Towards Developing Institutional Reforms to Stimulate Rental Housing Supply: The case of Ghana

by Samuel Swanzy-Impraim

Thesis submitted in fulfilment of the requirements for

the degree of

Doctor of Philosophy

under the supervision of
Associate Professor Xin Janet Ge
Associate Professor Vince Mangioni

University of Technology Sydney

Faculty of Design Architecture and Building

April 2023

Certificate of Original Authorship

I, Samuel Swanzy-Impraim, declare that this thesis is submitted in fulfilment of the requirements for the award of a Doctor of Philosophy Degree in Built Environment, in the Faculty of Design, Architecture and Building (DAB), University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution. This research is also supported by the Australian Government Research Training Program.

Production Note:
Signature removed
prior to publication.

Samuel Swanzy-Impraim

15th April 2023

Acknowledgement

I thank my supervisors, Associate Professor Janet Xin Ge and Associate Professor Vince Mangioni for their support throughout the PhD journey. Your guidance, advice and input helped me to sail through the challenges and produce this thesis. Despite your busy schedules, you prioritized our monthly meetings and provided prompt feedback on my work. I also thank all the internal assessors and chairs at UTS from Stage 1 to Stage 3. Your feedback and suggestions helped to improve the thesis. I acknowledge all the internal assessors and chairs who provided feedback, Professor Heather MacDonald, Dr Shanaka Herath, Associate Professor Sumita Ghosh, Associate Professor Song Shi, and Associate Professor Johnny Wong. Your insightful comments helped to direct the thesis towards its completion.

I appreciate the support provided by my parents, my late dad John Swanzy-Impraim and my mother Comfort Yeboaba Mensah and my siblings Solomon, Harriet, Enock and Jesse for being there and to my sweetheart Beatrice for her love and support. My colleagues at the African Research Connect and the School of Built Environment at UTS for their motivation and support during the PhD journey. You provided moral support during the pandemic and organized a series of face-to-face and virtual events. I also appreciate the support given by my Ghanaian family in Australia, Pastor Kofi, and Janet Mensah for their words of encouragement.

This thesis is a Conventional thesis according to section 10.1.1 of the UTS Graduate Research Candidature Management, Thesis Preparation and Submission Procedures 2022.

List of Publications and Related Works

Journal Articles

Swanzy-Impraim, S., Ge, X. J., and Mangioni, V. (2023). Increase Government Support for Build-to-Rent: Should We Expect Affordable Housing? *Buildings*, *13*(9), 2146. https://doi:10.3390/buildings13092146

Abidoye, R. B., Ge, J., Ahiadu, A. A., Adilieme, C. M., and **Swanzy-Impraim, S.** (2023). Perceptions of Young Adults on the Critical Success Factors of the Build-to-Rent Housing Model in Sydney, Australia. *Buildings*, *13*(8), 1892. https://doi.org/10.3390/buildings13081892

Swanzy-Impraim, S., Ge, X. J. and Mangioni, V. (2021). Barriers to institutional investment in rental housing: a systematic review of market risks. *International Journal of Real Estate Studies,* 15(2), 1-15. https://intrest.utm.my/index.php/intrest/article/view/125

Conference Papers and Presentations

Swanzy-Impraim, S., Donkor, A. P. and Otchere K. G. (2022). Bridging the gap between real estate education and market growth in Ghana. *The 21st Annual African Real Estate Society Conference, September 2022.*

Swanzy-Impraim, S., Ge, X. J. and Mangioni, V. (2021). The emergence of REITs in Ghana: a shift towards listed property trusts. *28th Pacific Rim Real Estate Society Virtual Conference, February 2021.* http://www.prres.net/papers/Impraim_Emergence_REITs.pdf

Swanzy-Impraim, S., Ge, X. J. and Mangioni, V. (2021). The Great Reset: resurgence of indirect real estate investment Real Estate Markets. *Virtual Joint Real Estate Conference by AsRES, GCREC and AREUEA, July 2021.*

Abstract

Institutional investors, such as pension, life insurance, and real estate investment trusts, have shown interest in rental housing investment. Housing policy experts consider this evolving interest as essential and timely for advancing the private rental sector. This research used qualitative methods through the lens of the constructivist grounded theory to understand and develop a model that resolves the barriers to institutional investment in rental housing in Ghana. It determined the changing roles of the government and private sector in rental housing provision and explored the determinants of institutional investment in rental housing. The findings revealed that the government of Ghana facilitates the private rental market mainly through land release and tax incentives. Institutional investors were sceptical about rental housing investment, and this was partly due to the failed affordable housing projects previously developed by the Social Security and National Insurance Trust, Ghana's first-tier state pension fund. To change this narrative, efforts must be made to minimise the market risks, increase the effective demand, implement more tax reforms, revisit pension fund investment, revise the regulator's role, and establish Ghana's first real estate investment trust sector. A collaborative effort is required for institutional investors to partner with developers through functional joint ventures and subsidiary companies to increase rental housing supply. The study concludes that land release and tax incentives help to reduce development costs, improve returns, and make rental property more attractive to institutional investors. Furthermore, illiquidity could be minimized by establishing subsidiary companies and functional joint ventures between institutional investors and developers. Additionally, an improved management of Ghana's macroeconomic environment would encourage a build-to-rent sector and attract more institutional investment into rental housing.

Table of Content

List of Tables

List of Figures

List of Abbreviations

AHAB ……..	Affordable Housing Aggregator Bond
AREIT …….	Affordable Real Estate Investment Trust
BNSSS …….	Basic National Social Security Scheme
BtR ………..	Build-to-Rent
BtS ………...	Build-to-Sell
CAQDAS …	Computer-assisted Qualitative Data Analysis Software
CAHF ……..	Centre for Affordable Housing Finance
CAPM …….	Capital Asset Pricing Model
CGT ……….	Constructivist Grounded Theory
CMBS …….	Commercial Mortgage-Backed Securities
CSR ………	Corporate Social Responsibility
DCF ……….	Discounted Cashflow
ECOWAS …	Economic Community of West African States
EREITs ……	Equity Real Estate Investment Trusts
FIIIs ……….	Financially Inclined Institutional Investors
FUM ………	Funds Under Management
GCB	Ghana Commercial Bank
GDP ……….	Gross Domestic Product
GFC ……….	Global Financial Crisis
GSE ………..	Ghana Stock Exchange
GST ………..	Goods and Services Tax
LIHTC …….	Low Income Housing Tax Credit
LPC ………..	Listed Property Company
MMDAs……	Metropolitan, Municipal and District Assemblies
MPT ……….	Modern Portfolio Theory
MREITs……	Mortgage Real Estate Investment Trusts
NET ……….	Neoclassical Economics Theory
NHMF …….	National Housing and Mortgage Fund
NIC ………..	National Insurance Commission
NPRA ……...	National Pensions Regulatory Authority

NRAS …….. National Rental Assistance Scheme

NUA ………. New Urban Agenda

OECD …….. Organization for Economic Co-operation & Development

PBSA ……... Purpose-Built Student Accommodation

PHC ………. Population and Housing Census

PIIIs ………. Property Inclined Institutional Investors

PPP ……….. Public Private Partnerships

PRS ……….. Private Rented Sector

REITs……… Real Estate Investment Trusts

RMBS …….. Residential Mortgage-Backed Securities

SEC ……….. Security and Exchange Commission

SC ………… Subsidiary Company

SDGs ……… Sustainable Development Goals

SHC ………. State Housing Corporation

SSNIT …….. Social Security and National Insurance Trust

TDC ………. Tema Development Corporation

JV ………… Joint Venture

CHAPTER ONE

RESEARCH BACKGROUND AND PROBLEM IDENTIFICATION

There is a growing need to increase rental housing supply in the world's big cities (Alakeson 2012; Green 2011; Hatcher 2015). Recent reports indicate that most of the world's urban population is priced out of the homeownership market due to changing demographics and rising house prices (OECD 2018). The existing supply pathways in housing markets have failed to match the housing requirements of mid-to-low-income households (UN-Habitat 2016, 2018). As of the end of 2019, Ghana recorded a housing deficit of 1.7 million units; Nigeria, 20 million; Tanzania, 3 million; South Africa, 2.5 million; Kenya, 2 million; Uganda, 1.7 million and Ethiopia, 1.2 million (Affordable Housing Investment Summit 2019; CAHF 2018). The deficits have driven house prices further, causing homelessness, urban informality, spatial injustice, and social segregation (Brown 2018; Jonkman & Janssen-Jansen 2018). Given the housing supply shortfalls and the overpriced homeownership, policymakers recognise that rental housing is essential in bridging the supply gaps worldwide.

There are several reasons why rental housing needs to be expanded in contemporary cities. The most discussed reason is demographic changes, often unpacked to reflect population increase and rapid urbanisation (Gao et al. 2017; Malik & Wahid 2014; Phillips & Joseph 2017). The UN-Habitat's database shows that the world is recording more urbanisation rates than ever. As of 2018, 55% of the world's population resided in urban areas, and it is projected to reach 68% in 2050 (UN-Habitat 2018). The demand for housing is expected to increase as more households migrate to big cities. Rental housing is needed to serve as a fallback for many urban residents who cannot afford homeownership. A policy change will spearhead an expansive rental housing supply in urban areas. Although demographic changes are quite basic, it has played their part in the skyrocketing housing demand in many countries.

Secondly, there are postulations that rental housing is given less attention in housing policies (Acioly & Horwood 2011; Glaeser 2011; Hatcher 2015). Many housing incentives and project-level interventions in many housing markets are implemented to encourage property developers and households to invest in homeownership. The quest for homeownership creates more shortfalls and reinforces other urban problems. It has become common for speculative buyers to scan housing markets for property investments that promise quick returns (Beswick et al. 2016; Goodfellow 2017). Policymakers have not been tenure conscious in housing policies (Glaeser 2011). The scalable potential of rental housing should be considered when addressing the housing affordability challenges in cities.

Policymakers attribute housing affordability challenges to the laissez-faire orientation of present-day housing markets (Peppercorn & Taffin 2013; Wetzstein 2017). Statistics show that 96 million urban households are financially stretched, and 235 million live in substandard housing (McKinsey Global Institute 2014). The UN Habitat's global sample of cities report also reveals that many households cannot afford to own or rent houses (UNHabitat 2016). Per this trend, more households are estimated to face housing affordability challenges by 2025 (McKinsey Global Institute 2014). There is a hint of an imminent housing affordability crisis if these issues are unresolved. In developed countries, many households find it difficult to meet the basic residential mortgage requirements. The situation is even worse in developing countries, as credit facilities have limited patronage due to high-interest rates. The mortgage debt-to-GDP ratio stands below 1% (CAHF 2018). Global leaders have a daunting task of solving the housing challenges in urban areas.

Among the pathways to increase rental housing supply, institutional investors have a growing appetite to invest in rental housing (Berry & Hall 2005; Milligan et al. 2015; Montezuma 2004a; Morrison 2016). This pathway is gaining worldwide acceptance because individual landlords have failed to provide rental accommodation on the scale needed (Andersen 2008; Peppercorn & Taffin 2013). Most invest for family reasons and social prestige, not for the market's needs (Seelig 2001). Institutional investors can provide sustainable finance and are the best catalysts for the rental housing agenda. Over the years, they have avoided the rental market due to barriers, such as; illiquidity, low returns, high management costs, non-progressive rent control laws, unreliable property market information, lack of opportunities for investment at scale, reputational damage and weak institutional framework (Alakeson 2012; Arku, Luginaah & Mkandawire 2012; Berry 2000; Gilmour & Milligan 2008). The barriers must be minimised or completely removed to convince them to invest in the rental asset. This research contributes to the theoretical and practical expositions on using institutional capital as the primary financing backbone for rental housing supply. Firstly, it investigates the changing roles of the government and the private sector in providing affordable rental housing. Secondly, it identifies the determinants of institutional investment in rental housing. Based on the findings, a new model is constructed for expanding rental housing. Although this research has worldwide relevance, Ghana is used as the primary case to study this phenomenon.

1.0 Research Problem

There has been a significant increase in Ghana's population over the past 20 years. According to the 2021 population and housing census, the population increased from approximately 19.7 million in 2000 to 30.8 million in 2021. The urban population also currently stands at 17.5%. The demographic changes have put much pressure on the housing markets, causing many urban households to be priced out of the homeownership market. Ghana's private rental market is expected to produce decent rental accommodations for growing urban residents. Unfortunately, the rental sector faces poor quality housing, substantial rent advance deposits, inadequate market information, and a lack of support for renters. The housing deficit as of 2021 was 1.7 million units. Amidst the deliberations to expand the rental sector, institutional investors in Ghana have shown scepticism about investing in the sector because of several barriers. The volatility of the rental sector has inhibited many institutional investors from investing in rental housing. Against the backdrop of expanding affordable rental housing, the study explores ways of attracting more institutional investment into the rental sector to meet the housing requirements of the majority of mid-to-low-income households. It specifically identifies the policy reforms needed to expand the rental sector.

1.1 Research Aim and Objectives

The research aims to develop a model that will help boost institutional investment in rental housing in Ghana. To achieve the research aim, the following are the objectives.

1. To determine the roles of the government and the private sector in boosting rental housing supply.
2. To understand the determinants of institutional investment in rental housing in Ghana.
3. To analyse how government and private sector roles change to improve rental housing supply.

1.2 Methodology, Methods, and Data Collection

This research's ontological and epistemological position is the constructivist philosophical worldview, which uses qualitative methods to understand, construct and generate a model to represent an identified phenomenon (Cresswell 2018). The research methodology adopted for this study is the Constructivist Grounded Theory (CGT), initially propounded by Glaser & Strauss (1967) and later modified by Charmaz (2006). The CGT combines the philosophies of constructivism and grounded theory to answer the research questions. This approach provides an in-depth understanding of a phenomenon and based on that understanding, generates a model to represent the insights uncovered through the empirical study. Per the aim and objectives of this research, the CGT provided the best methodology to answer the research questions. It was chosen because it allows the researcher to conduct qualitative research in a structured way, using inductive reasoning and the possibility of generating a new model (Charmaz & Belgrave 2007).

Postmodernist societies are often complex to understand, especially regarding population, urbanisation, and housing issues. The CGT helped to gather rich information using qualitative methods to understand the subject of attraction institutional investment into rental housing in Ghana. Lauridsen & Higginbottom (2014) and Charmaz (2006) provide a simplified diagrammatic explanation of the CGT methodology, presented in Figure 1.

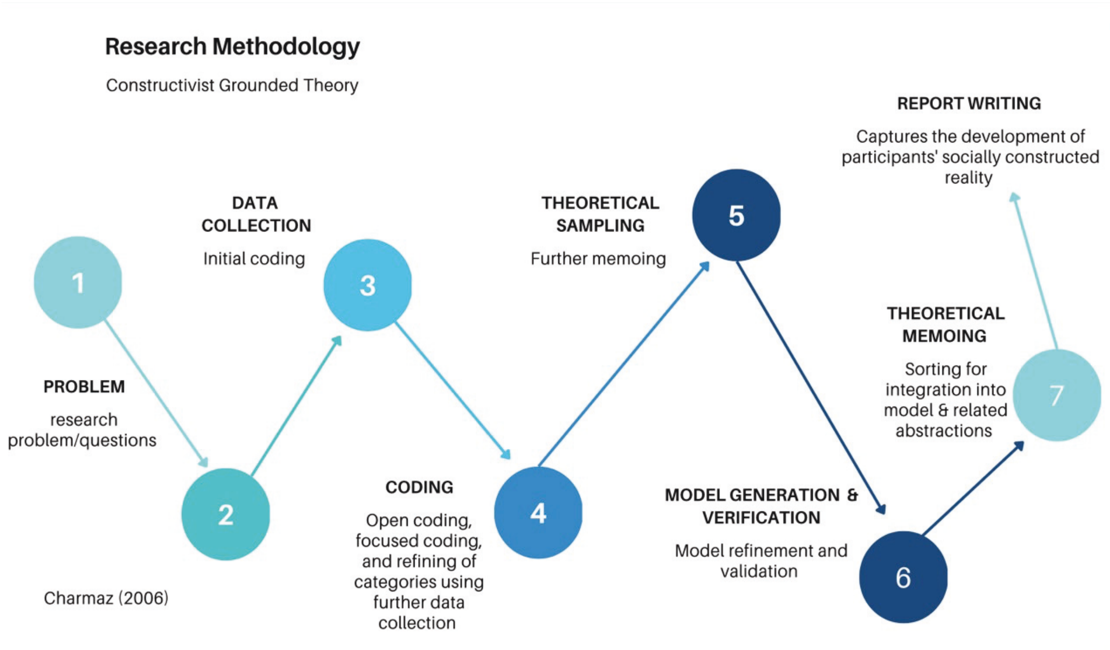


Figure 1 A Diagram showing the Constructivist Grounded Theory

Source: Adapted from Charmaz (2006); Lauridsen & Higginbottom (2014)

Figure 1 shows the research process involved with the CGT methodology. It commences with the research questions through data collection, writing drafts and memos, coding, model development and verification of the model. The data were collected mainly through semi-structured interviews, blending face-to-face interviews with virtual interviews on platforms like the Zoom app and Microsoft Teams. Triangulation was used, combining semi-structured interviews, secondary data, and cost-benefit analysis (CBA). The interview findings were verified from secondary sources and validated through a case study using a discounted cash flow (DCF) and sensitivity analysis. The triangulation helps to increase the findings' validity and reliability. An in-depth discussion of the research methodology is presented in chapter three. This includes an explanation of; the research design, sampling methods, data collection methods, operationalisation process, guidelines followed to generate the interview questions, data analysis and verification.

Based on the objectives, the following research questions were answered.

RQ1. What are the roles of the government and the private sector in providing affordable rental housing in Ghana?

In rental housing supply, the scope of government involvement in a free-market economy is minimal yet very complementary to private actors. This research question was answered using a combination of desktop reviews, semi-structured interviews, and the CBA. The answer presents both a historical and present overview of the government's role in affordable rental housing provision in Ghana. It further explains the role of the private sector in housing markets, positioning the meeting point between government intervention and private sector participation in Ghana's rental market. With the desktop reviews, information was sourced from government policy documents on housing policies, whilst the interviews were conducted with experts from industry, government, developers, and institutional investors.

RQ2. What are the determinants of institutional investment in rental housing in Ghana?

Diversification is one of the most important indicators of institutional investment in rental housing. Within this broad concept, truths and fallacies need further unpacking. At the same time, extant literature reveals several market risks in rental housing markets that contribute to pushing institutional investors away from the private rental sector. In answering research question 2, participants explain the pragmatic determinants per practice and theory. Semi-structured interviews were conducted with institutional investors, government actors, property developers, and industry practitioners to solicit their opinions, perceptions, and developments on the determinants of using institutional funds to invest in rental housing. Although a framework guided the queries, the outliers were the points of focus. This helped unravel what scholars still need to understand in their previous expositions. The interview results were validated using a cost-benefit analysis of a hypothetical rental housing project in Greater Accra. The purpose was to verify what experts proposed in a real-life situation with a set of assumptions. It also demonstrated the effect of government intervention on stakeholders.

RQ3. How should the roles of the government and the private sector change to improve rental housing supply in Ghana?

Ghana presents a unique system for institutional investment in rental housing supply. The empirical study was conducted to understand the current happenings and solicit expert views on improving the functions of public and private entities regarding rental housing supply. There are underlying principles to attracting institutional investors. The model addresses the barriers and proposes innovative avenues to stimulate greater institutional investment in rental housing. It provides a framework to deal with the weaknesses in the rental sector, providing an enabling environment to make the industry more attractive. The study thus provides practical and sustainable solutions validated using real-life scenarios.

1.3 Scope of the Research

The scope of the research provides the boundaries and parameters of this research. Rental housing supply is an intensively researched area with wide-ranging typologies. The study focuses on the private rental market rather than social or public housing. The meanings of rental housing vary across various geographical contexts. Fundamentally, the categories overlap and are often presented in multiple forms. The literature review covers all rental housing typologies. It reviewed previous studies on both market and affordable rental housing. The two provide an opportunity to understand the place of government intervention in demand and supply-side incentives. This study centres on the collaboration between the developers, institutional investors, and the government toward offering affordable rental housing to mid-to-low-income households, mainly those with decent jobs like nurses, teachers, bankers, etc. It is *not* aimed at very low-income earners and the extremely poor for social housing. The case study context is Ghana.

Case Study - Ghana

Ghana is a developing country located in the centre of West Africa. Its private rental market faces the challenge of inadequate rental accommodation because of the population increase and the rapidly urbanising trends in the big cities. The country's housing policy of Ghana is clear about giving attention to the rental sector, mainly to ensure the provision of high quality decent rental housing. A rental housing agenda is spelled out in the housing policy, positioning it as essential to the sustainability of its big cities. The study presents an opportunity to understand and analyse the country's rental housing markets and the constraints in the limited supply using different scenarios. Rental housing is fundamentally the same worldwide, as landlord-tenant relations exist in every country. Variations come in the types of owners, lease agreements, policy outlook and type of housing units. An empirical investigation is carried out to understand the dynamics of using institutional funds to invest in the private rental sector. Ghana's leading pension fund institution, Social Security and National Insurance Trust (SSNIT), has many rental housing projects in its investment portfolio. The study found out how this arrangement works and the possible ideas and lessons that can be drawn from it. The housing literature on Ghana is almost deficient in matters concerning institutional investors and their role in housing markets.

The study, therefore, makes original contributions in that regard.

1.4 Significance of the Study

World population growth is accompanied by high housing demand and constraints on housing supply. There are opportunities to understand how countries are coping with the population increase demands on housing markets. The study contributes to policy experts' efforts toward changing the *rental housing abandonment* narrative. In its New Urban Agenda (NUA) initiative, the UN-Habitat wants to make housing the centre of urban development. More expansive housing tenure is needed to serve most of the population. The new Sustainable Development Goals (SDGs) set for 2030 also seek to create inclusive and sustainable cities (UN-Habitat 2015). These goals cannot be achieved without increased attention to rental housing in the cities.

Many governments are shifting focus from promoting homeownership to instituting a vibrant private rental sector. Examples include the Australian government's primary initiative, the National Rental Affordability Scheme. This scheme was implemented to increase the rental housing supply in Australia. Although the project has been recently discontinued because of many challenges, the government is looking for ways to make the rental housing agenda successful. Apart from Australia, other countries are going in the same direction to stimulate affordable rental housing supply, e.g., the UK, USA, some parts of Europe, and emerging economies like Ghana. The dynamics for developed and developing countries may differ, but the agenda goes in the same direction. Therefore, this is theoretically and practically relevant and provides a framework for policy experts to examine housing policies from the tenure perspective critically.

The Gaps

After a comprehensive literature review on rental housing supply, three distinct research gaps were identified. Firstly, the discussions on housing tenure choice have previously been viewed from the household perspective. There is more focus on understanding the factors influencing households' decisions to either rent or buy (Boehm & Schlottmann 2014; Carter 2011; Mills 1990; Rosen 1979). Only a little has been done to understand housing tenure from the policy perspective. That is, understanding what goes into the government's decision to prioritise either homeownership or rental housing in housing policies. This study fills this gap by endeavouring to demonstrate why rental housing is suitable for contemporary cities and to explain the need to prioritise it in housing policies.

Secondly, a new wave of research advocates for policymakers to bring institutional investors into rental housing markets to expand the housing supply. Several affordable rental housing models involving institutional investors have been previously applied in Europe, the USA, Australia, South Africa, and Ghana (Alakeson 2012; Blessing & Gilmour 2011; Carvalho 2005; Courtney 2018; Haffner et al. 2015; Oxley et al. 2015). The focus has mostly been on finance, investment, and collaborations. There have been models on tax credits, public-private partnership (PPP), Bonds, Pooled funds, not-for-profit, renewed public borrowing and the stock exchange (Berry & Hall 2005; Blessing & Gilmour 2011; Gilmour & Milligan 2008; Kerans 2008; Lawson et al. 2009; Pawson & Milligan 2013). None of the models considered the fragility and volatility of rental housing investment and how an improved rental sector could boost its attractiveness to institutional investors. This study proposes a systemic look at rental housing markets to explain the rules, norms and reforms needed to stimulate affordable housing supply.

Finally, there is a diverse understanding of institutional investors and the kind of housing investment they engage in. The existing literature appears disjointed as it places prime importance on specificity and contextualisation rather than correctly conceptualising their involvement in housing markets. There is no widely accepted definition for institutional investors. The term is loosely used in literature and policy documents to refer to different groups of organizations. Many housing scholars incorrectly attribute institutional investors to mainly pension/superannuation funds and insurance companies only (Berry 2000; Ge 2009; Gerrans et al. 2006; Newell & Marzuki 2018; Reddy & Brijlal 1992; Stevens 2016).

It is important to note that other categories are less mentioned; examples are private equity funds, endowment funds, financial institutions, wealth managers etc. Little is known about how these less-mentioned institutional investors could contribute to the rented sector. For example, Private equity funds are rescuers who save business entities on the verge of dying. With the right arrangement, they could help revive many countries' dilapidated and almost forgotten housing sectors. A definition of the institutional investor was derived from the existing literature for clarity in housing market deliberations. After demonstrating that rental housing is suitable for mid-to-low-income households and correctly conceptualizing institutional investment in rental housing, a model was developed and tested in the housing policy context of Ghana. This model will help stimulate the supply of rental housing through institutional investors.

1.5 Contributions of the Study

The study makes the following contributions based on the research gaps identified and the refined research questions. Firstly, it contributes to discussing expanding affordable rental housing supply in housing markets. It shifts the policy discourse from individual rational choices, i.e., why households own or rent, towards a market-oriented analysis of housing tenure, i.e., why there is a need to promote rental housing in housing policies. This is quite a grey area in housing literature. This thesis makes original contributions on what can be done to change the homeownership focus narrative to rental housing in Ghana’s housing policies.

Secondly, the literature on the involvement of institutional investments in housing markets needs more harmony regarding the definition, type of investment and range of concepts used. This study would derive an adequate description for an institutional investor and synthesises the literature on the type of housing tenure they invest in. Institutional investors run a diversified portfolio of asset classes. This study contributes to the new asset class, rental housing. It discusses how the barriers of rental housing investment can be addressed to encourage more institutional investment. A suitable affordable rental housing model was developed involving a netted interaction between institutional investors, property developers, and the government. Each stakeholder plays a specific role in providing affordable rental housing at a large scale.

Finally, the developed model shows the nature of subsidies institutional investors need to undertake rental housing developments. It contributes to proposals for new tax incentives, land release strategies and other support systems that can be used to make the private rental market more attractive. The proposed reforms show how deferred taxes could be a cost effective strategy for government or how land release relieves the hectic processes involved when acquiring land in Ghana. The reforms also include how the regulatory bodies of pensions-NPRA, insurance-NIC and REITs-SEC can encourage institutional investors to venture into rental housing investment.

1.6 Ethical considerations

Institutional investors are responsible for managing and investing monies that belong to private individuals and entities. They are expected to exercise accountability to their contributors and shareholders and ensure that suitable investments are chosen. The researcher had to obtain information from fund managers about their current investment portfolios. It also had to engage government agencies and policy experts on their opinions and perception about the institutionalisation of the private rented sector. Ethics approval was obtained from the University of Technology Sydney, Australia's designated committee to adhere to ethical considerations before the fieldwork commenced. The ethics approval number is ETH21-5735. This step ensured the empirical investigations were conducted per the university's standards. It paid particular attention to the type of information sought and the implications for the owners of those funds. Considering the discussions about the uncertainties surrounding rental housing investment, owners of these funds may need some reassurance that their monies would not be lost. The type of information sought was publicly disclosed information and not private information.

1.7 Structure of Thesis

The thesis is made up of six chapters. Chapter One presents the background of the research, discussing the justifications for why rental housing supply should be expanded and how this expansion can be achieved through institutional investors. The research problem is presented with supporting facts and statistical evidence along with the identified research gaps, aim, objectives, questions, scope, significance, methodology, expected contribution, and ethical considerations. This is followed by chapter two, the literature review section. Chronologically, the literature review includes a definition of terminologies, housing tenure theory, the private rental market, asset-based welfare, theoretical framework, rental housing affordability, institutional investment in rental housing and a chapter summary.

The following section is chapter three, which presents the research methodology adopted for the study. It explains the constructivist grounded theory, data collection methods, operationalization of variables, data analysis methods, and achieving validity and reliability using triangulation methods. Chapter Four presents the findings from the empirical studies in Ghana. The first section presents the interview findings on the roles of the government and the private sector in improving rental housing supply, identifies the determinants of institutional investment in rental housing, and develops a model to improve rental housing supply in Ghana. It presents the discounted cash flow model findings and the sensitivity analysis results used to validate the interview findings. Chapter Five presents the analysis in the form of in-depth discussions. Chapter Six concludes the thesis, stating the recommendation for further research based on the empirical findings.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The literature review process enables the researcher to understand the existing knowledge in the field of study to identify the research gaps. An intensive literature review was carried out to get an update on the ongoing discourse on institutional investment in rental housing and identify the areas where gaps exist to explore. Per the research aim, there were significant areas that needed a review. These include debates on housing tenure, housing policy and asset-based welfare, rental housing typologies and institutional investment in rental housing. The discussion of housing tenure was essential to establish the background of the study and state the categories of housing options available on the market. This then led to the discourse on prioritising rental housing in housing policies. The narrative has been that rental housing has previously been given less attention in many countries' housing policies (Gilbert 2003; Glaeser 2011; Hatcher 2015). This supposed neglect has contributed to the housing deficit problem in many countries. The third and final areas of the review sought to understand: who institutional investors are, their role in housing markets and the factors determining their involvement in the private rental market.

The literature review commences with defining critical terminologies and moves on to housing tenure theory. Housing tenure is an intensively researched topic focusing on understanding individual rational decisions concerning rental housing and homeownership. First, the review looks at the meaning of housing tenure and the various categories. It reiterates shifting from discussions on individual decisions towards a market-oriented analysis. It dissects the power-play between the two main housing tenure options and establishes why rental housing is suitable for meeting the housing needs of the majority of the population. It looks at the discourse on rental housing in housing policies and asset-based welfare programs and joins the school of thought advocating for the prioritisation of rental housing. Finally, it uses demographic pointers and relevant theoretical arguments to unpack the benefits of the two housing tenure options on households, society, government, and the economy.

The following section discusses the theoretical framework underpinning the research. Since this study undertakes a supply analysis of housing, it looks at how the neoclassical economics theory explains the workings of housing markets. Increasing rental housing supply to meet the housing demand falls within housing production and consumption. The supply side thus looks at the issues surrounding individual and institutional investors, while the demand side examines the target group in housing markets. It briefly looks at the various views on rental housing demand and affordability, the branch of literature discussing the concept of housing affordability and the approaches used in measuring it. This sets an understanding of the concept of 'affordability' and helps to develop a rental housing model.

The subsequent section examines the extant literature on institutional investment in rental housing. The debate has two sides; the first part examines the events surrounding institutional investors already involved in the housing markets. It looks at the misrepresentation of the term 'institutional investor' in housing literature. Many scholars blindly assume that institutional investors are primarily pension and superannuation funds. This position is flawed in many respects; hence, this review attempts to synthesise the literature to generate an appropriate definition for an institutional investor. The second part focuses on institutional investors who are on the sidelines and appear reluctant to invest in rental housing investment. It delves into the barriers inhibiting institutional investors from investing in rental housing. Ongoing debates establish that the pace at which individual investors provide rental housing units on the market is not good enough to meet the rising demand on the market. This section thus reviews the literature on the role of institutional investors in meeting this demand.

The final part of the literature review presents the summary and conclusion of the entire chapter. It highlights the significant pointers in the literature review, namely insights on housing tenure theory, housing demand and supply analysis (neoclassical economics) and the role of institutional investors in housing production. It examines why the various reviews were done and how they relate to the study. Guided by the research questions and the theoretical foundation, the literature review leads to the discussion of the methodology, methods, and data collection section, which is explained in detail in chapter three.

2.1 Definition of Terminologies

I. Housing Tenure

The OECD defines housing tenure as “the arrangements under which the household occupies all or part of a housing unit” (OECD 2018). It also refers to “an arrangement which specifies whether a dwelling is rightly owned, being purchased or rented by a household or being occupied under another arrangement” (Australian Bureau of Statistics 2012).

II. Housing Tenure Choice

Following studies by Carter (2011); Lee, Ho & Chiu (2016); Painter, Gabriel & Myers (2001) and Tsharakyan & Zemcik (2010), housing tenure choice is defined as decisions households make towards owning or renting a dwelling for residential purposes. It is a mutually exclusive discussion on deciding between homeownership and rental housing.

III. Rental Housing

Rental housing is defined as "… property owned by someone other than the resident or by a legal entity for which the resident pays a periodic rent to the owner" (Peppercorn & Taffin 2013 p.1).

IV. Intermediate Tenure

Intermediate Tenure refers to "housing tenure with a bundle of housing rights in-between owning and renting" (Elsinga 2012 p.124).

V. Institutional Investors

Institutional investment is defined as "housing capital finance provided at scale by commercial companies and other corporate entities and is generally presented as an antonym to small-scale landlordism" (Pawson & Milligan 2013 p.338).

VI. Housing Affordability

Housing affordability is "an expression of the social and material experiences of people, constituted as households, about their individual housing situation" (Stone 2006 p.151).

2.2 An Overview of Housing Tenure Theory

Housing scholars and policy experts are looking to change the narrative that rental housing has been given less attention in housing policies. To understand the importance of the arguments presented, the housing tenure theory provides an understanding of the meaning and the various categories of *tenure* as applied in housing studies. Understanding housing tenure is relevant to this study because it gives the background for defining rental housing and discussing possible ways of prioritising it in housing policies. The widespread homeownership versus rental housing debate, also known as the housing tenure debate, has taken centre stage in housing conferences around the world (Acioly & Horwood 2011;

Peppercorn & Taffin 2013). This section discusses housing tenure choice, the identified demand-side determinants, and the rising need to shift the discussions from individual rational decision-making towards an institutional analysis.

Housing tenure as a broad concept was massively researched during the last quarter of the 20th century (Henderson & Ioannides 1983; Ioannides & Kan 1996; Lancaster 1966; Rosen 1979; Wilkinson & Russel 1979). It has been used to understand housing market dynamics and as an avenue for solving the global housing challenge. This research continued into the first decade of the 21st century at a much higher rate (Elsinga & Hoekstra 2005; Gilbert 2003; Painter, Gabriel & Myers 2001). Circumstances surrounding housing markets over the past decade have necessitated more research to help solve the global housing challenge (Carter 2011; Elsinga & Hoekstra 2015; Lee, Ho & Chiu 2016; Tsharakyan & Zemcik 2010). It involves-policy driven directives to establish a sustainable tenure balance to meet the housing needs of the global population. The housing challenges in many cities include; high house prices, housing affordability issues, housing polarisation, urban informality, social exclusion, segregation and housing poverty (Gilbert 2003; Goodfellow 2017).

It is important to note that the concept 'tenure' used in this thesis does not relate to legalisation, regularization or land title as presented by (Varley 2002). It is neither what Bate (2017) categorises as; [1] owner-occupied housing, [2] public housing and [3] private rental housing. This study adopts Rosen's (1979) conceptualisation, which states that housing tenure constitutes two mutually exclusive housing options: homeownership and rental housing (Rosen 1979). Homeownership in this respect is synonymous with owner-occupied housing; therefore, these two could be categorised under one broad housing tenure option: homeownership. The contention now is to explain why Bate (2017) separates public housing from private rental housing. Based on Rosen's explanation, public and private rental housing could be placed under rental housing (Rosen 1979). The conclusion is that the two extreme categories of housing tenure are homeownership and rental housing. Between the two powerful housing tenure options is what scholars refer to as the intermediate tenures (Elsinga 2012; Feather 2018; Yip 1995). A medium tenure is defined as a bundle of rights in-between owning and renting (Elsinga 2012). It can be explained as any arrangement that blends the two main tenure options on different dimensions. Examples include all the shared ownership and equity arrangements in housing markets. Based on this exposition, it can be stated that housing tenure constitutes three main categories, namely, rental housing, homeownership, and intermediate tenures. These categories are illustrated in Figure 2 below.

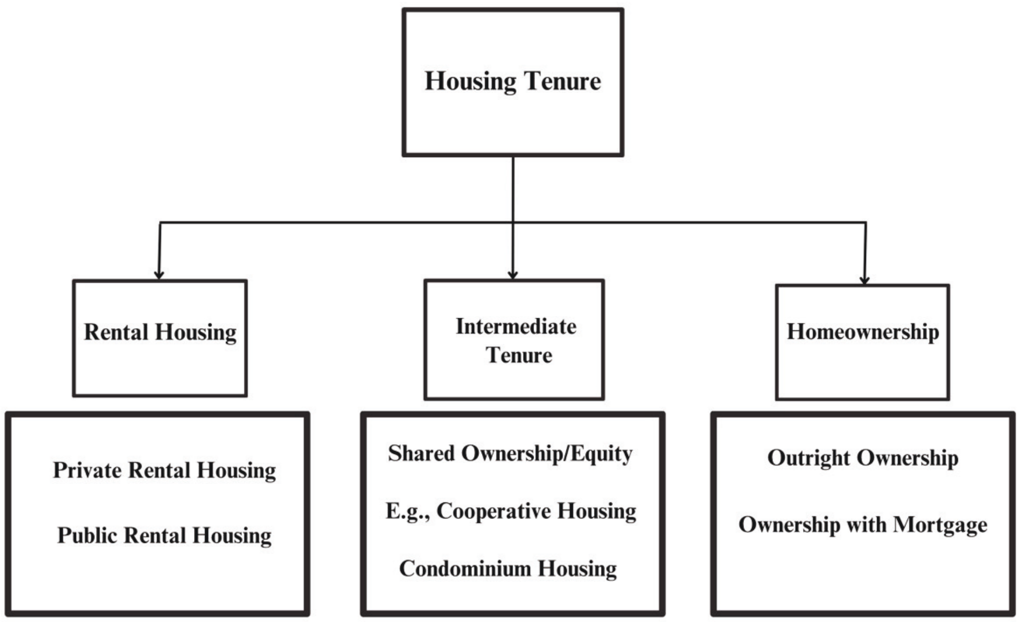


Figure 2 Categories of Housing Tenure
Source: Rosen (1979)

Figure 2 illustrates the three main categories of housing tenure: rental housing, intermediate tenures, and homeownership (Rosen 1979). Each of the three categories may have various sub-groupings under them depending on the context. For example, the sub-categories of rental housing include private and public. For this study, rental housing excludes all accommodations with commercial attributes such as hotels, motels, guesthouses, short-term rentals (e.g., Airbnb) etc. Such properties are considered purely income-producing and therefore fall under commercial properties. For homeownership, the sub-categories are those owned out rightly and those owned with a mortgage. There are different arrangements under each of them as well. For intermediate tenures, there is shared ownership/equity, cooperative housing, condominiums etc. Table 1 presents the various categories of housing tenure defined by the OECD.

Table 1 Category and Definitions of Housing Tenure according to OECD

Housing Tenure	Definitions by OECD
Owned outright	"The household owns the dwelling and has no outstanding mortgage related to the dwelling"
Owned with mortgage	"The household owns the dwelling but is currently paying off the mortgage"
Private Rental Housing	"The household rents the dwelling at market prices on the private rental market"
Public Rental Housing	"The household rents the dwelling at reduced market prices, e.g., employer-subsidized housing and accommodations where rent is fixed by law"

Source: OECD Affordable Housing Database 2019

The OECD omits the intermediate tenures but gives precise definitions for the main and subcategories of homeownership and rental housing. This suggests that intermediate tenures have yet to gain strong routes in discussions on housing tenure. Nonetheless, an extensive body of literature discusses it (Crook & Whitehead 2010; Elsinga 2012; Feather 2018; Nanda & Parker 2011).

2.2.1 Housing Tenure Choice

Housing tenure choice is simply the decision households make to go in for rental housing or homeownership. A huge quantum of the literature on housing tenure focuses on this line of research. For consumption purposes, households usually resort to a particular housing tenure at any time, except for those who acquire extra housing for ancillary purposes. On the other hand, housing investors are open to all asset classes, from which they decide which asset class to invest in (Gilbert 2003). Housing tenure would fall under residential investments within their real estate investment portfolio. It is crucial to lay the foundation of this study by discussing demand (households) and supply (investors or government) perspectives.

Housing tenure can be viewed from both the demand and supply sides. It is, however, the case that demand-oriented housing tenure discussions are dominant in housing literature because of the growing need to understand households' housing decisions. This theory traces its roots from the principles of economics, for instance, connections with individual rational choice theory and neoclassical consumer behaviour theory (Lancaster 1966; Wilkinson & Russel 1979). This is because of the introduction of the element of choice in housing tenure and the decisions expected between the two alternatives. It should, however, be noted that housing exhibits unique attributes compared to other commodities, for example, its locational and cultural uniqueness (Hawtrey 2012). The processes involved in measuring consumer satisfaction at any point in time are complex and multi-dimensional (Doling 1973). Thus, an attempt to treat housing as any economic commodity may be flawed. It is one thing for economists to relate the housing tenure choice theory to neoclassical economic theories. Still, another thing to inculcate is the differences in attributes beyond the mere measure of utility. The following section discusses the determinants of housing tenure choice from the perspective of households, bearing in mind the complexity of housing decisions.

2.2.2 Determinants of Housing Tenure Choice

Households consciously make housing tenure decisions based on specific considerations that are sometimes influenced by the regulatory environment and systems that favour homeownership or rental housing. The factors influencing such decisions include age, house prices, race, income, rent regulation, migration, available credit facilities etc. (Carter

2011; Lee, Ho & Chiu 2016; Painter, Gabriel & Myers 2001; Tsharakyan & Zemcik 2010). Decisions on housing tenure are not that simple as it takes time, and planning involves much thought. None of the two terms is perfect for every household, but one may be recommended based on the above-mentioned factors.

First, an increase in age and income is one of the main reasons households go for homeownership (Carter 2011). The desire to become a homeowner usually emanates from increased income and family size and the subsequent desire to switch housing tenures from rental to homeownership. The percentage of household income spent on housing may influence housing tenure choice. For homeownership, households must consider the cost of purchasing the property and user costs accompanying owner-occupied houses (Bourassa 1995). It must be noted that housing tenure decisions may only sometimes be rational and that there may be consequences for wrong choices. For instance, a household may become financially stretched and experience lower living standards as a trade-off for freehold ownership.

Secondly, the availability of credit facilities like residential mortgages influences householders' housing tenure choice at any given time (Lee, Ho & Chiu 2016). Housing finance options from debt and equity sources are essential to measuring the household's readiness for homeownership. Additionally, a rental housing sector with generous incentives and other accompanying benefits may attract many households' housing tenure decisions (Kattenberg & Hassink 2017). It provides an opportunity to save some money from subsidised rents and allows for long-term strategic planning toward buying a home.
Households would, however, have to qualify for residential mortgages before this can happen. Financial institutions with mortgage products are critical of their respective criteria for giving out loans.

Mid-to-low-income households often use rental housing as a transitional tenure and a stepping stone to homeownership (Priemus 2001). As household incomes increase, they develop a quest for higher housing satisfaction which they believe could be found in homeownership (Diaz-Serrano 2009). The question is whether homeownership gives a higher satisfaction than rental accommodation. In research conducted in eight Southern European countries to test homeowner satisfaction against that of tenants, it was found that homeowners in seven out of the eight countries were more satisfied with their housing situation than tenant (Elsinga & Hoekstra 2005). These results confirmed earlier studies conducted in other countries in Europe. It is not conclusive for all parts of the world but needs more testing.

Migration is an inevitable part of every household, whether planned or not. The propensity for households to migrate to other areas for work, family, or other reasons also influences their housing tenure choice (Liu 2019). When renters move into a new location with rising house prices, they will not go into homeownership (Ioannides & Kan 1996). Sometimes homeownership rates are influenced by intergenerational transfers within families, usually from older generations to younger ones (Cigdem & Whelan 2017). These are mostly done through bequests and gifts to continue family wealth. Any member of the young generation who receives such gifts is influenced in a way, even if the offer is rejected.

The regulatory environment in housing markets influences households' housing tenure choices. After considering factors such as income, house price, migration, credit facilities and housing satisfaction, the political climate and conditions are essential as it drives the economy. For instance, the decision of the Czech Republic to join the European Union (EU) and the following policies to deregulate the rental housing sector led to rising house prices which in turn influenced households’ tenure choice (Tsharakyan & Zemcik 2010). Results from the consumption surveys reveal a link between rent deregulation and the choice of households to rent or to own. Another example that shows the influence of the regulatory environment on housing tenure choice is the social rented sector in the Netherlands. The rental housing sector in the Netherlands is quite attractive as it delivers many benefits to mid-to-low-income households (Kattenberg & Hassink 2017). This is such that many households have registered to join the long queue for years. This system is, therefore, likely to influence household housing tenure choice.

Finally, differences in race and culture influence a household's housing tenure choice (Painter, Gabriel & Myers 2001). Diverse groups are believed to have different preferences for homeownership and rental housing. In a study conducted among racial and ethnic groups in Los Angelis in the US, it was revealed that differences in race and income levels explained the homeownership gap between Latinos and Whites (Painter, Gabriel & Myers 2001). One group has an advantage over the other through policies depending on the macroeconomic conditions. Sometimes the state of belonging (for example, citizenship or immigrant status) may determine whether a household would rent or buy.

Demand-driven housing tenure choice presents many insights, some of which have yet to be discussed in this review. Many unknown factors are yet to be explored to enrich the body of knowledge on household tenure decisions. This section reviewed significant factors such as high house prices, increase in age, the quest for higher housing satisfaction, income increment, migration, external regulatory environment, and differences in race. These factors are not considered in isolation but are discussed with other supply-side factors in housing markets.

2.2.3 Shifting from Individual Decision-Making to Institutional Analysis

Institutions are essential in housing markets because they provide the context within which individual rational choices are made (Ostrom 1991). Holistically, they provide a deeper understanding of economic performance (North 1990) and allow for comprehensive institutional analysis of social rules and interactions (Hodgson 2006). They are vital for housing tenure discussions focusing on stakeholder interactions between investors, developers, governments, and households. This section reviews the literature on the old and new institutional economics and attempts to establish this relationship within housing markets. Housing market institutional groups interact knowingly or unknowingly to produce housing outcomes and tenure options. Understanding this relationship could be the key to finding solutions to housing challenges in urbanising cities.

The term institution has struggled to gain a universally accepted definition worldwide. There are arguments about what the term institution means and what it entails. Scholars like Commons (1936), Plott (1979), Riker (1980), Ostrom (1986), Hodgson (2006) and many others have attempted to define the term institution, its composition and relevance in understanding economic performance. In this review, popular definitions have been presented to set the ball rolling. It is important to note that these scholars are from different academic fields; hence definitions differ according to their unique perspectives.

An institution is defined as a collective action controlling and expanding individual action (Commons 1936). This definition focused on the expansion of individual efforts into a collective one. Plott (1979) referred to the institution as "rules of expression, information transmittal and social choice". The elements of rules, information and social choice are introduced. Commons (1936) also explained the connection between collective action and regulations. Building on these definitions, Riker (1980) referred to an institution as having rules about behaviour, especially with decision-making. Recently, Hodgson (2006) defined institutions as systems of established and embedded social rules that structure social interactions. It is evident in the definitions mentioned above that rules, decision-making, and social interactions are crucial in explaining the term institution.

There is a gradual permeation of institutional economics theory into other disciplines. Interdisciplinary fields in areas such as political science, law, and psychology have been coined as new institutional economics. Famous institutional economists like Commons (1936), Ostrom (1986), North (1990), Coase (1988) and Williamson (2000) have provided the foundation to study institutions across diverse disciplines. The study of institutional economics involves the role and evolution of institutions and their relation to firms, governments, market norms, households and organisations (Hawtrey 2012). It involves studies on both micro and macro levels consisting of organisational entities and regulatory frameworks (Williamson 2000). Therefore, institutional economics in housing is under the umbrella of the new institutional economics theory.

Several researchers have defined the term institution within the housing studies fraternity with precise essentials. Needham (2012) referred to the institution as the rules (both formal and informal), practices and expectations that people follow. He captioned it, 'rules of the game'. His research focused on explaining foundational terminologies associated with housing market institutions and the roles of developers in housing supply (existing stock and new developments). With a more detailed position, Hawtrey's article 'Housing market institutions' attempted to explain the institutional nature of housing markets, the main groupings, and the different interactions. He defined an institution as:

> "...the full set of norms of a given marketplace, stated and unstated, including organisations but extending to brace the cultural fabric in which the housing market is nested, because all of this goes to make up the structural framework that supports human interaction" (Hawtrey 2012).

He categorised the primary housing market institutional groups into private, public and community based and explained their interactions in the housing market. These three groups usually are universally present as they sometimes work together, and other times compete for influence in the market (Hawtrey 2012). This definition also brings the element of uniqueness and states that the rules and norms are culturally different from one marketplace to another. For instance, they are country-specific institutions such as transaction taxes, language, and religious diversity (Michiel & de Graaff 2007). Due to the 'systemic' nature of housing markets, the institutional approach is suitable for providing a deeper understanding of market behaviour from diverse contexts.

2.2.4 Rental Housing Typologies

Generally, theories on rental housing typology explain the types or categories of rental housing. The literature points to the private rental housing sector as the focus of the housing policy (Crook & Kemp 2010; Gilbert 2012; Obeng-Odoom 2011; Priemus 1998; Whitehead 1996). In other instances, the attention is drawn to social or public housing. On the international level, these mix-ups could be pardoned because of the different meanings according to the categories of rental housing. Whitehead's (1996) mapping review on private renting in England, the US and Australia assert that the apparent direction of many governments is the private rented sector. However, this is inconsistent in recent literature and many policy documents. There are unanswered questions on whether they are categorised according to who owns it (i.e., whether privately or publicly) or based on the objective of the project (profit or not-for-profit). In any case, there are instances where the government partners with the private sector to produce rental housing investments, forming an intermediate tenure type. These clarifications are necessary to minimise the high ambiguity levels and provide a clear direction for this wave of research.

2.2.5 Existing Stock, New Stock and Total Stock

There are differences between existing rented stock, new rented stock, and total rented stock. Recognizing these differences leads to clarity, as seen in policy documents and housing literature (Miron 1995; Stanovnik 1994). The total rental stock is the combination of the existing and the new. The assumption has been that; stimulating the rental housing supply means building additional units. Unfortunately, this is not the case in many countries. Needham (2012) and Hawtrey (2012) provides an enlightening description of old rented stock as distinct from the new stock (i.e., the expected stock). The expectation of many scholars is that new project-level interventions would be carried out to propel housing supply to the next level. Increasing rental housing stock can be done by using existing stock and building new stock. Scholars believe institutional investors can provide the financial backing to build a new supply. Nothing is said about revisiting the existing stock to utilize unused spaces or create new spaces from existing rental dwellings, whether abandoned or vacant. Recognizing the differences between rented stock is essential to achieve optimum utilization of existing opportunities in housing markets. As discussed above, increasing rental housing supply is about more than building new units but understanding how housing suppliers could use all avenues well.

To get an overview of housing suppliers in contemporary cities, Table 2 contains a list of identified housing suppliers worldwide. These suppliers can be grouped into three main categories, public, private, and civic, as discussed in the housing tenure theory section. Other suppliers from other countries may not be listed in Table 2.

Table 2 Suppliers in Housing Markets

Terms used in literature to refer to suppliers of rental housing	
Large-scale investors	Small-scale investors
Government (social/public housing)	Mum and Dad investors.
Cooperatives (Condominiums)	Ma and Pa landlords
Institutional investors	Individual landlords
Developers	Small-scale landlords
Large Corporate Landlords	Small-scale developers
Real estate companies	Private rental landlords

Source: Bierre, Howden-Chapman & Signal (2010); Goodfellow (2017); Berry & Hall (2005); Andersen (2008); Acioly & Horwood (2011); Smith (2017); Gilbert (2012); Aziabah (2018)

The left column of Table 2 shows the terms used for large-scale suppliers, whiles those on the right column are for small-scale suppliers. Generally, based on the meanings conveyed in the literature, the suppliers can be categorized into two broad branches: individual and institutional investors. A detailed discussion of the differences between the two is presented in the forthcoming sections. From a first impression, the concept of build-to-rent portrays an attempt to invest in new rented stock; that is to say, an agenda advancement to build new rental housing units. However, in practical terms, this is not the case for different jurisdictions. The existing housing literature expresses build-to-rent to encapsulate new stock and refurbish existing stock. Some institutional investors express great interest in acquiring and repurposing existing properties for rental income (Nethercote 2020). These refurbished properties are sometimes considered under build-to-rent schemes in some countries.

2.2.6 Rental Housing Demand and Affordability

As policymakers are getting ready to expand rental housing supply through institutional investors, there is a need to consider introducing demand-side assistance programs to empower the targeted households to afford those units. As noted in the earlier discussions, the demand for housing has skyrocketed along with the increase in the world population. The problem is that a good percentage of the demand needs to be backed by adequate purchasing power. Many households need decent housing but need more financial backing. Against this backdrop, there is the suggestion that if the ability to purchase housing is absent, then most people do not need to own a home. They could rent at the start and later consider buying a house. Ironically, this has been happening already. The rental housing market has absorbed this section of the market. Housing policies, however, blindly stimulate the supply of homeownership (Pareja Eastaway & Varo 2002). This Janus dynamism between housing demand and supply is complex and needs appropriate remedies. To understand the concept of purchasing power, there is a need to review the literature on housing affordability. This is because; this study seeks to develop an affordable rental housing model for mid-to-low-income households. An aspect of the model is the ability of the target group to afford the rental prices. This section examines the debates on housing affordability and explains the generally accepted approaches to measuring it.

2.2.7 The Concept of Housing Affordability – Definitions

Scholars and policymakers confuse the meaning of housing affordability and affordable housing, and the debate continues on whether the two are the same or have different meanings (Stone 2006). The concept of housing affordability is a contested theory in housing studies and has attracted the attention of many scholars, especially its definition and measuring yardsticks (Baker, Mason & Bentley 2015; Kutty 2005; Luffman 2006; Stone 2006; Yip 1995). Quite a good number of definitions have been coined based on the approaches applied in its measurement. Government agencies adopt diverse approaches for various datasets (Joice 2014). The approach used depends on the logic behind it and the reason it is being measured. At the same time, its meaning is constantly evolving such that it has changed from meeting the needs of the poor and recently attributed to providing low-priced housing to middle-class homeowners (Martin 2011). In any case, there are important pointers that direct its use in policy documents. The housing affordability problem in developing countries is dire as housing markets in these countries are dominated by the informal sector. An informal housing market is characterised by slums (Davis 2004), undocumented construction activities; non-compliance with building codes and standards; and self-help construction (Sethuraman 1985). Research evidence reveals that the informal sector provides 60-70% of urban housing in Zambia, 70% in Lima, 80%

of new housing in Caracas and 90% in Ghana (UN-Habitat 2016). It is, therefore, essential to consider this in policy directives regarding the rental housing agenda.

2.3 Housing Policy & Asset-Based Welfare Programs

Rental housing supply is a policy issue and thus needs to be placed in this context. Although it operates within a free market, housing policy and asset-based welfare are undeniably essential in shaping housing outcomes. Governments no longer exercise monopoly in housing markets, but their facilitative role of creating the enabling environment continues. Many scholars exclaim that housing policies are dominated by homeownership (Glaeser 2011; Green 2011). Within this broad frame of thinking, concepts like 'asset-based welfare' and 'homeownership-based welfare' dominate such discussions (Elsinga & Hoekstra 2015; Izuhara 2016; Walks 2016). The discussions focus on the same ideas but are unpacked from different perspectives. The word 'asset' is loosely used in asset-based welfare literature. The extant literature does not plainly define an asset or what it constitutes. An asset is assumed to be housing or a finance base set-up to acquire a housing (Prabhakar 2019).

Secondly, asset-based welfare discussions are unclear about the target group. Therefore, there are assumptions that these welfare programs are for those in their retirement age or sometimes for low-income households. This section looks at the housing policy cry-out against biased asset-based welfare programs and unravels how this relates to discussions on rental housing supply. As this study is based on assertions that rental housing is somehow given less attention in housing policies, this review section focuses on the direction of the national housing policies in many countries. It identifies the challenges and prospects of prioritising rental housing supply in national policies. The literature on assetbased welfare provides a wealth of knowledge through which these debates can be understood. It reviews the definition of asset-based welfare, the reasons why it is set up and its influence on housing policy.

The literature on welfare countries points to those countries that initiate financial, social, and economic policies meant to promote the general well-being of their citizens (Izuhara 2016; Toussaint & Elsinga 2009). These welfare packages include housing, health care, education, pension schemes and other social benefits. Stebbing & Spies-Butcher (2016) assert that housing is the dominant product in welfare countries among the abovementioned welfare packages. This assertion is arguable as health and education form the core of welfare programs in many countries. It is essential to understand which countries are welfare countries and examine how they approach asset-based welfare.

There are support schemes for all classes of society, including the rich, middle class and the poor. International organizations like the World Bank, UN-Habitat and others assist the extremely poor by building low-cost housing projects (Acioly & Horwood 2011). Community-based Organizations (CBOs) institute housing finance schemes at the community level to help registered members build their own houses. Finally, another tool used is cooperative housing, where community members come together to save and participate in building their housing (Czischke 2018). All these are avenues by which assetbased welfare programs are used to encourage the ownership of assets.

