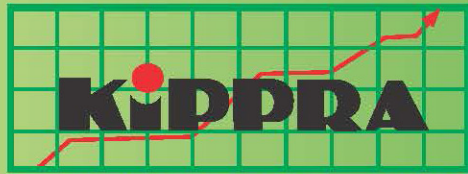


Financing Models for Affordable and Adequate Housing in Kenya

Victor Mose

Kenya Institute for Public Policy
Research and Analysis

KIPPRA Discussion Paper No. 259
2021



The **KENYA INSTITUTE** for **PUBLIC**
POLICY RESEARCH and **ANALYSIS**

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DP/259/2021

THE KENYA INSTITUTE FOR PUBLIC POLICY
RESEARCH AND ANALYSIS (KIPPRA)

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Published 2021

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ISBN 978 9966 817 70 9

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Abstract

The study investigates the symbiosis between housing financing and housing sector performance by using household and counties. It establishes that, at county level, uptake of housing loans are inelastic to changes in number of bank branches and mobile banking subscriptions, having registered positive elasticities of 0.2 and 0.3, respectively, but the age of household head is elastic with elasticity of 3.4 while negative elasticities of 0.5 were established for population living in poverty, average rent paid and per capita gross county product. At household level, uptake of housing loans increases with income, rent payable, mobile banking, age, female gender, education and employment status, but household size, marital status and area of residence were not significant. Adequate housing was associated with uptake of housing loans, together with increase in incomes, rent and age, and the female gender, post-primary education and the unmarried, but reduces with household size though subscription to mobile banking, status of employment and area of residence were not significant. The likelihood of having adequate room occupancy improves with loans uptake, rent payable, age of household head, female household heads, education level, employment and unmarried persons, and reduces with household size, but income and mobile banking subscriptions were not significant. In terms of affordability, rent payable increases with loans uptake, income level, household size, age, quality of walling, mobile banking subscription, female gender, education level, employment, urban residence and unmarried household heads. Kenya can mobilize additional Ksh 500 billion from the financial sector channels by utilizing policies allowing the banking, insurance, savings and credit organizations, pension and capital markets to finance or invest in real estate. Financial institutions need to open more branches in under-serviced counties, increase the marketing of their financial facilities, while promoting the complementary role played by mobile banking. There is need to strengthen data collection and planning on housing by incorporating household and market-based behaviour that determine the investment decisions in housing financing, housing quality and affordability.

Abbreviations and Acronyms

DFCK	Development Finance Company of Kenya
DFIs	Development Financial Institutions
ERS	Economic Recovery Strategy
FSD	Financial Sector Deepening
GEM	Global Entrepreneurship Monitor
GDP	Gross Domestic Product
GoK	Government of Kenya
ICDC	Industrial and Commercial Development Corporation
ICT	Information Communication Technology
IDB	Industrial Development Bank
KIBT	Kenya Business Training Institute
KIE	Kenya Industrial Estate
KIRDI	Kenya Industrial Research and Development Institute
KITI	Kenya Industrial Training Institute
KNBS	Kenya National Bureau of Statistics
MFI	Micro Finance Institutions
MSE	Micro and Small Enterprises
MSME	Micro, Small and Medium Enterprises
MTP	Medium-Term Plan
NGO	Non-Governmental Organization
SACCO	Savings and Credit Cooperatives Societies
UN	United Nations
WEF	Women Enterprises Fund
YEDF	Youth Enterprises Development Fund

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1. Introduction

Globally, the world is working towards sustainable cities and communities by 2030 as envisaged in the 11th goal of the Sustainable Development Goals, which targets access for all to adequate, safe and affordable housing and basic services and upgrade slums and support for least developed countries (United Nations General Assembly, 2015). This will require strengthening of financial and technical support mechanisms, including low interest financial facilities, application of appropriate technologies and local materials for sustainable and resilient buildings.

This paper focuses on housing financing with a view to establishing the housing financing models in Kenya and the contribution of housing financing channels to affordable and adequate housing. There are other critical services that promote performance of the housing sector, such as land, labour, technology, and access to housing services including health, education, trade, transport, water, sanitation, electricity, security, communication and recreation. The high cost of land, building materials, cost of finance, low investments, inadequate infrastructure for basic amenities, ineffective planning, approval processes, taxes and levies are the critical challenges that impede development of housing in Kenya. On the demand side, poverty, low incomes, low savings and information gaps reduce uptake of housing units while rapid rural-urban migration and rapid population growth create excess demand, thus housing deficits and growth of informal settlements.

Housing financing is central in determining the availability, affordability and adequacy of housing in the country with the cost of financial facilities going to the final consumers of housing services. From the demand side, affordability of housing compares price of properties relative to income levels, thus the cost of financing ought not to overstretch the cost of property, which will make properties unaffordable to majority of the population. Availability of adequate housing is a supply-side perspective, which relies on the scale of production, applied technology and quality of the properties constructed. Affordability of financial facilities for housing determines the scale and distribution of houses, own construction and purchase.

Three housing financing models exist: cash, loan, or a combination of cash and loan. Cash housing financing entails mobilization of financing by households to construct or buy dwellings based on their savings or receipt of booms or proceeds from sale of property; loan-only financing model is based on household borrowing from financial institutions such as banks, savings and credit cooperatives or welfare associations while the third model of housing financing entails a mix of cash and loan to construct or buy a house. The loan-based housing financing models are dependent on the characteristics of the channels of financing, some of which define financing channels include type of finance, means of access and conditions of access such as pricing, restrictions on amount, available repayment plan (instalments and period) and risk mitigation measures.

A country with deeper financial inclusion is bound to have better performance of the housing sector. One of the key indicators used to assess financial inclusion in developing economies from regional perspective is financial outreach through

branch penetration, especially the number of bank branches and the volume of the financial services at sub-national levels (Demirguc-Kunt and Klapper, 2012). The financial sector in Kenya is dominated by the banking industry, which commands over 65 per cent of financial market asset base while pension schemes, insurance and SACCOs share the remaining 35 per cent (Figure 1.1). The dominance of the banking sector gives it the overall influence of financial sector on other sectors. Therefore, the distribution of bank branches and volume of financial services across the country becomes a major policy concern with respect to access to financial facilities to promote the sub-national economies, including the housing sector.

Figure 1.1: Share of financial industries in financial sector asset base



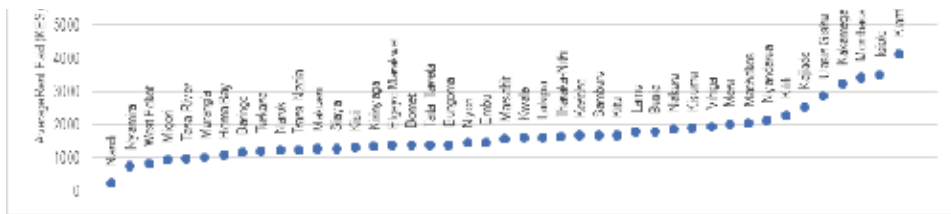
Source of data: CBK, IRA, RBA, SASRA and CMA (Various)¹

The distribution of bank branches in Kenya is skewed across the counties based on the average number of branches over the period 2013-2017 (Figure 1.2). Counties with fewest branches are exposed to financial deprivation, including loans for property development. Nairobi County has the highest number of branches estimated at 589 followed by Mombasa, Kiambu, Nakuru which have 129, 75 and 60 branches, respectively. These counties are expected to have better ease of access to loans, thus higher property development activities while other counties which have less than 5 bank branches will have low activity, including Samburu, Mandera, West Pokot, Tana River, Tharaka Nithi, Turkana, Elgeyo Marakwet, Nyamira and Wajir. This variance across counties is indicative of financial disparities leading to financial inclusion or exclusion, thus forms the core subject of this study as it seeks to ascertain the relationship between exposure to financial opportunities and development of the housing sector.

Variations in access to housing financing such as banking services, housing affordability indicators vary across counties including dwelling ownership to renting ratio, and the proportion of income spent on rent. For instance, house ownership and renting vary across counties (Kenya National Bureau of Statistics, 2016a), where in 16 out of the 47 counties, over 80 per cent of households lived in owner-occupied houses, while 5 counties had own-occupier of less than 50 per cent of the households, and the rest of the counties ranged between 50 and 80

¹ Stand for Central Bank of Kenya, Insurance Regulatory Authority, Retirement Benefits Authority, SACCO Society Regulatory Authority, Capital Markets Authority.

Figure 1.4: Average rent paid by households across counties

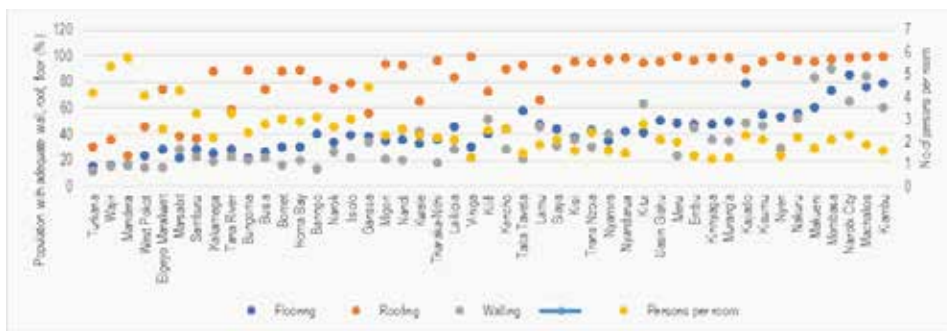


Source of data: KNBS (2016a)

Various dimensions are used to describe adequacy of housing. These include social and human dignity, infrastructure services, engineering and design perspectives, material science and environment. For instance, adequacy of housing can relate to number of persons per housing unit, resilience to adverse weather and distance to various amenities such as health facilities, schools, water points, trading centres, electricity, security posts and transport and communication services. The key attributes considered under housing adequacy are structural soundness of building, and population density in occupancy. Structural soundness defines the building strength and resilience to shocks, including adverse weather such as floods, storms, hot-sun, and natural hazards such as earthquake, which can be assessed through quality of roofing, walling and flooring. On the social perspective, adequate housing can be assessed from population density in dwelling-occupancy, which is number of persons per room.

The adequacy of houses varies across counties in terms of habitable conditions of walls, floors and roofs and sharing of rooms. The proportion of households with appropriate quality of roofing ranks higher than the proportion for flooring and walling (Figure 1.5), which may be indicative of relative differences in costs or availability of appropriate technology. There is also similarity in increasing overall trends of proportions of households with better quality for roofing, walling and flooring. There is an overall trend that counties doing well with adequate roofing, walling and flooring also perform better in adequate rooming by having smaller number of persons sharing a room. The status of roofing is impressive with 35 counties showing that over 75 per cent of households have adequate roofing. However, 39 and 36 counties recorded poor conditions in walling and flooring, where half of the household dwell in houses with inadequate walls and floors, respectively. This could be a pointer to technological, materials or cost constraints thereby hindering households from building houses with adequate walls and floors.

Figure 1.5: Proportion of households with good quality of houses in the counties



Source of data: KNBS (2016a)

The financial sector is expected to facilitate the development of the housing sector by providing financial services with ease of access. The housing deficit in Kenya has been partially attributed to financing exclusion, which manifests in limited access to financing in terms of availability and stringent conditions (Government of Kenya, 2018). Limited branch network, credit rationing, sub-optimal period of loan repayment and high cost of credit (interest rates, insurance, legal fees, etc) are some of the major bottlenecks that limit financial deepening. The huge variance in number of branches of banks opened across counties in Kenya, some having less than 5 branches to others having over 100 branches (Central Bank of Kenya, 2010-2017) has potential to incline access to adequate and affordable housing. Counties with fewer bank branches are likely to be deprived of financial services, thus have low economic activities such as property development. The housing deficit culminates in high property prices and rent, which subject some section of the population in Kenya to live in inhabitable housing conditions.

Since financing is one of the critical components in the property development value chain, it is important to assess its contribution to the persistence in housing deficit. This would ascertain the association or responsiveness of the housing sector to financing and provide evidence on the extent to which the market structure of the financial sector could be attributed to the skewed development of the housing sector. Such evidence will form the basis for policy shifts towards enhancing the role of housing financing. This study seeks to provide answers to the degree which access to financial services is associate with variations in affordable and adequate housing in Kenya and how various channels of financing have been utilized to support development of the housing sector and how the utilization could be enhanced. The study's objective was to explore the performance of housing finance channels in Kenya and the nexus between access to financial services and promotion of access to affordable and adequate housing in Kenya.

2. Policy Environment for Housing Financing and Trends in Financing Channels

2.1 Policy Environment

Kenya has made deliberate efforts towards enhancing housing conditions. Article 43.b of the Constitution of Kenya (Government of Kenya, 2010) provides that access to adequate housing is one of the fundamental economic and social rights. The Sessional Paper No. 3 of 2004 on Housing Policy recognized the need for the country to have a structured support framework for development of affordable and decent housing (Government of Kenya, 2004). This established the National Housing Fund and Housing Finance Corporation. In 2007, the country developed the Kenya Vision 2030, which underscored the fact that Kenya will be a predominantly urban country by 2030, thus the need to scale up supply of housing services (Government of Kenya, 2007). Towards this end, the housing and urbanization sector embarked on visualizing “an adequately and decently-housed nation in a sustainable environment.” One of the strategies the Vision identifies as critical to deliver on affordable and adequate housing is enhanced access to adequate finance for developers and buyers. In line with this, the housing policy 2016 established the National Housing Development Fund.

