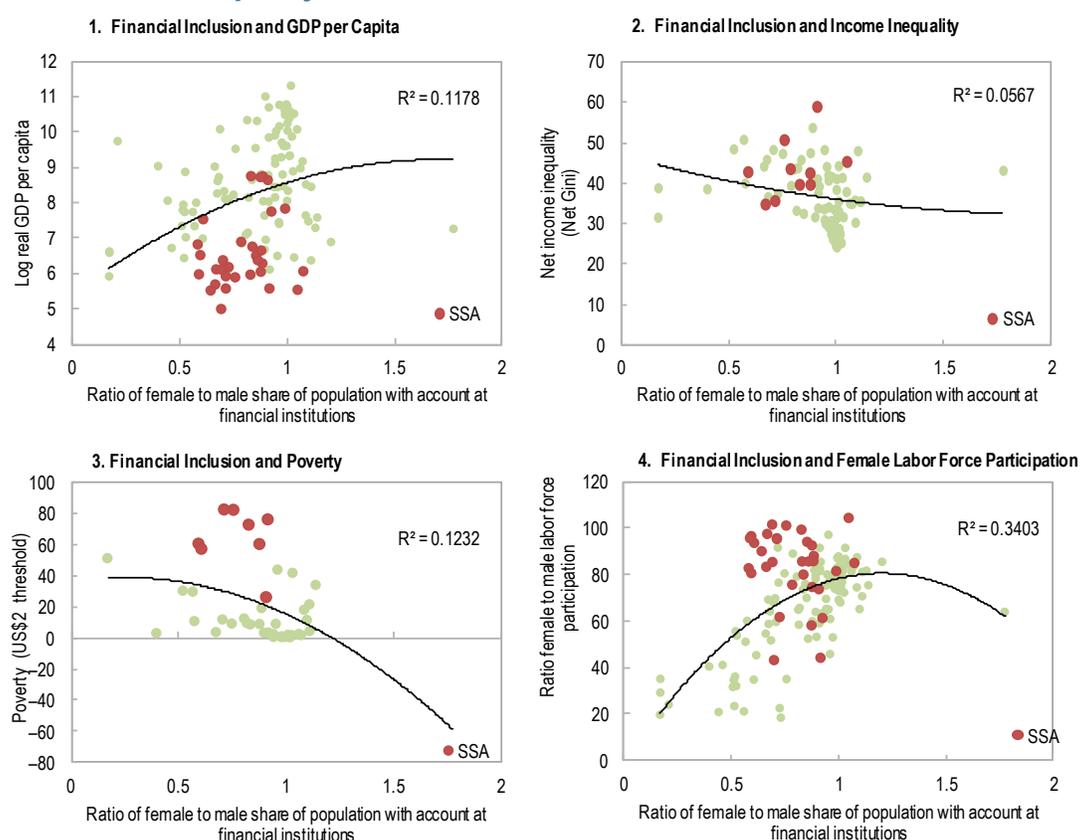
- More equal access of women and men to financial services, defined here as having an account at a formal financial institution, is closely correlated with higher economic development, as measured by higher GDP per capita or lower poverty rates.
- It implies more equal opportunities for men and women, and is therefore associated with a more equal income distribution (lower net Gini coefficient).
- Finally, it is also associated with more equal labor force participation rates between men and women. More equal labor force participation rates, in turn, have been previously associated with higher growth (Cuberes and Teignier 2015) and a more equal income distribution (Gonzales and others 2015).



We show that more equality in financial inclusion for men and women is significantly associated with lower income inequality, even when accounting for other determinants of inequality (Table 5). Lower financial access among different groups of the population distorts the allocation of resources, as it restricts investment in human and physical capital to the wealthier parts of the

population (Galor and Zeira 1993; Honohan 2008). Using a broader index of formal financial inclusion in a cross-section of countries,¹⁷ we find that higher gender equality in financial inclusion is associated with lower income inequality. This effect comes on top of standard drivers of income inequality such as the structure of the economy; for example, government expenditure appears to have a generally redistributive effect and is therefore associated with lower income inequality. At lower stages of development, when access to financial services is restricted to smaller parts of the population, financial depth is associated with increases in income inequality, but this effect disappears for more advanced economies. Due to its labor intensity, a larger agricultural sector is associated with lower income inequality.

Figure 15. Gender Equality in Financial Inclusion and Macroeconomic Outcomes



Sources: Solt 2014; World Bank 2014b, Global Findex 2014; and World Bank (2015), World Development Indicators.
 Note: SSA = sub-Saharan Africa.

¹⁷ We construct an index of formal financial inclusion using data from the World Bank (2014b) Global Findex database, using a principal components analysis approach. The index covers the following dimensions, defined as ratio of female to male, as a share of the total population ages 15 and older: having a bank account at a formal financial institution, having a debit card, having a credit card, saving in a formal financial institution, and borrowing from a formal financial institution.

Gender equality in financial inclusion may be influencing income inequality through its effect on female labor force participation. Theoretically, financial inclusion can empower women economically and therefore contribute to higher female labor force participation. An account at a financial institution provides women with a place outside the home to store money safely (CGAP 2015), and access to borrowing can allow women to start a business, thus contributing to increases in entrepreneurship and self-employment. These channels are particularly important in sub-Saharan Africa where women are overrepresented in the informal sector, with a large part of the population in nonwage employment.

Indeed, the results from an empirical cross-country analysis suggest that greater gender equality in financial inclusion is significantly and positively associated with equality in labor force participation rates (Table 6).

- In particular, narrowing the gender gap in financial inclusion by 10 percentage points is associated with a decrease in gender gaps in labor force participation by 2 to 3 percentage points globally. This finding holds after controlling for previously identified determinants of female labor force participation, such as the level of development (Duflo 2012; Tsani and others 2012), the gender gap in education (Eckstein and Lifshitz 2011; Steinberg and Nakane 2012), the fertility rate (Bloom and others 2009; Mishra and Smyth 2010), the male–female age differential at the time of first marriage (a proxy for a society’s attitude toward women), and an index of women’s rights (Gonzales and others 2015; IMF 2015b).
- Likely driven by the region’s labor market structure, the relationship between financial inclusion and labor force participation is stronger in sub-Saharan Africa than for the global sample—as evidenced by the positive and significant interaction of the regional dummy with the financial inclusion gap in column (8) of Table 6—with 10 percentage point reductions in female labor force participation being associated with decreases of more than 4 percentage points in labor force participation gaps.

This evidence suggests that policies targeted at improving women’s financial inclusion would help enhance both gender equality in labor force participation and income inequality. In turn, more equal labor force participation rates would unlock growth benefits and contribute to reducing income inequality.

Table 5. Explaining Income Inequality

Variables	(1)	(2)	(3)	(4)	(5)
Financial inclusion gap	-16.038 *** (5.52)	-15.874 *** (5.56)	-12.577 ** (5.02)	-12.628 ** (4.96)	-9.828 ** (4.81)
GDP per capita	-4.065 *** (0.75)	-5.043 *** (1.18)	-3.801 *** (1.1)	-6.923 *** (2.22)	-7.994 *** (2.14)
Financial depth		4.449 (4.77)	15.149 *** (4.96)	14.029 *** (4.95)	14.461 *** (4.7)
Financial depth * advanced economies			-13.615 *** (3.24)	-11.488 *** (3.46)	-7.248 ** (3.62)
Agriculture share of GDP				-0.359 (0.22)	-0.529 ** (0.22)
Government consumption expenditure					-0.524 *** (0.19)
Constant	89.459 *** (7.58)	96.596 *** (10.04)	80.421 *** (9.75)	113.097 *** (22.45)	129.694 *** (22.12)
Observations	70	69	69	69	69
R-squared	0.42	0.43	0.55	0.57	0.62

Source: IMF staff estimates.

Note: Global sample, restricted through availability of data on income inequality. Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Financial inclusion gap	0.491 *** (0.068)	0.399 *** (0.075)	0.319 *** (0.078)	0.220 *** (0.077)	0.235 *** (0.078)	0.241 *** (0.078)	0.260 *** (0.070)	0.211 *** (0.075)
GDP per capita	-0.483 *** (0.15)	-0.67 *** (0.159)	-0.489 *** (0.157)	-0.708 *** (0.166)	-0.736 *** (0.171)	-0.678 *** (0.191)	-0.468 *** (0.177)	-0.529 *** (0.188)
GDP per capita squared	0.025 *** (0.008)	0.034 *** (0.009)	0.023 *** (0.009)	0.036 *** (0.009)	0.037 *** (0.009)	0.034 *** (0.01)	0.023 ** (0.01)	0.026 *** (0.01)
Education gap		0.324 *** (0.1)	0.168 (0.104)	0.219 ** (0.101)	0.202 * (0.102)	0.206 ** (0.103)	0.013 (0.101)	0.087 (0.105)
Marriage age differential			-0.044 *** (0.013)	-0.022 (0.014)	-0.031 ** (0.014)	-0.033 ** (0.015)	-0.042 *** (0.013)	-0.04 *** (0.014)
Equal rights to get a job (dummy)				0.177 *** (0.047)				
Female legal rights index					0.045 *** (0.013)	0.049 *** (0.014)	0.033 ** (0.013)	0.039 ** (0.014)
Fertility rate						0.014 (0.02)	-0.05 ** (0.022)	-0.029 ** (0.023)
SSA (dummy)							0.266 *** (0.055)	
SSA * Financial inclusion gap								0.223 *** (0.071)
Constant	2.564 *** (0.662)	3.339 *** (0.7)	3.003 *** (0.692)	3.719 *** (0.713)	3.663 *** (0.72)	3.292 *** (0.902)	2.765 *** (0.816)	2.936 *** (0.868)
Observations	137	122	107	99	99	99	99	99
R-squared	0.34	0.40	0.40	0.44	0.43	0.43	0.54	0.49