Homeownership-based welfare programs are set up for two main reasons: to eradicate poverty and serve homeowners in their old age during retirement periods (Elsinga & Hoekstra 2015). Asset-based welfare programs are directed most efforts towards stimulating homeownership (Izuhara 2016; Stebbing & Spies-Butcher 2016; Walks 2016). Some scholars support using individual ownership of assets to eradicate poverty (Elsinga & Hoekstra 2015; Prabhakar 2019). They believe that asset accumulation should be used to create wealth among the citizens. Individuals must endeavor to accumulate assets (i.e. equity) throughout their working life so that these assets can be released later for pension and care purposes. Izuhara (2016) supports this claim and explains that asset ownership helps individuals build social capital and influence social participation. These claims, however, need to consider the capacity and readiness of these individuals to own and manage those assets. Many scholars battle whether wealth creation is the ideal answer to eradicating poverty.

Asset-based welfare literature suggests that asset accumulation is sometimes achieved through establishing a finance base or savings scheme (Mosciaro & Aalbers 2020; Prabhakar 2019). This means setting up support funds for a target group to purchase or build a house. An example is the compulsory savings schemes set up by employers on behalf of their employees to facilitate access to homeownership in Brazil, (Mosciaro & Aalbers 2020). Employees make monthly contributions to a scheme called 'Fundo de Garantia do Tempo de Servico', which is managed by the state for a period and ultimately used to purchase housing for employees.

As suggested above, asset accumulation is needed during the working life of individuals, which would be ultimately released through what some researchers call 'asset decumulation. Both young cohorts and the older generation need to understand the role assets play in ensuring their welfare. Asset accumulation is good but should be put in the proper perspective in a person's life cycle. The equity release theory could be employed for the older generation who are already homeowners to de-cumulate assets (O'Mahony & Overton 2015). The UK adopted mortgage equity release products to cash housing equity for welfare needs (Toussaint & Elsinga 2009). Even though homeownership-based welfare programs provide many benefits, they can alter the spatial distribution of wealth in cities (Walks 2016). The Canadian experience of spatial segregation and concentration of wealth within cities is evidence of this. On a holistic level, there is the neglect of those individuals who cannot afford to become homeowners. As has been established, homeownership can be a high-risk option for low-income households, potentially increasing inequality among the income groups (Whitehead 2016).

In this section, the meaning of asset-based welfare and its relationship with homeownership has been discussed. There is a place for homeownership in asset-based welfare programs, but there are apparent polarities. To correct any discrepancies, Whitehead (2016) suggests that there should be an effective support system for those with inadequate income to achieve acceptable housing standards. Furthermore, Elsinga & Hoekstra (2015) reiterate the key role of housing assets in welfare policies and admonish that there must be a clear understanding of the role of government and implementation of measures to minimise politically unacceptable levels of inequality. The target group for asset-based welfare should be clarified to avoid theoretical and practical misrepresentations. The relationship between homeownership levels, rental housing supply, population growth and retirement policy exist, but more exploration is needed in this area. For example, to discuss which housing tenure is ideal for the growing world populace.

2.3.1 The Rental Housing versus Homeownership Debate

Housing scholars and policy experts continue to argue about which of the two main housing tenures (i.e., rental housing and homeownership) is superior to the other. The present banter has been to expound why homeownership comes as a natural preference to households (Gurney 1999), and to justify the suitability of rental housing for meeting the housing needs of society (Gilbert 2003; Peppercorn & Taffin 2013). At the crossroads are scholars who believe homeownership offers numerous benefits to households and society, hence the need to prioritise it in housing policies (Rossi & Weber 1996). This section critically examines the workings of the private rented sector as opposed to the homeownership sector. This brings into harmony the postulations on prioritising specific housing tenure in housing policies. It helps in understanding why the barriers to institutional investment in the rented market exist and explain the possible reasons why rental housing is given less attention in housing policies. The section begins with a discussion on the benefits of homeownership to households and society and ends with why rental housing is preferred or suitable for the growing urban population.

The initial arguments go in favour of homeownership-based welfare programs. That is, it explains why it is adopted into governments' incentivisation programs. On the household level, homeownership leads to higher satisfaction, convenience, freedom, security, stability, equity, prestige, tax benefits and improved children's development (Elsinga & Hoekstra 2015; Harkness & Newman 2002; Haurin 2013; Linneman 1985; Tabner 2016). Results from a sample of selected European cities conclude that homeowners are more satisfied with their living conditions than renters (Elsinga & Hoekstra 2005). Firstly, buying a home is one of the most significant investments households make and could be a gratifying and satisfying decision (Terry-Lynn 2002). Linked to satisfaction are the comfort and freedom homeowners enjoy.

Secondly, security and convenience portray homeownership as a natural preference for households in many countries (Gurney 1999). Homeowners avoid confrontations with landlords, as is the case with renters. They feel more secure and safe knowing they have a place they can call home. This is true for both outright homeowners and owners with a mortgage. They are more likely to adjust their homes to reflect their taste and preferences in compliance with building regulations.

Thirdly, homeowners have the advantage of building equity and adding value to their homes which could be later released for care and pension purposes during old age (Elsinga & Hoekstra 2015). Buying a property is often seen as a wise decision as it turns to appreciate over time (Rohe & Stewart 1996). Conventional knowledge teaches us that landed properties appreciate, especially with the cost of the land and the physical structure over time. First-time buyers who decide to sell their houses in retirement can relocate and benefit from capital gains accrued on the house depending on the tax policy. In the same way, second and subsequent home buyers with speculative and profit-making mindsets, this is a goldmine to realize massive capital gains upon sale, all other things being equal. In some countries, homeowners create additional income streams by building additional units in their backyards for rent. Homeowners, therefore, benefit from the idea that; they have built-up equity for future benefits. The question, however, is; what percentage of these extensions and adjustments happen at the hindsight of local planning authorities, and how are they tackled? This practice is common in Ghana.

Fourthly, first-time home-buyers and subsequent ones enjoy favourable tax benefits through mortgage interest deductions and excluding net inputted rental income from taxable income (Blackley & Follain 1983). These tax benefits incentivise households to become homeowners rather than renters. Homeownership protects the consumption of households against their earnings and house price risk (Dıaz & Luengo-Prado 2010). This is not the same for rental price risk.

The contention among scholars about whether homeownership positively correlates to societal well-being continues. From the micro and macro-economic perspectives, some argue that homeownership provides positive externalities, neighbourhood benefits and social capital (Coulson & Li 2013; Leviten-Reid & Matthew 2018; Linneman 1985; Ziersch & Arthurson 2007). Others argue that the economic benefits of homeownership are not significant and convincing enough to make it a priority in housing policy (O'Sullivan & Gibb 2012). Empirical analysis from the US and other international data sources proves the effects are not much (Swidler 2011). Results from the analysis indicate that homeownership benefits certain localities and groups and could not be generalised for the whole of society as suggested in the literature (O'Sullivan & Gibb 2012). Nonetheless, there are some rewards for neighbourhoods worth discussing.

Policy experts are looking to create socially inclusive cities in the future as enlisted in the Sustainable Development Goals (SDGs) set for 2030 (UN-Habitat 2015). Homeownership creates a sense of belonging among homeowners in communities and neighbourhoods (Rohe, Van Zandt & McCarthy 2002). They build trust, strong ties and exchanges with neighbours as they see it as their permanent place of abode (Leviten-Reid & Matthew 2018). The mindset usually is long-term, intending to create a settled home and interact with other members of the neighbourhoods. However, the relationship between homeownership and bridging social capital (i.e. participation in a local organization) is found to be non-existent or simply far-fetched (DeFilippis 2001; Leviten-Reid & Matthew 2018). Notwithstanding this, becoming a homeowner makes it possible to make lifetime friends with neighbours.

Another reason some households decide to become homeowners is to enjoy the expected hedging benefits of homeownership in the future (Dröes & Hassink 2013). Factors such as holding periods, inflation and inputted rents help to transfer wealth from renters to owners (Tabner 2016). On the neighbourhood level, hedging benefits from high-quality locations could attract more homeowners. This is not always the case, as the idiosyncratic risk mostly outweighs the anticipated hedging benefits (Dröes & Hassink 2013). Not forgetting that stimulating homeownership in a neighbourhood is a way of revamping societies, leading to the appreciation of property values in that neighbourhood (Rohe & Stewart 1996).

Irrespective of the fact that homeownership benefits society, questions should be asked about whether it suits every household. As shown in the discussion above, homeownership may not be ideal for the young generation (McKee 2012), nor is it suitable for the urban poor and low-income households (Harkness & Newman 2002; Santiago et al. 2010). Others believe that homeownership does not benefit raising children because of the complexity involved in raising children (Barker 2013). It may, however, be a good fit for a great portion of mid-to-high-income households. Considering the above-mentioned criticisms of homeownership, governments and organisations giving out free houses to the poor may want to reconsider their decision. This could be done, but the target group should be able to cover all the costs of homeownership.

Phrases such as ‘neighbourhood benefits’, ‘social capital, community participation, civic affairs, social ties and neighbourhood attachments’ resound in the societal benefits of homeownership as elaborated in existing tenure literature (Coulson & Li 2013; LevitenReid & Matthew 2018; Linneman 1985; Ziersch & Arthurson 2007). Government benefits from the accumulated positive effects of the listed societal benefits of homeownership. It is thus important to distinguish between societal benefits and those positive externalities which directly and indirectly make contributions to the government’s development agenda. In this light, the questions to ask are [1] are homeowners better citizens than renters? or [2] does homeownership positively affect political engagement?

Several scholars have studied whether homeowners are better citizens than renters. These scholars attempted to answer this question by examining the societal benefits above. For example; McCabe (2013) studied whether homeowners are active participants in community life and civic affairs than renters. Although this relationship was not strong, it was found that homeownership helps develop social ties which subsequently promote community participation in voting and other political activities (Engelhardt et al. 2010). This suggests that homeowners contribute less to local development. DiPasquale and Glaesar (1998) found a positive relationship between homeownership restrictions and social capital investment. They found that homeowners are restricted in their residential mobility and thus more likely to invest in social capital, thereby contributing to the development of their communities. These two findings contrast with Stern (2011b), who states that, the effect of homeownership on citizen virtues is weak and not that significant as suggested by other scholars. Having said this, it is important to state that local governments benefit from the activities of homeowners, whether significantly or not.

Another direct benefit of homeownership to the government is revenue mobilization. Homeowners pay property taxes, strata fees, council rates and other related costs to government. These revenues are used by the government to undertake development projects to boost the housing market. The contribution of renters to the government is not yet explored or known in detail. They deal directly with landlords except in conflict situations when they seek for redress from government agencies. Homeowners are, therefore, important to the economy because of the monies they pay the government for development projects and their non-financial contributions to their neighbourhoods and communities.

2.3.2 Why Rental Housing is Preferred

Rental housing is considered the most suitable option for dealing with the global housing challenge (Acioly & Horwood 2011; Datta 2012; Gilbert 2003; Nyarko, Ayitey & Gavu 2015; Peppercorn & Taffin 2013). These scholars argue that rental housing is cheaper, more expansive, and more efficient for solving the housing crisis. Rental housing saves equity homebuilders from losses from unstable economic conditions (Nyarko, Ayitey & Gavu 2015). It is not just about why homeownership is not ideal for mid-to-low-income households but also a strong justification of why rental housing could do the trick. It can potentially absorb the lower end of the market, considering the increasing population, rapid urbanisation rates and spatial injustices in cities. The following explain why rental housing is suitable for dealing with the global housing challenge.

There are assertions that rental housing is financially cheaper than homeownership (Datta 2012). These assertions are made because of the absence of huge deposits or premiums required in choosing rental housing (Chicago Tribune 1987). In some countries, a 4-week deposit may be required to move into a rented apartment. Comparatively, rental housing does not require a huge financial commitment, as with homeownership (Gilbert 2003). Scholars who assert that getting a mortgage to buy a home is the best alternative to renting forget that homeownership comes with several expenses beyond monthly mortgage payments. These expenses include property taxes, electricity bills, trash pick-up costs, repairs and maintenance, homeowners' insurance and water and sewerage service.

Table 3 Housing Costs to the Homeowner, Renter, and Investor

Homeowner	Renter	Investor
Property Tax	Initial deposit/bond	Loss of annual return
Electricity	Fixed rent payment	Repairs and Maintenance
Water and Sewerage	Electricity (sometimes)	Property insurance
Council rates		Council rates
Repairs and Maintenance		Strata (units/apartments)
Property insurance		Land tax
Strata (units/apartments)		Capital gains tax

Source: Author (2020)

A home mortgage is believed to function like a 'forced savings', signed for another party to enjoy the proceeds. Rental housing frees the renter from such savings and allows freeing some money for other investments as the renter may deem fit. It would therefore be a good option for mid-to-low-income households as they would be exempted from all the costs of owning a home. It is, therefore, more expensive to own than to rent.

Furthermore, the expansive nature of rental housing makes it a suitable fit for large-scale housing supply (Green 2011). Rental housing would allow land to be used for its highest and best use, especially in housing policies (Acioly & Horwood 2011). This means providing innovative avenues to offer a lot of housing units to serve the housing needs of a larger target group. The same parcel of land which can host only one household can be utilised to host several households if the units are developed vertically in the form of apartments. But more land is required for homeownership than rental housing.

Finally, rental housing promotes flexibility and residential mobility. Employment and mobility are very important to every household. Most people change jobs at least once in their lifetime and may be required to move to new locations close to their new jobs. Renters are more likely to move than homeowners (Santiago et al. 2010). The renter could decide to vacant the rented dwelling at the end of the lease or earlier with agreed notice and a small penalty. Rental housing provides the flexibility needed to change jobs and neighbourhoods. On the other hand, homeowners may change jobs because the jobs are situated in proximity to their homes. This is because they feel more attached to their homes and neighbourhoods than renters.

2.3.3 Criticisms against Rental Housing

The debate about which housing tenure is suitable or preferred is not to be exhaustive. Scholars on both sides of the divide raise thought-provoking arguments to back their stance. Whiles some are discussing the decline of homeownership rates and the implication on the economy (Lee & Reed 2014; Randolph, Pinnegar & Tice 2013), others are wondering why rental housing is neglected in housing policies (Gilbert 2003; Glaeser 2011; Green 2011). Policy experts and academics must distinguish between ‘desirability’, ‘preference’ and ‘suitability’. As elaborated by Gurney (1999), a preferred housing tenure may not necessarily be suitable for the growing urban populace (Acioly & Horwood 2011). This is no surprise that policymakers are looking for a housing tenure that promises large-scale capacity and sustainability. As discussed above, the expansive nature of rental housing investment presents an opportunity to correct housing polarisation through effective restructuring and allocation. It is established as an essential tenure option for the urban poor in developing countries (Gilbert 2003), and an escape from the surging house prices and affordability problems in developed countries (Berry & Dalton 2004; Gilmour & Milligan 2008; Rahman 2010).

Dealing with constraints in housing supply is not a new phenomenon. The severity of the shortage in housing supply is however higher in contemporary cities than it was in the distant past. The tenure-driven approach is intended to improve previous strategies such as using; organizations, urban planning, land allocation and subsidies as is in the case of Germany (Granath Hansson 2019). A study conducted in Switzerland to investigate why the Swiss rent rather than buy revealed the following; high house prices in relation to household income, high land prices due to limited developable land and the moderate taxes inputted on rent (Bourassa & Hoesli 2010). Recent OECD figures on housing tenure in 2018 have not changed as more people rent than own houses in Switzerland (OECD 2018). Understanding these dynamics and other equally important factors would demystify the complexities in achieving housing equity and ensuring everyone gets the housing they deserve.

A huge quantum of extant literature focuses on understanding the demand side of the housing market, specifically by investigating the rational decisions households and individual consumers tend to make towards buying to own or simply renting (Boehm & Schlottmann 2014; Liu 2019; Mills 1990; Painter, Gabriel & Myers 2001; Tsharakyan & Zemcik 2010). The supply side has not been thoroughly investigated from the tenure perspective. It is time for policy experts, academics and governments to change this trend by discussing rental housing in housing policies through predetermined guidelines and processes (Acioly & Horwood 2011). This can be done by understanding the changing behaviour of housing markets and tailoring housing policies to close the housing supply disparities between the rich, middle-class and the poor.

2.4 Theoretical Framework

The discourse on institutionalizing the private rented sector (PRS) has been primarily done using several theoretical foundations. First is engaging institutional investors on portfolio management and performance, specifically on their strategic asset allocation models. Policy experts intend to convince them to slip into their portfolios a considerable component of rental housing investment, an alternative and novel asset class. To understand the peculiarities involved, institutional investors are guided by the Modern Portfolio Theory (MPT), largely attributed to Harry Markowitz, to not only project the implication of adding rental housing investment to their portfolios but also to assess the risks and returns on their portfolio (Markowitz 1952, 1959). An institutional investor, just like any other investor deals with risks and returns daily and applies diversification strategies to achieve optimal portfolio performance. The MPT provides a mathematical model for portfolio management. This section thus reviews the characteristics of institutional investors as well as the drivers of their investment decisions. Secondly, the Capital Asset Pricing Model (CAPM), originally derived from the MPT, offers deep insights into complementing existing portfolios with risk-free assets and addresses several flaws. Thirdly, the premise for bringing institutional investors into rental housing production was based on the urgency to curb the surging housing deficits in urbanizing cities. This discourse is best understood using the Neoclassical Economics theory (NET) explained by (Aspromourgos 1986; Pugh 1986; Smith, Rosen & Fallis 1988; Wilkinson & Russel 1979) . The NET is foundationally an economics principle applied to housing studies, with scholars using derivative concepts like housing economics, property economics, real estate economics etc. The NET allows for a demand and supply analysis of housing markets, specifically rental housing supply.

This section explains the theories and discusses how they form the study's theoretical framework. It is important to note that the discussions on institutionalizing the PRS are vast and therefore have been explored widely using different theoretical frameworks and research approaches. The MPT, CAPM and NET were chosen for this study because [1] they help to achieve the research aim, [2] they are the dominant theoretical frameworks used in the existing literature, and [3] they are grounded and universally accepted for use in both academia and industry. Finally, the section gives a description of concepts such as portfolio management, diversification, efficient frontier, efficient markets, systematic and non-systematic risks etc.

2.4.1 Modern Portfolio Theory

In studying portfolio management and performance, the Modern Portfolio Theory (MPT) explains the mean-variance of risks and returns of selected assets within a portfolio (Markowitz 1952, 1959). The MPT has become a widely accepted theory because it gives a foundational understanding of managing mixed-asset portfolios comprising of assets such as bonds, shares, stocks, real estate etc. The Portfolio Return Variance is an important equation on expected returns using the MPT. This is represented mathematically as.

$$\sigma\frac{2}{p} = \sum_{i} w_i^2\, \sigma_i^2 + \sum_{i}\sum_{j\neq i} w_i w_j \sigma_i \sigma_j \rho_{ij}$$

Where $_{ij}$ are two different assets, σ is the (sample) standard deviation of the periodic returns on the assets, and ρ_{ij} is the correlation coefficient of returns on the selected assets i and j. This model calculates the return profile of given assets within a portfolio. Considering minimising the risk profile of a particular portfolio, the concept of diversification, as propounded by Harry Markowitz is often used for asset allocation and combinations, ultimately resulting in optimal portfolio performance. The risk associated with assets (e.g., ρ_{ij}) is called non-systematic/ non-market risk, while the external risks associated with the market are called systematic/ market risk. Among the two types of risks, the former is argued to be diversifiable using Markowitz's model, whiles the latter is primarily nondiversifiable as it concerns external forces. There are some justifiable criticisms of the MPT, especially its reliance on expected values rather than real-world data. As expected, modelling depends on projected values rather than providing a framework by which different data sets could be applied. Nonetheless, the MPT's early development and application have given the foundation to assess portfolio management and performance, emphasising risks and expected returns. Another terminology that resounds in most portfolio management and performance literature is the concept of an efficient frontier.

This line represents the point at which the highest risk-return is generated, and at this point, optimal portfolio performance is achieved (Markowitz 1952).

This is represented in Figure 5 below.

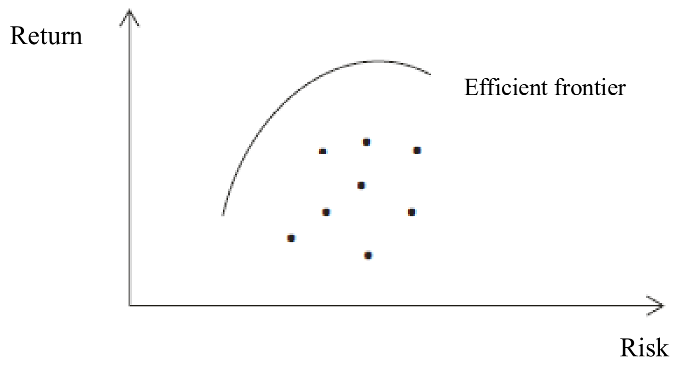


Figure 3 Efficient Frontier

Source: Adapted from Hudson (2014)

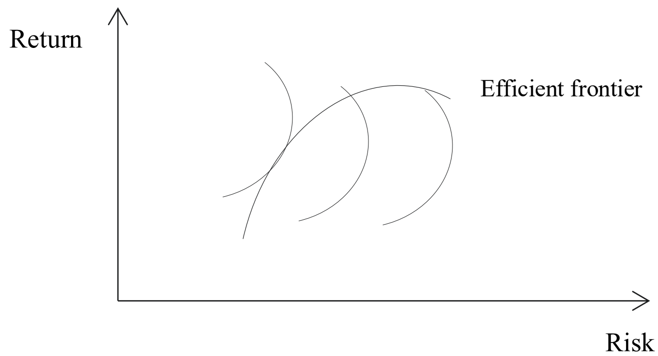


Figure 4 The Optimal Portfolio

Source: Adapted from Hudson (2014)

Applications of the MPT

Institutional investors use the MPT either directly or indirectly to manage their portfolios. Since it is a foundational theory, principles of risk-return variances and coefficients are borrowed from it for the development of new theories. This section gives a brief overview of how the MPT has been applied in research and practice. Many studies have adopted the Modern Portfolio Theory in examining portfolio performance (e.g. Akinsomi et al. 2015; Carvalho 2005; Curtis 2004; Francis & Ibbotson 2009; Gibilaro & Mattarocci 2016; Montezuma 2004a; Peat & Wright 2012; Umeh & Al-ameen 2018). This notable pathway provides a foundational understanding of the mean-variance model which elaborates on the risks and expected returns of assets and is largely followed as a prerequisite for portfolio selection and the proper balancing of assets within a portfolio, including measuring existing correlations between assets. The MPT was a breakthrough for institutional investors to better understand optimal portfolio performance and so it served as a building block for other theories to be developed. A few examples are the Asset Liability Framework- ALF, the Capital Asset Pricing Model- CAPM, Arbitrage Pricing Theory- APT etc. (Alcock et al. 2013; Chun, Ciochetti & Shilling 2000; Ennis & Burik 1991; Hudson 2014; Ross 2013). Apart from pension plan investments which often applies the ALF, the MPT is largely the basis for understanding institutional investors herd behavior towards various asset classes. Recent applications of the MPT cannot be exhausted in this section but the foundational premise shapes the discussions.

2.4.2 Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) is another model used by institutional investment in managing their portfolios. It was introduced by Jack Treynor in 1961 and won a Nobel price along with Markowitz. The CAPM is used for estimating the cost of capital of firms and evaluating the performance of portfolios (Fama & French 2004). It was propounded by Sharpe (1964) and Lintner (1965) and won a Nobel Prize in 1990. Due to its relationship with portfolio performance, it is believed to be derived from the MPT model and mostly applied and used for the evaluation of equities in capital markets. Its inception and application to property investment is currently gaining good grounds in real estate literature and may in future play a crucial role in analyzing portfolio performance. The CAPM allows for the addition of a risk free asset, a notional market portfolio and an efficient market, all of which were absent in the MPT (Hudson 2014). It addresses some of the criticisms of Markowitz's MPT in a simplistic yet detailed way. This makes it easy to use by investment analysts. It introduces the capital or security market line to the figure on optimal portfolio performance. This is illustrated in Figure 7 below.

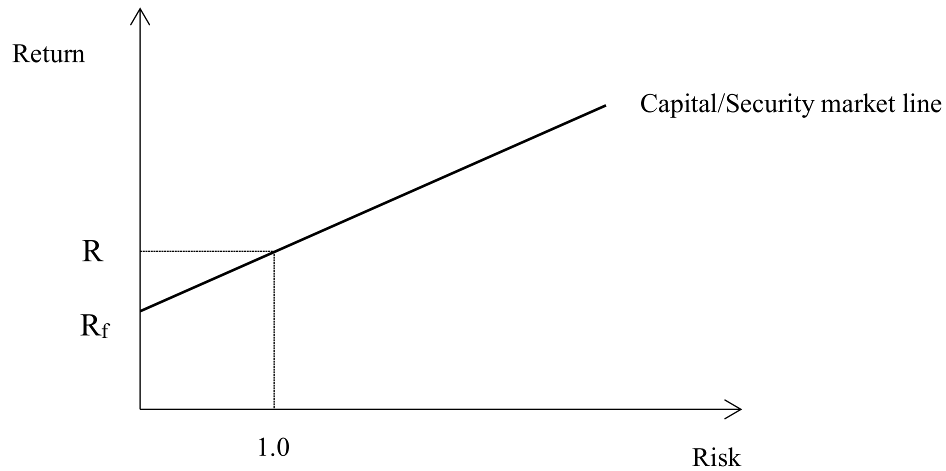


Figure 5 Capital Asset Management Model

Source: Hudson (2014)

The formula of the Capital Asset Pricing Model (CAPM):

$E(R_{i)} = R_{f+}\beta_i (E(R_m) - R_f)$ Where

R_f = risk-free rate of return

R_i = expected return from individual investment

β_I = sensitivity

$E(R_i)$ = capital asset expected return

$E(R_m)$ = expected return of the market

Portfolio performance is generally targeted at measuring risks and returns. There are three popular methods for measuring portfolio performance, namely, Treynor, Sharpe and Jensen ratios propounded respectively by Jack Treynor in 1961, William sharp in 1964 and

Michael Jensen in 1988. Although these three are different approaches, they may be used together as a way of comparing results. The type of ratio adopted is dependent on the data available and the use of the results. The respective formulas are presented below.

a) Treynor Measure = $\frac{PR-RFR}{\beta}$, where:

   PR = portfolio return
   RFR = risk-free rate
   β = beta

b) Sharpe ratio = $\frac{PR-RFR}{SD}$, where:

   PR = portfolio return

   RFR = risk-free rate

   SD = standard deviation

c) Jensen's alpha = *PR – CAPM,* where:

   PR = portfolio return

   CAPM = risk-free rate + β(return of market free rate of return)

2.4.3 Neoclassical Economics Theory

This study joins the scholarly debate on housing production (supply). Preliminary examination of the growing world population and the housing supply constraints has aroused mind-boggling questions about the future of cities (Aluko 2010; Gao et al. 2017; Malik & Wahid 2014). The anticipated challenge goes beyond high house prices and affordability issues and encompasses the potential for the limited housing stock to reinforce urban challenges such housing inequality, segregation, slums, homelessness, and spatial injustice. As observed, the discourse on housing supply is not complete without the demand dimension; hence the element of housing affordability is briefly factored into the argument. This means that it is not just about increasing rental housing supply, but more importantly instituting measures to empower tenants to afford the expected new stock. Pertinent to this discussion is the housing tenure theory, a multi-dimensional concept with two streams of paradigms in housing demand and supply. The emphasis of this research is on housing supply. Discussions about demographic changes and housing deficits in housing markets are often underpinned by the Neoclassical Economics Theory (NET). Pugh in his 1986 article titled: 'housing theory and practice', gave an enlightening piece on how the orthodox neoclassical economics theory helps to understand a demand and supply analysis of housing markets (Pugh 1986 p.24). This impressive written piece has been hugely acknowledged in housing economics and property market analysis over the years. The response of investors towards rental housing demand and interest rates reflects in either increasing supply (building additional stock) or maintaining supply. A demand and supply analysis in the private rented sector is carried through a review of extant literature globally. Figure 6 shows several elements of review.

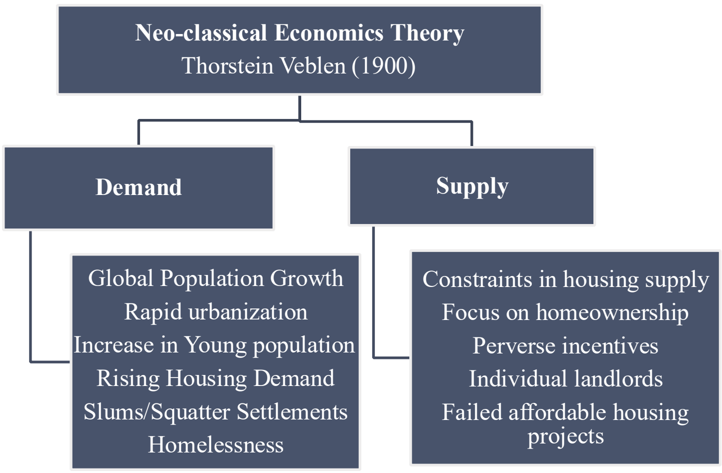


Figure 6 Neoclassical Economics Theory

Source: Author (2020)

To conceptualize the potential role of institutional investors in increasing rental housing supply, the MPT and NET are important theories which provide applicable frameworks to study the topic. There is the need to harmonize the housing literature with the finance literature to set the meeting point for original insights to be unraveled. This is foundational to achieving the research aim and objectives. Figure 7 below illustrates the MPT, and NET would be considered and highlights the framework for the discourse.

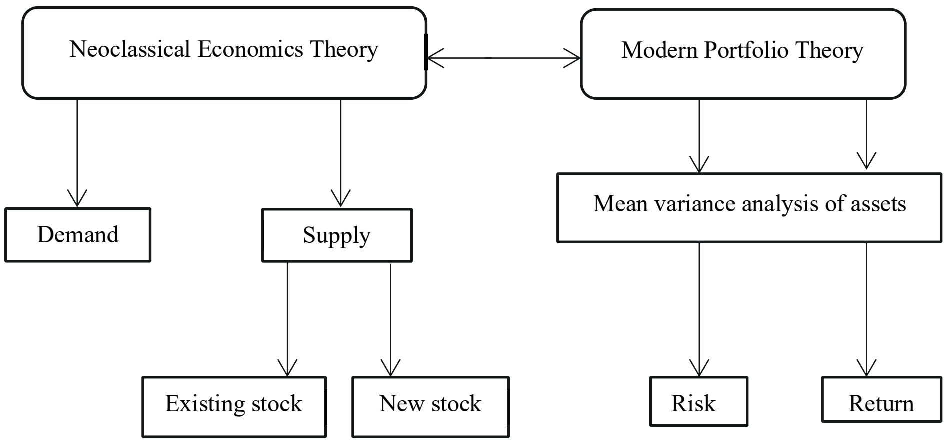


Figure 7 Theoretical Framework

Source: Adapted from Aspromourgos (1986); Markowitz (1952, 1959); Pugh (1986)

2.5 Institutional Investors in Housing Markets

The conceptual and theoretical meeting point of the financially buoyant institutional investor and housing markets is an interesting one. Although not entirely new, scholars have recently unravelled ground-breaking revelations about how the two factions could collaborate to solve society's never-ending housing deficit problems. There have been studies on harmonizing Markowitz's 1952 Modern Portfolio Theory (MPT) and the ancient Neoclassic Economics Theory (NET) to provide a sustainable solution to housing problems (Markowitz 1952; Pugh 1986). The MPT and NET underpin most studies involving institutional investors and housing markets. Section 2.4 of Chapter two provides a detailed explanation of the theoretical framework involving both theories. In this context, institutional investors are organizations with large pool of funds which create and manage investment portfolios on behalf of the fund owners (Clark & Monk 2017). Examples include pension funds, insurance companies, private equity funds, REITs etc. A portfolio refers to a group of assets (e.g., cash, bonds, stocks, equities, real estate etc.) that are managed within one investment folder. Clark & Monk (2017) provide a detailed explanation on institutional investors in their book: Institutional Investors in Global Markets. Latter sections of this review discuss some definitional varieties concerning institutional investors and how that influences the scholarly discourse on their integration into the private rental sector (PRS).

The debate on institutionalizing the PRS started when housing advocates called for institutional funds to be invested into rental housing, to help meet the skyrocketed housing demand in cities (Berry & Hall 2005; Lee 2008; Montezuma 2004a; Oxley et al. 2015; Peat & Wright 2012). This suggestion was premised on institutional investors' ability to provide; [1] a reliable source of finance, [2] long-term portfolio, [3] production efficiency and [4] economies of scale (Brill & Durrant 2021; Brill & Özogul 2021; Milligan et al. 2013; Priemus 1998). The array of positive attributes listed afore provides a good prospect for the expansion of the PRS and the desired alternative to the supposedly failed efforts of individual landlords to match the housing demand. Bringing in institutional investors looks simply but encapsulates within it complex interactions which need further unpacking. It represents a complete paradigm shift in rental housing supply and opens the opportunity to integrate finance literature and housing scholarship. The first part of this section of the literature review gives a broad but detailed summary of the scholarly discourse on the topic on institutional investment in residential property by providing a foundational understanding of the differences between an individual investor and an institutional investor, and the definition of an institutional investor. The second part of this section discusses institutional investors herd behavior, portfolio management and performance, strategic asset allocation, diversification benefits, the Financialization of housing investment etc. These concepts sum-up the discussions on institutionalizing the PRS and enlighten the readership of this thesis by providing a good apprehension of on-going debates.

2.5.1 A Paradigm Shift: Individual Investors versus Institutional Investors

Individual investors can be distinguished from institutional investors using three main benchmarks, namely, investor motivation, scale of investment and nature of management. The two factions show vast differences in many respects and share few similarities.

Generally, individual investors dominate rental housing production in many countries (Bierre, Howden-Chapman & Signal 2010). There are private individual homeowners who rent part of their homes or granny flats to tenants whiles others play the role of vacant landlords who invest in rented properties for returns (Andersen 1998; Seelig 2001). Although individual investors play a crucial role in rental housing production, their supposed dominance in housing markets cannot be generalized for all countries. There are countries whose rented sectors are dominated by housing associations, government, and cooperatives (Kullberg 1997; Priemus 2003). Understanding the differences and similarities between individual investors and institutional investors is crucial to the model this study hopes to develop.

To begin with, individual investors have diverse motivations for going into rental housing investment. In a study conducted in Australia, a number of reasons for which investors hold rental dwellings were identified, these include; long term investment, negative gearing, rental income, possible future home, capital gain, unable to sell, family reasons and others (Berry & Hall 2005). Many individual investors are not entirely successful in making profit from rental income as they invest for many reasons such as family, inability to sell or sometime for the possibility for a future home. On the contrary, institutional investors have long term investment drive and a strong eye for rental income, capital gains and negative gearing (Andersen 2008). The difference between them and individual investors is that they have the personnel to realize the optimum profit from property.

Another difference between individual investors and institutional investors is the scale of the rented project. As has been discussed early on, individual landlords invest in small, rented housing projects, sometimes as small as a granny flat or sometimes a single room within their owner-occupied dwelling. There are few individual landlords who undertake sizable projects like condominiums, duplexes, and semi-detached units for rent. Institutional investors have a large financial base and are known for large-scale investment (Berry 2000; Priemus 1998). This conceptualization can be argued to be flawed, in that; there are powerful individual investors who single-handedly undertake projects worth millions of dollars. The use of the term ‘scale’ as a differentiating factor therefore needs further refinement.

Lastly, the nature of management of the rented property provides a clue to differentiate between individual investors and institutional investors. Individual investors are mostly associated with the word ‘informal’ whiles institutional investors are considered more ‘formal’ in their dealings (Priemus 1998). The meaning conveyed from this line of thinking is that individual investors are not as organized in their management approach as institutional investors. The professionalism displayed by the former can nowhere be compared to lackadaisical management style adopted by individual investors, except in countries like Australia where a significant number of individual investors use the services of real estate agents. Generally, institutional investors are not interested in managing rented properties themselves, so they employ property management professionals to see to the overall running of their properties. Additionally, an institutional investor can be said to be; ‘an organization’ whiles an individual investor is a ‘person’.

The differences between individual investors and institutional investors have been established using investor motivation, scale of investment and nature of management. In differentiating between the two, concepts such as scale landlordism and large corporate landlordism are sometimes used (Arku, Luginaah & Mkandawire 2012; Bierre, HowdenChapman & Signal 2010; Gilbert 2012). The initial discourse revealed that institutional investors are interested in long term investments and a steady rental income, which explains why they sometimes invest in student accommodation (Newell & Marzuki 2018). Their motivations for investing in residential real estate are entirely different from those of individual investors in terms of scale and expected returns. To understand the drivers of their investment decisions and measure the potential for scaling up rental housing investment within their investment portfolio, it is important to adequately distinguish the two and make the needed readjustments for them. Additionally, the extant literature on institutional investors and housing markets reveals a lack of a commonly accepted definition for the term *institutional investor*. To help generate a suitable definition, the differences discussed above provide a starting point to do so. The next section looks at how housing scholars have used the term institutional investor and generates a defining criterion.

2.5.2 Definition of an Institutional Investor

The use of the term 'institutional investor' in housing studies is quite disjointed. There is no widely accepted definition and often used loosely in literature and policy documents to refer to different entities. Scholars are fond of attributing institutional investors to pension funds and insurance companies (Berry 2000; Ge 2009; Gerrans et al. 2006; Newell & Marzuki 2018; Reddy & Brijlal 1992; Stevens 2016). It is important to note that, apart from these two categories, there are other less mentioned ones, such as; private equity funds, endowment funds, financial institutions (banks), wealth managers etc. These funds are not necessarily government funds or grants but include funds that belong to a section of the public or purely privately owned monies managed by a specific fund manager. Not much is known about how these less mentioned categories contribute to housing markets considering the use of the term 'institutional investor'. For example, scholars often do not mention private equity funds in their propositions. Private equity funds apart from being one of the major drivers of real estate investments function as *rescuers* who save business entities which are on the verge of dying. Perhaps a deeper understanding of their work could be useful in reviving the dilapidated and almost forgotten social housing sector. For clarity and housing market deliberations, this study derives an adequate definition for institutional investors using the differentiating factors discussed early on.

The word 'institutional' suggests an organization or company that owns or manages a large financial base and looking for investment opportunities to put those funds to. Based on this view, an argument can be made that property development companies with large finance base can be called institutional investors considering the scale of their investment portfolio. In some contexts, Housing Associations (HAs) can qualify to be grouped under the definition of institutional investors. The difference is that they are originally set up for notfor-profit objectives. Their investments in the PRS helps provide affordable high-quality dwellings, normally subsidized by government to serve its target group. In recent times, HAs are gradually shifting from social motives towards profit-oriented goals (Tang, Oxley & Mekic 2017). This makes them an association that is seeking to combine social benefits and goals with profitability; like that of the English market (Crook & Kemp 2019). These HAs can therefore be categorized as hybrid, considering their quest for both social and profit-oriented benefits. To help generate an adequate definition for an institutional investor, a few points are discussed below.

Defining Criteria

What are the definitions presented in the existing housing literature and how are those definitions flawed in describing institutional investors? Apart from a few scholars, most researchers do not define what they mean by institutional investors. The term 'institutional investment' or the entity 'institutional investor' is often represented as large-scale investments/investor (Alakeson 2012; Berry 2000; Berry & Hall 2005; Blessing & Gilmour

2011; Gilmour & Milligan 2008; Pawson & Milligan 2013; Stevens 2016; Tang, Oxley & Mekic 2017). In the few definitions presented, the term is likened to organizations with large pool of funds either from private equity sources or mobilized as part of a public cause. Using the scale as the yardstick, institutional investors are the direct opposite of individual landlords or small-scale entities who invest in the PRS. The defining criteria as has been identified in extant literature include the following.

1) Objectives (motives) 2)

Scale of investment

3) Type of organization

4) Nature of operations

The table was constructed using 1) peer reviewed articles and books discussing institutional investors 2) several dictionaries and databases that offer insights into definition of terms. The first column shows the name of author(s), followed by the definition/ description given and finally the defining criterion used. This is illustrated in table 4 below.

Table 4 Definition of an Institutional Investor

Name of scholar	Definition/Description	Defining Criteria
Pawson & Milligan (2013 p.338)	"Housing capital finance provided at scale by commercial companies and other corporate entities and is generally presented as an antonym to small-scale landlordism".	Scale, organization
Priemus (1998 p.257)	An entity which invests in housing for long term profit and to diversify financial risks. Examples pension funds and insurance companies.	Objective, organization
Berry (2000)	Relates to large scale investors like superannuation/pension funds and insurance companies.	Scale, organization

Haffner et al. (2015 p.2)	"Large organizations (such as finance companies, insurance companies, labor unions funds, mutual funds or unit trusts, and pension funds"	Scale, organization
(Tang, Oxley & Mekic 2017)	Relates to pension funds and insurance companies.	Organization
Milligan et al. (2013)	"…large organizations (e.g., banks, unit trusts, superannuation funds or pension funds) with considerable cash reserves to invest".	Scale, organization
van Loon & Aalbers (2017)	Pension funds and insurers are collectively referred to as institutional investors.	Organization
Alakeson (2012 p.1)	Large scale institutions like pension funds and life funds constitute institutional investors.	Nature of operations, scale, organization
Andersen (2008 p.267)	Institutional landlords include "… the church, charities and government departments, who are non-profit organizations with the task of providing good and cheap housing for certain groups"	Organization and objective
Dubben & Sayce (1991 p.114)	An institutional investor constitutes pension funds, life insurance companies and property companies.	Organization, objective and nature of operations
Cambridge dictionary	An organization that invests in something, for example, a bank or insurance company.	Organization, objective
Wikipedia	"An entity which pools money to purchase securities, real properties, and other investment assets or originate loans". Examples include banks, credit unions, insurance companies, pensions, hedge funds,	Organization, objective, scale
	REITs, investment advisors, endowments and mutual funds.	

Investopedia	"A nonbank person or organization that trades securities in large enough share quantities or dollar amounts that it qualifies for preferential treatment and lower commissions"	Organization, scale, objective

The definition of institutional investors derived from the selected literature is presented below.

> ***Institutional investors*** *are profit-oriented organizations or entities that own or manage large financial assets and seek investment opportunities to put those funds to* (Alakeson 2012; Haffner et al. 2015; Pawson & Milligan 2013; Priemus 1998).

In summary, Table 4 demonstrates a large group of scholars using the phrase; institutional investment in the private rented sector (Alakeson 2012; Berry 2000; Milligan et al. 2013; Oxley et al. 2015; van Loon & Aalbers 2017), a description which refers to all categories of institutional investors. It is easier to relate to literature that refers to specific institutional investors in arguments, for example, property investment companies, wealth managers, pension funds organizations, financial institutions etc. Investigations on the role of institutional investors in housing markets have thus been explored in a broad fashion. The different representation of existing literature provides a good basis to identify areas that have been intensive research and those with knowledge gaps. Policy experts and scholars can expand their investigations to the other categories of institutional investors to improve the rented sector. The various categories operate with a different mechanism which could be harnessed for the benefit of housing markets. This section looked at the misconceptions in housing policy documents and literature.

Research evidence suggests that institutional investors show immense apathy towards residential property investment (Alakeson 2012; Andersen 2008; Berry & Hall 2005). The act of omitting residential property from portfolios has almost become institutional investors' herd behavior in the UK, EU, USA, Australia, and other parts of the world. The indicative procedures leading to which assets are included or omitted in institutional portfolios are quite the same but exhibit historical diversity. In a typical fund, selecting and allocating assets to various investments is known as portfolio construction/asset allocation (Markowitz 1952; Woods 2003). The asset allocation process includes selecting the right assets and carefully choosing the concentration of each asset in various markets for optimal portfolio performance. Asset allocation sometimes refers to "the process of combining various assets within a portfolio to achieve a particular investment objective" (Woods 2003 p.87). To generate expected returns, the asset allocation process must be strategic, effective, and tailored to specific geographical contexts (Akinsomi et al. 2015; Andreu, Ferruz & Vicente 2010; Ibbotson 2010; Woods 2003). Optimal portfolio performance is thus believed to be significantly hinged on how the asset allocation is done. An ardent advocate for an increase in the residential property component in institutional portfolios is a big ask and may require institutional investors to alter their existing asset allocation models. The justifications provided by policy experts for this shift must be founded and grounded.

Contrary to institutional investors' negative perception of residential property, a significant quantum of literature supports the assertion that portfolios perform better if residential property is included (Montezuma 2004a, 2006; Pagliari 2017; Peat & Wright 2012; Rehring 2012; Ziering & McIntosh 1997). In most arguments, scholars posit that residential property provides significant diversification benefits. Studies conducted in the US, UK, Australia, EU, and other parts of Asia have proven this assertion. On the other side of the debate, opposing solid arguments have been raised about the authenticity of the purported benefits of residential property investment. These are discussed in forthcoming sections.

The two sides of the debate are not completely at par. The allusion that residential property provides several benefits to portfolios is not what is being disputed. The contention is whether these benefits are significant enough and the surety of providing a win-win situation for policy experts and institutional investors. Before delving into the discourse on significance, several observations have been made from the literature concerning the diversification benefits provided by residential property. These pointers are crucial to clarifying the position of scholars and setting a straight emphasis on certain claims made in the literature.

Firstly, many scholars give little credence to *housing tenure* in their claims about the benefits of residential property investment (Bridget 2014; Carvalho 2005; Montezuma 2006; Roig Hernando 2017). The terms: residential property, housing investment, real estate and direct real estate investment are not the same. Residential property could mean either rental housing or homeownership. The narrative that residential property possesses an advantageous position in institutional portfolios would be erroneous if these terminological contentions are not resolved. Policy experts are reaching for rental housing investment to boost supply in the PRS. Additionally, the influence of rental housing investment on portfolio performance would differ from that of homeownership, hence the need to make this distinction.

Secondly, scholars who use the term *real estate* tend to omit sub-property markets. The assertion that real estate provides diversification benefits to institutional portfolios could be unpacked to mean different things (Akinsomi et al. 2015; Gholipour & Hooi Hooi 2017; Gibilaro & Mattarocci 2016; Higgins & Fang 2012; Naka 2006; Newell & Fischer 2009). Like the previous observation, real estate constitutes an asset class under which residential, commercial, agricultural, and industrial fall. The sub-property markets present their differences in terms of levels of benefits. For instance, in Malaysia, a study investigating the diversification benefits within the real estate asset class revealed that residential property ranks higher than commercial, industrial, agriculture and land development (Ema Izati Zull & Tajul Ariffin 2016). In another study in Ireland and Great Britain, the authors examined the risks and returns of retail and office spaces and found significant diversification benefits (McGreal et al. 2004). These studies represent an intradiversification analysis between assets of the same class. On the other hand, the benefits generated from securities are sometimes compared with those from real estate assets. Studies have been conducted in Australia to measure the diversification benefits between residential property on one hand and stocks and shares on the other (Melser & Hill 2019; Peat & Wright 2012). The Australian studies constitute an inter-diversification analysis between assets of different classes. The general assertions concerning real estate investment without the required specificity may be considered flawed. This suggests that the correlation coefficient between assets and asset classes is important as it determines the different levels of diversification benefits generated within the portfolio. For a graphical illustration of different correlations, consider the following assets represented by the alphabets A, B, C, D, E and F in the Figure 8 below.

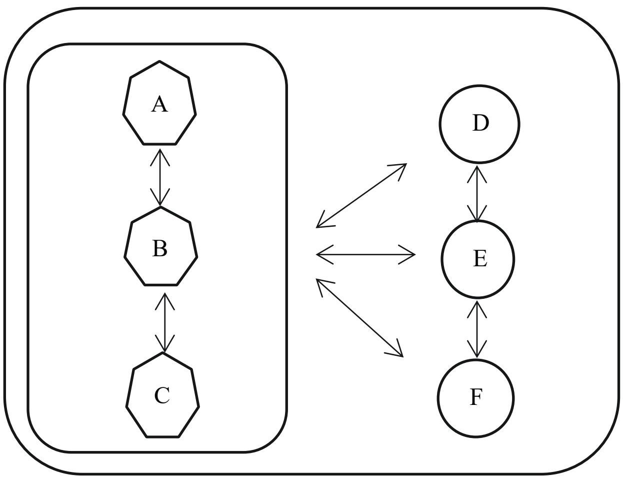


Figure 8 Types of correlations in a multi-asset portfolio

Source Melser & Hill (2019); Peat & Wright (2012)

Assets A, B and C belong to the same class, whiles D, E and F belong to different classes. The type of correlation (represented unconventionally) matters during portfolio selection and asset allocation as it forms the basis for optimal portfolio performance. Earlier studies show a low correlation between real estate assets and other asset classes when included in the same portfolio. In the US, a few authors compared the performance of residential property to liquid assets such as stocks and bonds and found that residential property provides diversification benefits for the entire portfolio due to its low correlation (Hartzell, Hekman & Miles 1986; Hoesli & Hamelink 1997; Ibbotson & Siegel 1984). Others have said that although correlation is the single indicator of diversification benefits, return gaps also influence the levels of diversification benefits realised (Bernstein & Pinkernell 2007; Delcoure 2010; Statman & Scheid 2008). The concept of diversification has more influence on portfolio performance than has previously been appreciated. It is a popular concept that provides interesting insights about risk reduction and possesses a multi-faceted applicability to discussions surrounding the expansion of the PRS. One important consideration for this review is to delve into how institutional investors manage investment portfolios and demonstrate how that understanding could help housing policy experts to carry out their rental agenda. Moving on, the work of asset managers is described as *institutional* because of the quantum of assets they possess and the relevance of using diversification to achieve the expected returns. The next section discusses diversification's meaning, strategies, and roles in institutional portfolios.

2.5.3 Diversification Explained

Diversification is defined as a risk management strategy that encourages spreading risks among different types of assets (Levy & Sarnat 1970; Markowitz 1952). Investment

Analysts draw inspiration from the popular adage; *do not put all your eggs in one basket*. This old wisdom suggests that investing all of one's money into one particular asset at any given time is not good. The repercussions of doing so could be disastrous during economic crises or when that asset performs badly. This section discusses the meaning and strategies for diversification, benchmarks for measuring diversification, correlation coefficient, returns gaps and categories of correlations. This discourse intends to round up the literature on all the diversification benefits of residential property, as identified in extant studies. Since diversification qualifies as a major indicator for attracting institutional investors, this section considers the relevance of these claims in line with the pursuit of policymakers to make the envisioned collaboration a success.

Every asset comes with a certain level of risk, which has an implication on expected returns. The risk profile of each asset and how this risk affects expected returns are analysed using either the MPT or the Asset-Liability Framework (ALF). These theories assist fund managers in making informed decisions on which asset to include in their portfolio and the combinations needed to reach the targeted returns. Some portfolio managers have resorted to using the Asset-Liability Framework instead (Chun, Ciochetti & Shilling 2000). This framework tends to provide a different lens through which portfolio managers analyse the real estate allocation in asset liability rather than merely looking at the mean-variance of risks and returns of assets. Institutional investors are particular about achieving optimal portfolio performance. Therefore, attempts to convince them to include a sizable rental housing investment in their portfolios must be objective and not merely political. The principle of diversification encourages the element of *variety* to shield off risks in case any asset flops in performance and to reduce portfolio risk (Bhuyan et al. 2015; Brill 2021; Oertel et al. 2019; Rehring 2012). There are fundamentally two strategies for diversification, namely, Naïve diversification and Markowitz diversification (Markowitz 1959). Naïve diversification suggests that including a variety of assets in a portfolio minimises the risk profile of that portfolio (Dirk 1998; Levy & Sarnat 1970; Olaleye, Aluko & Oloyede 2008; Platen & Rendek 2012). The naivety description is accorded to this strategy because it makes an unfounded assumption and omits important correlations between selected assets.

The assumption that *variety* helps to spread risk and passes as a good strategy for achieving optimal performance could be tricky. There is another strategy that goes beyond ensuring variety. This diversification strategy is known as Markowitz's diversification. This strategy caters for important correlations (relationships) between the selected assets and utilises its influence on the risk profile of the portfolio (Markowitz 1952, 1959). Diversification benefits are mostly measured using an array of benchmarks, including returns, capital gains, transaction sales and appraisal indexes obtained from government sources. Between naïve diversification and Markowitz’s diversification, the latter has been largely preferred by scholars discussing direct property investment. The Markowitz diversification strategy has its criticisms, discussed in chapter three. The type of strategy used depends on several factors, such as the purpose for diversifying, the market within which this is being done and other equally important determinants. The next section discusses in detail the role of residential property in influencing risk reduction and providing the diversification benefits postulated above.

2.5.4 The Role of Residential Property in Portfolios

For institutional investors to buy into the idea of diversifying their portfolios with a sizable component of residential property, adequate conditions must be created. Firstly, policy experts brainstorm how a well-structured build-to-rent scheme could benefit institutional investors and the PRS (Bridget 2014; Haffner et al. 2016; Oxley et al. 2015; Tang, Oxley & Mekic 2017). Secondly, ongoing reflections on the pending problems and issues in housing markets may hinder the expansion of the PRS through institutional investors (Dent

& Doling 1992; Hutchison Norman 1994). Thirdly, based on the identified problems, some studies question the preparedness of housing markets for the large-scale rental housing investment (Aziabah 2018). These three conditions have been carved from the direction of the extant literature concerning this area of research. On the first point on convincing institutional investors to invest more in the PRS, several points have been made on residential property investment's benefits to multi-asset portfolios. A multi-asset portfolio is an investment folder with different assets an entity manages.

First, residential property has been identified as providing steady returns over the long term. It is known to produce a risk-adjusted rate of return, especially in rental incomes (Berry 2000; Montezuma 2004a). The owners of institutional assets operate behind the scenes and prefer to hire professional investment analysts called trustees to design and manage all their investments (Dubben & Sayce 1991). These professionals act as intermediaries between asset owners and the portfolio. The services of intermediaries are sought at an agreed return measurement, and therefore they are expected to generate certain required returns (Clark & Monk 2017). Fund managers are not necessarily the owners of those funds but only act as managers. Based on this, creating an avenue for rental income would suit their investment strategy and provide steady returns to achieve optimal portfolio performance.

Secondly, residential property provides a leeway for institutional investors to reduce the overall risk of their investments (Montezuma 2004b). A study conducted in Australia by Peat & Wright (2012) showed how risk reduction could be achieved using residential property investment. The authors compared the long-term price performances of two institutional portfolios, one with residential property and the other without it. They found that the portfolio with residential property had a higher expected return than the latter. Other studies conducted in Europe, the UK and the US, such as those by Carvalho (2005) and Melser & Hill (2019) confirm what Peat & Wright (2012) found in Australia. Mindboggling questions exist about why residential property is omitted in institutional portfolios despite the enormous evidence of untapped diversification benefits. It can, however, be argued that the measure of return for property investment and the ability to monitor it poses a huge challenge for investors. Liquid assets are easier to monitor in this regard. In any case, a solid argument could be put forward by policy experts concerning reducing the risk through residential property investment.

The last point is that residential property provides hedging benefits in periods of inflation (Boudry et al. 2013; National & Low 2000; Rubens, Bond & Webb 1989; Wu & Pandey 2012). Results from studies in Malaysia's property market revealed that residential property provides a good hedge against inflation (Lee 2014), confirming results found in the US by Fogler, Granito & Smith (1985) and Anari & Kolari (2002). Despite the corroboration of these results, there have been several contentions about its significance, such as those by Hoesli & Hamelink (1997). Contentions have arisen because of the different indexes used, the context within which such analyses were done, and the lack of consistent time series data on the various indexes. Nonetheless, many authors affirm that residential property largely provides inflation-hedging benefits to multi-asset portfolios. It is crucial to check the actual, expected and unexpected inflation hedging benefits against that of other assets such as stocks, bonds, treasury bills etc. (Hartzell, Hekman & Miles 1986).

In summary, residential property has been part of multi-asset institutional portfolios in many countries. The new wave of discourse has been inspired by the efforts of policy experts to ensure the inclusion of rental housing and not just residential property. The promised inflation hedging attributes of the residential property leading to risk-adjusted steady returns and the low correlation with other assets constitute a well-founded justification for including rental housing investment. Understanding these discussions is crucial because it gives a proper context and builds on the earlier theoretical arguments.

This section investigated the literature on institutional portfolios and the real estate sector. It provided an understanding of the paradigms at work, especially with diversification and cash flow analysis of the various asset classes.

Every portfolio is unique and may be difficult to compare with another, even if it contains the same assets. However, several universally accepted considerations are fundamental to all fund managers with large portfolios. These include; the diversification benefits, the correlation between assets, and the geographical environment i.e. whether the investment is made in a local or international market (Hudson 2014). On the point of the geographical environment, institutional investors such as pension funds, insurance companies and private equity funds in the US, UK, Europe and Australia invest in both domestic and international markets, a situation which compels them to consider the political and regulatory climate of those markets (Clark & Monk 2017). The domestic policies on financial markets differ from those on the international space. For instance, a US-based institutional investor with assets in Australia may be compelled to comply with any laws pertaining to the Australian Securities Exchange (ASE). Therefore, the political and regulatory environment is important for boosting rental housing investment through institutional investors. Moving on, the next section looks at the herd behaviour of institutional investors in detail and sets the background to delve into previously ignored insights on the topic. It provides the foundation for developing a suitable model for institutional investors and housing markets.

