

URBAN HOUSING SUPPLY AND RENTAL AFFORDABILITY: THE CASE OF ADDIS ABABA CITY ADMINISTRATION

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Urban housing supply and rental affordability: the case of Addis Ababa city administration

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DECLARATION

This is to kindly declare that this thesis titled " URBAN HOUSING SUPPLY AND RENTAL AFFORDABILITY: THE CASE OF ADDIS ABABA CITY ADMINISTRATION " is my original work, conducted under the supervision of Dr. Hailegebriel Yirdaw. All sources of information used in this thesis have been duly acknowledged and referenced.

I affirm that this research has not been submitted for any other academic qualification, and the findings presented in this thesis are the result of my independent research efforts.

Furthermore, I take full responsibility for the content presented in this thesis, including any errors or omissions that may be found within.

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APPROVAL SHEET

This is to certify that the thesis prepared by Hermela Biratu, entitled: *Urban housing supply and rental affordability: the case of Addis Ababa city administration* and submitted in partial fulfillment of the requirement for the Degree of Master of Science in Development Economics complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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DEDICATION

I dedicate this thesis to my parents. Thank you for supporting me, sacrificing for me and believing in me. You inspire me and give me strength with your love. I want to dedicate this thesis to my brothers and sisters. You have always encouraged me and know when to leave me alone to better myself through higher education. I also dedicate this thesis to my friends and mentors, whose guidance, encouragement, and camaraderie have enriched my academic and personal life. May this work serve as a token of my gratitude for all the love, support, and encouragement I have received from each and every one of you.

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ACRONYMS

AA	Addis Ababa
AACA	Addis Ababa City Administration
CSA	Central Statistical Agency
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Product
HHIN	Household Income
HHC	Household Characteristics
HQ	Housing Quality
HS	Housing Supply
IHDP	Integrated Housing Development Program
LOC	Location Characteristics
RA	Rental Affordability
STATA	Statistics and Data Analysis Software
UN	United Nations
UN-Habitat	United Nations Human Settlements Programme
WB	World Bank

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ABSTRACT

This study examined the impact of housing supply on rental affordability in Addis Ababa, Ethiopia. Rapid urbanization, population growth, and rural-to-urban migration have increased housing demand, leading to shortages and rising rents. Using a mixed-methods approach, data were collected from 395 rental households and key informants. Descriptive statistics, correlation, regression, and thematic analysis were used. The findings showed that housing supply remains insufficient and that increased housing supply improves rental affordability by reducing rental pressure. However, high construction costs, limited land, inflation, and institutional challenges restrict the provision of affordable housing. The study recommends expanding affordable housing, improving land allocation and housing finance, encouraging private-sector participation, and investing in infrastructure to improve rental affordability and promote sustainable urban development.

Keywords: Urban Housing Supply, Rental Affordability, Housing Market, Addis Ababa, Urbanization, Housing Policy, Ethiopia.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In Addis Ababa which is the political and economic heart of Ethiopia we have seen great change in the city's character which between 2007 and 2024 has seen the population grow from 2.7 million to over 5.2 million (CSA, 2024). That which we are seeing is very quick development which in turn has made the housing situation much worse; we see an estimated 450,000 unit gap and only 12,000 new units a year which is through public and private projects (MoUDH, 2024). Also in 2005 we saw the start of the Integrated Housing Development Program which has to date completed over 180,000 condominium units which are mainly for middle income families. But we still have very large numbers – which is 78% of the urban population living below the poverty line which brings home less than ETB 3,600 (~USD 30) per month – which are still in the informal rental market which has very poor infrastructure in what are known as kebeles (UN-Habitat, 2023).

Rents on apartments have increased dramatically in downtown areas of Addis Ababa over the last 6 years. While average rent increased by 180% between 2018 and 2024 against average salary increase of only 42% (AA BoFED, 2024), low-income households are now paying on average 44% of their income towards rent in constant terms, up from 28% in 2016 and well above the global affordability limit of 30% (World Bank, 2023).

It remains an open question how the rental market will react to the huge public investment in condominiums, and supply affects rental affordability in different urban sub-markets in Addis Ababa. specifically to the informal market's price stabilization. This study will therefore investigate the question of how new housing.

1.2. STATEMENT OF THE PROBLEM

Rapid urbanization in Addis Ababa has significantly increased the demand for housing, driven by population growth, rural–urban migration, and economic concentration in the capital city. According to the World Bank (2020) and UN-Habitat (2018), Ethiopia is experiencing one of the fastest urban growth rates in Africa, estimated at over 4% annually. This speedy urbanisation has put significant strain on housing supply systems. The government has implemented various programs related to the provision of housing, one of which is the Integrated Housing

Development Program (IHDP), but up to now the provision of formal housing has still not become a problem to meet the needs that are increasing. (World Bank, 2020). As a result, many urban residents are living in rented accommodation and affordability is now a pressing issue. Empirical evidence shows that the rent in Addis Ababa has increased significantly in the years gone by, but household incomes, particularly of the poor and middle classes, have not. This means that rents are now increasingly unaffordable (UN-Habitat, 2018; Gebremedhin, 2021).

Under the theoretical concept, the correlation between housing supply and rental prices is explained by the law of supply and demand (Alfred Marshall, 1890); in this case, the more supply the less price, if all other factors are kept constant. In other developing cities such as Addis Ababa, however, the inverse relationship gets weakened by structural and institutional constraints. Demand and supply have limited responsiveness due to high construction costs, limited land availability, inefficiencies in the regulatory framework and limited access to housing finance (World Bank, 2020; UN-Habitat, 2018). Consequently, despite new housing units coming on the market, rents can remain high and may not be affordable. This means there is a difference between the theoretical expectations and the actual outcomes, and, therefore, the need for empirical investigation in the local context.

Furthermore, there are spatial disparities in housing supply in Addis Ababa which affect the affordability of housing rentals. Earlier studies found that there was a negative correlation between relatively higher concentration of condominiums and lower rental prices in the study area, while areas with relatively lower concentration of condominiums had higher rental prices in the study area (Gebremedhin, 2021). These spatial inequalities are further influenced by differences in infrastructure, accessibility, and availability of public services. But so far, little existing research has taken spatial aspects into account in analyzing housing supply and rental affordability in Ethiopia, leaving the important aspect unexplored.

While some studies have addressed the problems of housing shortage, affordability, and public housing in Ethiopia, most of them have been conducted at a micro level and have not looked at the issues in relation to each other. The evidence on the direct effect of urban housing supply on rental affordability and the impact of spatial variation and socioeconomic factors is limited. Moreover, the importance of institutional and policy-level constraints for influencing this relationship is not fully discussed. Hence, the critical research gap is the lack of a comprehensive

and evidence-based analysis that connects housing supply aspects to rental affordability outcomes in Addis Ababa.

This study tries to bridge this gap by examining the overall impact of urban housing supply on the affordability of rental housing in Addis Ababa. In particular, it fills the current literature by (1) testing the applicability of the supply–price relationship in the local housing market bottom-up, (2) introducing spatial differences between sub-cities and (3) analysing the role of socioeconomic and institutional conditions on the affordability of rents. The outcomes of this research can contribute to policy makers, urban planners and stakeholders in developing better affordable housing policies and better planning for sustainable urban development.

1.3. RESEARCH OBJECTIVES

1.3.1. General Objective

To examine the effect of urban housing supply on rental affordability in Addis Ababa, Ethiopia

1.3.2. Specific Objectives

- To assess the current level and trends of urban housing supply in Addis Ababa.
- To examine the relationship between housing supply and rental price levels in the city.
- To evaluate how changes in housing supply influence rental affordability for low- and middle-income households.
- To identify key factors that constrain effective housing supply in Addis Ababa.
- To analyze the contribution of government housing programs and private sector initiatives to improving rental affordability.