The Government of Kenya has continued to create incentives to attract investment in the housing sector and has initiated public investments in building houses through civil servants’ schemes, slum upgrading projects and low-cost housing for general public under the National Housing Corporation (NHC). The rate of urbanization in Kenya has always overcome provision of housing services, leading to persistent housing deficit. Most of the households in rural areas and slums in urban areas have inadequate dwellings in terms of size, resilience to adverse weather and access to basic amenities. This necessitated the government’s renewed focus on affordable housing in 2018 under the "Big Four" agenda, which sought to raise funds to construct 500,000 units over the period 2018-2022 (Government of Kenya, 2018). This required various policy reforms to lower the cost of construction and improve access to affordable mortgages such as establishment of the Kenya Mortgage Refinance Company to facilitate access to affordable long-term loan facilities; reduction of corporate tax rate for developers who construct at least 100 units per year; provision of free land to investors for construction of houses; establishment of a National Social Housing Development Fund; strengthening the National Housing Corporation in resource mobilization and management of tenant purchase schemes and to provide alternative financing strategies to finance low cost housing and the associated social and physical infrastructure.

The Finance Act 2019 provided for various incentives to investment in affordable housing cutting across VAT, imports duty, local content such as materials and manufactures, among others (Government of Kenya, 2019). It also established the National Housing Development Fund and modalities of making contributions by employers and employees towards support of affordable housing agenda, together with benefits and conditions to contributing employees.

In addition, the financial sector policies in Kenya under the banking, insurance, capital markets, pension schemes, and savings and credit cooperative societies allow the regulated entities to finance or invest in housing sector. In the banking sector, the risk management guidelines (Central Bank of Kenya, 2013) allowed banks to advance loans to real estate but limited to 25 per cent of total deposits, except for mortgage financing company whose limit is 40 per cent of total deposits. On its part, the insurance investment management guidelines (Insurance Regulatory Authority, 2017) allowed insurers to apply a concentration limit factor of 30 per cent and 50 per cent of total assets value on property investments for general and life insurance, respectively.

The savings and credit cooperative market is encouraged to invest in property and the regulations governing the deposit-taking SACCO business, allow SACCOs to invest in either land and/or buildings earning rentals or for capital appreciation of which the SACCO itself should not occupy more than 10 per cent of the property (SACCO Societies Regulatory Authority, 2010). Similarly, the capital markets offer investment vehicles for the housing sector through the Real Estate Investment Trusts² (REITs), which are divided into income and development. Income-REIT investment scheme owns and manages income generating real estate for the benefit of its investors therefore providing both liquidity and a stable income stream. A development REIT is involved in the development or construction projects for housing, commercial and other real estate assets. The retirement benefits regulations provide that retirement benefits schemes can invest in property, including land and buildings and such investment should not be more than 30 per cent of its asset value in property or REITs (Retirement Benefits Authority, 2016).

Policy measures encourage savings and investment; for instance, contributions to pension schemes as channels of increasing national savings is tax zero-rated. Such savings add to funds available for investment in land, buildings and property. There are also tax savings in terms of tax deductions extended to the private sector based on capital expenditure. Taxes and levies charged on individuals and corporates reduce private savings and investment capacity (Table 2.1), but tax incentives exist in terms of tax deductions that the housing sector enjoys (Table 2.2)

Table 2.1: Applicable taxes

Type of tax	Description
Income Tax	Corporates (30-37.5%); individuals (10-30%); developers of low-cost houses 15%; residential rental 10%; dividends distribution 5%-10% Withholding Tax - WHT.
Import Taxes	Import duty 25%; import declaration fee 2.25%; railway development levy 1.5%.

² A REIT is a regulated investment vehicle that enables the issuer to pool investors' funds for the purpose of investing in real estate. In exchange, the investors receive units in the trust, and as beneficiaries of the trust, share in the profits or income from the real estate assets owned by the trust.

VAT	Value Added Tax 16% on most of building materials.
Stamp Duty	At 4% or 2% depending on the location of the house.
Other Fees	Government valuation fees, legal fees and NCA and NEMA fees (though set aside).

Source of data: Kenya Property Developers Association - KPDA (2018)

Table 2.2: Tax incentives

Target	Category of Incentive	Description
Developers	Industrial Building Deduction	<ul style="list-style-type: none"> 5% of capital expenditure on rental residential buildings in a planned development area. 25% where developer provides roads, power, water, sewer etc. 10% on a dwelling house. Used to be 2.5% until 2010.
	Residential Rental Income Tax	<ul style="list-style-type: none"> 10% on gross rental income for resident landlords who earning Ksh 144,000 to 10,000,000 p.a.
	Lower Corporation Tax	<ul style="list-style-type: none"> 15% (instead of 30%) of the net profits for constructing at least 100 low cost houses in a year.
	Lower withholding tax (WHT)	<ul style="list-style-type: none"> 10% WHT for interest on housing development bond from usual 15% but capped at Ksh 300,000.
Purchasers and tenants	Mortgage relief	<ul style="list-style-type: none"> Interest paid on money borrowed to purchase/improve premises is a tax deductible, capped at Ksh 300,000 p.a., one house and must be occupied by the taxpayer.
	Contributions to Home Ownership Savings Plan	<ul style="list-style-type: none"> Deduction of Ksh 4,000 p.m. (on taxable pay), limited to 10 years. No WHT on interest earned capped at Ksh 3 million p.a.
	Exempt from VAT	<ul style="list-style-type: none"> Purchase/renting of residential building exempted; but 16% for commercial rent/purchase
	Exempt from Capital Gain Tax	<ul style="list-style-type: none"> Applicable to transfer of residential house where the seller lived in it for at least 3 years prior.

Source of data: Kenya Property Developers Association - KPDA (2018)

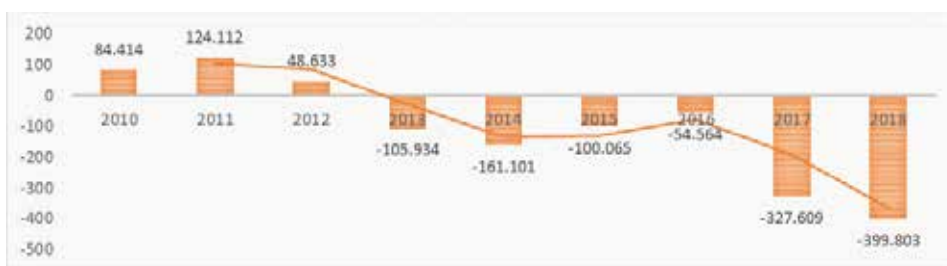
2.2 Trends in Channels of Housing Financing

There are various channels of housing financing and they vary in terms of trends, merits and demerits, but a combination of them may ensure sustainable housing financing. They focus on source of financing, financial availability, risk assessment, period of payment or access and cost of access.

2.2.1 National savings channel for housing finance

Some proportion of cash-based housing financing model depend on savings, related with the country's potential to save, which is measured using the rate of national savings. Kenya's net savings of national disposable income has been declining over time, having dropped from positive of over Ksh 84 billion in 2010 to negative of Ksh 400 billion in 2018 (Figure 2.1). Such decline exposes the country to risk of dissaving and borrowing and erodes the role of savings in housing financing. Low savings affect the ability of the population to finance housing investments from personal or group savings. This negatively affects the role of savings in performance of the housing sector, since individuals and firms are not able to accumulate enough savings for investment.

Figure 2.1: National savings (Ksh billions)



Source of data: KNBS (Statistical Abstracts, 2010-2018)

Low incomes, increasing cost of living, low deposit interest rates and low saving culture affect savings. However, this can be improved through economic expansion to increase income levels; increased investment across sectors supporting basic needs to control inflation which increases cost of living; increasing minimum wage rate; improving market linkages to reduce trade brokerage, which skews earnings for households; and reducing interest spread between the lending and deposit rates.

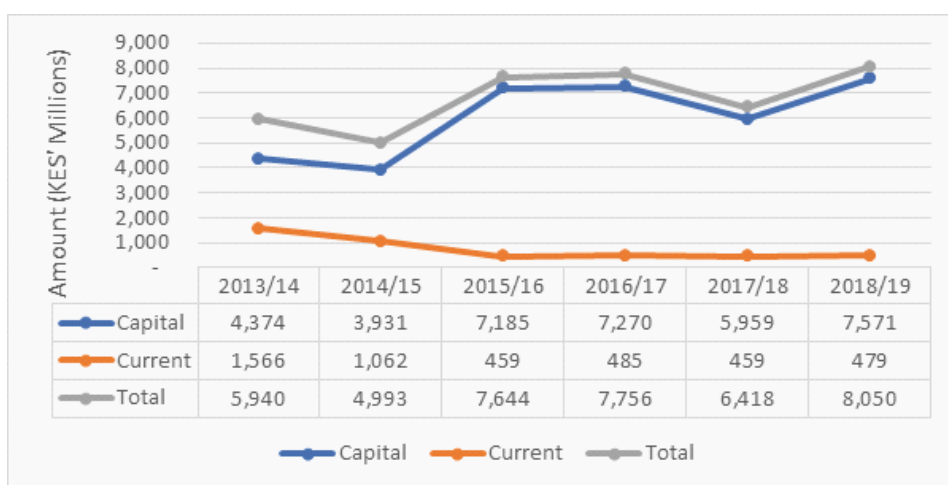
2.2.2 Government investment channel for housing finance

Governments invest in housing financing under programmes and projects aimed at providing affordable and adequate housing, including allied infrastructure. The government has signed a social contract to promote fundamental rights, including

access to adequate housing, espoused in the Kenya constitution as an economic and social right.

The National government has demonstrated commitment to enhancing adequate housing through housing development and human settlement programme. The objective is to provide adequate and affordable housing in both urban and rural areas and enhance estates management services and tenancy relations. Over the period 2014-2019, the government committed over Ksh 40 billion development and human settlement, with annual allocation having risen from Ksh 5.9 billion in 2014 to Ksh 8.1 billion in 2019 (Figure 2.2). The share of development expenditure grew from 74 per cent to 98 per cent during the period. Capital expenditure has been increasing while recurrent budget has been declining, which is a good policy design. However, the level of government investment may not be adequate to stimulate the sector. Low investment by the government should be viewed as being strategic to avoid crowding out the private sector from property development, but the threshold needs to be ascertained. The government intends to stimulate the sector and build confidence and certainty in return on investment, which the country has not well embraced.

Figure 2.2: National government budget for housing development and human settlement



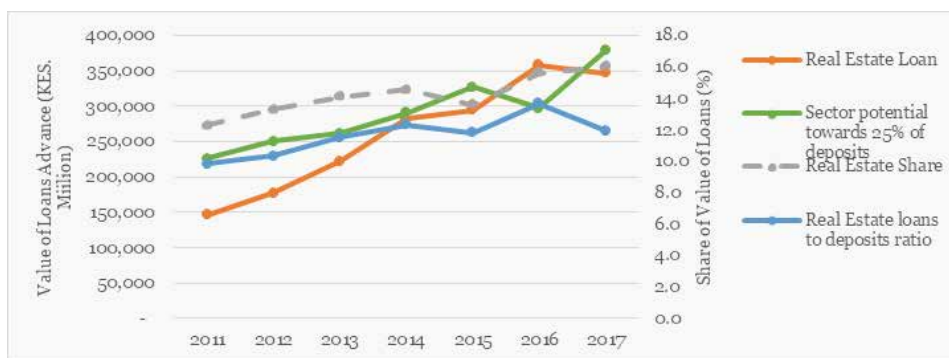
Source of data: National Treasury (Sector reports, 2013-2018)

Such heavy investment may compel the government to implement measures that may increase public debt and taxation, thus contributing to reduced disposable income among the population and crowding out the private sector. As a strategy, borrowing from development partners and banks should be well negotiated and structured, while efficient utilization and allocation of the dedicated social responsibility housing tax can win public trust and confidence and reduce social resistance in its implementation. The government should exploit public-private partnership channels by translating seed capital to government commitment in the projects as opposed to government fully financing the housing projects.

2.2.3 Banking channel for housing finance

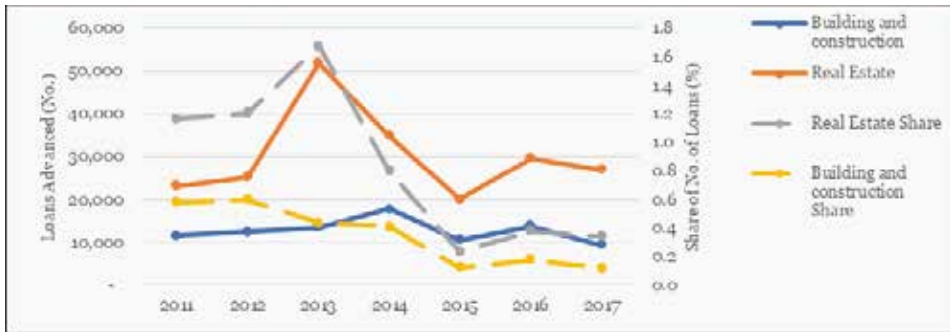
The banking sector provides housing finance through mortgages, and this can be traced in the overall share of real estate in bank lending. Real estate ranks third in terms of share of loans advanced by the banking sector. The value of loans advanced to real estate sector grew from Ksh 146 billion in 2011 to Ksh 358 billion and Ksh 346 billion in 2016 and 2017, respectively. This raised the value of loans from 12 per cent to 16 per cent between 2011 and 2017 (Figure 2.3), making the sector third behind personal and trade sector loans. The share of number of loans attributable to real estate sectors remained below 2 per cent over time, in a portfolio dominated by personal loans, loans to trade and agriculture sectors (Figure 2.4). Real estate development requires large loan size, translating to big projects that can guarantee loan repayment through economies of scale, break-even and return on investment. This crowds out small loan size borrowers, thus their financial exclusion. The banking sector has more room for expanding its loans and advances to real estate since the sector has not exhausted its threshold concentration ratio allowed at 25 per cent of total deposits. The actual ratio of real estate loans remained below 15 per cent over the period 2011-2017, having grown from 9.8 per cent in 2011 to a high of 13.7 per cent and 11.9 per cent in 2016 and 2017, respectively (Figure 2.3). If the full threshold concentration ratio for real estate was actualized, additional annual loans and advances ranging from Ksh 225 billion in 2011 to Ksh 378 billion in 2017 could have been injected into real estate investments.

