EFFECT OF MACROECONOMIC FUNDAMENTALS, SENTIMENT AND HOUSING FINANCE ON HOUSE PRICES IN GHANA, KENYA, NAMIBIA, AND SOUTH AFRICA

KWAKYE BENJAMIN

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KWAKYE BENJAMIN

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey–Fuller
ARDL	Auto Distributed Lag model
BIS	Bank for International Settlement
CPI	Consumer Price Index
ECM	Error Correction Model
EXC	Exchange rate
FBN	First National Bank
GDP	Gross Domestic Product
GFC	Global Financial Crises
GFD	Global Financial Development
GHA	Ghana
GMM	Generalized Method of Moments
GSB	Graduate School of Business
GSE	Ghana Stock Exchange
GVAR	Generalized Vectorauto Regression
HCL	Hass Consult Limited
HFV	Housing Finance Variables
HMV	Housing Market Variables
HP	House Price
IFS	International Financial Statistics
IMF	International Monetary Fund
IN	Income
INF	Inflation rate
IPS	Institute of Postgraduate Studies
IPS	Im, Pesaran and Shin
IR	Interest rate
JSE	Johannesburg Stock Exchange
KEN	Kenya
KPSS	Kwiatkowski-Phillips-Schmidt-Shin
L	Number of Listings
MI	Market Index
MV	Macroeconomic Variables
NAM	Namibia
NARDL	Non-linear Auto Distributed Lag model
NSE	Nairobi Securities Exchange
NSX	Namibia Stock Exchange
POP	Population
PP	Philip Peron
REIT	Real Estate Investment Trust
RET	Stock Market Return

SA	South Africa
SHC	State Housing Company
SI	Sentiment Index
SPV	Share Price Volatility
SSA	Sub-Saharan Africa
STIR	Short Term Interest Rate
SUR	Seemingly Unrelated Regression
SVAR	Structural Vectorauto Regression
USM	Universiti Sains Malaysia
VAR	Vectorauto Regression
VECM	Vector Error Correction Model
VIF	Variance Inflation Factor
WDI	World Development Indicators
WID	World Inequality Development

LIST OF APPENDICES

KESAN ASAS MAKROEKONOMI, SENTIMEN DAN PEMBIAYAAN PERUMAHAN TERHADAP HARGA RUMAH DI GHANA, KENYA, NAMIBIA DAN AFRIKA SELATAN

ABSTRAK

Dalam dekad terkini, peranan yang dimainkan oleh perumahan dalam pembangunan ekonomi semakin diberi perhatian. Namun, perhatian yang diberikan oleh para cendekiawan dan penggubal dasar adalah terhad, terutamanya di kawasan sub-Sahara Afrika bagi hubungan interaksi di antara harga rumah dengan makroekonomi dan pasaran kewangan. Tesis ini adalah bertujuan untuk mengkaji kesan ke atas asas makroekonomi, sentimen pasaran dan pembiayaan perumahan bagi harga rumah di Ghana, Kenya, Namibia dan Afrika Selatan dengan menggunakan model ARDL melalui data suku tahun iaitu dari tahun 1999 sehingga tahun 2020. Kajian ini adalah penting terutamanya dalam era di mana penggubal dasar berhadapan dengan pelbagai cabaran dari segi naik turun harga rumah yang menghalang kemampuan pemilikan rumah. Kajian ini menunjukkan bukti ketara bahawa asas makroekonomi adalah saling berintegrasi dengan harga rumah di semua negara. Di samping itu, asas-asas ini (KDNK sebenar, indeks harga pengguna, kadar pertukaran dan populasi) mempamerkan kesan yang signifikan ke atas harga rumah di kalangan negara-negara terpilih, sama ada dalam jangka masa panjang mahupun jangka pendek. Begitu juga bagi indeks sentimen pasaran yang dirangka telah menunjukkan saling berintegrasi dengan harga rumah di semua negara. Sentimen juga menunjukkan kesan yang signifikan secara statistik terhadap harga rumah di Afrika Selatan dan Ghana pada jangka masa panjang dan hanya jangka masa pendek di Afrika Selatan. Namun bagi kedua-dua negara Kenya dan Namibia, sentimen tidak

mempunyai sebarang pengaruh terhadap harga rumah dalam jangka masa panjang dan pendek. Tambahan pula, kajian ini juga menunjukkan faktor pasaran pembiayaan perumahan (kadar faedah, pendapatan boleh guna dan hutang gadai janji kepada KDNK) adalah sangat berkait dengan harga rumah di Ghana, Kenya, Namibia dan Afrika Selatan. Oleh itu, kepentingan statistik bagi pemboleh ubah pembiayaan adalah berlainan antara satu negara dengan negara lain. Hasil dapatan kajian ini adalah menarik melalui penonjolan kedua-dua persamaan dan perbezaan dalam hasil keputusan antara negara-negara di rantau yang sama. Ini berkemungkinan disebabkan polisi berlainan dan faktor-faktor lain. Kajian ini menyumbang kepada literatur menerusi pelbagai kaedah; pertama, penentuan hubungan di antara sentimen pasaran dan harga rumah di Ghana, Kenya, Namibia dan Afrika Selatan merupakan kajian baharu dalam bidang ini. Kedua, mengenai cabaran data dengan mengubah data primer kepada data bersiri bagi Ghana serta mengenal pasti sumber data perumahan yang boleh dipercayai bagi Kenya, Namibia dan Afrika Selatan. Ketiga, kajian ini juga menyelidik teori hubung kait yang mendasari harga rumah, seperti permintaan dan penawaran, tingkah laku kewangan, kesan pembiayaan dan kesan pendapatan perumahan yang menerangkan hubungan di antara tingkah laku kewangan dan ekonomi gunaan. Keempat, kajian ini menyokong kepentingan praktikal bagi penggubal dasar, pelabur dan para akademik dalam mengisi jurang literatur sedia ada. Secara keseluruhannya, penemuan yang komprehensif bagi kajian ini akan mempunyai implikasi terhadap pembangunan perumahan yang mapan dan strategi pelaburan.