1.4. Research Questions

- What is the current level and trend of urban housing supply in Addis Ababa?
- How does the level of housing supply influence rental price levels in the city?
- To what extent do changes in housing supply affect rental affordability for low- and middle-income households?
- What major factors constrain the adequate supply of housing in Addis Ababa?

- How effective are government housing programs and private sector initiatives in improving rental affordability through increased housing supply?

1.5. HYPOTHESES

Hypothesis 1 (Housing Supply)

H_{01}: Housing supply has no significant effect on rental affordability.
H_{11}: Housing supply has a positive and significant effect on rental affordability.

Hypothesis 2 (Household Income)

H_{02}: Household income has no significant effect on rental affordability.
H_{12}: Household income has a positive and significant effect on rental affordability.

Hypothesis 3 (Household Characteristics)

H_{03}: Household characteristics have no significant effect on rental affordability.
H_{13}: Household characteristics have a negative and significant effect on rental affordability.

Hypothesis 4 (Location Characteristics)

H_{04}: Location characteristics have no significant effect on rental affordability.
H_{14}: Location characteristics have a negative and significant effect on rental affordability.

Hypothesis 5 (Housing Quality)

H_{05}: Housing quality has no significant effect on rental affordability.
H_{15}: Housing quality has a negative and significant effect on rental affordability.

1.6. CONCEPTUAL FRAMEWORK

Dependent Variable (DV):	**Independent Variable (IV): Urban Housing Supply**
	Housing supply
	Household income, indicating purchasing power
	Household characteristics such as household size and composition
Rental Affordability	Location characteristics, including access to infrastructure, distance to the city center, and neighborhood attributes
	Housing quality indicators such as dwelling condition, size, and access to basic services

Source ; (Alemu & Nigussie, 2020; World Bank, 2019).

The framework of this research depicts the connection between the supply of urban housing and rental affordability in Addis Ababa, Ethiopia. The term rental affordability used in this study is related to the capacity of the household to pay rent payments without jeopardizing other basic needs, which are normally expressed as the ratio of rent payments to monthly household incomes, and are deemed unaffordable if the rent exceeds 30% of the total monthly income (UN-Habitat, 2020). It is affected by supply and demand factors, quality and location of housing. The supply side, such as the number of housing units, land availability, construction costs, and government housing policies, is expected to have a direct impact on the affordability of rentals, with increases in supply that lead to lower housing prices increasing affordability, and decreases in supply that drive up housing prices, decreasing affordability (Glaeser & Gyourko, 2018; Taffese, 2022). The other important factor is household income, which indicates the purchasing power of households; households with higher income can afford rent payments without compromising on their basic consumption, whereas lower income households have higher rent burden (Stone, 2006; Elsinga & Hoekstra, 2005; Alemayehu & Berhanu, 2021). Household characteristics are also important for affordability and larger households or households with more dependents tend to need larger units, which means a higher cost of renting the house and makes it less affordable (Baker et al., 2008; Scanlon & Whitehead, 2008). Proximity to the central business district and to infrastructure, and the availability of amenities in the neighbourhood, are also important location characteristics; high rents are associated with high quality central and good infrastructure, with low rents associated with low quality central and poor infrastructure (and amenities), but with low commuting expenses associated with a high quality central and good infrastructure, and low commuting expenses associated with low quality central and poor infrastructure (Alonso, 1964; Muth, 1969; Turok & McGranahan, 2013; Berhanu et al., 2018). Lastly, housing quality indicators such as housing condition, size and access to basic services moderate the rents households can access – the better the quality, the better the safety, comfort and access to services, and the lower the rent, the poorer the quality, all other things being equal, (Rohe & Basolo, 1997; UN-Habitat, 2015; Potts, 2009). These factors together represent the conceptual underpinning of this study, showing the complex ways in which housing supply, household income, household composition, location attributes, and housing quality contribute to the housing affordability of people in Addis Ababa, giving it a foundation for empirical analysis and policy analysis.

1.7. Limitations and Delimitations of the Study

1.7.1. Delimitations of the Study

Geographically this study was conducted in Addis Ababa City Administration and the sample was limited to Yeka Sub City which is the study area of rental households. The study was aimed at exploring the impact of the urban housing supply on the affordability of housing rental services and the impact of selected factors, such as household income, household characteristics, location characteristics, and housing quality. The study primarily concentrated on the rental households and stakeholders that are involved in the housing sector, such as, housing officials, urban planners and real estate agents. Data was analyzed based on the information collected during the study period, which is the condition of the housing market at that time.

1.7.2. Limitations of the Study

The study focused primarily on selected variables, namely housing supply, household income, household characteristics, location characteristics, and housing quality. Other factors that may influence rental affordability, such as inflation, interest rates, demographic changes, land market regulations, and broader macroeconomic conditions, were not included in the analysis.

Finally, the housing market is influenced by complex social, economic, and institutional factors. Consequently, the results of the study should be interpreted within the scope of the variables and considered in the research.

1.8. Organization of the Research Paper

This thesis is organized into five chapters. Chapter One presents the introduction, which includes the background of the study, statement of the problem, research objectives, research questions, significance of the study, scope and limitations of the study, and organization of the research paper.

Chapter Two reviews the relevant theoretical and empirical literature related to urban housing supply and rental affordability. It discusses key concepts, theories, previous studies, and the conceptual framework that guides the study.

Chapter Three describes the research methodology employed in the study. It presents the research design, study area, target population, sampling techniques and sample size, data sources and methods of data collection, variables of the study, model specification, and methods of data analysis.

Chapter Four presents the results and discussion of the study. It includes descriptive statistics, correlation analysis, regression analysis, and the interpretation of findings based on the research objectives and existing literature.

Finally, Chapter Five provides the summary of major findings, conclusions, and policy recommendations. It also highlights areas for future research related to urban housing supply and rental affordability in Addis Ababa.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Introduction

This chapter reviews relevant theoretical and empirical literature on urban housing supply and rental affordability. It focuses on key concepts, theories, and previous studies that explain the relationship between housing supply and rental prices, with particular emphasis on developing countries and Addis Ababa. The chapter also identifies research gaps that justify the current study.

2.2. Conceptual Review

2.2.1. Urban Housing Supply

Urban housing supply is the number of housing units in the city at a point in time, formal and informal, provided by public and private providers. It is an essential piece of urbanisation as it influences the capacity of cities to grow. Housing is a key driver of living conditions, urban form and economic prospects in fast growing cities like Addis Ababa. The issues of housing shortages in developing countries are frequently linked to overcrowding, informal settlements and the growing cost of housing, according to the World Bank (2020).

The land supply is a key factor in urban housing supply. Land is limited and heavily zoned and regulated in urban areas, especially in the capital cities where demand is high. Land is publicly owned in Addis Ababa and allocated via lease mechanisms that may slow down and restrict the pace and flexibility of which housing is developed. According to studies, land shortage and administrative obstacles have a great impact on housing supply in Ethiopian cities (World Bank, 2020). Consequently, the reactions to a change in demand are slow.

The construction cost is another significant factor that affects the supply of housing. The high cost of building materials, labour and infrastructure development drive up the cost of housing production. The high cost of construction in African cities has hampered developers' ability to offer affordable housing, according to UN-Habitat (2018). The price volatility of materials and scarcity of foreign exchange in Addis Ababa also adds extra costs to construction, further reducing the supply of housing.

Government policy and institutional measures are also key influences on urban housing supply. The Ethiopian government has conducted a number of housing programs, including the Integrated Housing Development Program (IHDP) that seeks to improve the supply of affordable

housing. These efforts have helped create additional housing supply, but have been hindered by challenges such as project delays, financing challenges and inadequate coordination between actors (UN-Habitat, 2018). This implies that the effectiveness of a policy is as critical as its design to fixing an issue of housing shortage.

