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Housing Finance and Inclusive Growth in Africa

Benchmarking, Determinants, and Effects

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Abstract

Using a partially constructed panel database of 48 Sub-Saharan African countries from 2000 to 2013, this paper analyzes the structure of housing finance in Africa, its determinants, and its impact on inclusive growth. The findings show that market capitalization and urbanization are key positive determinants of housing finance, and the post-conflict environment is conductive to greater housing finance development. This result suggests that housing finance is driven by standard market forces of demand and supply. In addition, the analysis finds that housing finance development in Africa is not yet an effective tool for reducing economic inequality, at its current, very early stage. However, the paper shows that above a given threshold, housing finance could be efficient at reducing inequality. Finally, there is a slightly positive relationship between housing finance and greater economic development in Africa. All these findings suggest that policies to boost housing finance development in Africa would be fruitful in the medium to long terms.

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Housing Finance and Inclusive Growth in Africa
Benchmarking, Determinants, and Effects[1]

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1. Introduction

Countries in Sub-Saharan Africa (SSA) have experienced stable economic growth averaging 5 percent over the past decade. However, growth has not been inclusive, and poverty as well as unemployment have remained very high. The challenge of inclusive growth is made even more daunting by unmanaged urbanization that has led to millions living in substandard housing.

Africa has the highest rate of urbanization growth, but the least developed housing finance in the world (World Bank 2014). UN Habitat reports that 46 African cities now hold more than one million people and that every day for the next fifteen years, Africa's cities will have to accommodate an extra 40,000 people. Over the next 25 years, more and more people will be added to the number of urban dwellers in Africa. This new challenge is emerging in a context of already widespread poverty and inequality in cities, where many people are living in slums without adequate basic services. Better housing finance systems are needed to meet the growing demand for housing that African countries face.

However, the low capacity of the construction industry and the absence of a strong housing finance sector are likely to exacerbate stresses on the housing market, raising rents and further widening income inequality. Despite a positive trend, the ratio of mortgage debt to GDP remains extremely low in Africa at 3 percent, compared to 70 percent in developed countries. Africa's mortgage markets are nascent and small by international comparisons. However, according to data from Badev et al. (2013), the average proportion of the population with the minimum income required for a prudent mortgage is 16 percent in Africa.

So far, efforts of African governments, international partners, and financial institutions have barely reduced the gap between high housing demand and insufficient housing supply in Africa's urban areas. As in other parts of the world, this gap is even more important for low- and middle-income households. In fact, currently most low- and middle-income households in Africa only have access to the unregulated, informal housing sector. With the exception of South Africa, formal sector housing programs (public or private) have mostly targeted middle- and high-income households in Africa.

Housing finance has generated at least three main strands in economic literature. The first strand focuses on housing finance determinants (see Badev et al. 2014; Egert and Mihaljek 2007; Haibin Zhu 2006; and Buckley and Madhusudhan 1984); the second on the channels with which it affects inclusive growth (see Buckley 1996 and Dubel 2007); and the third on its impact on growth and shared prosperity (see Hongyu et al. 2002 and Gutierrez et al. 2007). This literature has answered numerous questions of interest on housing finance determinants, but so far it has not focused on specific characteristics of SSA housing finance, due to housing finance's very low level of development among other things. The literature has yet to provide a comprehensive analysis of the linkage between housing finance and shared prosperity, especially in Africa.

Building on existing literature and to fill the gap, this paper offers answers to the following questions: What is the structure and typology of housing finance in Africa? What are the determinants of housing finance development in Africa? What is the relationship between housing finance, economic growth, and inequality in Africa?

Our investigation suggests that the housing finance sector in Africa is very weak. The ratio of mortgage debt to GDP is less than 10 percent for almost all countries other than South Africa and Namibia. Housing penetration (the percentage of the adult population with an outstanding loan to purchase a home) is also very low, with no country posting more than a 9 percent penetration rate and three out of four countries having a rate of lower than 5 percent. In addition, in African countries, the mortgage rate, the legal system,

and the country's GDP per capita are correlated with housing finance. Countries with a high GDP per capita and low mortgage interest rates enjoy greater access to housing finance. In turn, greater access to housing finance in Africa is positively related to GDP growth, inequality reduction, and human development indicators.

Our econometric investigation provides important findings on each of our questions of interest. Stock market capitalization and urban population growth rate are the strongest positive determinants of housing finance, while recovery from conflict is another determinant, albeit less strong. In addition, some variables seem to be hampering housing finance depending on the economic environment. These variables are the ratio of credit to the economy to GDP, which is a proxy of the development of the banking sector, and trade openness, which may mask the low level of housing finance in oil exporting countries.

In addition, housing finance has a positive impact on inequality reduction and inclusive growth. First, there is a threshold effect of the impact of housing finance on inequality. Indeed there is a middle range of value in which housing finance depth (ratio of mortgage debt to total credit) has a significant negative correlation to inequality—values that are too high or too low do not lead to a significant result. Second, our results suggest that a one percentage point increase of housing finance depth could lead to a 0.37 percentage point increase in growth of GDP per capita. This result is in line with Hongyu et al. (2002), Erbas and Nofthaft (2002), Uy (2006), and Freire et al. (2006) as well as findings from other regions.

The remainder of this paper is organized as follows: Section 2 provides a literature review; section 3 presents the characteristics of housing finance policy in Africa and investigates the link between housing finance and shared prosperity; section 4 provides an econometric analysis using a panel dataset we have built and draws some policy implications; and section 5 concludes.

2. An Empirical Literature Review of Housing Finance and its Impact on Inclusive Growth

The literature related to housing finance determinants and impact on inclusive growth is growing. The literature has been mostly empirical and has focused less on specific issues facing housing markets in Africa. In this section, we present the literature in three strands. The first strand reviews papers on housing finance determinants; the second focuses on the channels used by housing finance to affect growth and inequality; and the third strand presents the impact of housing finance on growth and inequality reduction. In each of these strands, we distinguish between theoretical and empirical findings as well as between findings within SSA and at the global level.

2.1. Determinants of housing finance

The literature so far has been empirical and has not focused on specific determinants of housing finance in SSA. This literature highlights three main determinants: GDP per capita, as a proxy for the level of development; stock market development; and informal finance. Most importantly, the literature shows that government support or subsidy is not a determining factor.

In fact, Badev et al. (2014), using a new set of data on the depth and penetration of mortgage markets across countries in the world, find that (a) mortgage markets seem to develop only at relatively high levels of GDP per capita; (b) policies associated with financial system development (such as price stability or the efficiency of contractual and information frameworks) are also associated with mortgage market development, and (c) well-functioning insurance markets and better capitalized stock markets are strongly associated with

mortgage market development. Moreover, Buckley and Madhusudhan (1984) test a model of the relationship between housing investment and GDP, anticipated inflation, changes in inflation, and the extent of capital deepening across several developing and transition countries. They find that, holding all else constant, countries with deeper financial markets invest relatively more in housing.

Moreover, Haibin and Zhu (2006), by analyzing the structure of housing finance markets and house prices in selected Asian countries, find evidence that in economies with more flexible housing finance markets, house prices are more responsive to overall changes in market conditions, particularly equity price movements. The main explanatory variables used were GDP, bank credit, equity prices, short-term rates, consumer price index, and the exchange rate.

In addition, Besley et al. (1992), showed that the Rotating Savings and Credit Associations (ROSCAS) achieve much higher allocative performance than other types of finance do—an indication that informal finance matters in long-term finance. Their result highlights the need to verify whether ROSCAS can be used as a housing finance alternative in Africa, where this type of financial institution is very common. The fact that the formal housing finance system is limited in SSA countries underscores the need to investigate the alternative of informal housing finance systems.

Finally, many studies show that government involvement is not one of the determinants. For example, Badev et al. (2014) show that neither government subsidies, nor government support of housing financing through state banks dedicated to housing finance, has been proven to spur the housing sector. In fact, many developing countries have had such banks for many decades, but their housing finance sector remains miniscule.

2.2. Channels used by housing finance to impact growth and inequality

The literature indicates that housing finance affects economic growth by reducing the cost of capital, increasing savings, increasing tax revenues, increasing investment in education, reducing vulnerability, and increasing financial deepening. By reducing the cost of capital, housing finance can spur economic growth. In fact, Dubel (2007) provides a model analyzing the relationship between housing finance and housing affordability and shows that well-functioning housing finance reduces loan interest rates. That in turn results in greater affordability of housing, with a potential positive impact on economic growth.

By increasing savings, housing finance can spur growth. According to Buckley (1996), many reasons explain why improving housing finance may lead to increased savings in the economy. First, the returns to housing will likely be positive. Second, housing provides the most secure collateral against market fluctuations and in immature markets can be easily expected to offer positive yields over the long run. Third, housing prices are less volatile than other asset prices. Fourth, the availability of housing improves labor mobility and therefore employment potential. Finally, the availability of affordable housing finance may lead to increased savings as potential homeowners save to make the required down payment and to maintain their assets. This saving will be an engine of investment, helping to stoke economic growth and development.

By increasing tax revenues, housing finance contributes to the development of public infrastructure and ultimately to economic growth and reduction of inequality. Hangen and Northrup (2010) and Econsult (2009) estimate that, in the United States, activity related to housing has a positive impact on revenues of states and other local governments. In the United States as well as in other countries, greater revenues to local government often translate into better infrastructure for the population and ultimately into reduced inequality. Moreover, using a large panel data set encompassing over 100 countries and over the period

1960-2000; Calderon and Serven (2008) show that growth is positively affected by the stock of infrastructure assets, and income inequality declines with higher infrastructure quantity and quality.

2.3. Housing finance, economic growth and reduction of inequality

Studies suggest that housing investment has an impact on economic growth (especially short-run growth) and employment. For example, Hongyu et al. (2002) find that compared to non-housing investment, housing investment has a stronger short-run effect on economic growth. They also find that housing investment has a long-run impact on economic growth but not on non-housing investment. Chen and Zhu (2008) find that the relationship between housing investment and economic growth in China is different depending on which provinces are analyzed. Moreover, Erbas and Nothaft (2002) find that low-income housing has a lower import component in production and higher labor intensity. This implies that construction of low-income housing will lead to greater employment and growth than the construction of middle- or high-income housing. Tipple (1994), by verifying the links between employment and housing development, shows that investment in shelter is very effective for promoting employment, especially among lower-income groups. Some of the benefits to the economy tend to be inversely proportional to housing costs, meaning that low-cost housing is more beneficial to the economy.

In addition, with respect to the empirical analysis of the relationship between housing and economic growth, there are some estimates of multiplier effects associated with construction in developing countries. For example, Uy (2006) notes that for every 1 peso spent on housing activities in the Philippines, an additional 16.61 pesos is contributed to national GDP.