EFFECT OF MACROECONOMIC FUNDAMENTALS, SENTIMENT AND HOUSING FINANCE ON HOUSE PRICES IN GHANA, KENYA, NAMIBIA, AND SOUTH AFRICA

ABSTRACT

The role of housing in the development of economies has been increasingly recognized. However, there has been limited attention from scholars and policymakers, particularly in sub-Saharan Africa regarding the interaction of house prices with the macroeconomy and the financial markets. This thesis investigates the impact of macroeconomic fundamentals, market sentiment, and housing finance on house prices in Ghana, Kenya, Namibia, and South Africa using the ARDL model with quarterly data from 1999 to 2020. This research is essential, especially in an era where policymakers are facing challenges of house price fluctuations that hinder affordability. The study reveals that macroeconomic fundamentals are cointegrated with house prices in all countries. Additionally, these fundamentals (real GDP, CPI, exchange rate, and population) significantly affected house prices in the selected countries, both in the long and short term. Similarly, the sentiment index was cointegrated with house prices in all countries and had a statistically significant effect on house prices in South Africa and Ghana in the long term and only in South Africa in the short term. In Kenya and Namibia, sentiment had no influence on house prices in both the short and long term. Furthermore, the research shows that housing finance factors (interest rate, disposable income, and mortgage debt-to-GDP) were strongly glued with house prices in Ghana, Kenya, Namibia, and South Africa. The statistical significance of financing variables varies from one country to the other. The findings are intriguing, highlighting both similarities and differences in results

among countries in the same region, possibly due to policy variations and other factors. This study contributes to the literature in several ways: first, it establishes the connection between market sentiment and house prices in Ghana, Kenya, Namibia, and South Africa, a pioneering effort in this field. Second, it addresses data challenges by transforming primary data into series for Ghana and identifying reliable housing data sources for Kenya, Namibia, and South Africa. Third, the research delves into the interrelated theories underlying housing prices, such as demand and supply, behavioral finance, financing effect, and the income effect of housing shedding light on the connection between behavioral finance and applied economics. Fourth, the study holds practical significance for policymakers, investors, and academics, and fills some gaps in the existing literature. Overall, the comprehensive findings of this study have implications for sustainable housing development and investment strategies.

CHAPTER 1

INTRODUCTION

1.1 Introduction

In recent decades housing has become a global and national concern to governments and consumers. For centuries, housing was only considered a basic necessity of life for human habitat and not given concerted attention in economics and finance studies across the globe. Many individuals purchase houses to reside in as a basic need of life, and there is little investment demand (Zhu, et al., 2018). It only served as a prestige and an achievement to homeowners and households but for the past decades it has been viewed not only as a place for human habitat but considered as both a consumption and an investment good (see Yang, et al., 2018; Zhang & Guo, 2018; Korkmaz, 2019; Simo-Kengne, 2019). More important, is the reliance of families (for example small buy-to-let landlords or tenants) on property investment class as well as large buyers including sovereign wealth funds of mutual funds (Fernandez & Aalbers, 2016).

According to Määttänen and Terviö (2014), a house refers to a bundle of land and immovable structures. Analogously, Real estate relates to "land and all things permanently attached" (Brueggeman & Fisher, 2011, p.1). Hence, for this study house price connotes the amount of money a house is/can be exchanged for in the open market. Even though, a house can be a sub-category of real estate, both housing prices and real estate prices shall be used interchangeably. Real estate represents the greatest share of household income, thus changes in housing prices are undoubtedly a potential cause of volatility in the market cycle. Both theoretical and empirical research have shown that housing capital may have a significant impact on household wealth as households feel richer with rising house prices (Ernst & Saliba,

2018). According to Iacoviello (2011), housing is well-thought-out to be the utmost treasured asset of families and a fundamental part of their portfolios.

A market economy reflects an environment in which expenditure, output, and investment decisions are focused on demand and supply. The prices of goods and services are decided through a free trade framework. A key feature of the market economy is that the prices of goods and services are primarily determined by price bargaining (Li, et al., 2018). The real estate market, like many other markets, is prejudiced by the factors of demand and supply. However, the markets have some unique characteristics that make them complex and differentiated from the other markets making it difficult to achieve equilibrium between demand and supply. These characteristics include; immobility, durability, inelastic supply, illiquidity, lumpy nature, high transaction costs, short-sale restraints, and the lack of financial instruments that would allow investors to hedge their exposure to house price risk (Peng, 2018; Uluc, 2018).

House price variations can be ascribed to several demand and supply factors in addition to certain financial variables. As supply increases with improved economic conditions household income increases thereby boosting the demand for housing (Alqaralleh, 2019). Glaeser and Nathanson (2017) posited that in a well-functioning market, the inequalities in demand and supply would ultimately be abridged, and reduced demand should result in downward pressure on real estate prices. Therefore, there should be a direct relationship between the two factors, because an imbalance in the two factors will either lead to shortage or oversupply.

In recent decades the role of housing in the development of national economies and the international economy has heightened because of its contribution to the growth of economies. Elile et al. (2018) opined that real estate investment is

given concerted attention due to its critical role and contribution to many national economies and socioeconomic development. The housing industry plays a significant role in the economy and as such the housing industry and the overall economy are co-dependent (Leamer, 2015). With this notwithstanding, Korkmaz (2019); Liu et al. (2019); and Hofman and Aalbers (2019) have also stressed the importance of real estate to the macroeconomy.

This increasing importance of housing was unearthed through the decade Global Financial Crisis (GFC). The pitfalls in the real estate market particularly the subprime mortgage catastrophe of 2007 - 2009, were well-known to be the principal factor instigating the global financial crisis leading to adverse consequences on the global economy (see Cerutti, et al., 2017; Korkmaz, 2019; Killins, 2020; Taderera & Akinsomi, 2020; Kwakye & Chan, 2020; Kibunyi, et al., 2017; Ernst & Saliba, 2018; Deng, et al., 2019; Abildgren, et al., 2018; and Agnello, et al., 2019). This downturn has heightened and anchored macro-housing-finance research in many countries as well as global research, see for example Martínez-García and Grossman (2020) involving 23 countries; Cesa-Bianchi, et al. (2015) involving 57 countries; Cerutti et al. (2017) using 50 countries; and Singh and Nadkarni (2018) using 23 emerging economies.

Regardless of the increasing importance of housing to economic development, it does not exist in a vacuum and its performance is connected to the performance of the economy and the financial market (Baum, 2009 as cited in Akinsomi, et al. 2018). Hence, changes in the economic fundamentals, market sentiment, and other financial variables may greatly influence house prices. To this end, it is therefore imperative to briefly examine house prices in the macro-housing-finance environment.

1.2 Background of the Study

It is axiomatic to posit that the financial crisis which peaked in 2008 has brought a changing face in real estate research in the finance and economic field, particularly the most probable factors that could impact housing prices in an economy. Hitherto the crises, there was over-concentration of study on macroeconomic variables and their relationship with housing prices, but in the recent past the argument keeps revolving between and among scholars with similar and divergent views, whether the argument is still resolute. Literature has shown that the ongoing debate settles on macroeconomic variables, market sentiment, and financial variables. According to Tunc (2020), the spotlight in macro-housing-finance research has been placed on the nexus between the financial market and the housing market after the global financial crisis in 2008. Policymakers and researchers have started to pay attention to the dynamic spill-over interaction between the housing market, the macroeconomy, and the financial markets. Housing finance has come to play a central role in the macroeconomy and financial stability risks have been increasingly linked to real estate lending booms, which are typically followed by deeper recessions and slower recoveries (Jorda, et al., 2016).