Housing finance is another important factor influencing housing supply. Large-scale housing development in this country needs adequate financing by the developers and, credit access by the households for housing purchase or rent. In most developing countries however, including Ethiopia, the financial markets are underdeveloped and mortgage systems are limited. A lack of access to long-term finance can limit the private sector's role in housing production, which can limit supply (World Bank 2020).

The availability of roads, water supply, electricity, and sanitation services also affects the housing supply in urban areas. In many communities, housing is being built where infrastructure is good and other parts of the community are not getting developed. The unequal patterns in infrastructure provision in Addis Ababa have helped lead to variation in housing supply patterns among sub-cities. Poor infrastructure in an area leads to less housing development, and good infrastructure leads to more investment and development (UN-Habitat, 2018).

Further, the contribution of private sector in housing supply should not be ignored. To boost supply, particularly in rapidly expanding cities, private developers are necessary. But their actions are influenced by profit motives, they tend to stick to high income housing markets and not to affordable housing markets. This disparity between supply and the needs of low income households also increases affordability issues. Glaeser and Gyourko (2003) point out that the supply of housing can be market-done, but it is not necessarily market sufficient, without accompanying government intervention to ensure affordability.

The informal housing sector is also an important characteristic of urban housing supply. Informal settlements account for a majority of the housing in many developing cities for those who are in the lower income brackets. The lack of capacity of the formal sector to cope with demand leads to the spread of informal housing in Addis Ababa. Informal housing helps to boost housing supply, but it frequently lacks essential services and legal protection, which may create challenges in terms of urban planning and living conditions (UN-Habitat, 2018).

In addition, population growth and urbanization are always putting a strain on housing supply. With the influx of people to the cities for jobs and improved standards of living, the demand for

housing grows fast. But when supply does not increase to match this growth, there are shortages, and rents rise, and they become less affordable. Ethiopia's urban population is expanding at a pace faster than the provision and maintenance of housing infrastructure and services, in line with the World Bank (2020).

Last but not least, the supply of urban housing is closely associated with economic conditions and macroeconomic stability. The demand for housing is influenced by construction costs, which are influenced by inflation, exchange rate fluctuations, and economic growth. In Ethiopia, the difficulties of macroeconomic conditions like inflation and foreign currency shortage have had a negative effect on the construction sector, which affects the expansion of housing supply (World Bank, 2020).

Finally, the supply of cities' housing is a complex concept, which is determined by land availability, construction costs, government policies, financial systems, infrastructure and market dynamics. These factors contribute to the limitation of the housing sector's capacity to respond to the rising demand in Addis Ababa. Knowing them is key to the development of efficient policies that could improve the provision of housing and its rental cost.

2.2.2. Rental Affordability

Rental affordability is defined as whether or not households can afford a rental home while maintaining their ability to pay for other important items like food, health care, and education. Generally, it is determined by the ratio of house rent to household income, and 30% of household income is accepted as a cutoff point for affordable housing (UN-Habitat, 2018). As cities like Addis Ababa are experiencing rapid urbanization, the costs of renting housing is a huge concern as supply is not meeting the demand.

Household income is one of the most important factors that determines rental affordability. A small rise in rent could make a big difference to people's affordability where incomes are low and stagnant. Households, especially those involved in the informal sector, in Addis Ababa have irregular or low wages that are hard to manage rising rentals. The World Bank (2020) reports that income inequality and insufficient jobs are key drivers to housing affordability issues in Ethiopian cities.

The second most important issue affecting rental affordability is the price of rents. Rental prices are driven by the market forces of supply and demand, and location, housing quality and infrastructure. When the demand for housing is greater than supply, individuals in the region

may have to pay much higher rents. This is a reality in the central areas of Addis Ababa where residents live close to employment and services and thus rent their homes at greater prices (UN-Habitat, 2018).

Housing quality and housing adequacy are also tied closely to the notion of rental affordability. Housing should be not just cheap but also provide basic amenities such as clean water, sanitation, electricity and space. Lower income families in many instances could obtain more affordable housing but that would be in informal settlements in poor conditions. Affordability should be complemented with the issues of habitability and access to basic service, as stated by UN-Habitat (2018).

Rental affordability is greatly influenced by location. Housing in areas close to employment, schools and transportation tends to be more expensive. According to urban economic theory, the value of land and houses falls as distance from the center of the city increases (Alonso, 1964). Lower rents are available in peripheral areas in Addis Ababa, however, residents tend to have higher transportation costs and limited services which can offset the advantages of lower rent.

Rental affordability is also affected by government policies and regulations. There are a number of ways to increase affordability for the poor, including rent control policies, housing subsidies and public housing programmes. Government programs in Ethiopia like condominium housing projects seek to promote affordable housing. But, they have been relatively ineffective in influencing the rental markets because of limited supply and implementation challenges (World Bank, 2020).

Another key factor in rental affordability is the amount of housing supply. Economic theory states that the more a house is supplied, the lower the rent costs and the better the price of a house is (Alfred Marshall 1890). But in reality, this relationship can be undermined by building expenses, construction site limitations and regulations. One of the reasons for rental affordability issues in Addis Ababa is the poor pace of housing development.

Beyond that, other socio-economic variables like household size, employment status and education level all impact on the housing market's affordability. Larger households require bigger housing units, which are typically more expensive. Likewise, unstable employment increases the risk of rent increases to households. The above factors underscore the fact that rental affordability is not just a market problem, it is a social and economic problem as well.

The informal rental market is another crucial aspect of rents. Informal rental arrangements are common in many cities in the developing world as a means of housing low-income groups. These choices may be more affordable, but they may not be legally secure or have access to basic services or security of tenure. Informal rentals are also common and highly significant in Addis Ababa, but can be challenging to regulate and plan (UN-Habitat, 2018).

Rental affordability is also influenced by macroeconomic factors, such as inflation and economic instability. When inflation goes up, households' real incomes decline and their cost of living goes up, which makes rent more difficult to afford. Meanwhile, inflation adds to the expenses of construction, which may result in rises in rents. The World Bank (2020) notes that the strong macroeconomic effects have pushed up the price of housing and made it hard to afford in Ethiopia.

Overall, rental affordability is a complex phenomenon that depends on a variety of factors, including income, rental costs, the supply of rental housing, where people rent, the policy environment, and the state of the economy. It is these factors that interact to make life challenging for low and middle-income families in the context of Addis Ababa. To design effective housing policies that make housing affordable and living conditions better, it is crucial to understand these dynamics.

2.2.3. Relationship Between Housing Supply and Rental Affordability

Housing supply and rental affordability is a fundamental question of urban economics and the housing policy. Theoretically, houses should be supplied and demanded, with more houses supplied as rent prices fall, which makes housing more affordable. Alfred Marshall (1890) states that if supply rises and demand doesn't change, the price of the product will decrease. In the context of housing markets, this means that increasing the supply of housing should put downward pressure on rents, and alleviate constraints on affordability, especially for low and middle income households.

But the actual impact of housing supply on the affordability of housing on rent can be more complex, particularly in rapidly urbanizing cities like Addis Ababa. While supply growth is a step towards affordability, a number of institutional and structural issues can mitigate or delay this advantage. New developments, for example, for high-income groups may not directly benefit the lower-income groups through an increase in supply. The poor supply/demand match

may lead to the lack of an impact of adding supply on general affordability (Glaeser & Gyourko, 2003).

The empirical evidence suggests that housing supply is an important determinant of rental prices, but that its importance varies from place to place. According to the World Bank (2020), this is because in many developing countries the rate of urbanisation has outpaced the rate of housing supply, resulting in the continued lack of affordable housing and increasing rents. Even though the government is undertaking housing initiatives in Addis Ababa, the need for rental housing remains high, leading to rising rents and a falling affordability.