Meanwhile, housing finance has the potential to increase investment in education, hence reducing the vulnerability of the poor; it could also contribute to financial deepening and inclusion. This improvement of financial deepening is critical for poverty reduction in SSA.

Housing finance could increase investment in education and reduce vulnerability for the poor. Becker (1975) and Atkinson (1975) studied the link between investment in human capital and wealth distribution. An implication of these models is that income inequality will decrease as access to finance improves and that housing improves homeowner's borrowing capacity. They also suggest that housing finance could lead to more investment in human capital. To the extent that improved housing affordability benefits the poor, housing finance may improve education opportunities for the poor. Jacoby (1994) finds that lack of access to credit perpetuates poverty in Peru because poor households cannot afford to provide their children with appropriate education. Jacoby and Skoufias (1997) find that without access to finance, income shocks cause poor families to discontinue schooling for children; housing provides an asset that can be used to smooth income shocks.

A more inclusive housing financial system can improve access to housing finance for poor and low-to-moderate-income households. Consistent with this view, Malpezzi (1999) suggests shifting from a housing finance perspective—where special circuits are used to mobilize short-term household deposits for long-term mortgages—to a perspective where housing finance is integrated with broader capital markets. Singh and Huang (2011) analyze data from Africa between 1992 and 2006 and find that financial deepening (as measured in part by credit to the private sector as a percent of GDP) is associated with less poverty and reduced income disparities in African countries, and that this is most important in the early stages of financial development. Stronger property rights strengthen this relationship. Beck, Demirguc-Kunt, and

Levine (2004) examine a broad cross-country sample of 58 developing countries and find that financial development (as measured by the ratio of private sector financial intermediation to GDP) reduces income inequality by disproportionately raising the incomes of the poor. Moreover, Singh and Huang (2011) find that poverty is inversely related to financial deepening. In addition, financial deepening reduces absolute levels of poverty, but does not affect income inequality to a significant degree in African countries.

3. Stylized Facts on Housing Finance in SSA

3.1. Data

To develop our stylized facts and econometric analysis, we examined a sample of 54 African countries with data from African Development Indicators (ADI), the Financial Development and Structure Database (FDSD), and the Housing Finance Databases of the World Bank. The database summary and description is presented in the appendix. The analysis is limited to 2000-2012 to ensure more up-to-date results. Housing market and finance policy data are drawn from the newest housing finance databases of the World Bank.

3.2. Benchmarking the SSA housing market and finance policy: Typology and characteristics

Benchmarking the SSA housing market and finance policy along with a comparative approach is essential to have a clear picture of what has been done to date and what remains to be done. The following subsection presents a general perspective applicable to all SSA countries and is followed by a presentation of country-specific views, which vary based on fundamental characteristics such as wealth, legal origins, political stability, regional context, and oil resources.

SSA housing market and finance policy: A general point of view

Overall, the banking sector in Africa has been growing since liberalization two decades ago when African governments adopted new legislation for financial institutions and institutionalised private banking systems, in some cases ending state monopolies in this sector. SSA countries' financial systems are growing rapidly and becoming increasingly integrated into the global financial system. At the core of the systems are banks, followed by pension funds. The regular Financial Sector Assessment Program (FSAP) implemented in those countries has generally confirmed that the banking system is well capitalized, liquid, and profitable.

However, few commercial banks clearly offer their customers housing loans in the form of mortgages. The majority of banks in Africa finance housing acquisitions, not via housing loans specifically, but as private investments or standard consumer loans. These latter products generally have high interest rates with short repayment periods.

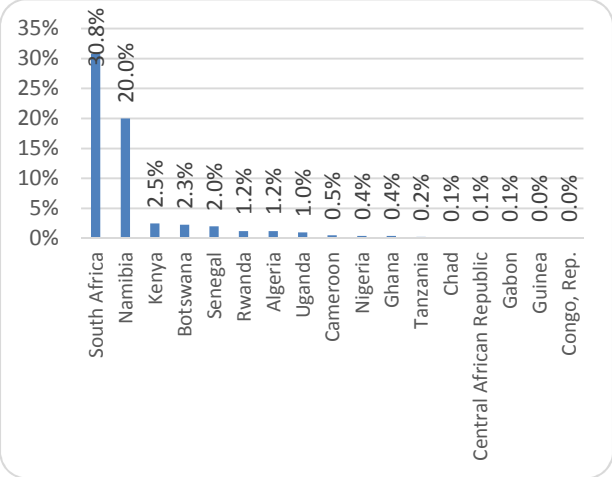
Some African countries have opted to establish specialized single-purpose nonbank mortgage lenders, or "monoline" lenders. Most notable is Kenya, which has housing finance companies. Nigeria also has primary mortgage institutions, and South Africa has financial service providers specializing in mortgage lending. Typically, these institutions have a narrow banking license limiting their activities and, in particular, restricting deposit collection. This means that they are usually reliant on wholesale funding on the liability side of their balance sheets. These institutions are particularly vulnerable during crisis periods because their funding costs rise to a much greater extent than those of lenders with a deposit base.

The banking and the financial system in most SSA countries remains underdeveloped compared to other developing regions. The ratio of private sector credit to GDP is less than 20 percent for some countries and financial access is lower (there is only one branch per 100,000 adults in some countries). The small size of

national markets, the low level of incomes, and the weak creditor rights and judicial enforcement mechanisms could explain this situation. Moreover, there is a need to improve the development level of the financial sector, especially the mortgage financing and banking sector. However, prospects are good since gradual financial deepening is underway in most SSA countries (Montfort et al., 2013).

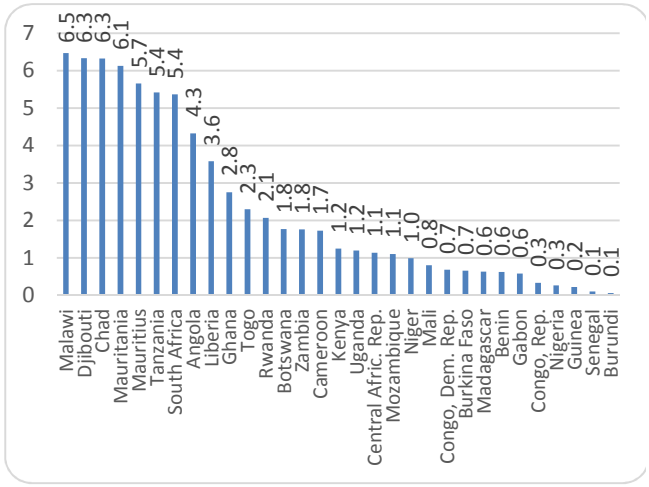
Although the mortgage market in Africa is still small by international standards, the sector is growing gradually and is attracting attention from policy makers. Positive growth is now observed in some markets such as Kenya, Uganda, and others. For example Kenya's mortgage market grew by 37 percent in 2012, resulting in a total of 19,700 mortgages. Uganda, for its part, showed signs of growth at the end of December 2012, representing about 0.98 percent of GDP. According to figure 3.1 below, South Africa and Namibia remain the market leaders in SSA in terms of depth. Figure 3.2 highlights practically the same classification with a GDP value of close to zero and minimal differences among a number of countries (Malawi, Djibouti, Chad, Mauritania, Mauritius, Tanzania) with higher levels of mortgage penetration. The highest mortgage penetration in SSA is 6.48 percent in Malawi, still significantly less than many countries in the world, such as Sweden at almost 60 percent.

Figure 3.1: Comparative Mortgage Depth across SSA Countries (as a percentage of GDP for 2000-2010).



Source: Authors' calculation using the World Bank database on housing finance launched by Badev et al., 2014: "Housing finance across countries: New data and analysis," WPS6756.

Figure 3.2: Comparative Mortgage Penetration across SSA Countries (housing loan penetration)

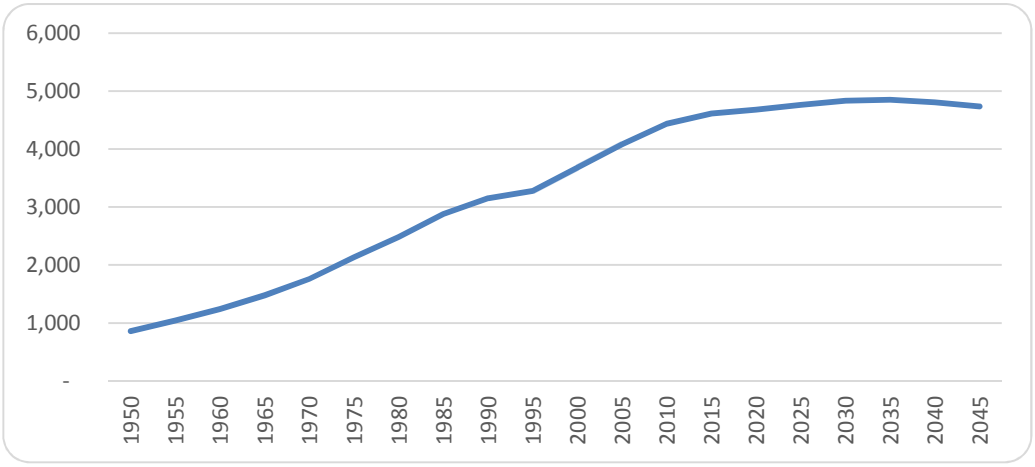


Source: Authors' calculation using the Global Financial Inclusion database (FINDEX) launched by Demirguc-Kunt, Asli and Leora Klapper (2012), "Measuring financial inclusion: The global Findex Database," World Bank Policy Research Working Paper 6025.
Note: Percentage of adult population with an outstanding loan to purchase a home. Unlike the mortgage depth indicator, the penetration index refers to any provider of housing loans, including regulated financial institutions, microfinance institutions, and other formal sources.

Sub-Saharan Africa is the region in the world where housing finance is the least developed. In fact, in SSA, many countries have less than 1 percent mortgage depth or do not have a mortgage market. Moreover, the most advanced countries in mortgage market development, such as South Africa (30.8 percent) and Namibia (20.0 percent), are far behind many countries in the world with a deeper mortgage market, like Denmark with 109.8 percent. Figure 3.3 below shows that annual housing demand is increasing. This could be

explained by an increasing urbanization rate. Even if the demand for housing is projected to be flat post-2015, it is still increasing at a low rate.