Following the growing concerns about the perceived deviation of house prices from fundamentals, potential spill-over impact on the other sectors of the economy, and the attempt to maintain financial stability without losing the primary goal of market stability, policymakers have kept an eye on changes in house prices since 2010 (Tunc, 2020). Martínez-García and Grossman (2020) reported that a widespread indication of episodes of explosiveness (or exuberance) in global real property prices exist and such episodes include: interest rate spreads, inflation and real stock market growth coupled with standard housing fundamentals. They further

postulated that indeed these variables are the best predictors of house prices and argue that other financial assets can play a vital role in sparking the advent of explosiveness in housing markets.

According to Gabauer and Gupta (2020), financial uncertainties have been the main conduit of shocks steering both, macroeconomic uncertainties and real estate uncertainties with macroeconomic uncertainty as a whole taking pre-eminence over housing uncertainties. Since real property is seen as a consumption and investment good, several factors apart from rational considerations may have the potential to affect its value (Das et al., 2020). In the property markets, for instance, home buyer's emotional response plays a key role in their choice of property transactions. Beyond fundamentals, their emotions play a significant role in asset pricing, and in particular in the housing markets (Das et al., 2020). Irrational expectation according to Jin et al. (2014) and Saydometov et al. (2020) contributes to house price volatility in the housing market devoid of market fundamentals.

The property market apart from its influential factors is intertwined with the economic and the financial markets, including but not limited to mortgage and the equity markets (Coakley, 1994; Lizieri & Satchell, 1997, as cited in Hofman & Aalbers, 2019). A linkage between real estate investment and the macroeconomy is reasonably not least expected because it is a major form of capital investment and can be an inhibitor of sustained economic growth. Changes within the property market, conjugated with turmoil in the mortgage market, can thwart the stability of the economy (Kamm & Chivunga, 2010). As documented by Leung and Ng (2019), the relationships between traditional macroeconomic variables (MV) and housing market variables (HMV) have been debilitated following the financial crises. Whereas the link between financial variables (FV) and housing market variables

(HMV) has been reinforced after the financial crises, of which in some cases significant relationships were recorded while in other cases small or no significant relationship exist.

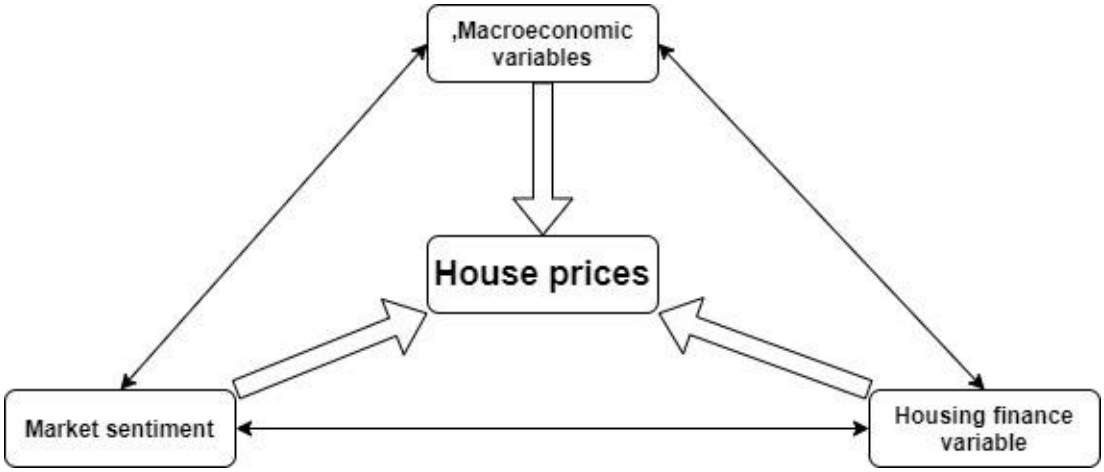

Figure 1.1 The connectivity between economic variables, market sentiment, housing financing variables, and house prices
Source: Author's construct

From Figure 1.1 it can be deduced that there is an interconnectivity between the macro economy, market sentiment, and other financial variables. Hence, the activities in one market may directly or indirectly affect the other. But for the benefit of this research, it can be observed that the central focus is how variables in those markets impact the housing market through prices which is the central theme of the study. Despite the heightened financial variables after the GFC, Several empirical studies including but not limited to Kwakye and Chan, 2024a; Bouchouicha and Ftiti (2012); Plakandaras et al. (2018); Simo-Kengne (2019); Jiao and Jiao, (2018) and Akinsomi et al. (2018) have on the other hand established a relationship between macroeconomic fundamentals and real estate in one way or the other. This presupposes that literature on the topic is therefore inconclusive. Hence, there is however the need to briefly highlight the housing market in sub-Saharan Africa, the

macroeconomic environment, expectations—sentiment, and the housing finance environment of house prices.

1.2.1 Housing markets in selected countries in sub-Saharan Africa

Policy and Legislation frameworks in the housing markets are deemed critical for sustainable housing investment and development. These frameworks enable consumers and investors in the property market to hedge their risks and quantify their returns (CAHF, 2022). Streamlining market activities and addressing some fundamental challenges in the housing market to increase housing investment, supply, and demand have necessitated policy formulations in the property market. See, for instance, the national housing policy of Ghana (Government of Ghana, 2015): the new housing policy legislation for Kenya (Republic of Kenya, 2016): the second revised national housing policy for Namibia (Republic of Namibia, 2023): and the new housing policy and strategy for South Africa (Department of Housing, 1995; Tissington, 2010). Cardinal to these policy frameworks are liberalization of the macroeconomic environment, and financing mechanisms to boost housing activities and make housing affordable to consumers, especially those in the lower income bracket.

Despite the selected countries sharing the homogeneous goal of providing housing at an affordable price, the visions driving the housing market developments seem to vary. For instance, the "Government of Ghana envisions a country in which everyone is able to access safe, secure, decent and affordable housing either owned or rented" (Government of Ghana, 2015, p.13): the overall goal of the housing policy of Kenya "is to facilitate the provision of adequate shelter and a healthy living environment at an affordable cost to all socio-economic groups in order to foster sustainable human settlements" (Government of Kenya, 2016, p. 15): Namibia's government vision is to make "housing the cornerstone of inclusive and sustainable

urban and rural development" (Republic of Namibia, 2023, p. 23): striving for the "establishment of viable, socially and economically integrated communities, situated in areas allowing convenient access to economic opportunities as well as health, educational, and social amenities, within which all South Africa people will have access on a progressive basis, to a permanent residential structure with secure tenure, ensuring privacy and providing adequate protection against the elements; and potable water, adequate sanitary facilities including waste disposal and domestic electricity supply" (Department of Housing, 1995, p. 19).