2.5.5 The Financialization of Housing Investments

The assertion that housing investments are gradually becoming financialised is gaining prominence in housing scholarship. This phenomenon involves converting tangibility and illiquidity to intangibility and liquidity. Innovative investment vehicles help convert residential property into an intangible asset class and enable residential property to rub shoulders with more liquid assets like stocks and shares. Conceptually, it is referred to as;

Financialization of rental housing (Aalbers 2017; Fields & Uffer 2016; Nethercote 2020; Wijburg, Aalbers & Heeg 2018); others prefer to call it; *Securitization of residential property incomes* (Hulse & Reynolds 2018; Montezuma 2004a; Roig Hernando 2017). Generally, the concept *securitization* refers to "the process of pooling loans or receivables and the issuance of securities backed by the pool" (Graff 2006 p.234). Loans and receivables constitute assets belonging to the investment entity. The term was first introduced along with residential mortgage-backed securities functioning within secondary mortgage markets in the 1970s. It has since then gained ascendancy in real estate literature, both commercial (Gordon, Marre & Bonjour 2005) and residential real estate, around the world. Due to the obscure nature of its arrangement and its proliferation in the US, it is sometimes referred to as shadow banking as it does not make itself visible in the primary mortgage market (Danielle Myles Zoe 2014). It is purported to have contributed immensely to the 2007/2008 Global Financial Crisis (GFC). The financialization and securitization concepts change rental housing, which is traditionally illiquid to a liquid asset in the portfolio of institutional investors. The ascendancy of this among institutional investors is a worry for policymakers as there are dangers of repeating the 2007/2008 GFC.

Breaking it down, the word *financialization* has been adopted by scholars to refer to financial services or events that happen in capital markets (Hudson 2014). Institutional investors are known to be dominant players in capital markets. They trade in many financial services, such as securities and equities. At this level, the focus is on reaching for liquid assets rather than illiquid ones. In instances where illiquid assets are involved, mechanisms are adopted to convert them to liquid assets. Rental incomes are traded in secondary residential markets, making this property investment indirect. Examples of such arrangements are REITs and private equity real estate funds. Based on this analogy, the two types of residential property investments are [1] securitized housing investment- indirect investment and [2] non-securitized housing- direct investment (Feldman 2003; Marcato &

Key 2005; Oikarinen, Hoesli & Serrano 2011). Non-securitized housing investments are mostly real property associated with the physical stock. Institutional investors have been accused of focusing so much on the financial market to the extent of finding ways to change assets that were not originally financial to begin to function as such. Previous dialogues on institutional investors were fixated on their dominant role in financial markets. Recently, deliberations have been directed at how their investment activities could be strategically tailored to benefit housing policy reform (Alakeson 2012; Berry & Hall 2005; Jopling 2012; Montezuma 2006). Policymakers and scholars are attempting to shift the 'institutional investment' paradigm from their indirect role in housing markets to a collective trajectory. Recommendations include using the collective reserves of large funds to finance private rental housing projects for low-to-mid-income households. Superannuation/Pension reserves are known to provide better options for housing finance. On a long-term basis, institutional investors may have to create a new investment asset class within their existing portfolio (Newell & Marzuki 2018; van Loon & Aalbers 2017).

The literature on institutional investors places pension funds and insurance companies as the potentially dominant actors in housing markets. There are other examples of collaborations between governments and private real estate equity funds or developers for below-market-rate rental housing investments. The Low-Income Housing Tax Credit Program (LIHTC) in the US and the National Rental Affordability Scheme (NRAS) in Australia are examples of such arrangements. The LIHTC program was implemented under the Tax Reform Act of 1986 to encourage private investors to produce affordable rental housing units through tax credit incentives (Cohen 1997; Cummings & DiPasquale 1999; Leviner 2003; McClure 2010; McClure 2012; McClure 2019). This program greatly contributed to the physical rental stock in the US. As one would expect, the LIHTC program has its flaws but can be argued to have largely served its purpose and continues to do so. Due to the political will to ensure continuity and the 15–30-year compliance restrictions meted out to developers who entered the program, it is still in progress. For a detailed explanation of the workings of the LIHTC program in the US, refer to Cummings & DiPasquale (1999). The NRAS was the Australian model of the LIHTC program but with different implementations. The NRAS commenced in 2008 and sought to encourage large-scale rental housing investment among developers and, at the same offer 20 per cent below market rate rents to eligible tenants (Blessing & Gilmour 2011; Burke & Hulse 2010; Gurran & Whitehead 2011; Lawson et al. 2009; Wood, Watson & Flatau 2006; Yates 2013). The government envisaged that combining these two objectives would increase the supply of affordable rental housing across Australia. The scheme has been recently discontinued due to the many challenges and a change in political will. Projects that commenced under the scheme and those being constructed would, however, continue under the scheme. The discontinuation concerns any new projects or funding for upcoming projects.

Countries like the UK have already recorded significant attempts to encourage institutional investments in the private rented sector. Two insurance companies, Legal & General and Blackrock, have taken such steps, with the former proposing to construct 3,000 affordable rental housing units annually and the latter already investing £275 million in Manchester as well as liaising with housing associations for more of such projects (Wijburg & Waldron 2020 p.115). In the US and Canada, private real estate equity funds and pension funds have added massively to the total rented stock (Andonov, Kok & Eichholtz 2013; Chun, Ciochetti & Shilling 2000; Tomperi 2010). Continental Europe has had its share with countries like Germany, Switzerland, Sweden, and the Netherlands pushing sizable institutional ownerships in their respective residential sectors (Fields & Uffer 2016; Roig Hernando 2017; Wijburg, Aalbers & Heeg 2018). There is an increasing pattern of institutional involvement in housing markets worldwide, an observation that calls for further probing.

The section examined housing scholars' enthusiastic interests in financialized and securitized housing investment (Aalbers 2017; Feldman 2003; Marcato & Key 2005). It discussed important issues about the surge of securitized property investments among institutional investors and the possible dangers this could pose to the global economy. The conditions driving the US sub-prime mortgage markets towards the GFC could lurk in the corner of the herd behaviour among institutional investors, which does not change (Gordon, Marre & Bonjour 2005; Roig Hernando 2017). In attempts to develop models encouraging unsecuritized housing investments, more attention should be given to possible lessons drawn from ongoing and abated *build-to-rent* schemes implemented in the US, UK, EU, Asia-Pacific etc. The expansion of the PRS will be a complete shift in the housing supply paradigm and, therefore, may need intensive preparation beforehand. As has been alluded to by Peat & Wright (2012) and Woods (2003), policy experts are heading for institutional portfolios which strategically allocate more assets in direct housing investment, an arrangement that is expected to increase the rental housing stock on the market significantly. Before zooming into the how, the forthcoming sections 2.6.6 to 2.6.8 review literature on specific institutional investors such as REITs, pension funds and Private equity funds considering the rental agenda. It discusses the work of each of them and presents the critical issues in discourses concerning residential property investment.

2.5.6 Real Estate Investment Trusts (REITs)

Property enthusiasts looking for simple avenues to own property have embraced REITs as the best strategy. As the name suggests, REITs are *trusts* or *funds* which invest in property on behalf of its shareholders (Parker 2012). It takes much financial commitment to fully own property through direct purchase from an individual or entity. This process involves trading equity in exchange for the property; only a few investors can qualify for such ownership. For instance, an investor may be expected to part ways with USD 3 million for a property through equity or debt. This amount is too much for most investors, even those seeking credit assistance. The REIT allows such investors to partly own property by trading in the funds as shareholders. This type of arrangement is categorised under indirect real estate investment. There has been an increase in indirect real estate investment over the past two decades, especially in countries such as the USA, UK, Australia and many parts of Europe and Asia (Christian 2006; Iuav-Venice 2007; Maurer & Sebastian 2002). This increase is evident in published real estate studies (Graeme et al. 2004; Newell, Acheampong & Worzala 2002; Winson-Geideman & Evangelopoulos 2013), and through patterns of risk-adjusted performance and diversification benefits of both types of investments (Ameer 2007; Grissom & DeLisle 1998; Newell et al. 2005). Amongst the two, direct real estate investment is argued to provide relatively higher returns than indirect real estate investment (Rattanaprichavej & Teeramungcalanon 2020). The reason for such claims is that the route to indirect real estate is quite straightforward compared to direct real estate investment.

More hurdles are associated with buying, holding, and managing direct real estate assets than indirect ones. Direct investors must deal with illiquidity, vacancy issues, tenant management, maintenance etc., making their entry more tedious than indirect investment. Nevertheless, each has unique attributes that can be harnessed to benefit institutional portfolios. Institutional investors blend assets in capital markets with those in real estate markets to obtain diversification benefits and increase optimal portfolio performance. In capital markets, the principle of liquidity shapes almost every activity as financial services and equities are bought and sold easily among investors. This is quite different from real estate markets, where assets show opposite attributes to stocks and bonds and thus offer a different investment pathway for investors. The principle of diversification in portfolio management is foundationally hinged on the contrasting attributes of different assets. The lower the correlation between any two assets, the more diversification benefits are expected (Bhuyan et al. 2015; Hartzell, Hekman & Miles 1986). To diversify institutional portfolios, assets that show the least correlations are often selected. Real estate assets cover a broad spectrum, including residential, commercial, industrial, land etc. Conventional knowledge teaches the physical characteristics of real estate, including immobility, indestructibility, and uniqueness, making it a good agent for obtaining diversification benefits and a great tool for reducing portfolio risks.

In recent years, innovations and technological advancements have altered the true meaning of *real estate* within the world of investments. These changes represent what Newell, Hwa & Acheampong (2002) call 'the repackaging of real estate portfolios'. Investment vehicles such as real estate equity funds, real estate investment trusts (REITs) and listed property companies have provided a leeway for institutional investors to escape the formerly unavoidable hurdles associated with real estate investments (Seiler, Webb & Neil Myer 1999). Illiquidity is no more a problem as special-purpose vehicles make it easier to invest in real estate in ways that were previously unimaginable (Christian 2006). These sharp changes pose a conundrum to investors and industry actors as they do not yet know the implications of these conversions on domestic and international real estate markets. It is no secret that institutional investors are more skillful in capital markets than in real estate markets. Often, the market research required for decision-making on real estate assets appears cumbersome to investors. This lapse in investor knowledge contributes to the immense apathy shown by institutional investors towards real estate investment (Benefield, Anderson & Zumpano 2009). Continuous attempts are being made to completely change the identity of real estate into a more familiar asset class so that institutional investors can easily trade it on stock markets. Investors are now expected to differentiate between *direct* and *indirect* real estate investments in company briefings and reports, meaning a lot has changed.

Having established the meaning of indirect real estate investment and linked it to the formation of REITs, scholars have made interesting assertions about how different REITs impact diversification benefits and portfolio performance. A study conducted in the US using historical data from 2002 to 2012 found that Equity REITs (EREITs) and Mortgage REITs (MREITs) influence portfolios differently. Bhuyan et al. (2015) found EREITs to provide higher diversification benefits than MREITs, a finding which contrasted the results of Kuhle (1987), which stipulated the benefits of MREITs. The extent to which the Global Financial Crisis (GFC) influenced these findings needs to be clarified, especially regarding postulations about why MREITs are not as favourable as EREITs regarding diversification. Bhuyan et al. (2015) findings were, however, based on the portfolio of common stocks and REITs belonging to small investors. The situation may be different with institutional portfolios which are relatively large with more assets. REITs play an important role in property markets as it gathers funds from significant number of investors and invest those funds in property in their behalf. This arrangement is indeed a potent way of encouraging more property investments in the sector. A lot is still unclear about REITs and residential property investment and whether it could play an important role in rental housing supply. More empirical investigations are needed to unravel not only what could be the advantage but any implications for residential markets.

2.5.7 Pension Funds & Superannuation

A pension fund is defined as "…a regular payment paid to a person on their retirement so that the individual can remain economically active in the absence of work" (Hudson 2014 p.219). They are the most mentioned institutional investors in finance and housing literature with varying composition, arrangements, and regulations. In Australia, they are predominantly known as superannuation funds. Apart from being either public or private, pension funds are sometimes differentiated based on their size, whether large or small. Due to their almost universal recognition as institutional investors, they play a crucial role in discourse pertaining to rental housing investment. This part of the review delves into how pension fund entities manage their portfolio and dissects any implications for their potential diversification into the PRS. It discusses the following: the identity of a pension fund *investor* as opposed to others, choices between the MPT and the ALF asset allocation models, arguments about risk and non-risk factors and an overview of pension fund investment in real estate. It further summarizes the discourse on using pension funds to expand the private rented sector (PRS).

Pension fund investors are one of the most conservative investment entities seeking a lowrisk investment with a long-term fixed rate of return (Hudson 2014). With their liabilities in mind, the board of trustees of pension funds strategically focus on asset combinations that are just enough to meet their long-term obligations to their retirees. The pension fund investor is anything else apart from a risk lover as their conservativeness is a major driver of their investment strategy. Sometimes regulations are made against what they call 'highrisk investment'. This means that there may be restrictions on the assets they invest in depending on the political and regulatory environment within which such pension funds invest. Because of their 'charitable' nature, many governments exempt pension funds from tax obligations. Pension funds are recently becoming highly return-oriented due to inflation and other socio-economic pressures. Just as other investors, they have become interested in alternative asset classes, one of which is real estate investment. In summary, the pension fund investor is conservative and risk-averse looking for investments that generate steady returns needed to meet the schemes' need.

Worzala & Bajtelsmit (1997) points out an interesting contention among pension fund managers. The argument is on whether REITs should be classified as 'real estate investment' in the sense of what real estate asset represents or should be categorized under common stocks given what REITs are. Their study questioned possible misleadings in the theoretical outlook of what scholars call *a well-diversified portfolio*, stating that unlike the 10-20% allocation component accorded to real estate assets, only 4% of the many pension fund portfolios are real estate assets (Worzala & Bajtelsmit 1997). There is a difference between what has been theoretically propounded and what the practice in the industry is. The reports on similar asset allocation models adopted by different pension funds cannot be generalized if the query about the true REIT category lingers. Worzala & Bajtelsmit (1999) undertook a study following their earlier study in 1997 and showed that asset allocation models adopted by large pension funds for decision-making vary substantially. The authors point out that small pension funds are likely to use more sophisticated models in allocating assets and that there is no standardization regarding asset allocation among pension fund managers.

Umeh & Al-ameen (2018) carried out an inter-diversification analysis in Nigeria to determine if there have been any diversification benefits of including real estate in the Nigeria Pension Commissions' mixed-asset portfolio from 2007 to 2016. Results indicated a low correlation of real estate assets with local ordinary shares, cash, private equity, and foreign investment. This resulted in diversification benefits realized in the portfolio (Umeh & Al-ameen 2018). This clearly shows that between the pension fund investor and other institutional investors, the principles of diversification do not change. Real estate is seen as a good tool for obtaining diversification benefits in portfolios. Within the same line of thinking, Ennis & Burik (1991) used the CAPM and portfolio selection theory to assess optimal real estate investment percentages. The authors' focus was, however, on non-risk factors in assessing pension fund portfolios. Their findings showed that non-risk factors such as illiquidity, divisibility of ownership interests, investor liability, and owner involvement tend to significantly influence pension fund investment in real estate more than the conventional risk factors often adopted (Ennis & Burik 1991). This presents another contention between risk and non-risk factors. Pension fund investors differ from REITs, private equity funds and others in terms of the propensity to take on certain levels of risk. They have long-term liabilities across various age groups and periods and thus may be a bit more conservative than the profit-motivated institutional investor.

Nonetheless, Craft (2005) asserts that funding ratios influence public and private real estate pension plan allocations. In this disposition, the author states that an asset-liability framework model for portfolio allocation predicts a much lower allocation for private and public real estate than the mean-variance model (Craft 2005). Findings showed that funding ratios (over-funding and under-funding) determine differences in the pension plans' public and private real estate components. As a pension plan becomes underfunded, the allocation for private real estate falls while that of public real estate remains constant. In an overfunded pension plan, private and public real estate allocation increases, but the increment is still below the mean-variance model. Chun, Ciochetti & Shilling (2000) find that, within an asset-liability framework, real estate investment has a low correlation with pension-plan liabilities. This explains why allocations for real estate are generally low in the portfolios of pension funds. It can be said that pension fund managers do not solely rely on the mean-variance model for their work.

Andonov, Kok & Eichholtz (2013), in their study on the global overview of pension funds, stated that large pension funds tend to invest more in indirect real estate, whiles smaller ones prefer direct real estate investment (Andonov, Kok & Eichholtz 2013). This does not mean that both pension funds do not combine these assets in their portfolio but only signals their inclination or preference for which type of asset. Large pension funds go for indirect real estate because, first and foremost, they realize better performance in real estate investment than smaller pension funds; they also enjoy cost advantages, a higher negotiation power and more resources at their disposal. US pension funds tend to perform poorly than those in other jurisdictions like Canada, Europe, and Asia. In support of these claims, Andonov, Eichholtz & Kok (2015) states that large pension funds invest in indirect real estate internally, whiles smaller pension funds invest in direct real estate using external managers and funds of funds. Outsourcing real estate management to financial intermediaries is more expensive and thus decreases returns.

Pension fund investors are often viewed as mainly public, as they serve the interest of retirees. In some countries, they are exempt from tax obligations considering the nature of their work. With all the funds available to them, are there any corporate social responsibilities they undertake? Rosentraub & Shroitman (2004) studied public employee pension fund investments to determine the levels of advocacies for what many scholars call *socially desirable investments* to improve neighbourhoods and cities, for example, on investments that aim at redeveloping metropolitan areas. In this study, the authors looked at pension fund investment in real estate as a social investment and a step towards improving cities and neighbourhoods. It was found that large public pension funds do not often enthuse about socially responsible investments in real estate (Rosentraub & Shroitman 2004). This part of the review has highlighted the pension fund as an investor and discussed a few characteristics and issues that pop up in discussions about attracting them into the private rented sector. As the dominant institutional investors, these issues are important to consider when engaging them concerning rental housing investment.

2.5.8 Private Equity Funds

Private equity funds are categorized as institutional investors because of their high levels of private financing, which they often use directly to invest in companies or engage in buyouts. It is a type of fund that makes investments in various spaces. On a broad scope, a fund is simply the pooling of assets together (Hudson 2014). These assets may be cash, shares, loans, or tangible assets. In the US, private equity funds are very active and have assets worth billions of USD under management. Examples include Blackstone Group, Carlyle Group, TPG Capital, EQT and many others. In Australia, funds such as Blackstone are also present along with others such as Bain Capital, KKR etc. Private equity funds, whether in the UK, Europe, Asia, the US, and Australia, possess similar characteristics of a large pool of assets. Some are more specialised in certain assets than others; for example, private real estate equity funds have real estate assets under management. Funds such as

Catalus Capital, Kuzari Group, Gemini Investors etc. Others have more securities than real estate, depending on the structure and objectives of the fund. The studies conducted in various countries are quite broad and differ in the type of investment they undertake. The review identifies what funds are available and which may or may not be interested in entering the property markets.

The US Low-Income Housing Tax Credit (LIHTC) Program is one of the world's collaborative efforts between government and private investors to increase affordable rental housing supply. It has been a sustainable program spanning over 30 years and has added more rental stock to the property market. It opened incentives for developers and investors to invest in affordable rental housing programs, in which many private equity funds participated. The HUD datasets on the LIHTC do not provide details of investors who have been previously involved but list the names and addresses of the various projects and other important information such as number of units etc. More research is needed to identify which developers had the backing of private equity funds and how such an arrangement was made. A similar scheme known as the National Rental Affordability Scheme (NRAS) was implemented in Australia with slight differences. Again, the data on companies and investors involved are not readily available in the public space. The assumption is that the NRAS attracted investors of different kinds, one of which is private real estate equity funds. Studies by Aarts & Baum (2016), Anderson, Krautz & Rottke (2016), Kiehelä & Falkenbach (2015), Tomperi (2010), Bansal & Gemson (2014), Alcock et al. (2013) and many others reflect the performance of private equity funds in real estate investment. Private equity funds engage in various investment activities in their original business frame. Due to their large financial base and previous engagement in programs such as the LIHTC program and NRAS, they are candidates for future policies on
institutional investment in rental housing.

2.5.9 Determinants of Institutional Investments in the Private Rented Sector

Housing scholars have investigated factors that motivate or demotivate the decision of institutional investors to invest in the PRS. Some view it as the determining factor, while others consider it a barrier inhibiting institutional investment in. rental housing. Extant research evidence pinpoints several barriers, including; novelty and illiquidity, high risks, poor market information, high management cost, low returns, inadequate rent control laws, the weak institutional framework for regulating landlord-tenant relationship, concerns about damage to reputation and lack of opportunities for investment at scale (Alakeson 2012; Andersen 2008; Berry 2000; Blessing & Gilmour 2011; Gilmour & Milligan 2008; Jopling 2012; Newell & Marzuki 2018; Pawson & Milligan 2013; van Loon & Aalbers 2017). The identified barriers portray rental housing investment as a no-go area, highlighting the rented sector as volatile and fragile. Using the word; 'barriers' creates a conundrum for scholars to criticize the true meaning of the afore-mentioned factors. There is an argument that institutional investors are already into rental housing investment, so the question should not be *what stops institutional investors from going into rental housing investment. More* accurately, *what challenges do those already in rented markets face?* Either way, the emphasis is on identifying the challenges in rented markets that repel those on the sidelines and disrupts those present in the market. Have some institutional investors previously invested in the rented sector and failed? If so, what are the possible reasons for the failure and exit? This section reviews the literature from all perspectives, harmonizing studies conducted in different countries. These are discussed below.

Novelty and illiquidity

Firstly, a large-scale rental housing investment scheme with several stakeholder engagements, conceived from the innovative thinking of policy experts, may be unfamiliar to institutional investors (Pawson & Milligan 2013). It could be viewed as a new investment asset class because of the dynamics involved in its management and implementation.

Institutional investors may be reluctant to accept an investment that is considered for its novelty and gambling nature. They prefer an investment media that is tried and tested to produce the required yields. Secondly, the scale of the project is beyond anything they could imagine. This means more funds are expected to be pushed into it. The huge scale could scare off 'careful' investors who could be in trouble if the project goes sideways. This could be the case for fund managers who make an account with their owners and shareholders. Lastly, the novelty and scale of a possible rental housing scheme could serve as a disincentive for institutional investors. Property investments are considered illiquid compared to equities and bonds and thus may not be ideal for investors (Berry 2000). This could only work if the investment portfolio is diversified enough to include all major asset classes.

High risks

There is an assertion that residential property is characterized by high risk compared to other assets (Blessing & Gilmour 2011). This position is, however, contentious in that equities tend to command extremely high risks than property (Dubben & Sayce 1991). Risk-free assets such as government gilts are deemed low risk among most assets. Scholars who posit that many risks characterise rental housing investment make these claims based on systematic or market risks influenced by the political and regulatory environment. For instance, the vacancy rate in rented markets may be high, and there could be uncertainties with rent payments and high maintenance costs. There may be other uncertainties with expected future capital gains and the nature of government policy concerning the rented sector. This sector is prone to these risks because of its long-term nature and the continuous relationship created with both the asset and the occupier. Risk-averse investors may not consider rental housing an ideal investment because of its high risk compared with commercial and industrial properties. Institutional investors back away from rental housing investment because they are not interested in the initial development stages of rental housing projects (Alakeson 2012). This stage is boring to them, and they may prefer buying already built rental housing units to getting new stocks on the market. In other words, they are more interested in getting the investment's yields than getting it up and running. The problem is that there are few existing rental housing stocks for investors to buy, thus the limited supply.

Unreliable property market information

The problem of poor access to property market information varies from country to country, with different repercussions. Its impact on investment decision-making is huge and should be emphasised. Berry (2000); Awuah et al (2017); Bowles, McAllister & Tarbert (2001); Hoque (2019) investigated the importance of property market information on property sales, taxation, and investment decision. These scholars took the property valuation perspective and attempted to show its relationship with the real estate market. The private rented sector is segmented in size, type, location, quality and neighbourhood, making it difficult to continuously keep an updated database of information in all locations (Berry 2000). Some locations are often updated more often than others, leaving room for uncertainties. This considers the capacity of data-gathering agencies to collect information on housing transactions adequately. The available information may need to be updated to be used for recent purposes.

Getting information on rent prices, house prices, and tenants is a huge problem in developing countries. Many transactions happen off the radar due to the informal nature of housing markets in those countries. For example, it may be difficult to determine the market rent as there is no database for recent rents charged. The consequence is that landlords could exploit tenants by charging high rents. Therefore, a good and reliable source of property market data is important in real estate investment decision-making (Awuah et al.

2017). In contrast to developing countries, advanced countries have a relatively good database on housing transactions and thus could better serve investors. Nonetheless, there are flaws in their respect. There should be open data for an effective private rented sector, and access to such data should be easy. Institutional investors and developers would be delighted to access reliable property market data to help make objective decisions and forecasting.

High management cost

Due to the small-scale nature of existing rental housing sector, the role of property management is expensive. More commitment for management in small projects than economies of scale designs for large projects. The institutional investor is interested in the yields from the property and not in the project management (Berry 2000). The idea of contracting property management professionals is a turn-off for investors. This is particularly challenging when operating expenses fluctuate and threaten expected profits. The fees charged by management professionals tend to be higher than those charged by small-scale artisans. The anticipated large-scale rental housing sector would mean using housing management professionals to scale up the general management practices. The property management responsibilities would be passed on to the developer or a property management company. The fees include rental agency fees (marketing fees), maintenance and repairs, and all fees associated with the lease administration. Considering the yields from rental housing investments, allocating sufficient funds for management is a huge challenge. Compared to other investments, rental housing management is complex and requires much commitment to management.

Garboden & Newman (2012) and Wood (2001) argue that operating costs for small lowend rental housing are more than that of bigger rented projects. This means that scaling up may be an advantage to realize economies of scale in operating costs. For decision-making, Bowles, McAllister & Tarbert (2001) suggests a flexible plan to cater to any unexpected operating cost changes. The element of uncertainty will always be present in measuring the performance of properties. Adequately prepare for operating costs to avoid the deterioration of rented properties. In big rented projects, the property management approach must be clearly defined to reduce any form of indecision among the relevant stakeholders. Aziabah (2018) reiterates the importance of having a reliable source of finance for property management. This does not necessarily have to be from the property itself; it may come from other sources (e.g., government coffers). As discussed earlier, under investor's yield, the rental housing quality benefits the tenant and investor, making the rented market attractive to large-scale investors. Current rental housing markets are often dominated by individual landlords who lack the professional knowledge to properly manage rental property (Priemus 1998). The impression is that institutional investors are much more professional and would not have these words associated with their properties.

The following studies were conducted in; Ghana by Aziabah (2018); in Australia by Yates (2013); in India by Tandel et al. (2015); in Nigeria by Megbolugbe (1983); in Slovenia by Stanovnik (1994); in England and the Netherlands by Lennartz (2015), this paper identifies that the property management sector in many countries has not been given the required attention.

Low returns

Low rental housing yields are a major barrier to institutional investors as the cost of financial intermediations remains high (Lawson et al. 2014a). The high cost of financial intermediation could reduce the yields realised from rental housing investment. Compared to other uses like commercial and industrial investments, rental housing investments command lesser returns (Alakeson 2012). When institutional investors are expected to choose between these options, they would more likely venture into assets that produce the highest returns. They judge this by looking at the differences between the required rent, market rent and the below-market rent (Berry & Hall 2005). In most cases, their required rent is more than the market rent. The suggestion of an affordable rental housing investment means returns are expected to be below market, which is a no-go area for institutional investors, except government intervention caters for the difference. The government's intervention can lower the cost of financial intermediation and issue a structured guarantee for superannuation funds (Lawson et al. 2014a). The stakeholders could work together to solve the problem of low returns. The figure below shows the components of an affordable rent gap. It illustrates the differences between the market rent, affordable rent and the expected rents institutional investors require. It also shows what is meant by the market gap rent (i.e., the difference between the market rent and the required rent).

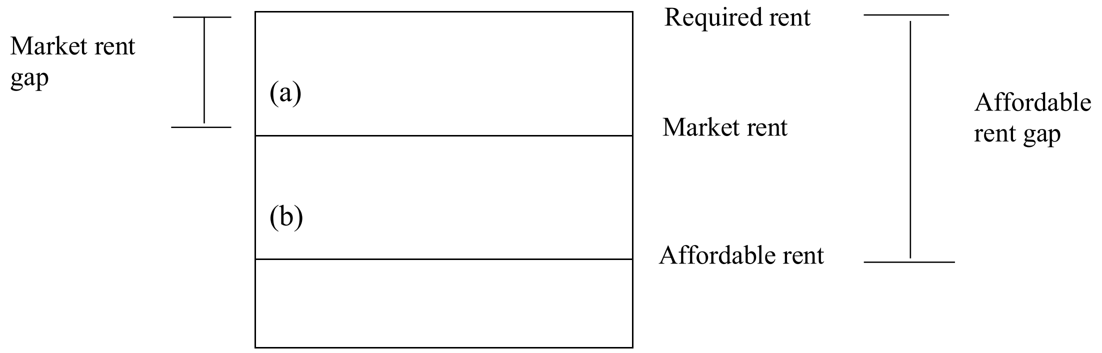


Figure 9 Affordable rent gap

Source: Berry & Hall (2005)

Inadequate rent control laws

As part of the government's overall policy over rent prices, certain directives serve as a disincentive to investors and landlords. This is particularly true when rent control laws are not progressive enough to move along with market forces. There are contrasting views on the effect of rent control on; investors' yield (Kutty 1996), the building of new stock (Tandel et al. 2015) and the quality of rental housing (Downs 1983). These effects tend to reflect on the country's political scene within which these rent control policies are implemented.

If institutional investors consider investing massively in the private rented sector, it is important to discuss the impact of rent control policies as evidenced in various countries.

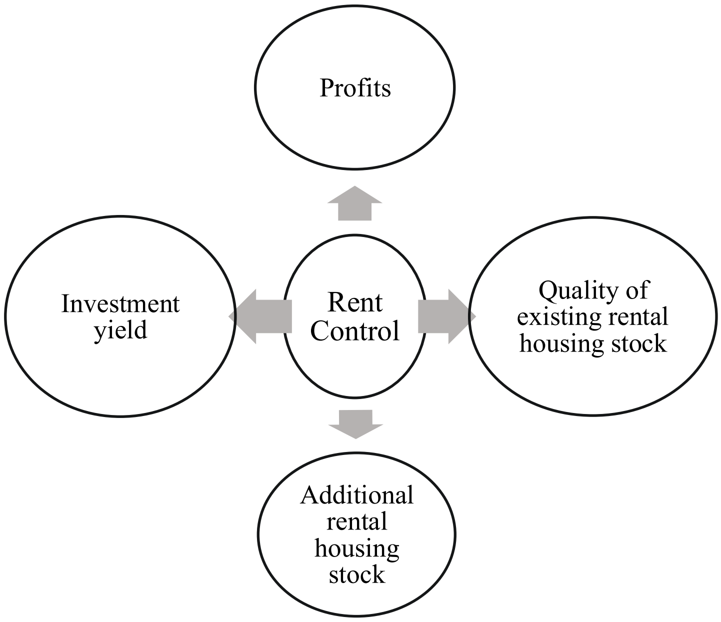


Figure 10 Effects of rent control

Source: Downs (1983), Tandel et al. (2015) and McKenzie & Lee (2018a)

Conventional knowledge suggests that rent control policies get introduced to curb surging rent prices to give relief to renters. A study conducted in Los Angeles and San Francisco in the US revealed that rent control policies benefit renters in the short term but discourage building additional units and the quality of the existing stock (McKenzie & Lee 2018b). Strict rent ceilings could reduce the profits from rental housing investments. Moon & Stotsky (1993) conducted a longitudinal analysis to test the assertion that rent control leads to declining housing quality. The findings support the view that rent control causes a negative change in rental housing quality, as Mckenzie & Lee (2018) suggested. This view is corroborated by a study conducted by Coleman (1988) to measure the impact of rent control on the English housing market. It was revealed that rent control led to a decline in Britain's private rented sector as it was described as marginalized, dilapidated and unattractive (Coleman 1988). Some scholars believe the opposite and call for further investigation into the holistic effect of rental control policies on the private rented sector.

For example, the assertion that rent control leads to poor quality of maintenance needs to be revised in many respects. This is because rental control ordinances and their response are neglected (Olsen 1988).

Government departments catering to rent charges are expected to continuously review and update the laws to reflect current market rates. Failure to do so may lead to losses or may discourage investor/landlords from re-investing in their rental housing investments (Kutty 1996). This would in turn lead to deterioration in the rental dwelling. In the event where rent control measures are lifted, tenants find it easier in finding rental accommodation (Oust 2018). In a study conducted in Oslo, it was revealed that the removal of rent control changed the way rental housing was advertised in newspaper listings, and that it reduced the cost, time and money used by potential tenants in finding rental accommodation. It is thus important to weigh the merits and demerits of rent control in relation to the current happenings before deciding when to impose or not. Institutional investors may have to deal with rent control policies if they invest in rental housing.

Weak Institutional Framework for regulating Landlord-Tenant Relationships

Issues such as racial and ethnic discrimination by landlords on tenants, exploitation through the charging of extremely high rents, default in rent payments and disagreements over utility bills need appropriate structures for redress. Experiences and observations from current privately rented markets suggest that institutions regulating landlord-tenant relationships in many settings are weak and inefficient (Arku, Luginaah & Mkandawire 2012).

To begin with, tenants sometimes experience racial discrimination in the pursuit of new accommodations. Some landlords give out their units to only a specific race or try to avoid certain races (Solonec 2000). In ethnocentric settings, ethnic groups may be discriminated against in the private rental market (Taiwo Gbadegesin & Ojo 2013). There are also several instances of discrimination against visually impaired tenants (Verhaeghe, Van Der Bracht & Van De Putte 2016). These are system failures that need redress. There should be good government agencies set up to deal with such complaints. Although landlords reserve the right to choose the tenant they want, extreme cases of racism and ethnic discrimination should be dealt with appropriately.

Exploiting tenants is not a new phenomenon in the private rented sector. Tenants who are in desperate need to either maintain an existing dwelling unit or a new unit are sometimes exploited by landlords. Properties with high demand are often given to the renter with the highest bid. This often happens when there are no rent control measures. This is evidenced in poor neighbourhoods as landlords reduce the risks associated with tenants living in such neighbourhoods (Desmond & Wilmers 2019). Again, administrative, and regulatory bodies should be set up to resolve complaints made by exploited tenants.

Furthermore, tenants who default on rent payments are sometimes marked as risky (Bierre, Howden-Chapman & Signal 2010). Landlords deprived of their monthly or weekly rents should also have the right to seek redress from the appropriate government agency. Setting up agencies that manage misunderstandings with lease agreements is crucial to ensuring an effective rental sector. Landlords may be able to report tenants who default in rent payments to the appropriate government agencies that can enforce the laws (Sackel 2012). Tenants should also feel free to report landlords who breach lease agreements or those who exploit them. The institutional framework needed to regulate landlord-tenant relationships can be effective if any conflicting rules are removed in the rent laws and regulations (Malkawi 2011). The laws must be clear, concise and without any ambiguity among both tenants and landlords.

Concerns about damage to Reputation

It is said that every tenant has a story to tell about their living experience in a rented house and that no institution or funds manager wants to invest in a sector with numerous risks and uncertainties. Many tenants perceive that their landlords do not have their well-being at heart (Arku, Luginaah & Mkandawire 2012). On the other hand, landlords also have reservations about certain categories of tenants, especially their credibility and ability to make rent payments. Although landlord-tenant relations are described as symbiotic, there are potential tensions in this relationship (Smith 2017). A study conducted in the US revealed that landlords in poor residential neighbourhoods exploit tenants by charging extremely high rents (Desmond & Wilmers 2019). This is a hedging strategy that makes up for the high risks in such poor neighbourhoods. In situations involving large-scale rental housing with potentially thousands of tenants, investors may be worried if these tenants feel aggrieved by the actions of their large-scale landlord. Aggrieved tenants may embark on demonstrations against the institutional investor to seek redress. Institutional investors, such as those who manage superannuation funds, may not get involved in a sector that can destroy their image. It is, therefore, important to understand the tenets of the landlordtenant relationship to ensure that new suppliers maintain their well-built reputation.

Lack of Opportunities for Investment at Scale

The current institutional framework for the rented sector needs to be revised for scaling up to large-scale rental housing projects (Andersen 2008; Kattenberg & Hassink 2017; Tang, Oxley & Mekic 2017). Aside from the financing sector, other areas of government regulation, incentives and management experts need to be equipped enough to cater for the activities of institutional investors. These investors do not see the prospects for long-term investment in the rental housing sector because of the absence of committed efforts from all stakeholders. The growing interest in the rental housing sector could present many opportunities for institutional investors to venture into large-scale rental housing investments. It would present a clearer picture of the market and allow investors to adequately price the anticipated risks in the sector. Opportunities could be in the form of incentives (for example, tax exemptions or tax credits) for investors who agree to go longterm.

2.6 Ways of attracting institutional investors into rental housing markets

The literature on suggestions and recommendations is either proactive or reactive. The new wave of research about inviting institutional investors into private rental housing presents conclusions and propositions reached after critical theoretical debates, empirical investigations, and policy analysis. Some scholars have given specific remedies (Alakeson 2012; Beer 1999; Berry & Hall 2005; Blessing & Gilmour 2011), whiles others have suggested addressing the identified barriers and creating collaborative efforts to encourage institutional investors into the sector. Alakeson (2012), Berry & Hall (2005) and Stevens (2016) called for undivided political support, Lawson et al. (2014) suggested using intermediaries and guarantees, Beer (1999) and Blessing & Gilmour (2011) recommended developing innovative financing models, and Smith (2017) advised improving landlordtenant relationships. The solutions to the pending housing challenges should be progressive; therefore, a blend of several recommendations may be needed.

Government support resonates with all the recommendations made by scholars and policy experts. This is because it is a housing policy issue, and thus government must be included in the equation. Firstly, Blessing and Gilmour (2011) assert that the government can use corporate tax exemptions to incentivise institutional investors to invest in rental housing. This can be done through a new investment vehicle, the unlisted residential property funds sector (Newell, Lee & Kupke 2015). Secondly, Alakeson (2012) and Stevens (2016) were specific about making local government authorities the drivers of the rented sector rather than trailblazers. They exclaim that local authorities should designate public land for the rental housing agenda, given their ability to use the planning and land-use system to allocate land for the rental housing agenda. Such an action would attest government's commitment to the rental housing agenda. Stevens (2016) acknowledges that the marketisation of socially owned assets for private investment would be hugely criticised. Nonetheless, there is a need for holistic political support on all levels of government. The political terrain may change, but the support for the private rental housing sector should not be clogged but rather have long-term political support. Thirdly, Government could create a guaranteed demand-side subsidy stream and a mechanism for delivering these subsidies (Berry & Hall 2005). The strategies suggested are discussed in detail below.

Public lands are usually designated for a social cause. A change in housing policy direction from homeownership to rental housing is the perfect time to allocate public lands for large rental housing projects. These public lands could be gifted to institutional investors or dashed out at low prices. This would motivate the other stakeholders to give more to the project. It embodies a shift from the social cause or common good to a highly profitable venture in housing supply. Local government authorities play a crucial role in the private rented sector (Stevens 2016). The nature of the rented sector requires effective grassroots participation of the government's local authorities. They should be able to coordinate and work with developers and institutional investors to make the project successful. Power must be decentralised and divided among special agencies which would oversee the process, address complaints and work on behalf of the government to achieve maximum results.

Generally, land use planning drives property development, ensures order in the housing markets and secures affordable housing (Gurran & Whitehead 2011). The power to designate land uses for specific purposes lies in the hands of the planning authorities.

Planning authorities must endeavour to strategically designate large acres of land for the private rental housing sector to attract institutional investors. This should not be labelled as the general land for rental housing but should allow projects named under the affordable rental housing scheme. These lands should be in good locations and should be able to attract its target group. Housing affordability challenges could be solved by manipulating planning systems (Beer, Kearins & Pieters 2007).

2.7 Chapter Conclusion

Chapter Two constituted the literature review section of the thesis. It reviewed existing literature on the topic of institutional investment in rental housing. It began with an overview of the theory of housing tenure in relation to rental housing as a major form of tenure. Under the housing tenure theory, the review focused on papers discussing rental housing demand and supply, the discourse on shifting from individualistic ideologies to an institutional analysis of rental markets. It further looked at whom institutional investors are, their roles and motivations in housing markets, the rationale behind inviting them, diversification benefits, the role of residential property in portfolios, financialisaton of housing, the barriers inhibiting their involvement and ways of removing these barriers. These discussions provide the background for the private financing option for many scholars and policy experts worldwide pursue. There is much literature on the participation of institutional investors in housing markets. The dominant paradigm is the role of pension funds, also called superannuation funds, on housing finance. Institutional investors are, however, a broad group of investors and thus go beyond pension-related funds and include private equity funds, banks, insurance companies, endowments, and many others.

As discussed above, the rationale behind advocating for institutional investments in the private rented sector is vast. Aside from the large financing base, institutional investors possess the potential to spread out funds for long-term investments, a feature of rental housing investment. Real estate has become a new asset class for institutional investors. Thus, much room exists to investigate how this novelty investment works and the challenges it poses to housing markets. The gaps found in the literature necessitated further probing into the matter. More insights should be discovered concerning the determinants of institutional investment in rental housing. What some scholars have identified as barriers need further explanations. As an emerging research area in housing scholarship, the preliminary findings gathered through panel discussions with institutional investors have provided a good foundation to investigate the peculiarities in developing frameworks and models for theoretical advancement and policy initiatives. Due to the nature of the gaps identified and the aim of the research, a qualitative approach to studying this topic allowed for a point-by-point contribution to what is lacking in knowledge. The study sought to understand a phenomenon and, most importantly, develop a model that addresses crucial flaws. Therefore, the suitable methodology was qualitative; the constructivist grounded theory and the empirical investigations were undertaken in Ghana. A detailed explanation of the research methodology, methods and data collection techniques are explained in detail in chapter three.

CHAPTER THREE

RESEARCH DESIGN & METHODOLOGY

3.0 Introduction

The research methodology adopted for this study is the Constructivist Grounded Theory (CGT), attributed mainly to Glaser & Strauss (1967). The CGT allows the researcher to take an inductive approach to research using qualitative methods to understand the depths of a topic (Glaser & Strauss 1967). A standalone qualitative method is often adopted when the researcher expects to gather in-depth insights about a phenomenon (Maxwell 2012). This study delves into why institutional investors show immense apathy towards rental housing investment and assesses how the identified factors impact their decision to enter the residential rental sector. At the end of the scholarship, the researcher developed an interactive model of the reforms needed to attract institutional investors into the rental industry. The insights gained from the empirical investigation informed the development of the model, which is expected to aid housing policy experts and practitioners in stimulating rental housing supply in rapidly urbanizing cities. The developed model is expected to make the rental sector more attractive to institutional investors, thereby increasing the possibility of expanding rental housing production in the study area.

Data collection and analysis were carried out using the structured approach provided by the CGT, which is foundationally referred to as *Grounded Theory*. The CGT was selected because it allows the researcher to understand how the research participants perceive reality and *the world* and how that understanding can be used in studying the topic in the future (Douglas 2003 p.53). The researcher finds it crucial to understand the topic from an emerging economy's geographical and policy perspective. The Ghana case helps to understand rental housing supply in a developing country. Although there are two seemingly contrasting policy settings, the focus is on understanding the phenomenon in

Ghana. The findings are discussed, referring to the existing supply pathways for rental housing and an outlook on institutional investment in rental housing.

3.1 Outcome of the Research

This research demonstrates why rental housing suits the growing urban population, mostly mid-to-low-income households. It makes practical and theoretical contributions to the debates on prioritising rental housing in housing policies and the discourse on harmonising institutional portfolios with rental housing investment. It put into proper perspective issues surrounding mixed asset institutional portfolios and the diversification and inflation hedging benefits it provides to institutional investors. Existing research evidence suggests that institutional investors are apathetic towards rental housing investment. The first objective relates to identifying and understanding the unique roles of the government and the private sector in providing affordable rental housing. The second objective seeks to understand the barriers inhibiting institutional investors from investing in rental housing. Previous studies identified several barriers to institutional investment in residential property, including illiquidity, low returns, high risks, high management costs etc. Still, they needed to delve into a deeper understanding of these factors.

The third objective relates to developing regulatory and fiscal reforms to increase affordable rental housing supply through institutional investors and to assess how the model fits in the housing policy context of Ghana. The reforms include discovering ways of attracting large-scale institutional investment in affordable rental housing through a unique collaboration between institutional investors, governments, and developers. This is different from social housing or public housing. It is a for-profit sector, yet affordable because of the involvement of the three parties playing supporting roles. It paves the way for investors to consider rental housing a lucrative investment, thereby committing funds to it.

3.2 Profile of Ghana

Ghana, formerly known as Gold Coast, is located in the sub-Saharan African region, with a population of approximately 30.8 million people, of which 15.2 million are male whiles 15.6 are female. It covers a total land area of 238,535 km^2, having the largest population in West Africa after Nigeria. It gained its independence from the British colony in 1957, one of the first African countries to do so. According to the 2021 Population and Housing Census (PHS), the Greater Accra region has overtaken the Ashanti region to become the most populous region with Ahafo being the least populous region in Ghana. Additionally, the country has a national population density of 129 persons per square kilometre. At the local governance level, every region is divided based on population size and managed by the Metropolitan, Municipal and District Assemblies (MMDAs). The MMDAs govern the regions at the local and decentralised levels. There are six (6) metropolitans, fifty-six (56) municipal and one hundred and fifty-six (156) districts. Accra is both the administrative and commercial centre of the country. Other big cities include Kumasi, Sekondi-Takoradi, Tamale, Ho, Koforidua, and Sunyani. Ghana previously comprised ten (10) regions which have progressively increased to sixteen (16). The most recent regions include Western North, Oti, Bono East, Ahafo, Savannah and Northeast regions. Figure 15 shows the sixteen regions in Ghana and the capital cities of each of the regions.

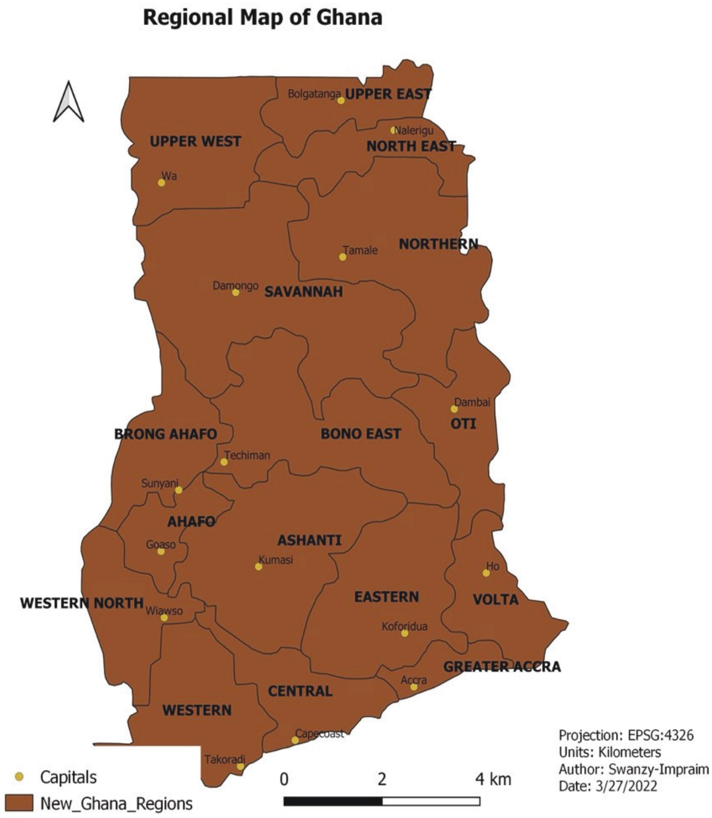


Figure 15 Regional map of Ghana

3.2.1 Performance of Ghana's Real Estate Market

Over the past decade, Ghana's real estate market has experienced significant growth in terms of size, growth rate, and key players. In the first quarter of 2023, Ghana's real estate sector grew at 0.9% from -3.9% in the first quarter of 2022. The year-on-year growth rate as at the first quarter of 2023 was 5.1%, relatively lower than the other sub-sectors of the country's service sector. The state of Ghana's economy after the disruptions caused by the COVID-19 pandemic is reflected in all the sectors of the economy. There has been a bounce-back in the rate of development in the residential, office spaces, retail, and industrial sectors of the market. The office and retail markets which were hit by the Covid restrictions in 2020, are doing quite well in 2023, especially in the core areas of Accra and Kumasi, where commercial real estate activity is vibrant. In a series of recent industry reports on real estate performance in Ghana, the main issues cover new players, new developments, and the vacancy rates in selected suburbs across the major cities in the country. Aside from the challenges facing the sector, there are opportunities for REITs and private real estate funds in this growing sector.

3.3 Research Design

To achieve the research aim, the process commenced with an initial intensive literature review to gather and synthesise the existing knowledge on the topic to identify unresolved research gaps. The literature review was guided by the preliminary problem statement and theoretical framework, which later informed the formulation of the research objectives and the revised research questions. The review thus focused on understanding the determinants of institutional investment in rental housing and identifying any loopholes concerning the involvement of institutional investors in the residential rental market. The research design, which includes a step-by-step process followed, is illustrated in Figure 11.

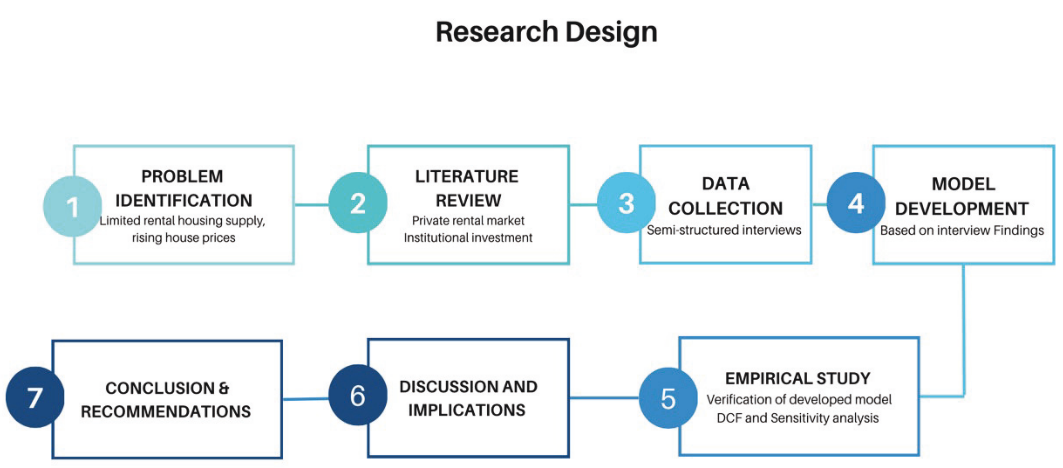


Figure 11 Research design

Source: Author 2020

As shown in Figure 11, the process commenced with the research problem and the predetermined theoretical framework underpinning the research, leading to the literature review stage. The papers selected from the review were organised and stored in Endnote

20, a referencing software, for easy access and reference. Several conceptual headings were identified and operationalised from the literature review on the determinants of institutional investment in rental housing. The concepts represent the barriers or hurdles in the way of institutional investors when it comes to diversifying their portfolio with rental housing investment. Fisch & Block (2018 p.105) state that a good literature review must be concept centric, focusing on concepts and not just studies. The crucial pointers in the literature were the factors which impact their decision on rental housing investment. With data collection techniques in mind, the concepts were categorised into sub-concepts, from which open-ended questions were developed to guide a semi-structured interview with respondents. A detailed explanation of the data collection techniques is explained in forthcoming sections.

A total of six variables were identified: profitability, rent control policies, target group, landlord-tenant relation, property management and property market information. A qualitative research software, NVivo 12 was used to create nodes and develop themes that served us major concepts under which barriers were grouped. The identified barriers had to be structured to allow for coherent analysis. The NVivo 12 research software may support qualitative analysis (Bandara, Miskon & Fielt 2011; Di Gregorio 2000). These concepts and sub-concepts are presented in Table 5.

Table 5 Rental Housing Market Risks

Concept	**Market risks**
Low profitability	• Low returns • High vacancy • Diverse investor motives • Illiquidity • High transaction cost • High management costs • High taxes
Non-progressive rent control policies	• Political interference • Inadequate rent control laws
Unclear target group	• Undefined project target • No distinction between for-profit and social investments

Poor landlord-tenant relations	• Weak institutional framework • Fear of reputational damage
Inadequate property management	• Less attention to property management in policy • Physical deterioration and functional obsolescence
Unreliable property market information	• Novelty
	• Absence of track record • Poor information on housing transactions

Source: Adapted from Swanzy-Impraim, Ge & Mangioni (2021)

The first concept in Table 5 is low profitability, which is unpacked to reflect the assertions made by scholars concerning the low profits associated with rental housing (Alakeson 2012; Berry 2000). They posit that rental housing investment is characterised by low returns, overly high risks, and illiquidity. The general perception is that it is a less profitable asset when compared to other investment asset classes. The concept of low profitability was therefore adapted to represent the issues surrounding risks, returns, illiquidity, and investor motives. This procedure was used to select and categorise all six variables into sub-variables. As a qualitative study, the open-ended questions to be asked during the interview would hinge on how low profitability inhibits institutional investors from rented markets using the sub-variables; risks, returns, illiquidity, and investor motives. The constructivist grounded theory research design would guide the thought process and help collect, organise, and analyse the interview findings.

3.4 Setting the Interview Questions

The interview questions were developed from existing research using an operationalisation matrix. As a qualitative study, the research questions are expected to be answered from the responses of the interviews as well as other secondary materials. The research questions were thus developed from operationalising the NET, MPT and CAPM theoretical framework. The central purpose of this study is to generally identify the primary determinants of institutional investment in rental housing. To help achieve this purpose, there are two major considerations. Firstly, it probes into the housing deficit to justify expanding the private rental sector. Unfavourable demographic changes and housing affordability drive discussions on increasing rental housing supply. Secondly, it seeks to understand institutional investors' strategic and tactical decisions towards rental housing investment. This includes investigating the place of diversification in institutional portfolios and the harmonisation between specific and rental housing market risks. It examines whether diversification is the single indicator for attracting institutional investors in the private rented sector and investigates the influence of existing barriers to institutional investment in rental housing. Figure 12 is a process chart that shows the logic behind generating the semi-structured interview questions. A more detailed explanation of the operationalisation matrix is illustrated in the appendix.

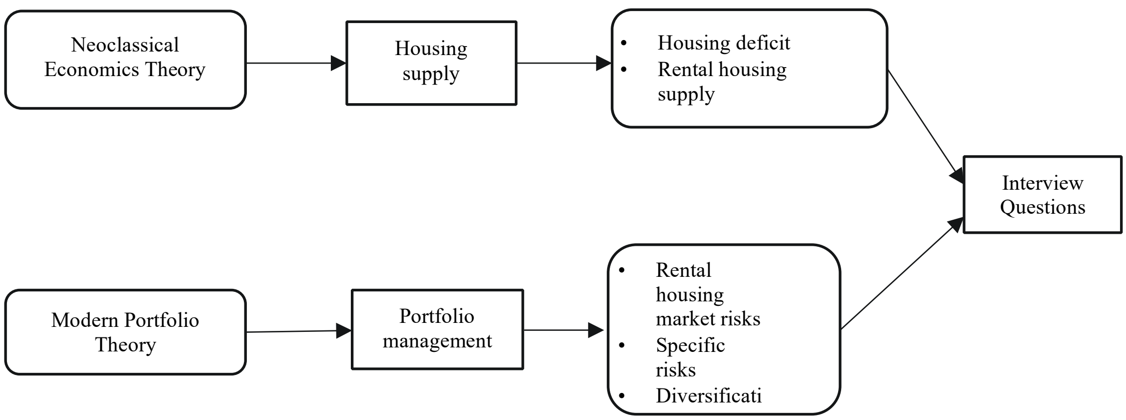


Figure 12 Process in developing the interview questions.

3.5 Ethics Approval

Ethics approval was a prerequisite before the commencement of any fieldwork. The researcher sought ethics approval from the Human Resource Ethics Committee (HREC) appointed by the University of Technology Sydney, Australia. The ethics consideration was in accordance with the National Statement on Ethical Conduct in Human Research, which seeks to promote research merit and integrity, justice, beneficence, and respect. The ethics application was categorised as high risk based on several factors. The application with reference ETH21-5735 was approved on the 3rd of March 2021 as meeting the requirement. Following the approval, the interview questions were updated based on the feedback from the committee, and the fieldwork commenced in Ghana.

3.6 Data Collection Methods

Data was collected using semi-structured interviews with key respondents who are experts in their respective categories, namely, institutional investors, developers, government, and tenancy unions. The three categories were selected as interviewees because of their relevance and involvement to rental housing supply. For a successful rented sector, these actors would be needed to play major roles in formulating and carrying out the projects.