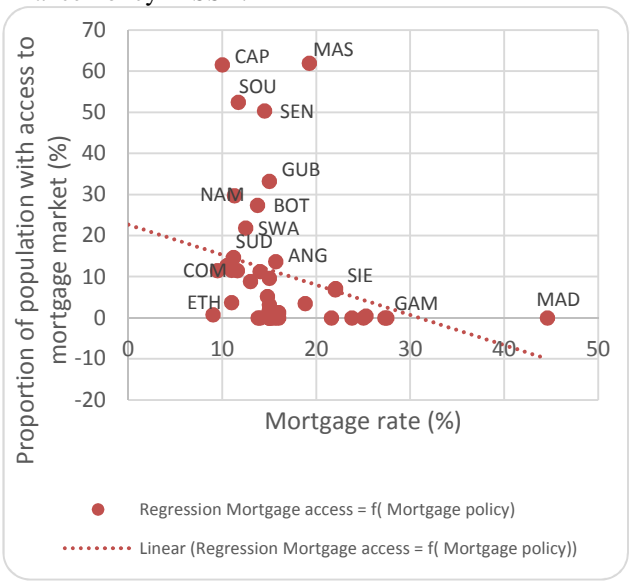
Figure 3.3: Annual Housing Demand Evolution in SSA, 1965-2050 (projection)



Source: Authors' calculation using the World Bank database on housing finance launched by Badev et al., 2014: "Housing finance across countries: New data and analysis," WPS6756.

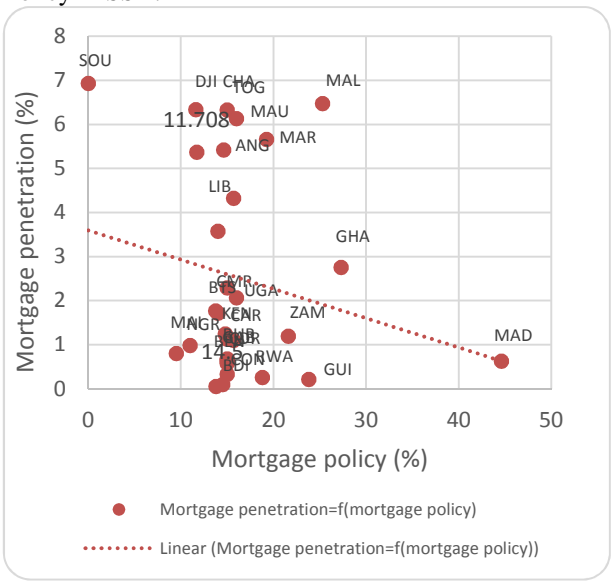
Many initiatives have been taken in Africa to support the development of the mortgage market. For example, the recent creation of national and regional mortgage refinancing institutions in Nigeria (2013), Tanzania (2011), and the WAEMU (West African Economic and Monetary Union) sub-region (2010) will improve mortgage loan granting. There potentially may be a way to improve household access to long-term liquidity through developing mortgage markets, and at a reasonable cost. Unfortunately, as shown in figures 3.4 and 3.5 below, interest rates are too high in almost all African countries, which undermines mortgage market accessibility.

Figure 3.4: Mortgage Market Access and Housing Finance Policy in SSA.



Source: Authors' calculation using the World Bank database on housing finance launched by Badev et al., 2014: "Housing finance across countries: New data and analysis," WPS6756.

Figure 3.5: Mortgage Penetration and Housing Finance Policy in SSA.



Source: Authors' calculation using the Global Financial Inclusion database (FINDEX) launched by Demirguc-Kunt, Asli and Leora Klapper (2012), "Measuring financial inclusion: the global Findex Database," World Bank Policy Research Working Paper 6025.

Note: The figure is a partial scatter plot, visually representing the regression of changes in the mortgage access (2006–2010 average) on the mortgage rate (2006–2010 average). The abbreviations next to the observations are the three-letter country codes as defined by the International Organization for Standardization.

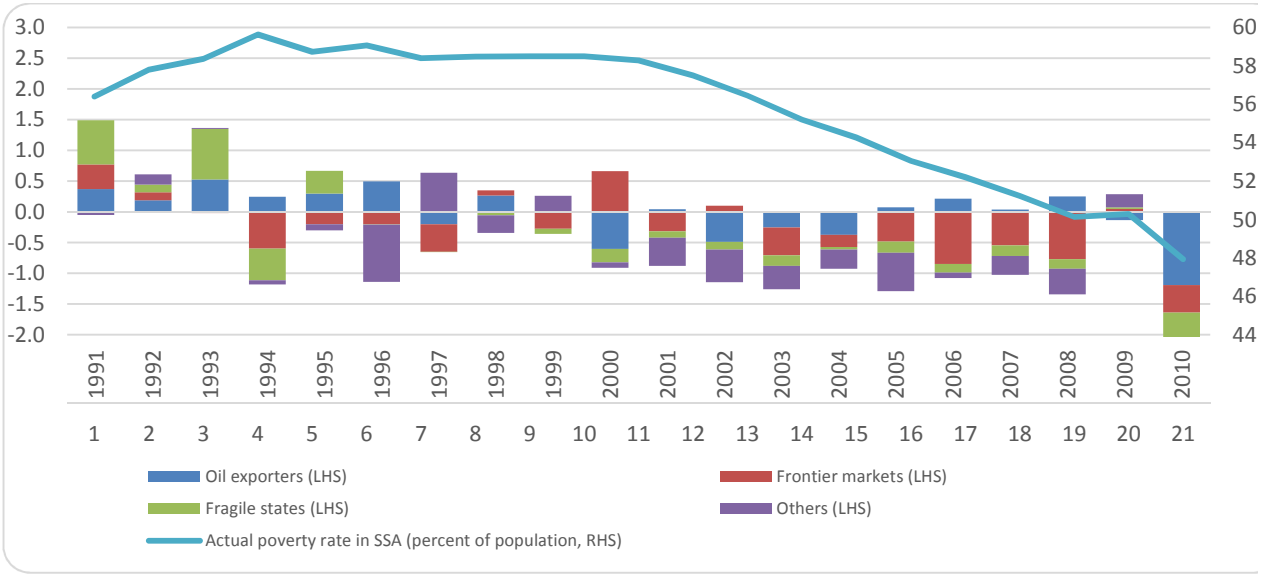
Note: The figure is a partial scatter plot, visually representing the regression of changes in the mortgage penetration (2006–2010 average) on the mortgage rate (2006–2010 average). The abbreviations next to the observations are the three-letter country codes as defined by the International Organization for Standardization.

This general point of view is complemented by a specific case study of the housing financial system of three specific African countries (Tanzania, Zambia and Cameroon), presented in the appendix. The description mainly highlights the fact that the formal housing finance system is not well developed and is bank based—it cannot therefore respond to the demand from economic agents. We are therefore not surprised to see that housing supply is not sufficiently abundant or affordable to meet the population's housing needs**.**

3.3. SSA housing market and finance policy typology and comparison

In order to take into account the heterogeneity of SSA countries, the 48 SSA countries are broken down into various groups depending on characteristics such as wealth, legal origins, oil exporting, ecoclimate (Sahel or forested), and regional proximity; see figure 3.6.

Figure 3.6: Poverty Level across Different Types of SSA Countries



Source: Authors' calculation based on WDI database

We checked to see if there are also differences in mortgage market policy and development across SSA countries. Additionally, we compared the effective performance of housing finance policy, depth, penetration, housing need, cheapest price, and input price with the benchmark performance.

Wealth-based breakdown

From a wealth point of view, expected income levels may affect housing finance indicators. In fact, table A.1 in the appendix shows that upper-middle-income countries perform better on housing finance indicators.

Breakdown based on legal origins

The origin of a country's legal system may affect its housing market and finance policies. Intuitively, colonized countries seem likely to have inherited their legal systems, and thus the way their housing markets

function would be essentially similar to that of their colonizers. The main legal origins in SSA we considered are the French (*code civil*) and British (common law) systems. Table A.2 in the appendix shows that countries with a French-based legal system may perform better on mortgage rate policy, while countries with a British-based legal system may perform better on housing finance depth, housing finance penetration, and housing finance access.

Other grouping

We found that oil-exporting countries perform better in terms of housing finance than non-oil-exporting countries, which may, in fact, be explained by the income level. In addition, regional proximity is relevant for housing finance performance. We found that ECCAS (Economic Community of Central African States) presents the best performances in housing finance policy and demand; SADC (Southern African Development Community) performs best in housing finance depth, penetration and access; and ECOWAS (Economic Community of West African States) has the best performance in housing price and input price. EAC (East African Community) presents average performance in all housing finance characteristics.

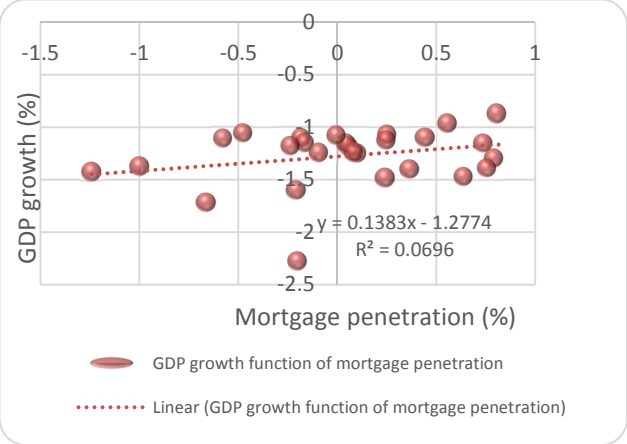
3.4. Housing finance, inclusive growth, and inequality in SSA: A statistical analysis

Recent literature states that in the world in general and in Africa in particular, more urbanized countries have lower rates of inequality and that urbanization goes hand in hand with more prosperity (Fox and Sohnesen 2012; Christiansen 2013; World Bank 2013). The process of urbanization should be accompanied by the growth of an affordable housing supply to respond to the consequent growing demand for housing. The development of the housing finance system could be an excellent tool for this objective.

This statement is confirmed by figures 3.7 and 3.8, which show that mortgage penetration is positively correlated with economic growth and negatively correlated with the Gini coefficient. This means that better mortgage penetration spurs growth and reduces inequality. Expanded housing finance can therefore boost inclusive growth and reduce inequality in Africa.

Figures 3.9 and 3.10 show that housing finance is positively correlated to two key indicators of national wealth for SSA countries. In fact, in SSA, mortgage depth is positively correlated to growth of GDP per capita. There is also a nonlinear positive relationship between mortgage penetration and the Human Development Index (HDI). This means that countries with greater mortgage penetration have a better level of human development.