The second consideration in this connection is the Elasticity of Supply of housing, that is, the responsiveness of housing supply to a change in housing demand. The supply of housing is inelastic in cities where land is scarce, regulations are strict and/or construction costs are high. This is because supply is not sufficiently elastic in that the supply cannot easily adjust to significantly higher demand, leading to higher rents. Geographic and regulatory constraints can have significant impact on the elasticity of housing supply, and can thus reduce the ability of supply side interventions to have a positive impact on affordability (Saiz 2010).

The link between the supply of housing and the affordability of rental housing also varies by area. Availability of housing can be irregularly distributed throughout the city, and the rent may differ between areas. The relatively more available housing supply in the sub-cities is reflected in lower rent costs than those in more central areas with less housing supply, as in Addis Ababa, where condo developments are associated with relatively low rent costs. But, there can be negative impacts from lower rents in these fringe areas due to poor infrastructure and job prospects (UN-Habitat, 2018).

In addition, the filtering nature of the housing market offers another rationale for the supply-side determinants of affordability. Filtering is the result of new units being constructed to rent at higher prices, while older units become affordable to lower-income groups at lower rent costs. This can make housing more affordable in the long term, but can be painstakingly slow and may not meet the immediate housing needs in rapidly expanding cities (Mankiw, 2014). The filtering effect is not strong in Addis because overall there is a shortage of housing and urban growth is rapid.

Housing supply and affordability also are influenced by institutional and policy factors. Governing bodies can have a positive or negative impact on housing supply through housing

assistance, land use and planning policies, and legislation. Bureaucratic delays, lack of financial resources, and unfriendly stakeholders' coordination have constrained the impact of housing policies on affordability in Ethiopia (World Bank, 2020).

Further, macroeconomic factors like the inflation rate, interest rates, and exchange rate swings may affect the availability of housing and renter's affordability. Higher inflation results in higher construction costs, which may create a decrease in housing supply, contributing to increases in rents. Meanwhile, inflation also diminishes the real incomes of households, leading to less affordability of housing. These all adds to the complexity of supply and affordability in the developing world.

Overall, it is expected that there should be an inverse relationship between the supply of housing and rental prices, but empirical evidence shows that there are various factors that moderate this relation, such as elasticity of supply, spatial distribution, income levels, and institutional constraints. From the perspective of Addis Ababa, these complexities underscore the need to undertake a thorough investigation of the impacts of housing supply on rental affordability.

To sum up, a key, but not exclusive, solution to address rental affordability is to increase housing supply. Policy interventions need to take into account the structural constraints, to be equitable in terms of housing distribution, and to take an integrated view on the wider socio-economic context. This highlights the need for this study to explore the actual effect of urban housing supply on the rental affordability in the context of Addis Ababa.

2.3. Theoretical Literature

2.3.1. Theory of Supply and Demand

One of the main principles of economics is the theory of supply and demand and it's important to understand the workings of the housing market. It proposes that prices of goods and services depend on the supply of goods and services offered by producers and the demand of goods and services by consumers (Marshall, 1890). Often times when supply is greater than demand, the prices go down, and when demand exceeds supply, the prices go up. In the housing industry, for instance, this basic maxim is crucial because price and availability of housing is immediately affected by the ebb and flow in supplies and demand.

Population growth, urbanization, changes in household income, and location and quality of housing preferences are the driver of demand in urban housing markets. It is the rapid urbanisation in Addis Ababa that has resulted in a tremendous housing demand. The World Bank

(2020) reports that Addis Ababa's housing stock has not been able to keep up with the population growth, thus contributing to the high cost of renting housing units. This is a representation of the market demand side pressures.

On the demand side, factors like job opportunities, income growth, and preferences for home ownership and size influence the demand for houses.On the supply side, land availability, development costs, government policies and access to finance, affect the number of housing units that can be built. Many developing cities, including Addis Ababa, have an inelastic supply of housing, with high construction costs, restricted supply of land and regulatory issues. (UN-Habitat, 2018) Inelastic supply implies that an increase in demand may not necessarily bring about a proportionate increase in houses available, leading to an increase in rents and decrease in housing affordability.

The rental market price mechanism is due to the interaction of housing supply and demand. Low housing supply, in comparison to demand, increases the price of renting, making housing less affordable. On the other hand, more supply can help lower rents and make housing more affordable as long as the extra housing is available to the bottom-tier purchasers and renters (Glaeser & Gyourko, 2003). In reality, however, the impact of interventions on the supply of housing will be dependent upon the compatibility of the newly created housing with the needs and income level of the target population.

Economics also recognizes that markets can be imperfect, thereby throwing off the perfect balance between supply, demand and price. Speculative behaviour for instance and regulatory restrictions and bureaucratic delays can hinder supply from responding to demand efficiently, thus maintaining high rental prices despite the development of new housing supply (Saiz, 2010). These conditions, combined with the new housing projects, exacerbate rental problems in Addis Ababa.

The other concept of importance is called equilibrium price; this is the price at which the quantity of housing supplied equals the quantity demanded. The market equilibrium for renting in cities that have a fast population growth rate with low availability of housing units tends to be higher due to the scarcity of units (Mankiw, 2014). This is where demand-side constraints and structural market inefficiencies need to be addressed as well, and that's where policy can have its impact on affordability.

The theory of supply and demand is also the basis for government policies regarding supply and demand. When a market failure exists and is not corrected by policy, such as policies aimed at subsidizing housing and/or controlling rents, there is a need to allocate land. For example, the Integrated Housing Development Program (IHDP) of the Ethiopian government seeks to boost provision of housing and alleviate housing costs for low and middle-income households (World Bank, 2020). But designing, implementing and harmonizing such policies with the fundamental forces of supply and demand are crucial for their effectiveness.

To sum up, the principle of supply and demand gives a theory that helps to explain the concept of rent affordability within city housing markets. It forecasts an inverse relationship between the supply of housing and the prices of rents, which means that the more housing is available, the lower the rents will be and the greater the affordability will be. But the results are determined by several factors such as the elasticity of supply, income of the household, regulations and market imperfections. The theory underlines the importance of supply growth and enabling policies to solve the affordability issues of rents in the context of Addis Ababa..

2.3.2. Urban Land Use Theory

Urban Land Use Theory provides a perspective on how land is allocated, valued, and developed within urban areas, as well as how the spatial dynamics affect housing markets, rental prices and affordability. The modern version of this idea is a further development of the early models, but also takes into account newer evidence regarding urban growth, infrastructure, and market dynamics in rapidly-growing cities.

Urban Land use Theory is mostly based on the idea that land becomes less valuable as it is further away from economic and social centres. Recent research indicates that neighborhoods with greater access to employment, services and transportation opportunities are higher valued by their land prices, which are, in turn, more expensive for housing costs (Gulyani & Bassett, 2019; Nguyen et al., 2023). The aspect of higher valuation of land in higher demand areas is a critical aspect of understanding the rental affordability issues since the developers prefer to build high income housing in the higher valuation areas as it is difficult to obtain land in higher demand areas.

Urban land use dynamics in the context of Addis Ababa are in line with these theoretical expectations. The demand for proximity to employment hubs is more pronounced in central suburbs (Kirkos, Arada), hence the rents are higher than in peripheral suburbs (Tekalign), etc.

(2021). In these ways, housing inequality in the inner city has been driven by uneven development of land use, such that inner city areas have seen a growing pressure from both residential and commercial demand, according to UN-Habitat (2022).