In sub-Saharan Africa (SSA), housing investment and development is a source of inclusive growth. For example, the World Bank Group (2015) estimated that housing investment constitutes about 6% of GDP. As stated by Price Waterhouse Coopers—PwC (2015) SSA has been eyed by foreign investors to be the best hub for real estate investment. Although the housing sector is diverse across African countries, the surge in demand for housing which drives prices remains a common reality in many African countries. The cost of providing formal housing either through state agencies or private developers is presumably high. As a result, the informal housing delivery system is commonly preferred and has become the norm usually through incremental financing due to the challenges in securing credit from financial institutions. Savings and lending from commercial banks to finance housing development by individuals is not a common practice in many sub-Saharan African countries. However, to some extent, this is achieved through personal loans in disguise.

The utilization of housing loans for housing development is noted to be very low and this contributes to the under-development of the mortgage market in sub-SSA. In 2011, it was estimated that about 85% of the urban population of Africa was unable to access housing credit from financial institutions due to one reason or the

other (World Bank Group, 2015). Even though the formal system of housing delivery and financing is rarely used by individuals it is not completely disregarded. Except that it is more skewed towards the private real estate developers, the higher-income groups, and the upper-middle-income groups. Additionally, customers of banks and non-bank financial institutions apply for personal loans to finance housing projects because of the stringent conditions to be met for housing loans. As a result, continued policy funding for real estate growth is becoming a general phenomenon emerging in SSA (CAHF, 2022; Bah et al., 2018).

In an attempt to increase housing supply Kenya's government, in partnership with the African Development Bank, raised US$10 billion to finance the Konza Technology City project 70. While the South African government, in cooperation with the Southern African Development Bank and the European Union, has undertaken a joint project to collect US$ 130 million to fund infrastructure growth, the government of Ghana is proposing policy changes to support investment real estate (PwC, 2015). The second revised national housing policy for Namibia is being rolled out to deliver housing at an affordable price (Republic of Namibia, 2023). Despite this increasing effort, it is estimated that Africa has a total housing deficit (a stock of housing required to meet the expected demand) of about 50,562,000 of which sub-Saharan Africa is hit by 44,912,000. Ghana, Kenya, Namibia, and South Africa’s share of housing deficits are recorded as 1700000, 2000000, 80000, and 3000000 respectively (Bah et al., 2018). These deficits therefore add to the rising property values in SSA (World Bank Group, 2015; Bah et al., 2018).

According to the World Bank Group (2015) the estimated average housing prices hoover around US$31,085 in SSA. On the other hand, Bah et al. (2018) posited that the average starting price of a house is US$28,000 with an annual average

increase of about 3%. Housing affordability is usually measured by the ratio of price-to-income with the affordability rule of thumb being that the price of a property should not surpass 2.5 times the annual income of a household (Bah et al., 2018). The national housing policy of Ghana and that of Kenya indicate that affordable housing encapsulates the ability of households to spend no more than thirty percent (30%) of their gross annual income on rent or purchase price of a house. When the thirty percent (30%) threshold is exceeded then housing is considered unaffordable to households (Government of Ghana, 2015; Republic of Kenya, 2016; BOWMANS, 2024).

In SSA, however, a total housing floor area of $40m^2$ and $80m^2$ of a house has a price-to-income ratio of 11.63 and 31.10 respectively which is rated to be very high. There is a widespread assertion in almost all 46 SSA countries that housing prices are greatly unaffordable to the vast population. In 2018, the cheapest housing unit constructed with a total floor area of $15m^2$ was priced at US$11,200 located in Kenya on the outskirts of Nairobi (Rust, 2019). It is however not astonishing that, the World Bank Group (2015) and Tipple (2015) posited that housing prices in Africa remain high due to low incomes.

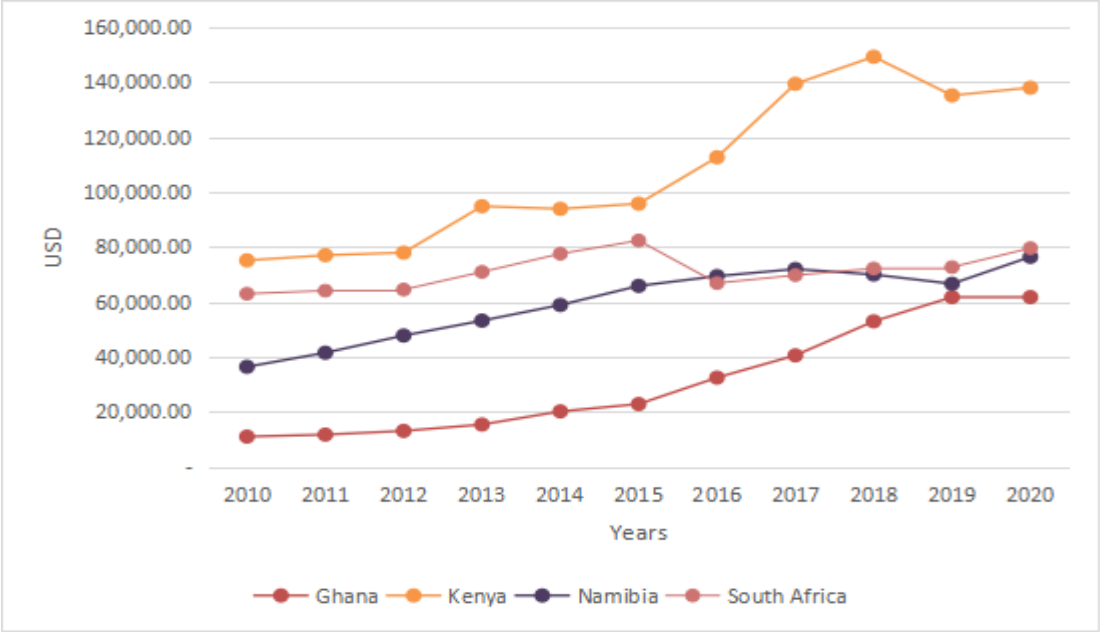

Figure 1.2 Average house price trend for Ghana, Kenya, Namibia, and South Africa, 2010-2020
Source: author's construct

Figure 1.2 shows the average housing price trend in four selected countries (Ghana, Kenya, Namibia, and South Africa). Among the selected countries it can be deduced that while Kenya recorded the highest housing values the reverse was the case in Ghana. The highest housing price was recorded in Kenya in the year 2018, whereas the lowest was observed in Ghana in the year 2010. Ghana and Namibia had a gentle housing price slope from 2010 to 2017. However, While Ghana achieved stability between 2019 and 2020, Namibia observed a decrease in the year 2018 and 2019 with a sharp increase in the year 2020. Kenya between 2010 and 2012 had fairly flat housing prices with a sharp increase in 2013. But skyrocketed from 2016 to 2018 until a decline was witnessed in the year 2019. In the case of South Africa, a decline in housing prices was magnificently observed between 2015 and 2016. Regardless, of the least price variations with the affordability rule of thumb referred, the housing price dynamics need to be looked at. Of great importance are the interactions between housing and the macroeconomy, sentiment, and the housing finance environment. Hence, the next sub-sections emphasize on same.