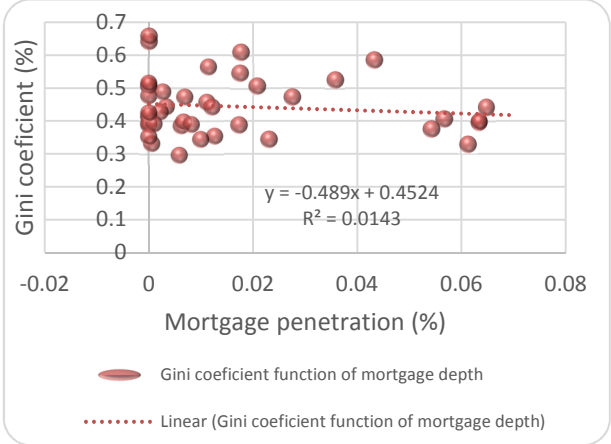
Figure 3.7: Mortgage Penetration and Economic Growth in SSA



Source: Authors' calculation based on a collection of data from a survey, the World Bank and Housing Finance in Africa yearbooks 2010, 2011 and 2013. Available at: www.housingfinanceafrica.org (accessed: Sept 08, 2014).

Note: variables are in logarithmic terms on both axes.

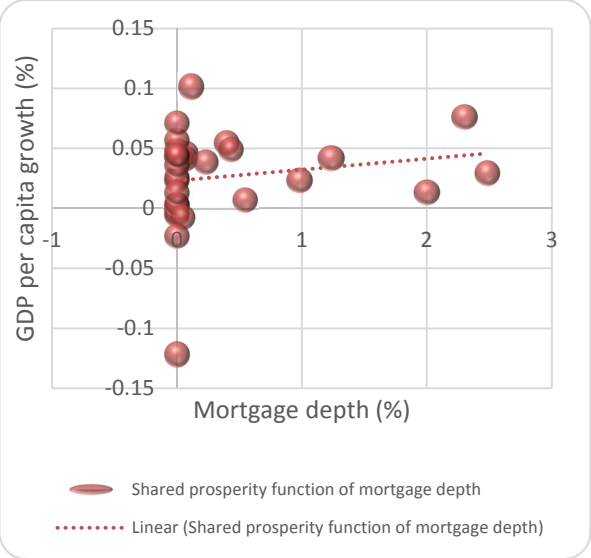
Figure 3.8: Mortgage Penetration and Gini Coefficient in SSA



Source: Authors' calculation based on a collection of data from a survey, the World Bank and Housing Finance in Africa yearbooks 2010, 2011 and 2013. Available at: www.housingfinanceafrica.org (accessed: Sept 08, 2014).

Note: variables are in logarithmic terms on both axes.

Figure 3.9: Nexus between Mortgage Penetration and GDP Per Capita Growth in SSA



Source: Authors' calculation based on a collection of data from a survey, the World Bank and Housing Finance in Africa yearbooks 2010, 2011 and 2013. Available at: www.housingfinanceafrica.org (accessed: 08/09/2014).

Figure 3.10: Mortgage Penetration and HDI

Source: Authors' calculation based on a collection of data from a survey, the World Bank and Housing Finance in Africa yearbooks 2010, 2011 and 2013. Available at: www.housingfinanceafrica.org (accessed: 08/09/2014).
Note: variables are in logarithmic terms on both axes.
Overall there is a positive link between housing finance and shared prosperity and between housing finance and poverty reduction.

In order to complete this exploratory analysis, we have presented a housing finance market typology for some selected SSA countries in the appendixes. The case study focuses on three SSA countries from three different subregions. These countries are Cameroon for Central and West Africa, Tanzania for East Africa, and Zambia for Southern Africa.

4. Empirical Investigation and Analysis

4.1. Regression models

In order to answer the three questions of interest, three regression models are used. The first model assesses housing finance determinants. It is given by

$$HFIN_{it} = \alpha + \beta_1 MACAP_{it} + \beta_2 Upop_{it} + \beta_3 GDPPC_{it} + \beta_4 GDPgrowth_{it} + BX_{it} + \varepsilon_{it}$$

where:

1. HFIN is a housing finance indicator, MACAP a financial market indicator, Upop the ratio of urban population to total population, GDPPC is GDP per capita which is an indicator of the level of development of the country, GDP growth; and X is a set of control variables (see the appendix for more detail).
2. $\alpha, \beta,$ are parameters, B a matrix of parameters, ε_{it} the disturbance term; the other variables are defined in the appendix.

This regression model is based on the theoretical background of determinant financial product development, such as housing finance products', which has been developed in the literature review.

The second model assesses the linkage between housing finance and economic growth. It is based on theoretical arguments developed in the literature review and specific findings about the SSA housing market presented in section 3. It is given by

$$(GDPPC)_{i,t} = \tau + \alpha_1 (HFIN)_{i,t} + \alpha_2 (X)_{i,t} + \mu_{i,t} \quad (2)$$

where τ, α_1, α_2, are parameters, μ_{it} the disturbance term.

The set of control variables accounts for all relevant determinants of GDP per capita given by neoclassical growth theory: labor, capital, and so on. In addition it accounts for origins of legal tradition and regional considerations highlighted in section 3.

The third model assesses the linkage between housing finance and inequality. It too is based on theoretical arguments developed in the literature review and specific findings about the SSA housing market presented in section 3. It is given by

$$(INQ)_{i,t} = \theta + \vartheta_1 (HFIN)_{i,t} + \vartheta_2 (X)_{i,t} + \vartheta_{i,t} \quad (4)$$

where θ , ϑ_1 , ϑ_2 are parameters, $\vartheta_{i,t}$ the disturbance term, and INQ an inequality indicator.

The set of control variables accounts for all relevant determinants of inequality and is given by development theory, including employment, education, and gender inequality among others. It also accounts for key findings highlighted in section 3.

4.2. Estimation strategy

The choice of panel data analysis gives us the advantage of having a reasonable size of time series data for analysis, which could not have been performed on each of the individual countries. The double dimension of panel data allows us to simultaneously take into account their dynamic behavior and their possible heterogeneity across countries, which is not possible with either time series or cross-sectional data.

To estimate the static model specification, we carry out specification and robustness checks including stationary and cointegration tests; based on the result we apply the Feasible Generalized Least Square (FGLS) in case of presence of heteroscedasticity or we apply XTPMG in case of a non-stationary problem. To

estimate the model, we use the System Generalized Method of Moment (GMM) estimator developed by Blundell and Bond (1998). The estimator combines two sets of equations. The first set includes first-difference equations where the right-hand side variables are instrumented by the levels of the series lagged one period or more. The second set consists of the equations in levels with the right-hand side variables being instrumented by lagged first- or higher-order differences.

This estimator has several advantages[5] such as taking into account country-specific effects, while enabling us to address issues associated with endogeneity, measurement errors, and omitted variables. By exploiting internal instruments, the System GMM estimator removes the often hard task of identifying valid external instruments consisting of variables that are correlated with the endogenous explanatory variable, but not with the error term of the equation.

The validity of these internal instruments (lagged variables in level and first differences) was not rejected. As suggested by Arellano and Bond (1991), and Blundell and Bond (1998), a Sargan-Hansen test of over-identifying restrictions and a serial correlation test were carried out. In both instances, the null hypothesis could not be rejected—the instrumental variables are not correlated with the residual, and the errors exhibit no second-order serial correlation.

In addition, to limit the risk of over-instrumentation, we keep the number of instruments to the minimum by using as instrument only the first valid lagged value of the right-hand side variables. We assume that financial variables are endogenous, and therefore are instrumented by their second lag value, while the other variables, treated as predetermined, are instrumented by their first lag value.

4.3. Results analysis and discussion

We present below estimation results of the three models using variables.

Housing finance determinants

Table 4.1 below presents results on housing finance determinants. It shows that stock market capitalization, the growth rate of the urban population, and the dummy variable of lagged conflict are key determinants of housing finance in SSA. Stock market capitalization and the growth rate of urban population are the strongest positive determinants, while recovery from conflict is not significant for some specifications. In addition, some variables seem to be hampering housing finance depending on the economic environment. These variables are: the credit to the private sector, which is a proxy of the development of the banking sector and trade openness, which may mask the low housing finance in oil exporting countries.

Table 4.1: Housing finance determinants (housing finance depth)

	Model A1: Housing finance determinants (housing finance depth)				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Market capitalization	**0.001*** **	**0.001*** **	**0.001*** **	**0.001*** **	**0.001*** **
	(0.00005)	**(0.00005)**	**(0.00005)**	**(0.00006)**	**(0.00005)**
Urban population growth	**0.0001***	**0.0002** **	**0.0001***	**0.0001***	**0.0002** **
	(0.00008)	**(0.00008)**	**(0.00008)**	**(0.00006)**	**(0.00008)**
Conflict dummy t-1	**0.007** **	**0.008** **	**0.007** **	0.004	0.009
	(0.003)	**(0.003)**	**(0.003)**	(0.002)	(0.003)
Investment stock	-0.0001	0.0005	-0.0001	0.0006	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)

[5] Bond, Hoeffler, and Temple (2001) offer a good overview on GMM estimation of empirical growth models.

GDP per capita	0.0002	0.0001	0.0002	0.0002	0.0003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Voice accountability	-0.00003	-0.00006	-0.00004	0.00004	0.00001
	(0.0001)	(0.0001)	(0.0001)	(0.00008)	(0.0001)
Domestic credit to private sector	-0.0002	-0.0001	-0.0002	**0.0002****	-0.0002
	(0.0001)	(0.0001)	(0.0001)	**(0.0001)**	(0.0001)
Trade openness	-0.00004	-0.00004	-0.0003	-0.00003	-0.00003
	(0.00003)	(0.00003)	(0.00003)	(0.00002)	(0.00003)
Inflation	0.00005	0.0001	0.00005	0.0001	-0.00001
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0002)
Interest rate	0.0001	0.0002	0.0001	0.00003	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Transfers	8.95e-20	1.03e-19	8.9e-20	8.9e-21	4.9e-20
	(1.15e-19)	(1.1e-19)	(1.1e-19)	(9.3e-20)	(1.1e-19)
Kaolegal	---	**-0.007****	---	---	**---
		(0.002)			
Kaosahel	---	---	-0.001	---	---
			(0.005)		
Kaomac	---	---	---	**-0.0004*****	---
				(0.00004)	
Kaofcbf	---	---	---	---	**0.003*****
					(0.0009)
Constant	-0.004	-0.02	-0.005	-0.027	0.04
	(0.063)	(0.061)	(0.062)	(0.05)	(0.062)
Countries	45	45	45	45	45
Observations	223	223	233	223	223

Source: Authors estimates

Note: Kaolegal (Financial openness*Legal-*dummy*: Legal-based decomposition-); Kaosahel (Financial openness*Sahel-*dummy*: Sahel-based decomposition-); Kaowealth (Financial openness*Wealth-*dummy*: wealth-based decomposition-); Kaotrop (Financial openness*Trade openness); Kaomac (Financial openness*Market capitalization); Kaofbcf (Financial openness*Investment stock). *,**,**: significance levels of 10%, 5% and 1% respectively. Values in bracket are standard errors.