Sources: IMF staff estimates.
Notes: Global sample. The dependent variable is the ratio of female to male labor force participation, averaged over 2012–14. All explanatory variables are lagged and represent averages over 2007–10. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Supporting Financial Development and Inclusion through Mobile Payments and Banking Services

With a sizable but sparse population, sub-Saharan Africa leads the world in the adoption of mobile banking. In the context of a predominantly rural population, it is important to note that traditional bank intermediaries do not reach remote areas, while the costs of their services are frequently prohibitive for low-income households and small businesses. The recent surge in mobile money observed in many sub-Saharan African countries has been facilitated by a strong increase in mobile phone subscriptions, supported by the expansion of network coverage, and technological adaptation to support financial services. Moreover, the declining prices of mobile devices and a growing variety of mobile payments and banking innovations have also contributed to this trend. As a result, in 2014, 11 percent of the population in sub-Saharan Africa held mobile banking accounts, compared with less than 6.5 percent in other regions (Figure 16). As shown by empirical studies, mobile banking is used by households over a wide range of economic, demographic, and educational backgrounds (Jack 2011).

Mobile banking services help to bridge the financial inclusion gap and compensate for shortcomings in access to financial services offered by traditional banking intermediaries. In East Africa, the use of cell phones to access mobile payments and banking accounted for half of all mobile connections in 2014 (GSMA 2015). Out of 28 countries in sub-Saharan Africa for which information is available, in six countries, holders of mobile accounts exceeded 20 percent of the

adult population (ages 15+). Kenya leads the region, with almost 60 percent of the population holding mobile accounts. But mobile money transactions are also growing rapidly in Uganda and Tanzania, doubling in terms of broad money in both countries, reaching about 30 percent in mid-2015. Nevertheless, access to mobile banking services remains uneven in Africa, with coverage of the population with mobile banking services being minuscule in many countries.

The developments in mobile money have complemented traditional bank services, but also challenged the way traditional banks operate in Africa and caused some positive spill-backs to traditional bank intermediation. The key benefits of mobile money are reduced costs and time required to access the financial services and, of course, convenience. The impact of mobile banking is impressive in some countries, with financial inclusion indicators doubling in just a few years and the number of mobile accounts exceeding traditional bank accounts (Côte d'Ivoire, Kenya, Niger, Tanzania, Uganda, Zimbabwe).

However, some studies also point out that mobile banking has helped to expand demand for traditional bank products (Mbiti and Weil 2011). Banks in Kenya, seeing the benefits of broadening their deposit base by tapping into low-income households, have found another effective way of collecting small deposits by establishing agent banking. Others deploy mobile- and web-based technologies to reach out to new clients. This has allowed a reduction in the costs charged to high-risk potential customers, because the real-time settlement platform (offered by mobile operators) does not require traditional risk assessment. There is increasing evidence that these developments encourage micro-savers to deposit even more in the commercial banks.

The successful experience of mobile operators in introducing payment and banking services (particularly in Kenya) provides some insight into the potential being created by the leveraging of mobile phone technology in fostering financial inclusion. M-Pesa—created in 2006 as the Kenyan Vodafone subsidiary (Safaricom)—launched its first mobile phone application to facilitate microcredit repayments. Because the company was involved in microfinancing services, it developed a new framework for payments and savings. The new payments and savings schemes expanded quickly, and the number of payments exceeded those made by Western Union and payment cards. Building on the M-Pesa experience, new products were launched—M-Shwari and M-Kesho (which are using the M-Pesa platform), and more recently M-Kopa. Although the average value of mobile payments in Kenya remains relatively small (at US\$24), the system currently allows for transactions at over 123,700 agents. This compares with only 1,440 bank branches and 2,700 ATMs (as of end-2014). Interestingly, the value of mobile money transactions (at 62 percent of GDP) increased commercial banks' deposits (which stood at 60 percent of GDP).

M-Pesa's innovative approach to the provision of payments, microcredits, and savings services to the previously unbanked population had broader implications, as these services spread out over time to other related areas. A number of factors have facilitated this expansion (IMF 2012b): (1) the rapid increase in the use of mobile phones, (2) the flexible approach to technology, (3)

the willingness to penetrate new markets, and (4) the design of government policies, which allowed for operations of M-Pesa as a parallel payment system while securing customers' funds (as deposits) in regulated and supervised commercial banks, backed by the availability of deposit insurance schemes. The legal framework was sufficiently flexible, permitting the introduction of new products while limiting operational risks related to the security of deposits. Over time, building on convenience, confidence, and further technological innovations, other financial products started to be offered to low-income households and small businesses, products from which in the past they had been virtually excluded.

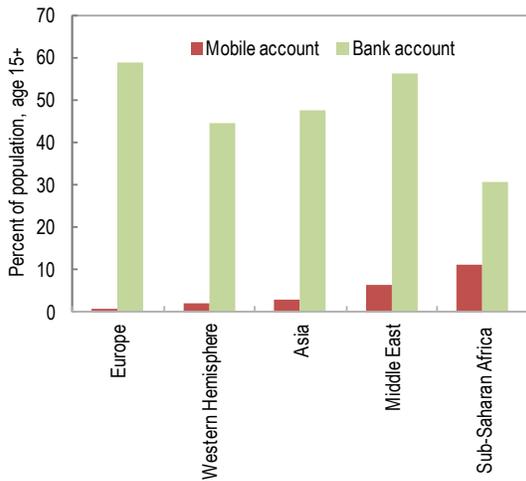
As a result, the variety of mobile financial products and services has expanded considerably. Utility bills, tax payments, savings vehicles, and credit and insurance products are only some examples of products and services gaining momentum via mobile services in countries such as Côte d'Ivoire, Uganda, Nigeria, Mauritius, and Tanzania. There are also products that target specific mobile users. For example, in Uganda, Orange Money provides farmers with an application that allows them to buy farming supplies and receive payments for their harvest, while in Côte d'Ivoire, a few companies (Orange, MTN, Moov, and Celpaid) have developed an application that allows for the payment of school fees. More recently, in an interesting innovation, M-Kopa Solar, a company that sells small solar panels to low-income houses, became a provider of an innovative financial service, allowing customers to acquire a solar panel kit by making daily micropayments (less than 50 cents) after an initial down-payment of about US\$35. This allows the low-income population to acquire assets with their micro-savings, while using the customers' repayment records as a way of assessing their creditworthiness for future lending.

Increasingly, the customers can also make international money transfers. In Tanzania and Côte d'Ivoire, mobile operators have started offering interconnected mobile money services among several countries, including in Asia. Similarly, cross-border remittances via mobile phones are gaining importance. It is estimated that such flows already generate up to 20 percent of all cross-border transactions (GMSA 2015).

Empirical studies on the development of mobile banking in East Africa show that an enabling regulatory environment is essential for supporting growth in mobile money services and financial inclusion (IMF 2012b). But there are also risks related to rapidly spreading mobile financial transactions, as they add to complexity and may pose a threat of abusive practices if conducted by unlicensed operators. Therefore, there are five key areas of risks that need to be considered and addressed by supervisors: the legal framework, financial integrity, fund safeguarding, and operational and payment risks (Khiaonarong 2014). To mitigate these risks, policymakers should decide on institutional arrangements for the oversight of mobile payments, a collaboration framework for domestic and international mobile transfers, capital requirements for nonbanks involved in mobile banking, and reporting requirements (Klein and Mayer 2011).

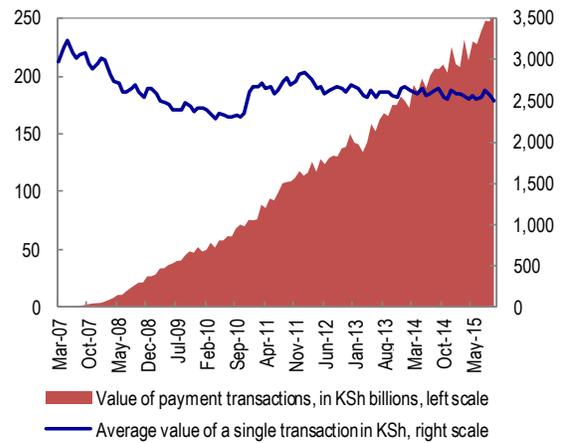
Figure 16. Mobile Payments

Mobile Phone Subscriptions, 1999–2004



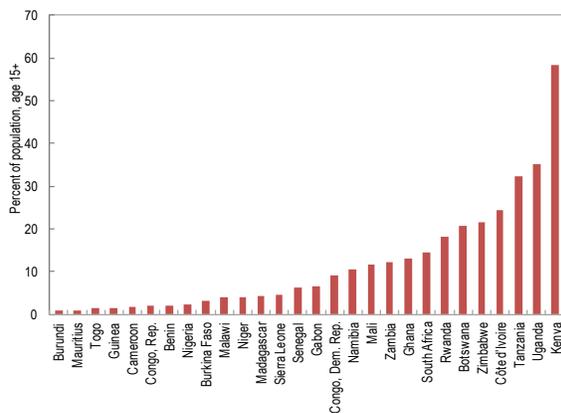
Source: World Bank (2015), World Development Indicators.