The importance of land availability and allocation mechanisms is also noted in Urban Land Use Theory. Public ownership of urban land and leasing systems can make efficient land use and housing development difficult in many cities in Africa, including Addis Ababa. Housing supply is less responsive to fluctuations in demand due to regulatory constraints, slow approval times and relative lack of serviced land supply (World Bank, 2020, Fekadu & Mulugeta, 2024). The institutional barriers also contribute to the fact that even in high demand areas, housing supplies do not grow at a sufficiently rapid rate, thus strengthening house price and rental increases. Accessibility and infrastructure is another key aspect of the theory. Better infrastructure (road, transport, utilities etc.) makes some areas more desirable and changes land value gradients. Accessibility, for instance, has also led to higher competition for land in and around the transport improvements in Addis Ababa, which has driven faster development and higher house prices in such regions (Ayele et al., 2023). There is a lack of infrastructure investment in lowincome neighborhoods, which leads people paying low rents to be further disadvantaged by a lack of infrastructure that would otherwise benefit their neighborhoods.

Another aspect of the urban land use theory is the relationship between zoning, land markets and affordability. Zoning and land use plans affect the kind and intensity of development on the various areas of a city. Where demand is high, the availability of housing units, especially affordable units, may be constrained by restrictive zoning and permitting processes (Dawson & Dwon, 2022). Urban plans in Addis Ababa have recently been designed to increase residential areas, despite the fact that enforcement and coordination problems slow down the actual development, causing the housing supply to remain low compared to demand. Furthermore, according to the theory, the process of urban development is influenced by market forces and becomes directionally determined. Growth is not equally distributed across cities, but is concentrated along key infrastructural corridors and nodes that have economic capacity. In Addis Ababa, like several other cities, the growth in neighborhoods such as Bole and Ayat has been accompanied by an influx of private developers, primarily because of land availability and rising amenities (Gebre & Woldemichael, 2025).

However, these growths can be outside of affordable wage growth areas and may not greatly increase the rental affordability of lowincome households unless there is policy intervention. These theory-based observations have been confirmed by recent empirical studies. Ng'ang'a (2021) showed that rent prices were the highest in the well-connected areas with a small amount of land release, which suggests a direct relationship exists between spatial land use and affordability, especially in rapidly growing African cities. Likewise, in Ethiopia, Alemu and Bekele (2024) found that land access issues, coupled with the rigidity of urban planning, have helped to sustain high rent prices in its urban centers.

To summarize, the theory of urban land use helps to understand why housing markets are not perfect spatial vacuum markets: location, allocation, infrastructure and regulatory context are all factors that affect the supply response to demand and the determination of rents in housing markets. In the particular context of Addis Ababa, such spatial dynamics have played a key role in the escalation of rents and difficulties to keep up with housing costs, thus highlighting the need for interrelated land use planning and housing policies in this city to meet its housing needs.

2.3.3. Housing Market Theory

Housing Market Theory is a tool to understand the nature of housing as a consumption good and an investment asset, and how different economic, social and institutional factors affect housing prices, supply and housing rental affordability. Housing Market Theory takes more into account the complexity of the housing market beyond just supply and demand including aspects such as expectations, market imperfections, investment motives, and the role of government interventions (Cameron & Shah, 2021).

Housing markets in urban settings are influenced by the dual nature of housing: as a shelter for households, but also as an asset for investors for which financial returns are expected. This duplicity has an impact on the pricing, allocation, and availability of housing units. For instance, in Addis Ababa, housing development is frequently promoted as an investment opportunity for higher income groups, potentially decreasing the supply of affordable housing rental to lower and middle income groups (Fikadu & Melaku, 2023).

One of the concepts behind Housing Market Theory is that market participants determine the price and rents for housing products based on their expectations for market conditions in the future, as well as their current supply and demand. Even before buildings are built, speculation, expected urban growth, and infrastructure planning expectations can create a market demand for

land and housing that pushes up land and housing values (Nguyen et al., 2023). Such investment behavior results in soaring rents in locations around new transport corridors or around business districts, as in Addis Ababa.

Another theme of Housing Market Theory is the influence of institutional and regulatory influences on market outcomes. However, housing markets do not function perfectly as markets, and government policies, land-use restrictions, availability of mortgage loans, and rent control regulations can have a significant impact on both supply and affordability and investment in the housing market (Alemu & Bekele, 2024). Housing supply responsiveness can be constrained by regulation in Ethiopia – for example, by the leasehold system for land use – and this can lead to increases in the prices of rental housing in both formal and informal markets.

The correlation between income and demand for housing is also a key factor. Households with greater income can bid for more expensive housing units and consequently push up the prices of all housing units. In contrast, low-income households could only afford to live in lower quality or on the outskirts of housing, further deepening the spatial inequities in the availability of rental housing. In line with recent research, the income gap in urban areas of Addis Ababa is strongly related to unequal access to rental housing (Tekalign, 2021).

In addition, the idea of market segmentation is introduced into Housing Market Theory, as housing is not a homogeneous product, but rather a set of distinct and different products. Market segmentation can result in differences in the impact of increased supply. For instance, building new luxury condos can boost the supply of housing but can't necessarily lower rents for low-income families, unless the new units are affordable (Gulyani & Bassett, 2019).

Last but not least, the theory highlights the role of macroeconomic conditions, like GDP growth, interest rates and inflation, in housing markets. Higher inflation also increases the cost of construction, decreases the purchasing power of households and impacts on the supply of new units and rental affordability (World Bank, 2020). The interdependency of macro-economic conditions and housing market dynamics can be seen in the case of economic instability and changing construction costs in Addis Ababa, which have been a major constraint on providing affordable housing.

Finally, Housing Market Theory is a complete theory that brings economics, investment, institutions and market imperfections together to make sense of the urban housing market. The theory seems to be particularly relevant for Addis Ababa, where the more houses are built, the

more they are available, but the less they are affordable to low- and middle-income households, emphasizing the importance of a coordinated policy approach that directly tackles the issue of housing affordability.

2.4. Empirical Literature Review

The empirical evidence of the effect of urban housing supply on rental affordability demonstrates the intricacies of supply and demand, policy and socioeconomic factors. This review aims at bringing together recent empirical evidence relevant for developing cities, focusing on the case of sub-Saharan Africa and Ethiopia.

Urban Housing Supply and Rental Affordability

There are several studies that show a significant relationship between housing supply and affordability of rentals. As a general rule, the more houses that are built, the lower the rent prices will be, which would support economic theory. Gulyani and Bassett (2019), for instance, examined the housing markets of cities in Africa and determined that the scarcity of housing in relation to urban growth causes rents in the urban area to be high, and disproportionately so to the low and middle income groups. They focused on the study that the supply of new units is not enough, but the kind of new units and their cost are important.

In Ethiopia, Tekalign (2021) studied the rent growth in Addis Ababa, and concluded that the areas with a higher density of new housing projects had relatively low rent growth rates than areas with low supply. The study revealed, however, that affordability issues also remained a problem for lower-income communities, indicating that simply increasing renter supply may be insufficient to reduce affordability pressures. Likewise, Fikadu and Melaku (2023) noted that private sector housing development is generally geared towards the high income groups, and consequently fails to address the demand for affordable housing, even in regions with a growing housing supply.

Spatial Variation and Infrastructure Impact

Empirical research also highlights spatial variations in housing provision and the cost of renting residential units. In Addis Ababa, Alemu and Bekele (2024) reported that the sub-cities located in the vicinity of economic centers and with good infrastructure showed higher housing investment and rental values while the peripheral sub-cities, despite the lower housing rental value, showed lower levels of access to transportation and public services. The spatial inequalities suggest that, after housing supply, the location of housing and access to

infrastructure also affect rental affordability, in accordance with Urban Land Use Theory. Ayele, Desta, and Mekonnen (2023) find the same results in their analysis of urban transport upgrading and its impact on housing markets in Addis Ababa. They found that enhanced transport corridors boosted the value of land and housing along the corridor, suggesting that the accessibility of the corridor is closely linked to land value and housing affordability. This highlights the need for coordination of infrastructure planning and housing supply interventions.