Stock market capitalization is a key determinant of housing finance in SSA. In fact, it is significant in all specifications of our empirical model. This result is coherent with the theoretical prediction and the empirical finding of Badev et al. (2014) at a global level. As a matter of fact, financial and stock markets are less developed in almost all African countries. A study by Beck et al. (2011) shows that more banking and less stock market are the key features of the financial structure; this could be the reason why SSA has a weak housing finance market, since its financial structure is more bank based than market based.

Indeed, we can see that this financial structure failed to improve housing finance depth in SSA. This could be explained by the fact that the banking sector usually does not offer specific and acceptable housing loans, which are generally long-term loans. For almost all these countries, there are several government and private banks, but mortgage depth remains low, stable, and sometimes tends to decrease.

Therefore, policy makers who wish to boost housing finance in SSA countries should consider strengthening the development of stock markets. Moreover, credit to the private sector is non-significant and negatively correlated to housing finance in some countries while it is significant and positively correlated to housing finance in others. This ambiguous empirical result might mean that the assumption that banking development is a catalyzer of housing finance should be reconsidered since it seems to be detrimental. Indeed, the country case studies in the appendix show that in Africa the banking sector is more developed than the financial sector—however, the region still has a low depth of housing finance. Developing mortgage markets is imperative and should be encouraged by a clear state policy.

In addition, the growth rate of the urban population is instrumental to housing market development in SSA. In table 4.1, the growth rate of the urban population is a positive determinant of housing finance in all empirical model specifications except one. This variable drives the demand of marketable housing in any country and specifically in SSA countries. This result confirms the finding of Badev et al. (2014) at a global level in the African context.

Furthermore, reconstruction after years of conflict that has devastated infrastructure is also a key determinant of housing finance. In many empirical specifications, the dummy of lagged conflict is positively and significantly correlated to greater housing finance in SSA. There are two main rationales behind this finding: (a) after conflicts where housing has been widely destroyed, there is a need to reconstruct; and (b) at the end of a financially draining conflict, they people do not have enough money saved to build a house without financing, so rebuilding will require credit.

The inflation rate, interest rate, transfers from abroad, and the GDP per capita rate are associated positively with housing finance, but these are not significant relationships. Thus these four variables are weak determinants of financial deepening. These findings are the same as those of Egert and Mihaljek (2007) and Haibin Zhu (2006). However, trade openness, domestic credit, and investment stock have a negative impact on housing finance.

In addition to the basic model and in subsequent regressions, we added one composed variable at a time. The idea is to check the compounded effect of our previous context differentiation. We find that financial openness combined with legal_*dummy*, investment stock, and market capitalization has a significant impact while its combination with Sahel_*dummy* is non-significant. On one hand, the combination of legal_*dummy* and market capitalization has a negative effect on housing finance depth and on other hand, the combination with investment stocks has a positive influence.

Tables 4.2 and 4.3 present estimated results of the shared prosperity and inclusive growth model. They show that housing finance depth has no significant impact on inequality in SSA. However, based on the literature, we were expecting a negative relation between those two variables. Our results are closer to this prediction when we consider housing finance policy. It fact, this policy appears to reduce inequality, since a negative and significant coefficient of housing finance indicators on inequality suggests that countries with more highly developed housing financial systems tend to have lower levels of inequality than those with bank-based financial systems.

Impact of housing finance on inequality

Table 4.2: Impact of Housing Finance on Inequality (Gini index)

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Housing finance depth (X)	-0.181	---	8.39	-1.52	12.46	30.08	39.16
	(0.942)		(13.03)	(3.75)	(15.66)	(36.43)	(36.38)
X^2	**---**	**-0.056***	**---**	**---**	**---**	**---**	**---**
		(0.137)					
Housing finance policy	**-0.006*** **	**-0.01*** **	**-0.005*** **	**-0.006*** **	**-0.005*** **	**-0.006*** **	**-0.006*** **
	(0.0009)	**(0.0008)**	**(0.0009)**	**(0.0009)**	**(0.0009)**	**(0.0009)**	**(0.0009)**
Inflation	-5.7e-06	-1.056	-5.6e-06	-5.7e-06	-5.6e-06	-5.7e-16	-5.7e-06
	(0.0003)	(0.002)	(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)
GDP per capita	-0.004	-0.058	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.008)	(1.005)	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)
Human capital	**-0.012*** **	0.0001	**-0.01*** **	**-0.012*** **	**-0.012*** **	**-0.012*** **	**-0.012*** **
	(0.002)	(1.281)	**(0.002)**	**(0.002)**	**(0.002)**	**(0.002)**	**(0.002)**

Gender	0.001	0.022	0.0007	0.001	0.0005	0.0012	0.001
	(0.003)	(1.007)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)
Conflict dummy t-1	**0.277****	0.801	**0.269****	**0.274****	**0.255****	**0.28****	**0.279****
	(0.09)	(2.729)	**(0.091)**	**(0.091)**	**(0.095)**	**(0.09)**	**(0.09)**
Political stability	**-0.02****	-0.0005	**-0.001****	**-0.013****	**-0.002****	**-0.001****	**-0.002****
	(0.002)	(1.418)	**(0.002)**	**(0.002)**	**(0.002)**	**(0.002)**	**(0.002)**
Hfinva	---	**---**	-0.128	---	---	---	---
			(0.194)				
Hfinconf	---	**---**	---	1.41	---	---	---
				(3.85)			
Hfinwealth	---	**---**	---	---	-6.29	---	---
					(7.785)		
Hfinlegal	---	**---**	---	---	---	-30.29	---
						(36.45)	
Hfinsahel	---	---	---	---	---	---	-39.36
							(36.39)
Constant	5.1***	4.92***	5.13***	5.1***	5.16***	5.098***	5.1***
	(0.292)	(0.055)	(0.296)	(0.292)	(0.302)	(0.292)	(0.292)
Countries	45	45	45	45	45	45	45
Observations	446	502	446	446	446	446	446

Source: Authors' estimates.

Note: Hfinva (Housing finance depth*Voice accountability); Hfinconf (Housing finance depth*Conflict dummy t-1); Hfinwealth (Housing finance depth*Wealth-*dummy*: wealth-based decomposition); Hfinlegal (Housing finance depth*Legal-*dummy*: legal-based decomposition); Hfinsahel (Housing finance depth*Sahel-dummy: Sahel-based decomposition). *,**,**: significance levels of 10%, 5% and 1% respectively. Values in bracket are standard errors.

Concerning the impact of housing finance depth, the non-significance of the impact has allowed us to verify the threshold effect. Our verification (in the table above and appendix) was conclusive since a higher value (squared values) of housing finance depth then became negatively and significantly correlated to inequality. However a very higher value (exponential value) presents a non-significant result again.

These results confirm the fact that there is a threshold effect. Indeed, above a certain threshold, higher values of housing finance depth conclusively reduce inequality, while lower and very high values do not have a significant impact. Well-developed housing finance systems are therefore associated with inequality reduction. Based on these findings, we can recommend the development of housing finance systems in African countries.

Turning to the control variables, the results are mostly in line with expectations. There is a strong negative but non-significant influence on inequality of inflation and of income per capita; and a significant negative impact of human capital on inequality, suggesting that higher levels of economic development and human capital are associated with lower levels of inequality. Additionally, the governance level indexed by political stability appears to reduce inequality. These results are in line with the theoretical and empirical literature, which assumes that investing in human and physical capital is a good tactic to reduce inequality.

However, the conflict dummy is contrary to inequality reduction objectives, since their coefficients are positive and significant. These last results suggest that the positive impact of the conflict dummy on housing finance development should be mitigated. While countries may expand housing finance after a conflict to boost reconstruction, the rich may be better positioned than the poor to take advantage of it, which risks increasing inequality. Additional measures may be needed to compensate for this effect.

Our composed variables are non-significant; however, all of them present the expected theoretical negative sign excluding housing finance depth interacted with conflict_*dummy*. Housing finance depth is contrary to inequality reduction in a post-conflict country. The reason could be the same as highlighted above since there is unequal access to and distribution of money, favoring the wealthy more than the poor. The capacity

of housing finance depth to reduce inequality is multiplied when it is combined with voice and accountability and with wealth, legal, and Sahel dummies. Our previous decomposition is therefore relevant in the analysis of the capacity of housing finance to reduce inequality.

Impact of housing finance on inclusive growth

Table 4.3: Impact of Housing Finance on Per Capita Economic Growth (GDPPC) and Economic Growth (GDP)

	GDPPC (1)	**GDP**	**GDPPC (2)**	**GDPPC (3)**	**GDPPC (4)**
Housing finance depth	**0.365****	**2.25****	11.56	79.85	0.009
	(1.44)	**(1.11)**	(15.43)	(86.3)	(0.007)
Housing finance policy	0.009	**0.002*****	0.009	0.01	0.007
	(0.007)	**(0.0003)**	(0.007)	(0.007)	(0.007)
Population 15-64	**3.56****	**-1.63****	**3.64****	**3.53****	**3.56****
	(1.39)	**(0.777)**	**(1.4)**	**(1.39)**	**(1.4)**
Investment stock	**0.717*****	-0.013	**0.718*****	**0.72*****	**0.72*****
	(0.097)	(0.042)	**(0.097)**	**(0.097)**	**(0.097)**
Human capital	**0.013****	**---**	**0.012****	**0.013****	**0.013****
	(0.004)		**(0.004)**	**(0.004)**	**(0.004)**
Trade openness	**-0.012*****	**-0.007*****	**-0.012*****	**-0.012*****	**-0.012*****
	(0.0014)	**(0.001)**	**(0.001)**	**(0.001)**	**(0.001)**
Conflict dummy t-1	0.109	---	0.089	0.12	0.109
	(0.117)		(0.119)	(0.117)	(0.117)
Infrastructure (Electricity)	**0.015****	**0.002****	**0.016****	**0.002****	**0.022****
	(0.0047)	**(0.002)**	**(0.005)**	**(0.005)**	**(0.005)**
Inflation	-0.002	---	-0.002	-0.002	-0.002
	(0.008)		(0.008)	(0.008)	(0.008)
Interest rate	-0.002	---	-0.002	-0.003	-0.002
	(0.006)		(0.006)	(0.006)	(0.006)
Transfers	1.1e-17	---	1.2e-17	1.2e-17	1.1e-17
	(1.8e-17)		(1.8e-17)	(1.8e-17)	(1.8e-17)
Domestic credit to private sector	-0.011	---	-0.01	-0.01	-0.011
	(0.007)		(0.007)	(0.007)	(0.007)
Hfinwealth	---	**---**	-5.98	**---**	**---**
			(7.702)		
Hfinlegal	---	---	---	-80.28	**---**
				(6.94)	
Hfinsahel	---	**---**	---	**---**	-0.365
					(1.44)
Constant	-23.06**	19.04***	-23.43**	-22.9**	-23.06**
	(6.96)	(3.34)	(6.96)	(6.94)	(6.96)
Countries	45	45	45	45	45
Observations	188	500	188	188	188

Source: Authors estimates.
Note: Kaotrop (Financial openness*Trade openness); Hfinwealth (Housing finance depth*Wealth-*dummy*: wealth-based decomposition); Hfinlegal (Housing finance depth*Legal-*dummy*: Legal-based decomposition-); Hfinsahel (Housing finance depth*Sahel-*dummy*: Sahel-based decomposition-). *,**,**: significance levels of 10%, 5% and 1% respectively. Values in brackets are standard errors.