Figure 2.3: Value advanced to real estate, building and construction (Ksh and shares)



Source of data: Central Bank of Kenya (Various), Bank Supervisory Annual Reports, 2011-2017

Figure 2.4: Loans advanced to real Estate, building and construction (No. and shares)



Source of data: Central Bank of Kenya (Various), Bank Supervisory Annual Reports, 2011-2017

There is still potential among the banking sector players that can be exploited through existing allowance on the loan concentration ratio for the housing sector. Some policy reforms may be required to make real estate investments competitive, more profitable and stable to attract bank lending especially for individuals. Some of the critical challenges the banking sector faces include high cost of borrowing, public perception on penalties to default and short repayment period. The cost of borrowing that can be reduced on interest rates, insurance, taxation and legal fees. The duration of lending is also limited with long-term facilities for over 20 years hardly existing in the Kenyan market, which undermines the primary concept of mortgage and renders potential borrowers ineligible due to high monthly instalments occasioned by short repayment periods. Further, borrowers should be aware of the criteria used in the assessment of loan applications to ensure conformity and increase the chances of their loan requests being honoured. The public needs awareness creation on risk profiling that banks conduct. The key risks that banks assess before lending include ability to pay, security, sustainability, credit worthiness and credit history; things the borrowers can be sensitized on how to strategically improve on before filing loan application.

2.2.4 Capital markets channel for housing finance

Capital markets can provide an ideal source of long-term financing for the housing sector using various instruments such as real estate investment trusts, housing bonds, asset-backed securities, mortgage refinance bonds and county bonds. Housing bonds are debt securities issued by governments to raise funds for affordable housing development and can be issued through the Kenya Mortgage Refinancing Company (KMRC). Asset-Backed Securities Asset-backed securities are bonds backed by financial assets in form of receivables other than mortgages. Mortgage Refinance Bonds replace initial mortgages to allow a borrower to obtain a better interest term and rate, especially when prevailing market interest rates are on the decline. County Bonds are debt obligations that can be undertaken by

County Governments using capital markets to raise financing, and this may be structured in a form of on-balance sheet or special purpose vehicle.

The most instrumental capital markets investment opportunities for housing sector is the Real Estate Investment Trusts - REITs (Capital Markets Authority, 2015). Though this is a new phenomenon in Kenya, having been introduced in 2015, it revitalized capital mobilization for the housing sector. Before then, the capital market could hardly raise a billion for the real estate development. Real Estate Investment Trusts (REITS), which can be either Income-REIT or Development-REIT, are financial instruments for capital investment that are advanced to companies registered at the capital markets to raise capital for real estate development. Income-REIT own and operate income generating real estate properties from which REIT investors receive stable cash inflows from the rental income, but Development-REIT finance real estate property development with returns coming from capital gains through the sale of the property.

The entry of REITs in 2015 saw Ksh 18.7 billion being raised in 2015 and increased to Ksh 95.9 billion and Ksh 83.2 billion in 2016 and 2017, respectively (Table 4.5). This is an encouraging trend for the real estate sector demonstrating that the policy shift to register REITs has potential to raise substantive capital for development of the housing sector. This may have been motivated by the policy requirement that allow the REITs to distribute at least 80 per cent of their profits to their investors and operate under pass-through taxation where profits are not taxed at the institutional level, but rather allow investors to declare them alongside their other taxable income.

Nevertheless, the capital market in Kenya poses high equity turnover and market capitalization manifesting in billions and trillions, respectively, which the real estate sector can seek to attract (Table 2.1). The turning point requires an attractive incentive spectrum especially on return on investment, business certainty and market stability. The housing sector can exploit the alternative source of housing finance offered by the capital markets, ranging from medium to long-term loans for fixed and working capital. The stock would range from ordinary stock of shares and debentures of corporations to bonds and securities of governments.

Table 2.3: Performance of capital markets and real estate financing (Ksh billions)

	Private Equity for Real Estate	Equity Turnover	Market Capitalization
2013	0.12	155.75	1,920.72
2014	0.32	215.73	2,300.05
2015	18.72	209.38	2,049.54
2016	95.94	147.18	1,931.61
2017	83.15	171.61	2,521.77

Source of data: Financial Sector Report (2017)

Policy reforms are required to address the challenges that capital markets face in housing financing, including low investor confidence instability of return on investment, uncertain market perceptions on profitability, and sustainability of housing business. The return on investment may not be attractive as other sectors competing for capital from the market. Sustainability of business is based on safe and uncertain business opportunities, which should be demonstrated through uptake of housing units and level of default risks in repayment. The capital market is also characterized by small market size through minimal listed companies, low turnover, low capitalization and low liquidity. The market has a narrow range of market products and services, low numbers of Kenyans investing in the stock market, underdeveloped market infrastructure and system, and weak corporate governance that negatively impacts on the responsiveness and integrity of the market.

2.2.5 Savings and credit cooperatives and housing finance

Savings by individuals and firms through Savings and Credit Cooperative Societies (SACCOs) can be transformed to investments and are boosted by the interests and dividends earned by members through their shares or contributions. The ability to save is influenced by the income levels and cost of living. SACCOs tend to offer savings platforms for middle-income and low-income entities, unlike capital and banking sectors. The cooperative movement mostly aims at enhancing welfare of members through benevolence, savings, investments and earnings on savings.

SACCOs contribute to housing financing through the deposit-taking SACCOs and non-deposit-taking SACCOs. The Deposit Taking SACCOs raised over Ksh 5.8 billion in 2017 for investment in properties, which include land and buildings (Table 2.2). This category of investment rose from Ksh 1.7 billion in 2012 to Ksh 7.3 billion in 2016. Non-deposit-taking SACCOs also play a role in lending or mobilizing resources for housing projects, but their data is not readily available.

Table 2.4: Investment in property and building by deposit-taking SACCOs (Ksh million, and shares %)

	2011	2012	2013	2014	2015	2016	2017
Investment properties being land and buildings (IP)		1,746	2,545		4,452	7,335	5,813
Investments in property and equipment (IPE)	10,079	11,738	13,608	20,875	22,824	36,405	31,146
Total assets	181,868	207,292	241,621	301,537	342,848	393,499	442,277
Share IP to in IPE		14.87	18.70		19.51	20.15	18.66
Share IPE to in Total Assets (%)	5.54	5.66	5.63	6.92	6.66	9.25	7.04

Source of Data: SASRA (Various), Supervision Annual Reports, 2011-2017

A large number of SACCOs remain outside the deposit-taking environment thus subject to different regulatory framework and access to market opportunities. Such SACCOs have low capitation, some level of informalities, low investor confidence, low corporate governance structures and short-term loan facilities. They operate at micro level and some of their loans finance housing needs at micro levels, especially for households building in phases spread over years. In this format of incremental property the building plan is done in phases, and can be time consuming. .

2.2.6 Insurance industry and housing finance

The insurance policy framework encourages investments in various channels, including investment in property, an investment plan where insurance companies develop properties to sell or rent. Insurance companies invest a proportion of the gross premiums collected from policy holders in the real estate sector by developing commercial and residential properties, an up to 40 per cent of the investment portfolio.

Insurance companies invested over Ksh 79.1 billion in property investments in 2017, which represented about 13.4 per cent of total assets valued at about Ksh 591.0 billion (Table 2.3). This more than doubled from Ksh 39.3 billion in 2012 due to a policy shift that allowed for more investment in property. The insurance sector has potential to invest in property development given the allowance that the players can invest up to 30-40 per cent in property investment. This implies that the insurance sector had potential to have additional investment into property ranging from Ksh 64 billion in 2012 to Ksh 118 billion in 2017.

Table 2.5: Investment in property and building by insurance industry (Ksh billion)

	2012	2013	2014	2015	2016	2017
Investment property (IP)	39.32	54.26	62.55	68.62	73.24	79.11
Land and Buildings	8.39	5.78	6.48	7.95	9.16	8.72
Share of IP in Assets, (%)	12.63	14.81	14.53	14.33	13.85	13.39
Total Assets	311.22	366.47	430.54	478.75	528.75	590.95
30% share in Assets	103.74	122.16	143.51	159.58	176.25	196.98
Additional Potential for IP	64.42	67.90	80.96	90.96	103.01	117.87

Source of Data: IRA (Various), Insurance Industry Annual Reports, 2012-2017

The insurance industry faces challenges such as low levels of awareness and uptake of insurance products, resulting in low insurance penetration of 2.8 per cent; low capitalization, undercutting through price-competition, limited

adoption of technology in product development and distribution, low perception rating resulting from fraud, and low claims settlement.

2.2.7 Retirement benefit schemes model for housing finance

Pension schemes invest in the housing sector through property development as investment channels for growing and safeguarding members' contributions into the schemes. The pension fund is sourced through compulsory contributions to national pension schemes or private retirement benefit schemes that can generate income from investments in real estate. Retirement benefit schemes can invest in real estate and generate and grow the incomes to create a sustainable business and market stability. The policy allowing use of accrued benefits as security for mortgage have capacity to boost performance of housing.

The investment by pension schemes into the real estate development increased from Ksh 101.6 billion in 2012 to over Ksh 226.7 billion in 2017 (Table 2.4). This accounted for about 20 per cent of the asset value of the pension schemes. These schemes still have an allowance of investing more in REITs, given the limit of 30 per cent, thus likely to introduce additional investment of over Ksh 10 billion annually. However, the business model is skewed towards commercial buildings, especially for rental income.

Table 2.6: Pension schemes industry investment portfolio for housing (Ksh billions)

	2012	2013	2014	2015	2016	2017
REITs ³					0.84	1.03
Share of REITs in Assets					0.09	0.1
Immovable Property (Real Estate Funding)	101.6	119.84	130.39	150.78	178.42	226.72
Share of REITs Assets, (%)	19	17.20	17	19	20	20.99
Total Assets	548.8	696.68	788.15	814.11	912.66	1,080.11

Source of Data: RBA (Annual Reports, 2012-2017) and Financial Sector Stability Reports

Pension schemes face challenges that reduce their investment capacity in various sectors, including housing, and tend to develop commercial buildings for rental than residential houses due to the risk of low uptake of residential buildings. The negative perception among the public due to experiences or witnesses in processes of claims and delays in payments or non-payment altogether make it difficult for

³ REITs: Real Estate Investment Trusts

uptake of discretionary pension products under various retirement schemes. Despite government efforts to enhance payment of benefits and public education, negative public opinion has slowed down the uptake.

2.2.8 Diaspora remittances for housing finance

The citizens living abroad contribute to development agenda through remittances, which are funds sent by citizens living or working in a foreign country. Establishment of diaspora resource mobilization framework for affordable housing can help in the formalization of remittances and coordination of diaspora incentives. Remittances are largely characterized by direct channeling for housing projects. Direct channels involve remittances being sent to family members or trusted individuals to finance housing projects. The indirect channels will require an established framework of licensed diaspora fund agents who receive and invest the funds in designated housing projects.

Total remittances for Kenya more than doubled between 2012 and 2018, having been estimated at US\$ 2.7 billion in 2018 up from about 1.2 billion in 2012 (Table 2.6). If the housing sector could claim at least 5 per cent share of the remittances, this had potential to raise Ksh 5.8 billion in 2012 and grow to a high of Ksh 13 billion in 2017 (Table 4.8).

Table 2.7: Potential of remittances to housing (US\$ millions)

	2012	2013	2014	2015	2016	2017	2018
Total remittance	1,170.89	1,290.57	1,428.48	1,548.03	1,724.30	1,946.90	2,697.46
5% Share for Real Estate	58.54	64.53	71.42	77.40	86.22	97.35	134.87

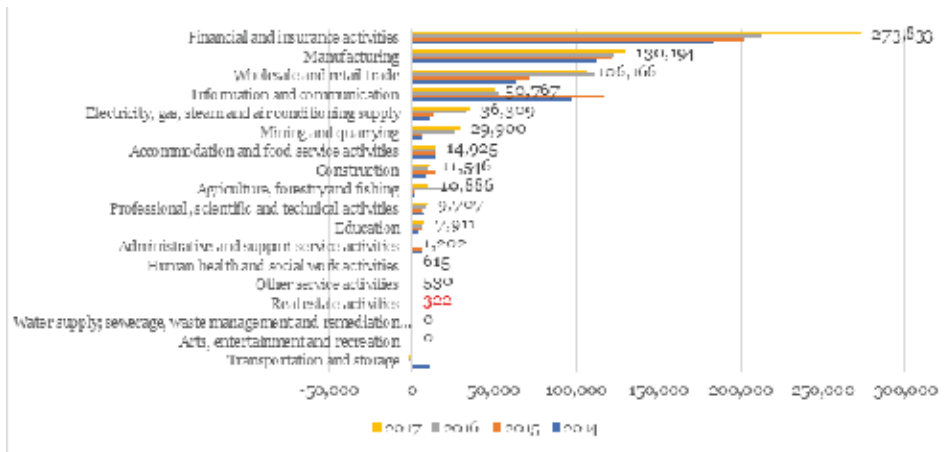
Source of Data: CBK (2018) Statistics

Under-utilization of remittances as a source of housing finance is attributed to limited incentives and regulated channels for investment. Data on the share of remittances directed to the housing sector is not readily available. These are key issues of policy concern since incentives and regulatory framework will build diaspora confidence in funding housing projects, since risks will be mitigated. Besides, the reporting framework needs to be enhanced to ensure that the purposes for which remittances are sent are declared and penalties placed for misinformation. It is understood that Kenyans in diaspora send money directly to family members and friends for investment and consumption, but reporting should be more regulated. Further, remittances can be induced by establishing remittance designated investment managers and conditions of investment in various sectors, including housing. These managers can enhance marketing of housing investment opportunities for diaspora investments.