Kenya: Development in Mobile Payments, 2007–15



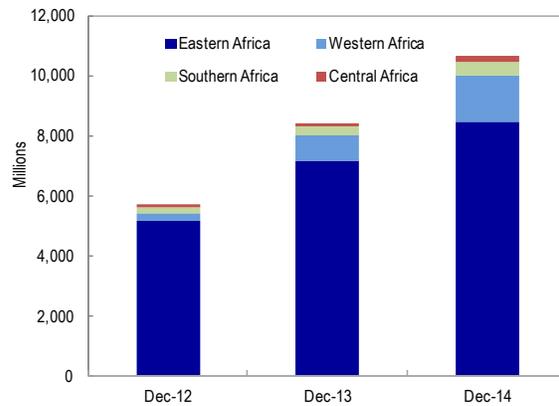
Source: World Bank (2014b), Global Index.

Mobile Accounts in Sub-Saharan Africa, 2014



Source: GSMA Mobile Money Programme.

Monthly Mobile Money Transactions



Source: GSMA Mobile Money Programme.

The Roles of Microfinance in Promoting Financial Inclusion

Microfinance has been growing rapidly in sub-Saharan Africa. Microfinance institutions (MFIs) typically provide small loans and saving services to the poor and near poor; some also provide micro-insurance and money transfer services. Following an average growth rate of about 20 percent per year in the number of borrowers and depositors since 2005, microfinance in the region served about 45 million clients in 2014 (Figures 17, panels 1 and 2), with the highest growth of MFI assets in East and Southern Africa (Figure 17, panel 3). In 2015–16, the region’s microfinance market is estimated to grow by 15–20 percent, second only to Asia, which can further support access to finance for the 350 million unbanked adults in the region (ResponsAbility 2014; Demircug-Kunt and others 2015).

Microfinance has been associated with the improvement of a variety of development indicators. While microfinance activities remain small relative to banks, their better reach to the poor with little or no collateral, including in rural areas, has significantly enhanced financial inclusion. It has also had a positive impact on the poor, including through savings and credit (Ghana, Uganda), investment of microfirms (Kenya, Malawi), and income and consumption (Kenya, Madagascar, Malawi), although the jury is still out on its sustained poverty-reduction. MFIs also enhance gender equality, as microcredits typically rely on women group guarantees to overcome the lack of collateral and missing financial market infrastructure. In 2014, about 60 percent of MFI borrowers were women in sub-Saharan Africa, and this share is almost twice as large as women's share of formal bank accounts. But this ratio still lags behind that of the best-performing region, Asia, and varies among the sub-regions, led by East Africa. Studies also find that microcredits by women have stronger positive economic impact than those by men.

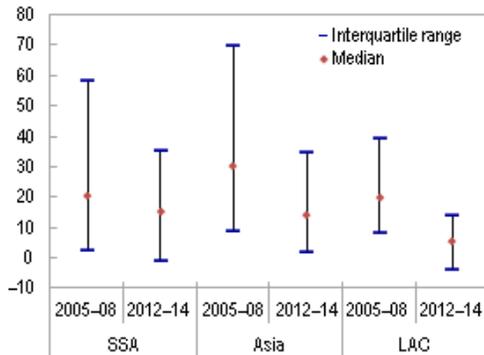
Saving mobilization has outpaced credit services of MFIs. Over the past decade, growth in the number of depositors has exceeded that of borrowers. In 2013–14, depositors outnumbered borrowers four to one, while total volume of deposits also exceeded the gross loan portfolio in all subregions. This reduces MFIs' funding needs from borrowing (less than 10 percent in the region). In contrast, numbers of borrowers and depositors are similar in other regions on average, and the volume of gross loan portfolios exceeds that of deposits (Figure 17, panel 3). Moreover, borrowing in other developing regions is much higher—at about a quarter of total liabilities, with deposits accounting for one half. Despite favorable financing costs, MFIs in sub-Saharan Africa encounter higher operational expenses (Figure 17, panel 4), largely driven by the lack of physical and financial market infrastructure.

The declining portfolio quality of MFIs underscores emerging challenges. Despite charging higher interest rates (Figure 17, panel 5), MFIs in sub-Saharan Africa produce a portfolio quality similar to the global average. Compared with other regions, sub-Saharan Africa records a higher loan loss rate, which rose to about 5 percent in 2012–14, the highest of all regions. While the share of loans at risk is largely at par with the global average, it has risen steadily (Figure 17, panel 6). Despite their significant contribution to financial inclusion, MFIs are also subject to boom–bust cycles, and—given that their clients are mostly poor with less education—the sector is particularly vulnerable to natural disasters (e.g., India, Nicaragua) and Ponzi schemes (Benin). Although the small size of MFIs generally limits the contingent fiscal risk, any significant shock can affect confidence, undermine financial deepening, and harm the poor the most. Therefore, strong actions are needed to address the risks in light of several recent crisis episodes.

Improving financial literacy and financial market infrastructure are fundamental to strengthening MFIs. These measures help overcome critical information problems that impede access to finance. In addition, they enhance the efficiency of microfinance and smooth the transition to bank finance as microfirms grow (CGAP and MIX 2011; Roodman 2012). Furthermore, these measures help to prevent the borrower over-indebtedness that has contributed to repayment crisis episodes in some countries in Asia and Latin America. In particular, technological innovation and product diversification can inject further dynamism in microfinance and enhance its growth and poverty impact. Given its advantage in reducing operational cost by tapping into the fast-growing and high-penetration mobile network, mobile banking has become a fast-growing business for MFIs (Côte d'Ivoire, Kenya).

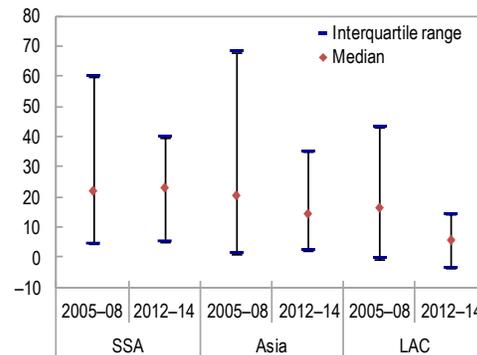
Figure 17. Key Features of Microfinance Institutions in Developing Countries

1. Growth of Borrowers



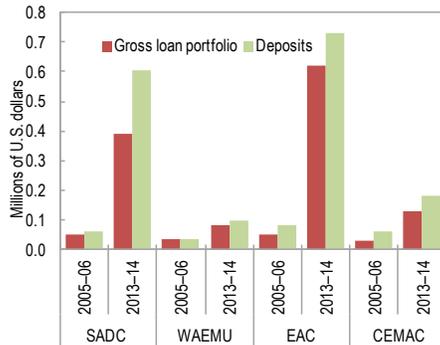
Sources: MIX database; and IMF staff calculations.
Note: LAC - Latin America and the Caribbean; SSA - sub-Saharan Africa.

2. Growth of Depositors



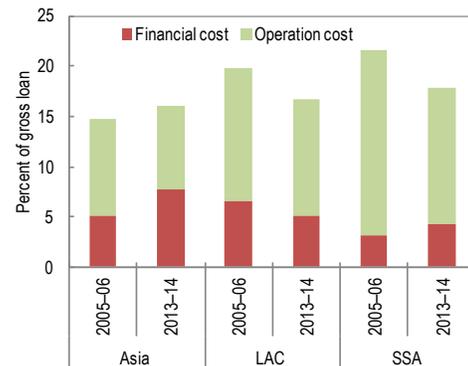
Sources: MIX database; and IMF staff calculations.
Note: LAC - Latin America and the Caribbean; SSA - sub-Saharan Africa.

3. Microfinance Loans versus Deposits



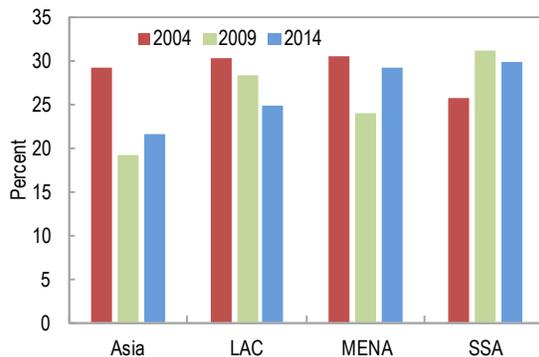
Sources: MIX database; and IMF staff calculations.
Note: SADC - Southern African Development Community; WAEMU - West Africa Economic and Monetary Union; EAC - East Africa Community; CEMAC - Central Africa Economic and Monetary Community.