From table 4.3 above, we can see that housing finance depth has a positive and significant impact (5 percent level) on GDP per capita growth and GDP growth in Africa. This result confirms that the development of housing finance is relevant to the pursuit of inclusive growth objectives. The impact is expected to be higher on economic growth than on per capita economic growth. Interestingly, our results imply that for every 100 dollars spent on housing finance activities in Africa, 36.5 dollars are added to per capita GDP while 225 dollars are added to GDP. This result confirms the findings of Hongyu et al. (2002), Erbas and Nofthaft

(2002), Uy (2006) and Freire et al. (2006) in other regions and is another reason why African countries should consider expanding their mortgage markets.

In addition, the working population (indexed by the 15–64 age cohort of the population), investment stock, human capital, and infrastructure are determinants of inclusive growth in Africa. These results are also in line with previous literature on the subject. However, trade openness is negatively and significantly related to GDP growth and GDP per capita growth. We can attribute these contradictory results to the proxy used to index these variables.

The combined variables are all non-significant and are associated to a negative sign; without combining them, we still have the same non-significant result. We are able to conclude then that our decomposition is relevant—but in the wrong way in terms of housing finance development impact on per capita economic growth. The variables housing finance policy, transfers, and conflict_*dummy* present the positive sign predicted by the theory, while the variables inflation, interest rate, and domestic credit to private sector present a negative sign, contrary to the theoretical predictions.

4.4. Robustness check

In order to make sure that our results are robust, we implemented additional estimations, changing some variables by their proxy, changing the specification, and changing the estimation method. By changing the specification, we were guided by the maximization of the number of observations relative to the one of the principal estimations. Practically, we either added control variables that might affect the dependent variable or removed other control variables to maximize the number of observations. As shown in the annexed tables, our results are conclusive since we have the same sign and signification variable as in the principal results discussed.

By exchanging some variables with their proxy, we were able to verify whether we obtain the same result even when we use different measures for the same variable. By changing the estimation method from FGLS to GMM, we verified the robustness of our main results. In addition, we used alternative measures of growth (GDP per capita growth and GDP growth) and housing finance (mortgage depth and mortgage penetration) to verify the quality of our results.

Tables A.6, A.7, and A.8 present the results of our robustness check regression. The results overall are conclusive. However, by comparing table A.6 in the appendix to table 4.1, the interpretation of the impact of conflict_*dummy* is either positive or negative and significant depending on how we change the housing finance index. So, the previous results of a positive impact of conflict_*dummy* are plausible only for housing finance depth and not housing finance penetration. Also, our combined variables become positively and significantly related to housing finance when the proxy is housing finance penetration.

We can therefore confirm that there is a little relative difference depending on the variable we use to index housing finance even if results remain mostly similar. The rest of the variables retain the same sign and significance independently of the change of the proxy of housing finance development and the estimation method.

Comparing table A.7 in the appendix to table 4.3, we see that by changing specification and dependent variables, our results remain globally unchanged. However, labor becomes not significant. Additionally, trade openness is negatively related to economic growth when we use the FGLS estimation method. However, when we use the GMM estimation method, trade openness positively and significantly affects

economic growth. Since the results for economic growth are largely similar to those of the inclusive growth equation, we can confirm the robustness of the impact of housing finance development on inclusive growth.

Comparing table A.8 in the appendix to table 4.2, the results remain the same independently of the estimation method. However, governance indexed by political stability produces either positive or negative (and significant) impacts on inequality, depending on the method.

5. Conclusion

This paper used a new database on mortgage depth and penetration across countries and panel data econometric techniques to investigate housing finance determinants and the potential of housing finance to contribute to inclusive growth in Africa. It begins by using a benchmarking exercise with a decomposition approach to describe and present the typology of housing finance systems in Africa.

The statistical analysis mainly revealed that housing finance performance varies significantly based on the decomposition of country characteristics. In addition, our analysis emphasized that housing finance systems in Africa are generally nascent and based more on banks than on markets.

The paper's econometric analysis leads to the following key findings.

First, stock market capitalization and urban growth are the main determinants of housing finance development in Africa. Specifically, stock market capitalization is one of the main determinants of housing finance development in Africa; while credit to the private sector is non-significant and negatively correlated to housing finance in some countries but it is significant and positively correlated to housing finance in others. Hence, the assumption that banking development is a catalyzer of housing finance should be reconsidered.

Second, countries with more highly developed housing financial systems tend to have lower levels of inequality than those with bank-based financial systems. Hence, well-developed housing finance systems are associated with inequality reduction.

Third, human capital appears to be the main factor for reducing inequality. In fact, there is a significant negative impact of human capital on inequality, suggesting that higher levels of economic development and human capital are associated with lower levels of inequality. These results are in line with the theoretical and empirical literature, which assumes that investing in human and physical capital is a good tactic to reduce inequality.

Fourth, housing finance depth is contrary to inequality reduction in a post-conflict country. The reason could be the same as highlighted above since the unequal access to and distribution of money favor the wealthy more than the poor.

Overall, to develop SSA housing finance markets, this study suggests that governments should focus on market capitalization and mortgage markets development.

6. Appendix

Table A.1: Statistical Comparison of Lower Income, Middle Income, and Upper Income Housing Markets and Finance Policy

		Mean	Std. dev.	Benchmark	Comment
Housing finance policy (mortgage rate)	Low Lower middle Upper middle	15.77 16.12 12.94	8.25 4.99 1.74	Low	Performance order is: UM, L, LM.
Housing finance depth (mortgage debt to GDP / credit to GDP)	Low Lower middle Upper middle	0.23 0.37 13.29	0.63 0.65 14.69	High	Performance order is: UM, LM, L.
Housing finance penetration (financial inclusion indicator of percentage of adult population with outstanding loan to purchase a home)	Low Lower middle Upper middle	2.11 2.17 2.57	2.21 2.15 2.49	High	Performance order is: UM, LM, L.
Housing finance access (proportion of population who can access mortgage rate in SSA)	Low Lower middle Upper middle	2.38 16.26 35.72	3.87 20.26 11.41	High	Performance order is: UM, LM, L.
Housing demand (annual housing demand)	Low Lower middle Upper middle	112.73 115.33 23.67	127.9 201.33 34.58	Low	Performance order is: UM, L, LM.
Cheapest housing price (price of the cheapest, newly built house by a formal developer or contractor)	Low Lower middle Upper middle	40388 37381 32308	58999 23090 22674	Low	Performance order is: UM, LM, L.
Housing input price (cost of standard 50kg bag of cement in US$)	Low Lower middle Upper middle	12.21 10.42 7.61	5.1 1.96 0.53	Low	Performance order is: UM, LM, L.

Source: Authors' calculation based on a collection of data from a survey, the World Bank and Housing Finance in Africa yearbooks 2010, 2011 and 2013. Available at: www.housingfinanceafrica.org (accessed: 08/09/2014).

Notes: All measures are in US$. The countries included in each group are: (1) Lower income countries: Guinea-Bissau, Guinea, Sierra Leone, Liberia, Mali, Burkina Faso, Togo, Benin, Niger, Chad, Central African Rep., Dem. Rep. of Congo, Uganda, Kenya, Ethiopia, Eritrea, Somalia, Tanzania, Mozambique, Zimbabwe, Madagascar, Comoros; (2) Lower middle income countries: Cape Verde, Senegal, Mauritania, Ivory Coast, Ghana, Nigeria, Cameroon, Congo, Angola, Zambia, Lesotho; (3) Upper middle income countries: Gabon; Namibia, Botswana, South Africa, Equatorial Guinea.

Table A.2: Statistical Comparison of Housing Markets of Countries' with French and British Legal Origins and Finance Policy

		Mean	Std dev.	Benchmark	Comment
Housing finance policy (mortgage rate)	French speaking English speaking	15.91 16.16	7.25 6.3	Low	French speaking countries perform better than English speaking countries
Housing finance depth (mortgage debt to GDP / credit to GDP)	French speaking English speaking	0.14 3.92	0.45 8.99	High	English speaking countries perform better than French speaking countries
Housing finance penetration (financial inclusion indicator of percentage of adult population with outstanding loan to purchase a home)	French speaking English speaking	1.88 3.26	2.25 2.27	High	English speaking countries perform better than French speaking countries

Housing finance access (proportion of population who can access mortgage rate in SSA)	French speaking	10.38	16.45	High	English speaking countries perform better than French speaking countries
	English speaking	10.96	17.58		
Cheapest housing price (price of the cheapest, newly built house by a formal developer or contractor)	French speaking	42560	58330	Low	Both tend to have the same performance
	English speaking	43520	26039		
Housing input price (cost of standard 50kg bag of cement in US$)	French speaking	12.29	5.3	Low	Both tend to have the same performance
	English speaking	10.49	3.94		

Source: Authors' calculation based on a collection of data from a survey, the World Bank and Housing Finance in Africa yearbooks 2010, 2011 and 2013. Available at: www.housingfinanceafrica.org (accessed: 08/09/2014).
Notes: All measures are in US$. The countries included in each group are: (1) French speaking countries: Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Rep., Chad, Comoros, Congo, Ivory Coast, Dem. Rep. of Congo, Djibouti, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Madagascar, Mali, Mauritania, Niger, Sao Tome & Principe, Senegal and Togo; (2) English speaking countries: Botswana, Eritrea, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