2.2.9 Foreign direct investment for housing finance

Foreign direct investment (FDI) are investments made by non-citizens who have business interests in the host country through individual investments or parent enterprises. They are characterized by long-term capital injections and significant degree of influence on the management of the recipient enterprises or operations of parent enterprises in the host economy. The stock of Foreign Direct Investment (FDI) for the housing sector was estimated at about Ksh 322 million in 2017, being the FDI for real estate development. This was an increase of Ksh 12 million from 2014 (Figure 4.11). If the real estate sector could have claimed a share of at least 5 per cent in the FDI, this could have raised between Ksh 26 billion to Ksh 34 billion annually over the period 2014-2017.

Figure 2.5: Stock of FDI by sector (Ksh, 2014-2017)



Source of Data: KNBS (Various), Foreign Direct Investment Reports, 2016 and 2018

The housing sector also seems least competitive to foreign direct investment. The sector requires policy reforms geared towards enhanced competitiveness through risk rating, profitability, stability and governance.

2.2.10 Public private partnerships and housing finance

Affordable housing programmes recognize public-private partnerships (PPPs) framework as a vehicle for mobilizing finance and technology to boost delivery of the housing agenda. It seeks to create a consortium of strategic partners such as investors, financiers and developers. FDI can be sourced and channelled into the housing sector through PPP frameworks. The focus has been on development of housing units for institutions such as universities, police and hospitals and skewed towards housing of civil servants. The key projects proposed under the PPP framework include: Police Housing at KCB Usalama; development of police

and prison housing units; accommodation, training and shopping complex at Kenyatta National Hospital; civil servants housing project in Nairobi (Shauri Moyo, Park Road, Starehe, Muguga) and Mombasa (Hobley). Further, the Boma Yangu initiative under the affordable housing agenda has planned to attract private investors to develop properties on allocated land, which would then be sold at an agreed subsidized rate to the members of the public.

However, the PPP framework in Kenya under the housing sector has delayed to take-off due to various challenges and a renewed packaging of PPP framework under affordable housing agenda is needed to unlock the potential.

2.2.11 Microfinancing and housing finance

The low income market has over time remained informal, but there is an emerging trend of new investment interests requiring improved formalization, including increase in registration of non-deposit taking savings and credit cooperatives, housing cooperatives and societies, and microfinance institutions in the banking industry. These players tend to respond to salient policy questions on housing demand by low income urban dwellers.

The return on investment from such investments are low due to low rental income. However, if property developers targeting low echelon of society are supported to undertake mass production of housing units, the cumulative return on investment will be attractive. Some government investment agencies such as National Social Security Fund (NSSF) should be encouraged to invest in the low-income household market.

This sector is experiencing undocumented capital investment in housing sector mainly due to the informalities including non-disclosure for purpose of borrowing. The housing sector agencies and county governments should be encouraged to invest in documenting such low capital investments. A proportion of the personal loans advanced in this segment or even mainstream banking are used in financing development of properties for household use. This can be ascertained through housing survey with key indicators, which support policy analysis.

2.2.12 Kenya mortgage refinancing and housing finance

Kenya Mortgage Refinancing Company (KMRC) was established by the Government of Kenya in 2018 to facilitate access to affordable mortgages with accommodative conditions to Kenyans. It is incorporated as a limited liability company with majority share (80%) being owned by the private sector, including banks, SACCOs and MFIs, while the government injects seed capital accounting for 20 per cent of the share. The principal objectives of KMRC are: refinancing or purchasing of eligible mortgage loans, thus encouraging financial institutions to increase their mortgage lending activities; investment in debt securities issued by the Government of Kenya or any guaranteed debt; providing fully secured long term financing to primary mortgage lenders for financing of eligible mortgages; issuing bonds, notes and other financial instruments for purposes of meeting its objectives.

For resource mobilization, KMRC has engaged local financial institutions, including commercial banks, and Savings and Credit Cooperative Organizations as primary mortgage lenders to facilitate the housing sector to access medium to long-term financing through domestic bond markets and by intermediating the local financial institutions with institutional investors. Other measures include partnerships with international IFIs, mainly the AfDB and the World Bank, to support initiatives such as provision of sovereign loans to the Government of Kenya for on-lending to KMRC.

The asset base of KMRC was Ksh 2.27 billion by 2019 and it was yet to start its core business of lending. The company had 20 participating financial institutions whose aggregate portfolio for housing loans amounted to Ksh 50.3 billion, which show the potential of refinance by KMRC. Other key players are the World Bank (WB) and African Development Bank (AfDB). The World Bank whose 80 per cent credit line will support affordable housing loan with up to a maximum ranging between Ksh 3 million to Ksh 4 million depending on the area, with Nairobi metropolitan area having the highest maximum limit. The balance of 20 per cent of World Bank credit facility will be advanced to middle to upper income housing. The AfDB credit facility is divided into a ratio of 40 per cent to 60 per cent to refinance mortgages of up to Ksh 5 million and Ksh 8 million, respectively, where the threshold income for affordable housing is marked at Ksh 150,000 per month.

3. Literature Review

3.1 Theoretical Literature

The financial sector can be theoretically linked with developments in the housing sector, with some theories explaining financing of housing sector as personal savings, financial intermediation, financial inclusion and public finance.

Savings theories

The cash housing financing model can be explained by the savings theories. Personal savings is the income an individual or household sets aside for future consumption or investment, it is the income not incurred in current expenditure plans. It measures the current stock of financial assets and the flows emanating from the proportion of current income being saved or not spent (Juster and Taylor, 1975). Savings is not high-income household phenomenon but even low-income households can save for shelter investments even though they are assumed to be consuming all their income, as evidenced in Mitlin (2008), who showcases Pakistan, Tanzania, South Africa and Namibia where local savings schemes in low-income settlements managed to finance improvements on housing and infrastructure development. Often, some savings are required before members or borrowers qualify for loans, or the borrower can be required to raise some proportion of the project value before borrowing (Mitlin, 2008).

A country's gross national savings is an aggregate value of savings by individuals and institutions. Such savings rely on the propensity to save by individuals and businesses, which relies heavily on level of income received, cost of living or inflation and expenditure behaviour. Inflation affects savings, since the proportion of income that can be saved depends on consumption, which increases with inflation due to increasing expenditure. Further, consumption patterns are informed by population densities, and poverty and dependency levels, while income patterns rely on past and present earnings and future expectations on earnings. In addition, future expectations influence current savings in that future uncertainties on income flow encourage savings and vice versa (Menezes and Auten, 1978).

Financial intermediation theory

Loan-based housing financing models are premised on financial intermediation, which anchors various financial market agents as being critical for households and firms in raising the required finances for investment. It is through financial intermediation that savings are linked with investments through the market mechanism of borrowing and lending. Initially, search costs, transaction costs and information asymmetry were at centre stage in explaining the existence of financial intermediation. However, even with decreasing trends in transaction costs and information gaps, financial intermediation is only increasing. Some of

the reasons for this are that financial institutions create a link between savings and investments and have potential to mitigate the risks associated with financial transactions.

Financial intermediation transforms savings into investments through the banking, capital, insurance, pension and savings and credit cooperative markets. However, the conditions of the mainstream financial intermediation channels explain existence of alternative and informal markets, including microfinance markets, rotating savings and credit associations and money lenders. Significantly, there have been efforts towards formalization of some of the microfinance institutions such as savings and credit associations, banking agencies and insurance agencies aimed at ensuring market stability through various programmes such as regulation, supervision and empowerment.

The banking and SACCOs sectors invest in housing sector through lending at some interest rate. In addition, SACCOs can develop property to sell to members, institutions or the public as a business growth strategy. Mortgages are usually given for some limited period of repayment, with routine interest rates and insurance costs and some one-off costs such as valuation and legal fees. Insurance and pension industries invest in housing sector through investments that are regulated to ensure that the investment portfolios are less risky and diversified as a way of mitigating against market risks. The levels of riskiness vary between commercial and residential properties, which influence investment choices resulting in a tendency for to invest more in commercial properties for renting as opposed to residential.

The major role of capital markets is to mobilize medium to long-term equity or loans for investment, through sale of securities. In Kenya, the key hindrances to the full participation of the capital markets in promoting housing sector is limited awareness, competition from less risky opportunities, and limited listing of companies dealing in property development.

Financial inclusion

Successful exploitation of the opportunities in the financing sector for housing depend on the level of financial inclusion, a process and status of elimination of all barriers that hinder access to financial services. Mainstream financial institutions engage in financial exclusion tendencies by discriminating and isolating risky sectors and population from full access to financial products. This is practiced through perception on financial risks and historical trends on default by such sectors or category of population. The poor and disadvantaged social groups are more prone to financial exclusion processes that prevent them from gaining access to the financial system (Leyshon and Thrift, 1995). This explains the existence of non-formal lending institutions that provide alternative financing mechanisms.

Financial exclusion is mainly based on ability to pay and the risk of default, which informs decisions on credit availability, applicable interest rate, loan insurance rate and the requisite collaterals or guarantees for various levels of lending. In

addition, financial exclusion can manifest in variance of ease of access among social classes and geographical disparities based on economic potential. Financial exclusion has policy implications on uneven development by manifesting in geographical differences in income levels and economic development (Leyshon and Thrift, 1995).

3.2 Empirical Literature

There is a symbiotic relationship between financial and housing markets, since affordable credit can trigger housing demand, while increasing prices of housing units or demand for houses can impact on the general demand for mortgages. This can be witnessed through the relationship in the business cycles of the financing and housing sectors (Cerutti, Dagher and Dell'Ariccia, 2015; Said et al., 2016; Greiber and Setzer, 2007; and Badev et al., 2014). For instance, a study by Said et al. (2016) found bi-directional relationship between the housing market and housing finance system in Malaysia and concluded that such inter-relationships provide evidence that sound performance robustness of the housing finance system can guarantee good performance of the housing market. Liquidity fuelled the development of the housing market in the Euro area and USA, since monetary policy and financial development influenced the housing market by improving financing conditions and increasing demand for housing (Greiber and Setzer, 2007). This symbiosis stresses the point that performance of the housing sector, which can be reflected through demand for housing loans or the housing prices or rent, inform investment decisions by financial sectors especially to regions where such performance is witnessed.

Badev et al. (2014) found a positive correlation between mortgage depth and housing loan penetration/coverage, and such correlation was a pointer of differences among countries. The authors argued that the differences can also be attributed to variations in financial systems, relative prices, institutional frameworks. Cerutti, Dagher and Dell'Ariccia (2015) in a study involving 53 countries found that credit booms, especially among households, predict the real-estate booms where regression analysis showed that the occurrence of household-credit boom increased the probability of a real-estate boom to 57 per cent from an unconditional probability of 29 per cent, and observed that cross-country differences in housing market depth arise from differences in financing environment. Ease of access to housing financing services has potential to enhance quality of housing, with loans such as mortgages increasing the capacity of households to construct or purchase quality houses.

Studies show that whereas mortgages are attracted to areas of high property development, it is also highly likely to be more sensitive to rental housing as opposed to home ownership, since financial institutions assess the ability to pay, which is higher in rental housing than household home ownership.

Shlomo et al. (1993) observe that high housing prices restricts demand for adequate houses, since a smaller proportion of the population can afford to purchase relative to income levels, which depresses quality of housing. Atuheire

and Karyeija (2014) found housing loans, mortgage financing and housing financing in Kampala to be positively correlated with affordable housing at 0.47, 0.31 and 0.35 degrees of association using spearman rank correlation. In this case, housing prices including rental prices are critical pointers to financial institutions on allocation or rationing of housing financing. Prices are usually driven by areas of higher population renting and in shortage of supply of houses. In addition, housing prices and rent are dependent on cost of construction, which is derived from cost of land and construction materials (Maigua, 2014) and cost of financing or interest rates (Omwenga, 2013).

Ease of access to finance can potentially increase the demand for properties and trigger rise in housing prices in the short-run. High property prices and rent may attract the financial sector, since that will be a pointer to ability to pay and high-income levels. Greiber and Setzer (2007) argue that rise in housing prices increases the demand for money while excessive supply of money can trigger property inflation, and that housing sector prices have potential to influence the overall price levels, resulting in demand for money, and causing adjustments in the financing sector. Labonne and Welter-Nicol (2016) found an elasticity of housing prices to credit of around 0.7, and conclude that this was a pointer of low efficiency of credit subsidies to improve housing affordability. The booms and busts of real estate prices echo those of the real business cycle (Labonne and Welter-Nicol, 2016).

The quality of housing is bound to change with improvement in housing financing, and the proportion of population living in slums is likely to reduce with improved financing, as evidenced in Doling, Vandenberg and Tolentino (2013), who found a negative relationship between population living in slums and the development of the mortgage market in Asian countries. The quality of housing in slums is low; however, the negative relationship between financing and population slums dwellings can also mean that the composition of the population can determine how regional outreach of financial services are spread, where poorer households or regions are likely to receive little attention from the financial sector.

Income levels also determine the quality of housing and ability to demand for mortgages. For instance, housing or rental prices relative to income determine housing choices made by households (Ezennia and Hoskara, 2019).

Level of education influences housing choices and ability to acquire quality housing. Though lower educated groups are disadvantaged in terms of housing, education and housing are not necessarily connected in a linear or direct correlation but rather through poverty (Alexiu, Ungureanu and Dorobantu, 2010). Education has a high correlation with employment, which correlates positively with ease of access to financing. Furthermore, education is expected to increase financial literacy, thus the uptake of housing finance may be higher among the educated population.

Employment status of a person influences the ability to have better housing. In the works of (Alexiu, Ungureanu and Dorobantu, 2010), unemployment causes poverty, and poverty has adverse effect on quality of housing. Employment is a signal of lower risk in housing financing, where employed persons can access

loans for construction or purchase of a house with ease than the unemployed.

On marital status, married income earners buy houses at higher rate and faster than unmarried income earners (Grinstein-Weiss et al., 2011), probably due to pressure on household heads to ensure that their dependants are well housed. However, unmarried population may live in adequate housing since their income does not have pressure from family needs. Age, may influence the decisions on housing financing.