1.2.2 Housing and the macroeconomic environment

There is a widespread assertion that every sector of the economy is influenced by the macroeconomic environment coupled with international shocks, and the real estate market is no exception. According to Russell and Andrew (2012), Macroeconomics refers to the study of the economy as a whole. Hence, macroeconomic fundamentals denote the economic factors that affect a particular nation or the wider economy within a given period, managed by central agencies. The huge cost associated with real estate investment, and its intrinsic risks, demands that investors, consumers, and developers have a fair idea about the macroeconomic dynamics in which the sector operates in other to make prudent investment decisions. Housing investment involves venturing into uncertainties with peculiar characteristics, where there are unaccustomed economic and political factors with its rules, business cycle, and networks. Hence, an experience in one market may not necessarily be translated and explained in all other markets (Agboola, 2015).

Real estate represents a significant proportion of a household's net worth, hence variations in property prices can pose a significant threat to the macroeconomy and vice-versa **(**Tang, et al., 2020**;** Goodhart & Hofmann, 2008; Iacoviello, 2011). The external sector's position in modelling and simulating macro-housing linkages and policy consequences in emerging markets relate to research in the housing market. One of the keys to this transfer in thinking was the realization that changes in housing prices are not merely the product of larger macroeconomic trends, but may also add to the success of companies (Lacoviello, 2014). On the global front involving a panel study, the relationship between house prices and macroeconomic fundamentals has been touched on by scholars (see Cesa-Bianchi et al., 2015; Zhu et al., 2017; Ernst & Saliba 2018; Aizenman, et al. 2019; Rufai et al., 2024). Similarly,

other time series approaches exploring the nexus of house prices and macroeconomic fundamentals bar SSA include but are not limited to (Jiao & Jiao, 2018; Li, et al., 2018: Day, 2018; Badarinza & Ramadorai, 2018; Wang & Ran, 2019; Jang, et al., 2020; Pan & Han, 2024).

In Sub-Saharan Africa, the scale of quality higher real estate investment portfolios appears to indicate that the sector remains far below the investment horizon for investors. Therefore, the growth of economies is expected to be guided primarily by domestic economic factors rather than international capital inflows for the near future (Anim-Odame, 2016). The real estate market in SSA is underdeveloped and at its infantile stage (Tipple, 2015; Donkor-Hyiaman, 2018; Anim-Odame, 2016; Agboola, 2015; and Bah, et al., 2018). Nevertheless, Anim-Odame (2016) posited that the South African market is a bit elevated above other countries in SSA.

This under development, according to Bah et al. (2018) among other things includes the instability of macroeconomic variables which has adversely affected the housing market on the continent. They posited that tackling the housing shortage on the continent has the ability to accelerate economic prosperity and reduce wage inequality. Although, the housing sector differs across countries and regions, the popular reality across the urban developing markets has been a spike in housing demand as a result of continuous increase in population and other macroeconomic factors, which effectively shoot up housing prices and move out of reach for the majority of those in need, especially the poor and middle-income households.

The inefficiencies in the market resulting partly from macroeconomic fundamentals have aroused a few numbers of macro-housing research in SSA. In Ghana, for instance, Adu-Jack et al. (2019) concluded that house prices are

cointegrated with inflation, exchange rate, and remittances but the exchange rate does not predict house prices. On the contrary, Boamah (2011b) found that the exchange rate is the only significant factor influencing the price of a property, particularly mortgage origination. Other studies conducted include the likes of Owusu-Manu et al. (2019) and Amenyah and Fletcher (2013).

Relative to this, are other comparable studies in Kenya where Bor and Ochieng (2019) examined the effect of macro-economic variables on real estate development in Kenya: The influence of macroeconomic variables on financial performance of commercial real estate market in Kenya (Keillah & Oluoch, 2018). Kibunyi et al. (2017) emphasizing real estate price bubbles in Kenya, discovered that inflation rate, GDP, and real money supply have a positive relationship with house prices and as well cause volatility in them.

In Namibia, Kaulihowa and Kamati (2019) touched on the determinants of house price volatility and found that GDP is among the leading macroeconomic factors causing volatility in house prices whereas Sunde and Paul-Francois (2017) performed econometric analysis of endogenous and exogenous determinants of house prices and new construction activity and established that population and inflation are among the key determinants of prices. Matongela (2015) also hinted at quantitative investigation into determinants of house prices in Namibia.

Empirical studies in South Africa are dispersed from its sister countries in SSA. For example, changes in GDP and unemployment according to Akinsomi et al. (2018) were among the most significant indicators in predicting real estate returns. See also the exposition of Lekhuleni and Ndlovu (2023).

Echoing the forgoing empirical narrations, Figures 3 to 6 highlight trends of some selected macroeconomic variables (GDP, inflation, exchange rate, and population) used as predictors of housing prices in the selected countries. Broadly speaking, Gross

Domestic Product (GDP) is commonly used as a proxy to measure economic growth in many countries. Literature has averred that either an increase or decrease in economic growth exerts some influence on housing prices in many countries. GDP measures the overall health of an economy within a given period, investors sometimes tend to use it to make housing investment decisions.

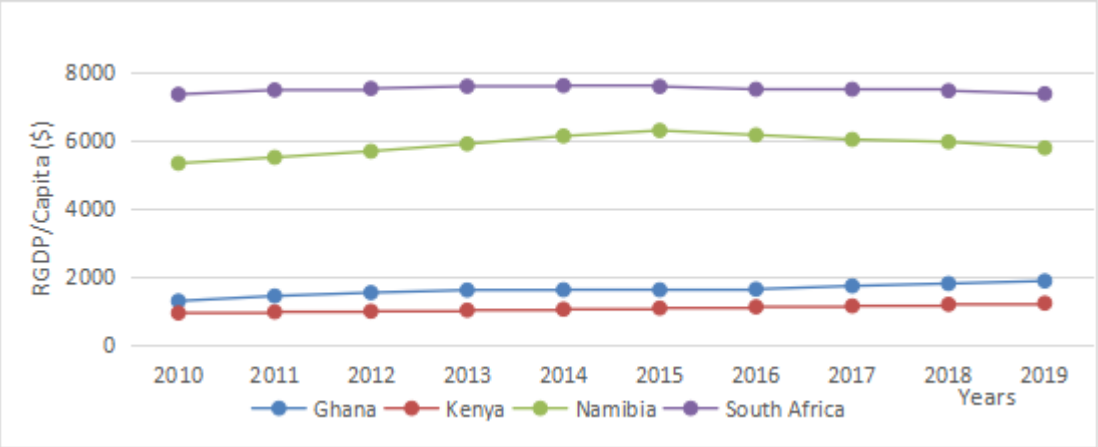

Figure 1.3 Real GDP per Capita for Ghana, Kenya, Namibia, and South Africa, 2010-2019
Source: World Development Indicators (WDI)

Figure 1.3 sheds light on the trend of real GDP per capita in Ghana, Kenya, Namibia, and South Africa. It can be seen that both Ghana and Kenya have a GDP of less than $2,000. Nonetheless, while Kenya has a virtually flat-slopping trend of GDP, Ghana on the other hand is experiencing a creeping trend in GDP from 2010 to 2019. South Africa, having the highest GDP among the selected countries has a slight downward slopping GDP from 2013 to 2019, unlike Kenya which has an increasing GDP until the decline from 2015. The changes in GDP among the selected countries depict an instability in GDP. One will ask, is this having any effect on housing prices?