Table A.3: Variable Definition and Data Source

Variables	Signs	Variable Definitions	Sources
Housing finance policy	HFINP	Mortgage rate	Housing finance data base, World Bank
Mortgage depth	HFIND	Mortgage debt to GDP / Credit to GDP	Housing finance data base, World Bank
Mortgage penetration	HFINPE	Percentage of adult population with an outstanding loan to purchase a home.	Financial inclusion data base, World Bank
Housing cost	HFINC	Cheapest house price	Housing finance in Africa
Housing construction price	HFINCP	Housing input price	Housing finance in Africa
Housing demand	HFINDM	Annual housing demand	Housing finance data base, World Bank
Urban population	UPOP	Urban population (% of total)	World Bank (WDI)
Public spending	PSPEND	Public spending on education, total (% of GDP)	World Bank (WDI)
Real interest rate	TXINT	Real interest rate (annual %)	World Bank (WDI)
Financial openness	KAOPEN	economy capital account degree of openness	Chin & Ito (2006)
Domestic credit	BCRED	Domestic credit to private sector by banks (% of GDP)	World Bank (WDI)
Net transfers	TRANS	Net current transfers from abroad (constant LCU)	World Bank (WDI)
Shared prosperity	INEQ1	Gini index	World Bank (WDI)
Shared prosperity	INEQ2	GDP per capita	World Bank (WDI)
Trade openness	TROPEN	Imports plus Exports in commodities (% of GDP)	World Bank (WDI)
Public Investment	PUBIV	Gross Public Investment (% of GDP)	World Bank (WDI)
Stock market capitalization to GDP (%)	MACAP	Total value of all listed shares in a stock market as a percentage of GDP. (Standard & Poor's, Global Stock Markets Factbook and supplemental S&P data)	Standard & Poor's, Global Stock Markets Fact book and supplemental S&P data
Inflation	INFL	Consumer Price Index (annual %)	World Bank (WDI)
Economic Prosperity	GDPG	GDP Growth (annual %)	World Bank (WDI)
Per Capita Economic prosperity	GDPPC	GDP per capita Growth (annual %)	World Bank (WDI)
Foreign Direct Investment	FDI	Foreign Direct Investment (%)	World Bank (WDI)
Unemployment	UNEM	Unemployment rate (annual %)	World Bank (WDI)
Human Capital	SE_SEC_ENRR	Secondary school enrollment (% gross)	World Bank (WDI)
Gender education	SE_ENR_PRSC_FIN	Ratio of girls to boys in primary and secondary education (%)	World Bank (WDI)

Population	POP	Population ages 15-64 (% of total)	World Bank (WDI)
Governance	VA_PER_RNK	Voice and accountability	World Bank (WGI)
Public spend	PSPEND	Public spending on education (% of GDP)	World Bank (WDI)
Infrastructure 1	IS_ROD_PAVED	Roads paved (% of total roads)	World Bank (WDI)
Infrastructure 2	EG_ELC_HYRO_ZS	Electricity production from hydroelectric (% of total)	World Bank (WDI)
Wealth_*dummuy*	WEALTH	Dummy variable based on the decomposition of (lower=0, lower middle=1, upper=2) wealth level	Author compute
Conflict_*dummy*	CONFLICT	Dummy variable based on the decomposition of (Conflict=1 versus absence of conflict=0) countries	Author compute
Sahel_*dummy*	SAHEL	Dummy variable based on the decomposition of (Sahel=0 versus Forest=1) countries	Author compute
Legal_*dummy*	LEGAL	Dummy variable based on the decomposition of (French law=0 versus Common law=1) countries	Author compute

WDI: World Bank Development Indicators. FDSD: Financial Development and Structure Database.

Source: Authors' construction.

Table A.4: Mortgage Depth Data Sources

Country	Region	No. of Obs	Period	Source
Botswana	Sub-Saharan Africa	1	2009-2009	Other
Burkina Faso	Sub-Saharan Africa	5	2006-2010	Central Bank
Burundi	Sub-Saharan Africa	5	2007-2011	Central Bank of Burundi
Cameroon	Sub-Saharan Africa	1	2005-2005	Other
Central African Republic	Sub-Saharan Africa	1	2005-2005	Other
Chad	Sub-Saharan Africa	1	2005-2005	Other
Congo, Rep.	Sub-Saharan Africa	1	2005-2005	Other
Gabon	Sub-Saharan Africa	1	2005-2005	Other
Ghana	Sub-Saharan Africa	2	2006-2008	Other
Guinea	Sub-Saharan Africa	1	2005-2005	Other
Kenya	Sub-Saharan Africa	5	2006-2010	Other
Malawi	Sub-Saharan Africa	2	2006-2007	Central Bank
Namibia	Sub-Saharan Africa	1	2011-2011	Hofinet
Nigeria	Sub-Saharan Africa	2	2006-2008	Other
Senegal	Sub-Saharan Africa	1	2004-2004	Other
South Africa	Sub-Saharan Africa	12	2000-2011	South African Reserve Bank
Tanzania	Sub-Saharan Africa	1	2009-2009	World Bank Mission April 2009
Togo	Sub-Saharan Africa	5	2006-2010	Other
Uganda	Sub-Saharan Africa	2	2010-2011	Central Bank

Source: Authors' construction based on Badev et al. (2014) database on housing finance.

Table A.5: Housing Loan Penetration by Country (2011)

Country	%	Country	%	Country	%
Angola	4.3	Rwanda	2.1	Kenya	1.2
Burundi	0.1	Sudan	6.4	Liberia	3.6
Benin	0.6	Senegal	0.1	Lesotho	0.8
Burkina Faso	0.7	Sierra Leone	0.5	Madagascar	0.6
Botswana	1.8	Somalia	6.9	Mali	0.8
Central African Republic	1.1	Chad	6.3	Mozambique	1.1
Cameroon	1.7	Togo	2.3	Mauritania	6.1
Congo, Rep.	0.3	Tanzania	5.4	Mauritius	5.7
Comoros	0.7	Uganda	1.2	Malawi	6.5
Djibouti	6.3	South Africa	5.4	Niger	1.0
Gabon	0.6	Congo, Dem. Rep.	0.7	Nigeria	0.3
Ghana	2.8	Zambia	1.8		
Guinea	0.2	Zimbabwe	1.3		

Source: Authors' construction based on Badev et al. (2014) database on housing finance.

Table A.6: Housing Finance Determinants (Sensitivity and Robustness Check)

Model A2: Housing finance determinants (Sensitivity and robustness check)						
	FGLS				GMM	
	HFD	**HFP**	**HFP**	**HFP**	**HFP**	**HFD**
Housing finance depth L1	---	---	---	---	**1.02***	0.131
					(0.045)	(0.086)
Market capitalization	**0.001*****	**0.03****	**0.03*****	0.02	**0.001*****	**0.001*****
	(0.00003)	**(0.012)**	**(0.013)**	(0.12)	**(0.00005)**	**(0.0001)**
Urban population growth	**0.00008***	**-0.06***	**0.06****	**-0.03***	**0.0002****	0.001
	(0.0005)	**(0.022)**	**(0.023)**	**(0.022)**	**(0.00008)**	(0.002)
Conflict dummy t-1	**0.004***	**-2.28***	**-3.42****	**-2.2***	---	---
	(0.002)	**(1.12)**	**(1.23)**	**(1.15)**		
Investment stock	0.00009	**1.22****	0.59	**1.11****	-0.002	-0.00003
	(0.001)	**(0.479)**	(0.53)	**(0.504)**	(0.002)	(0.01)
GDP per capita	**-1.0003*****	**-1.58*****	**-2.1*****	**-2.3*****	0.0003	0.0002
	(0.002)	**(0.482)**	**(0.51)**	**(0.512)**	(0.002)	(0.002)
GDP growth	**2.15*****	**2.37*****	**2.18*****	**2.5*****	0.0001	0.0001
	(0.002)	**(0.459)**	**(0.485)**	**(0.487)**	(0.002)	(0.002)
Political stability	**0.08*****	**0.1*****	**0.1****	**0.1*****	0.00001	-0.0001
	(0.023)	**(0.025)**	**(0.026)**	**(0.026)**	(0.0001)	(0.0004)
Domestic credit to private sector	---	-0.035	**-0.06***	-0.035	-0.0002	0.0001
		(0.028)	**(0.029)**	(0.028)	(0.0001)	(0.0006)
Trade openness	---	-0.006	-0.01	-0.006	-0.00003	-0.00004
		(0.01)	(0.01)	(0.01)	(0.00003)	(0.0001)
Inflation	---	**0.19****	**0.16****	**0.18****	-0.00001	0.0001
		(0.06)	**(0.06)**	**(0.063)**	(0.0002)	(0.0003)
Interest rate	---	**0.28*****	**0.267*****	**0.28*****	0.0001	0.0001
		(0.04)	**(0.04)**	**(0.04)**	(0.0001)	(0.0003)
Transfers	9.1e-20	3.02e-17	2.14e-17	3e-17	4.9e-20	-5.4e-21
	(9.8e-20)	(3.4e-17)	(3.33e-17)	(3.4e-17)	(1.1e-19)	(1.3e-19)
Kaolegal	---	**0.86****	---	---	**---**	---
		(0.33)				
Kaosahel	---	---	**0.962****	---	---	---
			(0.292)			
Kaowealth	---	---	---	0.16	---	---
				(0.266)		
Constant	-0.105	-28.4**	-0.913	-26.15*	---	---
	(0.04)	(14.9)	(16.84)	(15.41)		
Auto	na	Na	Na	Na	-1.06	-1.089
					(0.255)	(0.276)
Sargan OIR	na	Na	Na	Na	2.052	1.682
					(0.307)	(0.794)
Wald	na	Na	Na	Na	12.48*	70.374***
					(0.067)	(0.000)
Countries	45	45	45	45	45	45
Observations	401	252	252	252	223	206

Source: Estimation result observation by the authors.

Note: HFD (Housing finance depth); HFP (Housing finance penetration); Kaolegal (Financial openness*Legal-*dummy*: Legal based decomposition-); Kaosahel (Financial openness*Sahel-*dummy*: Sahel based decomposition-); Kaowealth (Financial openness*Wealth-*dummy*: wealth based decomposition-); Kaotrop (Financial openness*Trade openness-); Kaomac (Financial openness*Market capitalization); Kaofbcf (Financial openness*Investment stock). *,**,**: significance levels of 10%, 5% and 1% respectively. Values in bracket are standard errors. Auto: Autocorrelation test. OIR: Overidentifying Restrictions test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the Auto tests and; b) the validity of the instruments in the Sargan OIR test. P-values in brackets. AR(1): First Order Autoregression. AR(2): Second Order Autoregression. Autoregression is on the Return variables.