3.3 Overview of Literature

Though there is no consensus, the literature demonstrates positive relationship between housing financing and development of housing sector, including housing indicators such as home ownership, contribution to the economy and housing prices or rent. The effects of finance to the housing sector vary across households, countries and regions and evidently, geo-spatial differences across sub-national levels within the country are sensitive to financing policies. This lays a foundation to analyse housing financing using counties as a unit of analysis. In addition, analysis at household level is crucial to enhance financing and investment decisions in housing.

To ascertain the symbiosis between housing financing and adequacy of housing, various methods have been used in the analysis based mainly on the objectives of the studies and type of data. Cross-sectional data has been used to explore the relationships with the application of measures of central tendencies, association, and regression techniques. For instance, some studies have used mean and frequency statistics, correlations, linear and non-linear regressions. Where enough time series data is available, various studies have used trends, cointegration, vector error correction model, vector autoregression and impulse response to ascertain the relationship between finance and housing sector indicators. This study seeks to use linear and non-linear regression analysis mainly due to the type of data, objectives of the study besides its exploratory and explanatory nature in the research design.

The theory of savings and financial intermediation, which builds a case for financing of housing through personal savings and loans, respectively, has been used to construct model of financing using a binary variable of loan or cash. Financial intermediation theory is the central theory through which financial markets exist and are assessed as models of financing and the role of financial institutions in linking savings and investments. The theory of financial exclusion has been used in the assessment of the ease of access to financial services such as physical or mobile banking. Such ease of access is proxied by branch network and subscription to mobile banking, which vary across counties and households. Further supply of financial services in regions relies on regional economic power, which is assessed in terms of gross county product, poverty levels and income levels.

4. Methodology

The scope of the theoretical framework is limited to economic perspectives, but it also explains affordable and adequate housing including, social, political, environmental, technological and legal perspectives. However, these dimensions are wide fields of study, which no individual paper can claim to exhaustibly analyse. Nevertheless, some of such dimensions are exhibited in the housing sector indicators, thus executed in the analytical framework. For instance, analysis of the number of members per dwelling takes a social dimension while type of walling responds to technology angle of housing adequacy with respect to resilience to climate and weather conditions, which are environmental considerations.

4.1 Theoretical Framework

Models of housing financing can be examined from the both the demand and supply sides of the market since they inform the features of the financing channels and their overall contribution to the performance of the housing sector. The demand side examines the uptake of housing finance while the supply side examines the financial market readiness to serve the housing financing needs in the society or market.

The study modifies the theoretical framework laid by Bø (2018) which uses housing search and matching models to locate the preference of house buyers in the estimation of housing demand. It introduces market characteristics (M_v) into the framework used by Bø (2018) which assumed that households (i) choose housing financing V , within an area, to maximize their utility mapped by vector of housing characteristics (X_v), and price (P_v) of the property given the level of income (Y) of the buyer, as stated in equation 3.1, where the unobserved utility of the house. The introduction of the market characteristics (M_v) fills the gap of excluding the market dynamics in modelling of housing demand, thus completes the spectrum within which housing and housing financing decisions and choices are made by either borrowers or lenders.

$$V(i)=\max_v U_i(X_v, P_v, M_v, Y, \varepsilon_v) \quad 3.1.$$

In equation 3.1, the dependable variable housing V can be represented by the quality of the house that the household acquires, or its value. By extension, on the loaning side, the variable housing V can be the uptake of loans in terms of decision to use a loan or not, or the number of houses obtained through loans.

Among the independent variables household income (Y) and the price of the house (P) are typical variables in the demand functions. Other household characteristics (X) inform decisions in quality of housing and financing choices. They include household size and the education, employment status, age, and marital status of household head, among others. These indicators are often used to assess the riskiness of a household before providing loan facility. In addition, the demand for loans to construct or purchase a house is determined by market characteristics (M), including availability and conditions of such financial services besides the ability of the household to borrow. In the context of market characteristics, financial

availability can manifest in a range of characteristics, including housing sector financing allocation (A) and ease of access to finance (E), while other conditions may include the rating on riskiness (R), and typical time (T), which is taken to access or/and repay the loan and cost of borrowing (C).

Financial allocation for a sector can be regulated, where the policy requires a certain share of the financing capacity of a financial institution should not be exceeded for the housing sector. The allocation can be rationed by a financing institution by limiting lending to certain share of loan facility available to sectors, regions or groups based on their credit worthiness, and informs decisions on the requirement of collateral or any risk mitigation mechanism such as group lending or guaranteeing. Financial institution ration credit or investments based on the market risks, and customers can only borrow as much credit as is accessible in the market.

The ability to pay to some extent depends on the period of repayment and cost of borrowing. The period of borrowing can also be constrained based on actual estimation of the ability to pay and its sustainability, such as retirement age. The cost of borrowing may include interest rate to be paid, insurance and professional fees. It can also be viewed as the opportunity cost of borrowing to build or purchase a house, which manifests in rent payable.

Further, financial availability is augmented by ease of access, since it determines the swiftness with which the facilities respond to borrowers' financial obligations to broker and secure investment opportunities. It can also manifest in the application of technology, ease of access to branches of financial institutions as centres of service delivery and marketing.

4.2 Analytical Framework

The study estimates housing financing model and explores the relationship between financial services and adequate housing in Kenya using equation 3.2. This maps the investigation into the estimation of the housing financing model by focusing on factors from both the demand and supply sides. In equation 3.2, the variable V is the dependent variable representing choices in housing or housing financing, Y is income of the households, P is the price of the house, A is the allocation or amount available for housing financing, E is the ease of access, T is time taken to access or repay, C is the cost of access, and R is the riskiness. Equation 3.2 is adjustable to any analytical techniques depending on the type of variables and the need for transformation and normalization.

$$V_i = \beta_0 + \beta_1 Y_i + \beta_2 P_i + \beta_3 A_i + \beta_4 E_i + \beta_5 \log T_i + \beta_6 \log C_i + \beta_7 R_i + \varepsilon_i \quad 3.2.$$

Using equation 3.2, the determinants of demand for loans to construct or purchase a house are investigated, at household and county level. At household level, the demand is represented by the binary choice of taking a loan or not for construction or purchase of a house. At county level, through aggregation of observations in the variables, the demand is represented by the population who obtained housing property using a loan. The demand for a type of housing financing is assumed to be

influenced by the cost of access relative to income levels, household characteristics such as economic activities, household size, age, education, and ease of access or availability of financial services.

It is hypothesized that the uptake of housing finance by households and across regions increases with proximity to financial services, including physical and digital presence. Age of a borrower influences demand for loan, through the period of repayment and instalment amount, since mortgages are usually pegged on retirement age. Younger generation are expected to be charged relatively lower premium/instalment amounts with longer repayment period. Affordability of loan depends on the interest rate among other charges, but in the absence of reliable data on interest rates by regions, then the opportunity cost of borrowing becomes an appropriate proxy - like rent payable - as what the borrower is willing to forego, to represent the cost of borrowing. Ease of access to housing finance can manifest in number of bank branches in the area, ownership of bank accounts and utilization of e-banking.

On the supply side, quality of housing is related with the supply of financial services, together with market and household characteristics. Supply of financial services is largely accounted for by availability of the services, which can be proxied by ease of access through number of branches opened in an area or monetary value of financial services offered. Some of the key factors that determine the availability of finances include ability to pay, credit worthiness/riskiness and market size. Income levels or rent payable are good signals to ability to pay, while poverty level can proxy for credit risk. The market size is a combination of market economic power and the population.

In the relationship between financing and housing sector, observing higher degree of association and elasticity between financial indicators and status of housing among households and counties will be indicative of the mutual interdependence between the two.

Model 1

At county level, using equation 3.2, the demand for housing finance (V) is modelled on the number of properties using a loan for acquisition and the variables defined as follows:

- V is number of properties acquired by households by using a loan facility for either construction or purchase.
- Y is the gross county product or income of households, being a proxy for ability to pay
- P is the price or quality of the house
- A is the number of bank branches in the county, being a proxy for ease of access
- C is rent payable, being proxy for the cost housing financing.
- R is the poor population, being a proxy for credit worthiness or riskiness.

- E is mobile banking subscription being proxy for cost of access.
- T is age of household heads being a proxy for interest rates and period of repayment

Model 2

At household level, using equation 3.2, the housing financing plan (V) is modelled on the choice of using a loan or not to acquire a house through either construction or purchase, and the variables are defined as follows:

- V is housing financing choice of using loan or not.
- Y is income level of the household.
- P is the price or quality of the house.
- A is employment status of the household head proxy for allocation.
- E is mobile banking subscription by the household head.
- C is rent payable by the household.
- T is age of household head.
- R is a combination of household characteristics defining riskiness, which include area of residence (AR), household size (Z), sex (S), education level (EL), marital status (MS).

Model 3

In the production side, using equation 3.2, adequate and affordable housing is modelled as the dependent variable (V), with the adequacy of housing being captured in terms of type of walling and density of room occupancy, while affordable housing is proxied by rent payable. These dependent variables are modelled as being influenced by independent variables defined as follows:

- V is the quality of housing represented differently in 3 sub-models by using type of wall, density of room occupancy and rent payable as different dependent variables.
- Y is income level of household head.
- P is the price or quality of the house.
- A is loans uptake.
- C is rent payable.
- T is age of household heads.
- E is mobile banking subscription.
- R is a combination of household characteristics, which define riskiness, and they include area of residence (AR), household size (Z), sex (S), education level (EL), employment (W), marital status (MS).

4.3 Data Measurement, Sources and Description.

4.3.1 Data measurement

(a) The dependent variables

Demand side housing financing model dependent variable

In the demand-side housing finance model, two dependent variables were used in separate model specifications, representing county level and household level analysis. At county level, the dependent variable (V) was constructed as Logloan, which is represented by the total number of properties acquired by households by using a loan to construct or purchase the property. In the analysis of housing financing model at household level, the dependent variable (V) was constructed as loaning being a binary variable where one (1) represented use of loan and zero (0) represented not using loan.

This is based on the survey question in the 2015/16 household budget survey, collected by the Kenya National Bureau of Statistics (KNBS, 2016), which focused on how the household acquired the dwelling - cash, loan or a combination. In this survey, there is limited data collection for detailed policy analysis on housing. Additional data could have focused on the source of the loan for housing, whether bank, SACCOs and any other financial sources, how long was the loan, the interest rate, the source of money for loan repayment, among others. On the cash side, it would have been helpful to ask whether the cash was from savings, boom, fund raising, donation, or proceeds from sale of an asset like land, or any other source.

Supply-side housing financing model dependent variable

On the supply-side, the dependent variable (V) on adequacy of housing was captured through three ways using qualitative aspects and classifications. The first dimension of dependent variable (V) was captured as occupancy being a binary variable (1,0) representing the density in room occupancy estimated as population per habitable room, where adequate occupancy was 1, otherwise zero (0). Adequate room occupancy is set at a maximum of 3 persons per room regardless of the room size (UNHabitat, 2018; 2016).

The second dimension of dependent variable (V) was secondly captured as walling being a binary variable (1,0) for the type of walling, where adequate walling was 1, otherwise zero (0). Adequate walling was constructed as the number of households using stones with cement/lime, bricks, block and cement as opposed to wood, mud and cow dung, stone with mud, bamboo with mud, grass reeds and plywood. In this study, type of wall was used to represent technical soundness of the dwelling and room-occupancy for social soundness of the dwelling.

The third dimension of dependent variable (V) was on affordable housing, which was modelled as a continuous variable logrent representing the average rent payable on the household dwelling. Affordable housing is a relative term, which imputes the relationship between rent or interest rate payable and the ability to pay for it. Therefore, an investigation on how rent payable relates with income and other economic and social factors of the household is necessary towards having a

comprehensive view on the design of affordable and adequate housing.

This study finds that quality of housing is not sufficiently investigated and fills the gap by introducing occupancy, walling and rent payable as key indicators to be considered in the adequate and affordable housing discourse. The study is limited as it does not include other aspects. Though, other attributes for roofing and flooring can be considered in assessing adequacy of housing, the walling dimension is the only variable high variability in observations and is the most dependable component in conducting building structural safety audits. However, other attributes of housing such as access to utility services, including transport, electricity, water, education, security, information and communication are best investigated as infrastructure services and are recommended for further analysis.

(b) Independent variables

Some of the independent variables used represent ease of access, ability to pay, credit worthiness, cost of access, period of payment, credit rationing and interest rates. These variables were constructed as follows:

- *Logbranches and logmobbank*: These represent ease of access (*E*) through bank branch network and mobile banking penetration at the county. These were modelled as Logbranches for the number of bank branches and logmobbank for the number of households with mobile banking subscription at the county, respectively. This is because access to loans depends on availability of the financial service, which can be physical or online through internet services.
- *Logincome*: This represents ability to pay, which is proxied by level of income (*Y*). It builds on the understanding that a positive correlation between income and ability to pay. In this regard, logincome was constructed as natural log of the amount of income in the county or household, for the county and household level analyses.
- *Logpoverty*: This represents credit worthiness/riskiness (*R*), where poverty level is used to signal likelihood of loan default. In this regard, logpoverty was constructed as natural log of number of households who are regarded as poor.
- *Loggcp_cap*: This represents regional ability to pay, which represents level of income (*Y*) and is proxied by economic performance of the county through the gross county product. This is constructed as loggpcap by taking natural log of the gross county product per capita.
- *Logrent*: This represents the cost of access (*C*) to housing and by association the cost of access to financial services since it can represent the interest rates payable as an opportunity cost. It is proxied by average rent payable at the county. It builds on the understanding that there exists a positive correlation between rent payable and interest rates levels, thus in the absence of reliable data on interest rates at county level, then rent payable can be used. Rent absorbs all prices of housing, since costs are transferred to the consumers through pricing of housing products. In this regard, logrent was constructed

as natural log of the average rent paid in the county or the rent payable or attributable to the dwellings of the households, for the county and household level analyses.