Programs and interventions in policy.

The study of government programs to enhance rental affordability has focused on the role of housing programs in the government. The Integrated Housing Development Program (IHDP) in Ethiopia has tried to deliver affordable housing through condominium development but with mixed results. The program had the effect of adding housing units, but it fell short of its expected impact on housing affordability to lower income and middle income groups due to various factors, such as delays in the policymaking and implementation process, high construction costs, and weak targeting (World Bank, 2020). Fekadu and Mulugeta (2024) also noted constraints on the program's impact in the rental market due to coordination issues among government agencies, private developers, and financial institutions.

Market and macro-economic factors.

Empirical studies in recent years also suggest a correlation between macroeconomic factors and housing supply and rental affordability. In a study of the developing cities in Asia and Africa, Nguyen, Tran, and Hoang (2023) found that inflation, currency exchanges and increasing construction costs beget a decrease in the supply of housing, which, in turn, drives up rental prices.

Economic turbulence in Addis Ababa has also influenced the construction sector, even as new housing developments are under way, and rents have been climbing.However, macroeconomic instability has also had an impact on construction activity in Addis Ababa, which has led to an increase in rents despite the construction of new housing projects (Gebre & Woldemichael, 2025).

Furthermore, empirical research on market segmentation points out that the supply of housing to higher income groups is not necessarily filtering down to make the housing more affordable to low income tenants. Both Mankiw (2014) and Gulyani and Bassett (2019) highlighted the need

for policy action to ensure that higher supply will make food more affordable for all income levels.

2.5. Research Gap

Although a lot of research has been conducted on urban housing markets and urban rental affordability, there is still a lack of understanding regarding the effect of urban housing supply specifically in Addis Ababa on urban rental affordability. A number of existing studies provide helpful information about trends in housing supply, dynamics in rental prices and government policies, but some limitations remain.

First, many studies tend to examine either housing supply or the affordability of housing, but not both at the same time, in a spatially explicit context. For instance, Tekalign (2021) analyzed the rental characteristics of different areas in Addis Ababa sub-cities, with a specific focus on rent prices; however, he failed to comprehensively explain the effect of housing supply variations on the differences in rent prices. Likewise, Fikadu and Melaku (2023) examined private sector housing investments but did not pay much attention to their effects on the affordability of rental housing for low and middle income households.

Second, the importance of housing supply variation and how this affects the affordability of housing is under-studied. Empirical research seldom includes the spatial aspects of location, infrastructure and accessibility in its quantitative analyses of rental affordability while Urban Land Use Theory focuses on these aspects. There is recent evidence showing that proximity to transport corridors and/or economic centers strongly influences rents (Ayele, Desta, & Mekonnen, 2023; Gebre & Woldemichael, 2025) but there is limited research that links the spatial dynamics to housing supply and affordability.

Third, previous research typically ignores the joint effect of government programs, the private sector housing supply and macroeconomic variables. Although the introduction of programmes like Ethiopia's Integrated Housing Development Program (IHDP) has been an effort to increase housing supply, their impact on more affordable rentals is not yet fully clear, as they experience bureaucratic delays, escalating costs, and are poorly targeted at low-income households (World Bank, 2020; Fekadu & Mulugeta, 2024). Moreover, macroeconomic conditions like inflation and construction costs, that directly influence responsiveness to supply of housing and the rental price, are often not included in housing affordability analysis.

Fourth, most of the previous studies use macro data or descriptive analysis, giving limited insights into the causal relationship between the supply of housing and rental affordability. Few empirical studies that integrate quantitative and qualitative approaches to understand the socioeconomic, spatial and policy aspects influencing rents in Addis Ababa exist. Finally, few studies provide policy recommendations based on empirical evidence to help guide both the government and private actors to foster more affordable housing for low- and middle-income populations. Current research focuses on problems, and not many have attempted to systematically assess the effectiveness or sustainability of the interventions in the local context.

2.6. Summary of Literature Review

Urban housing supply and rental affordability is a complex issue as revealed in the literature reviewed in this study. Theory of supply and demand (Marshall, 1890; Mankiw, 2014) and empirical studies consistently demonstrate that housing supply is an important factor in determining rental prices, with the theory predicting an inverse relationship between housing supply and rental prices. With a higher supply of housing, rents may decline, and housing may become more affordable, but this is dependent on the type, location, and accessibility of the housing units.

The limited supply of land coupled with high construction costs and regulatory and bureaucratic issues are key constraints on urban housing supply in Addis Ababa (Fekadu & Mulugeta, 2024; Gebre & Woldemichael, 2025).

Although private and public sector projects have introduced additional housing, the new housing has been mainly focused on high income groups with low and middle income groups struggling to access affordable rental homes (Fikadu & Melaku, 2023; Tekalign, 2021). These challenges are compounded by the spatial inequities, where the cost of renting housing is different across sub-cities, and is influenced by jobs, infrastructure, and public services available (Ayele, Desta, & Mekonnen, 2023; UN-Habitat, 2022).

Empirical studies have shown that, government interventions can impact rental affordability, but that interventions such as Ethiopia's Integrated Housing Development Program (IHDP) are limited in their effectiveness because of coordination problems, poor targeting, and bureaucratic delays (World Bank, 2020; Fekadu & Mulugeta, 2024). Furthermore, the responsiveness of housing supply and housing rent prices are greatly influenced by macroeconomic factors

including inflation rate, construction costs, and urban growth patterns (Nguyen, Tran, & Hoang, 2023; Gebre & Woldemichael, 2025).

Market dynamics and spatial planning are also important as per literature. Two theories that are useful in the understanding of the effects of location, land allocation, accessibility, and institutional factors on housing market theory and urban land use theory are used. The housing market is segmented, and a rise in the supply of housing can help to make it more affordable for most people, but not for everyone, unless the new housing is affordable to low and middle-income households (Gulyani & Bassett, 2019; Fikadu & Melaku, 2023).

Even with these findings, there are still elements of research that are missing from current studies. Most previous research is conducted on either the supply-side or the affordability aspects, with only limited spatial data, socio-economic indicators, government interventions, and macroeconomic data included in one of these analyses. No research has been conducted to examine rental affordability in Addis Ababa using both quantitative and qualitative approaches that integrate the multidimensional factors that can impact it.

This study aims to fill these gaps by offering an in-depth examination of the impact of urban housing supply on rent affordability while considering the spatial variation, policy interventions, socioeconomic factors and macroeconomic environment. The results are likely to play a role in devising strategies that will help enhance access to affordable rental housing for low and middle-income urban dwellers in Addis Ababa.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Description of the Study Area

The study was carried out in the capital of Ethiopia, Addis Ababa, the country's political and economic centre. Housing is in high demand in Addis Ababa as the city has grown rapidly over the last few years, both from rural–urban migration and natural population growth (World Bank, 2020). The city is composed of multiple sub-cities; each has different levels of infrastructure, housing provision and rental market conditions. Though the government has taken steps like the Integrated Housing Development Program (IHDP) to address the housing shortage, it still exists and is expensive (UN-Habitat, 2018). Addis Ababa's unique features make it an appropriate case to examine how housing supply affects housing affordability.

3.2. Research Design

This study would use a mixed method of research design which would incorporate both quantitative and qualitative methods. Mixed methods research, in John W. Creswell's (2014) view, is the use of numerical data and contextual information to gain a full picture of research problems. The study took an explanatory research design which is suitable for the study of causal relationship between the variables (Kothari, 2004).

The quantitative results were utilized for the analysis of the relationship between urban housing supply and rental affordability, whereas the qualitative results were employed to investigate the underlying institutional and socioeconomic factors relating to the above-mentioned relationship.