Table A.7: Impact of Housing Finance on Economic Growth (Sensitivity and Robustness Check)

	FGLS		GMM
	(1)	(2)	(4)
GDP L1	**---**	**---**	**0.94***** **(0.075)**
Housing finance depth	**2.25**** **(1.11)**	**2.27**** **(1.11)**	0.133 (0.146)
Housing finance policy	**0.002***** **(0.0003)**	**0.002***** **(0.0004)**	**0.0005*** **(0.0002)**
Population 15-64	**-1.63**** **(0.777)**	**-1.62**** **(0.777)**	-1.126 (0.222)
Investment stock	-0.013 (0.042)	---	-0.012 (0.012)
Human capital	**---**	---	-0.0002 (0.0007)
Trade openness	**-0.007***** **(0.001)**	**-0.01***** **(0.001)**	**0.0004*** **(0.0002)**
Conflict dummy t-1	---	---	---
Infrastructure (electricity)	**0.002**** **(0.002)**	**0.003**** **(0.002)**	0.0006 (0.001)
Inflation	---	---	-0.0004 (0.0003)
Interest rate	---	---	-0.0002 (0.0003)
Transfers	---	---	**-1.2e-18**** **(5.9e-19)**
Domestic credit to private sector	---	---	-0.0009 (0.0005)
Constant	19.04*** (3.34)	18.61*** (3.037)	---
Auto	Na	Na	**-1.110** **(0.266)**
Sargan OIR	Na	Na	**3.462** **(0.483)**
Wald	Na	Na	**3.688*** **(0.054)**
Countries	45	45	45
Observations	500	500	178

Source: Estimation result observation by the authors.
Note: Kaotrop (Financial openness*Trade openness); Hfinwealth (Housing finance depth*Wealth-*dummy*: wealth-based decomposition-); Hfinlegal (Housing finance depth*Legal-*dummy*: Legal-based decomposition-); Hfinsahel (Housing finance depth*Sahel-*dummy*: Sahel-based decomposition-). *,**,**: significance levels of 10%, 5% and 1% respectively. Values in bracket are standard errors. Values in bracket are standard errors. Auto: Autocorrelation test. OIR: Overidentifying Restrictions test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the Auto tests and; b) the validity of the instruments in the Sargan OIR test. P-values in brackets. AR(1): First Order Autoregression. AR(2): Second Order Autoregression. Autoregression is on the Return variables.

Table A.8: Impact of Housing Finance on Inequality (Sensitivity and Robustness Check)

	FGLS					GMM
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(8)**
Ineq L1	**---**	**---**	---	---	**---**	**1.013*** **
						(0.007)
Housing finance depth (X)	0.825	---	---	-1.52	12.46	-0.012
	(0.907)			(3.75)	(15.66)	(0.01)
X^2	**---**	**-0.056***	**---**	**-0.015****	**-0.031****	**-0.015***
		(0.137)		**(2.039)**	**(1.019)**	**(0.017)**
e^x	---	---	0.124	6.035	1.086	-0.006
			(0.017)	(5.06)	(21.35)	(0.009)
Housing finance policy	**-0.006*** **	**-0.01*** **	**-0.005*** **	**-0.006*** **	**-0.005*** **	**-0.003****
	(0.0009)	**(0.0008)**	**(0.0009)**	**(0.0009)**	**(0.0009)**	**(0.001)**
Inflation	-6e-06	-1.056	-5.6e-06	-5.7e-06	-5.6e-06	-1e-07
	(0.00003)	(0.002)	(0.00003)	(0.00003)	(0.00003)	(1e-07)
GDP per capita	-0.007	-0.058	-0.004	-0.004	-0.004	**0.004*** **
	(0.008)	(1.005)	(0.008)	(0.008)	(0.007)	**(0.00003)**
Human capital	**-0.01*** **	0.0001	**-0.01*** **	**-0.01*** **	**-0.01*** **	-0.00006
	(0.001)	(1.281)	**(0.002)**	**(0.002)**	**(0.002)**	(0.00005)
Gender	---	0.022	0.0007	0.001	0.0005	-0.00008
		(1.007)	(0.004)	(0.003)	(0.004)	(0.00009)
Conflict dummy t-1	---	0.801	**0.269****	**0.274****	**0.255****	**---**
		(2.729)	**(0.091)**	**(0.091)**	**(0.095)**	
Political stability	---	-0.0005	**- 0.012****	**0.015****	**0.012****	**0.007****
		(1.418)	**(0.004)**	**(0.003)**	**(0.002)**	**(0.0003)**
Hfinwealth	**---**	**---**	-6.09	---	---	---
			(7.84)			
Hfinlegal	**---**	**---**	---	-33.6	---	---
				(36.56)		
Hfinsahel	**---**	**---**	---	---	-43.86	---
					(36.45)	
Constant	5.5***	4.99***	5.13***	5.1***	5.16***	---
	(0.082)	(0.053)	(0.296)	(0.292)	(0.302)	
Auto	na	na	Na	Na	Na	**-1.089**
						(0.276)
Sargan OIR	na	na	Na	Na	Na	**1.682**
						(0.794)
Wald	na	na	Na	Na	Na	**70.374*** **
						(0.000)
Countries	45	45	45	45	45	45
Observations	457	502	446	446	446	367

Source: Estimation result observation by the authors.

Note: Hfinwealth (Housing finance depth*Wealth-*dummy*: wealth-based decomposition); Hfinlegal (Housing finance depth*Legal-*dummy*: legal-based decomposition); Hfinsahel (Housing finance depth*Sahel-dummy: Sahel-based decomposition). *,**,**: significance levels of 10%, 5% and 1% respectively. Values in bracket are standard errors. Auto: Autocorrelation test. OIR: Overidentifying Restrictions test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the Auto tests and; b) the validity of the instruments in the Sargan OIR test. P-values in brackets. AR(1): First Order Autoregression. AR(2): Second Order Autoregression. Autoregression is on the Return variables.

Box A.1: Housing Policy and the Formal Sector Share of Housing Production in Cameroon

Since Cameroon's independence in 1960, its housing policy has been based primarily on a system of direct central government intervention through three organizations: (1) the Mission d'Aménagement et d'Équipements des Terrains Urbains et Ruraux (Mission to Plan and Improve Urban and Rural Land, or MAETUR); (2) the Société Immobilière du Cameroun (Cameroon Real Estate Corporation, or SIC); and (3) the Crédit Foncier du Cameroun (Cameroon Land Credit Bank, or CFC). However, this system has met only a limited share of the demand. Despite government measures, it has produced less than 1 percent of all parcels—a supply that is further limited to the upper-middle classes, especially civil servants.

Residents' self-construction and self-marketing efforts created housing or parcels without central government or decentralized local government intervention. Land access has been organized in mainly informal ways: Customary authorities have developed the urban extensions, and de facto and legal landowners have increased the density of urban areas through the private rental market, the largest share of housing in Douala and Yaoundé today.

During the past two decades, private property developers have appeared, initially in response to incentives provided by the central government, such as a property development decree and tax incentives for structural projects. Yet these developers' interventions remain modest and lack visibility.

Box A.2: Housing Finance Trend in Zambia

In 2012, Zambia committed nearly US$700 million for infrastructure development across the country. With sustained economic growth each year, FDI (foreign direct investment) and investment in the housing sector have led to job creation and increased access to housing, retail real estate projects, and commercial buildings. Major infrastructure projects are going on across the country—notably, Roma Park which includes both commercial and residential components. From the supply side, there is a challenge of housing in many urban centers, especially in rapidly growing cities in the provinces of Copperbelt and North-West, where mining operations have restarted. Moreover, and according to research from UN Habitat, there is a deficit of 1.3 million housing units across the country, and the construction of 46,000 units or more per year is recommended to fill the gap.

However, between 2001 and 2011, the construction rate was only 11,000 units. The major challenge in the real estate sector in Zambia is the accessibility to units by low and middle income households, which is common in many African countries. The two main housing institutions—the National Housing Authority and the Pension Scheme Authority—promoted housing primarily for employees with medium and high incomes, excluding those in other categories. The relative political stability of Zambia's economic growth stimulated by the mining industry and its booming middle class generate continuing growth in demand for housing in major urban centers across the country. However, there is still vast potential and opportunities to apply micro-finance as an effective tool to provide housing to people in the low income bracket, who are too often overlooked.

Box A. 3: The Rental Market in Tanzania

In Tanzania, the formal and informal rental market is divided into several segments. Tanzanians employed in the formal sector may rent rooms from $50 per month or a small apartment for $300 per month. Upper-class Tanzanians and expatriates pay between $1,000 and $5,000 per month, depending on location and amenities. Paying a year's rent in advance is common. The rental market is a lucrative business. Investors generally buy several units or apartment buildings at a cost of between $200,000 and $300,000. They rent units for $1,500–$5,000 per month, realizing a positive return on investment within three to five years. Rentals in the informal sector and for lower-income brackets often have even higher returns. In a typical scenario, the property owner's family occupies one part of a housing unit and rents out the other to another party. In low-income neighborhoods, three or four families commonly live under one roof.

Mainly driven by new legislation, the Tanzanian real estate market has begun to change. Previously, financial institutions were cautious about lending for real estate, since the laws related to foreclosure were unclear and offered little protection to investors. Now the institutions are more active in real estate, since relevant laws provide greater financial security. It is clear that the legislative and legal environment in Tanzania has stimulated the real estate market. Currently, the deficit of housing stock in Tanzania is estimated at 3 million units with a value of US$80 billion. The annual demand for housing in urban areas is estimated at around 200,000 units.

To fill the gap, the government gave lead authority to the National Housing Corporation (NHC) and mandated it to build at least 15,000 units by the end of 2015. As of 2012, the NHC had mobilized nearly US$100 million of long-term financing from local commercial banks and international finance institutions, for the construction of housing units. By promoting participation of private business leaders and banks, the reform legislation helped stimulate growth in the housing finance sector.

Since the legislative and legal environment began to provide security in transactions, much progress has been made in the sector; as more and more banks introduce mortgage products as part of their lending. In addition, the mortgage market is developing smoothly and the total amount of credit by the banking sector has reached around US$96 million. The total number of mortgage loans grew rapidly from 1,889 in early 2013 to 2,784 at the end of December 2013. Notably, the creation of the Tanzania Mortgage Refinancing Company (TMRC) in 2011 contributed significantly to the growth and stability of the mortgage market in Tanzania. This institution provides attractive rates and promotes good practices among both borrowers and banks. To date, the mortgage loans granted by the TMRC represent 11 percent of outstanding mortgages. As more borrowers benefit from the opportunities offered by TMRC liquidity, mortgage credit in Tanzania will grow considerably.

The housing market in Tanzania provides a huge potential for growth, especially with the planned large-scale housing currently being built by the NHC, and the growing demand for additional housing units. Tanzania's rental market is growing. However, beyond mortgages, there is also real potential in the micro-finance sector for housing, adding opportunities for all Tanzanians to acquire housing.

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