- *Logage*: This represents period/time of repayment (T) and by association the interest rate payable. Young generation is expected to have longer repayment period for mortgages and on lower interest rates than the old generation. This was represented by constructing logage as natural log of the average age of the household heads in the county or the age of the household head, for county and household level analyses.
- *Logsize*: This is another component of riskiness (R) and it represents the number of persons per household and was constructed as the natural log of the household size.
- *Sex*: This is another component of riskiness (R) and it represents the sex of the household head where male =0 and female =1, where the female persons are assumed to be riskier for lack of collateral.
- *Education*: This is another component of riskiness (R) and it represents the highest level of education accessed by the household head and was constructed as (1) for post-primary education and zero (0) otherwise.
- *Marital*: This is another component of riskiness (R) and it represents whether the household head is married (0) or not married (1), where not married persons are assumed to be riskier.
- *Employed*: This is another component of riskiness (R) and it represents whether the primary activity of the household head is employed (0) or not employed (1), where unemployed persons are assumed to be riskier.
- *Area*: This is another component of riskiness (R) and it represents area of residence as rural (0) or urban (1), where urban areas are assumed to be riskier.
- *Mob_bank*: This is another component of ease of access (E) and it represents whether the household has mobile banking subscription or not, and constructed as a binary variable with (0) for subscription and (1) for non-subscription. At county level analysis logmobbank was constructed as log of the aggregated observation of population with mobile subscription.

4.3.2 Data sources

Data was sourced from the Kenya National Bureau of statistics (KNBS), including the Kenya Integrated Household Budget Survey 2015/16 (KNBS, 2016a). In the county level analysis, gross county product report (KNBS, 2018) was used for county economic performance. In addition, financial sector data was sourced from the annual industry reports prepared by the Central Bank of Kenya (CBK). The data on number and size of mortgages offered by financial institutions is not readily available and yet such data is useful in policy analysis on issues related with equity in distribution and access. Data on FinAccess is scantily collected or

reported. It will be recommended that such data is carefully captured to achieve its intended purpose of informing policy analysis and decision-making in housing financing.

The units of analysis are both at county and household levels. Counties are sub-regional economies in Kenya, and they are 47 in number. The relevance of county as a unit of analysis is to inform policy on financial inclusion for mutual socio-economic growth and development, regional balance and shared prosperity, which are among the national values and principles of governance. This adopts a macroeconomic approach of sectoral performances across the counties, with a view to establishing any links between regional housing sector performances and access to financial services or financial inclusion. In addition, household level analysis appreciates the relevance of diversity in human dignity and empowerment in achieving affordable and adequate housing. This is achieved by appreciating that diversities in income and poverty, education, employment, marital status, household size, age and gender/sex, influence adequacy in living space, quality of dwellings and affordability, are significant in policy and decision-making.

4.3.3 Data descriptive

Table 4.1 shows the mean and standard deviation of continuous indicators, and frequencies for discrete data. The level of uptake of loans for housing was 6 per cent while the population with adequate walling, adequate occupancy, mobile banking subscription and post-primary education were 34 per cent, 53 per cent, and 9 per cent and 26 per cent, respectively. The population was evenly distributed on sex (1:1) and marital status (1:1). The urban households comprised of 23 per cent of the total household. The continuous data was normalized by using logs and the means and standard deviation, which show that the data does not have distribution bias. The data at county level were obtained by aggregation and averaging the observations within the counties. This was to help analyse access to housing financing at sub-regional level by linking uptake of housing loans with ease of access, ability to pay and riskiness.

Table 4.1: Descriptive statistics

Categorical variables				
Variable	Description	Frequency (Category)	Frequency percent	Frequency (Total)
Loaning	No (0)	68,240	93.69	72,837
	Yes (1)	4,597	6.31	
Walling	Not adequate (0)	47,985	65.90	72,820
	Adequate (1)	24,835	34.10	
Occupancy	Not adequate (0)	33,558	46.07	72,837
	Adequate (1)	39,279	53.93	

Mob_bank	Yes (0)	3,023	8.92	33,882
	No (1)	30,859	91.08	
Sex	Male (0)	35,825	49.19	72,837
	Female (1)	37,012	50.81	
Education	Primary (0)	39,200	73.86	53,072
	Post primary (1)	13,872	26.14	
Marital	Yes (0)	25,737	50.03	51,445
	No (1)	25,708	49.97	
Employment	Yes (0)	10,719	35.51	30,182
	No (1)	19,463	64.49	
Area	Rural (0)	55,951	76.82	72,837
	Urban (1)	16,886	23.18	
Continuous variables (Household level)				
Variable	Description	Frequency	Mean	SD
Logrent	Log of rent payable	72,653	7.068	1.133
Logincome	Log of household income	22,601	8.632	1.207
Logsize	Log of household size	72,837	1.720	0.474
Logage	Log of age of household head	71,050	2.758	1.009
Continuous data (county level)				
Variable	Description	Frequency	Mean	SD
logloans	Log of number of dwellings built on loans	47	4.315	0.782
logbranches	Log of number of bank branches	47	2.629	1.081
logpoverty	Log of population which is poor	47	5.698	0.617
logage	Log of age of household heads	47	3.822	0.075
logrent	Log of rent paid	47	7.923	0.337
logmobbank	Log of population with mobile banking subscription	47	3.701	1.074
loggcp_cap	Log of gross county product per capita	47	4.910	0.438

5. Analysis and Findings

This analysis is organized in two folds, 5.1 and 5.2, reflecting the demand- and supply-side of housing financing models, respectively. This covers two policy objectives on housing finance model and relationship between housing finance and performance of the housing sector.

5.1 Demand-side Housing Financing Model

5.1.1 Household level housing finance demand model

It is significant to know what attributes of households that can be associated with choices made in either using cash or loans or its combination for construction or purchase of houses. This is helpful to policy makers as they design incentives to enhance the role of different channels of financing in achieving affordable and decent housing. The analysis shows that income, rent payable, mobile banking, age, sex, education and employment status are significant and positively influence housing financing decisions on uptake of housing loans, unlike household size, marital status and area of residence (Table 5.1).

Table 5.1: Housing financing model for households

Loan-cash (Loan=1, Cash=0)	Probit regression (Robust)		Average marginal effects		P> z	Model fitness
	Coef.	Std err	dy/dx	Std err		
Log_income	0.034	0.015	0.005	0.002	0.023	Pseudo R ² = 0.1142 Marginal effects after probit: Y = Pr(loan-cash) (pre- dict): = 0.0724 Prediction power: Correctly classified =90.51% No. of Obs. Used in the model= 15,896
Log_rent	0.310	0.014	0.046	0.002	0.000	
Log_hhsize	-0.018	0.027	-0.003	0.004	0.510	
Log_age	0.227	0.048	0.034	0.007	0.000	
Mob_bank (not sub- scribed) *	-0.146	0.040	-0.022	0.006	0.000	
Sex (female) *	0.144	0.031	0.021	0.005	0.000	
Education (post-primary) *	0.236	0.032	0.035	0.005	0.000	
Marital (not married) *	0.007	0.046	0.001	0.007	0.874	
Employ (not employed) *	-0.124	0.031	-0.018	0.005	0.000	
Area (urban) *	0.024	0.033	0.004	0.005	0.466	
_cons	-4.801	0.226				

(*) dy/dx is for discrete change of dummy variable from 0 to 1

The probability of a household having taken a loan to construct or purchase a house as opposed to the use of cash increases with increase in income levels of the households. An increase in income by one per cent is more likely to increase the likelihood of a household having obtained a house loan by about 0.5 per cent, than

having used cash only. This indicates that policies supporting increased earnings and disposable income boost the ability of households to apply for loans for construction or purchase of houses. Policies such as improving minimum wages and reducing income tax can potentially accelerate uptake of loans.

An increase in rent by one percent is more likely to increase the chance of a household to obtain a house loan by 4.6 per cent, than having used cash only. Since quality of house can be associated with its rent value, then this intuitively implies that access to loans enhances the quality of housing or desire to have a high-quality house, and increases the chances of using loans for construction or purchase of houses.

For age, an increase in number of years by one per cent is more likely to increase the chance of a household having obtained a house loan by 3.4 per cent. This means that younger generations may not be active participants in the loans market, and thus the need for increased loan promotional activities on younger age brackets.

Subscription to mobile banking is more likely to increase the chances of a household having taken a loan for housing than using cash. On average, a household without mobile banking is less likely to have taken a loan for housing by 2.2 per cent than being a household with mobile banking subscription, which emphasizes the role of e-financing to enhance access to financial services. Therefore, efforts geared towards intensified Internet and mobile banking care accelerate the role of financial services to the development of the housing sector.

The analysis showed that a female-headed household is more likely to have taken a loan for housing than male-headed household by about 2.1 per cent. This can be associated with the socialization of women who are more likely involved in women groups, which encourage group-based lending, thereby making them more attractive to financial institutions.

A household head with post-primary education is more likely to take a loan for housing than household head with primary education by about 3.5 per cent. As a result of this, it is plausible that the Government of Kenya has made basic education free, and this has potential to increase uptake of and for housing, or to supplement cash options.

Unemployed head of household is less likely to have taken a loan for housing than an employed household head by about 1.8 per cent. This is also motivated by the nature of housing loans where banks lend to persons with regular and stable incomes, who are dominantly employees. The country should continue with efforts to reduce unemployment to enhance home ownership and uptake of financial services such as loans for housing.

5.1.2 County level housing financing demand model

To ascertain what determines housing financing beyond household level, developing housing financing model across regions is achieved by comparing uptake of loans against over-reliance on cash across counties. Financial institutions make decisions to invest in counties by following various parameters, especially

those parameters describing business visibility, resulting in the number of loans taken for housing financing varying across counties. This can be attributed to the differences in business profile of the counties. The number of loans for housing per county, represented by number of households using loans for construction or purchase of dwellings, was run against number of bank branches, population with mobile banking, population under poverty, average age of household heads, average rent-paid, and gross county product (Table 5.2). The number of bank branches and population with mobile banking subscription represented financial availability, while population under poverty proxied for riskiness and by extension interest rates. The average age is a good proxy for period of loan repayment, while average rent paid correlates with pricing of housing properties. In addition, gross county product, which reflects the economic performance of the county as a contribution to the country gross domestic product, represented the ability to pay for the loans. These variables are assumed to be key in motivating investment decisions by financial institutions at sub-regional levels.

The study shows that the number of loans for housing financing have positive elasticities of 0.2, 3.4 and 0.3 to changes in number of bank branches, average age of household head and population with mobile-banking services across counties, respectively. Negative elasticities of 0.5, 0.5 and 0.5 were found in the responsiveness of the number of loans for housing financing to the changes in population living in poverty, average rent paid and per capita gross county product, respectively. Heteroscedasticity test was conducted using Breusch-Pagan/Cook-Weisberg test, and it was detected thus a robust regression was run. Multicollinearity was tested using variance inflation factor (VIF) and the rule thumb of VIF being less than ten (10) was used to reject the presence of multicollinearity.

Table 5.2: Uptake of loans for housing financing across counties

Logloan	coeffi- cient	Std. err	Robust Std. err	P> t	Multicollinearity		Heteroskedasticity Breusch-Pagan / Cook-Weisberg test	Fitness
					Variance infla- tion factor			
					VIF	Toler- ance		
logbranches	0.246	0.183	0.147	0.102	4.23	0.236	Ho: Constant vari- ance Variables: fitted values of log-loan chi ² (1) = 0.03 Prob>chi ² =0.8524 Reject Ho, conduct robust reg	R-Sq: 0.3936 F(6,40) = 4.33
logpoverty	-0.539	0.225	0.161	0.002	2.08	0.480		
logage	3.420	1.370	1.101	0.003	1.14	0.875		
logrent	-0.549	0.209	0.262	0.043	1.33	0.750		
logmobbank	0.284	0.166	0.132	0.037	3.45	0.289		
loggcp_cap	-0.499	0.341	0.203	0.019	2.41	0.415		
_cons	-0.855	6.369	5.410	0.875	Rejected VIF<10			

An increase in number of bank branches by 10 per cent is associated with increase in number of loans by 2 per cent across the counties. In addition, uptake of

housing financing loans increases by 3 per cent across counties when mobile banking population increases by 10 per cent. The two results show that, just like at household level, integration of physical and digital financial connection between financial institutions and customers is critical in financial inclusion at regional level. Technology has potential to enhance access to loans for housing financing. Policies promoting digital progress and elimination of digital divide across the counties are therefore a potential strategy in housing financing. In addition, initiatives that create incentives to financial institutions to open more branches, besides short- and medium-terms cost to be incurred, can inherently boost the outreach and role of financial services to the development of the housing sector.

The results also show that a 10 per cent increase in population living in poverty decreases the number of loans for housing financing by 5 per cent. There should be effort to bridge the poverty gaps if financial inclusion is to be achieved. Interest rates chargeable among poorer regions may be higher than richer regions due to the indirect relationship between risk of default and interest rates.

Paradoxically, the analysis shows that increase in per capita economic potential by 10 per cent is associated with decline in number of loans for housing financing by 5 per cent. This is a paradox since income levels increase chances of utilizing loans for construction or purchase of a house at household level. However, this result may point to limited distribution of wealth within counties, which hinders the transfer of purchasing power among households, thus lowering the demand for loans for housing financing by households in aggregate terms at county levels. Further, areas with higher per capita gross county product may be characterized by high industrialization and under-employment with survival wages that limit capacity to take loans for housing financing.

Uptake of loans also increases by 3 per cent when average age of household head in the county increases by 1 per cent. The implication of this is that older generations have higher affinity to seek for loans from financial institutions. This is against the opportunities and benefits that point to younger generation accessing mortgages at lower interests and longer repayment period.