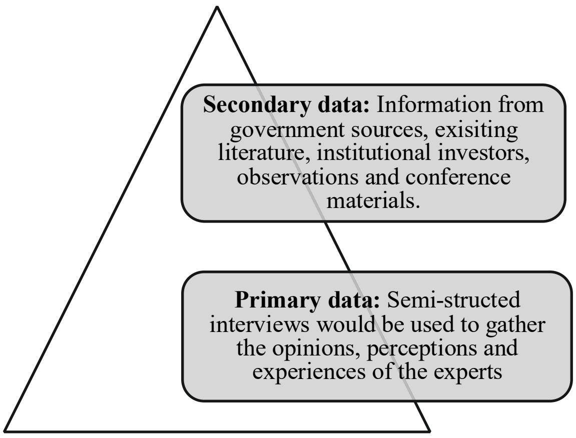


Figure 13 Types of data collected.

The data collection method, including the recruitment strategy, choice, and number of interviews, are explained in the forthcoming sections.

3.6.1 Sampling Methods

The main sampling technique for selecting the experts from the institutional investors' group was *snowball sampling*, a non-probabilistic sampling method. Respondents were experts in their fields and therefore had important contacts or industry colleagues who had useful information and insights on the research topic. This is particularly crucial for Ghana's geographical and housing policy context. Unlike quantitative research, which is probabilistic and statistical, qualitative research has no agreed sample size across various fields (Cleary, Horsfall & Hayter 2014). The requirement for sampling for research with data collection and theory testing differs from those with both data and theory generation, creating issues with ontological assumptions and logic of inquiry (Blaikie 2018 p.639). For snowball sampling, the researcher selects an index individual who is engaged in an interview and later asked to nominate others with similar characteristics for the second wave of data collection (Trotter 2012 p.400). This means that the researcher does not have a predefined total sample size before the commencement of the interviews.

For theory-based research designs, an acceptable sample size ranges between 15 and 25 respondents (Trotter 2012 p.399). This research adopted a total sample size of 19 respondents. At least 3 respondents were selected from any institutional investors' group comprising pension fund managers, endowment fund managers, insurance companies, financial institutions, private equity funds and real estate developers. Per the definition of an *institutional investor* identified in housing literature, the researcher selected six institutions as respondents. Depending on the responses and recommendations, the number may be increased to achieve reliability and validity of the expected results. The institutional investors selected for this research are presented in Figure 14 below.

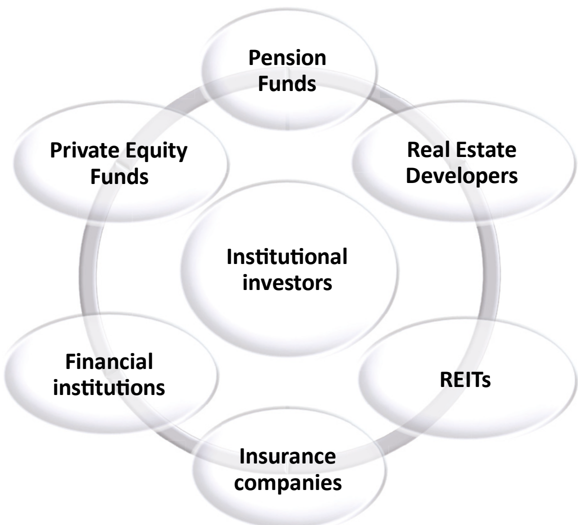


Figure 14 Institutional investors in Ghana

Source: Author 2020

Figure 14 shows the specific institutional investors being engaged through in-depth interviews. They include pension funds, real estate developers, real estate investment trusts (REITs), insurance companies, financial institutions, and private equity funds. As stated early on, structured open-ended interview questions were sent to respondents through virtual means. This method allowed for structured communication with the respondents. Getting experts to answer questions was difficult because of their busy schedules, but using virtual apps such as Zoom, Skype, and Ms Teams made it easier. Theoretical foundations guided inquiries and responses analysed to answer the research questions.

Key respondents were selected through purposive sampling from the government and tenancy union sides. These include respondents from the Ministry of Housing, rental agencies and all relevant public organisations connected to the rental housing market. This researcher adopted the triangulation method, combining semi-structured interviews, cost-benefit analysis, and secondary data. A high-reliability level was achieved through the UTS Data Management Plan. With this plan, the researcher documented the step-by-step process of the entire research. This ensured transparency and allowed for possible future repetition and replication of the research by other scholars. Through the snowball sampling technique, more agencies and experts were engaged based on the recommendations of the experts.

3.6.2 Recruitment Strategy

The recruitment strategy is the way respondents are contacted and engaged. It commenced with making initial phone calls to relevant organizations or persons to make first contact with participants. The background, qualification and position of participants were verified from the organizational sources during this period. Emails stating a request for virtual interviews with participants were sent out to the organizations and persons. An introductory letter stating a brief description of the purpose of the research and the reason for the interview was attached to the email. Lastly, an official letter from the university confirming the researcher's identity and candidature was attached for the reference of the organization and participants. In cases where industry colleagues recommended participants, the same recruitment procedure was followed before interviews were conducted.

The participants consist of 19 respondents selected among the various stakeholders in Ghana. Interviews were conducted virtually through two main online communication platforms: Zoom and Skype. Provisions were made for participants who preferred other platforms like Microsoft teams and Facebook for the interview to be conducted. The interviews were conducted within one year after ethics approval. Permission was sought from the participants for the interviews to be recorded for easy fallback on responses and for transcription and coding purposes. Although the researcher conducted the interviews himself, research assistants in Ghana were tasked to establish contact with some participants to set up online appointments.

3.6.3 Reasons for the Number of Interviews

The respondents selected are policy experts, institutional investors, and property developers. To qualify as a participant, the person or organisation had to be directly or indirectly connected to the property market as a consultant, academic, developer, institutional investor, tenancy union or government housing agency representative. It excluded tenants and homeowners as well as individuals who are not related to the housing sector. To conduct a good qualitative analysis, a range between 15 to 25 participants is a good and reasonable number (Trotter 2012 p.399). The total number of interviews conducted was 19 across the stakeholder group. This number provides a good range for high validity and reliability of results. Normally between 15 to 25 participants are sufficient to obtain adequate data to conduct a good qualitative analysis (Trotter 2012). Out of the 25 interviews planned, 19 respondents participated, i.e., n=19 representing a total response rate of 76%.

Several measures were adopted to resolve any issues with the low response rate. Firstly, the BtR sites and projects understudy were visited and examined to verify and authenticate participants' responses, especially concerning the characteristics of the asset class and its functionality. Secondly, information gathered from the interviews was cross-checked with the relevant institution to ensure the right information was used for the analysis. The participants are the main stakeholders in the industry, and hence their input is highly valued for its details rather than quantity. No travel was required of participants. Participants did not need to travel to any locations for focus group discussions or interviews. The online and in-office presence was enough to gather the needed information. Respondents received no benefit, payment, or compensation for the research. The online interviews and face-toface follow-ups took 30 to 40 minutes for every participant. The semi-structured interview questions were sent to participants beforehand to familiarize themselves with the questions before the interview date and time.

3.7 Data Analysis Methods

The data analysis process begins with preparing and organising primary data gathered in semi-structured interviews. Audio and video recordings from the interviews are converted automatically into transcripts using online software called Otter. The transcripts were then cleaned of errors, and the results were grouped and analysed using the qualitative research software NVIVO 12. The software allowed the interviews to be coded to aid the qualitative data analysis, specifically a thematic analysis. Hilal & Alabri (2013) posit that rather than manually assessing the transcripts, computer-assisted qualitative data analysis software (CAQDAS) may be used to minimize subjectivity, enhance the richness, and assess comprehensive text-based information. The CAQDAS approach is recognized worldwide for qualitative research in various disciplines. Several notable studies explaining this approach include studies by Azeem, Salfi & Dogar (2012); Sotiriadou, Brouwers & Le (2014); Welsh (2002) and Leech & Onwuegbuzie (2011). Key relationships between the variables were unravelled, and assertions made at the end of the discussions were supported with empirical evidence of expert opinions and facts. The codes and themes were presented cohesively in the form of descriptive analysis. All interviews had been completed at this stage, and the writing was underway.

The analysis eventually led to formulating an affordable rental housing model, which was tested and validated in Ghana. The respondents were engaged in a broad but narrow range of issues on the volatility of the rental sector, matters concerning institutional investors decision-making on assets and the identified barriers inhibiting institutional investors from going into the rental sector. In line with the principles of CAQDAS, the findings are summarised using several visual representations generated from the NVivo 12 software. The visualisations help to show the relationship between codes, the popularity of words/phrases and a reader-friendly presentation of the data. The visualisations include a) word cloud, tree map, concept map, and explore diagrams comparing relevant codes and panel transcripts. The interviews constitute three participants: policy experts from government, industry, and academia, property developers/managers, and fund managers from pensions, insurance, and banking, respectively. The maps and diagrams show the relationships between the files, i.e., transcripts, the codes (parent and child nodes), and the connecting labels.

3.8 Developing the Model

A base model for a rental housing project was developed initially. This model constitutes a diagrammatic framework that represents the processes involved in developing and managing a rental housing project in Ghana. It also presents the different avenues for collaboration between the major stakeholders in the private rental sector. The next stage involves the variation of the base model using scenarios for build-to-rent and other avenues for institutional investment in rental housing as identified in the literature. The findings from the empirical studies vis-à-vis the experiences, insights, perspectives, and recommendations of experts in Ghana's housing market are critically analysed to produce a framework that predicts the channels that enhance the flow of capital from institutional investors into the private rental market.

The framework feeds into the expected policy reforms to increase the supply of affordable rental housing in Ghana. The model, therefore, builds on the theoretical foundations on harmonising institutional portfolios with rental housing investment and, secondly, identifying a sustainable flow of funds for large-scale rental housing supply. Holistically, it clarifies the *synergy* between the capital markets, the playing field of institutional investors, and rental housing investment. It identifies important connections between the major stakeholders, placing in perfect view the growing need to involve institutional investors in the proposed policy initiatives.

As stated early on, the major stakeholders in Ghana's private rental market were interviewed on how government policies may be reformed to stimulate the production of rental housing supply. The interviews revealed some propositions on convincing or attracting more institutional investors into rental housing investment. The study examined the support needed at the policy level to cause the desired increase. Although this research adopts a qualitative approach, the model is used as a method of triangulation to achieve the required validity and reliability of the research. The interview results are thus validated using quantified benchmarks and numerical estimations to prove or disprove the reliability of the claims made in the interviews. The method used to measure the validity of the findings is a Cost Benefit Analysis (CBA) using discounted cash flow analysis.

The primary objective of using a CBA to test the validity of the model in Ghana was to examine the impact of alternative policy initiatives and several baseline conditions such as incentives, taxes, regulatory requirements, income shifts and inflation rates on the feasibility of a hypothetical project. As the name implies measuring the costs and benefits of a project or phenomenon, the CBA method has been widely applied in the social sciences. It allows for objective analysis to determine the social return on investment. It influences decision-making and reforms in public policy including affordable housing, the energy efficiency of buildings, and specific projects. Several authors adopted this method in examining the social benefits of various parameters. Recent studies by Cordes (2017), Drabo et al. (2021), Armin Jeddi, Andrew Patton & Hankey (2019) and Araújo et al. (2016) demonstrate the growing relevance of the CBA method in assessing social impact investments of various forms.

In this study, the CBA method complements the semi-structured interviews and important policy documents to answer the research questions and helped to achieve high validity and reliability of findings. This triangulation method helped to achieve two main purposes.

1. It tested whether institutional investors such as pension funds, life-insurance funds, and the rapidly evolving real estate investment trusts, can be attracted into the residential rental housing market. The benchmarks used were the findings from the interviews on the determinants of institutional investment in rental housing. The primary objective at this level was to examine how the model could compete with the fixed-income market.
2. It used a hypothetical rental housing project to test the effect or impact of the proposed policy reforms on the various stakeholders, including developers, institutional investors, tenants, and the government. The approach used to measure the changes was a sensitivity analysis following the discounted cash flow analysis. The focus was to measure the quantity of rental stock that can be added to the total stock using alternative policies.

3.8.1 Illustration of Framework

Charts provided a suitable means to present graphics of the framework deduced from the interviews. It shows the connections between stakeholders and the structure of the supply pathway for rental housing. It represents the proposed framework for greater institutional investment in rental housing in Ghana and explains how the system for rental housing supply can be structured for maximum impact on supply. That is, it shows the relationship between the institutions, incentives, and stakeholders involved.

3.8.2 Validation and Verification of Model using Cost of Benefit Analysis

The findings needed to be verified or validated through triangulation to achieve high reliability of the empirical results. The inputs made by the research participants were tested using CBA to examine the benefits of rental housing investment and the effects of government policies on the stakeholders involved. There are several methods for conducting a CBA. This study adopted a DCF model to measure the Net Present Value (NPV) and the Internal Rate of Return (IRR) of an income-producing property over a period of 30 years. The NPV and IRR calculation over the period did not inculcate a multiplication of the discount rate by the inflation rate. The DCF was conducted to validate the expert opinions solicited through the interviews.

3.8.3 Steps Followed to Develop the DCF using Excel.

The DCF was used as a tool for conducting the cost-benefit analysis. The following steps were followed.

i. Project Identification

The first stage identifies a hypothetical project located in the rapidly urbanising region in Ghana, Greater Accra. To validate the findings from the interviews with stakeholders, there was a need to test the effect of policies on each stakeholder. The sample project helped measure the stakeholders' net cash flow in an active rental housing project. The stakeholders include the developer, institutional investor, government, and tenants. The project is a 500-unit multifamily rental housing project with three blocks. The project was planned to be completed in phases over eight years.

ii. Data Collection and Development of the DCF Model

Data was gathered from various sources to aid the cost-benefit analysis. Although the project is hypothetical, data was collected on real projects in Accra to support the research. Several assumptions were made in developing the DCF model and were based on the empirical data. In cases where the data was limited, the assumptions were based on the most recent or closely related data. Firstly, to distinguish between the results of a traditional DCF model and the proposed model, three types were developed: a base model, a joint venture model and an affordable rental housing model to validate the assertions that institutional investors can partner with developers to invest in affordable rental housing. Secondly, a hundred percent (100%) equity financing strategy was assumed for the joint venture and affordable housing models. Meaning, no debt was used in financing the project but a partnership where 80% equity was sourced from the institutional investor and 20% equity from the developer. This assumption was made based on the limited debt financing opportunities for such projects in Ghana, and the potential to using institutional funds as the financing backbone. This is a 30-year DCF with no reversionary income, meaning that the project will be held by the partners in the long term and would not be sold at any point. This was to reflect the long-term investment strategy of conventional institutional investors such as pension and life insurance funds. Thirdly, the comprehensive model constituted the development of a three-phase multi-purpose rental housing project located in a suburb of the Greater Accra region of Ghana. The project includes three blocks adjacent to each other on the same site. The first, second and third blocks were scheduled to be completed in years 4, 6 and 8 respectively, with the property expected to start generating income in the beginning of year 5 and the years 7 and 9 respectively. The cashflow is illustrated in the DCF. Finally, a 2% allowance was made for negative externalities to reflect events that may affect the running of the property.

iv. Analysis of Results

The model results were analysed using the NPV and IRR decision rule and a sensitivity analysis of several variables such as market growth, vacancy rates, and interest rates. A positive NVP demonstrates profitability whiles a negative NPV shows the project will not be feasible. The IRR was measured against the cost of capital or the discount rate to measure the investors profitability. Table shows the formulas used to calculate NPV and IRR. It shows the general and excel formulas along with the interpretations of the abbreviations.

Table Measuring NPV and IRR

Formula	Formula computed in excel
Net present value $$NPV = \sum_{t=0}^{n} \frac{R_t}{(1+i)^t}$$ Where: NPV= net present value R_t= net cashflow at time t t= number of time periods i= discount rate	$NPV = (rate, value\ 1, [value\ 2], \ldots)$ NB: check appendix for the extracted values

Internal rate of return $$0 = NPV = \sum_{t-1}^{t} \frac{C_t}{(1+IRR)^t} - C_0$$ Where: C_t= net cashflow C_0= total initial investment costs IRR= the internal rate of return T= the number of periods	$Formula = IRR(range\ of\ values)$

3.9 Chapter Conclusion

The constructivist grounded theory research design was adopted from a range of qualitative research designs initially considered for this study, including Patton's typology, hermeneutical analysis, discourse analysis, analytic induction, content analysis and matrix analysis. The CGT suits the research context and offers a structured approach to achieving the research aim, especially in generating a new model. From the world's philosophical viewpoint, the study matches the constructivists' view, who construct an understanding of a phenomenon and then generate a theory from it. A blend of the grounded theory with the constructivist view of the world matched perfectly with the CGT methodology first propounded by Glaser & Strauss (1967) and later updated by several scholars, for example, Charmaz (2006). Since the research sought deep insights into a phenomenon, the data collection focused on empirical investigations using sampling methods that offer specificity and non-probabilistic attributes, namely, purposive and snowball sampling. The target respondents are people with expertise and experience on the subject and therefore stand in good positions to offer some original insights. Referring to the CGT, the data collected would be stored in the UTS Data management repository and analysed qualitatively using NVivo, a software package. Relevant secondary data from government sources supplemented the empirical data.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.0 Introduction

This chapter presents the data gathered from the empirical investigations using a descriptive approach. Anderson (2010 p.5) states that, in presenting the findings of a qualitative study, the researcher may summarise the main points gathered and emphasise the knowledge being added to the study area. The study adopts descriptive language and quotations to show the highlights of the empirical findings. Several interviews were conducted to identify the factors needed to expand the rental housing supply through institutional investment in Ghana. The interview findings are peculiar to Ghana and reflect the phenomenon in a developing country. The research questions include the following.

1. What are the roles of the government and the private sector in boosting rental housing supply in Ghana?
2. What are the determinants of institutional investment in rental housing in Ghana?
3. How should the roles of the government and the private sector change to improve rental housing supply in Ghana?

A detailed operationalisation matrix showing how the research questions were derived, along with the theories, variables, and methods is attached to the appendix. The participants selected for the interviews belong to three broad stakeholder groups, namely, institutional investors, policy experts, and property developers. A snowball sampling method was used to select the participants. A total sample size of 25 was initially designed, of which 19 responded and agreed to the interviews. The first group of interviews were conducted virtually due to restrictions on face-to-face during the peak of the covid-19 pandemic. Microsoft Teams app and Zoom app were the two leading platforms used. An additional set of interviews were conducted face-to-face after the covid restrictions. The participants were recorded, transcribed, and imported into the NVivo 12 software, which helped to identify and classify the codes and themes from the transcripts. A list of interviewees selected for the semi-structured interviews is presented in Table 6.

Table 6 List of Ghana Interviewees

Participants	No. of interviews	Participant (no.#)
Pension fund managers	5	2, 3, 4, 5, 6
Insurance fund managers	3	15, 12, 13,
Fund manager - Banking	2	16, 17
Policy experts	6	1, 7, 8, 10, 11, 18
Property developers	3	9, 14, 19
Total	**N=19**	

Source: Author (2023)

As shown in Table 6, 10 fund managers across pension, life insurance and banking participated in the research. The researcher sought to understand their asset selection and allocation strategies, especially why they avoid rental property investment. It looked at their perception of the rental asset, level of correlation with their traditional assets, and suitability for diversification. This helped to understand the barriers associated with adding the rental asset to their portfolios. A total of 6 policy experts across academia, industry and government also participated. This group were asked their thoughts about the rental housing agenda in policymaking and implementation. It sought to understand the experts' thoughts on using institutional funds to expand the rental sector and the implications on Ghana's housing markets. Finally, a total of 3 property developers participated in the research. It solicited their views on potential partnerships with institutional investors and their readiness or issues at play. In Ghana, the limited credit facilities make it difficult for developers to embark on big rental projects. The discourse on inviting institutional investors into the sector provides a potential avenue for developers to get the finances to undertake these projects. The arrangement of the sections of chapter four reflects the order of the three research questions. The next section provides a profile of Ghana.

4.1 The Role of Government and the Private Sector in the Provision of affordable rental housing in Ghana

The role played by the government and the private sector in providing rental housing is embedded within the framework of the respective housing markets. Both secondary data and semi-structured interviews answer this question. The desktop reviews helped to introduce the geographical context, presenting the demographic changes and urbanisation over time. The interviews inquired about the housing policy direction and the roles played by both parties in providing affordable rental housing supply. Over the years, different political regimes have embarked on initiatives to improve affordable housing in Ghana. Some of the policies align with the roadmap of international organisations such as the UN Habitat and the World Bank. The government cooperate with these organisations at various levels to provide affordable housing. Several examples are presented in Table 7.

Table 7 National Housing Policies- Ghana

Policy	Description	Year
SSNIT Flats	A state pension fund initiative implemented by Ghana's Social Security and National Insurance Trust (SSNIT) to provide affordable rental housing supply to the contributors of the fund across the country. This scheme has been officially discontinued due to several managerial challenges.	1970s
National Housing Policy and Action plan (NHPAP)	A proposed plan designed to guide the activities of Ghana's housing policy during the post-colonial era. This plan however was not realised but remained a proposal throughout the designated period.	1987 - 1990
National Shelter Strategy (NSS) Part I	The first of the national shelter strategy was implemented to guide housing policy matters. This document was put together in collaboration with the UN-Habitat. Just like the NHPAP, it remained a proposal during the period.	1991 - 1992
National Shelter Strategies Part II	The second part of the NSS followed the first one. There were also further reviews of the updated document in 1999, 2000, 2003 and 2005.	1992

Istanbul Declaration on Human Settlements	Ghana joined other countries to participate in a conference organised by the UN-Habitat in Istanbul, Turkey. The conference was done to promote adequate shelter for all people. The objective of the conference includes providing adequate platform to promote liveable, equitable, sustainable, and safer human settlements. The strategies were adopted by Ghana in housing policies during the period.	1996
Growth and Poverty Reduction Strategy (GPRS I and II)	The GPRS I and II were implemented to reduce poverty and foster the development and growth in the macroeconomic condition of Ghana. Under this program, an emphasis was placed on urban development, housing, and slum upgrading.	2006 - 2010
National Urban Policy Framework (NUPF)	Ghana's first comprehensive urban policy framework designed to foster urban settlements that are sustainable, spatially integrated, and orderly developed. The NIPF was expected to aid the socioeconomic development of Ghana.	2012
National Housing Policy	A short-term housing policy to address mainly Ghana's housing problems, especially the housing deficit challenge. The target group for this policy are the low-income families.	2012
National Slum Upgrading and Preventing Strategy	A policy designed between Government of Ghana and the UN-Habitat to devise means to upgrade and integrate Ghana's slums into the country's planning framework.	2013
Public Servants Loans Scheme Board (PSHLSB)	The PSHLSB is a scheme established to offer residential mortgages to civil and public servants to	2020
	enable them build or buy their first home. This loan facility is supervised by the Ministry of Works and Housing.	
National Rental Assistance Scheme	The Ministry of Works and Housing proposed a rental assistance program designed to provide low-interest loans to eligible Ghanaian citizens to enable them to pay the huge rent advance required by most landlords in Ghana. The NRAS was first proposed in 2020 and still under review.	2020

Source: Adapted from government of Ghana policy documents

Housing in Ghana is a hot topic in the political sphere and an area that has seen significant growth over the years. Experts, property developers and institutional investors had a lot to say about the country's rental market and the policy direction of the government. The interviews conducted with these stakeholders focused on understanding the dynamics of Ghana's rental housing supply and demand. It looked at the national housing policy direction, especially on the housing deficit, the state of existing rented stock, and the prospects of using institutional funds to increase the rental stock in the housing market. Expert opinions were also gathered on the implications of having corporate landlords in Ghana's housing market, as well as the place of demand and supply-side subsidies in the national housing policy. Participants were asked about the best strategies for bridging the over 2 million housing gaps in Ghana.

The policy experts stated that the discourse on housing deficits is erroneously discussed from the supply perspective, rather than looking at it from the demand side. They revealed that effective demand plays an important role in closing housing supply gaps. The capital available to produce sizable portfolios of high-quality residential units for the market is available, but the challenge is the ability of the tenants to afford these units. Policy experts believe that Ghana's housing deficit is underpinned by housing affordability which is a resultant of the lack of effective demand. Participant 1 stated:

> "When we talk about Ghana's housing deficit problem, we conceptualise it as a supply problem. But if you dig a bit deeper, it is not; it is a demand problem. And the demand is driven by housing affordability".
>
> (Participant #1, Policy expert)

The country's housing policy is not tailored to the housing demand on the market. This means that the concept of housing affordability is not being addressed in the strategies adopted by the government for affordable housing. The national housing policy discourse is lacking the use of terminologies such as social or public housing. Rather, the Ministry of Works and Housing initiatives point to the facilitation of affordable housing supply. The projects which are described as 'affordable housing' are mostly offered on a market-driven basis. Public housing in Ghana is allocated to government institutions to be given to public servants working in the various arms of government (judiciary, legislature, and executive). These are individuals who occupy positions in highly ranked public offices. On the broader scope of the housing market, public or social housing is not included in the discourse bridging the housing supply gaps for mid-to-low-income households. Participant 7 stated:

> “We have got the concept wrong. What the government is doing is not affordable housing. The basic problem is that our policy is not really tailored towards the real demand on the ground. Yes, because housing, as you know has two aspects, we have housing in the context of economics and housing in the context of social issues. What they are calling affordable housing ought to be in the social arena, not in the economic arena”.
>
> (Participant #7, Policy expert)

The national housing policy direction is predominantly dictated by project-level interventions initiated through the Ministry of Works and Housing. In some instances, the ministry partners with private developers at various levels to provide affordable housing unto the market. There are several strategies government could adopt to help bridge Ghana’s housing deficit problem. Firstly, participant 1 stated that the entire economy must be productive to increase incomes over time. The mid-to-low-income households need to be empowered not only by demand-side subsidies, but most importantly, through the creation of better employment conditions. This links it to the state of the country’s macroeconomic environment. Secondly, the cost of providing housing in Ghana is quite high, contributing to the high house prices and rents on the market. Policymakers must think about the cost of production problem to increase affordability. This can be done through direct government intervention using the country’s fiscal policy direction. For example, through tax incentives, providing the needed infrastructure for developers, encouraging the use of local building materials etc. Property developers can be supported with supply-side incentives in this regard which will then reduce the high house prices and rents placed on their properties.

The major government agencies responsible for the production and facilitation of affordable housing supply in Ghana include the Ministry of Works and Housing, Tema Development Company, State Housing Corporation, Department of Rural Housing, National Lands Commission, Rent Control Department, Public Servants' Loan Scheme Board amongst others. These agencies work together at various levels to produce affordable housing in Ghana. Over the years, several affordable housing projects worth millions of USD have been injected into Ghana's housing markets. The client for most of these projects is often the Government of Ghana whiles in some cases, there are publicprivate partnerships that result in such projects. Various political regimes have commissioned and constructed housing projects to address the country's housing deficit and to increase access to homeownership for mid-to-low-income households. These projects are located across all the regions in Ghana. A list of affordable housing projects includes, Tamale Affordable Housing Project, Saglemi Affordable Housing Project, Kpone

Affordable Housing Project, Borteyman Affordable Housing Project, Shai Hills Affordable Housing Project, Gbetsile Affordable Housing Project, Amasaman Affordable Housing, Asokore Mampong Affordable Housing, Apolonia Affordable Housing Project etc. One important issue raised concerns about the misallocation of state-led affordable housing projects. Participant 8, a government policy expert, mentioned the highly political nature involved with delivering affordable housing units to the deserved occupiers. Participant 8 stated:

> "…the challenge is that our system is highly political. So those in power are the people who really enjoy it. It is almost impossible to do affordable housing or below-market housing. It will not ever get to the poor people. When you develop affordable housing, the rich people and the politicians will take it eventually sell it back to the poor people, that is what always happens. And so even the affordable houses we are selling they are just about the market rate".
>
> (Participant #8, policy expert)

Participant 8 also mentioned the need to empower state property developers like the Tema Development Corporation (TDC) and the likes to develop housing that is below the market rate. The way to empower them is through financing infrastructure developments and serving the plots for housing developments. This will reduce the cost of production for the developers. It is shown from the interviews that the policy experts disagree with Ghana's national housing policy direction of providing market-driven affordable housing for midto-low-income households. Participants 1, 7 and 8 advocate for the deliberate use of social or public housing in the discourse as it will change the housing allocation strategies and strictly enhance the below-market housing supply. Additionally, there are currently no demand-side incentives in the country's housing policy. This means that there is no direct government support for first time home buyers or renters in any form. Policy experts state that, for the effective demand to increase, there must be support systems in place at the lower levels of the income ladder to aid the target group in securing credit facilities for home purchase or assist with rent payments. Rental housing which is often not mentioned should also be given a boost by the government.

In summary, Ghana's housing policy for affordable housing is dominated by initiatives that focus on bridging the housing deficits by increasing housing supply instead of improving the effective demand. The housing discourse lacks affordable housing because most housing projects are offered at the market level. Through the Ministry of Works and Housing, the government has commissioned affordable housing projects across the country. Participants revealed that these projects have failed to reach the targeted beneficiaries due to inadequate housing allocation strategies. The highly political system allows the rich and political leaders to buy out affordable housing units.

4.2 Determinants of Institutional Investment in Ghana's Housing Market

Unlike the US, UK, Europe and Australia, the role of institutional investment in rental housing has been somewhat silent in Ghana. Although the phenomenon is happening, it has not been looked at through a global lens, especially with examples in specific developed countries. Institutional investors in Ghana including state and private pension funds, financial institutions (mostly banks), insurance companies, private equity funds, and real estate investment trusts (REITs) are showing interest in real estate investment. Experts and fund managers from each of these categories were engaged through interviews on several issues surrounding their portfolio selection and asset allocation strategies. The first part of this section presents findings from the interviews with Ghana's major pension fund managers. Pension fund managers were asked about the assets they invest in and the reasons behind the choice of assets. The follow-up question focuses on their level of international exposure and the reasons behind it. These questions provide insights into the dynamics of portfolio construction and the uniqueness of an institutional portfolio within the context of understanding the omission of the rental asset. It, therefore, solicited their opinion on rental housing investment and their position on its suitability for inclusion in their portfolios. The interview further delved into understanding the barriers inhibiting them from investing in rental asset. Finally, it presents expert views on student accommodation as opposed to Ghana's general private rental market.

The second part of this section presents findings from fund managers who manage insurance funds in Ghana. It presents an overview of the developments of the life and nonlife insurance business in Ghana, specifically on the recent developments. In the interviews with insurance fund managers, similar questions were asked concerning their asset allocation model and their international exposure. It further looked at the role of the regular in their previous apathy towards the rental asset. These questions are important in understanding the reasons behind their dominance in the financial space. The final part of the section presents findings on the emergence of REITs in Ghana as well as the barriers inhibiting institutional investment in rental housing. It solicited views from fund managers (pensions and insurance) concerning the emergence of REITs. The two groups of experts had various views on implementing the 2019 REIT Guidelines. It further presented the funds operating like REITs in Ghana, especially publicly known ones.

4.2.1 Understanding Asset Selection in Institutional Portfolios

The different categories of institutional investors have multi-asset portfolios that they rely on to meet their benchmarks. Based on earlier assertions that institutional investors show immense apathy towards rental housing investment, the empirical investigations sought to identify the assets within institutional portfolios and the logic behind the asset allocation strategy of major institutional investors in Ghana. Several fund managers were engaged to determine which assets they invest in and whether their portfolios include real estate assets. It was revealed that pension fund managers set their investment policy in line with the National Pensions Regulatory Authority (NPRA) guidelines. The NPRA is the main regulatory body for pension fund institutions in Ghana. As part of their responsibility, the NPRA set ceilings on the various asset classes pension funds can invest in to ensure responsible investing. As these funds belong to many individuals. In response to whether the regulator plays a role in their asset allocation strategy, participant #3 stated:

> "We are a licensed institution, and our activities are guided by the law and that includes our investment activities. Our investment is bound and directed by the NPRA investment guideline, which set ceilings for the various asset classes".
>
> (Participant #3, Fund manager)

Pension funds operating within the shores of Ghana are mandated to check and comply with all requirements and conditions of the NPRA guidelines. There are strict procedures for fund managers who want to include certain types of assets in their portfolios. The type of assets allowed in its varying components has implications on the levels of diversification in multi-asset portfolios. In selecting assets, fund managers stated that, after checking the NPRA guideline, they take decisions based on the historical performance of the available asset classes and investor discretion. Some participants alluded to using a risk-management framework that sets the tone for risk appetite and the accompanying tolerance levels. In response to the question on the assets they invest in, participant #2 stated:

> "We restrict our investments to financial instruments within Ghana's capital markets. In the fixed income space, I would say it could be the government of Ghana securities which could be 91- or 182-day treasury bills all the way to the bonds".
>
> (Participant #2, Fund manager)

Ghana has a predominantly fixed-income market, which is dominated by fixed issuance. The fixed-income market is dominated by government bonds, which most fund managers invest in. Participants 4, 5 and 6, pension fund managers, responded similarly to participants 2 and 3. In summary, pension fund managers in Ghana invest in government securities, quasi-government securities, equities, and money market instruments. For the question on why real estate was a small component within institutional portfolios, participants stated that their clients were not calling for it. Additionally, although there is an appetite for pension fund managers to invest in real estate, there are not enough vehicles. Pension funds in Ghana are allowed to invest in alternative asset classes. The findings show that the NPRA indirectly influences the type of assets pension fund managers invest in by the guidelines. Table 8 shows the permitted investments for pension funds in Ghana.

Table 8 Permitted Investments by the Ghana National Pensions Regulatory Authority

5.1	Bonds, bills, and other securities issued or guaranteed by the Bank of Ghana or the Government of Ghana
5.2	Bonds, debentures, redeemable preference shares and other debt instruments issued by corporate entities and listed on a stock exchange registered under the Securities Industry Act, 1993 (P.N.D.C. Law 333)
5.3	Ordinary shares of limited companies listed on a Stock Exchange and registered under the Securities Industry Act 1993 (P.N.D.C. Law 333) with good records, declared and paid dividends in the preceding five year.
5.4	Bank deposits and bank securities

5.5	Investment certificates of the closed-end investment fund or hybrid investment funds listed on a Stock Exchange registered under the Securities Industry Act, 1993 (P.N.D.C.L333) with a good record of earning.
5.6	Units sold by open-end investment funds or specialist open-end investment funds listed on the Stock Exchange are recognized by the Authority.
5.7	Bonds and other debt securities issued by listed companies
5.8	Real estate investment, and
5.9	Other forms of investment that the Authority may determine

Source: Adapted from NPRA Guidelines 2022

Table 8 shows the details of the various assets pension funds are allowed to invest. However, it does not give the specific ceilings of the assets as mentioned in the interviews. The findings, therefore, show that pension fund managers in Ghana use the NPRA guideline along with their internal investment policy in selecting and allocating the assets they invest in. It also revealed the reasons why pension fund managers have very little or no real estate investment in their portfolios. Figure 16 presents a word cloud showing the interview results on the asset selection strategies of institutional investors in Ghana.

Figure 16 Keywords on the asset allocation of institutional investors in Ghana

The most common words discussed by fund managers include NPRA and NIC guidelines, clients, securities, equities, financial, capital, and trustees, amongst others. Institutional investors such as pension funds are guided by the NPRA guidelines regarding the assets they choose to invest in. Additionally, their portfolios are dominated by equities and securities and are meant to meet the targets set on behalf of the clients. Figure 17 is a concept map that shows the themes generated from institutional investors' responses. Fund managers are asked about their asset allocation strategies, the components of their portfolios, and why the rental asset is omitted. The following themes are shown in Figure 17.

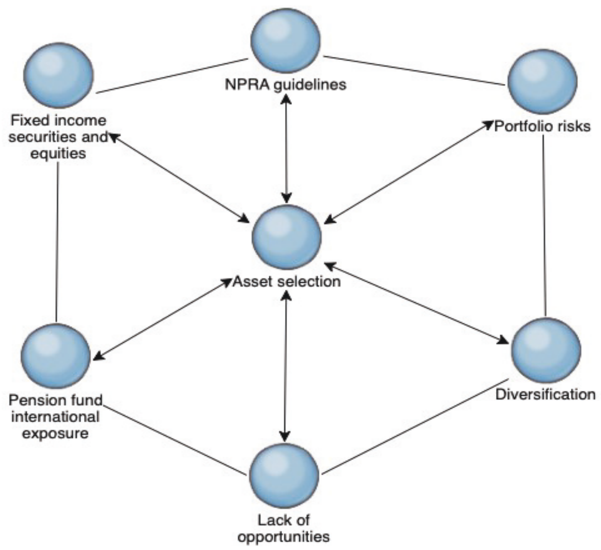


Figure 17 The asset selection of fund managers in Ghana

Institutional portfolios have very little or no real estate assets. It is confirmed in the interviews that institutional investors invest in fixed-income securities and equities. They were asked further the reasons why the rental asset, and the real estate asset at large, is mostly omitted from their portfolio. Their responses indicated the following reasons, firstly, the asset allocation strategies are guided by the NPRA or NIC investment guidelines. Secondly, they consider the risk-return profile of their portfolio in line with the expectations of clients and the board of trustees. Thirdly, concerning why the rental is omitted, they revealed that, although there is an eye for diversification, there are limited opportunities to invest in the asset class. Figure 18 shows the participants that discussed the important role played by the regulator in shaping the asset allocation strategy of institutional investors.

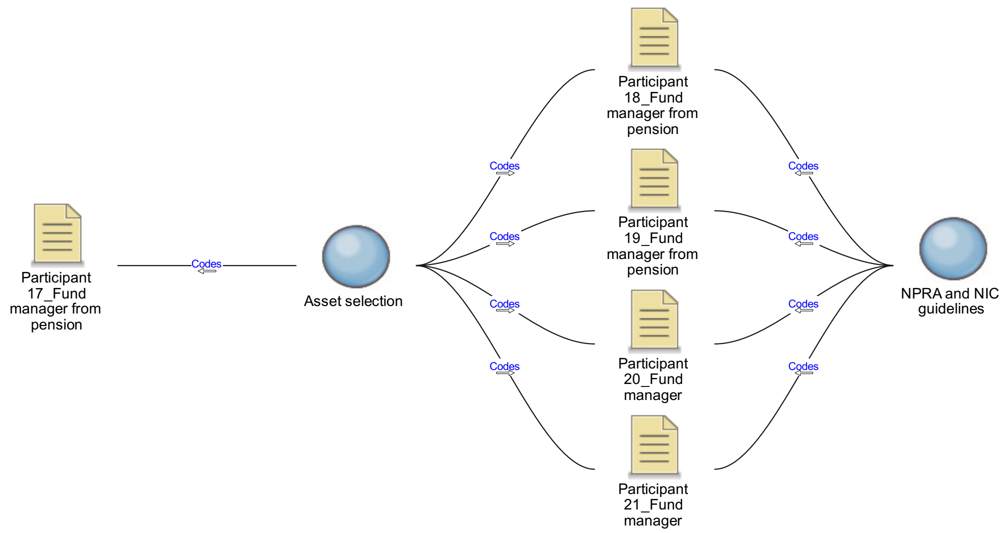


Figure 18 The role of the NPRA and NIC guidelines

As shown in Figure 18, apart from participant 2, participants 3, 4, 5 and 6 explained how the regulatory guidelines influence the assets they invest in. Fund managers consider these guidelines extensively before investing. The National Pensions Regulatory Authority (NPRA) and the National Insurance Commission (NIC) of Ghana are the two main regulatory bodies for the pension and insurance business in the country. The empirical investigations revealed that their activities and investment guidelines tend to shape the internal investment policies of the respective institutional investors.

4.2.2 Importance of Overseas Investment

Most pension fund managers interviewed did not have international exposure, while a few had investments in the West African sub-region. Many economic activities are happening in the African continent, especially around the Economic Community of West African States (ECOWAS). Institutional investors in Ghana, especially pension funds, have not yet taken advantage of cross-country collaborations in the region, which could offer a broad range of benefits. For pension funds, the NPRA has not made any provisions prohibiting overseas investments nor has it discouraged it in any way. It is an untapped area for further exploration. There are a few regulatory considerations for fund managers who want to invest in the west African sub-region. It involves getting familiar with the nature of the target markets and sometimes its relationship with the sub-region. This section sought to understand whether this was one of the strategies used by pension funds in diversifying their portfolios. It was also to understand the options for the common currency to be introduced in the ECOWAS region. Participant 3, a fund manager at a pensions fund was asked whether they invest abroad; the response was:

> "Unfortunately, no. Again, if you read the guideline, you realize, we are allowed to do up to 10% of our assets outside the country but the bureaucracy you go through to be able to do that is unthinkable. I mean, you need basically an approval from the president before you invest outside the jurisdiction".
>
> (Participant #3, Fund manager)

Concerning investing overseas and all matters relating to international exposure of pension funds in Ghana, participants 2, 4 and 5 stated that they had no current overseas investments. Nevertheless, they stated their intention to do so and that plans were underway to invest in Africa and the globe. Four pension fund managers interviewed (i.e., participants 2, 3, 4 and 5), stated that they had no direct international exposure, meaning they did not invest in other markets outside Ghana. Participant 5 stated that their overseas exposure is somewhat through private equity, which invests in the Eurobond. Some invest in pan African Eurobond from Mauritius because of fewer restrictions and the platform it provides for cross-country investments. Some stated they have outlets in Ivory Coast, Nigeria, South Africa, and Mauritius. Participant 6, a big international investor, stated that he has sizable international exposure, especially in Africa. Participant 6 stated:

> "So, we have Eurobond fund that we run that is registered in Mauritius. Start investing. Your bonds issued by quite several African countries. For example, we have teams in Ghana, Ivory Coast, and others".
>
> (Participant #6, Fund manager)

Interviews with pension fund managers in Ghana concerning their level of international exposure reveal that, most funds do not invest overseas. The reasons behind it are neither regulatory nor intentional. International diversification is a form of a diversification strategy for institutional investors.

4.2.3 Pension Funds and Rental Housing Investment in Ghana

The Social Security and National Insurance Trust (SSNIT) is Ghana's main public pension fund institution. It was established under the National Pensions Act 2008 Act 766, to cater for a three-tier pension scheme. In Ghana, the three-tier pension scheme is simply an optional 16.5% base salary contribution of workers toward their pension. It has a widely diversified portfolio ranging from securities and equities to commercial and residential real estate. As Ghana's largest non-bank financial institution, SSNIT invests in apartments, also known as ‘flats’, across the country. These flats or apartments were initially built for rental but due to managerial challenges, majority of the flats were sold whiles others were operated on rent-to-own basis. It was one of Ghana's first examples of institutional investment in rental housing. The management of the properties was placed in the hands of an in-house property team. Over the decades, the SSNIT flat scheme has attracted a lot of attention from industry players and the government. This is due to the numerous challenges faced with financial losses, inadequate maintenance, and housing misallocation problems. Recently, the focus has been on commercial real estate investment rather than the apartment-based model.

The Ghana University Superannuation Scheme (GUSS) is a pensions scheme for lecturers in tertiary educational institutions in Ghana. This is particularly common practice in the universities, where lecturers are signed-up to contribute towards their pension. As a campus-based institutional investor, GUSS invests in student accommodation in the major universities in Ghana. There is an opportunity for steady annual returns due to the continuous cycle of new students every academic year. GUSS complements the efforts of the universities in providing student accommodation on campus and off-campus sites. Just like other rental units in Ghana's private rental market, GUSS hostels charge advance rents for the academic year. For example, the academic year from September to May the following year, exclusive of the end-of-year vacation. The rent advance payment system works very well for landlords and investors in Ghana.

The explore diagram in Figure 19 compares the transcripts of participants 4 and 6 pension fund managers. The essence of the diagram is to enlist the codes generated from the interviews with the two fund managers. It also shows the commonalities in responses and the relationship between them.

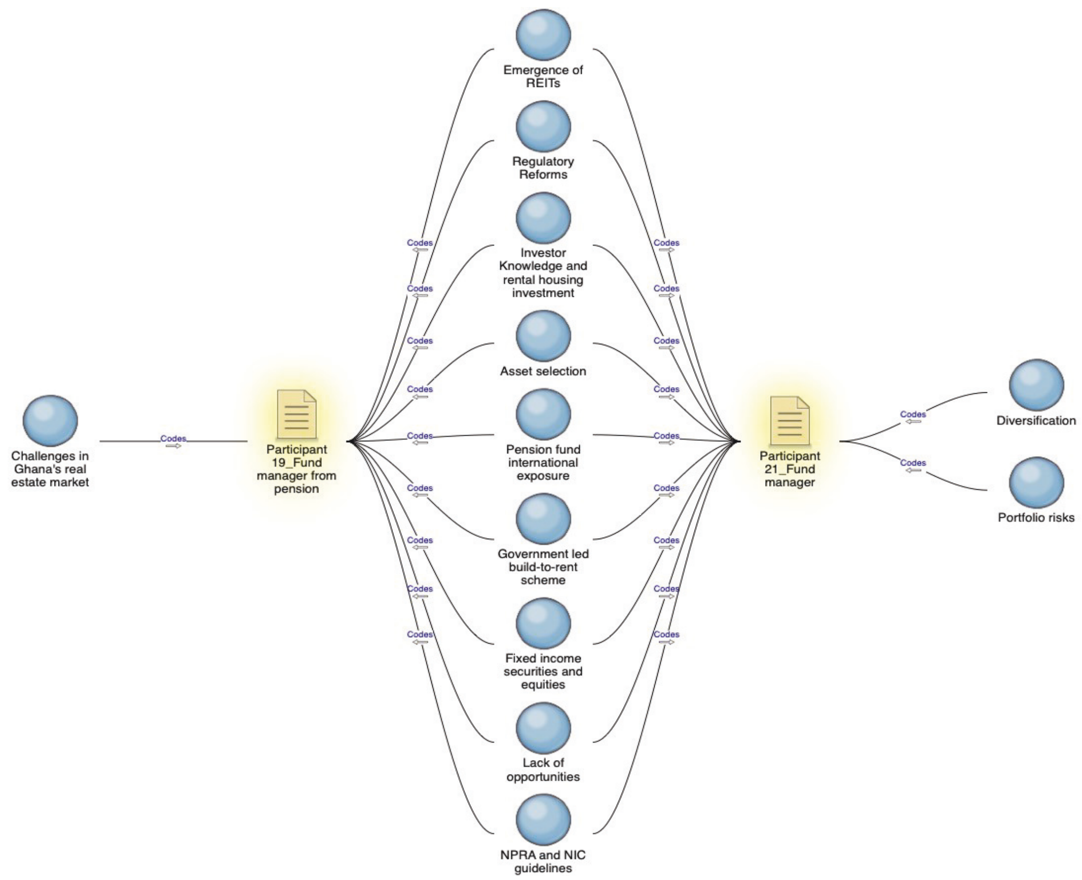


Figure 19 The asset allocation strategies for pension fund managers in Ghana

The themes presented in Figure 19 constitute the factors influencing the selected pension fund managers' selecting assets. Concepts such as NPRA guidelines, fixed-income securities and equities, international exposure, lack of opportunities, investor knowledge gaps, regulatory reforms, REITs etc., were discussed in the interview. The concepts help to answer RQ2, which sought to identify the determinants of institutional investment in rental housing in Ghana.

4.2.4 Insurance Funds and Rental Housing Investment in Ghana

Insurance companies are one of the major institutional investors in Ghana. Life and nonlife insurance business manage a large pool of funds that could be invested in real estate. Several interviews were conducted with fund managers in insurance companies in Ghana. The questions asked were centred around the components of their portfolios, specifically on the proportion of real estate and the reasons behind it. As it was preidentified before the interviews, insurance portfolios had a very small percentage of real estate investment. The National Insurance Commission (NIC), which is the main regulatory body of the insurance business in Ghana, was established under insurance law 1989 (PNDC law 227) and was subsequently amended under Insurance Act 2006 (Act 724) and is currently being operated under the new Insurance Act 2021 (Act 1061). As in the case of pension regulation, insurance funds are regulated by a body set up by the government. The research sought to find out if there were any restrictions concerning the investments that licensed insurers could undertake. With this question, the extent to which regulatory bodies influence the assets within Ghana's portfolios of insurance companies. Participant 10, a fund manager with an insurance company, stated:

> “The NIC determines your solvency as an insurance company. You need to meet a certain target and in doing that, they have come up with a list of investments and a discounting factor on the kind of investments you are going into. So, if you are investing in real estate, they can probably discount your investment by like 40%. If you are in the money market short term, they can discount it by just 5%. If you have little cash, you can get a full 100% on maybe treasury bills or something. That is what they have done. So, they don't directly tell you, invest in A or B but with the ratings and the discounting factor, they are directing you to a particular end. At the end of the day what you invest in will determine whether you are solvent or not. You must declare that you have the necessary capital adequacy ratios. You should be able to continue operating as an insurance company, so that is what they have done, they have discounted the list of assets that you can invest in there”.

(Participant #10, Fund manager)

Insurance funds, especially life insurance are invested over the long term and provided as a lump sum at maturity or in the event of the death of the policyholder. Fund managers for these funds are therefore interested in long term investments that will enable them to obtain the expected returns at maturity. Non-life insurance funds may be considered more shortto-medium-term funds because they are invested for unforeseen health complications or damage to assets. From the perspective of an insurer, funds from life insurance are likely to be invested in the long term whiles non-life insurance funds are likely to be invest in the short-to-medium term. Empirical investigations revealed that the portfolios of insurance companies in Ghana are dominated by fixed income securities, which are followed by equities. The component of real estate is very minimal in some portfolios while completely absent in others. For those that invest in real estate, the assets are spread across commercial, industrial, and residential properties. It was also revealed that there are several insurance companies listed on the Ghana Stock Exchange (GSE). They trade publicly to expand their investor base and financing options. One of the major findings from the interviews is the recent mandatory requirement for insurance companies in Ghana to separate life insurance from non-life insurance. Events following this separation is the increased appetite for alternative investments, especially through the formation of subsidiary real estate companies. After this finding, a desktop review was done to check notable examples of insurance companies with subsidiary real estate companies. This is presented in Table 9.

Table 9 List of Insurance Companies with Subsidiary Real Estate Companies

Insurance Company	Subsidiary Real Estate Company
Enterprise Group Insurance Company	Enterprise Properties
Glico Group Insurance	Glico Properties
UT Life Insurance Company ltd	UT Properties

Source: Author construct from various sources

The findings show the channel by which insurance businesses in Ghana invest in real estate. Although not many are into it, the few who have done has succeeded in taking their real estate investments off their books to avoid any complications with their core insurance businesses. The new insurance law does not discourage the formation of subsidiary property companies.

4.3.5 Real Estate Investment Trusts in Ghana

Real estate investment trusts (REITs) are evolving in Ghana's real estate market. Although the regulatory framework is in the infantile stage, collective investment schemes (funds) are being operated in the spirit of listed property. The research found two main schemes operating REITs in Ghana: the Republic Bank REITs and the joint venture between GCB securities and Ghana's Ministry of Finance. Republic Bank's REIT was set up in 1995 to invest in real estate, shares, and bonds. It was named REIT from the onset because the fund was pooled together from different investors and invested. The description given to their investment vehicle states the objective for indirect real estate investment. The joint venture between GCB securities and the Ministry of Finance was a pilot housing program initiated by the Government of Ghana to provide affordable housing to mid-income public sector workers in Ghana. There are possibly other REITs being operated across the country that is not known and thus not captured in this research. The calls for a framework to regulate indirect real estate investment in Ghana, the Securities and Exchange Commission implemented Ghana's first REIT Guidelines in 2019. The guidelines were the first steps toward providing a regulatory framework to govern the activities of REITs and all other forms of indirect real estate investments. REITs are evolving in Africa, and Ghana is one of the few countries, after South Africa, Nigeria, Kenya, and Mauritius to take steps toward regulating the sector. The research also looked at the companies that are listed on the Ghana Stock Exchange (GSE) to see if there were any list property trusts or companies. It was revealed that there was no listed property company on the GSE, meaning there was no

REIT on the GSE. This shows that there are no listed and non-listed REITs in Ghana. However, there are processes underway to change this narrative. Some of the fund managers are working around the clock to develop REITs for their respective clients in accordance with the new guidelines. Others are reluctant about the ongoing processes and not ready to enter it in the short term.

To get an overview of the reception of major institutional investors, fund managers and experts were asked for their views on Ghana's first REIT guidelines, specifically on the opportunities and challenges of establishing a REIT sector in Ghana. All interviewees stated that REITs provide opportunities for institutional investors such as pension funds, financial institutions, insurance companies, private equity funds etc., to gain exposure to real estate investment, and for that matter rental housing investment. This route is recommended to investors who want to avoid illiquid investments such as rental housing investments. A thriving REIT sector will encourage liquidity in Ghana's real estate sector. Additionally, it will serve as a platform for property developers to expand their financing options. For example, property developers who will get listed on the GSE will be able to attract funds from different investors as they trade publicly. Again, financial institutions with legally permitted REITs will be able to gather funds from a significant number of investors to undertake real estate investments. In either of the two circumstances, listed and non-listed REITs are avenues by which property developers and institutional investors in Ghana can gain exposure to real estate investments. It will save time needed to establish an in-house real estate department or the processes needed to outsource it to a real estate consultant. Additionally, it will encourage foreign investors to invest in the Ghanaian real estate market through listed REITs. Within the ECOWAS region, REITs could be advanced better if the different countries trade with each other at different levels. It will give an easier and broader scope for business activities at all levels including indirect real estate investment.

Several ideas were put forth by the interviewees about the way forward with the REITs guidelines. Policy experts advocate that, for the REIT sector to be fully recognized in Ghana, it must be advanced to an Act of parliament. The guidelines were generated from the broader regulations on mutual funds and thus limited. Passing it into an Act of parliament will allow the government to support the sector with land and corporate tax incentives. It will also allow greater enforcement and compliance with the regulations concerning establishing and operating REITs in the country. The views of fund managers are oriented more towards the state of Ghana's real estate industry. They describe it as an arena of many problems, ranging from real agency issues to land disputes. The majority of the fund managers interviewed stated the cautiousness not to enter investments that are not in order, especially when it is classified under alternative investments. The appetite of fund managers to increase diversity in institutional portfolios, does not mean entering investments for the sake of it, but doing due diligence to ensure that the asset is good to bring the expected returns.

The findings revealed several conditions that are foundational to the success of a new REIT sector. Firstly, experts state that the macroeconomic environment plays an important role. Indicators such as employment, interest rates, GDP, inflation, national income etc. are needed to be in good standing to provide a conducive environment for REIT to thrive. The success or failure of the real estate sector is influenced by indicators such as credit facilities, mortgage payments, rent payments, house prices etc., all of which are shaped by macroeconomic considerations. In a developing country, these indicators need revamping to support a new REIT sector. Secondly, for a successful establishment of Ghana's first REIT sector, the general real estate industry must be improved. Ghana's real estate industry is confronted with peculiar challenges such as customary land disputes, inadequate property database, real estate agency issues, high cost of building materials etc. Experts describe the sector as 'informal', especially with respect to the nature of property transactions, property management and land administration. Although a REIT is an indirect form of real estate investment, the underlying asset is the property and hence is directed affected by the happenings in the real estate sector.

Lastly, to establish Gh-REITs, the right legal and regulatory framework must be put in place. The introduction of the REIT guidelines is a major milestone in legalizing and recognizing REITs in Ghana. Experts reveal that, although the guidelines provide the blueprint to prospective REITs, the laws in both the real estate sector and securities sector must be enforced at all levels. Several laws in Ghana's real estate sector have been upgraded recently to cater for changes in the sector. These include the Real Estate Agency Act 2020 (Act 1047), Land Act 2020 (Act 1036), and Ghana Insurance Act 2021 (Act 1061). These must be combined with existing laws in both sectors including the Local Government Act 2016 (Act 936), Securities Industry Act 2016 (Act 929), Interstate Succession Act 1985 (PNDC Law 111) and the 1992 Constitution. Some of the laws are directly related to the activities of REITs whiles others govern the general real estate industry. Policy experts state that the government must ensure full enforcement and compliance with the laws to successfully establish a REIT sector in Ghana. Furthermore, upgrading the new REIT guidelines into an Act of parliament is needed as the next major step needed to bring transparency to handing out tax incentives and other support structures. In a quest to identify REITs in Ghana, it was discovered that a government led rent-to-own scheme designed for public sector workers called the National Housing Mortgage Fund (NHMF) operated like a REIT. The NHMF was the first of its kind and operated before the passage of the 2019 REIT guidelines.

The National Housing and Mortgage Fund (NHMF) is one of the avenues used by the government of Ghana to provide affordable housing to public sector workers. It is a fund set up under the 2018 Budget and Economic Policy and started with a pilot project in Tema Community 22 in the Greater Accra region. The NHMF was initiated in the housing market to promote social equity and housing equality, a scheme that propagates the affordability narrative of mid-income households in the public sector. The fund works like a rent-to-own scheme founded on the principle of a REIT. As a solution to the low mortgage penetration and foreign currency home mortgage requirements, the NHMF was designed by the Ministry of Finance to increase local currency mortgages, reduce the high cost of financing residential mortgages, and offer a majority of mid-income households the opportunity to own homes.