3.3. Research Population and Sampling Technique

Rental households and key stakeholders in Addis Ababa are the targeted population of this study. Rental households are added because they are affected directly by the issue of rental affordability and they can provide information about the household income, rents paid, housing type, and housing quality. Key stakeholders such as housing officials, planners and real estate agents are chosen to give expert input on housing policy, market trends and how well government and private housing programs are working. Two of these groups will be included to provide a comprehensive picture of what influences renting affordability in the city.

The case study is chosen so that Yeka Sub-City has variations in housing supply and housing affordability. Yeka has a great diversity of housing types, condominiums, private rentals and informal settlements. It's an area with a variety of middle and lower income families and has had

major urban development in recent years, representative of sub-cities with high housing supply. The region has a relatively robust infrastructure, convenient access to the central business district and access to public services, making it a suitable place to examine how housing supply affects rent affordability.

Stratified random sampling method was used in Yeka to ensure the representation of each housing type and household category. The sub-city population was stratified according to housing type including condominiums, private rentals and informal settlements. Random selection of households within each stratum to obtain a sample that is free of sampling bias and is therefore more reliable.

The total population of the rental households and the selected margin of error were used to determine the sample size for the rental households, based on a formula developed by Taro Yamane (1967). In the case of Yeka Sub City, where the total number of rental households is 200,000, the formula indicates the sample size to be about 400 households with a 5% margin of error. Proportional sample allocation was used to split the sample across the strata, according to the number of households within each of the housing types.

$$n = \frac{N}{1 + N(e^2)}$$

$$n = \frac{200{,}000}{1 + 200{,}000(0.05^2)}$$

n= 400

Where

n = sample size

N = total population

e = sample error

Key informants were purposively selected because of their expertise and involvement in housing policy and development in Yeka Sub-City and included housing officials, urban planners and real estate agents. Their qualitative findings were used to complement the household survey findings and to gain further insight into the institutional, socioeconomic and policy issues that influence rental affordability. The study uses stratified random sampling for the households and

purposive sampling for the key informants and thereby high representativeness, reliability and precision of the study is ensured and the diversity of the housing conditions in Yeka Sub-City is captured.

Housing Type	% of households	Number of respondents (395 × %)
Condominium	39.5%	158
Private rental	34.5%	138
Informal settlement	26%	104
Total	100%	400

3.4. Source of Data and Data Collection Instruments

The study was used both primary and secondary data sources. Structured questionnaires were used to collect primary data from the rental households to get information on rental prices, income and housing conditions. Key informant interviews with stakeholders were also held to obtain qualitative data.

Secondary data was gathered from documents and publications from various institutions including World Bank (2020), UN-Habitat (2018), Ethiopian Central Statistical Agency. These sources are reliable sources of information regarding housing supply, urbanisation trends and policy frameworks.

3.5. Method of Data Analysis

Descriptive and inferential statistics were used to analyse the collected data. Key variables were summarized using descriptive statistics such as means, percentages and standard deviations (Gujarati, 2004).

The analysis of the relationship between housing supply and its affordability was conducted using inferential analysis, especially multiple regression analysis. In economics, regression techniques are frequently employed to evaluate the association of two variables, one called the dependent variable and the other the independent (explanatory) variable (Gujarati, 2004). Qualitative data analysis involved thematic analysis, which involved categorizing responses of the interviews into themes to complement the quantitative results (Creswell, 2014).

3.6. Validity and Reliability

Validity is how well the research instruments measure what they are designed to measure, and reliability is the consistency of the measurement (William M. K. Trochim 2006). The questionnaire was pre-tested with a pilot study and reviewed by experts in order to ensure its validity. Cronbach's alpha was used to test the reliability of the instrument with regard to internal

consistency among the variables (George & Mallery, 2003). The reliability coefficient of .7 or above was accepted.

3.7. Model Specification

This study aims at specifying an econometric model that can be used to investigate the effect of urban housing supply on the rental affordability of Addis Ababa City Administration. The analysis is based on the urban housing market theory, which suggests that the rent and housing affordability depends on urban housing supply conditions, demand-side factors, structural and location features.

The empirical model is specified as a multiple linear regression model:

$RA_i = \beta 0 + \beta_1 HS_i + \beta_2 INC_i + \beta_3 HHi + \beta_4 LOCi + \beta_5 Qi + \varepsilon i$

Where:

RA_i: Rental affordability (dependent variable), measured using rent-to-income ratio or affordability index

HS_i: Housing supply, representing availability of housing units (key explanatory variable)

INC_i: Household income, indicating purchasing power

HHi: Household characteristics such as household size and composition

$LOCi$: Location characteristics, including access to infrastructure, distance to the city center, and neighborhood attributes

Qi: Housing quality indicators such as dwelling condition, size, and access to basic services

: Error term capturing unobserved factors

3.8. Ethical Consideration

The study was following ethical research standards throughout the research process. Participation was voluntary, and informed consent obtained from all respondents (Creswell, 2014). Confidentiality and anonymity was strictly maintained.

Additionally, all sources of information was properly cited to avoid plagiarism, and the study was respect cultural and social norms during data collection.

CHAPTER FOUR

3. DATA ANALYSIS, RESULTS AND INTERPRETATION

Introduction

The chapter presents and discusses the result of the study on the impact of urban housing supply on rental affordability in ADDIS ABABA (City Administration). It incorporates analysis and interpretation of the data received from respondents and key informants. Descriptive statistics, correlation analysis and multiple regression analysis results are presented, followed by a discussion of the results in relation to the objectives of the study and the literature. The data gathered were carefully checked for suitability of statistical analysis prior to analysis. A total of 400 questionnaires were sent to the selected respondents, 395 out of which were completed and returned, giving a response rate of 98.75%. Questionnaires were checked for completion, consistency, and accuracy of the returned surveys. In addition, preliminary data screening was conducted to deal with missing values and to determine if the data were suitable for subsequent statistical analysis based on the basic data assumptions.

4.1. Demographic Background of Respondents

4.1.1. Gender Distribution of Respondents

For the study, 395 respondents were selected from Addis Ababa City Administration's rental households. In this group 227 participants were male (57.47%) and 168 female (42.53%).

Table 4.1. Gender

Gender	Frequency	Percent
Male	227	57.47%
Female	168	42.53%
Total	**395**	**100%**

Source: STATA output 2026

The descriptive analysis based on gender of the participants shows that 227 participants (57.47%) were male and 168 (42.53%) were female. This means that there was a higher percentage of males than females. The results indicate that the men are more proactive in the decision making process in relation to rentals and housing in the study area. The participation of the female group, however, was also significant, and this shows that the conditions of the housing supply and rental affordability are having a significant impact on both genders in Addis

Ababa City Administration. The male and female participants increase the representativeness and reliability of the study.

4.1.2. Age Distribution of Respondents

Table 4.2.Age

Age Category	Frequency	Percent
Below 25	24	6.08%
25–34	81	20.51%
35–44	135	34.18%
45–54	124	31.39%
55+	31	7.85%
Total	**395**	**100%**

Source: STATA output 2026

The age distribution shows that the bulk of the surveyors are in the economically-active age group. Of the total number of respondents being 395, 135 (34.18%) were in the age group of 35-44 years and 124 (31.39%) were in the age group of 45-54 years. Surveyed who are in the age group of 25-34 years were 81 (20.51%). However, surveyors below 25 years old and above 55 years old made up 24 (6.08%) and 31 (7.85%) respectively. From the analysis, it can be concluded that most of the respondents belong to the middle-age category.

4.1.3. Marital Status Distribution of Respondents

TABLE 4.3 Marital Status

Marital Status	Frequency	Percent
Single	121	30.63%
Married	99	25.06%
Divorced	106	26.84%
Widowed	69	17.47%
Total	**395**	**100%**

Source: STATA output 2026

The results showed that the single group was the major part of the sample with 121 respondents (30.63%). This means that many of the people seeking rental housing in Addis Ababa are unmarried, which may include students, young professionals, migrants, and urban workers of low to middle income seeking independent living. There were 106 respondents who were divorced, or 26.84%, and 99 who were married, or 25.06%. Married respondents were also fairly high, indicating that there is a significant share of family households in the rental market.