4. Financial versus Operational Cost



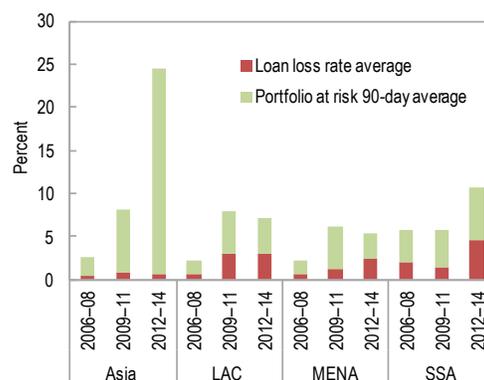
Sources: MIX database; and IMF staff calculations.
Note: LAC - Latin America and the Caribbean; SSA - sub-Saharan Africa.

5. Nominal Interest of MFIs



Sources: MIX database; and IMF staff calculations.
Note: LAC - Latin America and the Caribbean; MENA - Middle East and North Africa; SSA - sub-Saharan Africa.

6. Portfolio Quality Indicators



Sources: MIX database; and IMF staff calculations.
Note: LAC - Latin America and the Caribbean; MENA - Middle East and North Africa; SSA - sub-Saharan Africa.

Strengthening supervision is key to addressing consumer protection and financial stability concerns while supporting financial inclusion. While the “test and learn” approach to supervision has supported rapid growth of the sector in many of the region’s countries, enhancing risk-based supervision and enforcement is critical to weeding out problem MFIs in order to support stability and efficiency (BIS 2010; CGAP and MIX 2011; Cui, Dieterich, and Maino 2016). Some countries made progress in regulating MFIs by activities (Democratic Republic of Congo, Kenya, Rwanda, Uganda, WAEMU), but effective enforcement against small-sized, yet often more numerous, MFIs requires stronger commitment and commensurate resources of relevant supervisors. In addition to supervisor monitoring, strengthening professionalism in the microfinance sector is important to mitigating governance risk. Finally, the high share of MFIs that take deposits in the region also require effective collaboration between supervisors of nonbank financial institutions and bank supervisors.

5

Ensuring Continued Financial Stability

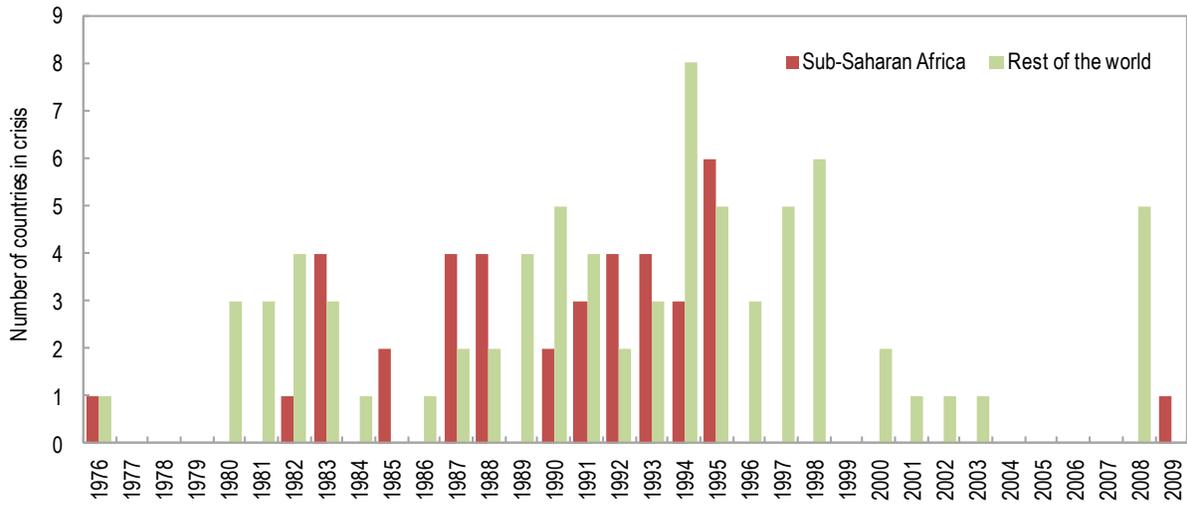
Key financial stability indicators—while stronger than in the past—have come under pressure more recently, possibly presaging a slower pace of financial development in the future. Progress in supervisory standards varies substantially across countries, and challenges to implementation remain. Pan-African banks bring new opportunities and are an important driver of financial development, but also pose oversight challenges and may increase systemic risk. The results of an empirical analysis of episodes of commodity price shocks show that declines in commodity prices are associated with higher financial sector fragility, such as increased nonperforming loans and bank costs, and lower bank profitability and liquidity, especially in sub-Saharan Africa, where the level of dependency on commodities is high.

Banking crises in the region have become rarer, and financial soundness indicators have improved over recent decades—although they have weakened somewhat more recently (Figures 17 and 18). The reduced frequency of banking crises—a trend evolving in parallel with favorable macroeconomic conditions and improvements in supervisory frameworks from the early 2000s—has undoubtedly contributed to financial development. At the same time, the impact of the global financial crisis on financial sector stability has been moderate in most sub-Saharan African countries (Mlachila, Park, and Yabara 2013), possibly also reflecting the region’s relatively low financial integration. In fact, main financial soundness indicators have improved compared with a decade ago (Mecagni, Marchettini, and Maino 2015). However, in the past five years, indicators deteriorated somewhat, with capital adequacy ratios staying flat at best and nonperforming loans continuously rising, in line with evidence of overheating in some countries of the region (IMF 2016a).

More recently, the decline in commodity prices, tighter external financing conditions, and exchange rate depreciations have exerted further pressures on various dimensions of financial soundness, in particular in commodity-exporting countries (IMF 2016a). This could be a harbinger of a slower pace of financial development in the medium term.

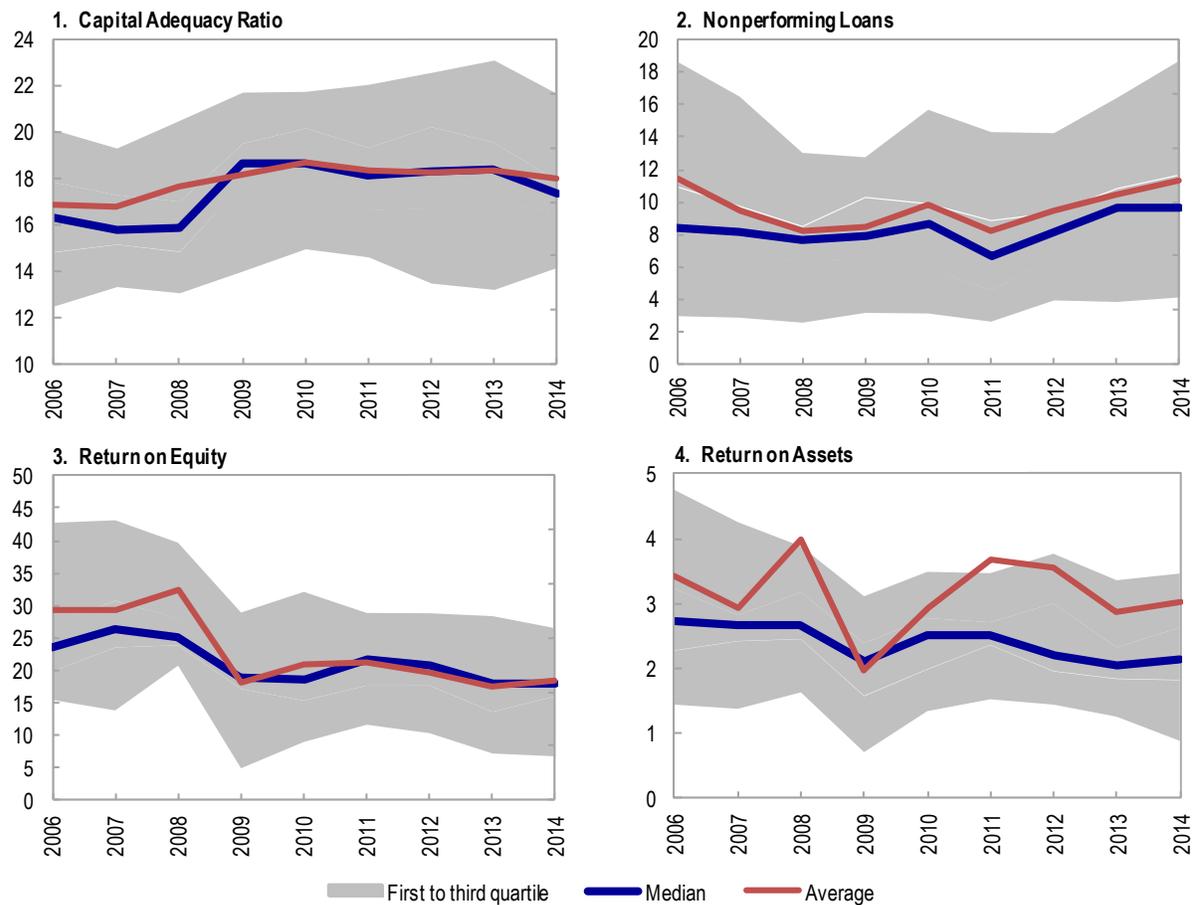
Progress in supervisory standards and implementation of deposit insurance schemes varies substantially across the region (Table 7; Enoch, Mathieu, and Mecagni 2015; Mecagni, Marchettini, and Maino 2015). Most countries have already moved to international reporting standards or plan to move toward them in the short term, while only six countries still rely on national standards (including Angola, Guinea, South Sudan). However, only a few countries and one monetary union have implemented deposit insurance schemes as of 2016 (CEMAC, Kenya, Nigeria, Tanzania, Uganda, Zimbabwe). Basel II standards have been implemented only in Malawi, Mauritius, Mozambique, and South Africa.