The NHMF was initially designed in partnership with Stanbic Bank, Republic Bank and GCB Securities for the first phase. According to the Ministry of Finance, the scheme will be expanded after an evaluation and replicated nationwide. The project is currently in its second pilot phase with an updated housing quality than the first. In an interview with a developer representative (Tema Development Corporation), there were questions about the challenges encountered during the first phase. It is unclear whether the housing units under the NHMF were indeed allocated to the target group it was designed for. Additionally, concerns were raised about the target group holding on to the units for the expected period before transitioning into homeownership. It finds that these units are easily sold to the rich when the target group experiences hardship, after which they relocate to other parts of the city.

In summary, institutional investors in Ghana invest mainly in the fixed income market. Pension fund managers revealed that they invest in government securities and equities, but very little or no real estate investment. Their international exposure was also minimum, with a few fund managers having several investments in the Eurobond outside Ghana. It was found that the regulators (NPRA and NIC) play a key role in shaping their asset allocation strategies. Insurance fund managers revealed that life insurance companies show interest in real estate investment by establishing subsidiary property companies. Lastly, there is an emergence of REITs in Ghana. In 2019, the SEC implemented its first-ever

REIT guidelines to establish, recognize and legalize REITs in Ghana.

4.3.6 Barriers to Institutional Investors in Rental Housing in Ghana

Institutional investors and policy experts were asked their views on the inhibiting factors preventing institutional investment in Ghana's rental housing market. The view of fund managers was centred more on the returns, while policy experts focused on the market risks associated with the competition within Ghana's private rental market. Apart from matters concerning corporate social responsibilities, the fund managers stated that they focus on meeting their benchmarks and getting adequate investment returns. The fixed income market, which is the playing ground for most of these investors, provides very good returns as against rental housing investment. Participant 3 stated:

> "…a five-year bond is giving you 18% every year, why would you want to go and take a risk, in a real estate market when you could comfortably invest in the government bond? The question is, what would a real estate investment give you? I doubt if you would make 18% in rental yield, when you go directly into real estate, so the macro condition, really does not favour the risks involved in investing in productive assets like real estate, in a country like Ghana. So, what government can do seriously, is to sought-out the macros, whiles players within the pension industry go out and seek opportunities in real estate investing".
>
> (Participant #3, Fund manager)

This view was also expressed by participant 19, who stated that:

> "…the high yields of government securities, fight against you going into a risky area, which gives you a return lower than government securities. So, in doing rental, you may have less than 16% annual returns but if you are trading government securities you get about 18-19% annual returns. So, the question then is, why are you taking that excess risk. So, it doesn't make sense as a fund manager to take that level of risk".
>
> (Participant #19, Fund manager)

Fund managers expressed that, the rental yield in Ghana is not competitive enough to match the returns on government securities. Additionally, the risks are glaring and difficult to overlook during risk assessment. Another barrier is the inadequate property market information on the rental asset. Concerning government securities, investors can track the performance over the period and can quickly predict and forecast how much returns are expected. There is no formidable database that gives the historical performance of the various rental assets in Ghana. Participants stated that the companies that hold this information keep it and do not share it. Finally, participant 1, a policy expert from the academic field, raised concerns about gaps in investor knowledge. The participant stated:

> "Real Estate is a specialized field and requires more hands-on and much more unique set skills and expertise. A developer or an investor who's done this for a while can pretty much manage that risk better than the institutional investor doing it. I think the evidence is clear. Most of the investments of SSNIT haven't turned out that well, and it's partly due to issues of, whether they are managing them well... and so hopefully in the next five years, we should be able to train investors. And again, it's not just for those who are coming into the job market, but those who are already there may need some training to help them. At least to appreciate the asset. Because one thing people sometimes miss is real estate is not just like any other asset".
>
> (Participant #1, Policy expert)

Ghana's fund managers and investment analysts are mostly trained and experienced in managing financial assets. The SSNIT example, where a major pension fund institution entered direct build-to-hold rental investment, was the perfect scenario for knowledge gaps in strategic and tactical decisions. Policy experts and property managers also expressed these views (e.g., Participants 7 and 9).

4.3 Institutional Investors and a Government Build-to-Rent Scheme

Given the rapidly changing demographics and the steady rise in house prices, the need to prioritise rental housing supply in Ghana's housing policy is inevitable. Institutional investors were asked about their willingness to venture into a BtR scheme facilitated by the government. Responses showed that the rental asset would go through the same process as the other assets for selection within institutional portfolios. Fund managers want clarity regarding the nature of the government's involvement in the scheme and the direction of cash flow among the stakeholders. Some participants were sceptical about government exposure due to past experiences and political unwillingness to ensure continuity. A notable view that was expressed by all the interviews was the SSNIT case, which was confronted by numerous challenges. SSNIT, Ghana's dominant state pension institution, went into rental housing investment and had to sell many of the apartments due to numerous challenges such as inadequate management, misallocation etc. Due to the lack of data on the asset's historical performance and the glaring failure of the SSNIT rental investments, fund managers will only venture into a government led BtR scheme if it is adequately developed and structured for longevity. Participants 2 and 4 stated:

> "What would the structure of this scheme be? Will the assets be mine in perpetuity or there will be a clause to transfer it to whoever is renting based on a certain period? I guess the devil is in the detail. I am not against a government-led build-to-rent scheme, but I have heard some horror stories in the past. If you speak to SSNIT, they will tell you that there are some housing projects that they engaged in which have gone south. I would like to know the learnings of that".
>
> (Participant #2, Fund manager)

> "We will consider any investment opportunity that is brought to our attention, but the structure needs to make sense. So, we need to know exactly where the cash is flowing towards if the government is providing some level of guarantee for tenants. Because we have looked at the data, particularly for affordable housing. And if you look at what the tenants like Teachers pay, based on salary levels, it is not encouraging".
>
> (Participant #4, Fund manager)

As seen in the views above, fund managers' perception of a government-led build-to-rent scheme is that any such arrangement must be worthwhile based on the returns. Participants 3, 5, 6 and 10 also expressed similar sentiments as participants 2 and 4. Fund managers are willing to assess such investment opportunities once they are developed and implemented.

4.4 Summary of Interview Results

The empirical investigations began with identifying the major institutional investors in Ghana and assessing how many are involved or showing interest in rental housing investment. This was against the backdrop that a more sustainable source of finance was needed to expand rental housing supply to serve the rapidly growing urban population. It looked at the direction of Ghana's national housing policy and the place of rental housing within the scope of incentives and the government's facilitative role. It was found that the housing deficit has increased along with the urban population growth levels in the big cities. Unfortunately, there was little or no effective demand for the estate houses being built in the urban centres. Expert opinions revealed that Ghana's housing problem is not supply-oriented but a demand problem. Market-level affordable housing projects are being misallocated or left vacant due to ineffective demand and inadequate housing allocation strategies. It found that institutional capital could be useful in providing long-term rental housing supply within the urban areas in the country to serve a majority of mid-to-lowincome households.

Ghana's main state pension fund SSNIT has a sizable component of real estate investment within its portfolio. With its previously phased-out rent-to-own apartments, there are concerns about using pension funds and other similar funds for rental housing investments. Private pension fund managers, insurance fund managers and other financial institutions who were interviewed mentioned the glaring risks of going into rental housing investment using the SSNIT case. Experts reveal that the in-house property department of SSNIT could not manage the properties well, leading to its deterioration and the phasing out of the project. Nonetheless, the research participants were hopeful about investing in the real estate sector.

Insurance companies operating in Ghana have shown interest in real estate investment. It was found that the investment activities of the insurance business in Ghana have undergone various changes. Some insurance companies have established subsidiary property companies specialising in real estate investment. Funds from life insurance were considered suitable for rental housing investment. This is because of the long-term nature of the liabilities and the asset. Funds from non-life insurance are considered short-term and therefore not good for real estate investment which has a long gestation period. With the growing insurance coverage in Ghana and the increase in life insurance companies, several channels could be used to expand the financial base for high-quality rental housing investment.

Real estate investment trusts (REITs) are one of the major institutional investor groups increasing in Ghana. Findings revealed that there were no officially recognized REITs in the country. In 2019, the Securities and Exchange Commission (SEC) passed its first-ever REIT guidelines to foster the establishment, implementation, and operation of REITs in the country. Institutional investors and policy experts were largely receptive to the new guidelines and exclaimed its anticipated benefits for the real estate sector and the country. Developments are underway to integrate institutions previously operating REITs outside the guidelines while inviting more institutional investors to set up some. The guidelines allow pension funds and insurance companies to gain exposure to real estate investments, specifically to build-to-rent properties.

Finally, the low returns were found to be the major barrier inhibiting institutional investors from investing in rental housing. Fund managers in Ghana compare the returns on government securities with that of rental investment and find no reason to venture into the rental asset. Apart from the low returns, the asset is characterised by market risks that are not easily dealt with. Institutional investors and policy experts found the student accommodation rental investment more desirable for scalability. This is because the returns are slightly higher than the private rental market. Aside from events such as the covid-19 pandemic, students always come for educational purposes. The GUSS example (pension fund for university lecturers) has proven to provide steady and good returns over the years.

4.4.1 Highlights Interview Findings

- The discourse of affordable housing has been omitted in Ghana's national housing policy, and all directives have focused on the supply side with no demand-side incentives.
- The institutional investors selected for the Ghana context include financial institutions, pension funds, insurance companies and REITs.
- Institutional investors selected for the study tend to avoid illiquid assets such as real estate.
- The nationwide financial reforms affected institutional investors who had invested in real estate.
- Ghana's dominant state pension fund SSNIT has set a wrong precedent on direct rental housing investment.
- SSNIT has also established a subsidiary property company called Ghana Hostels Limited (GHL) to invest specifically in student accommodation
- The Ghana University Superannuation Scheme (GUSS) is a pension scheme for university lecturers that invest in student accommodation.
- The NPRA influences the asset allocation strategies of pension institutions in Ghana through the ceilings provided for the various asset classes.
- Life insurance funds are more suitable for long-term investments.
- The NIC influences the asset allocation strategies of insurance companies in Ghana.

- Three life insurance companies in Ghana have established subsidiary property companies to invest in property.
- REITs are gradually being integrated into the legal framework of the real estate market in Ghana through the passage of the REIT guidelines.
- Institutional investors in Ghana are likely to invest in residential rental property through either listed REITs or the establishment of subsidiary property companies.

4.4.2 Implications of Findings for the Model

Objective 1: To determine the role of government and the private sector in boosting rental housing supply.

The findings reveal the place of rental housing in Ghana's housing policy. It identifies potential stakeholder roles for prioritising rental housing within housing policy. It would help specify each stakeholder's role (i.e., government, institutional investors, and property managers/developers) and identify loopholes in the system that need to be addressed in a new build-to-rent model.

Objective 2: To identify the determinants of institutional investment in rental housing.

The findings have identified the factors needed for institutional investment in rental housing in Ghana. It explains why many institutional investors are apathetic toward the rental housing supply. This information will address the challenges and guide the development of a build-to-rent model using the housing investment options in Ghana.

4.5 A Model for Institutional Investment in Rental Housing in Ghana

A model is developed from the empirical results solicited from experts concerning public and private sector collaboration for rental housing supply. It identifies the potential pathways for increasing institutional investment in rental housing supply. Experts' experiences, insights, and perspectives are critically analysed to predict the channels that enhance the flow of capital from institutional investors. The model harmonises institutional portfolios with rental housing investment to resolve housing deficits and counter affordability concerns. It clarifies the *synergy* between capital markets and housing markets and identifies essential connections between major stakeholders, placing in perfect view the position of the institutional investor. Several assumptions were made for the design of the model. The assumptions underpin the framework for using pensions, life insurance, REITs, and private equity funds.

The first assumption is that institutional investors differ in motivation, business model and functionality. Some investors are predominantly into funds management, whiles others have broader portfolios with different assets. To contextualise the Ghana research, institutional investors are categorised into two major groups, namely, category A: propertyinclined institutional investors (PIIIs) and category B: financially inclined institutional investors (FIIIs). The grouping allowed the researcher to adequately explain the focus of discourse when experts make claims about attracting institutional investors. The proposed model shows the PIIIs and FIIIs in Ghana can invest in rental property and the avenues by which government support can be effectively channelled for maximum impact. PIIIs are institutional investors that specialise in property investment. Examples include REITs, private equity funds, listed property companies etc. They are categorised as institutional investors because of the large funds available.

On the other hand, FIIIs specialise in investing mainly in financial assets, such as securities, equities, and cash. Examples include superannuation, pension, life insurance, mutual funds, etc. The PIIIs will likely invest in rental property because they already have the expertise. But for the FIIIs, the private rental market is a relatively new investment climate, yet they possess huge funds to make a difference in rental housing supply. Figure 20 shows the proposed model for Ghana.

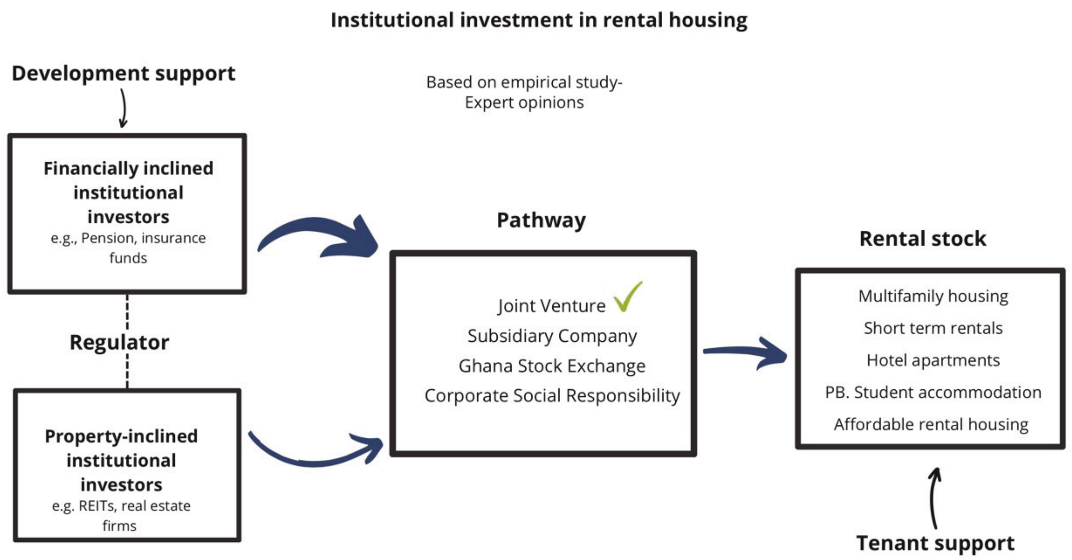


Figure 20 A Framework for Ghana

Source: Interviews and policy documents

The model shown in Figure 20 depicts relationships identified as the pathways to increasing institutional investment in rental housing in Ghana. The diagram shows how the regulators of institutional funds, such as the National Pensions Regulatory Authority (NPRA), National Insurance Commission (NIC), Securities and Exchange Commission (SEC) and the Bank of Ghana (BoG), influence the funds they supervise. As the empirical study identifies, the regulator plays a vital role in shaping the fund's investment policy. Their activities contribute to licensing eligible funds and promoting responsible investing among them. The NPRA is responsible for regulating Ghana's public and private pension funds and provides investment guidelines that tend to shape the investment policies of these funds. The fund managers interviewed pointed to the fact that they consider the regulator's guidelines in their investment policy, especially relating to the assets they invest in. This phenomenon is similar to life insurance funds regulated by the NIC. The NIC was established under the Insurance Act 2021 (Act 1061) and is responsible for monitoring and controlling insurance business in Ghana. Just like the NPRA, the activities of the NIC influence the investment policy of life insurance companies. The same applies with SEC regulates Ghana's emerging REITs industry and shapes their investment activities. The interview findings shows that the regulator's oversight role can influence institutional investors to include rental housing in their portfolios. This can be done by removing restrictions on property investment against securities and equities, the dominant assets in institutional portfolios.

Another important consideration is the role of the funds being regulated. As state early on, pension and life insurance funds are categorised as FIIIs, while developers and Gh-REITs are categorised as PIIIs. The government can support the funds with development incentives such as tax concessions, free land, stamp duty exemptions etc. To invest in rental housing, there are four pathways for FIIIs and PIIIs to invest in rental property. The framework combines expert opinions with what is already happening in Ghana to design the model. It was found that some pension and life insurance funds have subsidiary companies that invest in property. The investors posit that this approach seems to work better than the previous approach of establishing an in-house management team within the parent company. The subsidiary company allows the fund to take their property investment off their books and allow property experts to develop and manage that their portfolio. Secondly, the expert proposed a functional joint venture (JV) between developers (PIIIs) and institutional investors (FIIIs). A functional JV will allow the parties to collaborate at various levels for property investment. This arrangement will allow the investor to provide 80% of the finance whiles the developer provides the remaining 20%. The investors will leave the development and management of the property to the developer and concern themselves with receiving and distributing the returns. Experts posit that the channels for pension and life insurance funds to mitigate the risks of taking on a significant measure of illiquidity is to partner with private real estate developers or establish subsidiary property companies to handle all matters relating to property investment. This pathway will ensure that they transition into the private rental market. The relevance of establishing JVs and subsidiary companies is elaborated further in chapter five.

Thirdly, as real estate investment trusts (REITs) are in their formative years in Ghana's property market. Experts state that, they can play an essential role in attracting finances for rental housing investment and, most importantly, creating the platforms to develop and managing rental properties. The processes involved with establishing and legalising Ghana's first REIT sector will provide opportunities for listed property companies (LPC) to contribute to the private rental sector. There is an opportunity for property companies to transition into the Ghana Stock Exchange (GSE) and expand their financing options through strategic partnerships with the traditional institutional investors. LPCs will provide a trusted pathway for Ghana's growing private pension and life insurance funds to gain exposure to rental housing investment vehicles for the first time. Concerning innovative vehicles Ghana's rental market is yet to birth a fully-fledged build-to-rent (BtR) industry.

Although BtR is not altogether operational in Ghana, there are affordable rental housing projects developed by SSNIT, the country's major state pension fund. The closest housing options to BtR are what is popularly called hotel apartments developed by real estate companies in the big cities. These are purpose-built multifamily rental apartments and condominiums that offer luxury living with essential amenities. Build-to-rent as conceptualised in the UK, the US and Australia, is yet to be realised in Ghana. The interviews revealed the possibility of attracting three categories of institutional investors:

pension funds, insurance funds and REITs. Per the results, REITs constitute an essential pathway for increasing institutional investment in rental housing in Ghana.

An institutional investor can also invest in affordable rental housing model through their corporate social responsibilities (CSR). The way to do this is through inclusionary housing or a full initiative to invest in rental property. Although the CSR is a good avenue, it may not provide the rental stock in the scale needed. In summary, the Ghana model is hinged on creating a platform to minimise illiquidity. This idea is necessary to pave the way for attracting listed and non-listed property companies, forming more subsidiary property companies, and advancing Gh-REITs to produce Ghana's build-to-rent industry, a new institutional investment avenue making waves worldwide. With proper government support for housing supply and demand, the proposals to increase decent and high-quality rental accommodation within the core locations in the big cities can be realised.

4.5.1 Relationship between the proposed Model and DCF Results

The research is a qualitative study primarily based on semi-structured interviews supported by secondary data. The interview results solicited from experts needed to be verified to demonstrate high validity and reliability. Since the empirical findings informed the framework in Figure 20, the researcher further tested the major findings using a cost-benefit analysis (CBA). A hypothetical mixed-use development that has rental property as its focus was adopted for the testing. The purpose of the CBA is to evaluate the costs and benefits of expanding affordable rental housing supply among the major stakeholders. This was necessary to provide a formidable basis to institute policy reforms for more institutional investment in rental housing and helped to make valid conclusions. Following the interview findings, the CBA helped to make valid conclusions on the subject. Table 10 constitutes the rationale for testing the findings. It includes only the findings that needed to be verified.

Table 10 Relationship between Interview Findings and CBA

Research objective	Major Interview Findings	Rationale for CBA and DCF Testing
To determine the roles of the government and the private sector in providing affordable rental housing supply?	The government has implemented the national rental assistance scheme to relieve tenants of the stress of mobilising two years of rent. The study found that the scheme will increase the amount paid in the long run.	The NRAS is in the process of being rolled out across the country. Experts are, however, sceptical about its effectiveness in helping tenants to pay their rent. Several calculations helped to verify how it will work and if it will be beneficial.
	Institutional investors are capable of providing affordable rental housing in Ghana.	Individual landlords provide a significant amount of rental accommodation in Ghana. The DCF helped to test the feasibility of a rental housing project by an institutional investor.
	The supply of land will attract more institutional investment in for affordable rental housing.	Land cost constitute a significant portion of development cost. As the government provides free land for affordable housing, the DCF helped to measure how it affects the developer's cost.
To identify the determinants of institutional investment in rental housing investment in Ghana?	Institutional investors can minimise the illiquidity associated with rental housing investment by establishing functional JVs and subsidiary companies.	The DCF helped to test a functional JV between a developer and an institutional investor. Additionally, it looks at a scenario for a subsidiary company.
	Property taxes play a vital role in making rental property attractive to institutional investors.	The tax treatment on a rental property in Ghana was tested using the DCF model. It looked at property tax, rental income tax, withholding tax and ground rent. Furthermore, it looked at the NPV before and after tax.
	The lack of effective demand inhibits institutional investment in rental housing	Apart from the NRAS, which is a low-interest loan, Ghana has no rent assistance programs. The DCF model helped to test various scenarios of housing subsidies for mid-to-low-income households.
To identify the roles of the government and the private sector change to improve rental housing supply in Ghana?	The state of Ghana's macroeconomic environment affects the private rental sector and ultimately deters institutional investors from the sector.	A sensitivity analysis is used to test several impact variables, including market growth, Covid-19/ RussianUkraine war, vacancy rate and income increment.
	More housing incentives will attract institutional investment in rental housing.	More incentives for developers and institutional investors are carried out in the DCF model to measure the benefits.

	The regulators of pension, lifeinsurance funds and REITs can influence greater institutional investment in rental housing.	Once the proposed project is completed, it adds 500 units to the rental stock. The freedom given to FIIIs by the regulators to invest in rental property will contribute significantly to Ghana’s private rental market.

Source: Author (2023)

Table 10 presents part of the interview findings that needed verification. A DCF model and a sensitivity analysis was conducted to test several scenarios to identify the most effective pathways for stimulating greater institutional investment in rental housing in Ghana. The interview findings backed by the DCF results helped the researcher make valid conclusions. The next section explains the cost-benefit analysis conducted using the DCF.

4.6 Cost Benefit Analysis

Governments and private investors use a Cost Benefit Analysis (CBA) to determine priorities on a project and evaluate the performance of a business or a social investment (Cordes 2017). A CBA measures the project's usefulness in achieving the desired goals for a defined period. In this study, the interview results were used to develop of a framework for rental housing supply in Ghana. As explained early on in chapter three, a CBA was used to validate or test the usefulness of this framework in the housing policy context of Ghana. There are several ways to undertake a CBA; this study uses a DCF to evaluate the costs and benefits of a hypothetical rental housing project for the stakeholders in Ghana’s private rental market. The stakeholders include developers, investors, government, and tenants. A base DCF model for a rental housing project is built and several variations made in subsequent models to validate the interview findings. For instance, a scenario for affordable build-to-rent in a JV was created and several impact variables tested in a sensitivity analysis. Given Ghana's current macroeconomic environment and housing market conditions, the study apportioned benchmarks to disruptive and historical events and considered the real-world factors developers may face when developing and managing a rental housing project.

4.6.1 Project Description

An institutional investor is looking to invest in a 500-unit multi-family rental housing project in Madina: an inner-city suburb in the Greater Accra region of Ghana. The project will comprise 3, 2 and 1-bedroom apartments with designated working spaces, shops, a gym in each block, parking lots and a children's playground. The ground floor will mainly be used for retail spaces, including a supermarket, standard-sized shops, and a gym. The proposed project is expected to be completed in three stages, block by block over eight years. Stage 1 of the project, which constitutes the construction of block 1, will be selffinanced by the developer from equity. After the completion of block 1, the developer will sell it to an investor at the end of the fourth year to generate more income to complete the second and third stages. Block 1 will generate rental income for the investor at the beginning of the fifth year when the project is 30% complete. Block 1 consists of 1 bedroom (80 studios), two bedrooms (50 ordinary apartments), and three bedrooms (20 penthouses). The total number of units to be let after stage 1 is, therefore, 150 units.

During the second and third stages of the project, the developer will sell blocks 2 and 3 in the seventh and ninth year, respectively to the same investor. After stage 2, an additional 180 units will be rented out, adding to the 150 units already on the market. After this stage, the project will be 66% complete. Stage 3 will add 220 units, meaning that, after stage 3 the entire project will put out a total of 500 rental units on the market. The retail spaces will also generate income for the investor as they will be let out to prospective renters. They include a 20m^2 space for a supermarket, a total area of 20m^2 for standard-sized shops and a 14m^2 area on the ground floor which will be rented out and used as a fitness centre (a gym) for the residents of the project. The car parks, constructed at the basements, will be free for residents of the projects and their guests.

4.6.2 Site Selection and Preconstruction Stage

The initial process of selecting an adequate site for the project is vital to the developer, especially with all the essential activities and requirements to be met at the preconstruction stage. This section overviews the factors in selecting the site for the proposed rental housing project. It further describes the anticipated activities or processes involved in the preconstruction stage. Firstly, the increased demand for high-quality rental housing in the inner-city areas of Greater Accra motivated the choice of location for the project. In the site selection phase, the area's demographics, the zoning regulations, distance to the CBDs, the highest and best land use, etc. were considered. This meant selecting a site close to the CBD and other relevant services.

Secondly, before the development commenced, a preconstruction stage comprising land acquisition, lease registration, development approvals and the payment of some legal fees were done. In Ghana, several processes are required for a developer to commence work on a site. The first step is to register the lease of the land at the Public and Vested Land Management Division (PVLMD) of the Lands Commission. The Lands Commission is the government institution responsible for land administration in Ghana. The second step is to gather all the relevant documents required to obtain a development permit from the Accra Metropolitan Assembly as authorised by section 18 of the Ghana Local Government Act, 2016 (Act 936). The estimated time for the preconstruction stage is between 6 months to 1 year. The fees associated with this stage include the appropriate land administration fees, development approval fees, and stamp duty fees. These data were gathered from the respective government institutions.

4.6.3 Assumptions for the DCF Model

Empirical data were solicited to develop the base DCF model for a rental housing project in Greater Accra, Ghana’s capital region. Real-time information was gathered from verifiable sources, and several assumptions were made. Data was gathered for the project's preliminary and advanced stages, including land costs, construction costs, development approval fees, legal fees, and sales commission. Information on land cost was sourced from the Accra Lands Commission, the region's main institution responsible for land administration. Rental income and construction costs were solicited from comparable rental properties in Greater Accra. Furthermore, information on development approval fees, including building and construction permits were sourced from the Accra Metropolitan Assembly (AMA). The AMA is one of Ghana's 261 Metropolitan, Municipal and District Assemblies (MMDAs). The MMDAs are the local arm of the government of Ghana and are responsible for managing the government’s affairs at regional level. The data on taxes and stamp duty fees, were obtained from the Ghana Revenue Authority (GRA) and the Lands Commission. Finally, several government institutions provided data on impact variables such as discount rates, Consumer Price Index (CPI), market growth, institutional investor returns, and household income increment, including the Ministry of Finance, the Central Bank of Ghana, the National Pensions Regulatory Authority (NPRA), and the World Bank. Other research entities, such as the Global Property Guide, also provided important information for the model. In summary, the assumptions provided vital information to calculate the NPV and IRR of the project. The sources of data are verifiable with the above-mentioned institutions. They provided the required data to develop the DCF model in excel. The following are key assumptions for the base DCF model. All amounts are estimated in USD. A detailed table showing all the assumptions is presented in the appendix.

Table 11 Key Assumptions for the Base DCF Model

Data	Description
Land costs	$70,000
Total development approval fees	$12,333
Vacancy rate	5%
Rent default allowance	2%
Stamp duty fees	1%
Ground rent	1%
Commission on sale	2%
Legal fees on sale	0.5%
Discount rate	25%
Market growth rate	12%
Income Increment p.a.	20%
CPI average 2022	26.10%
Site maintenance and flora fees (gross rental income)	2%
Repairs and maintenance cost (of net rental income)	2%
Property management fees (of gross rental income)	5%
Marketing cost (of net rental income)	2%

Source: Interviews and various policy documents

The information in Table 11 are key data selected from the main matrix in the appendix. The information was used to develop the base DCF model, given the assumptions made for a mixed-use development with rental focus in Greater Accra. The assumptions presented in the appendix are grouped based on the four stakeholders and includes a column on the source of the data. There are also tables showing the project description, e.g., number, type, and area of units; rent calculation, and construction cost calculation. The policy documents are also referenced with links in the bibliography.

4.6.4 Discounted Cashflow Models and Results

The DCF models come in three variations: base, joint venture, and affordable build-to-rent models. The base model provides the foundation upon which the other models are built. Within the models are assumptions that allowed the researcher to test several claims made by experts in the interviews. Section 4.6.3 provides information on how the interview findings link to the DCF model and explains which of the findings required validation. The following are essential points for the different types of models.

Firstly, the base DCF model reflects the costs and benefits of a typical rental housing project in Greater Accra, Ghana. The results from the base model are basically to check the profitability of a mixed-use development with 500 rental units. It calculates the NPV and IRR for the developer and the investor. The NPV is an opportunity cost of estimating whether the varied model's returns exceed the base model's returns over 30 years. The results indicate the following: a positive net present value (i.e., NPV>0) means the project is financially feasible and will be profitable to the developer and investor, whilst a negative net present value (i.e., NPV<0) means the project will not be beneficial. The net cash flows are separated into before-tax and after-tax estimations resulting in two NPVs, NPV_1 and NPV_2. The separation allows the researcher to evaluate the impact of the tax component on the NPV. Although there are two NPVs, the NPV_2 provides the result required for decisionmaking, constituting what would have been realised in a real-world setting. The base model, therefore, focused on a rental project constructed in stages by a developer and sold to an investor after every stage of completion.

Secondly, an internal rate of return (IRR) was calculated on the base model's net cashflows of both the developer and the investor. This provided a better understanding of the project's profitability over 30 years and estimated how much the IRR exceeded the weighted cost of capital. An IRR below the discount rate means the project will not be beneficial, whiles a higher one means it will be beneficial. The estimations were made for before and after-tax net cashflows. The final part presents the results of a sensitivity analysis conducted to test several scenarios using selected impact variables. The sensitivity analysis results indicate what is likely to happen in the event of a change in the selected variables. Each model is explained with its assumptions and truncated* excel tables in the forthcoming sections. The complete overview of the DCF models is attached to the appendix of the thesis.

4.6.5 The Base Model: Developer's Project

The base model is a mixed-use project with 500 multifamily housing, one supermarket, six standard-sized shops, a gym, and a car park in the basement. The project is financed and constructed by a developer and then sold to an institutional investor rather than to different individual investors. The investor that buys it leases it at the market rate. The project comprises three separate blocks adjacent to one another. Block 1 is sold in the 4th year, block 2 in the 6th year and block 3 in the 8th year. The sales prices for the blocks are \$4,000,000, \$4,200,000, and \$6,800,000 respectively. A market growth rate of 12% per annum is recorded over 30 years. In summary, the base model is built on the principle that a developer self-finances a multifamily housing project with mixed uses and sells it to an investor, who then leases at the market rate. The developer does not need to repay any loan or credit facility because the project was financed from equity. A mixed-use development is preferred over a mere multifamily housing to ensure the highest and best land use in inner-city areas. The forthcoming sections, A and B, present the NPV and IRR results of the base model given the abovementioned assumptions.

A. Estimating the Developer's Benefits

Microsoft Excel was used to develop a discounted cash flow model to calculate the developer's benefits. The DCF results show that, for a developer to undertake a mixed-use development of a magnitude of 500 multifamily housing in Accra, a capital of 12.1 million USD is needed. This estimate is spread across the following costs: land acquisition, land registration fees, development approval fees, electricity and water connection fees and construction costs for all three blocks. Stage 1 gets the project to 30% completion, meaning without a loan, the financial requirement to pull off the first block is approximately \$4 million. A property developer in Ghana may require some form of credit facility or loan to undertake a 500-unit mixed-use development. The developer will receive sales income for the three blocks in years 4, 6 and 8. The commission on sales and the legal fees are deducted to get the net income from sales.

Table 12 shows the sample cash flow of the developer's benefits over the period. This is a truncated version of the cashflow for 30 years.

Table 12 Developer's benefits from the base model

Developer	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Yr *30
Sales								
Sales income from block 1	$0	$0	$0	$0	$4,000,000	$0	$0	$0
Sales income from block 2	$0	$0	$0	$0	$0	$0	$4,200,000	$0
Sales income from block 3	$0	$0	$0	$0	$0	$0	$0	$0
Total income from sales	$0	$0	$0	$0	$4000,000	$0	$4,200,000	$0
Commission on sales	$0	$0	$0	$0	($80,000)	$0	$84,000	$0
Legal fees on sales	$0	$0	$0	$0	($20,000)	$0	$21,000	$0
Net income from sales	$0	$0	$0	$0	$4,100,000	$0	$4,305,000	$0
Development cost								
Total Dev. Approval fees	($12,333)	$0	$0	$0	$0	$0	$0	$0
Electricity and Water Connection fees	$0	$0	$0	$0	($400)	$0	($400)	$0
Land registration fees	($12,000)	$0	$0	$0	$0	$0	$0	$0
Land cost	($70,000)	$0	$0	$0	$0	$0	$0	$0
Construction cost Stage 1	$0	($767,500)	(767,500)	(767,500)	(903,500)	$0	$0	$0
Construction cost Stage 2	$0	$0	$0	$0	$0	(1,807,000)	(1,807,000)	$0
Construction cost Stage 3	$0	$0	$0	$0	$0	$0	$0	$0
Total construction cost	$0	$0	$0	$0	$0	$0	$0	$0
Total Development cost	($94,333)	($767,500)	($767,500)	($767,500)	($903,900)	($1,807,000)	($1,807,400)	$0
NCFBT	($94,333)	($767,500)	(767,500)	(767,500)	$3,196,100	($1,807,000)	$2,497,600	$0
NPV before tax	($145,957)							
IRR before tax	21%							
Stamp duty tax	($120)	$0	$0	$0	$0	$0	$0	$0
Capital gains tax	$0	$0	($82,453)	$0	$0	($600,000)	$0	$0
NCFAT	($94,453)	($767,500)	($861,953)	(767,500)	$3,196,100	($1,807,000)	$2,497,600	$0

NPV after tax	($194,413)
IRR after tax	19%

Source: extract from DCF excel file- base model

It is shown in Table 12 that, over 30 years, the developer's NPV before tax is recorded as negative $145,957 and a before-tax IRR of 21% in the excel computation. The NPV and IRR after tax also recorded figures of negative $194,413 and 19% respectively. This means the project will not be profitable over the period. It is not the best investment decision for any developer looking to venture into a 500-unit mixed-use development in Ghana, especially without a loan facility. The situation may change with the right financing strategy and development incentives from the government. Due to the huge nature of the development and finances involved, developers will require assistance to undertake such a project in the Greater Accra region of Ghana.

B. Estimating the Investor's Benefits

The second part of the model estimates the investor's benefits. In the base model, the investor purchases the mixed-use project after the completion of each block. Block 1 is purchased in year 4, block 2 in year 6 and block 3 in year 8. All three blocks are leased out in the same years of purchase. The results show that, the investor's NPV before tax is $3,965,338 (i.e., NPV>0), whilst the NPV after tax is $1,723,616 (also NPV>0) over 30 years. This result indicates that, with the same set of assumptions, the investor will profit from the project whiles the developer experiences a loss. Simply put, per the before-tax and after-tax NPVs and IRRs, the mixed-use development will be profitable to the investor. Table 13 shows the cashflows from year 5 to 11, that is when the first block 1 started to generate income.

Table 13 Investor's Cashflows

Investor	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year *30
Purchase cost	$0	($4,200,000)	$0	($6,800,000)	$0	$0	$0	$0

Income								
Gross rental income-residential	$3,548,000	$3,973,760	$4,450,611	$4,984,685	$5,582,847	$6,252,788	$7,003,123	$60,316,229
Gross rental income retail	$48,000	$53,760	$104,611	$117,165	$179,224	$200,731	$224,819	$1,936,312
Vacancy allowance (B)	($177,400)	($198,688)	($222,531)	($249,234)	($279,142)	($312,639)	($350,156)	($3,015,811)
Rent payment default (C)	($70,960)	($79,475)	($89,012)	($99,694)	($111,657)	($125,056)	($140,062)	($1,206,325)
Externalities-Covid 19/war (D)	($70,960)	($79,475)	($89,012)	($99,694)	($111,657)	($125,056)	($140,062)	($1,206,325)
Total allowance E = B + C + D	($319,220)	($357,638)	($400,555)	($448,622)	($562,751)	($630,281)	($630,281)	($5,428,461)
Gross Income after allowance F = A - E	$3,276,680	$3,655,859	$4,094,562	$4,653,227	$5,890,769	$6,597,661	$7,389,380	$56,824,080
Operating Exp.								
Repairs and maintenance	$0	($73,398)	($83,093)	($91,718)	($105,192)	($117,815)	($131,953)	($1,136,482)
Management fees	$0	($183,494)	($207,733)	($229,295)	($262,981)	($294,538)	($329,883)	($2,841,204)
Marketing fees	$0	($73,398)	($83,093)	($91,718)	($105,192)	($117,815)	($131,953)	($1,136,482)
Site management	$0	($73,398)	($83,093)	($91,718)	($105,192)	($117,815)	($131,953)	($1,136,482)
Ground rent	$0	($18,349)	($20,773)	($22,930)	($26,298)	($29,298)	($32,988)	($284,120)
Total Operating Expenses	$0	($422,036)	($477,787)	($527,380)	($604,856)	(661,545)	($758,731)	($6,534,769)
NOI	$3,276,680	$3,247,845	$3,676,881	$4,118,106	$4,654,759	$5,091,020	$5,838,930	$49,109,473
Other Expenses								
Stamp duty fees	($120)	$0	$0	$0	($45,456)	$0	$0	$0
Legal fees on purchase	($32,767)	$0	$0	$0	($45,548)	$0	$0	$0
NCFBT	$3,243,793	$952,155	$3,676,881	$2,681,894	$4,608,211	$5,213,330	$5,838,930	$50,289,311
NPV before tax	$3,965,338							
IRR before tax	56%							
Tax treatment								
Property tax	$0	($64,957)	($73,538)	($82,362)	($93,095)	($101,820)	($116,779)	($982,189)
Rental income tax	$0	($293,591)	($332,373)	($372,258)	($420,769)	($460,205)	($527,813)	($4,439,274)
Withholding tax	$0	($76,172)	($294,150)	($214,551)	($368,657)	($407,282)	($467,114)	($3,928,758)
Corporate Social Responsibility	$0	($190,431)	($735,376)	($536,379)	($930,952)	($1,018,204)	($1,167,786)	($9,821,895)
Total Taxes	$0	($625,151)	($1,435,438)	($296,310)	($1,813,473)	($2,035,261)	($2,279,492)	($19,172,116)
NCFAT	$3,243,793	($1,577,306)	$2,241,443	($2,385,584)	$2,794,738	$3,178,070	$3,559,438	$30,656591

NPV after tax	$1,723,616	
IRR after tax	40%	

Source: extract from DCF excel file

Table 13 assumes that the investor will take charge of the running of the property the same year it buys it from the developer. Although, the NPV_2 and IRR_2 show positive results, there are concerns about the operational aspect of the property. The interview results revealed that institutional investors do not have the expertise to take decisions on the running of the property. This is particularly the assertion regarding FIIIs like pension and life insurance funds. The expert views were that, based on the performance of rental projects, there are gaps in investor knowledge among by FIIIs in Ghana. There is a suggestion for FIIIs to partner with property developers to help them manage their property investments. To demonstrate the viability of this idea, the next section looks at a variation of the base model to reflect a partnership arrangement between developers and investors.

4.6.6 Scenario 1: Joint Venture

A scenario is created to reflect a functional Joint Venture (JV) arrangement between developers and institutional investors. It examines how a partnership between FIIIs and PIIIs will help improve rental housing as posited by experts. One of the significant findings from the interviews is that a functional JV between developers and institutional investors will provide immense benefits for both parties. Although these partnerships have worked in the US and the UK under unique circumstances, they have not been tested in an emerging economy like Ghana to evaluate the base model's changes in the project's NPV and IRR. The study makes the following assumptions in the JV scenario.

- The JV comprises an 80% to 20% ownership arrangement between the institutional investor and a developer. This means that the investor will provide most of the finances whiles the developer provides little, with the same arrangement for sharing profits.

- The developer will acquire the land, develop the project, and manage it over 30 years.
- The institutional investor will not be involved in the property's tactical decisionmaking but will be more concerned with the returns generated and dealing directly with the shareholders.

The same assumptions for the base model are used in the functional JV model, except that the property will not be sold. Both parties will jointly own it and hold it for 30 years. Table 14 shows the DCF results for the JV between developers and institutional investors.

Table 14 DCF Results for Joint Venture

Joint Venture	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year *30
Development Cost								
Total DA fees	($12,333)	$0	$0	$0	$0	$0	$0	$0
Electricity & water connection fees	$0	$0	$0	$0	($400)	$0	($400)	$0
Land registration fees	($12,000)	$0	$0	$0	$0	$0	$0	$0
Land cost	($70,000)	$0	$0	$0	$0	$0	$0	$0
Construction cost stage 1	$0	($767,500)	($767,500)	($767,500)	($903,500)	$0	$0	$0
Construction cost stage 2	$0	$0	$0	$0	$0	($1,807,000)	($1,807,000)	$0
Construction cost stage 3	$0	$0	$0	$0	$0	$0	$0	$0
Total Development Cost	($94,333)	($767,500)	($767,500)	($767,500)	($903,900)	($1,807,000)	($1,807,400)	$0
Other expenses								
Stamp duty fees	$0	$0	$0	$0	$0	($120)	$0	$0
NOI	$0	$0	$0	$0	$0	$3,276,680	$3,247,845	$50,289,311
Net cashflow before tax	$0	($767,500)	($767,500)	($767,500)	($903,900)	$1,469,680	$1,440,445	$50,289,311
NPV of NCFBT	$3,788,841							
IRR of NCFBT	43%							
Total taxes	$0	$0	$0	$0	$0	$0	($625,151)	($19,632,720)
Net cashflow after tax	$0	($767,500)	($767,500)	($767,500)	($903,900)	$1,469,680	$815,294	$30,656,591
NPV of NCFAT	$1,566,563							
IRR of NCFAT	34%							

Source: extract from DCF excel file

Table 14 records a positive NPV_2 of \$1,566,563 and an IRR_2 of 34% higher than the weighted cost of capital. Unlike the base model results, the developer and investor will benefit from the project. Government support will make the project even more attractive to institutional investors.

4.6.7 Scenario 2: Affordable rental housing model

Scenario 2 tests the effect of government intervention on the different stakeholders. An emphasis is placed on the base model as it showed a negative NPV for the developer. For the JV, the project's NPV showed a positive result, which benefits both parties. In the interviews, experts were asked to recommend strategies by which government support can be used to improve affordable rental housing supply. The expert views revealed that the government could provide free land and several tax incentives and, in return, ask them to reduce the rental price for eligible households. The exposition on government support and the projects' NPV is grouped into three parts: the impact of free land supply and tax concessions and the effects of rent subsidies on stakeholders. The following assumptions are made for the DCF model for affordable rental housing.

- The government provides free land and a stamp duty waiver for all affordable BtR projects in inner city suburbs.
- There is a 50% tax concession on property, rental income and withholding income for investors who invest in affordable rental housing.
- A stamp duty waiver exists for all affordable rental housing projects in inner city suburbs.

4.6.7.1 The impact of free land supply on the base model

Government policy documents show that free land supply is one of the significant incentives given to developers to invest in affordable housing in Ghana. In the base model, the land cost of $70,000 represents a significant expense to the developer. After the land cost deduction, the net cash flow before tax (NCFBT) and net cashflow after tax (NCFAT) were still negative. This result indicates that, although an incentive in land supply will increase the developer's NPV, it will not result in a positive NPV. In terms of making the base model profitable, the government may need to provide more incentives to make the project financially feasible for the developer. Free land supply however provides its own benefits to the developer. Land acquisition in Ghana's big cities can be quite competitive, especially in inner city areas. Apart from the intense competition by commercial users, land disputes and encroachment issues make the land acquisition phase daunting. Government support through free land supply will reduce the frustrations investors go through when securing land for residential development.

4.6.7.2 The impact of tax concessions on the base model

The taxes the investor pays to hold and operate a mixed-use property constitute an expense. These include rental income tax, withholding tax, property tax and corporate social responsibility. The investor's NPV_1 and NPV_2, based on the NCFBT and NCFAT, both produce positive NPVs. The tax treatment of the base model is already a good incentive for the investor to invest in multifamily rental property in Ghana. Other incentives, such as the 5-year tax holiday for investors and proposed reductions in rental incomes, will incentivise investors to invest in rental property in Ghana. Experts believe that a combination of free land supply, rent payment subsidies and tax incentives will help increase the financial feasibility of rental property development in Ghana's big cities.

4.6.7.3 The impact of government support on tenants

There are several scenarios at play when it comes to demand-side housing incentives in Ghana. Experts make interesting insights on the happenings in the market and the implications of government initiatives for tenant support in the private rental market. This discourse is vital because it examines the ability of renters to rent, and the level of government support needed to improve the effective demand on the market. The study found many vacant rental housing projects in Ghana's big cities, especially the Greater Accra region. The outrageous rental prices and the demands for the 2 years' rent advance make it difficult for landlords to find the right tenants. It was also found that some landlords price their properties in foreign currencies, usually the USD rather than the Ghana cedis, without authorisation from the Bank of Ghana. This section is in three parts; firstly, it tests several scenarios to measure housing affordability using the DCF of the hypothetical rental housing project developed for this study. The second part examines the impact of pricing rental projects in USD on the tenant's ability to pay rent. The final part tests the expected impact of the just implemented National Rental Assistance Scheme (NRAS) on eligible tenants. These helped to understand the implications of government intervention on the stakeholders in Ghana's private rental market.

Housing Affordability Benchmarks

The tenants were grouped into several income groups, namely, high-income households, mid-income households and low-income households. Figures from the Ghana Statistical Service on income levels were used to make assumptions on the annual household incomes. In the model, high-income households make above \$20,000 p.a., mid-income households \$9,000 p.a. and low-income households \$3,000 p.a. The housing affordability index recommends committing not more than 30% of a household's disposable income to housing expenditure. Per the computations, the rental price of \$3,000 p.a. is affordable to high- and mid-income households. This demonstrates that low-income households in Ghana need the most support in paying rent. The affordability benchmark is not applicable if households are required to make 2 years' rent payment upfront. It is more about ensuring that housing expenditure is 30% of disposable income but a requirement to mobilise huge amounts.

The Impacts of Pricing Rental Properties in USD

The Ghana cedi is the legal tender for all transactions in Ghana. The study found that the rental prices of many properties in the Greater Accra region are advertised in USD. Further inquiry revealed that the tenants of these properties actually pay rent in USD. Over the past few years, the Ghana cedis has experienced a record devaluation against the US dollar. There are several implications of the performance of the Ghana cedi on tenants' ability to pay rent. Although experts have merely exclaimed the potential negative impacts of transacting housing in a foreign currency, little empirical study has been done to examine how it affects tenants' ability to pay rent. Several assumptions needed to be in place to measure the impacts: a rental housing project, data on exchange rates and a computation of the percentage change and rental increase.

Data on the annual exchange rates of the USD to the GHC was sourced from the World Bank, whilst the rental prices and incomes were based on estimations from the DCF model and recent figures from the Ghana Statistical Service. The period chosen for the assessment is from 2011 to 2023 and an assumption of income increment of 30% and 40% in 2015 and 2019 respectively. It creates a scenario of a rental property marketed and priced in USD and assumes that locally based tenants with Ghanaian-based employment pay rents in foreign currency. It examines the extent to which the Ghana cedis depreciation stresses the tenant's ability to pay rent. On a broader scale, it looks at the effects on Ghana's private rental market, especially with vacancy rates, rental prices, and the housing affordability issues. Table 15 is a simple schedule showing the exchange rates of the USD and the GHC from 2011 to 2023 and a computation of the rental price and household income for that period.

Table 15 Exchange Rates and Rental Pricing in Ghana

Year	Rent in USD	Ex. rate Gh/USD	Rent in GHC	% change	Income USD
2011	1,000.00	1.52/1	1,520.00	-	5,000.00
2012	1,000.12	1.82/1	1,820.22	19.75	5,000.00
2013	1,000.24	1.98/1	1,980.48	0.09	5,000.00
2014	1,000.36	2.90/1	2,901.04	46.48	5,000.00
2015	1,000.48	3.71/1	3,711.78	0.28	6,500.00
2016	1,000.60	3.91/1	3,912.35	5.4	6,500.00
2017	1,000.27	4.35/1	4,351.17	11.22	6,500.00
2018	1,000.84	4.59/1	4,593.86	5.58	6,500.00
2019	1,000.96	5.22/1	5,225.01	13.74	9,100.00
2020	1,001.08	5.60/1	5,606.05	7.29	9,100.00
2021	1,001.20	5.81/1	5,816.97	3.76	9,100.00
2022	1,001.32	6.40/1	6,408.45	10.17	9,100.00
2023	1,001.44	10.86/1	10,875.64	69.71	9,100.00

Source: World Bank and Government of Ghana policy documents

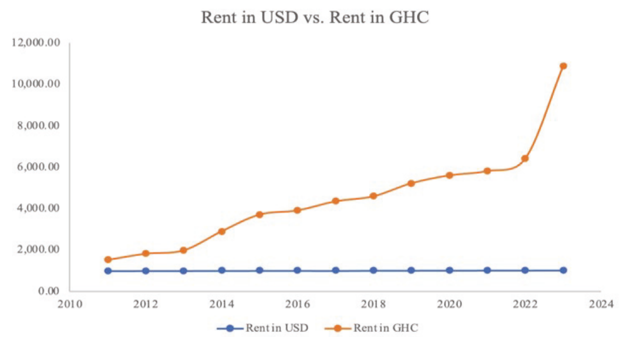


Figure 21 Rent in USD vs. rent in GHC

Source: based on Table 15

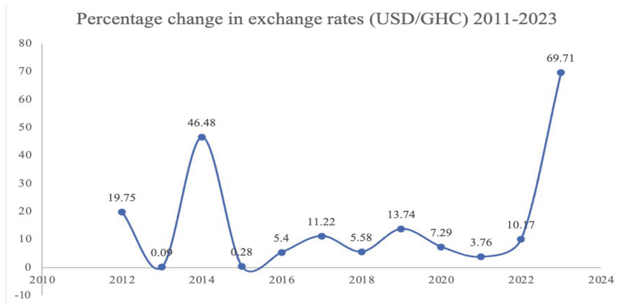


Figure 22 Percentage change in exchange rates USD/GHC 2011-2023

Table 15 shows the rent in USD and the equivalent GHC, with the changes in the exchange rates from 2011 to 2023. A graphical representation of the increased rent and the percentage change over the period is shown in Figures 21 and 22. Between 2013 and 2015, the depreciation of the Ghana cedis caused the tenant to pay more rent even though the rent prices remained constant. There is another steep rise in rent in GHC from 2019 to 2013, due to the impact of the covid-19 pandemic and several disruptive events. Amidst all these happenings, rent prices in USD are set, but tenants pay more for rent because of the different currencies involved. The Bank of Ghana authorises and licenses specific entities to trade in USD and considers any unapproved transactions illegal. Experts posit that this further depreciates the Ghana cedi, causing economic problems. A rental property that charges rent in USD and demands 2 years' advance payment is beyond the reach of midlow-income households and is the underlying cause of the many vacant apartments in Ghana.

The National Rental Assistance Scheme

The National Rental Assistance Scheme (NRAS) is a tenant support program implemented by the government to provide low-interest loans to eligible households to help them pay 2 years of advance rent. It is one of the few interventional strategies established by the government to support tenants in the private rental market. The scheme, implemented in 2022, is expected to help households access decent rental accommodation and make renting more affordable. The NRAS has been outsourced to several private universal banks with a seed amount of approximately USD 2.4 million (i.e., GHC 30 million). The scheme will directly pay the rent amount into the landlord's bank account and deduct it monthly from the tenant's salary over two years. The eligible tenants are required to make a deposit of two months before they move in and the loan repayment should not exceed 30% of the tenant's income and should be paid within 2 years.

In the interviews conducted, the experts acknowledged the relevance of the scheme and made several assertions on its impact on Ghana's private rental market. For instance, there is a prediction that, under certain conditions the scheme will increase the rent amount.

There are also concerns about how narrow the scheme is in terms of reach and scope. Although the NRAS is expected to serve both the formal and the informal sectors, very few informal sector households can demonstrate regular income streams. This brings into question how many of such households will be eligible to secure such loans. The DCF model developed in this research and the loan calculator on the official NRAS website were used to verify several claims made by the experts.

Part A - based on the DCF model.

The assumptions for the DCF model provide information on average household incomes in Ghana's urbanised cities. For the Part A analysis, the average income of mid-income household is $9,000 and the annual rent is $3,000. It is assumed that the loan will be given out at 12% compound interest and the landlord will charge a rent advance of 2 years, (i.e., $6,000). Table 16 is a simple compound interest schedule for 30 months, given that, a loan of $6,000 at 12% interest is given to tenants as part of NRAS.

Table 16 Compound interest loan schedule/rent payment from NRAS

Month	Principal	Rate	Interest	E.O.M Principal/rent
1	$250.00	12%	$30.00	$280.00
2	$280.00	12%	$33.60	$313.60
3	$313.60	12%	$37.63	$351.23
4	$351.23	12%	$42.15	$393.38
5	$393.38	12%	$47.21	$440.59
6	$440.59	12%	$52.87	$493.46
7	$493.46	12%	$59.21	$552.67
8	$552.67	12%	$66.32	$618.99
9	$618.99	12%	$74.28	$693.27
10	$693.27	12%	$83.19	$776.46
11	$776.46	12%	$93.18	$869.64
12	$869.64	12%	$104.36	$973.99
*30	$6,687.48	12%	$802.50	**$7,489.98**

Source: Extract from excel computation

The results in Table 16 show that although the rent paid to the landlord is $6,000, midincome households will pay a total rent of $7,489.98. To maintain the housing expenditure benchmark of 30%, the tenant may require 30 months (i.e., 2 and half years) to finish the payment. For this rental property, the household may be ineligible and will therefore be asked to find a cheaper accommodation. It also shows that the rent amount is increased over the period.

Part B – based on the NRAS Calculator (in USD-2022 average exchange rate-6.4/1)

An eligibility calculator is provided on the official NRAS website for potential applicants to check if they qualify for a loan at specific rental prices. The information required to check eligibility includes net monthly salary, rent per month and the number of years of renting. The average net monthly salary of public sector employees in Ghana, such as teachers and nurses, is approximately $410. The NRAS calculator produced a simple schedule showing the net salary required to access the property at different price points. Table 17 gives instances of a range of net salaries against rents amount and expected payments. All amounts are approximated in USD.

Table 17 Expected monthly rent payment- NRAS Calculator

Month	Net Monthly Salary (USD)	Rent amount (USD)	Expected monthly rent payment (USD)
1	100	31	39
2	200	31	39
3	300	47	58
4	400	47	58
5	500	63	77
6	600	63	77
7	700	78	97

Source: NRAS official website (https://nras.gov.gh/calculator)

The interview results reveal that the NRAS will relieve the stress of paying two years' rent upfront but will increase the rent amount over the two years. Whiles this is a good way for the government to help tenants meet the demands of landlords and recoup its capital, such a loan will increase the rental payment, albeit less than what a typical loan will cost. A below-market rent reduction for mid-to-low-income households will ensure that eligible households save 10% and 20% of their rent payments. This income could be used to cover other living expenses. A progressive incentive will be an interest-free loan, or a grant given to eligible households to help them pay their rent. The empirical results revealed that institutional investors are concerned not only about receiving government support but, more importantly, about the ability of tenants to pay rent consistently.

4.6.7.4 Government's Benefits

The study has presented different scenarios of government intervention in Ghana's private rental market. The government aims to add more rental stock and support renters. This means that their contribution to the development of the private rental sector is an expense. In the DCF, government expenses were matched against the revenues to reach a net present value. In the scenario for affordable housing, where several incentives, such as free land supply and tax concessions, were applied, a negative NPV was recorded. Although the NPV of the government is negative, any such project will add 500 rental units to the market. The other area of concern for the government is the tenant's well-being. Initiatives like the NRAS were implemented to ensure that mid-to-low-income households access affordable rental accommodation. The model, therefore, demonstrates the incentives required to produce more rental apartments in Ghana.

4.6.8 Sensitivity Analysis Results

The interview results revealed that the state of the macroeconomic environment is very important to institutional investors. Market growth, vacancy, interest rates, and negative externalities impact investment activities. A sensitivity analysis is conducted on several impact variables to validate the interview findings on macroeconomic factors and investors' benefits. The sensitivity analysis measures the responsiveness of the stakeholders' NPVs to changes in the variables. It explains the effects with charts generated from Excel. Some impact variables form a part of the macroeconomic indicators, which experts suggest causes scepticism among institutional investors. The sensitivity analysis tests how changes in the variables affect the NPV. All the charts and tables of the sensitivity analysis results are presented in the appendix; only the relevant ones are presented in this chapter.