Counties with relatively higher rent payable have fewer housing financing loans, where an increase in average rent paid by 10 per cent is associated with a decrease in number of loans for housing by 5 per cent. The incentive of financial institutions to advance loans for homeowners is relatively low compared to incentives to provide loans for rental income generating business in the real estate sector. Higher rental prices are a sign of high population seeking rental housing, since an imbalance between demand for and supply of rentals will drive rental prices upwards. High rental prices signal to higher income generation and higher ability to absorb relatively higher interest rates. Thus, financial institutions will ration housing financing for homeowners and instead offer them to rental housing borrowers, thereby contributing to lower supply of household loans for housing financing.

5.2 Supply-side Housing Financing Model

The focus of this section is to relate affordable and adequate housing to financing models. It seeks to establish how type of financing determines the quality of housing for households. Adequacy of a dwelling is captured in type of wall and room-occupancy.

5.2.1 Adequate housing through quality of walling

The analysis shows that the supply of adequate housing is associated with use of loans for construction or purchase, together with increase in incomes, rent and age, and the female gender, post-primary education and the unmarried, but reduces with household size (Table 5.3). Subscription to mobile banking, status of employment and area of residence were not significant as variables in explaining variations in adequate housing.

Table 5.3: Quality of housing and financing model for walling

Walling Adequate (1), otherwise (0)	Probit regression (robust)		Average marginal effects		P> z	Model fitness
	Coef.	Std. Err.	dy/dx	Std. Err.		
Loaning (used loan) *	0.410	0.042	0.117	0.012	0.000	Pseudo R ² = 0.2596
Logincome	0.112	0.012	0.032	0.003	0.000	Marginal effects after probit:
Logrent	0.700	0.014	0.200	0.003	0.000	
Logsize	-0.306	0.022	-0.088	0.006	0.000	Y=Pr(Ade-wall) (pre- dict):=0.4319
Logage	0.231	0.037	0.066	0.011	0.000	
Mobbank (not subscribed) *	-0.025	0.035	-0.007	0.010	0.473	Prediction power: Correctly classified = 75.43%
Sex (female)*	0.123	0.024	0.035	0.007	0.000	
Education (post- primary) *	0.122	0.024	0.035	0.007	0.000	No. of Obs. Used in the model= 15,892
Marital (not mar- ried) *	0.263	0.036	0.075	0.010	0.000	
Employed (not employed) *	0.025	0.024	0.007	0.007	0.290	
Area (urban) *	0.018	0.026	0.005	0.008	0.504	
_cons	-6.817	0.190				

(*) dy/dx is for discrete change of dummy variable from 0 to 1

The probability of a household having adequate wall is higher among households that obtained a loan for construction or purchase, than those using cash only. For instance, the household with loans for housing are more likely to have adequate

wall than the household using cash only by about 11.7 per cent. This result supports the government initiative that seeks to exempt contributions to housing schemes from taxation of the amount contributed. Savings to housing investment schemes increase the chances of households borrowing ability within the scheme. This happens since such schemes encourage savers to use the savings as collateral for borrowing.

An increase in income by one per cent is more likely to increase the likelihood of a household having an adequate wall by about 3.2 per cent. The role of income in reduction of deprivation in housing is crucial, just like its role in promoting uptake of housing loans as earlier found, which promotes the quality of housing.

Households with dwellings whose rent value is higher are more likely to have an adequate wall. An increase in rent by one per cent is more likely to increase the chance of a household having an adequate wall by 20 per cent. This also agrees with earlier findings that rent payable is associated with uptake of loans. This result supports the argument that rent payable is associated with quality of the housing, as rent payable also supports the likelihood of a household having taken a loan for housing.

Large households are less likely to have adequate walling in the housing supply model, though household size was not significant in explaining uptake of loans in the household housing financing demand model. In this analysis, we find that an increase in household size by one per cent is more likely to decrease the likelihood of a household having an adequate wall by 8.8 per cent. Large household sizes are associated with low income levels per household member against disproportionate expenditures, thus increasing poverty levels, which limit investment in quality housing.

An increase in age among household heads by one per cent is more likely to increase the chance of a household having an adequate wall by about 6.6 per cent. This finding relates well with earlier findings in the housing financing demand model, where increase in age was associated with increase in uptake of loans. Therefore, the interaction between age and affinity to take loans supports quality of housing. Nevertheless, this also points to the need to invest in financial education for the younger generation, especially in creating awareness on the age-related advantages of taking loans such as mortgages.

Subscription to mobile banking is not significant in explaining the likelihood of a household having an adequate wall. However, this was significant in explaining the likelihood of obtaining a loan for housing, where subscription was supportive of uptake of loans. This indicates that there is no direct relationship between mobile banking and quality of housing, but rather an indirect relationship exists through actual uptake of loans.

Female-headed households are more likely to have adequate wall than male-headed households by about 3.5 per cent. This corroborates the finding that female-headed households have relatively higher affinity to use loans for housing. Therefore, the female are relatively better agents of channelling housing financial services for improved performance of the housing sector. Further research to

ascertain this would be appropriate. However, this is an interesting finding besides the fact that access to finance by the female is limited compared to the male (Central Bank of Kenya, Kenya National Bureau of Statistics, and FSD Kenya, 2019), which means that initiatives geared towards unlocking access to finance by female can open new frontier for housing sector development.

A household head with post-primary education is more likely to have an adequate wall than household head with primary education by about 3.5 per cent. This finding correlates with access to formal financial services, which increases with level of education, as evidenced in FinAccess (2019) where 98.6 per cent access of the household with tertiary level of education had formal access to financial services compared to 60.7 per cent among those without education.

Unmarried household heads are more likely to have an adequate wall than married household heads by about 7.5 per cent. This may be an indication that marriage has inherent responsibilities such as food, medical, clothing and schooling, which compete with the need for quality housing in the household budget or expenditure. However, marital status was not significant in influencing decisions on whether to use loan or cash only in construction or purchase of a house in the housing finance demand model for households.

Employment status was not significant in explaining the variation in quality of housing in the housing financing supply model. However, it was significant in explaining likelihood of having used a loan for housing in the housing financing demand model, where employed persons had higher chances of having taken loan for housing. Therefore, though it is arguable that employment supports income generation and credit worthiness, it emerges that there is no direct relationship between employment and quality of housing among homeowners. Thus, employment indirectly influences quality of housing through ability to use incomes, and deliberate effort to seek loans for housing.

Area of residence was not significant in explaining differences in quality of walling. This is a pointer to the fact that society is homogenous in terms of social stratification. Regardless of the residence being urban or rural, the society or community has relatively identical proportions for low, middle to high income populations.

5.2.2 Adequate housing through density of room occupancy

Adequacy of housing is also assessed in terms of room occupancy, which measures the number of household members per habitable room. Rent value of the house, household size, age of household head, gender, education, marital status and employment explain the likelihood of a household complying with room occupancy standards (Table 5.4). The level of income and subscription to mobile-banking were not significant even at 90 per cent confidence level.

Table 5.4: Quality of housing and financing; model for room occupancy

Occupancy Adequate (1), other- wise (0)	Probit regression (robust)		Average marginal effects		P> z	Diagnostics test and Model fitness
	Coef.	Std.Err	dy/dx	Std.Err		
Loaning (used loan) *	0.242	0.053	0.054	0.012	0.000	Pseudo R ² = 0.3317 Marginal effects after probit: Y=Pr(Ade-occupancy) (predict): = 0.8386 Prediction power: Correctly classified = 81.17% No. of Obs. Used in the model= 15,896
Logincome	0.009	0.013	0.002	0.003	0.488	
Logrent	0.571	0.016	0.129	0.003	0.000	
Logsize	-2.081	0.044	-0.469	0.007	0.000	
Logage	0.728	0.049	0.164	0.011	0.000	
Mobbank (not sub- scribed) *	0.023	0.040	0.005	0.009	0.561	
Sex (female)*	0.156	0.028	0.035	0.006	0.001	
Education(post- primary) *	0.178	0.028	0.040	0.006	0.000	
Marital (not mar- ried) *	0.595	0.045	0.134	0.010	0.000	
Employed (not em- ployed) *	-0.050	0.027	-0.011	0.006	0.061	
Area (urban) *	-0.229	0.031	-0.051	0.007	0.000	
Cons	-2.865	0.216				

(*) dy/dx is for discrete change of dummy variable from 0 to 1

The probability of a household living within adequate room-occupancy standards is higher among households that obtained a loan for housing than those using cash only by about 5.4 per cent. Therefore, providing incentives for expansion and deepening of housing financing to households has the potential to accelerate the performance of the housing sector in Kenya.

Income levels was not significant in explaining variation between adequate room occupancy. This inconsistency with the expectation that income should increase the ability to construct or purchase more habitable rooms may be explained by the fact that occupancy is dependent on two key variables, which are household size and number of rooms. It is not necessarily true that high income households have smaller household sizes. Households with middle to high incomes accommodate various categories of workers in addition to relatives, which increases the household size, even when the nuclear family is small. As a result, variations in income may not be significant to influence variations in room occupancy.

Households with dwellings whose rent value is higher are more likely to have adequate room occupancy. An increase in rent value by one per cent is more likely to increase the chance of a household having an adequate room occupancy by 12.9 per cent. One of the variables that increases value of rent is the number of rooms of the property.

Large households are less likely to have adequate room occupancy. An increase in household size by one per cent is more likely to decrease the chance of a household having adequate room occupancy by about 46.7 per cent. Population growth is a strong factor determining the quality of housing, thus the need for controlling its rapid growth.

An increase in age of household head increases the chances of the household having adequate room occupancy. In the analysis, an increase in age by one per cent is more likely to increase the chance of a household having an adequate room occupancy by about 16.4 per cent. Younger households tend to live in small-sized houses. Housing development takes time in terms of planning to construct or purchase or extend a house, and making savings for the houses or as they enhance their credit worthiness to take up a housing loan.

Subscription to mobile banking was not significant in explaining the likelihood of a household having an adequate wall.

Female-headed households are more likely to have adequate room occupancy than male-headed households by about 3.5 per cent. The female gender are strong agents in controlling household size and population growth. Further, female-headed households are more likely to be single, divorced or widowed, which has high likelihood of considering small families.

A household head with post-primary education is more likely to have an adequate room occupancy than household head with primary education by about 4 per cent. This finding is similar to the role of education in ensuring quality of housing from walling perspective, and in uptake of loans.

Employment status was significant in explaining variations in room occupancy, where an unemployed household head is less likely to have adequate room occupancy by approximately 1.1 per cent than an employed counterpart. This indicates that employment provides potential to a household head to build or purchase houses with adequate rooms.

Unmarried household heads are more likely to have adequate room occupancy than married household heads by about 13.4 per cent. This may be attributed to the fact that unmarried persons tend to live alone.

5.2.3 Affordable housing

Affordable housing is a relative term, thus it is prudent to extend the discussion to include other salient household features against which affordability can be assessed. Besides benchmarking on income, affordable housing can be relative to the size of the household. The analysis reveals that rent payable increases with loan accessibility, income level, household size, age, quality of walling, mobile banking subscription, female gender, education level, urban residence, employment status and unmarried household heads (Table 5.5).

Table 5.5: Affordable housing and financing model for rent payable

Logrent	coeff	Std. err	P> t	Multicollinearity: Variance inflation factor		Heteroscedasticity: Breusch-Pagan / Cook-Weisberg test	Fitness
				VIF	Tolerance		
Loaning (used loan)*	0.389	0.024	0.000	1.070	0.932	Ho: Constant variance chi ² (1)=194.05 Prob>chi ² =0.0000 Fails to reject Ho: R ² = 0.4190 Number of obs = 15,892 F(10, 15880) = 1041.19	
Logincome	0.202	0.007	0.000	1.32	0.755		
Logsize	0.192	0.013	0.000	1.02	0.978		
Logage	0.366	0.022	0.000	1.38	0.726		
Walling (good)	0.895	0.015	0.000	1.17	0.855		
Mobbank (not subscribed) *	-0.207	0.021	0.000	1.12	0.893		
Sex (female) *	0.189	0.014	0.000	1.11	0.903		
Education (post-primary) *	0.268	0.015	0.000	1.16	0.859		
Marital (not married) *	0.296	0.022	0.000	1.40	0.714		
Employed (not employed) *	0.043	0.014	0.003	1.11	0.903		
Area (urban) *	0.344	0.016	0.000	1.05	0.947		
_cons	3.345	0.106	0.000	Rejected VIF<10			

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Households that had taken a loan for housing live in dwellings with higher payable rent by about 0.39 per cent, above households that used cash only to construct or purchase a house. This corroborates with the earlier finding that loans improve the quality of housing, assuming that rent is a predictor of quality of housing.

Rent is inelastic to income, given the elasticity of 0.2, which means that an increase in income by one per cent increases the rent payable by 0.2 per cent. Policies targeting increase in income, such as those in employment have potential to change the housing behaviour of the households. It also means that designers of affordable housing can plan houses in terms of tiers of houses based on income levels, but the extent of variation should not be so high due to the less proportionate response of rent to income changes.

An increase in household size by one percent is associated with an increase in the rent payable by 0.2 per cent. The size of household informs the design of houses in anticipation of the number of members who can stay in a property.

Increase in age of household head by one per cent increases the rent payable by 0.4 per cent. The increase in rent due to changes in age can be explained by the fact that age is a predictor of household size and income level, since households increase

the number of family members over time, while wealth is also accumulated over time through savings plans and annual increment in earnings.

Households that have adequate walling of their dwellings have higher payable rent by about 0.9 per cent compared to those with inadequate walling. The result shows that there exists a co-movement and causality between rent and quality of housing (proxied by walling).

Households who have subscribed to mobile banking have higher payable rent by about 0.2 per cent compared to those who do not have mobile banking subscription. This is an indication to the ease of access to financial services, which makes the households have higher ability to pay for higher rent. In addition, households with mobile banking are associated with ownership of bank accounts and ease of access to banking services. In addition, mobile banking resonates with the level of education and incomes.