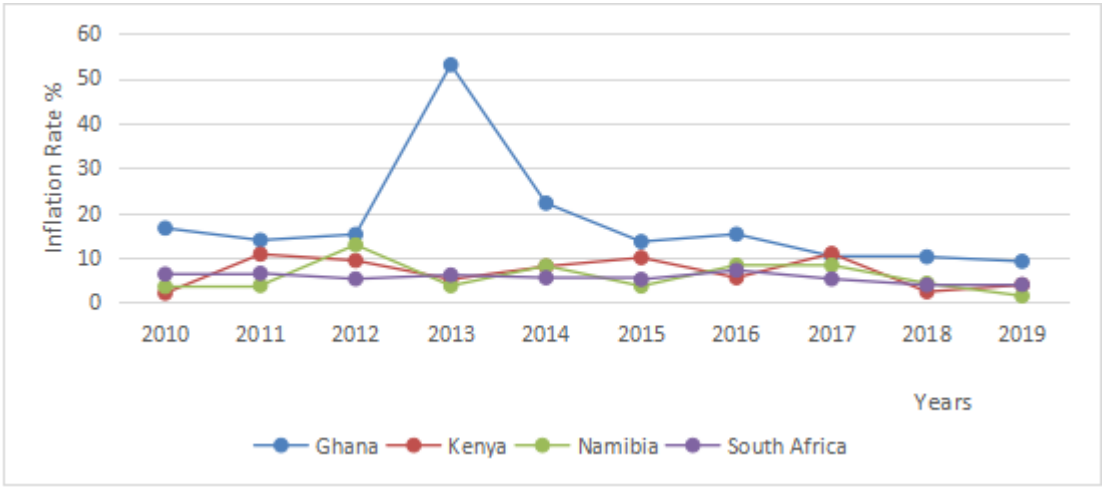

Figure 1.4 Inflation Rate for Ghana, Kenya, Namibia and South Africa, 2010-2019
Source: World Development Indicators (WDI)

It can be visualised from Figure 1.4 that there is high instability in the inflationary rate in the selected countries. Virtually all selected countries have an undulating trend regarding changes in inflationary rates. Ghana then seems to have a high and the highest (2013) inflationary rate in the selected countries. The rate in question therefore seems not stable in these countries hence difficult to predict. While South Africa, Namibia, and Kenya have an inflation rate usually below 10%, Ghana on the other hand has inflation usually above 10%. It is axiomatic that the selected countries have high and unstable inflation rates but does this have any bearing on housing prices? When inflation goes up, the cost of goods and services within a given country over a given period goes up of which real estate is not an exception. This indicates that the cost of building materials, labour among others also shoots up which ultimately makes the prices of properties high. On the other hand, falling inflation is an indication of falling property values but an enhanced demand for housing.

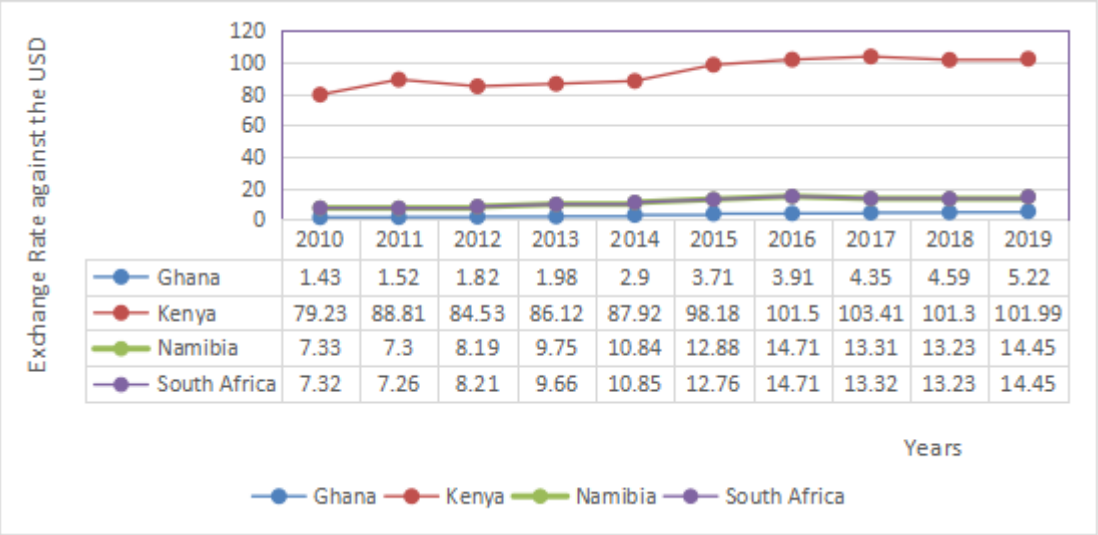

Figure 1.5 Exchange Rate of Ghana, Kenya, Namibia and South Africa, 2010-2019
Source: World Development Indicators (WDI)

A glance from Figure 1.5 shows that Kenya has the highest exchange rate whereas Ghana has the lowest. Both Namibia and South Africa have closely akin exchange rates. In Ghana, for instance, the exchange rate had increased from 1.43 in 2010 to 5.22 in 2019. Namibia and South Africa increased from 7.33 in 2010 to 14.34 in 2019. Kenya which had the highest moved from 79.22 to 101.99 in 2019. This increasing trend has been conjectured by scholars to be attributed to the high importation of goods and services. This therefore warrants an investigation into scouting the nexus of the increasing exchange rate and housing prices in the selected countries. With the increasing globalization and other international trade around the world, exchanging one currency in terms of the other has become necessary to facilitate trade transactions. The prices of goods and services are directly affected by exchange rates, particularly products that are import-driven. The pressure on a particular country's currency has a spearing effect on other countries or sectors of the economy but this depends on the country's international trade systems. The depreciation of a particular country's currency can spread to its real estate market and fuel prices. But the degree or shocks of transmission will be contingent on how dependent the

country is on other countries in terms of the importation of building materials. The contrary holds for an appreciation in the local currency.