4.6.8.1 Market Growth Sensitivity on Investor's Benefits

A market growth forecast allows the investors to understand the performance of the market, set reasonable benchmarks and devise appropriate market strategies in the operational period. This is essential because the rental asset is new to institutional portfolios. A sensitivity analysis is carried out with the market growth rate as the impact variable to test variations to the base model in the event of expected growth. It shows how the NPV, and IRR will react if there is a change in market growth, given that all other assumptions remain constant. The starting point adopted for the variation is 2%, with an increment of 2% every two years. The 'market' here refers to the private rental market. The results are presented in Figure 23.

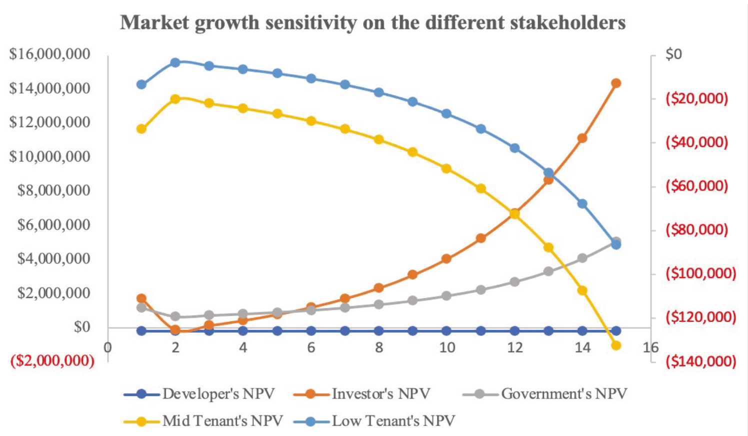


Figure 23 Market growth sensitivity on stakeholder's benefits

Figure 23 shows which of the stakeholders will benefit most from a growth in the size of the private rental market. The results show that the investor's NPV records the highest sensitivity to changes in market growth. The government's NPV follows this. The tenants' NPV remained constant throughout the period.

4.6.8.2 Sensitivity of Externalities on Investor's Benefits

During this research, the world experienced several disruptive events, including a pandemic, war, etc. These two negative externalities had an impact on property markets worldwide. This shows that disruptive events may affect the project in the future. The covid-19 pandemic resulted in intermittent lockdowns, restrictions in property inspections and job loss. These led to higher vacancies and stalemates in rent payments. In the base model, the researcher made a 2% provision for negative externalities and recorded a positive NPV_2 of $1,723,613 for the investor and an IRR_2 of 40%, respectively. This shows that the project will be profitable in a stable investment environment, given that all the other assumptions remain constant. If a historical event such as a pandemic, war, or cyberattack of significant impact occurs, the project's NPV_2 and IRR_2 will be affected. A sensitivity analysis of a disruptive event with an elevated rate of 46% with an increment of 3% every 2 years will result in a negative NPV_2 of ($45,413) and an IRR_2 of 25%, below the weighted average cost of capital. A disruptive event with a worldwide impact will likely result in a negative NPV_2 and a reduced IRR_2 after 14 years. Figure 24 shows a sensitivity chart showing the variations in the NPVs of the different stakeholders.

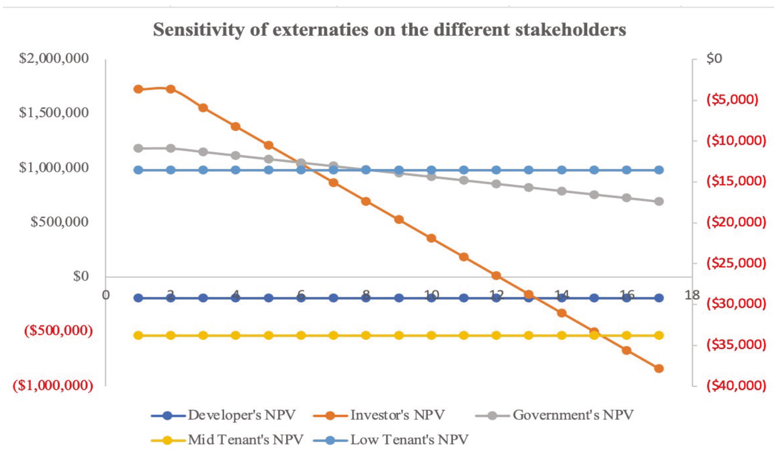


Figure 24 Covid 19 Sensitivity on stakeholder's Benefits

Figure 24 shows that, in the event of any pandemic, war, cyberattack or earthquake, the investors' NPV will be most affected. This is because the amount of capital invested is high.

There is a steep decline in the NPV extending to the negative. There is also a decline in the government's NPV but at a gentle slope. The developer's NPV records a flat line and therefor remains in the negative.

4.6.8.3 Interest rate Sensitivity on Investor's Benefits

Interest rates in emerging economies are relatively high compared to that of advanced countries. This is due to the differences in macroeconomic conditions and the levels of volatility in the investment environment. A sensitivity analysis of the interest rate on the investor's NPV and IRR was conducted to evaluate project performance changes when there are interest rate changes. Given the baseline conditions, the results show that an increased interest rate of 45% will result in a negative NPV_2 of ($20,975) and an IRR_2 of 44%, marginally below the discount rate. The chart shows high-interest rate sensitivity to the investor's NPV and IRR. In other words, the project may be greatly affected by changes in interest rate.

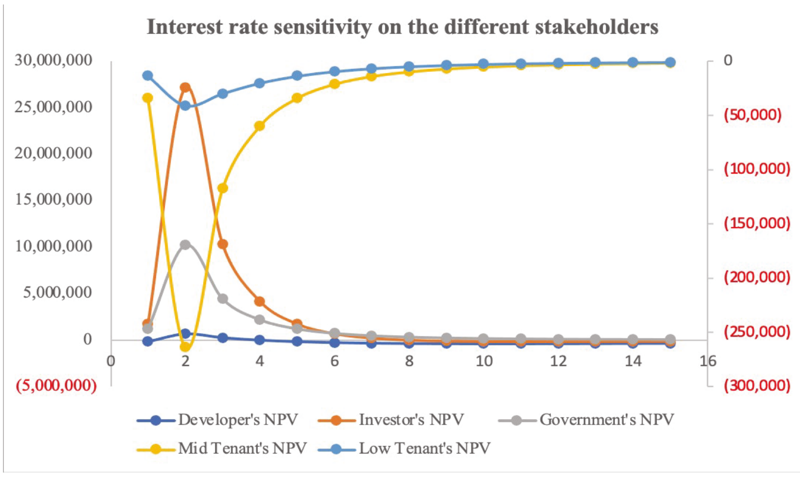


Figure 25 Interest rate sensitivity on stakeholder's benefits

4.6.8.4 Vacancy rate sensitivity on investor's benefits

The relationship between the vacancy rate and the investor's NPV is direct; therefore, if the base model vacancy increases, the investors' NPV will also increase. As seen in Figure 24, a decrease in the vacancy rate leads to a steep decrease in the investor's NPV. From the interview results, a decrease in vacancy rate may be caused by a disruption event like Covid-19, lack of effective demand among prospective renters or poor marketing strategies. Experts revealed that the state of the private rental market inhibits institutional investment in rental housing. The challenges include low vacancy rates in rental properties.

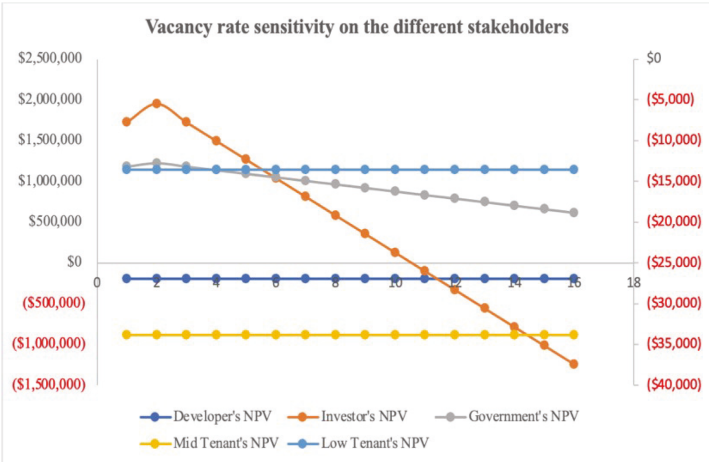


Figure 26 Vacancy rate sensitivity on stakeholder's benefits

4.6.9 Summary of DCF Findings

Model	**DCF Result**	**Implication of result**
Base Model	Developer: The developer's NPV is -$194,413, whiles the IRR is 19% Investor: The investor's NPV is $1,723,616, whiles the IRR is 40%	Not profitable for the developer but profitable for the investor
Joint Venture Model	The project's NPV is $1,566,563, whiles the IRR is 34% The risk shared depends on the ownership arrangement	The partnership between the developer and the investor covers up for the loss. A joint venture partnership of 80% to 20% is recommended.
Affordable rental housing Model	Based on the joint venture model, government support in terms of land supply, and tax incentives will make the asset class more attractive to institutional investors.	A combination of free land and tax incentives will help make the asset class attractive to investors. Pension funds have more advantage because they do not pay taxes like others do

Source: Author (2023)

4.7 Chapter Conclusion

The discourse on using institutional funds to invest in rental housing is an insightful area of research. The empirical study conducted in Ghana contributes immensely to the changing roles of the government and the private sector in improving rental housing supply. The interviews with experts revealed a promising prospect to institutionalise Ghana's private rental market using pension, life-insurance funds, and Gh-REITs. The model shows several pathways to attract institutional investors, including, establishing joint ventures and subsidiary companies to invest in rental property. There is also the place of adequate government intervention through incentives to stimulate institutional investment in rental housing. Chapter presented the findings from the interviews and from the DCF results.

CHAPTER FIVE

DISCUSSIONS

5.0 Introduction

Chapter five discusses the main findings of the research and analyses how the findings lead to the results of the literature on institutional investment in rental housing. As a qualitative study, the discussions are in-depth and reflective of 19 interviews solicited from Ghana. Like the literature, the interview results indicate that institutional portfolios have limited or no rental housing investments. However, the reasons backing these claims differ slightly. Most literature discusses the barriers that render rental housing investment a no-go area for institutional investors. Most previous studies present a disposition that examines the riskreturn profile of institutional portfolios and identifies the specific and market risks of rental housing. This research has identified a new dimension to the discourse, a phenomenon that will likely influence future research.

This study finds that the rental housing asset is not categorised under traditional institutional quality investments, which generally include equities, securities, and cash. The pattern identified from the interviews suggests that it is not in the intricate nature of an institutional investor to invest in rental property. The participants hold that historically, the rental asset is an alternative asset class by exclusion and, therefore, not considered mainstream within the boundaries of institutional portfolios. Although this narrative is changing, it forms the basis to justify why this area of research is new and puts into proper perspective the milestones required to attract more institutional investors. Having stated this, the findings provide a deeper understanding of the factors that inhibit institutional investment in rental housing and suggest the required regulatory and fiscal reforms.

Chapter five constitutes two main parts; the first part analyses the findings on rental housing supply in the housing policies of Ghana. This exposition explores whether rental housing should be prioritised in housing policy, as some expound. It examines the dynamics of expanding affordable rental housing supply in response to the rapidly changing demographics. These discussions explain the relevance, essentiality, and urgency of progressing a 'rental housing agenda' in Ghana. The final part analyses the interview results to identify the strategies for expanding the rental housing supply, with a specific emphasis on leveraging the financial potential of institutional investors. It discusses the expert views on fast-tracking the process of stimulating large-scale rental housing investment using strategic regulatory and fiscal reforms. This includes understanding the existing impediments, examining the implications for the housing markets in the two countries and developing a model based on the findings.

The insights discovered from the interviews are articulated in the form of discussions and advanced into a model that propagates a nationalistic agenda to expand the private rental sector in Ghana. The model is informed by stakeholder views, expert opinions, and research evidence on the justifications for expanding rental housing supply and the most suitable avenues in achieving this outcome. The supporting study offers the opportunity to examine the similarities, differences and draw lessons for improving policy outcomes for rental housing supply. Once the local conditions are considered, the model may be tested and applied in other locations.

This research is one of the first empirical studies in Ghana exploring the emerging research area on institutional investment in rental housing. Although institutional investment in rental property is happening in Ghana, not much has been done to understand it through the lens of housing policy priorities. In this study, an emphasis is placed on three categories of institutional investors, namely, pension funds, insurance funds, and REITs. This section analyses the opinions of major stakeholders connected to institutional investors' workings and Ghana's private rental market. The analysis is essential for understanding the strategies that will aid the expansion of the rental sector through institutional investment and, secondly, identifying how these strategies will bridge housing supply gaps in Ghana. The section has three parts; the first is a demographic analysis using data from the just-ended population and housing census in 2021. This part examines Ghana's population growth, urbanisation trends and the increased demand for housing. The second part analyses the expert opinions (presented in chapter 4) on the conditions needed to attract institutional investment in rental housing. The final part presents an interactive model for affordable rental housing supply through pension funds, insurance funds and REITs.

5.0.1 Population Growth, Urbanization and Rental Housing Supply in Ghana

The debate about expanding the rental sector in Ghana is primarily premised on the rapid urbanisation rates. Experts posit that there is a direct relationship between urbanisation and housing. As more people move into the big cities, challenges such as rising house prices, affordable housing shortages, and the increased cost of living often reinforce the housing deficit challenge. According to the 2021 population and housing census, Ghana's population has increased significantly from 6.7 million in 1960 to 30.8 million in 2021. This growth pattern translates into discussions about the implications of the increasing population on housing in the big cities. Figure 35 shows Ghana's population size (in decades) from 1960 to 2021.

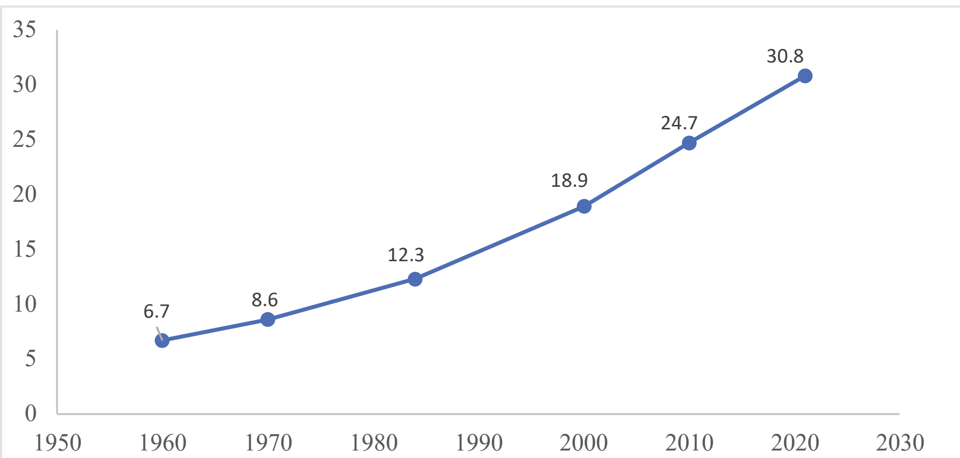


Figure 27 Population growth of Ghana in million, 1960 to 2021

Source: GSS 2021

It is shown in Figure 27 that except for 1960 and 1990, which recorded moderate growth, the population of Ghana increased significantly. The consideration is that the growth pattern shows continuous growth, which has experienced more rapid growth since 1990. On a region-by-region basis, locations such as the Greater Accra and Ashanti regions, which have Ghana's most vibrant and big cities, continue to experience increasing population growth than the other regions because of their immense growth and economic activity. Another important consideration is the regions that are experiencing the most population increases. The trend of the change in the regions and cities could be described as urbanisation. Three main categories of people need rental accommodation in Ghana's big cities. Firstly, the young professionals who are looking for jobs. The policy experts interviewed revealed a market for young professionals who secured jobs or are looking to find employment in the big cities.

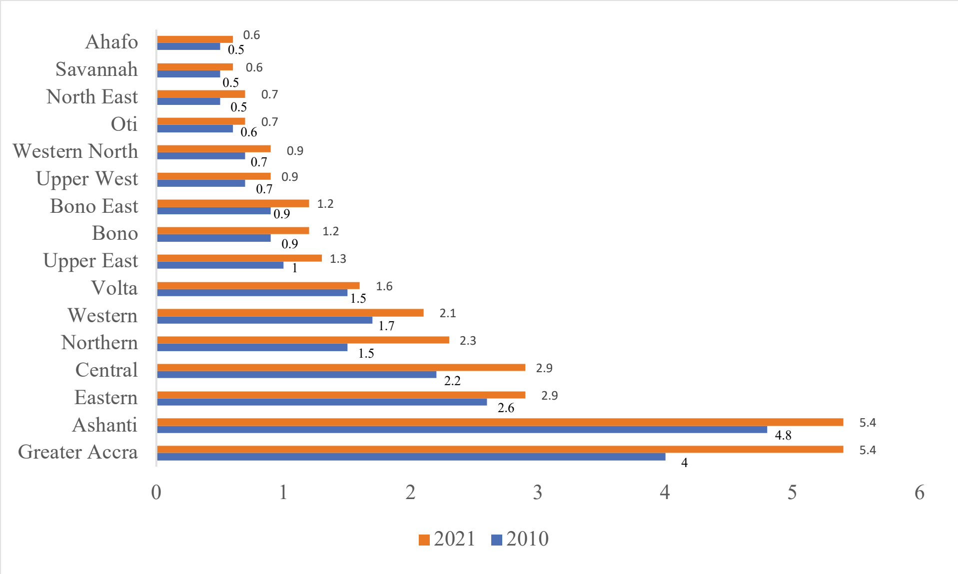


Figure 28 Population growth in the 16 regions from 2010 to 2021

Source: GSS 2021

Figure 28 shows the rapid urbanisation in its major regions, such as Greater Accra, Ashanti, and Eastern regions. Ghana's national capital city Accra is in the Greater Accra region. Between 2010 and 2021, Greater Accra continued to experience a greater urban population growth because of the commercial and trading activities, and the fact that it is the administrative capital of Ghana. Many households move into the region from remote areas to seek better job opportunities as it attracts both local and international companies. There are concerns about finding quality and affordable rental dwellings in the big cities. There are incremental housing developments that are often constructed and occupied by homeowners. This form of housing is altered internally or externally by the homeowners to provide rental accommodation to prospective tenants. In Ghana, these rental units constitute the 'compound housing' system and are dominant across the country. At the national level, the policies for affordable housing production are premised on publicprivate partnerships (PPP). Although the era of direct housing provision by the government is ended, it facilitates the process of housing delivery across the country.

5.1 Contribution of Government and Private Sector in Rental Housing Supply

The direction of the housing policy discourse on rental housing supply in Ghana is somewhat varied in terms of focus and initiatives. A significant number of the literature discusses the challenges posed by the rent advance payment system in the country. There are others that focus on the unfortunate outcome of using State pension funds to invest in rental housing and the implication on the private rental sector. The interview results and the review of relevant government documents reveal that the government's attempt to provide affordable housing has not proven to be fruitful. Although the rental sector is not given maximum attention, there are attempts to address several issues relating mainly to the effects of the rent payment system.

5.1.1 The National Rental Assistance Scheme

Through the Ministry of Works and Housing, the Government of Ghana is looking to implement one of Ghana's first demand-side assistance programs for tenants. The scheme is expected to provide an adaptive solution to the stress created by the two-year rent advance payment that has evolved in the private rental market. Many landlords charge upfront rents for two years before prospective renters are allowed to occupy the property. Previous research has indicated that tenants tend to struggle to make this huge deposit either at the start of a new lease or during the renewal of an existing one. Experts raise several questions about the usefulness of this scheme in addressing rental payment issues in Ghana.

Firstly, the scheme which is expected to provide a low-interest loan to eligible tenants is likely to reinforce non-compliance to section twenty-five (25) of the Rent Act, 1963, Act 220. This law states that a landlord can collect a maximum of 6 months' rent at once. While the scheme conflicts with the Rent Act, it is expected to relieve tenants of the burden of mobilising two years of rent. With the informal nature of the private rental market, regulation of rent payments and collection is quite minimal, making strict enforcement too difficult. The lack of a database on rental properties and adequate information on the respective landlords contribute to the lack of compliance with Act 220. The legal implications present a call for reforms to harmonize the scheme with the law.

Secondly, although the loan will ease the burden of mobilising rents from various sources, it is likely to increase the housing expenditure of eligible tenants. The interest charged on the loan, no matter how small it is, will increase the rent paid by the tenant over the lease period. For example, if the two-year rent advance amounts to $2000, and the interest charged on the loan is say 5%, the total amount that will be repaid by the tenant is $2100 over the two years. In this regard, the government makes a profit from this money whiles the tenant pays more rent. The interest charged on the loan defeats the purpose of establishing the scheme. Although it may prevent evictions in the short term, it will add to the rental payment of eligible tenants. An interest-free loan is likely to serve the purpose of helping mid-to-low-income households to secure rental accommodation. Thirdly, the bracket of eligible tenants for the scheme is quite narrow. It omits households and individual working in the informal sector. This means all individuals who do not have record with the Ghana's Controller and Accounting General's department do not qualify for this loan.

5.2 Conditions for Institutional Investment in Rental Housing Supply

There are certain conditions, determinants or factors that are needed to attract institutional investment in rental housing. The interview results from Ghana show that the phenomenon is not entirely new in Ghana. The existing scholarly housing literature has not sufficiently investigated and addressed the happenings in Ghana. The stakeholders' interviews were focused primarily on understanding the situation and identifying the avenues of attracting institutional funds into revealing the following conditions, changing the perception of fund managers about rental housing investment, minimising the systematic/market risks, revisiting pension fund investments, the use of life insurance funds, establishing Gh-REITs, revising the role of the regulator, and increasing the effective demand.

5.2.1 Changing the Perception of Fund Managers about Rental Housing

The interviews conducted among the fund managers of the major institutional investors in Ghana found that rental housing investment is not particularly famous amongst this group of investors. A bad precedent is set by Ghana's dominant state pension fund called the Social Security and National Insurance Trust (SSNIT). As far back as 1974, SSNIT expanded its portfolio to include housing investment to serve two primary purposes. Firstly, SSNIT invests in residential accommodation to generate returns to finance the fund. The investment income is expected to pay for eligible SSNIT contributors' benefits sufficiently. The second reason SSNIT ventured into housing investment is to provide affordable housing to accommodate its contributing members.

The pension fund managers who participated in this research assert that rental housing investment may not be a viable option for them because its giant state competitor; SSNIT failed with its affordable housing program. They posit that using SSNIT funds to invest in affordable housing was not successful and that the outcome is clear for other fund managers and investors to decide. This position is true as many of SSNIT's affordable housing projects have either been sold out, abandoned, or left in a deplorable state. This research finds that the SSNIT affordable housing program was not successful because of the lack of managerial competence of pension funds to develop, hold, and manage rental housing investments. The general condition of the operational projects does not appeal to other investors who may be considering rental housing investment. The authors found that the SSNIT multifamily rental projects are poorly managed and maintained which leads to further deterioration. The tenants also revealed that there is a lack of regular physical inspection and inadequate repairs and monitoring. Although SSNIT introduced housing investment in their portfolio over 30 years ago, they do not have the adequate expertise to invest in multifamily residential accommodation. It is unknown how this shortcoming contributed to the overall management of affordable housing projects.

The general impression of the Ghana interviews is that stakeholders perceive the real estate market as problematic and challenging. This perception needs to be changed to attract more pension fund managers to invest in rental housing again. SSNIT has shifted from residential property investment to commercial and retail etc. SSNIT established a subsidiary company called Ghana Hostels Limited (GHL) in 1999 to invest in and manage purpose-built student accommodation at selected universities across the country. The subsidiary company model is a relatively new model used by various institutional investors in Ghana to engage the services of specialised property experts to handle their investments in property. This has allowed for the use of technical knowledge in the management and maintenance of properties. Efforts must be put into changing the negative perception among fund managers of rental housing investment. Adequate structures must be instituted to reduce market risks and establish an effective management platform to manage property investments separately from financial assets. A comprehensive evaluation may be conducted to identify the challenges that led to the failure of some of the SSNIT flats to aid possible reviews that will help future pension plan investment in rental housing.

5.2.2 Minimizing the Systematic/Market Risks

In portfolio management, systematic or market risk is the risk that relates to the entire market. Rental housing investment is part of the real estate market, and therefore, the systematic risk, in this case, links to the risks associated with the real estate market. Apart from recognising the changed position of institutional investors and taking gradual steps towards a rental housing agenda, there is a need to examine the systematic risks associated with the rental asset. The challenges in Ghana’s real estate market constitute a significant determinant for institutional investment in rental housing. Problems such as land disputes, real estate agency issues, high vacancy rates in rental properties, lack of effective demand, etc., constitute systematic risks. These factors influence the private rental market's profitability and push institutional investors away from investing in the asset. SwanzyImpraim, Ge & Mangioni (2021) gave a holistic exposition on the potential for the market risks associated with rental housing that potentially scare institutional investors from investing in rental housing. These include low profitability, non-progressive rent control policies, inadequate property management, fear of reputational damage etc. The fund managers interviewed stated that the rental sector is full of problems and not attractive to investment. When investors investigate the pending issues, the asset may be sidelined because of the problems it may pose to institutional investors. This presupposes that even if institutional investors agree to harmonise their portfolios with rental housing investment, their decision to invest in the asset class will likely be rescinded when the systematic risks are objectively assessed.

The findings from this research confirm the results of earlier studies with a specific focus on the SSNIT case which proved to be a failure. Although the institutional investors interviewed are not experts in property markets, their position was not to invest in the asset class because of the SSNIT experience. Ongoing studies are looking to evaluate the SSNIT case study to identify the reasons for the failure and the several abandoned affordable housing projects across the country. Meanwhile, this is an essential finding on the dynamics of using state pension funds to invest in rental housing. The opportunities it presents, and the lessons learnt from the case study. Currently, there are variations to the strategies used by SSNIT to invest in rental housing. Unfortunately, they are no more into direct investment in affordable housing projects in Ghana. More focus is recently shifted to commercial property, retail, office spaces, and the usual securities and equity investments.

This study posits that pension fund investment in rental housing in Ghana is primarily considered a failure due to many known and unknown reasons that constitute systematic risks to institutional portfolios. The modern approach has moved on to investments in student accommodation through establishing a subsidiary property company called Ghana Hostels Limited. A comprehensive evaluation of the program will give a reasonable basis for policy actions toward revising this arena of investment for SSNIT. Several reforms are being made to improve Ghana's real estate market. Laws and amendments such as the Real Estate Agency Act 2020 Act 1047 and the Ghana Insurance Act 2021 Act 1061 have been made to resolve many of the challenges in the real estate sector. There are bills in parliament awaiting the necessary procedure to be passed into law. All other things being equal, minimising the systematic risks will make Ghana's private rental market more attractive to institutional investments such as pension funds, life insurance companies etc.

5.2.3 Revisiting Pension Fund Investment in Rental Housing in Ghana

Pension funds are undoubtedly one of the main targets for attracting institutional capital into the private rental market. Using these funds to invest in housing is not an entirely new phenomenon in Ghana, dating to 1974. In recent times, SSNIT, the pioneer, has shifted from residential investments to commercial and retail assets. Reports indicate that the affordable housing program has been sold out whiles the rest were changed to rent-to-own; with the growth of SSNIT and the introduction of more private pension schemes in Ghana, this section analyses the dynamics involved with attracting these funds into rental housing investment. It looks at the growth of the state pension fund and the private pension funds and assesses how these funds could be leveraged into the private rental market.

There are two broad categories of pension funds in Ghana: the state pension fund (mainly 1st tier), also called the Basic National Social Security Scheme (BNSSS), and private pension funds (2nd and 3rd tier). The Social Security and National Insurance (SSNIT) was set up to regulate the BNSSS. The National Pensions Regulatory Authority (NPRA) report on the BNSSS indicated an interestingly higher property and fixed assets component than equities and securities. This report has several implications for the ongoing theoretical and policy debates on institutional investment in the rental asset. It shows that the state funds (public) are hugely invested in housing while the private pension funds invest primarily in securities and equities. The narrative that institutional investors shun away from rental housing investment in Ghana is valid for only private pension funds. The NPRA annual report shows the composition of the state pension fund industry (BNSSS) in Ghana. This is illustrated in Figure 29.

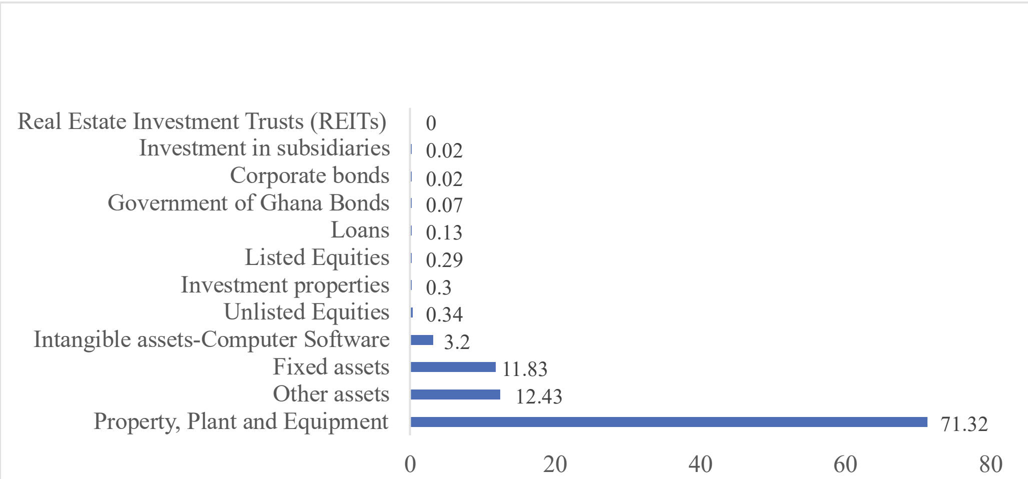


Figure 29 Asset classification of funds under BNSSS as of DEC. 2019

Source: NPRA Annual Report 2019 p.20

As shown in figure 29, 71.32% of the BNSSS assets are invested in property, plant, and equipment (PPE). This is followed by other assets (12.43), fixed assets (11.83), etc. As the BNSSS already possesses significant assets in PEE, the debates about using institutional funds for rental housing investments need to shift to private pension funds. The private pension funds in Ghana have an opposite composition of assets in their portfolios. The composition of 1st and 2nd-tier private pension funds is illustrated in Figure 38.

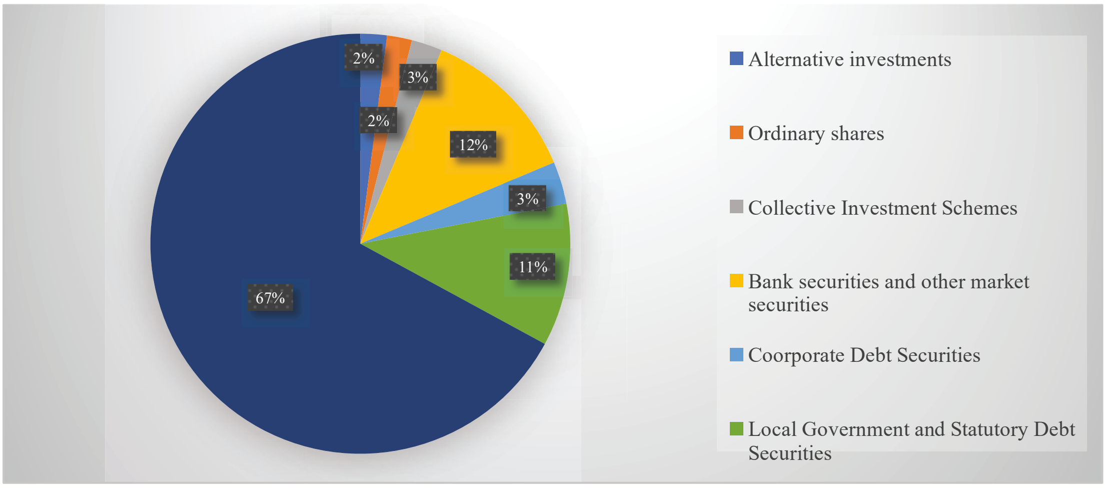


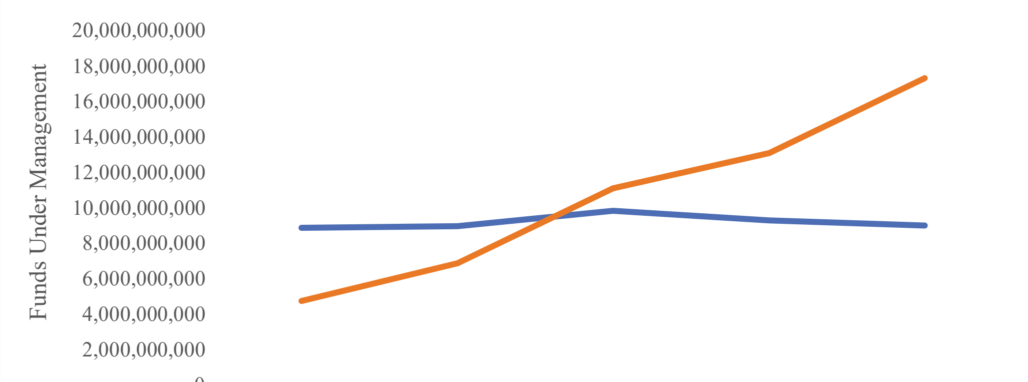
Figure 30 Asset classification of funds under the BNSSS as of Dec. 2019

(Source: NPRA Annual Report 2019, p.20)

As seen in Figure 30, the 1st and 2nd tier private pension funds in Ghana invest predominantly in Government of Ghana (GoG) securities (67.09%). This is followed by local government and statutory debt securities (10.98%), corporate debt securities (3.26%), bank securities and other market securities (12.35%), amongst others. It is shown that private pension funds in Ghana invest only 2.03% of their portfolios on alternative investments. As discussed earlier, the rental asset belongs to alternative investments, an area that policy experts discuss. The reports confirm the responses from the interviews with fund managers that private pension funds invest primarily in securities and equities. The interview revealed the reasons why government securities dominate their portfolios. Firstly, the fund managers said that the GoG securities provide comparatively good returns of 18% against the other assets. Secondly, as the government is involved, private pension funds perceive GoG securities as low-risk investments compared to other investments.

Whiles these reasons dominate the interview responses, several arguments were made about the competitiveness of the rental yields to the GoG securities. The latter is preferred over the former because of the vast differences between the returns generated.

The private rental market in Ghana is also perceived as problematic and risky to invest in. This line of argument relates to the systematic risk of investing in rental housing. Upon consideration, the precedent set by SSNIT on rental housing deters private pension funds from investing in the asset class. Although residential property provides diversification benefits to multi-asset portfolios, the asset class has unresolved systematic risks. Again, the competitiveness of the asset against other real estate assets is essential to the investment decision of pension funds. Over the years, more private pension funds have been introduced into the pensions industry. Figure 31 shows the growth trend between the BNSSS, the statemandatory funds and the private pension funds from 2015 to 2019.



	2015	2016	2017	2018	2019
BNSSS	8,810,075,000	8,888,601,000	9,771,140,000	9,242,474,000.00	8,929,300,000
Private Pensions	4,672,108,464	6,792,946,261	11,023,178,469	13,013,606,576	17,262,269,255

Figure 31 A trend analysis of BNSSS and private pensions 2015-2019

Source: NPRA Annual Report 2019 p.17

The introduction of more financial institutions into the pension industry at various levels influenced the growth of the funds under management (FUM) from 2015 to 2019. As shown in figure 31, the compulsory BNSSS experienced steady growth while private pensions increased significantly. This suggests that the target for policymakers must be private pension funds rather than the BNSSS. Nevertheless, the BNSSS already has a significant component of PEE; several reforms may be made to rejuvenate the affordable housing program in Ghana. The stakeholder views from this research indicate several barriers to institutional investment in rental housing.

The profound issues related to rental housing investment's systematic/market risks tend to affect the external investment environment of the asset class. In Ghana, the real estate market is confronted with several challenges that affect the private rental market. The following section discusses the systematic risks of the rental asset's low institutional investment. It discusses the stakeholder views solicited from the interviews and analyses them with the happenings in Ghana’s real estate market.

5.2.4 A Look at Life-insurance Funds

Life insurance funds in Ghana are investing in property through the establishment of subsidiary companies. Just like pension funds, insurance funds offer the opportunity to leverage more capital into Ghana’s private rental market. The stakeholder interviews indicate that there is a lot of financial potential for insurance funds to invest in rental housing. This area of research is not intensively explored as the literature is almost nonexistence. Life insurance companies are also known to invest predominantly in securities and equities. As they have long-term liabilities, the opportunities exist to invest a portion of these funds into rental housing assets for diversification benefits. Life insurance funds in Ghana are closely following the processes for establishing REITs in Ghana. Aside the subsidiary company model, REITs are considered an avenue for insurance funds to gain exposure to property investment.

5.2.5 Establishing Real Estate Investment Trusts in Ghana

Real Estate Investment Trusts (REITs) are institutional investors likely to cooperate with pension funds and insurance companies in pursuing large-scale rental housing investments.

In 2019, the Securities and Exchange Commission (SEC) of Ghana established its first REIT guidelines as a step toward legalising and licensing REITs in the country. The stakeholders that participated in this research made interesting inputs about the opportunities REITs could offer for Ghana’s private rental market. Several considerations may be made to incentivise them to enter partnerships that promote high-quality rental dwellings for most moderate-to-low-income households as a specialised fund for property investment. However, this step must not be considered a quick response to the challenge but a mid-to-long term avenue to position REITs as the middlemen, institutional investors, and the rental market.

The empirical investigations revealed that, before implementing the 2019 REIT guidelines, there were only two publicly known REITs in Ghana. Also, no REITs are listed on the Ghana Stock Exchange (GSE). Several funds may be operating as REITs in Ghana without the required license. There are ongoing seminars and conferences to announce the existence of the REIT guidelines. All interested REITs are expected to secure a permit from SEC to operate in Ghana. This research sought the feedback of stakeholders, including policy experts, institutional investors, and property developers, on the new REITs guidelines. The feedback is mainly positive and accepted amongst all the stakeholders who participated in this research. However, the extract from the interviews reveals strategies to improve and finalise the REIT guidelines in Ghana.

Firstly, stakeholders posit that the macroeconomic conditions in Ghana must be improved to benefit the real estate industry. This includes providing employment opportunities, lowering inflation rates, and pursuing initiatives that foster economic growth. The attention needed to improve the macroeconomic environment is as important as the time required to formulate REITs in Ghana. Macroeconomic conditions dictate investment activities and the real estate industry at large. The second factor is minimising the problems facing Ghana's real estate industry. This theme relates to the systematic/market risks that affect the entire property market. In Ghana, there are challenges with conflicts that arise from land grabbing, encroachments, multiple sales of land etc. The reforms in land-use planning and administration, especially with the harmony between state and customary lands, are essential to the real estate industry. The position of previous studies on this subject is quite interesting. However, this research finds that the informal procedure associated with customary lands is the root cause of land disputes in Ghana. Some loopholes must be tightened to improve Ghana's land use planning and administration. Another area of concern is the problems with the activities of real estate agents. There are unlicensed real estate agents that are causing clients to lose money through various means. Although these problems are happening, there are ongoing reforms to solve these problems. Several profound

To successfully legalise and establish Gh-REITs, the stakeholder interviews revealed three main conditions: improving Ghana’s macroeconomic environment, improving the real estate industry, and establishing an adequate legal and regulatory framework. Once the legal framework for the REITs is established, the pathway to transition to listed property companies will offer more opportunities for the REITs to expand their financing options.

5.2.6 Revising the Role of the Regulator

The activities of institutional investors are regulated by recognised state agencies that monitor the funds. This research found original insights on the influence of the regulator in the investment policy of some Ghana funds categories, such as pension funds, insurance funds, REITs etc. This area of research has not been discussed in the extant literature about institutional investment in rental housing. In the interviews, fund managers revealed the processes involved in selecting the assets in their portfolios. Two main discoveries were made concerning the guiding principles of their investment policy. Firstly, they have an inhouse investment policy or framework that guides their investment. They revealed that particular attention is given to ensuring their investments meet the benchmarks and returns of the clients. This involves evaluating the risk-return profile of their portfolios at any point in time. Since this approach concerns internally driven decisions, the fund managers and investment analysts follow their respective policies to settle on the chosen assets.

Secondly, the regulator plays an essential role in the investment process of institutional investors in Ghana. The regulator licenses members and ensures compliance with the industry's laws. The fund managers interviewed revealed that the regulator sets up investment guidelines to ensure 'responsible investing' by licensed funds. For this research, several regulators are identified as having a direct influence on the investments of institutional investors. These include pension funds: regulated by the National Pensions Regulatory Authority (NPRA), insurance funds: regulated by the National Insurance Commission (NIC), REITs: regulated by the Securities and Exchange Commission (SEC) of Ghana, etc. Before delving into the regulator's role, Figure 32 presents the categories of pension institutions regulated by the Ghana NPRA.

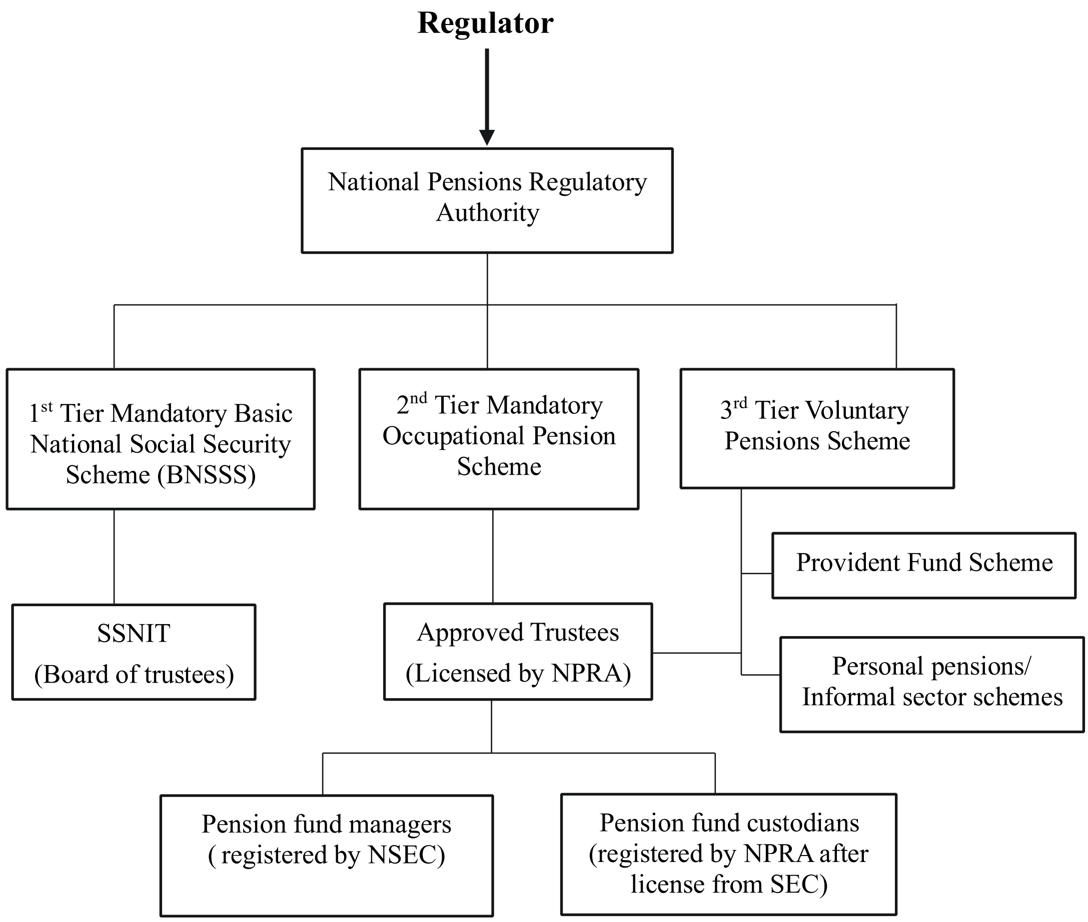


Figure 32 Composition of pension schemes in Ghana

Source: NPRA Annual Report 2019

Figure 32 shows the regulatory activities of NPRA, specifically the various tiers of pension funds under them and the different categories of pensions in Ghana. This diagram broadly illustrates the coverage of the NPRA. It finds that the regulator does not decide which assets the investors should invest in but provides general guidelines that shape the assets in which the different categories of funds invest. Evidence from the interviews gave the impression that rental investment is not encouraged by the regulators of various institutional investors. The Regulator's power is a new revelation in why institutional investors show apathy towards the rental sector.

The first-tier pension scheme is a national social security scheme for all employees in Ghana's public and private sectors. The second tier is an occupational or worked-based scheme mandatory for all formal employees. This level of pension is privately managed and is expected to give contributors a higher lump sum than was previously given under SSNIT. Finally, the third tier is a voluntary pension scheme for formal and informal sector employees, often supported by tax incentives. The NPRA regulates the three levels of pension schemes. Per previous discussions on the comparative growth of BNSSS (1^{st} tier) and private pensions (2^{nd} and 3^{rd} tier), it is evident that the funds under management of private pensions in Ghana are increasing exponentially. This large pool of money must target Ghana's private rental market. The private pension funds must be encouraged to invest in rental property using three pathways: a subsidiary property company, a REIT, or a property developer partnership. Additionally, the rental investments of the BNSSS may be revisited, but this time with an improved program.

5.2.7 Increasing the Effective Housing Demand

In property economics, effective demand relates to demand that is backed by purchasing power. The stakeholder views from this research reveal that the lack of effective demand for rental accommodation is one of the significant challenges in Ghana's private rental market. This is particularly critical as there are enormous financial requirements to access rental housing. Usually, tenants must pay two years' rent advance payment before they can occupy a rental dwelling. This makes it challenging to mobilise the amount needed to sign a new lease or renew an existing one. In response to this problem, policy experts posit that a solid support base from the government would help tenants afford rental properties provided by institutional investors. These support programs may be distributed through demand-side incentives. Demand-side incentives are supporting structures put in place to increase the ability of tenants to pay their rents. These can be direct government support towards rent payment (for example, paying off a percentage of rent) or working with landlords to reduce tenants' rent. There are very few demand-side incentives for the rental sector in Ghana. Except recently, there has never been any direct support for tenants to pay their rents in Ghana. A more defined case can be made for public housing, often described as local authority housing designed for government workers. There is a gap between the intention of policymakers and the translation of this intent into actual practice.

Stakeholders reveal that demand-side assistance programs must be revamped in Ghana's private rental market. The first is the phasing out direct government housing provisions through the State Housing Corporation (SHC) and the Tema Development Corporation (TDC). The Government of Ghana used these two agencies to provide low-cost housing during the last quarter of the 20th century. Recently, the SHC and TDC are no longer giving housing directly on the market. The new crop of project-level interventions commissioned over the past two decades under different pollical regimes is market-driven, with little attention to proven housing allocation strategies. Within the preview of the government's facilitative role, not much support has been given to the private rental market from the demand perspective. These debates are essential if the direction toward institutional investment in rental housing should be taken seriously in housing policy. It includes looking at the loopholes in demand-side assistance and the avenues to close them.

Concerning the rent advance payment system, renters mobilise funds from various sources to afford the 2-year rents required by many landlords. Some rely on support from family and friends, loans, savings, and employers to meet the rent amounts for two years. The operation of this system is not only peculiar to the big cities but countrywide. Although this phenomenon is not legally accepted, it is practised across the board, even by government organisations. Perhaps, there is a need to make changes to the law on rent payment before any demand-side assistance programs are designed. This is to avoid contradictions and criticisms about the Government ironically offering support for illegal activities within the private rental market. It is evident that the focus on increasing the rental housing supply far outweighs the demand. The historical trajectory of Ghana's housing policy on rental housing provides a formidable basis to suggest that bringing more institutional investors on board could result in complex housing policy challenges. The exemplary structures must be implemented to attract these investors and balance the market with increased effective demand.

5.2.8 The place of Property Rating and Tax Incentives

Tax incentives are an important consideration when it comes to attracting institutional investors into rental housing investment. The interviews showed that it is an essential part of the support package given by the government to property investors in Ghana. However, the participants of the research, many of whom were fund managers did not give specific feedback on tax incentives. This is because the discourse on the built-to-rent asset class is yet to be realised in Ghana. Nonetheless, the input shows how different institutional investors will respond to tax treatments. For pension funds, it is shown that tax incentives may not be needed as the fund mostly does not pay taxes once it is managed under the national pensions regulatory authority (NPRA). There is an opportunity for pension funds to invest in the asset class without much worry about paying huge taxes, as with other profit-oriented investors. Tax incentives may be used to attract private equity funds, life insurance companies, and REITs. In Ghana, rental housing investors are tasked to pay property taxes, also known as property rates. The Local Governance Act, 2016 (Act 936) authorises the District Assemblies to collect taxes, rates, duties, and fees at the local level. Act 936 emphasises collecting taxes on all 'immovable properties', including houses, apartments, estates, malls, etc. Property-related taxes include ground rents, real estate value-added tax (VAT), etc.

The literature on property rating in Ghana contributes to the support needed by private real estate companies, the administrative challenges faced by the district assemblies, and the opportunities for revenue collection in Ghana. Property rating may not be a big issue for property investors as it has hardly dominated the headlines in Ghana. In 2015, the government of Ghana introduced a 17.5% real estate VAT which was eventually reduced to 5% after rigorous stakeholder engagements. The 5% tax is a generous offer to support Ghana property investors. This research posits that Ghana's challenge with property rating concerns its mobilisation and administration rather than an impediment to property development. As the discourse of providing purpose-built residential apartments becomes more profound in Ghana, tax treatment will become essential, especially with foreign investor taxes and ground rents.

5.3 Validating the Interview Results: DCF and Sensitivity Analysis Results

5.3.1 How the proposed Model addresses the barriers

A study by Swanzy-Impraim, Ge & Mangioni (2021) sums up the market risks associated with investing in the private rental market. These risks are barriers to Institutional investment and contribute to why investors stay away from the rental market. The barriers, along with the interview findings, were quantified and tested in the DCF model. The proposed model will help to address the identified barriers. An exposition of how the model addresses the market risks in Ghana’s private rental market is presented in Table 18.

Table 18 How the Model addresses the Barriers.

Concept	Market risks	The proposed Model’s role

Low profitability	• Low returns • High vacancy • Diverse investor motives • Illiquidity • High transaction cost • High management costs • High taxes	Firstly, the DCF model was used to measure the project's benefits over 30 years. The result showed that the project is financially feasible and will give the investor steady returns. Secondly, the JV and REITs pathways will reduce illiquidity, and encourage moderate taxes and economies of scale. The model therefore addresses the impact factors likely to influence the profitability of the project.
Non-progressive rent control policies	• Political interference • Inadequate rent control laws	The study found no rent control policies in Ghana. Since the focus of the research is on private rental housing, there is little government interference. The foreseeable interference by the NPRA, SEC and NIC, the regulators of the funds, is adequately addressed.
Unclear target group	• Undefined project target • No distinction between forprofit and social investments	The model explains that the focus of institutional investors is on market rental housing. This is because they are profit driven. The target group is therefore the mid-to-high income households. However, with the right condition-based development incentives, they can be admonished to go into affordable rental housing through inclusionary housing or a CSR arrangement. The model therefore addresses any challenge associated with unclear target group.
Poor landlord-tenant relations	• Weak institutional framework • Fear of reputational damage	The JV, Gh-REITs and the subsidiary company arrangement illustrated in the model reduces strained landlord-tenant relationships. The developer, with a fully set up management team, will address all issues related to the tenant. In this regard, the institutional investor, which may be a pension or lifeinsurance fund, has no contact with the tenant. In the event of any issue, their reputation will not be at stake.
Inadequate property management	• Less attention to property management in policy • Physical deterioration and functional obsolescence	A fully set-up management staff by the developer resolves this barrier. In the past, institutional investors have been accused not having the requite knowledge to invest and manage property. The limitation will be resolved by the proposed model.
Unreliable property market information	• Novelty • Absence of track record Poor • information on housing transactions	The challenge with limited market data is in Ghana's property market. The model encourages the use of listed property companies and other improved avenues for collecting data on housing transactions.

Source: Author (2023)

Table 18 explains how the proposed model will overcome systematic or market risks. This is structured to the Ghana context and aims to reduce rental market volatility. Since market risks are external and not easily diversified in institutional portfolios, the estimates of variables such as war, pandemic, or earthquake provide several impact scenarios an investor is likely to face. These risks are not peculiar to the asset but could generate an environment that may derail the project's success. The DCF and sensitivity analysis helped to justify claims made in the interviews.

5.3.2 A Discussion of the Interview Findings and Sensitivity Analysis results

The interview findings were verified using a DCF and sensitivity analysis. Several assertions were made in the interviews that needed verification. Table 10 lists the rationale behind verifying the claims made by experts in the interviews. This section discusses in detail the outcome of the verification and explains the implication on rental housing supply in Ghana. The DCF model was developed for three scenarios: a base model, a joint venture model, and an affordable build-to-rent model. The model was created for a hypothetical rental housing project with a supermarket, shops, a gym, and a car park. The base model helped to identify the amount needed by a developer to construct such a project. It examines the cost and incomes required and makes provisions for real-life situations such as vacancy rates, property taxes etc. The NPV and IRR were used as the decision criteria for the developer and investor. The base model proved beneficial to the investor and a loss to the developer. In Ghana, there are limited opportunities to secure construction loans to undertake big residential projects. The model, therefore, shows that when a developer in Ghana self-finances a mixed-use development, given several assumptions, it is likely to result in a loss. This confirms the need for a conducive investment environment for developers. This is a significant determinant to stimulate institutional investment in rental housing in Ghana.

The sensitivity analysis was conducted mainly to examine how the project will perform when the macroeconomic conditions change. Variables such as market growth, interest rates, Covid-19, income growth and vacancy rates show that the investor's NPV is highly sensitive to changes in the macroeconomic conditions. The interviews revealed that institutional investors are concerned about the macroeconomic conditions and the problems in the private rental market. The sensitivity proved that the selected factors indeed impact the project's NPV will be greatly affected when the macroeconomic conditions decline. For instance, if interest rates or inflation increase, it will affect the project's profitability.

5.4 The Findings and the Literature

The relevance of this research is demonstrated by the extent to which the empirical findings are consistent or contrary to previous studies' results. An emphasis is therefore placed on achieving originality and advancing deep insights on the topic. The method used in this research and the methods used in other studies are also compared to bring out the uniqueness of the findings. The scholarly debates on expanding rental housing supply are vast and intensively researched, but the research on the means to achieving this goal is emerging in many countries. Per the trending theoretical debates, scholars are deliberating on using institutional funds to expand the rental sector. This is not so much of a new research area in the US because of its progressive multifamily housing sector. However, the UK, Australia and some other parts of the world are now catching up with the idea in policy and practice. The study brings a lot on the table because of the focus on an emerging economy like Ghana. It makes original contributions on the strategies for attracting institutional investors into the rental sector to improve rental housing supply. It understands how those who are already in housing markets are investing and provides insights on how sideline investors perceive the market and how they can be admonished to engage in it.

The roles of the government and the private sector in improving rental housing supply

The first research question is an ongoing conversation in many countries. It identified the changing roles of the government and the private sector in improving rental housing supply. The theoretical debates underpinning the government's direct housing provision against its current facilitative strategy were not coincidental but driven by the fast-growing demands of beneficiaries. This forced transition is partly due to limited finances in government coffers to match the housing requirements of citizens. Notable scholars such as Apicello (2010); Cao & Keivani (2014); Drummond, Burleton & Manning (2004) and Lennartz, Haffner & Oxley (2012) have made contributions to this topic. It is evident through the empirical study that housing supply in Ghana aligns with the postulations of these scholars. Pugh (1986) confirmed this earlier through context-specific studies in his exposition on Ghana's changing housing supply paradigm.

Having established that governments are no longer providing housing to citizens, scholars such as Glaeser (2011); Hatcher (2015), and Green (2011) further pointed out how many governments support homeownership but give less attention to rental housing. Their view is that, in a neoliberal system, the ideal housing option for most households is homeownership, hence the focus of many governments. The findings of the study in Ghana are consistent with those of previous studies. It revealed that the government's involvement in improving rental housing supply is minimal compared to homeownership. The government provides designated land and tax incentives to developers to produce homeownership. Until recently, there was no tenant support program in Ghana's private rental sector. The most recent initiative for the private rental market is the National Rental Assistance Scheme (NRAS). The NRAS is a tenant support loan scheme which provides low interest loans to renters to help them pay the 2-year advance rents charged by landlords. The study found that the NRAS will relieve tenants of the stress of mobilising 2 years' rent but increase the rents being paid in the long run. The NRAS will also encourage more landlords to charge 2-year advance rents even though it is illegal. This contributes to the debates on the implications of the rent advance payments in Ghana, notable studies include Asante, Ehwi & Gavu (2021); Ehwi, Asante & Morrison (2020) and Arku, Luginaah & Mkandawire (2012).