Household heads with post-primary education have relatively higher payable rent by about 0.3 per cent more compared to households with only primary education. Education is a predictor of income levels and employment. This interdependence provides education with the impetus to influence housing choices, including quality and rent.

Unemployed household heads have relatively higher payable rent by about 0.04 per cent more, compared to the employed counterparts. This shows that households undertaking alternative economic activities to employment have higher affinity to construct or purchase housing units of higher quality and rent. In addition, the earnings from employment may not be sufficient to necessitate savings for quality housing. The policies calling for self-sustenance economic activities and increase in salaries and wages have a positive long-term implication on the quality of housing.

Female-headed households live in dwellings with relatively higher payable rent by about 0.2 per cent more, compared to the male counterparts. This shows that households headed by female gender are more sensitive to quality of housing than the male-headed counterparts. In addition, it is an indication that female heads would spend more in quality housing than male counterparts.

Unmarried household heads live in relatively higher payable rent costing them about 0.3 per cent more compared to the married counterparts.

Urban households have relatively higher payable rent, which is approximately 0.3 per cent more, compared to the rural households. This reflects that urban areas are associated with higher cost of construction, which translates to relatively higher rent than the rural areas.

6. Conclusion and Recommendations

The housing sector in Kenya is growing and poised for a revamp given the government's resolve to stimulate access to affordable adequate housing in 2018. This is expected to increase the contribution of the sector to the economy in line with the Constitution of Kenya, the Kenya Vision 2030 and the SDGs. It will also enhance the stock of technology, create more employment and rejuvenate the financing models.

There is evidence that improvement in housing finance has a positive impact on the housing sector, besides the inelasticity. The analysis has revealed latent potential within the financial sector which, if fully utilized, can change affordable and adequate housing landscape in Kenya. This requires a profitable and stable funding model that can attract private investments into the housing sector through the financial sector. Stable funding models will require that all elements of uncertainties that shroud property development are eliminated, including approval red-tapes, land ownership quarries, inadequate infrastructure, cost and duration of credit, cost of construction, pricing and fear for housing crunch.

Various household and market factors influence household decisions on housing financing, housing quality and affordability. These include income, rent, mobile banking, age, sex, education and employment status. It also shows that the number of loans for housing financing across counties have positive elasticities to changes in number of bank branches, age of household head and population with mobile-banking services across counties, while negative elasticities to changes in population living in poverty, rent paid and per capita gross county product.

The quality housing is represented by quality of walling and room occupancy. The analysis shows that the quality of walling is associated with use of loans for construction or purchase, together with increase in incomes, rent and age, and the female gender, post-primary education and the unmarried. However, mobile banking, status of employment and area of residence were not significant in explaining variations in walling. However, level of income, subscription to mobile-banking were not significant in explaining room-occupancy.

Rent payable increases with loan accessibility, income level, household size, age, quality of walling, mobile banking, female gender, education, urban residence, unemployed and unmarried persons.

Though the policy framework is supportive of housing finance in Kenya, a review of some aspects such as limits of allowable investments and risk allocation will unlock the accessibility and utilization of alternative sources of finance. Equitable access to financial services across the counties to bridge the differences in bank branches, output of financial sector and relative impact on the performance of the housing sector.

Therefore, it is recommended that:

1. Financial institutions could deepen accessibility to housing finance with incentives to open more branches across the country, promote mobile banking, expand lending to real estate and enhance marketing of their

respective housing finance products. Banking services influence the value of the financial sector output, and this impacts on the indicators of the housing sector, but mobile banking is yet to record significant effects.

2. The untapped potential in the financial sector manifesting in low investment in property financing or development needs to be unlocked. The insurance, SACCOs, capital markets and pension schemes are yet to fully exploit the profitability in property development. Policy review and incentives on perceptions, capitation, investment portfolio, sustainability and investor confidence will open-up participation of regulated entities in the financial sector to participate and support property development. A national survey on financial sector investment in housing should be conducted.
3. Government agencies in the housing and finance sector should enhance public awareness campaigns and stakeholder training programmes on the various sources of housing finance. This is evidenced in low uptake of available financial facilities' low penetration levels by some industries such as insurance, pensions and cooperatives. It is critical to increase knowledge and skills set on financial literacy, financial product development, marketing and promotions to encourage savings culture and motivate the role of private sector investments in public initiatives. Further, other sources such as foreign direct investment, diaspora remittances and REITs have not been entrenched in the real estate sector, thus having dismal share. The housing sector resource mobilizers should be trained on ways of exploring and penetrating the alternative sources of finance, especially within the mainstream financial institutions.
4. Since real estate development requires large-scale projects for it to attract economies of scale and profitable return on investment as witnessed by the large average loans, county governments could make it possible by facilitating public-private-partnerships through investor pooling and providing affordable land and allied services to reduce the land risks, cost of construction and attract private sector investment. County governments could establish credit assurance and guarantee mechanisms for the residents for housing to reduce the uncertainty over the risk of default, which demotivates lenders. The financial sector could expand credit through the county regional blocks.
5. Housing needs by low-income households can be encouraged through packaging mass production properties with incentives lowering cost of construction. Microfinance institutions and facilities need be encouraged across the country but in a regulated environment to prevent exploitation and erosion of investor confidence. Mortgage refinancing mechanisms and county government guarantees could be utilized to encourage investments for low-income segment of the population.
6. Financial institutions should establish mechanisms of providing disaggregated data at county and sector levels to support policy and research analysis. This will require that authorities revise the reporting framework to require that data is disaggregated and reported at the levels of county and sectors.

7. The country needs to enhance its instruments of data collection or data reporting on housing to ensure sufficient data is available to promote policy analysis and decision-making. This is informed by the missing variables on housing financing in collection or reporting. FinAccess dataset could be enhanced by improving the quality of data on housing, including response rate. For the Kenya Integrated Household Budget Survey, additional data could focus on the source of the loan for housing, duration of the loan, interest rate applicable, source of money for loan repayment, among others details.
8. There is need for policy makers on affordable and adequate housing to take into consideration the various market and household characteristics that influence investment decisions in housing financing, housing quality and affordability. Such policy designs will ensure that the heterogenous nature of the society is integrated in the planning for effective delivery of the housing agenda.

References

- Alexiu, T.M., Ungureanu, D. and Dorobant, A. (2010), "Impact of education in terms of housing opportunities". *Procedia Social and Behavioral Sciences*, Vol. 2: 1321-1325.
- Atuheire, K. and Karyeija, G.K. (2014), "The role of financial institutions towards affordable housing to urban middle income earners: Evidence from Kampala City, Uganda". *African Journal of Social Work*, 4(2).
- Badev, A., Beck, T., Vado, L. and Walley, S. (2014), *Housing finance across countries: New data and analysis*. Washington DC: World Bank.
- Blackwell, T. and Sebastian, K. (2017), Varieties of housing finance in historical perspective: The impact of mortgage finance systems on urban structures and homeownership. MPIfG Discussion Paper, No. 17/2, Max Planck Institute for the Study of Society.
- Bø, E.E. (2018), "Housing match quality and demand: What can we learn from comparing buyer characteristics". *Journal of Housing Economics*, Vol. 41: 184-199.
- Central Bank of Kenya, Kenya National Bureau of Statistics and FSD Kenya (2019), 2019 Fin Access Household Survey. Nairobi.
- Capital Markets Authority (2015), Real Estate Investment Trusts. Nairobi: CMA.
- Central Bank of Kenya (2010-2017), Bank Supervisory Annual Reports (2010-2017). Nairobi: CBK.
- Central Bank of Kenya (2013), *Risk management guidelines*. Nairobi: CBK.
- Central Bank of Kenya (2019), *Diaspora remittances*. Nairobi: Central Bank of Kenya.
- Central Bank of Kenya - CBK (2017), *Financial sector report*. Nairobi: CBK.
- Cerutti, E., Jihad, D. and Dell’Ariccia, G. (2015), *Housing finance and real estate booms: A cross-country perspective*. Washington DC: International Monetary Fund.
- Demirguc-Kunt, A. and Klapper, L. (2012), Measuring financial inclusion: The global Findex Database. Washinton DC: World Bank.
- Doling, J., Vandenberg, P. and Tolentino, J. (2013), Housing and housing finance: A review of the links to economic development and poverty reduction. Asian Development Bank.
- Ezennia, I.S. and Hoskara, S.O. (2019), "Exploring the severity of factors influencing sustainable affordable housing choice: Evidence from Abuja, Nigeria". *Sustainability Journal*, MDPI.
- Government of Kenya (2004), Sessional Paper No. 3 on National Housing Policy for Kenya. Nairobi: Ministry of Lands and Housing.

- Government of Kenya (2007), *Kenya Vision 2030: A globally competitive and prosperous Kenya*. Nairobi: National Economic and Social Council.
- Government of Kenya (2010), *The Constitution of Kenya*. Nairobi: Government Printer.
- Government of Kenya (2018), *Third medium-term plan 2018-2022: Transforming lives: Advancing socio-economic development through the "Big Four"*. Nairobi: The National Treasury and Planning.
- Government of Kenya (2019), *Finance Act 2019*. Nairobi: Government of Kenya.
- Greiber, C. and Setzer, R. (2007), *Money and housing – evidence for the euro area and the US*. Deutsche Bundesbank.
- Grinstein-Weiss, M., Charles, P., Guo, S., Manturuk, K. and Key, C. (2011), "The effect of marital status on home ownership among low-income households". *Social Service Review*, Vol. 85, No. 3: 475-503.
- Ikenna, S.E. and Sebnem, O.H. (2019), "Exploring the severity of factors influencing sustainable affordable housing choice: Evidence from Abuja, Nigeria". *Sustainability*, Vol. 11 (5792).
- Insurance Regulatory Authority (Various). *Insurance Industry Annual Report (2010-2017)*. Nairobi: Insurance Regulatory Authority.
- Insurance Regulatory Authority (2017). *The Insurance Investments Management Guidelines 2017*. Nairobi: Insurance Regulatory Authority.
- Juster, F.T. and Taylor, L.D. (1975), "Towards a theory of savings behavior". *The American Economic Review*, Vol. 65, No. 2: 203-209.
- Kenya National Bureau of Statistics (Various). *Statistical Abstracts*. Nairobi: Kenya National Bureau of Statistics.
- Kenya National Bureau of Statistics. (2016a). *Kenya Integrated Household Budget Survey 2015/2016*. Nairobi: Kenya National Bureau of Statistics.
- Kenya National Bureau of Statistics. (2016b). *Foreign Direct Investment Survey 2016*. Nairobi: Kenya National Bureau of Statistics.
- Kenya National Bureau of Statistics. (2018). *Foreign Direct Investment Survey*. Nairobi: Kenya National Bureau of Statistics.
- Kenya Property Developers Association - KPDA (2018), *Affordable housing investment in Kenya: Building affordable homes and making financial returns*. Nairobi: Kenya Property Developers Association.
- Labonne, C. and Welter-Nicol, C. (2016), *Cheap credit, affordable housing? Evidence from the French interest-free loan policy*. ACPR, Banque de France or INSEE.
- Leyshon, A. and Thrift, N. (1995), "Geographies of financial exclusion: Financial abandonment in Britain and the United States". *Transactions of the Institute of British Geographers*, Vol. 20, No. 3: 312-341.

-
- Maigua, R.K. (2014), Factors influencing provision of low cost housing in Nairobi County, Kenya . University of Nairobi.
- Menezes, C.F. and Auten, G.E. (1978), "The theory of optimal savings decisions under income risk". *International Economic Review*, Vol. 19, No. 1: 253-258.
- Mitlin, D. (2008), "Finance for low-income housing and community development". *Global Urban Development*.
- National Treasury and Planning. (2013-2018). Energy infrastructure and ICT sector report for MTEF report. Nairobi: National Treasury and Planning and Ministry of Finance.
- Omwenga, N.M. (2013), Factors affecting adequacy of provision of housing to low income earners in Nakuru Municipality, Kenya. Nairobi: University of Nairobi.
- Parliamentary Budget Commission (2018), Eye on the Big Four: Budget Watch for 2018/19 and the Medium-Term. Nairobi: Parliamentarary Budget Commission.
- Retirement Benefits Authority - RBA (2016), Retirement Benefits Regulations. Nairobi: Retirement Benefits Authority.
- Retirement Benefits Authority - RBA (Various), Annual Reports and Financial Statements. Nairobi: Retirement Benefits Authority.
- SACCO Societies Regulatory Authority - SASRA (2010), SACCOs Societies Regulations. Nairobi: SACCO Societies Regulatory Authority.
- SACCO Societies Regulatory Authority - SASRA (Various), SACCO Supervision Reports. Nairobi: SACCO Societies Regulatory Authority.
- Said, R., Alastair, A., Stanley, M. and Majid, R. (2014), "Inter-relationship between the housing market and housing finance system: Evidence from Malaysia". *International Journal of Strategic Property Management*, 138-150.
- Shlomo, A., Mayo, S.K. and Stephens, W.L. (1993), "The housing indicators programme: A report on progress and plans for the future". *Netherlands Journal of Housing and the Built Environment*, Vol. 8, No. 1: 13-48.
- UNHabitat (2016), Slum almanac 2015/2016: Tracking improvement in the lives of slum dwellers. UNHabitat.
- UNHabitat (2018), SDG Indicator 11.1.1 Training Module: Adequate Housing and Slum Upgrading. Nairobi: United Nations Human Settlement Programme (UN-Habitat).
- United Nations General Assembly (2015), Sustainable Development Goals. United Nations.

World Bank (2015), *Stocktaking of the housing sector in Sub-Saharan Africa*. Washington DC: World Bank.

Yinusa, O.G., Ilo, B.M. and Elumah, L. O. (2017). *Mortgage Financing and Housing Development in Nigeria*. Osogbo: Departments of Accounting and Finance and Business Administration, Fountain University.

ISBN 978 9966 817 70 9

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