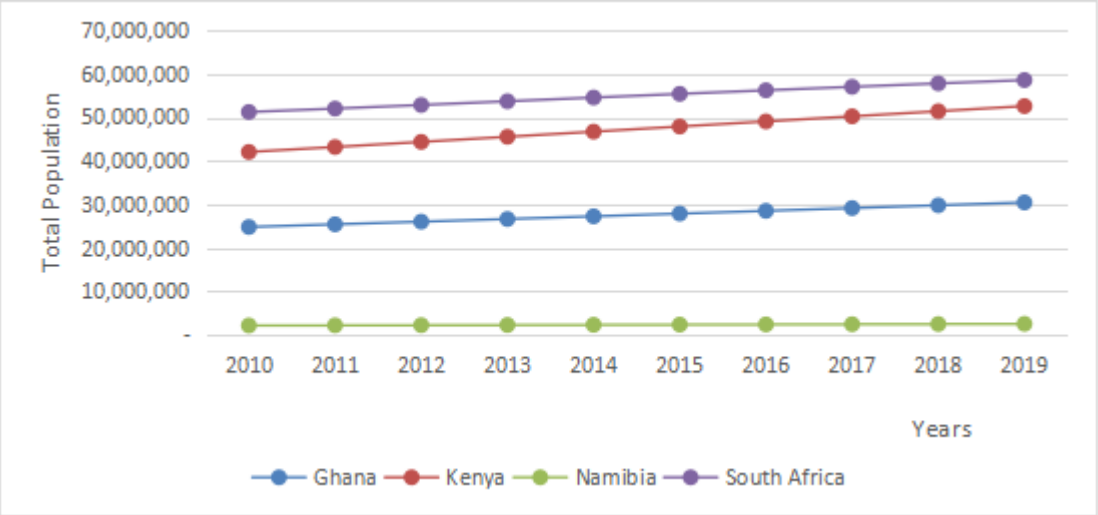

Figure 1.6 Total population, Ghana, Kenya, Namibia and South Africa, 2010-2019
Source: World Development Indicators (WDI)

It can be deduced from Figure 1.6 that population increases at an increasing rate without a decline for all countries except Namibia which has maintained its population below 10,000,000. The trends portray that the population grows at a gentle slope except Namibia which has a flat slope and the lowest total population for all years, followed by Ghana, Kenya, and South Africa in ascending order. It is however not astonishing that Africa has been mentioned to be the fastest-growing continent in the world in terms of population. Largely, it can be stated that the selected countries have unstable macroeconomic conditions.

From the above, it can be deduced that the current state of science emphasizing the direct relationship between the macroeconomy and house prices and in particular effects of economic fundamentals on house prices in in the selected countries are under-studied or given less attention in literature. And even with the available ones, the focus is geared toward the determinants of house prices (Kibunyi et al., 2017; Kaulihowa & Kamati, 2019 and Sunde & Paul-Francois, 2017) or

mortgage prices (Owusu-Manu et al., 2018) at the country or city level without thoroughly looking at the direct effects of the economic variables on housing prices. Both macroeconomic variables and house prices were observed to be cointegrated in the long term, except few (Owusu-ansah et al., 2020 and Bouchouicha & Ftiti, 2012) who noted no long-term cointegration. Besides, most of the studies carried out were compelled to use primary data due to the non-existent or inadequate availability of house price data (see Adu Jack et al., 2019; Owusu-Manu et al., 2018; Kaulihowa & Kamati, 2019 and Kibunyi et al., 2017). In the wake of the sketchy time series data, Kwakye and Chan (2024a) provided an alternative approach by investigating the relationship between house price and economic fundamentals in Namibia using interpolated and real data to examine their dynamics and fill the gap.

Both similarities and differences can be seen in the use of variables between and among countries with the common ones being GDP, inflation, exchange rate, and population. Additionally, none of the studies carried out made a comparative analysis of two or more countries to concurrently make inferences as seen in the advanced economies and other global south countries in Asia.

The inconclusiveness and the inconsistencies in findings coupled with frequent volatility in macroeconomic fundamentals having a potent effect on housing prices and the lack of comparative analysis in SSA makes it imperative to examine the effects of macroeconomic fundamentals on house prices in Ghana, Kenya, Namibia, and South Africa. Particularly, in an era where real estate investment in SSA has caught the eye of international investors with potentially rewarding returns (PwC, 2015). The next section examines housing and market sentiment in the financial environment.

1.2.3 Housing and market sentiment

Cognitive psychology study sheds light on how people reason, make choices and, among other things, allocate their resources. Psychology literature argues that people's emotions affect their decision-making. Bad moods have a major impact on the choices they make. Purchasing or selling a house is one of the greatest financial and economic decisions people face in their lives (Saydometov, et al., 2020). In the context of this study, market sentiment is defined "as a misguided belief about the growth in housing prices, the risk of house price appreciation, or both, that cannot be justified by the current economic information set available to housing market participants" (Ling, et al., 2015. p. 88). Since real estate serves as both an investment and a consumption good, variables other than rational considerations may influence its value. For example, in the housing markets, the emotional reaction of prospective homebuyers significantly weighs on transactions (Das et al., 2020).

Irrational expectation also contributes to price volatility in the housing market devoid of economic fundamentals (Kwakye & Chan, 2024b; Ding et al., 2023; Jin, et al., 2014) and the degree in the variability of house prices often exceeds that which would be predicted by fundamentals (see Case & Shiller 2003; Shiller, 2014). It is on this grounds that Lim and Tsiaplias (2018) argues that the booms in house prices are particularly sensitive to household sentiment, even when interest rate falls below certain thresholds.

Case et al. (2015) using survey evidence posited that there were long term expectations of abnormally optimism during the US boom before the recession. Hui et al. (2017) also noted that "irrational exuberance" increases house prices above fundamental values. Recent literature shows that sentiment plays a significant role in asset pricing not least in the real estate markets (Kwakye & Chan, 2021; Das et al.,

2020). The intensity of speculation in the housing market according to Leamer (2007) differs from economy to economy but similar economies have alike characteristics. While the study of sentiment emerged in the financial market way too long ago, in the real estate market few decades can be chronicled. With this notwithstanding, the study of real estate sentiment is prevalent in the advanced and upper-middle-income countries while in other emerging and frontier economies, it is at its teething stage. In advanced countries such as the US, it was documented that median housing price return responds to both negative and positive sentimental shocks. However, returns from property prices are typically higher in the period of pessimistic sentiment (Zheng & Osmer, 2019). Comparable studies have established similar findings (Saydometov, et al., 2020; Das et al., 2020; Cheng, 2020; Dietzel, 2016; Gupta, et al., 2019; Hausler, et al., 2018; Lang & Schaefers, 2015; Hui & Wang 2014; Lam & Hui, 2018).

Unlike the global north where market sentiment has gained ground, the same cannot be said in SSA. Perhaps due to the size of the market in terms of capitalization or market index, price volatility, returns, and number of listings among others. For instance, the market capitalization in US$ for Ghana, Kenya, Namibia, and South Africa increased from 500,000,000 to 9,247,420,000 (1749.49%) for Ghana; 1,255,390,000 to 21,398,330,000 (1604.52%) for Kenya; 303,290,000 to 1,867,170,000 (515.63) for Namibia; and 204,300,790,000 to 1,051,528,630,000 (414.69) for South Africa (WDI, 2022) for the period 2000-2020. Additionally, looking back at Table 1.1 it could be observed that all stock market variables are volatile. Whereas Ghana recorded the highest market index of 54.91095984 in 2013 the least was seen in Kenya (-31.63197319) in the year 2011. Share price volatility characteristics vary from one country to the other, but the highest and the lowest price volatilities were recorded in Namibia and Ghana with values of 59.56 and 6.89 in the years

2020 and 2016 respectively. In all regards, it could be noted that the South African stock market is more robust and fast growing in terms of its listings comparable to the others.