Concerning the role of the private sector, individual landlords contribute significantly to Ghana's rental stock. In recent deliberations on the changing demographic dynamics and the accompanying housing stress, several scholars have asserted that the current housing providers have failed to match the demand. The discourse transcends to providing *decent* yet affordable rental housing in Ghana's big cities to serve the majority of the urban residents. This study contributes to the knowledge on improving Ghana's private rental market. Several studies by Agyemang, Asamoah & Obodai (2018); Asabere (2007); Obeng-Odoom (2011); Soyeh, Asabere & Owusu-Ansah (2021) and Bangdome-Dery & Eghan (2013) provide findings on happenings in the private rental market. The resounding debates on Ghana's rental sector include the historic policy changes, investments, and limitations in the rental market.

The findings of this study align with the results of previous studies on the changing roles of the government and private sector and in many instances, build new arguments on the gradual introduction of institutional investors as the emerging financiers of the sector. It has identified the historic overview of policy reforms, the challenges with using pension and life insurance funds, and the required policy reforms to establish a progressive rental sector in Ghana. Surrounding the pathways to greater institutional investment, the study has identified reforms for Ghana's growing indirect real estate investment vehicles.

Determinants of institutional investment in rental housing

Globally, scholars have identified the factors that 'determine' institutional investment in rental housing. Previous studies in other countries identified the inhibiting factors or what many refer to as the barriers to institutional investment in present-day housing markets. This study is one of the first empirical studies on the subject in Ghana. It has identified the barriers as it pertains to Ghana and proposed solutions to address the identified barriers. The areas of contribution include addressing the market risks, rebranding the rental property sector, minimising illiquidity, and revising the regulator's role. Some of the findings confirm the results of other studies and demonstrates inconsistent in certain findings.

5.4.1 The Impact of Market Risks

Studies by Alakeson (2012); Berry (2000); Blessing & Gilmour (2011); Pawson & Milligan (2013) and Lawson et al. (2014b) identified barriers such as high risks, inadequate rent control policies, weak institutional frameworks, lack of opportunities for investment at scale etc. Most of the barriers identified by the previous studies link to systematic risks. The findings from this research confirm the results of earlier studies with a specific focus on the SSNIT case which proved to be a failure. Although the institutional investors interviewed are not experts in property markets, their position was not to invest in the asset class because of the SSNIT experience. Ongoing studies are looking to evaluate the SSNIT case study to identify the reasons for the failure and the several abandoned affordable housing projects across the country.

5.4.2 The perception of Fund Managers in Ghana

Private pension funds in Ghana need a better perception of rental property investment. The findings from this research corroborate the findings of Bangdome-Dery & Eghan (2013); Eyiah-Botwe (2015); Kukah et al. (2021), who assessed the end-user satisfaction with these projects. The authors found that the SSNIT multifamily rental projects were poorly managed and maintained, which led to further deterioration. I was also discovered that the tenants asked for regular physical inspections and adequate repairs and monitoring but did not get the appropriate response. Although SSNIT introduced housing investment in their portfolio over 30 years ago, they lacked the adequate expertise to invest in multifamily residential accommodation. The perception among fund managers must be changed for them to see the new opportunities promised by the emerging pathways to rental housing investments.

5.4.3 Liquidity Constraints

The study found that institutional investors can minimise the liquidity constraint associated with rental housing investment by establishing subsidiary companies or joint ventures with developers. The subsidiary company or the JV helps to close the knowledge gaps among financially inclined institutional investors in managing property investments. Previous studies by Berry & Hall (2005) and others discussed novelty and high management costs but did not link it to the insufficient expertise at play. Unlike financial assets, property investment requires special skills other than what the typical institutional investor knows. Amongst the pathways, the JV provides better platforms to ensure that the properties are managed properly. Rental property investment is therefore no more an illiquid venture for the institutional investor.

5.4.4 The Regulator's Influence

Previous research on increasing institutional investment in rental housing have examined various barriers and determinants over the years. Studies by Lawson et al. (2014b); Montezuma (2004a); Pawson et al. (2019) and Alakeson (2012) made interesting discoveries about the various roles of the government. By this, the authors emphasize the incentives and support programs that the government can implement to help support the sector. This study however contributes to another dimension of the debate. It finds that the regulators of the three categories of institutional investors including pensions, life insurance and Gh-REITs play a vital role in shaping the assets these investors include in their portfolios. It found that the NPRA provided investment guidelines to all pension funds in Ghana. The same applies to the NIC which also provides benchmarks that indirectly influence the investment framework of life insurance companies in Ghana.

5.5 Implications of Findings on Stakeholders

There are implications of the research findings on stakeholders. The proposed model will alter the investment activities of institutional investors in an enormous way. Rental property investment's horizon is long-term; hence, a significant amount of institutional funds will be locked up over a long period. There is a long gestation period before the project starts generating shareholder returns. In a functional JV, institutional investors must collaborate with a property developer for 30 years unless otherwise agreed. This partnership has several complexities, requiring a new working culture between the two entities. It is likely that work-related conflicts will arise from overlapping duties and disagreements over decisions that affect both parties. The remedy to such overlaps is to define the capital structure of the JV before its commencement. Concerning SCs, more financial and administrative resources are required to establish a daughter company and seek the services of a professional management team and the structures needed to facilitate their work. Based on this consideration, a functional JV will be faster and more economical than an SC.

Secondly, the government must implement laws to govern tax incentives for institutional investors to invest in affordable rental housing. The laws will structure and position the right threshold for the tax concessions required and other incentives. The way to support pension funds will differ from private equity funds because of the differences in business model and motivation. Property developers must also own a part of the JV to ensure adequate management and facilitate the transition process if the investor bouts out in the short term. The JV will also provide the needed finance for developers without having to secure loans from banks. Finally, the findings provide potential pathways for the government to provide rental subsidies to the target group, who are mostly mid-to-lowincome households.

5.6 Chapter Five Conclusion

This chapter has analysed and discussed the findings from the interviews. It analyses institutional investment in rental housing and elaborates on how rental housing supply can be improved. Ghana has had an interesting case of its state pension fund having quite a sizable portion of property investment. It looked at private fund managers' perception of the asset class and the challenges and opportunities for rental housing investment. Furthermore, REITs are in their formative stage in Ghana and are considered an essential avenue for attracting more institutional investors into rental housing. The last part of chapter five presents a diagrammatic representation of an interactive model that will propel the advancement of affordable rental housing in Ghana.

CHAPTER SIX

SUMMARY, CONCLUSION, RECOMMENDATION AND FUTURE RESEARCH

6.0 Introduction

In a rapidly urbanising world, rental housing has become essential in meeting the housing requirements of the majority of mid-to-low-income households. The rental housing producers in Ghana have done their part in providing a sizable rental housing portfolio. As more Ghanaian cities become highly urbanised, the demand for high-quality rental accommodation is also increasing at an astronomical rate. The demand has surpassed the supply on the market, leading to huge housing supply shortfalls in the country, especially in the big cities. Policymakers are looking for new strategies to expand rental housing supply to help meet the rising housing demand in Ghana. As the advocacies continue, experts are routing for using institutional funds to provide a sustainable financing option for developers and investors. This thesis is one of the first empirical studies investigating the growing research on institutional investment in rental housing in Ghana.

The housing supply paradigm is gradually changing towards an institutional era. The roles of public and private actors are taking twists and turn across the spectrum of the housing supply chain. Ghana was selected as a case to understand how these changes are unfolding and to identify the similarities, differences, and lessons from other countries with more advanced institutional housing options. This research consists of three objectives, firstly, it identified the roles of the government and the private sector in providing rental housing supply in Ghana. This objective helped to understand the position of the involvement of institutional investors in contemporary housing markets. Secondly, it investigated the determinants of involving institutional investors in Ghana's private rental market. The second objective helped to understand how the use of institutional funds will foster the production of purpose-built rental housing supply for the majority of the mid-to-low-income households in Ghana. It explored the barriers inhibiting the use of institutional funds to invest in rental housing. The institutional investors considered for this study include pension funds, life insurance funds, and real estate investment trusts (REITs). The third objective linked the first and second objectives as it identified how the government and private sector roles could be improved to increase affordable rental housing supply.

The research methodology adopted for the study is the Constructivist Grounded Theory (CGT), largely attributed to Charmaz (2006). The CGT allowed the researcher to use an inductive approach to gather data from experts and develop a model based on the data. The study combined expert interviews with a cost-benefit analysis of a hypothetical rental housing project in Ghana's Greater Accra region. Three groups of participants took part in the research. Firstly, institutional investors were interviewed to understand their asset allocation strategies, investment decision making and their position on the rental housing discourse. Secondly, policy experts were engaged on their views on the implications of using institutional funds to invest in rental housing. Finally, property developers were interviewed on the opportunities and challenges associated with partnering with institutional funds to invest in rental housing. The empirical investigations helped to understand how to increase institutional investment in rental housing to boost rental housing supply. As a qualitative study, the interview results needed to demonstrate high levels of validity and reliability. The experts made claims about the pathways that will attract institutional investors into Ghana's private rental market and the government support required to make the rental asset more attractive. These claims were verified using a discounted cash flow (DCF) model of a hypothetical rental housing project. A sensitivity analysis was then conducted to measure the impact of several variables on the project's benefits.

6.1 Summary of Thesis

The thesis is about understanding how rental housing supply can be increased using institutional capital. Because of the in-depth inquiry involved and the fact that it is a relatively new research area in Ghana, qualitative method was used to engage experts from industry, academia, and policymaking to solicit their views on the reforms needed to achieve this objective. The study evaluates the implications of the proposed reforms on the government, developers, investors, and tenants.

Chapter one has presented the background of the study, including the research problem, aim, objectives, research questions, scope, and significance. It has also explained the research methodology, ethical considerations, research gap, and contribution to knowledge. It has discussed the changing demographic dynamics at the global level and specified how the phenomenon is unfolding in Ghana. It has detailed the impact of population growth, urbanisation trends and provided the known justifications for expanding affordable rental housing supply in Ghana. Furthermore, it has explained how the researcher investigated the prospects of using institutional funds to expand Ghana's private rental market. In simple terms, the first part of the thesis has provided a synopsis of the research. It has provided the readership with a holistic understanding of the research specifying the primary purpose and the contribution to the theoretical debates and policy issues on the topic.

Chapter two has presented the literature review of the thesis. The review focused on five main themes: housing tenure theory, housing policy and asset-based welfare, private rental markets, and institutional investors in housing markets. Firstly, the literature on housing tenure summarises the power-play between homeownership and rental housing. Previous studies posit that despite the high renting population worldwide, there is a limited rental housing supply. Their position is to give more attention to rental housing because of the benefits it provides in urban settings. Another school of thought summarises the advantages of promoting homeownership among urban residents. The discourse between the two factions is guided by the Housing Tenure Theory (HTT) which laid the foundation to discuss individual rational choices against institutional analysis in housing markets. The HTT underpins the position of scholars on the preferences for rental housing supply in contemporary cities.

The second part of chapter two has reviewed the literature on housing policy and asset-based welfare. It has looked at the place of rental housing in housing policy and explained government intervention through asset-based welfare programs. This is followed by a review of all relevant literature on institutional investment in rental housing, specifically, on the position of institutional investors in housing markets and the role of housing in multi-asset portfolios, the financialization of rental housing, and an exposition on real estate investment trusts (REITs), pension funds, life insurance funds, and private real estate equity funds. The final part of chapter has looked at all relevant previous studies discussing the determinants of institutional investment in rental housing and the findings on attracting institutional investors into the private rental sector.

Chapter three has presented the research design, methodology and methods adopted for the research. The study adopted the CGT methodology to guide the research process from the inception to completion. The researcher adopted a qualitative approach with inductive reasoning to gather insights on using institutional funds to expand rental housing supply in Ghana. The subsections include the research design, sampling methods, ethical considerations, data collection techniques, data analysis, and CBA. Chapter three has presented a detailed explanation of how the CGT methodology was applied in the research, specifically on how the interview questions were developed and operationalised, the data collection techniques, the recruitment strategy, and how the interview results were analysed. A Computer-assisted Qualitative Data Analysis (CAQDA) approach was employed to prepare, organise, and code the interview results. This approach made it easier to group the interview transcripts for easy identification and reference. The software used for the CAQDA is NVivo 12. Finally, a CBA of a hypothetical rental housing project was adopted to verify the interview results to achieve high validity and reliability. The triangulation method combined interview results, CBA results and secondary data to reach valid conclusions.

Chapter four has presented the findings of the research, mainly the summary of the interview results, DCF model and sensitivity analysis. The empirical investigations focused on the general outlook of Ghana’s private rental market and institutional investors' potential role in providing sustainable finance for developers. The findings answer three research questions. The first part has provided a demographic background of Ghana, specifically the population growth, urbanisation trends, and rental housing supply. This is followed by the findings on the scope of the government and private sector involvement in rental housing supply. The second part has presented the findings on the determinants of institutional investment in rental housing. This part identified the conditions needed to stimulate greater institutional involvement in rental housing supply. The third part of chapter four has presented the findings on the strategies for attracting institutional investment in rental housing in Ghana. It has presented the barriers facing Ghana’s private rental market and the regulatory and fiscal reforms needed to attract more institutional investors into the sector. The highlights of the interviews and their implications on the model are presented and explained accordingly.

The next part is the diagrammatic representation of the model, which is followed by a detailed explanation. The model is primarily based on the interview findings and the experts' proposals. It constructs a framework that will stimulate greater institutional investment in rental housing to help boost rental housing supply in Ghana—the expert views needed to be verified to make valid conclusions, and hence, a DCF model and a sensitivity analysis were conducted. The DCF includes a base model, a joint venture, and an affordable rental housing model. It examines the profitability of a hypothetical rental housing project at different price points using the NPV and the IRR decision rule.

Chapter five has presented a discussion of the results. It has presented how the findings lead to the extant literature on institutional investment in rental housing. It discusses the contributions of the research and how they confirm or contradict the findings of previous studies and the interactive model developed for Ghana. This chapter has discussed the interview findings constructively and related them to the CBA model. Finally, chapter six has presented the conclusion and recommendations of the research, including an introduction, a summary, conclusions reached, limitations, and recommendations for further research. The next section presents the conclusions reached from the study.

6.2 Conclusion

There is a direct relationship between the demographics of a country and the housing demand at any time. The extant literature establishes several justifications for increasing rental housing supply; a point of note is the influence of demographic changes. Countries such as the US, UK and Australia found the need to increase multifamily housing to match population changes. The phenomenon is not different in Ghana. Between 2010 and 2021, Ghana's population increased from 24.7 million to 30.1 million (PHC 2021). The country's urbanisation rate also increased from 12.5% to 17.5%, with most people moving to the Greater Accra and Ashanti regions, the two most populous regions in Ghana. There is clear evidence that most of the population is concentrated in the two regions, and in these areas, the demand for housing is high. The 2021 PHC showed a housing deficit of 2 million units nationwide. Based on these changes, experts posit that there is an urgent need to increase housing supply in Ghana. Amongst the deliberations to increase housing supply, there are advocacies to prioritise rental housing in policy.

There are peculiar and notable changes that depict the outlook of Ghana's housing markets. Firstly, there is an improvement in the type of structures used for constructing residential buildings. Housing quality has improved significantly, with many developers using superior building materials. The 2021 PHC report reveals that 64.1% of all residential buildings in Ghana are constructed with cement blocks, while 29.6% are made of mud and earth. This is opposed to the 57.5% and 34.2% recorded in 2010. The improved housing quality is either a result of a change in homeowners' preferences or households' ability to afford high-quality building materials. Either way, the improved housing quality signifies growth in Ghana's housing market. The housing structures with inferior materials are, however, almost 30%. The urban informality resulting from slums and informal settlements in the country's urban areas is a major worry to policymakers. As the urban population continues to increase and inner-city lands become scarcer, the quest for purpose-built rental apartments in these urban areas will increase.

Secondly, against the backdrop of expanding rental housing supply through institutional investment, the proliferation of detached and semi-detached houses in urban areas suggests that there are more mum-and-dad units than apartments. Within the framework of ensuring the best use of inner-city land and providing decent rental accommodation for urban residents, purpose-built apartments are a preferred typology rental stock. The question remains whether the market is ready for medium-to-high-rise rental apartments as the pathway to expanding rental housing supply. It is unlikely that individual landlords have the financial capacity to undertake such projects as there is limited access to loans. Government support is also quite minimal for this expansion. The empirical study in Ghana combines expert views on the required reforms with the DCF results on a hypothetical rental project to make several conclusions. This is followed by recommendations to increase institutional investment in rental housing supply in Ghana.

The Role of Government and the Private Sector in Providing Rental Housing in Ghana

The government of Ghana and the private sector play distinct yet collaborative roles in improving affordable housing supply. In recent years, demand and supply-side initiatives have been implemented to augment private actors' efforts in providing affordable housing. Within the housing supply framework, the government no longer provides free houses to citizens. Its current position is to sustain the existing public housing institutions and facilitate public-private partnerships that promote housing supply for Ghanaian residents. On the supply side, the government provides tax incentives for low-cost housing, free land for affordable housing and infrastructure support for developers.

The government of Ghana implements several demand-side assistance programs to improve affordable housing supply. It has established several low-cost residential mortgages for public servants such as teachers, nurses, police, etc. These include the State Housing Company Limited (SHC) mortgage, the Affordable Real Estate Investment Trust (AREIT) and the National Rental Assistance Scheme (NRAS). Firstly, through the SHC, the government offers residential mortgages at a low interest rate of 9.9% per annum over 20 years to eligible public sector workers. The repayment plan depends on the deposit, the loan repayment period, and the agreed monthly deduction. The SHC is wholly owned by the government, with branches nationwide. Secondly, the government has established a pilot rent-to-own scheme through the National Homeownership Fund (NHF). The scheme is structured as an AREIT, which partners with several universal banks nationwide. The project's first phase is situated in Tema communities 22, 25 and 26. The AREIT is another residential mortgage offering low-interest loans of 12% to 13% to public sector workers.

The most recent initiative for the private rental market is the NRAS established through the Ministry of Works and Housing. The NRAS is a low-interest loan scheme designed to help tenants cope with the demands of the 2-year rent advance payment system. Using a loan repayment schedule, this research has demonstrated that the NRAS will initially relieve tenants of the stress associated with the rent advance system but will increase rental payments in the long run. Also, the scheme may not be effective because it is designed to suit public and civil servants with little focus on the informal segment of the market.

The study makes the following conclusions. The SHC, AREIT and NRAS will add a significant number of affordable housing units for renters to get access to decent housing. However, these incentives may not be the best strategy for facilitating the sector's growth. Government intervention in some of the housing policies lacks depth, relevance, and applicability. For example, excluding renters, not part of the public or civil sector is a major setback. Households with informal sources of income, such as the market women who sell in the markets, freelance businessmen, and private shop owners, do not benefit from government support for housing. Since this market segment is vast, there is a gap in dispensing government support. Justifiably, there is limited data on housing transactions, especially among this group. It is a major challenge for policy experts to design adequate housing allocation strategies that deliver housing incentives to the informal market segment where the support is most needed. Finally, the government has revived some abandoned affordable housing projects. For example, the Saglemi Affordable Housing Project, amongst many others.

Determinants of Institutional Investment in Rental Housing in Ghana

The following are the determinants of institutional investment in rental housing in Ghana: firstly, changing the perception of fund managers, minimising the systematic risks, using pension and life insurance funds to invest in rental housing, increasing the effective housing demand, and instituting tax incentives. The study has shown that these factors will help mobilise the required finances and create the right platforms to expand Ghana's private rental market. For this research, institutional investors are classified into two groups: financially inclined institutional investors (FIIIs) and property-inclined institutional investors (PIIIs). The FIIIs are the investors who position a larger portion of their portfolios on financial assets, examples include pension and life insurance funds. FIIIs tend to focus on institutional quality assets such as securities, equities, and cash. On the other hand, PIIIs are investors with expertise in different types of property investment. Examples include real estate investment trusts (REITs), listed property companies (LPCs) and other indirect real estate investments. The two broad categories of institutional investors have unique expertise and composition.

In Ghana, FIIIs such as pension, and life insurance funds, offer the greatest potential to expand Ghana's private rental market. The study identified five pathways for the two traditional investors to invest in rental housing. The *first pathway* is establishing functional Joint Ventures (JVs) with property developers. A functional JV is simply a partnership between an investor and a developer to construct, hold and manage rental housing projects over the long term. A JV is needed because several attempts made by FIIIs to directly invest in rental housing failed due to the lack of expertise, competence, and administrative structures to manage rental property. A functional JV partnership will provide the specialised knowledge and expertise required to make strategic and tactical investment decisions on the asset class. The study also found that the most effective motivation for the JVs to manage rental housing projects adequately is for the developers is to become part-owners of the project and not mere managers. It will also help to improve liquidity and transitionary procedures when one party decides to sell its share. The study has demonstrated in the DCF model that, a functional JV between FIIIs and PIIIs with an 80/20 ownership share will be profitable to both the developer and investor.

The *second pathway* for pension and life-insurance funds to invest in rental housing is by establishing Subsidiary Companies (SCs) and employing property experts to develop and manage their property portfolios. An SC is simply a separate company that will develop and manage the property portfolio of the parent company. It is different from a typical holding company in the financial world. The SC approach is recommended if the FIII does not want to enter a JV for reasons known to them. The SC will allow the FIII to take the property portfolio off their core business and financial books. It will make it possible for people with the right expertise to manage the property portfolio of the FIII. The downside of an SC is that it may require a longer time for the FIII to start developing its projects. Also, it does have a track record of delivering successful projects, even if the workers were poached from companies with a track record. The formation of an SC requires time, commitment, and extra resources. The company has to have its management and workers. Based on the peculiarities, a functional JV may be easier to adopt than an SC.

The *third pathway* for FIIIs to invest in rental housing is through indirect real estate investment vehicles. The study found that Ghana's private rental sector has started developing indirect real estate investment vehicles. In 2019, Ghana's Securities and Exchange Commission (SEC) implemented its first-ever REIT guidelines. This was the first regulatory measure to monitor the activities of indirect real estate investments. The introduction of the guidelines provided the legal and regulative framework to guide the formation of funds for real estate investments: one of the first countries in Africa to take this step. The first publicly known REIT in Ghana is the REIT set up by Ghana's Ministry of Finance and several banks, including Republic Bank and the GCB securities, to develop affordable housing for public servants nationwide. This project is still in its pilot phase and being tested for effectiveness. The study establishes that Ghana REITs (Gh-REITs) will provide another pathway to attract institutional investment into the private rental market.

It will allow developers to expand their financing options by getting listed on the Ghana Stock Exchange (GSE). In this regard, FIIIs can invest in LPCs with special-purpose vehicles for rental housing investments. At the moment, there is no LPC on the GSE.

The *final pathway* for FIIIs to invest in rental housing is through their Corporate Social Responsibilities (CSR). FIIIs and PIIIs give back to the communities they operate in or any part of the country in various forms. Rental accommodation may be given to residents as part of the CSRs of the investors. Two broad possibilities are at play; firstly, the FIIIs can voluntarily embark on major affordable housing projects that seek to contribute to society. This may be in the form of social impact investments. Secondly, as part of a JV or an SC, the FIIIs and PIIIs may designate a proportion of their property portfolio for affordable rental housing. For instance, 20% may be priced below the market rent within a market rental housing project. Scholars often refer to this designation as inclusionary housing. Although the CSR pathway is promising, the expected contribution to the total rental stock may be lower than the previously discussed pathways. Nonetheless, FIIIs and PIIIs may be admonished to undertake inclusionary housing, especially in cases where government support is dispensed in free land supply, infrastructure support and tax concessions.

In summary, FIIIs in Ghana can contribute to expanding developers' finance options in the private rental sector. They can provide long-term finance, scalability, and economies of scale in the rental sector. Their efforts must, however, be complemented by the PIIIs. The five pathways identified in this study include a functional JV, an SC, Gh-REITs, and CSRs. The functional JV is highly recommended among all the pathways identified, as it will foster mutualistic collaborations and enhance the expansion of the private rental market. Just as the rental asset has a low correlation with financial assets, it exhibits unique attributes that require a different approach to management. Over the past 30 years, the happenings in Ghana have shown that pension funds are not experts in property investments. Several of the housing projects of SSNIT have been abandoned and left in deplorable states, creating a bad reputation among private pension funds in Ghana. This perception needs to change to attract more FIIIs into the rental sector. The PIIIs will also benefit as the limited funding opportunities and high-interest rates reduce access to financial resources. Considering the huge capital required to finance a mixed-use rental housing project, only a few developers could undertake such projects without a loan. The FIIIs and PIIIs can work together to achieve the goal of providing a large-scale rental housing supply in Ghana.

How the Government and the Private Sector can improve Rental Housing Supply in Ghana

The study combined the findings from ongoing housing policy initiatives with the views of experts across industry, academia, and policy to recommend strategies to rental housing supply. It further validated the results with a hypothetical rental housing project emphasising understanding the effect of these strategies on each of the stakeholders. It finds that to improve rental housing supply in Ghana, the government and the private sector must continue to work together at all levels. Institutional investors must be made aware of the benefits of investing in the rental asset from the perspective of a profit-oriented investor and an entity interested in social investment. This study has demonstrated that institutional investors can contribute to providing affordable rental housing in Ghana and their involvement is likely to scale up housing supply to meet the increasing housing demand.

The government must also improve the macroeconomic environment as it constitutes a major determinant for institutional investment in Ghana's private rental market. It can improve its role by providing incentives that are attractive to institutional investors and developers. The hypothetical rental housing project used for the DCF model shows that the supply of free land for affordable rental housing is highly attractive to investors. Aside from the reduction in the cost component, which was assumed to be $70,000, it will relieve the investor from the struggles of land acquisition in Ghana, especially the disputes surrounding lands in inner-city and middle suburbs. Ghana's customary land ownership system is known to clash with the demands of statutory ownership creating land disputes. Strategic land release for affordable housing will save investors from the disputes resulting from multiple land sales, encroachments, and delayed development approvals.

The DCF model also demonstrates the importance of tax concessions in attracting FIIIs. Concessions in property tax, ground rent, withholding tax, and rental income tax could be a good starting point to supporting investments in affordable rental housing. The impact of tax treatment on the project's NPV when tested in the affordable rental housing model, shows it will be a profitable investment. Finally, there are limited demand-side incentives in Ghana's private rental market. The DCF results show that, housing incentives in the form rent vouchers for eligible tenants will reduce their housing expenditure and reduce the vacancy rates in rental apartments, a phenomenon that contributes to the perception that rental property investment is a high-risk venture in Ghana. The lack of effective housing demand inhibits institutional investment in rental housing in Ghana. The contributing factors include unemployment and low-income levels. This links to the earlier point that government needs to improve the macroeconomic environment. Another major finding from the study is that investors of rental apartments in Ghana's big cities price their properties in USD without the appropriate license and authorisation from the Bank of Ghana. Without a corresponding increase in incomes, any devaluation in the local currency further increases the rent payment for tenants. This is a contributing factor to the high vacancy rates in high quality rental apartments in Ghana.

Finally, the role of the regulators of FIIIs and PIIIs can be improved to facilitate greater institutional investment in rental housing. As FIIIs operate in strictly regulated markets, agencies such as the National Pensions Regulatory Authority (NPRA), the National

Insurance Commission (NIC) and the Securities and Exchange Commission (SEC) influence the investment frameworks of the FIIIs through the investment guidelines and responsible investment parameters. Although regulators do not directly instruct FIIIs on the assets to invest in, their benchmarks influence the investment decisions of FIIIs. The flexibility to enter into JVs and establish SCs to invest in rental housing will contribute significantly to Ghana's private rental market.

6.3 Limitations of Research

The study was confronted by several limitations, most of which were addressed during the thesis process. There were methodological limitations which had the potential to affect the generalizability and outcomes of the research. The rigorousness of the research design to offer insights to represent the entire Ghana context was not easily established. For instance, given the relatively small sample size, the views of the 19 interviewees may not be representative of Ghana. Nonetheless, the stakeholders were selected from across the country and played crucial roles in the policy discourse on using institutional funds to invest in rental housing. This did not affect the comprehensiveness of the research as it was mainly a qualitative study conducted with inductive reasoning. Additionally, although the assumptions made for the CBA and DCF were valid at the time of the research, there may not always be valid in the future. For example, during the DCF analysis, the Ghana currency was experiencing a record fluctuation in value, making it difficult to conduct it in Ghana cedis. The exchange rate at the time of the research was used to convert the Ghanaian currency to a more stable currency, the USD. The appropriate assumptions were adopted to address the impact of the devaluation of the cedi on the DCF.

6.4 Recommendations

The study interviewed nineteen (19) stakeholders from industry, policy, and academia on using institutional funds to expand Ghana’s private rental market. Several industry participants were fund managers of pensions, life insurance funds, and developers, while the policy experts were selected from government agencies. The participants were asked about the strategies required to increase institutional investment in Ghana. Several recommendations were given, which were validated using a DCF model and sensitivity analysis. The following recommendations are based on the major findings from the empirical study in Ghana.

6.4.1 A Shift from Direct Rental Housing Investment

In Ghana, FIIIs mostly do not have the competence to manage residential rental properties. Based on this, it is recommended that FIIIs shift from direct rental housing investment; meaning that they should not directly develop and manage rental investment as part of their core portfolios. Instead, they should partner with PIIIs to make use of their technical expertise and professional management platforms to ensure efficient running of their property investments. Direct rental housing investment is a daunting task that requires a huge administrative and financial commitment. As the demand for rental housing rises at an all-time high, FIIIs can contribute to meeting the housing needs if they partner with developers at various levels to develop and manage rental housing projects.

6.4.2 Enhancing Management of Ghana’s Macroeconomic Conditions

The economic situation in Ghana affects the private rental sector positively or negatively. Macroeconomic factors such as employment, inflation, interest rate, and gross domestic product (GDP) directly influences the housing market vastly. The rental sector heavily depends on a working population with the required purchasing power to afford the rental apartments on the market. Other factors regarding inflation and GDP relate to the general economic climate of the country. The figures influence business activities, rental prices and other costs related to developing and running rental investments. Therefore, it is essential to manage the country's macroeconomic environment to support the sector to produce affordable rental housing.

6.4.3 Improving Ghana's Real Estate Market

The negative perception held by institutional investors about Ghana's private rental market needs to change for more institutional capital to be channelled into the private rental sector. This includes resolving the challenges related to real estate agencies, land disputes, the rising cost of building materials and the non-compliance of real estate laws and regulations. An improved real estate industry will likely increase the competitiveness of the rental asset class with other less correlated assets, such as equities. It changes the investment outlook of the asset class vis a vis reducing the systematic risk of rental property investment.

6.4.4 Providing Tenant-Support Programs

This research has demonstrated that Ghana's private rental market has limited tenant support programs. Since the second half of the 20th century, housing policies are yet to comprehensively provide demand-based incentive programs to support eligible tenants in paying their rents. The research recommends that the 2 years rent advance payment in Ghana does not reflect the law, but an adjustment most landlords make to cope with the uncertainties with rent payment defaults. The rent advance payment system evolved in response to the dynamics of renters not having regular jobs. A significant number of tenants who operate their own businesses may not always get a steady income to pay their rent or time. Tenant support programs will help tenants sustain their rent payments and help investors generate the expected rental income.

6.4.5 Investing in Purpose-Built Student Accommodation

The purpose-built student accommodation sector (PBSA) is one of the fast-paced subsectors in Ghana's private rental market. It is evolving into a promising avenue for pension and life insurance funds to invest in rental property across the major tertiary institutions in Ghana. PBSAs have proven to provide long-term steady returns higher than the returns from multifamily rental accommodation on the general private rental market. Tertiary university pension funds such as the Ghana University Superannuation Scheme (GUSS), have embarked on developing student hostels across the country. Experts posit that, although the GUSS hostels are doing incredibly well, there are more avenues to expand PBSAs to meet the housing requirements of students. This includes understating how the universities are partnering with GUSS to provide on-campus rental accommodation for the growing student population.

6.5 Recommendations for Future Research

Firstly, assuming no time constraint, the limitations with the generalizability of the research to the Ghana context can be probed more thoroughly with a greater sample size and expansive analysis using quantitative models. Future studies may be required to interview institutional investors operating in institutions across all the sixteen (16) regions of Ghana, and where the Ghanaian currency is fairly stable, the CBA and DCF may be conducted using the Ghana cedi. The results will bring a different dimension to the stakeholder benefits.

Secondly, the idea of funds management is to pool financial resources from different shareholders and contributors into one folder for investment. This means fund managers are obligated to their shareholders or trustees to manage their funds and produce the required returns at various times. This system has *tax exemptions* for certain categories of institutional investors. Depending on the fund, special tax reservations are made at the payment level, dividend distribution or when meeting long-term liabilities. Pension and life insurance funds are predominantly conservative investors with long-term liabilities. They are structured as social funds designed for large-sized contributors and therefore enjoy certain tax exemptions. Ghana’s NPRA and NIC recorded a rise in private pension and life insurance funds in the past few years. In line with using these funds to invest in rental housing, further study is required to understand how the tax exemptions may be utilised in their property portfolios. Not much is known about how the involvement of institutional funds in rental property investment changes the dynamics for taxes on property development.

Finally, this study has established that the institutional investor could minimise rental property illiquidity by entering into a functional JV with a developer or establishing subsidiary companies. There are legal and regulatory requirements for establishing a JV. Little research has been done to understand the requirements for establishing JVs in Ghana, especially concerning FIIIs and PIIIs. Also, the JV's capital structure, liability and profit share, and allocation of responsibilities need further investigation. For instance, in closing knowledge gaps, the developer takes charge of the property management whiles the investors deal with the shareholders or contributors. However, there are expected overlaps in duties that need further probing. An emphatic line must be drawn between the duties of the PIIIs and that of the FIII to avoid conflicts in running the investment. It will also define the collaborations in strategic and tactical decision making.

Bibliography

Aalbers, M.B. 2017, 'The variegated financialization of housing', *International Journal of Urban and Regional Research*, vol. 41, no. 4, pp. 542-54.

Aarts, S. & Baum, A. 2016, 'Performance persistence in real estate private equity', *Journal of Property Research*, vol. 33, no. 3, pp. 236-51.

Acioly, J.C. & Horwood, C. 2011, 'A Practical Guide for Conducting: Housing ProfilesSupporting evidence-based housing policy and reform', *United Nations Human Settlements Programme (UN-HABITAT)*.

Affordable Housing Investment Summit 2019, 'Conference Proceedings', *Affordable Housing Investment Summit,*.

Agyemang, F.O., Asamoah, P.K.B. & Obodai, J. 2018, 'Changing family systems in Ghana and its effects on access to urban rental housing: a study of the Offinso Municipality', *Journal of Housing and the built environment*, vol. 33, no. 4, pp. 893-916.

Akinsomi, O., Pahad, R., Nape, L. & Margolis, J. 2015, 'Geographic diversification issues in real estate markets in Africa', *Journal of Real Estate Literature*, vol. 23, no. 2, pp. 26195.

Alakeson, V. 2012, 'Making institutional investment in the private rented sector work', *London: Resolution Foundation*.

Alcock, J., Baum, A., Colley, N. & Steiner, E. 2013, 'The role of financial leverage in the performance of private equity real estate funds', *Journal of Portfolio Management*, vol. 39, no. 5, pp. 99-110,8.

Aluko, O.E. 2010, 'The impact of urbanization on housing development: the Lagos experience, Nigeria', *Ethiopian journal of environmental studies and management*, vol. 3, no. 3.

Ameer, R. 2007, 'Dividend Payout of the Property Firms in Malaysia', *Pacific Rim Property Research Journal*, vol. 13, no. 4, pp. 451-72.

Anari, A. & Kolari, J. 2002, 'House prices and inflation', *Real Estate Economics*, vol. 30, no. 1, pp. 67-84.

Andersen, H.S. 1998, 'Motives for investments in housing rehabilitation among private landlords under rent control', *Housing Studies*, vol. 13, no. 2, pp. 177-200.

Andersen, H.S. 2008, 'Is the private rented sector an efficient producer of housing service? private landlords in Denmark and their economic strategies', *European Journal of Housing Policy*, vol. 8, no. 3, pp. 263-86.

Anderson, C. 2010, 'Presenting and evaluating qualitative research', *American journal of pharmaceutical education*, vol. 74, no. 8.

Anderson, R.I., Krautz, S. & Rottke, N.B. 2016, 'Is real estate private equity real estate? - Dynamic interactions between real estate private equity funds, non-real estate private equity funds, and direct real estate investments', *Journal of Property Research*, vol. 33, no. 3, pp. 252-68.

Andonov, A., Eichholtz, P. & Kok, N. 2015, 'Intermediated investment management in private markets: Evidence from pension fund investments in real estate', *Journal of Financial Markets*, vol. 22, p. 73.

Andonov, A., Kok, N. & Eichholtz, P. 2013, 'A global perspective on pension fund investments in real estate', *Journal of Portfolio Management*, vol. 39, no. 5, pp. 32-42,4.

Andreu, L., Ferruz, L. & Vicente, L. 2010, 'The importance of asset allocation in Spanish equity pension plans', *Journal of Pension Economics & Finance*, vol. 9, no. 1, pp. 129-42.

Apicello, J. 2010, 'A paradigm shift in housing and homeless services: Applying the population and high-risk framework to preventing homelessness', *The Open Health Services and Policy Journal*, vol. 3, no. 1.

Araújo, C., Almeida, M., Bragança, L. & Barbosa, J.A. 2016, 'Cost–benefit analysis method for building solutions', *Applied Energy*, vol. 173, pp. 124-33.

Arku, G., Luginaah, I. & Mkandawire, P. 2012, '"You either pay more advance rent or you move out": landlords/ladies' and tenants' dilemmas in the low-income housing market in Accra, Ghana', *Urban Studies*, vol. 49, no. 14, pp. 3177-93.

Armin Jeddi, Y., Andrew Patton, M. & Hankey, S. 2019, 'Green Affordable Housing: CostBenefit Analysis for Zoning Incentives', *Sustainability*, vol. 11, no. 22, p. 6269.

Asabere, P. 2007, 'The demise of the rent-controlled public housing programmes of ghana: The story of the tema development corporation', *Urban Studies*, vol. 44, no. 10, pp. 191935.

Asante, L.A., Ehwi, R.J. & Gavu, E.K. 2021, 'Advance rent mobilisation strategies of graduate renters in Ghana: a submarket of the private rental housing market', *Journal of Housing and the Built Environment*, pp. 1-21.

Aspromourgos, T. 1986, 'On the origins of the term 'neoclassical'', *Cambridge Journal of Economics*, vol. 10, no. 3, pp. 265-70.

Awuah, K.G.B., Gyamfi-Yeboah, F., Proverbs, D. & Lamond, J.E. 2017, 'Sources and reliability of property market information for property valuation practice in Ghana', *Property management*.

Azeem, M., Salfi, N.A. & Dogar, A.H. 2012, 'Usage of NVivo software for qualitative data analysis', *Academic Research International*, vol. 2, no. 1, pp. 262-6.

Aziabah, S. 2018, 'Better public housing management in Ghana', *A+BE | Architecture and the Built Environment; No 7 (2018): Better public housing management in GhanaDO - 10.7480/abe.2018.7.2101*.

Baker, E., Mason, K. & Bentley, R. 2015, 'Measuring housing affordability: A longitudinal approach', *Urban Policy and Research*, vol. 33, no. 3, pp. 275-90.

Bandara, W., Miskon, S. & Fielt, E. 2011, 'A systematic, tool-supported method for conducting literature reviews in information systems', AIS Electronic Library (AISeL)/Association for Information Systems, pp. 1-13.

Bangdome-Dery, A. & Eghan, G.E. 2013, 'Measuring residential satisfaction levels of residents in the SSNIT flats of Wa, Ghana', p. 124.

Bansal, B. & Gemson, J. 2014, 'Private equity investment and real estate development', *Journal of Financial Management of Property and Construction*, vol. 19, no. 3, pp. 202-25.

Barker, D.R. 2013, 'The evidence does not show that homeownership benefits children', *Cityscape*, vol. 15, no. 2, pp. 231-4.

Beer, A. 1999, 'Housing investment and the private rental sector in Australia', *Urban Studies*, vol. 36, no. 2, pp. 255-69.

Beer, A., Kearins, B. & Pieters, H. 2007, 'Housing affordability and planning in Australia: The challenge of policy under neo-liberalism', *Housing Studies*, vol. 22, no. 1, pp. 11-24.

Benefield, J.D., Anderson, R.I. & Zumpano, L.V. 2009, 'Performance differences in propertytype diversified versus specialized real estate investment trusts (REITs)', *Review of Financial Economics*, vol. 18, no. 2, pp. 70-9.

Bernstein, R. & Pinkernell, K. 2007, 'Updated: uncorrelated assets are now correlated', *Merrill Lynch Investment Strategy*.

Berry, M. 2000, 'Investment in rental housing in Australia: small landlords and institutional investors', *Housing Studies*, vol. 15, no. 5, pp. 661-81.

Berry, M. & Dalton, T. 2004, 'Housing prices and policy dilemmas: a peculiarly Australian problem?', *Urban Policy and Research*, vol. 22, no. 1, pp. 69-91.

Berry, M. & Hall, J. 2005, 'Institutional investment in rental housing in Australia: A policy framework and two models', *Urban Studies*, vol. 42, no. 1, pp. 91-111.

Beswick, J., Alexandri, G., Byrne, M., Vives-Miró, S., Fields, D., Hodkinson, S. & Janoschka, M. 2016, 'Speculating on London's housing future', *City*, vol. 20, no. 2, pp. 321-41.

Bhuyan, R., Kuhle, J.L., Al-Deehani, T.M. & Mahmood, M. 2015, 'Portfolio diversification benefits using real estate investment trusts - An experiment with US common stocks, equity real estate investment trusts, and mortgage real estate investment trusts', *International Journal of Economics and Financial Issues*, vol. 5, no. 4.

Bierre, S., Howden-Chapman, P. & Signal, L. 2010, '‘Ma and Pa’ landlords and the ‘risky’ tenant: discourses in the New Zealand private rental sector', *Housing Studies*, vol. 25, no. 1, pp. 21-38.

Blackley, D. & Follain, J.R. 1983, 'Inflation, tax advantages to homeownership and the locational choices of households', *Regional Science and Urban Economics*, vol. 13, no. 4, pp. 505-16.

Blaikie, N. 2018, 'Confounding issues related to determining sample size in qualitative research', *International Journal of Social Research Methodology*, vol. 21, no. 5, pp. 635-41.

Blessing, A. & Gilmour, T. 2011, 'The invisible hand? using tax credits to encourage institutional investment in social housing', *International Journal of Housing Policy*, vol. 11, no. 4, pp. 453-68.

Boehm, T.P. & Schlottmann, A.M. 2014, 'The dynamics of housing tenure choice: lessons from Germany and the United States', *Journal of Housing Economics*, vol. 25, pp. 1-19.

Boudry, W.I., Coulson, N.E., Kallberg, J.G. & Liu, C.H. 2013, 'On indexing commercial real estate properties and portfolios', *Journal of Real Estate Finance and Economics*, vol. 47, no. 4, pp. 617-39.

Bourassa, S. & Hoesli, M. 2010, 'Why Do the Swiss Rent?', *The Journal of Real Estate Finance and Economics*, vol. 40, no. 3, pp. 286-309.

Bourassa, S.C. 1995, 'A model of housing tenure choice in Australia', *Journal of Urban Economics*, vol. 37, no. 2, pp. 161-75.

Bowles, G., McAllister, P. & Tarbert, H. 2001, 'An assessment of the impact of valuation error on property investment performance measurement', *Journal of Property Investment & Finance*, vol. 19, no. 2, pp. 139-57.

Bridget, O.C. 2014, 'Institutional investment in UK residential property continues to grow, with a further [pounds sterling]5bn set to enter the sector in the next 12 months.(05 Finance)', *Estates Gazette*, no. 771.

Brill, F. 2021, 'Governing investors and developers: Analysing the role of risk allocation in urban development', *Urban Studies*, p. 00420980211017826.

Brill, F. & Durrant, D. 2021, 'The emergence of a build to rent model: The role of narratives and discourses', *Environment and Planning A: Economy and Space*, p. 0308518X20969417.

Brill, F. & Özogul, S. 2021, 'Follow the firm: Analyzing the international ascendance of build to rent', *Economic Geography*, vol. 97, no. 3, pp. 235-56.

Brown, D.A. 2018, 'Homeownership in black and white: the role of tax policy in increasing housing inequity', *U. Mem. L. Rev.*, vol. 49, p. 205.

Burke, T. & Hulse, K. 2010, 'The institutional structure of housing and the sub-prime crisis: an Australian case study', *Housing Studies*, vol. 25, no. 6, pp. 821-38.

CAHF 2018, *Africa Housing Finance Yearbook 2018*, South Africa.

Cao, j.A. & Keivani, R. 2014, 'The Limits and Potentials of the Housing Market Enabling Paradigm: An Evaluation of China's Housing Policies from 1998 to 2011', *Housing Studies*, vol. 29, no. 1, pp. 44-68.

Carter, S. 2011, 'Housing tenure choice and the dual income household', *Journal of Housing Economics*, vol. 20, no. 3, pp. 159-70.

Carvalho, J.M.d. 2005, 'Institutional investment in residential property: the Swiss, Dutch and Swedish cases', Ph.D. thesis, University of Glasgow (United Kingdom), Ann Arbor.

Charmaz, K. 2006, *Constructing grounded theory: A practical guide through qualitative analysis*, sage.

Charmaz, K. & Belgrave, L.L. 2007, 'Grounded theory', *The Blackwell encyclopedia of sociology*.

Chicago Tribune 1987, 'Advantages of renting an apartment cited: [Final Edition, C]', *Chicago Tribune*, 12/13/1987 Dec 13, p. 1D.

Christian, F. 2006, 'The Development of German Open-Ended Real Estate Funds', *Journal of Real Estate Literature*, vol. 14, no. 1, pp. 39-56.

Chun, G.H., Ciochetti, B.A. & Shilling, J.D. 2000, 'Pension-Plan Real Estate Investment in an Asset–Liability Framework', *Real Estate Economics*, vol. 28, no. 3, pp. 467-91.

Cigdem, M. & Whelan, S. 2017, 'Intergenerational transfers and housing tenure – Australian evidence', *International Journal of Housing Policy*, vol. 17, no. 2, pp. 227-48.

Clark, G.L. & Monk, A.H.B. 2017, *Institutional investors in global markets*, Oxford University Press, Oxford.

Cleary, M., Horsfall, J. & Hayter, M. 2014, 'Data collection and sampling in qualitative research: does size matter?', *Journal of advanced nursing*, pp. 473-5.

Coase, R.H. 1988, 'The Firm, the Market, and the Law. Chicago: Univ', Chicago Press.

Cohen, D.P. 1997, 'Improving the Supply of Affordable Housing: The Role of the Low-Income Housing Tax Credit', *Journal of Law and Policy*, no. 2, pp. 537-70.

Coleman, D. 1988, 'Rent control: the British experience and policy response', *The Journal of Real Estate Finance and Economics*, vol. 1, no. 3, pp. 233-55.

Commons, J.R. 1936, 'Institutional economics', *The American Economic Review*, vol. 26, no. 1, pp. 237-49.

Cordes, J.J. 2017, 'Using cost-benefit analysis and social return on investment to evaluate the impact of social enterprise: Promises, implementation, and limitations', *Evaluation and program planning*, vol. 64, pp. 98-104.

Coulson, N.E. & Li, H. 2013, 'Measuring the external benefits of homeownership', *Journal of Urban Economics*, vol. 77, pp. 57-67.

Courtney, E. 2018, 'Institutional investment in social housing in Dublin city: potential solutions to encourage institutional investors to deliver social housing to the Dublin city market'.

Craft, T.M. 2005, 'How Funding Ratios Affect Pension Plan Portfolio Allocations', *Journal of Real Estate Portfolio Management*, vol. 11, no. 1, pp. 29-35.

Cresswell, J. 2018, 'Chapter 1: The selection of a research approach in Cresswell J. Research design: qualitative, quantitative, and mixed methods approaches', Los Angeles: Sage Publications Inc.

Crook, A.D.H. & Kemp, P.A. 2019, 'In search of profit: housing association investment in private rental housing', *Housing Studies*, vol. 34, no. 4, pp. 666-87.

Crook, T. & Kemp, P.A. 2010, *Transforming private landlords : housing, markets and public policy*, John Wiley & Sons, Incorporated, Hoboken, United Kingdom.

Crook, T. & Whitehead, C. 2010, 'Intermediate housing and the planning system', *Making Housing More Affordable: The Role of Intermediate Tenures*, pp. 101-19.

Cummings, J.L. & DiPasquale, D. 1999, 'The low-income housing tax credit: an analysis of the first ten years', *Housing Policy Debate*, vol. 10, no. 2, pp. 251-307.

Curtis, G. 2004, 'Modern portfolio theory and behavioral finance', *The Journal of Wealth Management*, vol. 7, no. 2, pp. 16-22.

Czischke, D. 2018, 'Collaborative housing and housing providers: towards an analytical framework of multi-stakeholder collaboration in housing co-production', *International Journal of Housing Policy: Special issue: Self-organised and Civil Society Participation in Housing Provision. Guest editors: David Mullins and Tom Moore*, vol. 18, no. 1, pp. 55-81.

Danielle Myles Zoe, T. 2014, 'Is US securitisation going back to 2005?', *International Financial Law Review*.

Datta, A. 2012, 'Migration and urban living in less developed countries'.

Davis, M. 2004, 'Planet of slums', *Built Environment*.

DeFilippis, J. 2001, 'The myth of social capital in community development', *Housing Policy Debate*, vol. 12, no. 4, pp. 781-806.

Delcoure, N. 2010, 'Diversification benefits: correlation and return gaps', *International Review of Applied Financial Issues and Economics*, vol. 2, no. 3, pp. 597-607.

Dent, P. & Doling, J. 1992, 'Investing in the privately rented sector', *Journal of Property Valuation and Investment*.

Desmond, M. & Wilmers, N. 2019, 'Do the Poor Pay More for Housing? Exploitation, Profit, and Risk in Rental Markets 1', *American Journal of Sociology*, vol. 124, no. 4, pp. 1090-124.

Di Gregorio, S. 2000, 'Using Nvivo for your literature review'.

Dıaz, A. & Luengo-Prado, M.J. 2010, 'Homeownership: economic benefits', *The international encyclopedia of housing and home*, pp. 439-45.

Diaz-Serrano, L. 2009, 'Disentangling the housing satisfaction puzzle: Does homeownership really matter?', *Journal of Economic Psychology*, vol. 30, no. 5, pp. 745-55.

Dirk, P.M.D.W. 1998, 'Naive diversification', *Financial Analysts Journal*, vol. 54, no. 4, pp. 95-100.

Doling, J.F. 1973, 'A two-stage model of tenure choice in the housing market', *Urban Studies*, vol. 10, no. 2, pp. 199-211.

Douglas, D. 2003, 'Inductive theory generation: A grounded approach to business inquiry', *Electronic journal of business research methods*, vol. 2, no. 1, pp. 47-54.

Downs, A. 1983, 'The coming crunch in rental housing', *The ANNALS of the American Academy of Political and Social Science*, vol. 465, no. 1, pp. 76-85.

Drabo, E.F., Eckel, G., Ross, S.L., Brozic, M., Carlton, C.G., Warren, T.Y., Kleb, G., Laird, A., Porter, K.M.P. & Pollack, C.E. 2021, 'A Social-Return-On-Investment Analysis Of Bon Secours Hospital's 'Housing For Health' Affordable Housing Program', *Health Affairs*, vol. 40, no. 3, pp. 513-19.

Dröes, M.I. & Hassink, W.H.J. 2013, 'House price risk and the hedging benefits of home ownership', *Journal of Housing Economics*, vol. 22, no. 2, pp. 92-9.

Drummond, D., Burleton, D. & Manning, G. 2004, 'Affordable housing in Canada: In search of a new paradigm', *Finding Room*, pp. 15-68.

Dubben, N. & Sayce, S. 1991, *Property portfolio management: an introduction*, Routledge.

Ehwi, R.J., Asante, L.A. & Morrison, N. 2020, 'Exploring the Financial Implications of Advance Rent Payment and Induced Furnishing of Rental Housing in Ghanaian Cities: The Case of Dansoman, Accra-Ghana', *Housing Policy Debate*, vol. 30, no. 6, pp. 95071.

Elsinga, M. 2012, 'Intermediate Housing Tenures', in S.J. Smith (ed.), *International Encyclopedia of Housing and Home*, Elsevier, San Diego, pp. 124-9.

Elsinga, M. & Hoekstra, J. 2005, 'Homeownership and housing satisfaction', *Journal of Housing and the Built Environment*, vol. 20, no. 4, pp. 401-24.

Elsinga, M. & Hoekstra, J. 2015, 'The janus face of homeownership-based welfare', *Critical Housing Analysis*, vol. 2, no. 1, pp. 32-41.

Ema Izati Zull, K. & Tajul Ariffin, M. 2016, 'Malaysia property sector; Performance analysis and portfolio diversification benefits within sub-sector', *International Journal of Housing Markets and Analysis*, vol. 9, no. 4, pp. 468-82.

Engelhardt, G.V., Eriksen, M.D., Gale, W.G. & Mills, G.B. 2010, 'What are the social benefits of homeownership? Experimental evidence for low-income households', *Journal of urban Economics*, vol. 67, no. 3, pp. 249-58.

Ennis, R.M. & Burik, P. 1991, 'The influence of non-risk factors on real estate holdings of pension funds', *Financial Analysts Journal*, vol. 47, no. 6, p. 44.

Eyiah-Botwe, E. 2015, 'Assessing housing project end-users satisfaction in Ghana: A case study of SSNIT Housing Flats in Asuoyeboa-Kumasi', *Civil and Environmental Research*, vol. 7, no. 3, pp. 13-23.

Fama, E.F. & French, K.R. 2004, 'The capital asset pricing model: Theory and evidence', *Journal of economic perspectives*, vol. 18, no. 3, pp. 25-46.

Feather, C. 2018, 'Between homeownership and rental housing: exploring the potential for hybrid tenure solutions', *International Journal of Housing Policy*, vol. 18, no. 4, pp. 595-606.

Feldman, B.E. 2003, 'Investment policy for securitized and direct real estate', *The Journal of Portfolio Management*, vol. 29, no. 5, pp. 112-21.

Fields, D. & Uffer, S. 2016, 'The financialisation of rental housing: A comparative analysis of New York City and Berlin', *Urban studies (Edinburgh, Scotland)*, vol. 53, no. 7, pp. 1486-502.

Fisch, C. & Block, J. 2018, 'Six tips for your (systematic) literature review in business and management research', Springer.

Fogler, H.R., Granito, M.R. & Smith, L.R. 1985, 'A theoretical analysis of real estate returns', *The Journal of Finance*, vol. 40, no. 3, pp. 711-9.

Francis, J.C. & Ibbotson, R.G. 2009, 'Contrasting real estate with comparable investments, 1978 to 2008', *The Journal of Portfolio Management*, vol. 36, no. 1, pp. 141-55.

Gao, X., Xu, A., Liu, L., Deng, O., Zeng, M., Ling, J. & Wei, Y. 2017, 'Understanding rural housing abandonment in China's rapid urbanization', *Habitat International*, vol. 67, pp. 13-21.

Garboden, P.M.E. & Newman, S. 2012, 'Is preserving small, low-end rental housing feasible?', *Housing Policy Debate*, vol. 22, no. 4, pp. 507-26.

Ge, J.X. 2009, 'An alternative financing method for affordable housing', *Housing Finance International*, vol. 24, no. 2, pp. 34-8.

Gerrans, P., Gardner, D., Clark-Murray, M. & Speelman, C. 2006, 'An investigation of home bias in superannuation investiment choices', *Economic Papers - Economic Society of Australia*, vol. 25, no. 1, p. 17.

Gholipour, H.F. & Hooi Hooi, L. 2017, 'Ripple effect in regional housing and land markets in Iran: implications for portfolio diversification', *International Journal of Strategic Property Management*, vol. 21, no. 4, pp. 331-45.

Gibilaro, L. & Mattarocci, G. 2016, 'Landmark buildings and diversification opportunities in the residential market', *International Journal of Housing Markets and Analysis*, vol. 9, no. 4, pp. 429-45.

Gilbert, A. 2003, *Rental housing: an essential option for the urban poor in developing countries*, UN-Habitat.

Gilbert, A. 2012, 'Private rental landlords: developing countries', in S.J. Smith (ed.), *International Encyclopedia of Housing and Home*, Elsevier, San Diego, pp. 381-6.

Gilmour, T. & Milligan, V. 2008, 'Stimulating institutional investment in affordable housing in Australia: insights from the US'.

Glaeser, E.L. 2011, 'Rethinking the federal bias toward homeownership', *Cityscape*, vol. 13, no. 2, pp. 5-37.

Glaser, B.G. & Strauss, A.L. 1967, 'The discovery of grounded theory: strategies for qualitative research: Aldine Transaction', *New Brunswick, NJ*.

Goodfellow, T. 2017, 'Urban fortunes and skeleton cityscapes: real estate and late urbanization in Kigali and Addis Ababa', *International Journal of Urban and Regional Research*, vol. 41, no. 5, pp. 786-803.

Gordon, P., Marre, D. & Bonjour, B. 2005, 'Understanding the commercial mortgage-backed securities market in the hospitality sector', *Journal of Retail & Leisure Property*, vol. 4, no. 2, pp. 105-17.