Figure 18. Systemic Banking Crises, 1976–2010



Source: Laeven and Valencia 2012.

Figure 19. Sub-Saharan Africa: Financial Soundness Indicators, 2006–14



Sources: Country authorities; and IMF staff estimates.

Enforcement of prudential standards is quite weak in some cases, and the adoption of stricter financial standards in the future is likely to face implementation hurdles. Prudential standards are insufficiently enforced in many of the region's countries. For example, while the WAEMU Banking Commission has put considerable effort into building operational capacity and enhancing banking supervision in the past few years, the average bank does not comply with the regionally required regulatory (Basel I) capital adequacy ratio of 8 percent (IMF 2015g) in half of the WAEMU member countries. This highlights that more ambitious norms in the future may face the risk of even weaker implementation capacity.

The rapid expansion of Pan-African banks brings new opportunities, but it also poses more risks. The role of PABs in enhancing financial intermediation, promoting greater economic integration, and fostering innovation is critical. However, there are also risks related to their systemic importance and interconnectedness. The most important risk is related to the lack of adequate supervisory oversight on a consolidated basis. At the same time, some banks have weak internal governance frameworks. These problems need to be addressed to mitigate against systemic risks that could endanger financial development.

Table 7. Sub-Saharan Africa: Financial Sector Supervisory Standards

	Accounting Standard	Capital Adequacy Standard ¹	Deposit Insurance	Asset Classification ²
Angola	National	No Basel II yet	No	< 90 days
Botswana	IFRS	Basel II in progress	No	90 days
Burundi	IFRS Plan	Basel II in progress	No	> 90 days
Cabo Verde	IFRS	Basel II in progress	No	< 90 days
CEMAC	IFRS Plan	No Basel II yet	Implemented	> 90 days
Comoros	National	Basel II in progress	No	N/A
Congo, Dem. Rep.	National	No Basel II yet	No	90 days
Eritrea	N/A	N/A	No	N/A
Ethiopia	IFRS Plan	No Basel II yet	No	90 days
Gambia	IFRS Plan	No Basel II yet	No	90 days
Ghana	IFRS	No Basel II yet	No	90 days
Guinea	National	No Basel II yet	No	N/A
Kenya	IFRS	Parts of Basel II/III	Implemented	90 days
Lesotho	IFRS	No Basel II yet	No	90 days
Liberia	IFRS	Basel II in progress	No	90 days
Madagascar	National	No Basel II yet	No	90 days
Malawi	IFRS	Basel II	No	90 days
Mauritius	IFRS	Basel II	No	90 days
Mozambique	IFRS	Basel II	No	> 90 days
Namibia	IFRS	Parts of Basel II	No	90 days
Nigeria	IFRS	Basel II in progress	Implemented	90 days
Rwanda	IFRS	Basel II in progress	No	90 days
São Tomé and Príncipe	IFRS Plan	Basel II in progress	No	N/A
Seychelles	IFRS Plan	No Basel II yet	No	90 days
Sierra Leone	IFRS	No Basel II yet	No	90 days
South Africa	IFRS	Basel III	No	90 days
South Sudan	National	No Basel II yet	No	N/A
Swaziland	IFRS	No Basel II yet	No	90 days
Uganda	IFRS	No Basel II yet	Implemented	90 days
Tanzania	IFRS	No Basel II yet	Implemented	90 days
WAEMU	IFRS Plan	No Basel II yet	No	> 90 days
Zambia	IFRS	No Basel II yet	No	90 days
Zimbabwe	IFRS	Basel II in progress	Implemented	91 days

Sources: Enoch, Mathieu, and Mecagni 2015; Mecagni, Marchettini, and Maino 2015.

Note: CEMAC = Economic and Monetary Community of Central Africa; IFRS = International Financial Reporting Standards; N/A = not available.; WAEMU = West African Economic and Monetary Union.

¹ The Financial Stability Institute conducts a survey on the current status report on implementation of Basel II, Basel 2.5, and Basel III for non-Basel Committee on Banking Supervision/non-European Union jurisdictions and publishes unedited responses. The column is based for Basel II on answers to Pillar 1 (standardized approach of credit risk, basic indicator approach, and standardized approach for operational risk), Pillar 2, and Pillar 3.

² This category indicates the threshold of "number of days in arrears" after which loans are classified as nonperforming loans.

Commodity Price Shocks and Financial Sector Fragility¹⁸

The current sharp decline in commodity prices is not unprecedented and frequent occurrence of such declines has led to a large number of studies analyzing the impact of lower commodity prices on economic growth (Deaton and Miller 1995; Dehn 2000), debt (Arezki and Ismail 2013), and conflict (Brückner and Ciccone 2010). However, the literature lacks a systematic empirical analysis of the impact of commodity price shocks on the financial sector of commodity exporters.

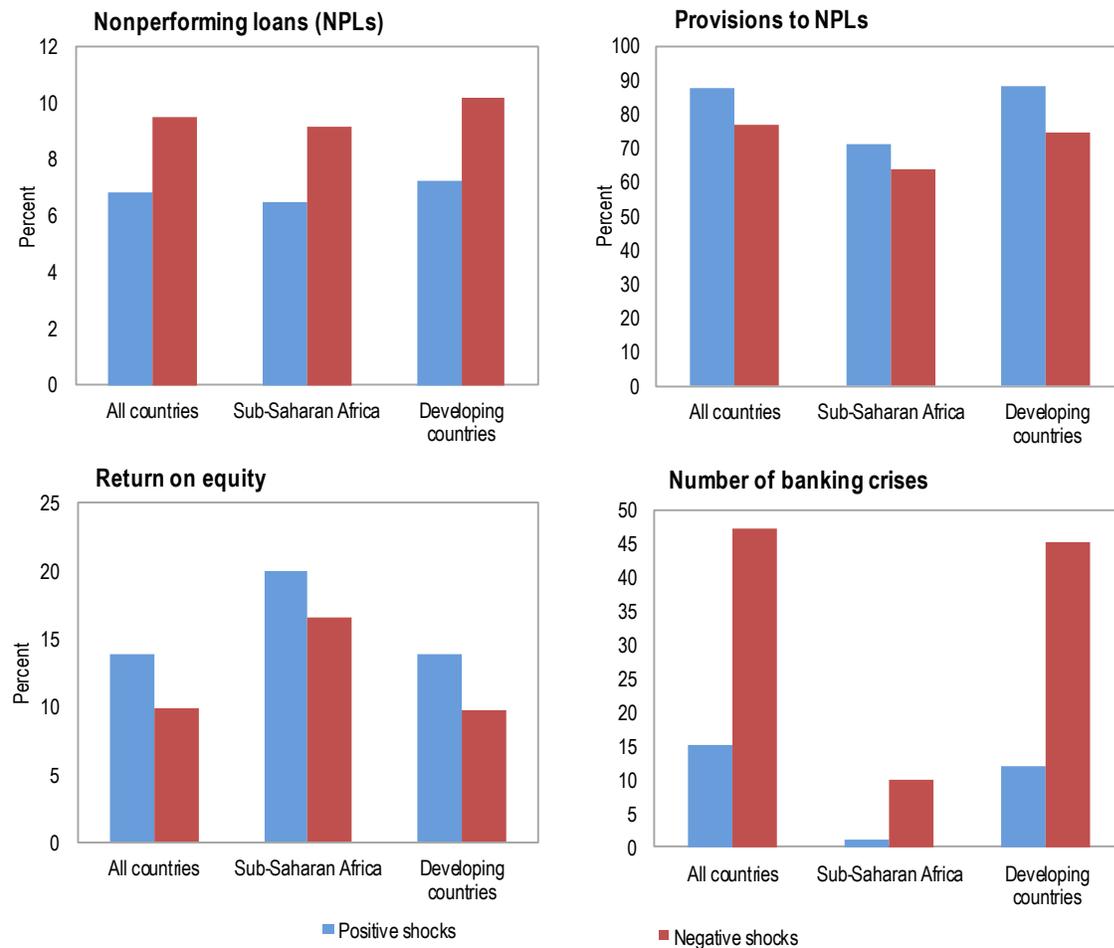
The analysis presented here attempts to fill this gap by investigating the impact of commodity price declines on financial sector fragility. In the recent past, countries such as Ecuador, Malaysia, Nigeria, and Russia suffered considerable financial sector dislocation following sharp commodity price declines. Financial fragility can be defined as the increased likelihood of a systemic failure in the financial system, for which the most obvious indicator would be a systemic banking crisis. A less dramatic definition would capture the sensitivity of the financial system to relatively small shocks. The analysis is based on a panel study of 71 commodity exporters among emerging and developing economies over 1997–2013, including 22 sub-Saharan Africa countries.¹⁹

Commodity price shocks can contribute to financial fragility through various channels. First, a decline in commodity prices in commodity-dependent countries results in reduced export income and fiscal retrenchment to deal with lower revenue, all of which can adversely impact economic activity and the ability of agents (including governments) to meet their debt obligations, thereby potentially weakening bank balance sheets. Second, a surge in bank withdrawals following a drop in commodity prices may significantly reduce bank liquidity and potentially give rise to a liquidity crisis. Third, if the authorities fail to curtail public spending in the face of declining revenues, payment arrears might start to accumulate, putting suppliers in a difficult financial situation and potentially at risk of defaulting on their bank loans. Fourth, commodity price shocks, if large enough, can also put downward pressure on the domestic currency. The currency depreciation can then lead banks to experience losses owing to net open foreign exchange positions in their balance sheets, or if unhedged borrowers are unable to service their loans.