Nevertheless, it is worth noting that in many global southern countries including the ones under investigation, many REITs exist but are not formally listed on the stock market due to the cumbersome nature of the listing requirements and procedures. Others may likewise not directly be represented as a real estate investment trust (REIT) but a financial institution that channels investors' funds to REITs. This is because many investors and or depositors only invest with financial institutions (banks and non-banks) expecting their returns at the maturity date of their investment period without knowing where and how their funds would be invested. According to Lowis et al. (2015) and Mooya (2010), investors' confidence in the housing market continues to decrease due to uncertainties in the financial market, increasing political instability, and economic fundamentals.

Table 1.1 Selected stock indices for Ghana, Kenya, Namibia, and South Africa, 2011-2020

COUNTRY	PERIOD	STIR	MI	SPV	RETURN	LISTINGS
Ghana	2011	10.40583333	-22.81770287	na	8.592737	29
	2012	17.79083333	7.735271053	9.384505	-1.902868	29
	2013	20.8175	54.91095984	9.069328	78.01689	29
	2014	22.5675	-22.52433203	7.833834	21.63878	30
	2015	23.60916667	-29.61677792	7.203557	-6.692717	30
	2016	20.93916667	-19.25936289	6.898379	-16.65227	30
	2017	13.625	49.12695272	9.108334	24.04325	30
	2018	13.1025	-17.6781263	10.66557	33.23196	30
	2019	14.19166667	-23.60517401	11.47233	-21.48113	33
	2020	13.70272792	-17.41917989	13.25488	-14.68528	31
Kenya	2011	8.723654167	-31.63197319	10.2155	1.102802	58
	2012	12.58065207	43.2271718	10.44956	-13.06521	60
	2013	8.925441667	37.90110888	10.45739	49.0543	61
	2014	8.930675	13.83411955	11.43953	28.93192	65
	2015	10.92691667	-24.15689418	10.117	7.116198	64
	2016	8.512416667	-11.83211062	11.38036	-11.02877	65
	2017	8.371833333	23.45949121	12.24214	2.397633	64
	2018	7.762416667	-14.72603994	13.70024	17.02289	0
	2019	6.893083333	26.59491433	13.95407	-11.00463	59
	2020	6.853916667	-21.60694508	16.9628	-4.926687	60
Namibia	2011	5.622240833	6.229004546	21.08522	7.549875	6
	2012	5.544783333	19.01163556	20.31774	6.498105	7
	2013	5.424672254	-0.104646393	17.58494	7.28984	8
	2014	5.813600202	6.175551496	17.20036	11.75117	8

	2015	6.48875	-0.918138933	17.86707	1.629524	8
	2016	6.5925	24.1713889	26.52182	-10.88791	8
	2017	8.366270695	17.69581631	23.12472	14.0473	10
	2018	7.994144094	-12.17311395	17.86032	19.45561	10
	2019	7.6175	-2.237805017	19.60395	-0.4984815	11
	2020	5.240530836	-31.52692816	29.56016	-16.09776	13
South Africa	2011	5.4875	-17.41617912	17.06888	12.4474800	347
	2012	5.285833333	15.7488702	17.00413	9.0264320	338
	2013	5.078333333	-7.446832922	13.61961	19.7823700	322
	2014	5.8	3.864445153	13.58834	18.3649600	322
	2015	6.0525	-26.6224994	14.14455	6.1253100	316
	2016	7.229166667	17.61693217	17.83656	-0.7025032	303
	2017	7.33	30.62323296	15.15683	5.8786550	294
	2018	7.156666667	-25.89343148	12.98573	4.0358090	289
	2019	7.083333333	8.5507722	15.81004	-1.0843750	274
	2020	4.545833333	-7.02234534	23.30047	-3.2629760	264

Note: STIR-short term interest rate, MI- market index, SPV- share price volatility.
Source: author's construct from IFS, WDI, GFD

The study of housing market sentiment in particular the nexus of market sentiment and house prices is nascent across many sub-Saharan African countries. Whilst hands can be laid on copious scientific works about the developed countries the current state of science in SSA is either in death or scanty. However, limited studies have begun to emerge using primary evidence or the stock market variable(s) to examine its relationship with housing prices. For example, Lowis et al. (2015) in South Africa, examined the role of market fundamentals versus market sentiment in property investment decision-making and established that even though market sentiment affects house prices, fundamentals have a stronger effect compared to market sentiment. Also, Muzindutsi and Mutangwa (2015) established that there is a long-run relationship between the stock market and house prices particularly small and medium houses. Negative information was also evidenced in Nigeria, to cause volatility in residential property prices, particularly in two and three-bedroom flats in Abuja (Alkali, et al., 2019). In Kenya, a two-way causality was established between house prices and the Nairobi Securities and Exchange (NSE), when Kibunyi et al.

(2017) modelled the composite index of NSE as one of the variables in an attempt to establish real estate price bubbles in Kenya.

Holistically, the evidence shows that literature on market sentiment has been dominated by advanced economies while in emerging economies particularly, SSA, it has been left unexplored with no concerted attention from scholars and policymakers. But increasingly, the perception of market participants has been shown to influence housing prices in the long term (Gazzani, 2019; Hui & Wang, 2014; Wang & Hui, 2016; Hui, et al., 2017; and Shiller, 2014). In SSA, the few empirical studies carried out used the stock market index to examine its effect on house prices (Kibunyi, et al., 2017; Muzindutsi and Mutangwa, 2015) except Lowis et al. (2015) that even relied on primary data in South Africa to examine the role of fundamentals and market sentiment in making property investment decisions. Could it be the assertion of scholars that the challenge involved in the creation of the sentiment index impedes its study? (see Heinig & Nanda, 2018; Sabherwal, & Aroul, 2020; and Das et al., 2020; Kwakye & Chan, 2024b).

Shiller (2014) accentuated that even with the developed market consensus has still not been reached regarding the basic question of what causes movements in asset prices. Emphasizing that such a simple question should have been addressed in the past but yet remains unanswered is probably not so easy to answer. More innovative works have tendered to suggest that house price variations cannot always be justified by economic fundamentals or rational factors (See Wang & Hui, 2016; Jin, et al., 2014; Case & Shiller 2003; and Hui, et al., 2017). This study attempts to construct an investor sentiment index using the stock market indices and examines its effects on house prices in Ghana, Kenya, Namibia, and South Africa to fill the gap.