Graeme, N., Elaine, W., Patrick, M. & Karl-Werner, S. 2004, 'An international perspective on real estate research priorities', *Journal of Real Estate Portfolio Management*, vol. 10, no. 3, pp. 161-70.

Graff, R.A. 2006, 'Securitization demystified', *Journal of Real Estate Portfolio Management*, vol. 12, no. 3, pp. 233-48.

Granath Hansson, A. 2019, 'City strategies for affordable housing: the approaches of Berlin, Hamburg, Stockholm, and Gothenburg', *International Journal of Housing Policy*, vol. 19, no. 1, pp. 95-119.

Green, R.K. 2011, 'Thoughts on rental housing and rental housing assistance', *Cityscape*, vol. 13, no. 2, pp. 39-55.

Grissom, T. & DeLisle, J. 1998, 'Alternative total return series for direct real estate investment', *Journal of Real Estate Portfolio Management*, vol. 4, no. 1, pp. 17-33.

Gurney, C.M. 1999, 'Pride and prejudice: discourses of normalisation in public and private accounts of homeownership', *Housing Studies*, vol. 14, no. 2, pp. 163-83.

Gurran, N. & Whitehead, C. 2011, 'Planning and affordable housing in Australia and the UK: A comparative perspective', *Housing Studies*, vol. 26, no. 7/8, pp. 1193-214.

Haffner, M., Hoekstra, J., Tang, C. & Oxley, M. 2016, 'Exploring institutional investment in social rental housing in the United Kingdom, the Netherlands and France', *Housing Finance International*, vol. 30, no. 4, pp. 28-34.

Haffner, M.E.A., Hoekstra, J., Tang, C. & Oxley, M. 2015, 'Institutional investment in social rental housing: France, the Netherlands and the United Kingdom explored', ENHR.

Harkness, J. & Newman, S.J. 2002, 'Homeownership for the poor in distressed neighborhoods: Does this make sense?', *Housing Policy Debate*, vol. 13, no. 3, pp. 597-630.

Hartzell, D., Hekman, J. & Miles, M. 1986, 'Diversification categories in investment real estate', *Real Estate Economics*, vol. 14, no. 2, pp. 230-54.

Hatcher, C. 2015, 'Globalising homeownership: housing privatisation schemes and the private rental sector in post-socialist Bishkek, Kyrgyzstan', *International Development Planning Review*, vol. 37, no. 4, pp. 467-86.

Haurin, D. 2013, 'The relationship of homeownership, house prices, and child well-being', *Cityscape*, vol. 15, no. 2, pp. 227-9.

Hawtrey, K. 2012, 'Housing market institutions', *International Encyclopedia of Housing and Home*, pp. 528-37.

Henderson, J.V. & Ioannides, Y.M. 1983, 'A model of housing tenure choice', *American Economic Review*, vol. 73, no. 1, p. 98.

Higgins, D. & Fang, F. 2012, 'Analysing the risk and return profile of Chinese residential property markets', *Pacific Rim Property Research Journal*, vol. 18, no. 2, pp. 149-62.

Hilal, A.H. & Alabri, S.S. 2013, 'Using NVivo for data analysis in qualitative research', *International interdisciplinary journal of education*, vol. 2, no. 2, pp. 181-6.

Hodgson, G.M. 2006, 'What Are Institutions?', *Journal of Economic Issues*, vol. 40, no. 1, pp. 1-25.

Hoesli, M. & Hamelink, F. 1997, 'An examination of the role of Geneva and Zurich housing in Swiss institutional portfolios', *Journal of Property Valuation and Investment*.

Hudson, M. 2014, *Funds: Private equity, hedge and all core structures*, John Wiley & Sons.

Hulse, K. & Reynolds, M. 2018, 'Investification: Financialisation of housing markets and persistence of suburban socio-economic disadvantage', *Urban studies (Edinburgh, Scotland)*, vol. 55, no. 8, pp. 1655-71.

Hutchison Norman, E. 1994, 'Housing as an investment? A comparison of returns from housing with other types of investment', *Journal of Property Finance*, vol. 5, no. 2, pp. 47-61.

Ibbotson, R.G. 2010, 'The importance of asset allocation', *Financial Analysts Journal*, vol. 66, no. 2, pp. 18-20.

Ibbotson, R.G. & Siegel, L.B. 1984, 'Real estate returns: a comparison with other investments', *Real Estate Economics*, vol. 12, no. 3, pp. 219-42.

Ioannides, Y.M. & Kan, K. 1996, 'Structural estimation of residential mobility and housing tenure choice', *Journal of Regional Science*, vol. 36, no. 3, p. 335.

Iuav-Venice, L. 2007, 'Italian property funds: opportunities for investors', *Journal of Real Estate Literature*, vol. 15, no. 3, pp. 397-428.

Izuhara, M. 2016, 'Reconsidering the Housing Asset-Based Welfare Approach: Reflection from East Asian Experiences', vol. 15, no. 2, pp. 177-88.

Jesson, J. & Lacey, F. 2006, 'How to do (or not to do) a critical literature review', *Pharmacy Education*, vol. 6, no. 2, pp. 139-48.

Joice, P. 2014, 'Measuring housing affordability', *Cityscape*, vol. 16, no. 1, pp. 299-307.

Jonkman, A. & Janssen-Jansen, L. 2018, 'Identifying distributive injustice through housing (mis) match analysis: the case of social housing in Amsterdam', *Housing, Theory and Society*, vol. 35, no. 3, pp. 353-77.

Jopling, N. 2012, 'Funds are edging closer to private rented sector, but barriers remain', *The Estates Gazette*, p. 45.

Kattenberg, M.A.C. & Hassink, W.H.J. 2017, 'Who moves out of social housing? The effect of rent control on housing tenure choice', *De Economist*, vol. 165, no. 1, pp. 43-66.

Kerans, M. 2008, 'Bridging the affordable rental housing gap: establishing a viable funding model to attract institutional investment', University of Technology Sydney, Sydney.

Kiehelä, S. & Falkenbach, H. 2015, 'Performance of non-core private equity real estate funds: an European view', *Journal of Portfolio Management*, vol. 41, no. 6, pp. 62-72.

Kuhle, J.L. 1987, 'Portfolio diversification and return benefits—common stock vs. real estate investment trusts (REITs)', *The Journal of real estate research*, vol. 2, no. 2, pp. 1-9.

Kukah, A.S.K., Anafo, A., Abdul, L.H., Jnr, A.V.K.B., Korda, D.N., Sinsa, D.B. & Kukah, R.M.K. 2021, 'Relationship between challenges militating against mortgage finance and benefits of mortgage acquisition in Ghana: case of SSNIT', *International Journal of Real Estate Studies*, vol. 15, no. 2, pp. 55-65.

Kullberg, J. 1997, 'From waiting lists to adverts: the allocation of social rental dwellings in the Netherlands'.

Kutty, N.K. 1996, 'The impact of rent control on housing maintenance: a dynamic analysis incorporating European and North American rent regulations', *Housing Studies*, vol. 11, no. 1, pp. 69-88.

Kutty, N.K. 2005, 'A new measure of housing affordability: Estimates and analytical results', *Housing policy debate*, vol. 16, no. 1, pp. 113-42.

Lancaster, K.J. 1966, 'A new approach to consumer theory', *Journal of Political Economy*, vol. 74, no. 2, pp. 132-57.

Lauridsen, E.I. & Higginbottom, G. 2014, 'The roots and development of constructivist grounded theory', *Nurse Researcher*, vol. 21, no. 5.

Lawson, J., Berry, M., Hamilton, C. & Pawson, H. 2014a, *Enhancing affordable rental housing investment via an intermediary and guarantee*, Melbourne, AHURI Final Report no. 220.

Lawson, J., Berry, M., Hamilton, C. & Pawson, H. 2014b, *Enhancing affordable rental housing investment via an intermediary and guarantee*, Australian Housing and Urban Research Institute Melbourne.

Lawson, J., Berry, M., Milligan, V. & Yates, J. 2009, 'Facilitating investment in affordable housing - towards an Australian model', *Housing Finance International*, vol. 24, no. 1, pp. 18-26.

Lee, C.-C., Ho, Y.-M. & Chiu, H.-Y. 2016, 'Role of personal conditions, housing properties, private loans, and housing tenure choice', *Habitat International*, vol. 53, pp. 301-11.

Lee, C.L. 2008, 'Housing in Australia as a portfolio investment', *International Journal of Housing Markets and Analysis*, vol. 1, no. 4, pp. 352-61.

Lee, C.L. 2014, 'The inflation-hedging characteristics of Malaysian residential property', *International Journal of Housing Markets and Analysis*.

Lee, C.L. & Reed, R.G. 2014, 'The Relationship between housing market intervention for firsttime buyers and house price volatility', *Housing Studies*, vol. 29, no. 8, pp. 1073-95.

Leech, N.L. & Onwuegbuzie, A.J. 2011, 'Beyond constant comparison qualitative data analysis: Using NVivo', *School Psychology Quarterly*, vol. 26, no. 1, p. 70.

Lennartz, C. 2015, 'Rivalry between social and private landlords in local rental housing markets', *Urban Studies*, vol. 53, no. 11, pp. 2293-311.

Lennartz, C., Haffner, M. & Oxley, M. 2012, 'Competition between social and market renting: a theoretical application of the structure-conduct-performance paradigm', *Journal of Housing and the Built Environment*, vol. 27, no. 4, pp. 453-71.

Leviner, S. 2003, 'Affordable housing and the role of the low income housing tax credit program: A contemporary assessment', *Tax Lawyer*, no. 4, pp. 869-904.

Leviten-Reid, C. & Matthew, R.A. 2018, 'Housing tenure and neighbourhood social capital', *Housing, Theory and Society*, vol. 35, no. 3, pp. 300-28.

Levy, H. & Sarnat, M. 1970, 'International diversification of investment portfolios', *The American Economic Review*, vol. 60, no. 4, pp. 668-75.

Linneman, P. 1985, 'An economic analysis of the homeownership decision', *Journal of Urban Economics*, vol. 17, no. 2, pp. 230-46.

Lintner, J. 1965, 'The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets', *Review of Economics and Statistics*, vol. 47:1, pp. 1337.

Liu, R. 2019, 'Hybrid tenure structure, stratified rights to the city: An examination of migrants' tenure choice in Beijing', *Habitat International*, vol. 85, pp. 41-52.

Luffman, J. 2006, 'Measuring housing affordability', *Perspectives on Labour and Income*, vol. 18, no. 4, pp. 48-51,3-4,6-7.

Malik, S. & Wahid, J. 2014, 'Rapid urbanization: problems and challenges for adequate housing in Pakistan'.

Malkawi, B.H. 2011, 'Regulating Tenancy Relationships in Jordan: Pro-Landlord, Neutral, and Pro-Tenant', *Arab Law Quarterly*, vol. 25, no. 1, pp. 1-26.

Marcato, G. & Key, T. 2005, 'Direct investment in real estate', *The Journal of Portfolio Management*, vol. 31, no. 5, pp. 55-69.

Markowitz, H. 1952, 'Portfolio selection', *The Journal of Finance*, vol. 7, no. 1, pp. 77-91.

Markowitz, H. 1959, *Portfolio selection, efficent diversification of investments*, J. Wiley.

Martin, L. 2011, 'Good deals for homebuyers, not for the poor: erasing poverty from affordable housing discourse', *Journal of Poverty*, vol. 15, no. 1, pp. 3-21.

Maurer, R. & Sebastian, S. 2002, 'Inflation risk analysis of European real estate securities', *Journal of Real Estate Research*, vol. 24, no. 1, pp. 47-78.

Maxwell, J.A. 2012, *Qualitative research design: An interactive approach*, vol. 41, Sage publications.

McCabe, B.J. 2013, 'Are homeowners better citizens? Homeownership and community participation in the United States', *Social Forces*, vol. 91, no. 3, pp. 929-54.

McClure, K. 2010, 'Are low-income housing tax credit developments locating where there is a shortage of affordable units?', *Housing Policy Debate*, vol. 20, no. 2, pp. 153-71.

McClure, K. 2012, 'Low-income housing tax credits', in S.J. Smith (ed.), *International Encyclopedia of Housing and Home*, Elsevier, San Diego, pp. 180-5.

McClure, K. 2019, 'What should be the future of the low-income housing tax credit program?', *Housing Policy Debate*, vol. 29, no. 1, pp. 65-81.

McGreal, S., Adair, A., Berry, J.N. & Webb, J.R. 2004, 'Institutional real estate investment in Ireland and Great Britain: returns, risks and opportunities', *Journal of Real Estate Portfolio Management*, vol. 10, no. 2, pp. 85-96.

McKee, K. 2012, 'Young people, homeownership and future welfare', *Housing Studies*, vol. 27, no. 6, pp. 853-62.

McKenzie, R.B. & Lee, D.R. 2018a, 'How economists understate the damage from rent controls', *Regulation*, vol. 41, no. 4, Winter 2018/2019, p. 22.

McKenzie, R.B. & Lee, D.R. 2018b, 'How Economists Understate the Damage from Rent Controls: These policies may lower rental payments, but they hurt the quality of rental housing.(PROPERTY)', *Regulation*, vol. 41, no. 4, p. 22.

McKinsey Global Institute 2014, *A blueprint for addressing the global affordable housing challenge*.

Megbolugbe, I.F. 1983, 'The hopes and failures of public housing in Nigeria: a case study of Kulende and Adewole housing estates, Ilorin', *Third World Planning Review*, vol. 5, no. 4, p. 349.

Melser, D. & Hill, R.J. 2019, 'Residential real estate, risk, return and diversification: some empirical evidence', *Journal of Real Estate Finance and Economics*, vol. 59, no. 1, pp. 111-46.

Michiel, v.L. & de Graaff, T. 2007, 'The impact of housing market institutions on labour mobility; a European cross-country comparison', Federal Reserve Bank of St Louis, St. Louis, 2007.

Milligan, V., Pawson, H., Williams, P. & Yates, J. 2015, 'Next moves? Expanding affordable rental housing in Australia through institutional investment', *City*.

Milligan, V., Yates, J., Wiesel, I. & Pawson, H. 2013, 'Financing rental housing through institutional investment—Volume 1', *AHURI Final Report*, no. 202.

Mills, E.S. 1990, 'Housing tenure choice', *The Journal of Real Estate Finance and Economics*, vol. 3, no. 4, pp. 323-31.

Miron, J.R. 1995, 'Private rental housing: The Canadian experience', *Urban Studies*, vol. 32, no. 3, pp. 579-604.

Montezuma, J. 2004a, 'Housing investment in an institutional portfolio context', *Property Management*, vol. 22, no. 3, pp. 230-49.

Montezuma, J. 2004b, 'Housing investment in an institutional portfolio context', *Property Management*.

Montezuma, J. 2006, 'A survey of institutional investors' attitudes and perceptions of residential property: The Swiss, Dutch and Swedish cases', *Housing Studies*, vol. 21, no. 6, pp. 883-908.

Moon, C.G. & Stotsky, J.G. 1993, 'The effect of rent control on housing quality change a longitudinal analysis', *Journal of political economy*, vol. 101, no. 6.

Morrison, N. 2016, 'Institutional logics and organisational hybridity: English housing associations' diversification into the private rented sector', *Housing studies*, vol. 31, no. 8, pp. 897-915.

Mosciaro, M. & Aalbers, M.B. 2020, 'Asset-based welfare in Brazil', *Housing Studies*, vol. 35, no. 2, pp. 376-89.

Naka, N.M. 2006, 'Diversification benefits of Japanese real estate over the last four decades', *Journal of Real Estate Finance and Economics*, vol. 33, no. 3, pp. 259-74.

Nanda, A. & Parker, G. 2011, 'Analysis of the intermediate housing market mechanism in the UK'.

National, T.-F. & Low, S.-H. 2000, 'The Inflation-Hedging Characteristics of Real Estate and Financial Assets in Singapore', *Journal of Real Estate Portfolio Management*, vol. 6, no. 4, pp. 373-85.

Needham, B. 2012, 'Institutions for housing supply', in S.J. Smith (ed.), *International Encyclopedia of Housing and Home*, Elsevier, San Diego, pp. 99-108.

Nethercote, M. 2020, 'Build-to-rent and the financialization of rental housing: future research directions', *Housing Studies*, vol. 35, no. 5, pp. 839-74.

Newell, G., Acheampong, P. & Worzala, E. 2002, 'Property research priorities in Australia', *Pacific Rim Property Research Journal*, vol. 8, no. 2, pp. 127-39.

Newell, G., Chau, K., Wong, S. & McKinnell, K. 2005, 'Dynamics of the direct and indirect real estate markets in China', *Journal of Real Estate Portfolio Management*, vol. 11, no. 3, pp. 263-79.

Newell, G. & Fischer, F. 2009, 'The role of residential REITs in REIT portfolios', *Journal of Real Estate Portfolio Management*, vol. 15, no. 2, pp. 129-39.

Newell, G., Hwa, T. & Acheampong, P. 2002, 'Listed property trusts in Malaysia', *Journal of Real Estate Literature*, vol. 10, no. 1, pp. 109-18.

Newell, G., Lee, C.-L. & Kupke, V. 2015, *The opportunity of unlisted wholesale residential property funds in enhancing affordable housing supply*, Final Report 249, Melbourne.

Newell, G. & Marzuki, M.J. 2018, 'The emergence of student accommodation as an institutionalised property sector', *Journal of Property Investment & Finance*, vol. 36, no. 6, pp. 523-38.

North, D. 1990, 'Institutions, institutional change and economic performance-Cambridge, UK.'.

Nyarko, F.J., Ayitey, J.Z. & Gavu, E.K. 2015, 'Evaluation of home-equity financing option in a developing economy, illustrated with an example of Ghana', *Świat Nieruchomości*, vol. 4, pp. 23-8.

O'Mahony, F., Lorna & Overton, L. 2015, 'Asset-based welfare, equity release and the meaning of the owned home', *Housing Studies*, vol. 30, no. 3, pp. 392-412.

O'Sullivan, A. & Gibb, K. 2012, 'Housing taxation and the economic benefits of homeownership', *Housing Studies*, vol. 27, no. 2, pp. 267-79.

Obeng-Odoom, F. 2011, 'Private rental housing in Ghana: reform or renounce?', *Journal of International Real Estate and Construction Studies*, vol. 1, no. 1, p. 71.

OECD 2018, *Questionnaire on Affordable and Social Housing (QuASH 2018)* OECD mimeo, Paris France.

Oertel, C., Gütle, T., Klisa, B. & Bienert, S. 2019, 'US real estate as target assets for European investors', *Journal of Property Investment & Finance*, vol. 37, no. 4, pp. 398-404.

Oikarinen, E., Hoesli, M. & Serrano, C. 2011, 'The long-run dynamics between direct and securitized real estate', *The Journal of Real Estate Research*, vol. 33, no. 1, pp. 73-103.

Olaleye, A., Aluko, B.T. & Oloyede, S.A. 2008, 'Evaluating diversification strategies for direct property investment portfolios', *Journal of Real Estate Portfolio Management*, vol. 14, no. 3, pp. 223-31.

Olsen, E.O. 1988, 'What do economists know about the effect of rent control on housing maintenance?', *The Journal of Real Estate Finance and Economics*, vol. 1, no. 3, pp. 295-307.

Ostrom, E. 1986, 'An agenda for the study of institutions', *Public Choice*, vol. 48, no. 1, pp. 325.

Ostrom, E. 1991, 'Rational choice theory and institutional analysis -- the cement of society by Jon Elster / Solomonic Judgements by Jon Elster / The Common Good by Bill Jordan / and others', *The American Political Science Review*, vol. 85, no. 1, p. 237.

Oust, A. 2018, 'The removal of rent control and its impact on search and mismatching costs: evidence from Oslo', *International Journal of Housing Policy*, vol. 18, no. 3, pp. 43353.

Oxley, M., Tang, C., Lizieri, C., Mansley, N., Mekic, D., Haffner, M. & Hoekstra, J. 2015, 'Prospects for institutional investment in social housing', *IPF, London*.

Pagliari, J.L. 2017, 'Another take on real estate's role in mixed-asset portfolio allocations: real estate's role in institutional mixed-asset portfolios', *Real Estate Economics*, vol. 45, no. 1, pp. 75-132.

Painter, G., Gabriel, S. & Myers, D. 2001, 'Race, immigrant status, and housing tenure choice', *Journal of Urban Economics*, vol. 49, no. 1, pp. 150-67.

Pareja Eastaway, M. & Varo, I.S.M. 2002, 'The tenure imbalance in Spain: the need for social housing policy', *Urban Studies*, vol. 39, no. 2, pp. 283-95.

Parker, D. 2012, *Global real estate investment trusts: People, process and management*, John Wiley & Sons.

Pawson, H., Martin, C., Van Den Nouwelant, R., Milligan, V., Ruming, K. & Melo, M. 2019, *Build-to-rent in Australia: product feasibility and potential affordable housing contribution*, Landcom.

Pawson, H. & Milligan, V. 2013, 'New dawn or chimera? Can institutional financing transform rental housing?', *International Journal of Housing Policy*, vol. 13, no. 4, pp. 335-57.

Peat, M. & Wright, D. 2012, 'The impact of residential property investment on portfolio performance', *JASSA*, no. 2, pp. 35-42.

Peppercorn, I.G. & Taffin, C. 2013, *Rental housing: lessons from international experience and policies for emerging markets*, The World Bank.

Phillips, B. & Joseph, C. 2017, *Regional housing supply and demand in Australia*, Australian National University.

Platen, E. & Rendek, R. 2012, 'Approximating the numeraire portfolio by naive diversification', *Journal of Asset Management*, vol. 13, no. 1, pp. 34-50.

Prabhakar, R. 2019, 'A house divided: asset-based welfare and housing asset-based welfare', *International Journal of Housing Policy*, vol. 19, no. 2, pp. 213-31.

Priemus, H. 1998, 'Commercial rented housing: two sectors in the Netherlands', *Netherlands journal of housing and the built environment*, vol. 13, no. 3, pp. 255-77.

Priemus, H. 2001, 'Social housing as a transitional tenure? Reflections on the Netherlands' new housing memorandum 2000-2010', *Housing Studies*, vol. 16, no. 2, pp. 243-56.

Priemus, H. 2003, 'Dutch housing associations: current developments and debates', *Housing Studies*, vol. 18, no. 3, pp. 327-51.

Pugh, C. 1986, 'Housing theory and policy', *International Journal of Social Economics*, vol. 13, pp. 3-104.

Rahman, M.M. 2010, 'The Australian housing market – understanding the causes and effects of rising prices', *Policy Studies*, vol. 31, no. 5, pp. 577-90.

Randolph, B., Pinnegar, S. & Tice, A. 2013, 'The first home owner boost in Australia: a case study of outcomes in the Sydney housing market', *Urban Policy and Research*, vol. 31, no. 1, pp. 55-73.

Rattanaprichavej, N. & Teeramungcalanon, M. 2020, 'An investment decision: Expected and earned yields for passive income real estate investors', *Cogent Business & Management*, vol. 7, no. 1, p. 1786331.

Reddy, P.S. & Brijlal, P. 1992, 'The role of pension funds in housing finance: The South African scenario', *Development Southern Africa*, vol. 9, no. 2, pp. 187-98.

Rehring, C. 2012, 'Real estate in a mixed-asset portfolio: the role of the investment horizon', *Real Estate Economics*, vol. 40, no. 1, pp. 65-95.

Rohe, W.M. & Stewart, L.S. 1996, 'Homeownership and neighborhood stability', *Housing Policy Debate*, vol. 7, no. 1, pp. 37-81.

Rohe, W.M., Van Zandt, S. & McCarthy, G. 2002, 'Home ownership and access to opportunity', *Housing Studies*, vol. 17, no. 1, pp. 51-61.

Roig Hernando, J. 2017, 'The securitization of residential rental revenue streams in Europe', *International Journal of Housing Markets and Analysis*, vol. 10, no. 4, pp. 503-18.

Rosen, H.S. 1979, 'Housing decisions and the US income tax: an econometric analysis', *Journal of Public Economics*, vol. 11, no. 1, pp. 1-23.

Rosentraub, M.S. & Shroitman, T. 2004, 'Public employee pension funds and social investments: recent performance and a policy option for changing investment strategies', *Journal of Urban Affairs*, vol. 26, no. 3, pp. 325-37.

Ross, S.A. 2013, 'The arbitrage theory of capital asset pricing', *Handbook of the fundamentals of financial decision making: Part I*, World Scientific, pp. 11-30.

Rossi, P.H. & Weber, E. 1996, 'The social benefits of homeownership: Empirical evidence from national surveys', *Housing Policy Debate*, vol. 7, no. 1, pp. 1-35.

Rubens, J., Bond, M. & Webb, J. 1989, 'The inflation-hedging effectiveness of real estate', *Journal of Real Estate Research*, vol. 4, no. 2, pp. 45-55.

Sackel, M. 2012, 'Pay Up or Get Out: The Landlord's Guide to the Perfect Eviction', *University of Miami Law Review*, vol. 66, pp. 973-1183.

Santiago, A.M., Galster, G.C., Kaiser, A.A., Roman, A.H.S.-S., Grace, R.A. & Linn, A.T.W. 2010, 'Low-income homeownership: does it necessarily mean sacrificing neighborhood quality to buy a home?', *Journal of Urban Affairs*, vol. 32, no. 2, pp. 171-98.

Seelig, T. 2001, 'Structures of private rental housing provision in Australia and their consequences for', pp. 1-18.

Seiler, M., Webb, J. & Neil Myer, F. 1999, 'Are EREITs real estate?', *Journal of Real Estate Portfolio Management*, vol. 5, no. 2, pp. 171-81.

Sethuraman, S.V. 1985, 'Basic needs and the informal sector: The case of low-income housing in developing countries', *Habitat International*, vol. 9, no. 3, pp. 299-316.

Sharpe, W.F. 1964, 'Capital asset prices: A theory of market equilibrium under conditions of risk', *The journal of finance*, vol. 19, no. 3, pp. 425-42.

Smith, L.B., Rosen, K.T. & Fallis, G. 1988, 'Recent developments in economic models of housing markets', *Journal of Economic Literature*, vol. 26, no. 1, p. 29.

Smith, S. 2017, 'Landlordism and landlord-tenant relations in Kisumu and Kitale's low-income settlements', *International Journal of Urban Sustainable Development*, vol. 9, no. 1, pp. 46-63.

Solonec, T. 2000, 'Racial discrimination in the private rental market : overcoming stereotypes and breaking the cycle of housing despair in Western Australia', *Indigenous Law Bulletin*, vol. 5, no. 2, pp. 4-6.

Sotiriadou, P., Brouwers, J. & Le, T.-A. 2014, 'Choosing a qualitative data analysis tool: A comparison of NVivo and Leximancer', *Annals of Leisure Research*, vol. 17, no. 2, pp. 218-34.

Soyeh, K.W., Asabere, P.K. & Owusu-Ansah, A. 2021, 'Price and rental differentials in gated versus non-gated communities: The case of Accra, Ghana', *Housing Studies*, vol. 36, no. 10, pp. 1644-61.

Stanovnik, T. 1994, 'The sale of the social housing stock in Slovenia: what happened and why', *Urban Studies*, vol. 31, no. 9, pp. 1559-70.

Statman, M. & Scheid, J. 2008, 'Correlation, return gaps, and the benefits of diversification', *The Journal of Portfolio Management*, vol. 34, no. 3, pp. 132-9.

Stebbing, A. & Spies-Butcher, B. 2016, 'The decline of a homeowning society? Asset-based welfare, retirement and intergenerational equity in Australia', *Housing Studies*, vol. 31, no. 2, pp. 190-207.

Stern, S.M. 2011a, 'REASSESSING THE CITIZEN VIRTUES OF HOMEOWNERSHIP', *Columbia Law Review*, vol. 111, no. 4, pp. 890-938.

Stern, S.M. 2011b, 'Reassessing the citizen virtues of homeownership', *Colum. L. Rev.*, vol. 111, p. 890.

Stevens, B. 2016, 'Strategic intervention for the economically active? Exploring the role of selected English local authorities in the development of new market rental housing with pension fund investment', *Journal of Housing and the Built Environment*, vol. 31, no. 1, pp. 107-22.

Stone, M.E. 2006, 'What is housing affordability? The case for the residual income approach', *Housing Policy Debate*, vol. 17, no. 1, pp. 151-84.

Swanzy-Impraim, S., Ge, X.J. & Mangioni, V. 2021, 'Barriers to institutional investment in rental housing: A systematic review of market risks', *International Journal of Real Estate Studies*, vol. 15, no. 2, pp. 1-15.

Swidler, S. 2011, 'Homeownership: yesterday, today and tomorrow', *Journal of Financial Economic Policy*, vol. 3, no. 1, pp. 5-11.

Tabner, I.T. 2016, 'Buying versus renting–determinants of the net present value of home ownership for individual households', *International Review of Financial Analysis*, vol. 48, pp. 233-46.

Taiwo Gbadegesin, J. & Ojo, O. 2013, 'Ethnic bias in tenant selection in metropolitan Ibadan private rental housing market', *Property Management*, vol. 31, no. 2, pp. 159-78.

Tandel, V., Patel, S., Gandhi, S., Pethe, A. & Agarwal, K. 2015, 'Decline of rental housing in India: the case of Mumbai', *Environment and Urbanization*, vol. 28, no. 1, pp. 259-74.

Tang, C.P.Y., Oxley, M. & Mekic, D. 2017, 'Meeting commercial and social goals: institutional investment in the housing association sector', *Housing Studies*, vol. 32, no. 4, pp. 41127.

Terry-Lynn, M. 2002, 'Renting versus owning: Growing Conditions: [Final Edition]', *The Standard*, 10/26/2002 Oct 26, p. C2.

Tomperi, I. 2010, 'Performance of private equity real estate funds', *Journal of European Real Estate Research*, vol. 3, no. 2, pp. 96-116.

Toussaint, J. & Elsinga, M. 2009, 'Exploring 'Housing Asset-based Welfare'. Can the UK be Held Up as an Example for Europe?', *Housing Studies*, vol. 24, no. 5, pp. 669-92.

Trotter, R.T. 2012, 'Qualitative research sample design and sample size: Resolving and unresolved issues and inferential imperatives', *Preventive medicine*, vol. 55, no. 5, pp. 398-400.

Tsharakyan, A. & Zemcik, P. 2010, *Effect Of The Rent Deregulation On Tenure Choice And Homeownership In The Czech Republic*, European Real Estate Society (ERES).

Umeh, O.L. & Al-ameen, A.O. 2018, 'Real estate performance in Nigeria pension fund', *Journal of Property Investment & Finance*, vol. 36, no. 5, pp. 454-65.

UN-Habitat 2015, *Sustainable Development Goals*, 2021, <https://unhabitat.org/aboutus/sustainable-development-goals>.

UN-Habitat 2016, *World Cities Report 2016. Urbanization and Development - Emerging Futures*, UN-Habitat, Nairobi.

UN-Habitat 2018, *World urban population projections*, Department of Economics and Social Affairs, 2020, <https://www.un.org/development/desa/en/news/population/2018revision-of-world-urbanization-prospects.html>.

van Loon, J. & Aalbers, M.B. 2017, 'How real estate became 'just another asset class': the financialization of the investment strategies of Dutch institutional investors', *European Planning Studies*, vol. 25, no. 2, pp. 221-40.

Varley, A. 2002, 'Private or public: debating the meaning of tenure legalization', *International Journal of Urban & Regional Research*, vol. 26, no. 3, pp. 449-61.

Verhaeghe, P.P., Van Der Bracht, K. & Van De Putte, B. 2016, 'Discrimination of tenants with a visual impairment on the housing market: empirical evidence from correspondence tests', *DISABILITY AND HEALTH JOURNAL*, vol. 9, no. 2.

Walks, A. 2016, 'Homeownership, Asset-based Welfare and the Neighbourhood Segregation of Wealth', *Housing Studies*, vol. 31, no. 7, pp. 755-84.

Welsh, E. 2002, 'Dealing with data: Using NVivo in the qualitative data analysis process', vol. 3.

Wetzstein, S. 2017, 'The global urban housing affordability crisis', *Urban Studies*, vol. 54, no. 14, pp. 3159-77.

Whitehead, C. 2016, 'Housing as Asset Based Welfare: A Comment', *Critical Housing Analysis*, vol. 3, no. 1, pp. 10-8.

Whitehead, C.M.E. 1996, 'Private renting in the 1990s', *Housing Studies*, vol. 11, no. 1, pp. 712.

Wijburg, G., Aalbers, M.B. & Heeg, S. 2018, 'The financialisation of rental housing 2.0: releasing housing into the privatised mainstream of capital accumulation', *Antipode*, vol. 50, no. 4, pp. 1098-119.

Wijburg, G. & Waldron, R. 2020, 'Financialised privatisation, affordable housing and institutional investment: the case of England', *Critical Housing Analysis*, vol. 7, no. 1, pp. 114-29.

Wilkinson, M. & Russel, R.R. 1979, *Microeconomics: A synthesis of modern and neoclassical theory*, Halsted Press.

Williamson, O.E. 2000, 'The new institutional economics: Taking stock, looking ahead', *Journal of Economic Literature*, vol. 38, no. 3, pp. 595-613.

Winson-Geideman, K. & Evangelopoulos, N. 2013, 'Topics in real estate research, 1973-2010: a latent semantic Analysis', *Journal of Real Estate Literature*, vol. 21, no. 1, pp. 59-76.

Wood, G., Watson, R. & Flatau, P. 2006, 'Low income housing tax credit programme impacts on housing affordability in Australia: Microsimulation model estimates', *Housing Studies*, vol. 21, no. 3, pp. 361-80.

Wood, G.A. 2001, 'Promoting the supply of low income rental housing', *Urban Policy and Research*, vol. 19, no. 4, pp. 425-40.

Woods, D. 2003, 'The Basics of Asset Allocation', *Employee Benefits Journal*, vol. 28, no. 4, pp. 87-9.

Worzala, E.M. & Bajtelsmit, V.L. 1997, 'Real estate asset allocation and the decisionmaking framework used by pension fund managers', *Journal of Real Estate Portfolio Management*, vol. 3, no. 1, pp. 47-56.

Worzala, E.M. & Bajtelsmit, V.L. 1999, 'How do pension fund managers really make asset allocation decisions?', *Benefits Quarterly*, vol. 15, no. 1, pp. 42-51.

Wu, C.Y. & Pandey, V.K. 2012, 'The impact of housing on a homeowner's investment portfolio', *Financial Services Review*, vol. 21, no. 2, pp. 177-94.

Yates, J. 2013, 'Evaluating social and affordable housing reform in Australia: lessons to be learned from history', *International Journal of Housing Policy*, vol. 13, no. 2, pp. 11133.

Yip, N.M. 1995, 'Housing affordability in England'.

Ziering, B. & McIntosh, W. 1997, 'Revisiting the case for including core real estate in a mixedasset portfolio', *Real Estate Finance*, vol. 13, no. 4, pp. 14-22.

Ziersch, A. & Arthurson, K. 2007, 'Social capital and housing tenure in an Adelaide neighbourhood', *Urban Policy and Research*, vol. 25, no. 4, pp. 409-31.

Appendix 1: Ethics Approval

HREC Approval Granted - ETH21-5735

Dear Applicant

Re: ETH21-5735 - "Towards Developing Institutional Reforms to Stimulate Rental Housing Supply"

Thank you for your response to the Committee's comments for your project. The Committee agreed that this application now meets the requirements of the National Statement on Ethical Conduct in Human Research (2007) and has been approved on that basis. You are therefore authorised to commence activities as outlined in your application after meeting the above conditions.

You are reminded that this letter constitutes ethics approval only. This research project must also be undertaken in accordance with all UTS policies and guidelines including the Research Management Policy.

Your approval number is UTS HREC REF NO. ETH21-5735.

Approval will be for a period of five (5) years from the date of this correspondence subject to the submission of annual progress reports.

The following standard conditions apply to your approval:

- Your approval number must be included in all participant material and advertisements. Any advertisements on Staff Connect without an approval number will be removed.
- The Principal Investigator will immediately report anything that might warrant review of ethical approval of the project to the Ethics Secretariat (Research.Ethics@uts.edu.au).
- The Principal Investigator will notify the UTS HREC of any event that requires a modification to the protocol or other project documents, and submit any required amendments prior to implementation. Instructions on how to submit an amendment application can be found here.
- The Principal Investigator will promptly report adverse events to the Ethics Secretariat. An adverse event is any event (anticipated or otherwise) that has a negative impact on participants, researchers or the reputation of the University. Adverse events can also include privacy breaches, loss of data and damage to property.
- The Principal Investigator will report to the UTS HREC annually and notify the HREC when the project is completed at all sites. The Principal Investigator will notify the UTS HREC of any plan to extend the duration of the project past the approval period listed above through the progress report.
- The Principal Investigator will obtain any additional approvals or authorisations as required (e.g. from other ethics committees, collaborating institutions, supporting organisations).
- The Principal Investigator will notify the UTS HREC of his or her inability to continue as Principal Investigator including the name of and contact information for a replacement.

This research must be undertaken in compliance with the Australian Code for the Responsible Conduct of Research and National Statement on Ethical Conduct in Human Research.
You should consider this your official letter of approval. If you require a hardcopy please contact the Ethics Secretariat.

If you have any queries about your ethics approval, or require any amendments to your research in the future, please don't hesitate to contact the Ethics Secretariat and quote the ethics application number (e.g. ETH20-xxxx) in all correspondence.

Yours sincerely,
The Research Ethics Secretariat

On behalf of the UTS Human Research Ethics Committees
C/- Research Office
University of Technology Sydney
E: Research.Ethics@uts.edu.au

Appendix 2: Operationalization Matrix

Theory	Research objective	Interview questions	Participants
Neoclassical economics theory	To determine the role of government and the private sector in boosting rental housing supply.	• What is your view on the current national housing policy in Ghana? • Are there any existing affordable rental housing schemes involving institutional investors? • Can individual landlords bridge the over 2 million housing deficits in Ghana? • Is institutional investment in rental housing a realistic agenda? Explain • What would be the main challenge with having corporate landlords? • Do you agree that rental housing has been given less attention in Ghana's housing policy? Explain.	Policy experts and property managers
		• Are there any rental assistance programs for tenants in Ghana?	

		• Are there any specific initiatives or policies for the property management sector in Ghana?	
Modern portfolio theory	To identify the determinants of institutional investment in rental housing.	• What are your thoughts on diversifying institutional portfolios with rental housing investment? • What are your thoughts on the 2019 REIT guidelines? • What market structures are needed for large scale rental housing investment in Ghana?	Policy expert
		• Which assets do you invest in? • Do you invest outside Ghana? • How do assess the risk-return profile of your portfolio? • How flexible is your asset allocation model? • Is illiquidity a challenge to you? • Which of the two is easier to manage and why? Securitized vs. unsecuritized property. • Would you be willing to enter a government-led build-to-rent scheme? Explain.	Institutional investor
		• Do you outsource property management? • What market structures are needed for large scale rental housing investment in Ghana? • Comparing residential property to other assets, which has more risks, and which gives more returns? • Would you be willing to enter a government-led build-to-rent scheme? Explain.	Property developer/manager
Model Development	To develop an interactive model to increase rental housing supply through institutional investors, property developers and government, and to assess how the model fits within the housing investment options in Ghana.	• What can be done to increase the rental housing supply in Ghana? • What can the government do to attract institutional investment in rental housing?	All participants (policy experts, institutional investors, and property managers)

Appendix 3: Information for DCF Model

(a) Summary of Project Description

Item	Type of Unit	Total Area (Sqm)	No. of Units	Completion	Percent Completed
Block 1					
1 bedroom	Studio	7	80		
2 bedrooms	Ordinary apartment	9	50	Year 4	30%
3 bedrooms	Penthouse	13	20		
Retail space A	Supermarket	20			
Basement	Car park (yellow)				
Total			**150**		
Block 2					
1 bedroom	Studio	7	120		
2 bedrooms	Ordinary apartment	9	40		
3 bedrooms	Penthouse	13	20	Year 6	66%
Retail space B	Shops	20			
Basement B	Car park (blue)	55			
Total			**180**		
Block 3					
2 bedrooms	Ordinary apartment	9	130		
				Year 8	100%
Penthouse	Penthouse	13	90		
Gym	Gym	14			
Car park (Red)		30			
Total			**220**		

(b) Assumptions

DATA	DESCRIPTION	SOURCE
I. Developer		
Total Development Approval fees	$12,333	Accra Metropolitan Assembly
Land cost	$70,000	Lands Commission
Construction cost from block 1	$3,070,000	Rental Project in Accra
Construction cost from block 2	$3,614,000	Rental Project in Accra
Construction cost from block 3	$5,962,000	Rental Project in Accra
Sales income from block 1	$4,000,000	Rental Project in Accra
Sales income from block 2	$4,200,000	Rental Project in Accra
Sales income from block 3	$6,800,000	Rental Project in Accra
Commission on sales	2%	Rental Project in Accra
Legal fees on sale	0.5%	Ghana Revenue Authority
Total construction period	12 years	Rental Project in Accra

Developer's share	20%	Interviews
II. Institutional Investor		
Investment time horizon	30 years	Rental Project in Accra
Vacancy allowance	5%	Rental Project in Accra
Allowance for rent payment default	2.0%	Rental Project in Accra
Allowance for externalities	1%	Interviews
Site maintenance and flora fees (gross rental income)	2%	Rental Project in Accra
Repairs and maintenance cost (net rental income)	2%	Rental Project in Accra
Property management fees (of gross rental income)	5%	Rental Project in Accra
Marketing cost (of net rental income)	2%	Rental Project in Accra
Capital Gains Tax after 30 years	15%	Ghana Revenue Authority
Stamp Duty Fees	1%	Ghana Revenue Authority
Ground rent	1%	Lands Commission
Investor's expected return from fixed income market p.a.	17%	Interviews
Age of retirement (pensions)	60	National Pensions Regulatory Authority
Life expectancy (life insurance)	64 years	World Bank
Rent Escalation (CPI) average in 2022	26.1%	Ghana Statistical Service
Expected return p.a. (pension)	8%	Interviews
Expected return p.a. (life insurance)	10%%	Interviews
Residential Rental income Tax p.a.	8%	Ghana Revenue Authority
Non-residential rental income tax p.a.	15%	Ghana Revenue Authority
Withholding tax on residential property- resident p.a.	8%	Global Property Guide
Withholding tax on residential property- non- resident p.a.	15%	Global Property Guide
Property rating/tax p.a.	2%	Ghana Revenue Authority
Discount rate	25%	Bank of Ghana
Purchase cost 1	$4,000,000	Rental housing project in Accra
Purchase cost 2	$4,200,000	Rental housing project in Accra
Purchase cost 3	$6,800,000	Rental housing project in Accra
Legal fees on Purchase	1%	Ghana Revenue Authority

Corporate Social Responsibility (inclusionary housing)	20%	Sample affordable housing Project
Investor's share	80%	Interviews
III. Government		
Total Development Approval fees	$12,333	Accra Metropolitan Assembly
Special corporate income tax- low-income housing p.a.	25%	Ghana Revenue Authority
Actual corporate income tax after 5 year's holiday period p.a.	5%	Ministry of Finance
National Rental Assistance Scheme (low interest loans)	5%	Ministry of Finance
Total Housing Deficit (units)	1.8 million	Ghana Statistical Service
Stamp Duty Fees	1%	Ghana Revenue Authority
Land supply (in acres)	5	Ministry of Finance
Residential Rental income Tax p.a.	8%	Ghana Revenue Authority
Non-residential rental income tax p.a.	15%	Ghana Revenue Authority
Withholding tax on residential property- resident p.a.	8%	Global Property Guide
Withholding tax on residential property- non- resident p.a.	15%	Global Property Guide
Ground rent	1%	Lands Commission
Government infrastructure expenditure	$8,000	Accra Metropolitan Assembly
Government infrastructure expenditure Block 2	$5,000	Accra Metropolitan Assembly
Government infrastructure expenditure Block 3	$3,000	Accra Metropolitan Assembly
Land registration fees	$12,000	Lands Commission
IV. Tenants		
Utilities (water, electricity, and internet)	3%	Rental Project in Accra
High-income households p.a.	$20,000	Ghana Statistical Service
Mid-income households p.a. (Accra)	$9,000	Ghana Statistical Service
Low-income households p.a.	$3,000	Ghana Statistical Service
Rental subsidy for mid-income households	10%	Interviews
IMPACT VARIABLES	**RATE**	**SOURCE**
Vacancy rate	5%	Rental Housing Project
CPI average 2022	26.10%	Bank of Ghana
Market growth rate	12%	Bank of Ghana
Discount rate	25%	Ministry of Finance

Rent default allowance	2%	Rental Housing Project
Externalities	1%	Ministry of Finance
Income Increment p.a.	20%	Ministry of Finance

(c) Rent Calculation

STAGE OF DEVELOPMENT	NO. OF UNITS	RENT/MONTH	GROSS RENT P.A.
Phase 1			
1 bedroom	80	$1,500	$1,400,000
2 bedrooms	50	$2,300	$1,380,000
3 bedrooms	20	$3,200	$768,000
Total revenue residential year 5			$3,548,000
Total revenue retail space A year 5		$4,000	$48,000
Phase 2			
1 bedroom	120	$1,500	$2,160,000
2 bedrooms	40	$2,300	$1,104,000
3 bedrooms	20	$3,200	$768,000
Total revenue residential year 7			$4,032,000
Total revenue retail space B year 7		$3,700	$44,400
Phase 3			
2 bedrooms	130	$2,300	$3,588,000
3 bedrooms	90	$3,200	$3,456,000
Total revenue residential year 9			$7,044,000
Total revenue retail space C year 9		$4,000	$48,000
Total revenue residential			$14,624,000
Total revenue retail			$140,400

(d) Construction Cost Calculation

Block 1	**Floor area (sqm)**	**No. of Units**	**Construction cost/sqm**	**Construction cost**
1 Bedroom	7	80	$2,000	$1,120,000
2 Bedroom	9	50	$2,400	$1,080,000
3 Bedroom	13	20	$2,600	$676,000
Supermarket	20	1	$2,000	$40,000
Car park (Yellow)	55		$2,800	$154,000
Total (A)				**$3,070,000**
Block 2				

1 Bedroom	7	120	$2,000	$1,680,000
2 Bedroom	9	40	$2,400	$864,000
3 Bedroom	13	20	$2,600	$676,000
Shops	20	6	$2,000	$240,000
Car park (Blue)	55		$2,800	$154,000
Total (B)				**$3,614,000**
Block 3				
2 Bedroom	9	130	$2,400	$2,808,000
3 Bedroom	13	90	$2,600	$3,042,000
Gym	14		$2,000	$28,000
Car park (Red)	30		$2,800	$84,000
Total (C)				**$5,962,000**
Total construction cost A+B+C				**$12,646,000**

Appendix 4: DCF Results

(a) A screenshot of the DCF model in MS excel.

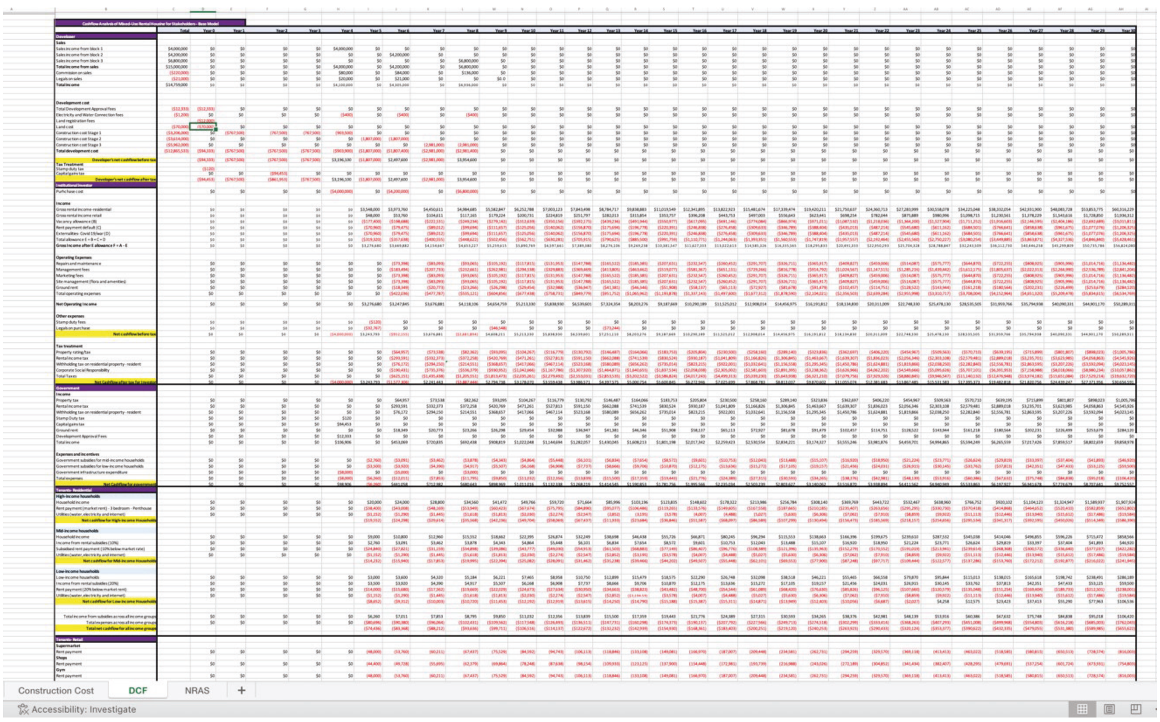
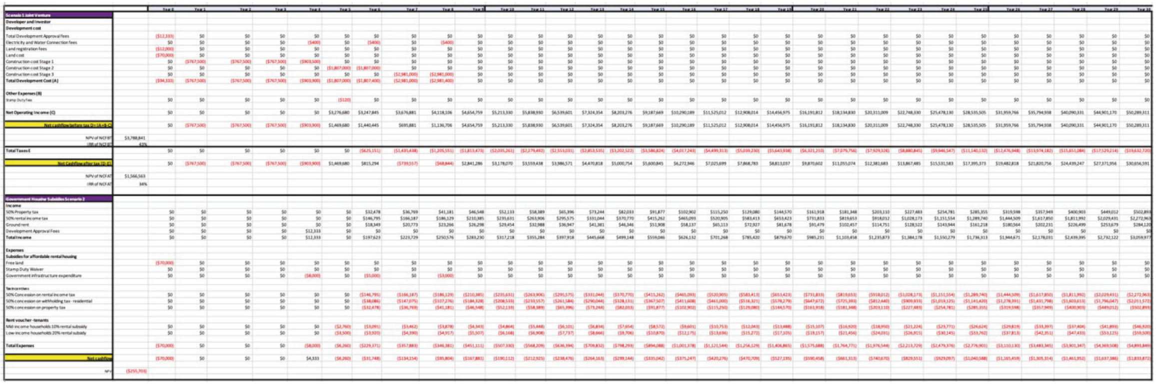


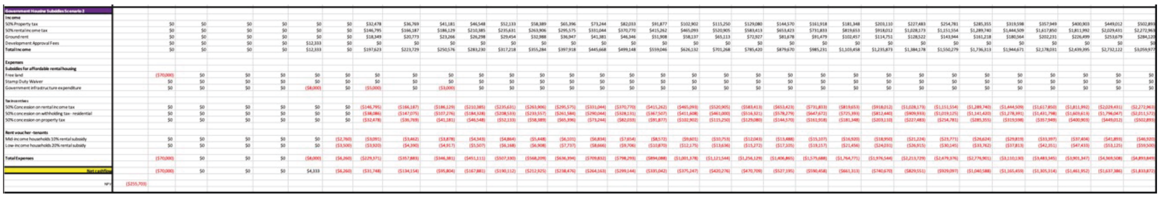
Figure 33 DCF model screenshot

Source: MS excel

(b) Joint Venture Model



(c) Government's Housing Subsidies



Appendix 5: Tables from Sensitivity Analysis

Table 19 Market growth sensitivity on Stakeholders

	Developer's NPV	Investor's NPV	Government's NPV	Mid Tenant's NPV	Low Tenant's NPV
Market growth	($194,413)	$1,723,616	$1,182,349	($33,809)	($13,590)
2%	(194,413)	(99,949)	667,562	(20,174)	(3,530)
4%	(194,413)	153,072	735,635	(22,021)	(4,894)
6%	(194,413)	449,224	817,111	(24,207)	(6,506)
8%	(194,413)	799,454	915,467	(26,819)	(8,433)
10%	(194,413)	1,218,029	1,035,235	(29,970)	(10,758)
12%	(194,413)	1,723,616	1,182,349	(33,809)	(13,590)
14%	(194,413)	2,340,731	1,364,602	(38,530)	(17,074)
16%	(194,413)	3,101,660	1,592,259	(44,392)	(21,398)
18%	**(194,413)**	**4,049,020**	1,878,871	(51,732)	(26,814)
20%	(194,413)	5,239,161	2,242,359	(61,001)	(33,652)
22%	(194,413)	6,746,679	2,706,445	(72,792)	(42,351)
24%	(194,413)	8,670,399	3,302,561	(87,895)	(53,493)
26%	(194,413)	11,141,271	4,072,356	(107,352)	(67,849)
28%	(194,413)	14,332,805	5,071,016	(132,549)	(86,438)

Table 20 Sensitivity of Externalities on stakeholders

	Developer's NPV	Investor's NPV	Government's NPV	Mid Tenant's NPV	Low Tenant's NPV
Externalities	($194,413)	$1,723,616	$1,182,349	($33,809)	($13,590)
2%	(194,413)	1,723,616	1,182,349	(33,809)	(13,590)
5%	(194,413)	1,552,534	1,149,723	(33,809)	(13,590)
8%	(194,413)	1,381,452	1,117,097	(33,809)	(13,590)
11%	(194,413)	1,210,369	1,084,470	(33,809)	(13,590)
14%	(194,413)	1,039,287	1,051,844	(33,809)	(13,590)
17%	(194,413)	868,205	1,019,218	(33,809)	(13,590)
20%	(194,413)	697,122	986,592	(33,809)	(13,590)
23%	(194,413)	526,040	953,966	(33,809)	(13,590)
26%	(194,413)	354,958	921,339	(33,809)	(13,590)
29%	(194,413)	183,875	888,713	(33,809)	(13,590)
32%	(194,413)	12,793	856,087	(33,809)	(13,590)
35%	(194,413)	(158,289)	823,461	(33,809)	(13,590)
38%	(194,413)	(329,372)	790,835	(33,809)	(13,590)
41%	(194,413)	(500,454)	758,209	(33,809)	(13,590)
44%	(194,413)	(671,536)	725,582	(33,809)	(13,590)
47%	(194,413)	(842,618)	692,956	(33,809)	(13,590)

Table 21 Vacancy rate sensitivity on Stakeholders

	Developer's NPV	Investor's NPV	Government's NPV	Mid Tenant's NPV	Low Tenant's NPV
Vacancy rate	($194,413)	$1,723,616	$1,182,349	($33,809)	($13,590)
1%	(194,413)	1,951,726	1,225,851	(33,809)	(13,590)
5%	(194,413)	1,723,616	1,182,349	(33,809)	(13,590)
9%	(194,413)	1,495,506	1,138,847	(33,809)	(13,590)
13%	(194,413)	1,267,397	1,095,346	(33,809)	(13,590)
17%	(194,413)	1,039,287	1,051,844	(33,809)	(13,590)
21%	(194,413)	811,177	1,008,343	(33,809)	(13,590)
25%	(194,413)	583,067	964,841	(33,809)	(13,590)
29%	(194,413)	354,958	921,339	(33,809)	(13,590)
33%	(194,413)	126,848	877,838	(33,809)	(13,590)
37%	(194,413)	(101,262)	834,336	(33,809)	(13,590)
41%	(194,413)	(329,372)	790,835	(33,809)	(13,590)
45%	(194,413)	(557,481)	747,333	(33,809)	(13,590)
49%	(194,413)	(785,591)	703,832	(33,809)	(13,590)
53%	(194,413)	(1,013,701)	660,330	(33,809)	(13,590)
57%	(194,413)	(1,241,810)	616,828	(33,809)	(13,590)

Table 22 Interest rate sensitivity on stakeholders

	Developer's NPV	Investor's NPV	Government's NPV	Mid Tenant's NPV	Low Tenant's NPV
Interest rate	(194,413)	1,723,616	1,182,349	(33,809)	($13,590)
10%	640,689	27,171,928	10,214,351	(264,033)	(41,057)
15%	228,359	10,284,361	4,408,775	(117,235)	(29,836)
20%	(31,184)	4,161,853	2,164,942	(59,603)	(20,146)
25%	(194,413)	1,723,616	1,182,349	(33,809)	(13,590)
30%	(295,907)	677,282	701,893	(20,853)	(9,346)
35%	(357,288)	204,559	444,236	(13,692)	(6,584)
40%	(392,337)	(14,042)	295,360	(9,422)	(4,749)
45%	(409,983)	(113,546)	204,083	(6,720)	(3,499)
50%	(416,099)	(154,998)	145,422	(4,930)	(2,627)
55%	(414,595)	(167,556)	106,266	(3,699)	(2,006)
60%	(408,105)	(165,758)	79,309	(2,827)	(1,554)
65%	(398,417)	(157,075)	60,266	(2,196)	(1,220)
70%	(386,750)	(145,421)	46,516	(1,728)	(968)
75%	(373,942)	(132,854)	36,401	(1,376)	(777)