¹⁸ This section is based on Kinda, Mlachila, and Ouedraogo (2016).

¹⁹ Countries included in the sample are net exporters of a nonrenewable commodity, where that commodity represents at least 10 percent of the country's total exports in 2005, the base year, and for which sufficient financial sector data are available. Sub-Saharan countries are Angola, Botswana, Burundi, Cameroon, Côte d'Ivoire, Ethiopia, Gabon, Ghana, Guinea, Equatorial Guinea, Mali, Mozambique, Namibia, Niger, Nigeria, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

Figure 20. Commodity Price Shocks and Selected Indicators of Financial Sector Fragility



Source: Authors' estimates.

Periods of declining commodity prices tend, indeed, to be associated with more deteriorated financial sector conditions, including nonperforming loans and the number of banking crises. These results hold for both the full sample and for sub-Saharan African countries (Figure 19).²⁰ The empirical investigation therefore focuses on periods of commodity price declines and relies on two econometric models.

- The *financial fragility analysis* is based on the following equation:

$$FSI_{i,t} = \alpha + \beta PriceShocks_{i,t} + \sum_{m=1}^M \gamma_m X_{mit} + \omega_{it} \quad (1)$$

Where $FSI_{i,t}$ is one of seven financial soundness indicators: (1) share of bank nonperforming loans (NPLs), (2) provisions to NPLs, (3) return on assets, (4) return on equity, (5) cost-to-

²⁰ The mean comparison T-test shows that the differences are statistically significant for NPLs, provisions to NPLs, return on equity, and banking crises.

income ratio, (6) liquid assets-to-deposits and short-term funding ratios, and (7) the ratio of regulatory capital to risk-weighted assets. We also develop a synthetic index of the various indicators—computed as the mean of the seven indicators, each normalized to take a value between 0 and 1 (with higher values corresponding to more stability of the financial sector);

$PriceShocks_{i,t}$ represents commodity price shocks, computed as the residual of an econometric model that regresses the logarithm of commodity prices on its lagged values (up to three) and a quadratic time trend. This measure removes the predictable elements from our shock measure, ensuring that we capture only unforeseen price movements. The variable is rescaled to be 0 in case of positive shocks, and range from 0 to 1 in case of negative shocks—as a consequence, the variable represents only negative shocks, and a positive (negative) sign in the regressions presented thereafter means that negative commodity price shocks tend to increase (decrease) the indicator under study;

X_{mit} denotes control variables such as inflation, credit growth, and income per capita; and ω_{it} stands for the error term including a country-specific fixed effect and an idiosyncratic term. Equation (1) is estimated using the panel fixed effects estimator.

- The *banking crisis analysis* is based on the following equation:

$$Bcrisis_{i,t}^{est} = \beta PriceShocks_{i,t} + \sum_{m=1}^M \gamma_m X_{mit} + \omega_{it}, \quad (2)$$

$$Bcrisis_{i,t} = 1 \text{ if } Bcrisis_{i,t}^{est} > 0, \text{ and, } Bcrisis_{i,t} = 0 \text{ if } Bcrisis_{i,t}^{est} \leq 0 \quad (3)$$

where $Bcrisis_{i,t}$ is the banking crisis dummy from Laeven and Valencia (2013), and $Bcrisis_{i,t}^{est}$ is the estimated value from the regression. As above, X_{mit} denotes the control variables and ω_{it} the error term. Equation (2) is estimated using the conditional logit fixed-effects estimator.

The results provide evidence that declines in commodity prices are associated with higher financial sector fragility, as measured by a wide range of indicators (Table 8). Drops in commodity prices are associated with higher nonperforming loans and bank costs, while they reduce bank profitability (return on assets and return on equity), liquidity, and provisions to nonperforming loans. As a result of this fragility, commodity price downturns tend to increase the likelihood of banking crises. While these results are found across regions, sub-Saharan African countries seem to be more affected, via both a higher impact on NPLs and a higher likelihood of banking crises following price declines. For instance, a 50 percent decline in commodity prices (similar to the order of magnitude experienced over the period July 2014–June 2015, and equivalent to a 3.6 standard deviation) results in an increase in nonperforming loans of 3.5 percentage points for the whole sample and 4.5 percentage points in sub-Saharan Africa. In addition, the results are robust to a battery of robustness checks, including (1) an alternative measure of commodity price shocks, (2) a differentiation between hydrocarbon and other nonrenewable commodities, (3) a focus on shocks lasting more than one year, and (4) a focus on large shocks.²¹

²¹ The alternative measure of commodity price shocks follows Arezki and Brückner (2012) and Brückner and Ciccone (2010), and measures commodity price shocks by changes in prices.

The recognition that commodity price declines are a major source of financial fragility raises questions about the appropriate framework to ensure financial stability in the face of these shocks. While there is not much that macroeconomic policy can do to prevent commodity price shocks, the analysis shows that the impact of these shocks on the banking system depends on the economic, financial, and institutional conditions in place when the shocks occur. Indeed, the adverse effects of commodity price shocks on financial fragility tend to occur more severely in countries with poor quality of governance and weak fiscal space, as well as those that do not have a sovereign wealth fund, do not implement macroprudential policies, and do not have a diversified export base. In addition, stronger public finance management capacities can help prevent the occurrence of domestic arrears in the wake of negative commodity price shocks. Addressing these weaknesses could reduce financial sector fragility and the probability of banking crises.

Table 8. Impact of Declines in Commodity Prices and Financial Sector Fragility

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	NPLs	Provisions to NPLs	ROA	ROE	Cost	Reg. Capital	Liq. Assets	Index	Crisis
Price shocks	2.2840*** (0.52)	-16.0300*** (3.69)	-0.5810*** (0.13)	-6.5350*** (1.58)	1.5370* (0.90)	-0.3440 (0.37)	-1.9730** (0.93)	-0.0083*** (0.002)	1.8750** (0.78)
Exchange rate, t-1	4.7850*** (1.34)	-16.6900 (12.09)	-1.1000 (1.35)	-22.0800 (26.51)	4.9110 (11.71)	-2.7760 (3.54)	-0.6880 (3.74)	-0.0133 (0.01)	-0.6720 (1.12)
Real interest, t-1	0.1160** (0.05)	-0.8220*** (0.24)	-0.0223 (0.01)	-0.2310 (0.18)	0.1380* (0.07)	0.0009 (0.02)	-0.0502 (0.05)	-0.0005** (0.0002)	0.0977*** (0.04)
M2/reserve, t-1	0.0500 (0.19)	-0.7010 (2.23)	0.0099 (0.01)	0.1010 (0.29)	0.0828 (0.34)	-0.0013 (0.10)	-0.0980 (0.48)	0.0002 (0.00)	0.3730** (0.15)
Inflation, t-1	0.0001 (0.04)	0.0523 (0.28)	0.0051 (0.02)	0.1510 (0.40)	0.0058 (0.16)	0.0388 (0.04)	0.0300 (0.09)	0.0001 (0.00)	0.0855** (0.04)
Credit growth, t-1	-5.0090 (3.19)	14.0000 (17.88)	-0.2430 (0.30)	-5.8580 (3.85)	-0.3940 (3.12)	-5.3770*** (1.55)	-6.7660 (4.17)	-0.0140** (0.01)	0.0444 (2.98)
Log(GDPPC), t-1	-1.5950 (1.50)	-3.6980 (6.45)	-0.1660 (0.24)	0.0153 (2.55)	-2.0160 (1.76)	-0.1780 (0.68)	-6.4890** (2.73)	-0.0132** (0.00)	-3.4290** (1.55)
Debt, t-1	0.1070** (0.04)	0.0298 (0.17)	-0.0053* (0.00)	0.0100 (0.05)	0.0696*** (0.02)	0.0218 (0.03)	0.0026 (0.05)	-0.00004 (0.00)	-0.0225* (0.01)
Constant	40.9800 (37.96)	185.1000 (159.60)	6.0470 (5.92)	15.6500 (63.20)	99.5600** (42.68)	20.9800 (17.50)	195.5000*** (65.68)	0.8470*** (0.16)	
Observations	457	426	691	691	693	454	697	697	191
Countries	45	45	58	58	58	45	58	58	15
R-squared	0.3470	0.1290	0.0580	0.0460	0.1230	0.1290	0.0920	0.0520	

Source: authors' estimations.
Note: Fixed effects are included. Robust standard errors in parentheses.
Note: ***p < 0.01, significant at 1 percent, **p < 0.05, significant at 5 percent, *p < 0.10, significant at 10 percent. NPLs = nonperforming loans; ROA = return on assets; ROE = return on equity.

6

Policies for Supporting Financial Development and Stability

While financial development has contributed to economic growth and reduced its volatility in sub-Saharan Africa, the region is well below its possibility frontier. To reap the full benefits of financial development, appropriate financial sector policies should be formulated and implemented, focusing on building institutions, promoting sound legal and regulatory frameworks, and broadening financial inclusion. That said, policymakers should be aware that this process takes time. Promoting financial development requires agility and careful management, particularly in periods of financial liberalization and regional integration, and when adopting technological innovations (such as mobile banking). As financial systems evolve, existing rules and regulations need to be timely adjusted to address emerging risks.

To accelerate financial development, policies—appropriately calibrated for sub-Saharan Africa—could include:

- *Providing strong legal and institutional frameworks, promoting healthy competition between banks, and improving financial infrastructure* (Gulde and others 2006). Strengthening legal frameworks, including property rights and contract enforcement; enhancing the duration and objectiveness of legal proceedings; improving credit information systems; and reducing costs related to narrowly defined and prohibitively high collateral requirements are critical for creating a conducive environment in which the financial sector can develop and thrive. Boosting banking competition by introducing policies that promote market contestability by allowing the entry of well-capitalized institutions and the timely exit of insolvent ones is an important consideration for creating public confidence and promoting a level playing field. Improving institutional frameworks, in particular corporate governance, through higher efficacy of corporate boards, by the ethical behavior of management and aligning standards in accounting, auditing, and disclosure with international best practices, is essential for a country's financial development.
- *Ensuring that governments play an active but nondistortionary role in financial development.* Government policies should aim at creating a conducive environment for financial sector development by promoting sound and stable macroeconomic

frameworks and fundamentals. Apart from its useful role in establishing institutions, policy frameworks, and financial infrastructure, the state can play an important role in promoting the transparency of information and reducing counterparty risk (World Bank 2012). It can facilitate inclusion of a broader set of lenders in the credit reporting system and promote the provision of high-quality credit information. It should also support developing financial markets through issuance of government securities, which can be used as collateral in money market operations and a benchmark for other bond issuers. However, the track record of state-owned banks in credit allocation remains rather weak, leading frequently to resource misallocation and deterioration of the quality of intermediation, which undermines the benefits of using such lending as a countercyclical tool (World Bank 2012).

- *Fostering financial market development.* As long-term investment is critical for sustainable economic growth, developing deep and efficient capital markets—which create alternative sources of long-term financing (beyond traditional bank credit) and support saving mobilization for investment—comes to the fore of agenda. To develop capital markets in the region, government policies should focus on establishing a long-term yield curve through regular auctions of benchmark instruments (government securities) and, where feasible, promoting primary dealership systems, with two-way pricing responsibilities to facilitate price discovery and enhance market liquidity. In the medium term, strengthening diversity of nonbank financial institutions (through regulatory reforms in pension and insurance systems, and upgrading legislation to allow for setting saving vehicles) is a critical step for sustained development of domestic capital markets and the creation of a dedicated investor base. Improving information disclosure and strengthening financial market infrastructure should not be left out of the picture.
- *Introducing enabling policies to broaden financial inclusion.* These include measures that aim at reducing intermediation costs. These can be achieved through: (1) stronger bank competition, (2) opening the sector to foreign entry, and (3) a flexible approach to the adoption of innovative financial products. As indicated by recent evidence, particularly in mobile banking, technological developments play an important role in bringing down the costs of intermediation in the use of financial services. Although increasing access to credit either directly or through special credit lines or specialized credit institutions, including state-owned banks, may be helpful in inclusion of poorer populations, these policies often lead to distortions and have mixed results in improving access to financial services and reducing costs of intermediation (World Bank 2014a).

- *Exploring the potential of Islamic finance.* Islamic finance could complement conventional financial systems by broadening the range of products and facilitating risk diversification and financial hedging. Empirical studies (Gelbard and others 2014) indicate that in initiating such development there is no "one-size-fits-all" approach; a strategy should involve a few steps, including: (1) launching a public awareness campaign; (2) amending legal, supervisory, and accounting frameworks; (3) building supervisory capacity to appropriately assess and oversee risks; and (4) revising operational frameworks for monetary policy and instruments accordingly. Although new products and services may be appealing to a broader population (not only Islamic), there may be trade-offs to launching new products, particularly in countries with shallow financial markets, which may lead to market fragmentation and segmentation (Gelbard and others 2014).

Additional recommendations specifically aimed at improving financial inclusion should concentrate on:

- *Supporting the development of mobile banking.* In this context, promoting inexpensive and flexible use of technology, creating favorable conditions for banks to develop new products and areas of financial services, and keeping the legal framework open and adaptable have been found to facilitate financial inclusion (IMF 2012b). Regulations should be established in areas such as consumer protection, "know-your-customer" policies, branchless banking, and e-money. The policymakers should also decide on oversight standards and institutional arrangements for mobile payments, and play a critical role in setting collaborative frameworks between different jurisdictions for cross-border mobile payments.
- *Promoting microfinance.* Adopting flexible regulations for microfinance allows for further growth and development while minimizing the spread of unlicensed institutions (IMF 2012a). The regulatory framework should address the trade-offs between the depositors' protection on one hand and stifling of financial innovation, competition, and costs of regulation on the other hand (Hardy, Holden, and Prokopenko 2002). The policies should also look into the adequacy of internal controls and promote appropriate record keeping (including on loan loss recognition).
- *Promoting financial literacy.* As sustained improvement in financial inclusion is contingent on the level of financial literacy, government policies could focus on promoting the financial education of active and potential low- and middle-income users of financial services. This can be done through well-designed education programs and information awareness campaigns. In this context, the government should also foster consumer protections in the access and use of financial services.

To increase financial sector stability, policies should focus on:

- *Strengthening microprudential supervision, including to reduce risks related to rapid growth of Pan-African banks.*
 - As banks' compliance with prudential rules remains a challenge in a large number of countries, it needs to be improved by giving supervisors more enforcement power and better monitoring risk. Regulatory forbearance should be curtailed. Stronger and more systematic sanctions could help to restore the credibility of supervisory frameworks and actions. Introducing International Financial Reporting Standards and consolidated reporting requirements is important for conducting off-site supervision. Enhancing banking resolution frameworks—particularly in countries that belong to a monetary zone—to allow for the orderly exit of insolvent institutions remains essential for promoting public confidence and reducing risks to financial stability. In countries that are members of a monetary zone, stronger cooperation between the regional supervisor agency and member country authorities is needed.
 - Strengthening supervision is particularly urgent in the case of Pan-African banks, as their widespread presence makes them prone to the propagation of shocks, given their cross-border activities and exposures. In this context, introducing consolidated supervision and broadening the regulatory perimeter to include their nonbank activities is needed. Cross-border supervision should be enhanced by improving institutional cooperation among home and host supervisors, and expediting harmonization of regulations and supervisory procedures, while addressing gaps in crisis management arrangements and contingency planning. Establishing an appropriate mechanism for resolving unviable institutions and ensuring an adequate functioning of deposit insurance schemes would be an important step in securing public confidence and mitigating broader spillovers.
- *Building capability to implement macroprudential policies to address systemic risks.* As financial sectors mature and systems become more complex, building risk assessment capacities of the supervisory agencies in order to prevent spillovers and spill-backs between the financial sector and real economy becomes vital. However, the first step should be the closing of data and information gaps (for instance, developing housing price indices). Building capacity in macroprudential tools and analysis, implementing stress testing and early-warning indicators, and establishing adequate institutional arrangements should follow adequate information-collecting efforts that are needed for systemic risk assessment.

Annex 1. Financial Development, Growth, and Economic Volatility

We examine the impact of financial developments on growth, with first the composite measure and then its components, the measures of financial institutions and financial markets. Both financial institutions and markets are assessed based on their depth, access, and efficiency. Following Sahay and others (2015b), a dynamic system generalized method of moments (GMM) estimator is used with additional control variables including per capita GDP, education enrollment, and share of government consumption in GDP. The share of agriculture in GDP is added to better reflect its significance in sub-Saharan Africa.

The basic estimation equation is:

$$y_{it} = \alpha + \beta_0 FD_{it} + \beta_1 FD_{it}^2 + \beta_2 (FD_{it} * Interact_{it}) + \beta_3 X_{it} + \epsilon$$

where y is real GDP growth, averaged over non-overlapping five-year periods for country i at time t . The key regressors are financial development indicator (FD or its component index), its squared term, and additional interaction terms. X includes the other likely determinants described above. The model is estimated for the 1980-2013 period and all sub-Saharan African countries, but data availability varies by variable.

The quadratic form is chosen to allow for a possible non-linear impact (Arcand, Berkes, and Panizza 2012; Sahay and others 2015b). The interaction term is used to examine the impact in sub-Saharan Africa, our region of our interest. This approach also allows us to use more data from the global sample to mitigate data constraints in sub-Saharan African countries. However, given the weak coefficient on the square terms, and that most sub-Saharan African countries are at the relatively low level of financial development—and therefore below the threshold to exhibit a negative growth impact as discussed in the text—the model is run only on the level of the index in favor of parsimony.

Similarly, we estimate the financial development's impact on economic volatility, and then extend to investment volatility and to different components of financial development. Based on the literature and the specific context of sub-Saharan Africa, additional control variables include: five-year lags of GDP per capita, trade and financial openness, energy exports (percent of GDP), volatility of foreign growth, gross capital inflows in the region excluding country in question, terms-of-trade changes, polity index, growth in GDP per capita, government consumption, and aid to GDP volatility for 1995–2013.

The large size of the coefficients of the financial development variables on investment volatility could be explained by the substantial volatility of investment across countries and over time. In addition, although the coefficient is positive for the global sample, the financial development coefficient for sub-Saharan African countries (FD + FD * SSA) is statistically significant and negative while the coefficient on the square term is statistically significant and positive. Similar results were obtained using a two-stage least square estimator.

Table A.1.1 Financial Sector Development, Growth, and Volatility: Key Variables and Sources

Variable	Source
Financial development index	Sahay and others (2015b)
Financial institutions index	Sahay and others (2015b)
Financial markets index	Sahay and others (2015b)
Real GDP growth	IMF WEO database
Growth volatility	Authors' calculation. Five-year rolling standard deviation of real GDP growth
Investment volatility	Authors' calculation. Five-year rolling standard deviation of growth of investment-to-GDP ratio
GDP per capita	IMF WEO database
Education enrollment, primary	World Bank (2015), World Development Indicators
Share of government consumption in GDP	Penn World Tables, version 7
Agriculture value added (percent of GDP)	World Bank (2015), World Development Indicators
Investment-to-GDP ratio	IMF, World Economic Outlook database
Trade openness	Sahay and others (2015b)
Financial openness	Sahay and others (2015b)
Energy exports (percent of GDP)	World Bank (2015), World Development Indicators
Volatility of foreign growth weighted by export	Sahay and others (2015b)
Volatility of regional gross inflow/GDP ratios-winsorized (5 percentile, 95 percentile)	Sahay and others (2015b)
Volatility of term of trade changes	Sahay and others (2015b)
Real aid to GDP growth	IMF (2015b)
Institutional quality	Polity IV database, Marshall and others (2010)

Annex 2. Drivers and Impediments of Financial Development

This annex examines the drivers of financial development using the generalized method of moments (GMM) to mitigate endogeneity problems. The model used panel regressions of data for 1980–2013 for about 90 developing countries (excluding oil exporters), although the number of observations varies depending on the variables.

The estimation equation is:

$$FD_{it} = \text{Constant} + \beta_0 FD_{it-1} + \beta_1 CA_{it-1} + \beta_2 TO_{it-1} + \beta_3 GDP_{it-1} + \beta_4 I_{it-1} + \beta_4 CR_{it} \\ + \beta_5 (CA_{it-1} * SSA_{it}) + \beta_6 (TO_{it-1} * SSA_{it}) \\ + \beta_7 (GDP_{it-1} * SSA_{it}) + \beta_8 (I_{it-1} * SSA_{it}) + \beta_9 (CR_{it} * SSA_{it}) + \varepsilon_{it}$$

where *FD* is the financial development index for country *i* at time *t*. *CA* stands for de facto capital account openness, *TO* for de facto trade openness (ratio of the sum of imports and exports to GDP), *GDP* for real GDP per capita, *I* for inflation, *CR* for country risk rating, and *SSA* for a sub-Saharan Africa dummy variable, and ε is the error term.

All the coefficients of the main variables show expected signs. Interaction terms with the sub-Saharan Africa dummy variable should be interpreted as the incremental impact for the regions' countries (Table 3 in the main text). The overall impact for the region's countries should be evaluated by the sum of the coefficients for all developing countries and the coefficients on interaction terms. For example, the overall impact of capital account openness of the region's countries should become 0.014 (= 0.005 + 0.009). A robustness test was conducted including oil exporters, but the main results were not changed.

The second section examines the impediments of financial development focusing on institutional quality. The purpose is to investigate why some countries' financial development is less advanced than others' compared to the benchmark. A simple ordinary least squares (OLS) regression was run with each country's financial development distance to its benchmark. The distance to the benchmark is the average in the period of 2011 and 2013 and institutional quality is as of 2013. The results should be interpreted in such a way that institutional quality with a higher coefficient is more influential to the distance to the benchmark (Table 4 in the main text). Of the 21 institutional quality indices, 14 have an expected sign while the remaining 7 indices do not but these were statistically insignificant. Robustness tests were conducted with various institutional quality indicators such as the Country Policy and Institutional Assessment (CPIA), the World Bank's Doing Business Indicators, and institutional indicators of Polity IV. The results are qualitatively similar.

Table A.2.1 Drivers and Impediments of Financial Development: Data Sources and Description

Variable	Description	Source
Financial development index	See Box 1.	Sahay and others (2015b)
Capital account openness	Sum of international assets and liabilities as a share of GDP, indicating the country's de facto degree of capital account openness	IMF WEO database
Trade openness index	Sum of exports and imports of goods and services as a share of GDP	IMF WEO database
Real GDP per capita	...	IMF WEO database
Inflation	Annual inflation rate	IMF WEO database
ICRG country risk rating	International Country Risk Guide country risk rating, which covers political, financial, and economic risks	PRS Group
SSA (dummy)	A dummy variable with value 1 for sub-Saharan African countries, as defined by the IMF	IMF WEO database
Financial development index's distance to the benchmark	Derived from the results in chapter 1	IMF
Institutional quality index	The index consists of 21 categories and is constructed mainly based on the WEF's Executive Opinion Survey, which captures the opinions of over 14,000 business leaders in 144 economies	Global Competitiveness Index Pillar 1 (Institution) by the World Economic Forum (WEF)

Annex 3. Gender Gaps in Financial Inclusion and Income Inequality

This Annex provides an overview of the data sources used in the empirical analysis of the drivers of income inequality in Chapter 4.

Table A.3.1. Data Sources and Description

Variable	Description	Source
Income Inequality	The traditional Gini measure of inequality. In this paper, we use "net" Gini but find similar results with "market" Gini. This is the dependent variable in the analysis on the gender determinants of income inequality. A value of 0 represents perfect equality.	Solt (2014).
Labor Force Participation	The ratio of labor force participation rate of females to males. A value of 1 represents perfect equality.	World Bank (2015), World Development Indicators
Financial inclusion gap	The result of a principal components analysis (PCA) estimate on five Findex time series variables if an individual: (1) has an account at a financial institution, (2) has a credit card, (3) has a debit card, (4) saved at a financial institution, and (5) borrowed from a financial institution. Each variable is disaggregated by gender. We first calculated ratios of female to male inclusion for each component before performing PCA on these ratios; the final variable is the fitted value using the principal component. A value of 1 represents perfect equality.	World Bank (2014b), Global Findex 2014
GDP per capita	The logged GDP per capita (in constant 2011 international dollars).	World Bank (2015), World Development Indicators
Financial development	This is an index published by the IMF in a Staff Discussion Note (SDN) that aims to measure financial development. The index takes on values in the continuum between 0 and 1, where 1 represents maximum development. Please refer to the SDN for details on the methodology.	Sahay and others (2015b)
Financial development * advanced economies	An interaction term of financial development with a dummy variable that takes on value 1 for advanced economies (as per IMF definition)	Sahay and others (2015b)

Variable	Description	Source
Agriculture share of GDP	The value-added share of agriculture as a percentage of GDP	World Bank (2015), World Development Indicators
Government consumption expenditure	Government consumption expenditure as a percentage of GDP	World Bank (2015), World Development Indicators
GDP per capita squared	The squared value of the GDP per capita variable	World Bank (2015), World Development Indicators
Education gap	The difference between the mean years of schooling for females and males across all educational attainment levels. A positive value represents more female schooling. The source data is the UN HDR 2013.	Barro and Lee (2013), UNESCO Institute for Statistics (2013), and Human Development Report Office estimates based on data on educational attainment from UNESCO Institute for Statistics (2013) and on methodology from Barro and Lee (2013)
Marriage age differential	From the UN World Marriage Database, we extract the Singulate Mean Age at Marriage (SMAM), which is the average length of single life expressed in years among those who marry before age 50. We take the difference of this between male and female SMAM, such that a positive value is how much (on average) older the male spouse is compared to the female.	United Nations, Department of Economic and Social Affairs, Population Division, World Marriage Data 2012
Equal rights to get a job (dummy)	This is a dummy variable that takes on value 1 when the answer to the WBL question "Can a married woman get a job or pursue a trade or profession in the same way as a married man?" is "Yes."	World Bank (2013)
Female legal rights index	The sum of 10 binary indicators representing existence of selected (unmarried and married) women's legal rights. Takes on value of 0 (no rights) to 10 (all selected rights). Rights include obtaining identification, signing contracts, inheritance, ownership of property, and favorability of the default marital regime.	World Bank (2013), and IMF (2015b).
Fertility rate	The number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with age-specific fertility rates of the specified year	World Bank (2015), World Development Indicators
SSA (dummy)	A dummy variable with value 1 for sub-Saharan African countries, as defined by the IMF	IMF classification
SSA * Financial inclusion gap	An interaction term of the Financial inclusion gap with the SSA dummy variable	IMF classification

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