4.1.4. Educational Level of Respondents

TABLE 4.4. EDUCATIONAL LEVEL

Educational Level	Frequency	Percent
Primary	19	4.81%
Secondary	34	8.61%
Diploma	37	9.37%
Degree	132	33.42%
Postgraduate	173	43.80%
Total	**395**	**100%**

Source: STATA output 2026

The education level analysis showed that a large percentage of the participants had high educational status. Total N = 395, 173 of them (43.80%) had a post-graduate degree; 132 of them (33.42%) had a bachelor's degree. Of the individuals with secondary and primary education, there were 34 (8.61%) and 19 (4.81%), respectively. The number of those who obtained their diplomas was 37 (9.37%) and for those who acquired their secondary and primary education was 34 (8.61%) and 19 (4.81%), respectively. From the results, it can be inferred that the majority of the respondents in the survey had higher education, which is parallel with the high awareness level of the housing market dynamics and housing unaffordability problems in the Addis Ababa City Administration. In addition, the results suggest that the problems of affordability of urban housing have also affected the families with some good education, due to the rising prices of renting and the lack of housing in the city.

4.1.5. Employment Status of Respondents

TABLE 4.5. EMPLOYMENT STATUS

Employment Status	Frequency	Percent
Employed	45	11.39%
Self-employed	48	12.15%
Unemployed	69	17.47%
Student	115	29.11%
Homemaker	118	29.87%
Total	**395**	**100%**

Source: STATA output 2026

The study of employment status indicates that majority of the respondents in the study area were homemakers and students. The total number of respondents was 395, of whom 118 (29.87%) were homemakers and 115 (29.11%) were students. There were 69 respondents (17.47%) who were unemployed, 48 (12.15%) self-employed, and 45 (11.39%) formally employed. The findings show that significant portion of respondents belong to economically dependent or

financially precarious group. This implies that high rentals and low availability of urban housing in the Addis Ababa City Administration may present major challenge in renting for the households that have limited and irregular income sources, which consequently reduces the affordability of rents.

4.2.Descriptive Statistics of Respondents' Socioeconomic Characteristics

Table 4.6. Socioeconomic Characteristics

Variable	Obs	Mean	Std. Dev.	Min	Max
Household Size	395	2.527	1.140	1	4
Monthly Household Income	395	4.025	1.175	1	5
Type of Housing	395	3.997	1.210	1	5
Monthly Rent	395	4.157	1.160	1	5
Length of Stay	395	3.992	1.227	1	5

Source: STATA output 2026

The data shows that the average value of the household size was 2.527 with standard deviation 1.140, the minimum size was 1 and the maximum size was 4. The observation suggests that the size of the households in the study is about 2-3 members per household on average. The standard deviation is relatively small, indicating that there was some variation in family size among the respondents. Household size is a key indicator of housing demand because larger households normally require more space in which to live and more housing costs. The recent study on housing in an urbanizing world finds that the increasing household size is a major factor behind the rising demands and affordability pressures in fast-growing cities (UN-Habitat, 2022). Household monthly income showed a mean value of 4.025 and a standard deviation of 1.175 indicating minimum and maximum values of 1 and 5 respectively. This discovery suggests that the people responding to the surveys are primarily in the middle income bracket, but there are income differences within households. The relative high standard deviation is due to the differences in income among the respondents. Household income is a key determinant of housing affordability because it determines whether or not households have the ability to pay rent and afford housing. The World Bank (2022) states income inequality is still a key driver of housing affordability issues in developing countries at the urban level.

The descriptive results also show that the variable housing type has a mean of 3.997 and a standard deviation of 1.210. This shows that the respondents live in various types of houses, including private rental houses, condominiums, kebele houses, and informal settlements. The relatively high mean value indicates that there may be a large share of people living in formal or

relatively better houses. The variance (the standard deviation) does, however, show differences in the quality and conditions of housing between houses and households. Urban housing studies from recent times have highlighted the significant impact of housing type on rental affordability, housing quality and access to urban amenities (Adewale et al. 2023).

Monthly rent had the greatest mean value (4.157), and standard deviation (1.160), ranging from 1 to 5. The discovery indicates that a large number of respondents have relatively high rent prices in the Addis Ababa City Administration. The result shows the growing rental pressure experienced by urban households, which is due to the accelerated pace of urbanization, housing scarcity and rising housing demand. Rental prices are also one of the main problems for urban housing in African cities, as the supply of housing is not always in line with the growth of the population and migration pressures (UN-Habitat, 2020).

Lastly, the length of stay had a mean of 3.992 with a standard deviation of 1.227. The result indicates that generally respondents have lived in their current dwellings for a moderate period of time but there is a variation within households. Longer duration of stay can have a significant impact on respondents' views on housing affordability, neighbourhood quality and housing satisfaction, as those who have lived in the area longer are more likely to be aware of rental price changes and housing market conditions. In general, the descriptive statistics reveal that socio-economic and housing conditions of the respondents of the Addis Ababa City Administration are different, and these conditions are important influences on the outcome of renting and housing demand patterns.

4.3. Descriptive Statistics of predictor and predicted variables

Table 4.7. Housing Supply (HS_i)

Variable	Mean	Std. Error	95% Confidence Interval (Lower)	95% Confidence Interval (Upper)
HS1	2.8861	0.0518	2.7842	2.9879
HS2	2.8987	0.0518	2.7969	3.0006
HS3	2.9342	0.0512	2.8335	3.0349
HS4	2.8886	0.0523	2.7859	2.9914
HS5	2.9013	0.0506	2.8017	3.0008

Source: STATA output 2026

The first statement, “There is adequate housing supply in Addis Ababa” received a moderate mean score, suggesting that a significant portion of participants had mixed feelings or disagreed with the adequacy of housing supply to meet the growing demand in Addis Ababa. The observation highlights the continuous housing shortage that exists in Addis Ababa which is

attributed to the rapid urbanization, population growth and movement of migrants from rural areas. Analysis of recent data by UN-Habitat (2022) shows that many African cities continue to experience chronic housing deficits due to the rate of urban population growth clearly outweighing the pace of housing development, especially in terms of formal housing.

The next statement, new housing construction has increased in recent years, also had a moderate level of consensus of participants. This means that the respondents concede some improvement in the efforts that have been undertaken to build houses in Addis Ababa, especially in condominium projects and in private residential construction projects. However, the moderate responses do indicate that the increase in housing construction is still insufficient in comparison with the growing housing demand. Recent studies done on the housing market in Ethiopia confirm that urban housing deficits, in spite of the rapid housing development in recent years, are not being met satisfactorily (Gebremeskel & Woldie, 2021).

Moderate endorsement was expressed for the third statement, "Government Housing Programs have enhanced housing availability. This means that governmental housing policies, especially condominium housing policies have positively impacted the improvement of housing accessibility in Addis Ababa. But many homes still struggle with affordability due to high home prices, long wait times, and a lack of homes. Public housing programs in developing countries often improve access to housing, but do not necessarily address affordability issues for the economically disadvantaged urban poor well (World Bank 2022).

The fourth statement, "Private Sector involvement has led to more housing supply," was also a statement with moderate level of agreement by respondents. The discovery suggests that the private real estate developers and investors have contributed in housing development in Addis Ababa particularly in the middle and high income residential sectors. Unfortunately, private housing projects tend to be more expensive to build and rent in, making them more difficult for low income families to afford. A recent study of urban housing, focusing on investigations from recent years, suggests that the housing developed in the private sector sector often focuses more on the market of housing for profit-making than on the provision of affordable housing (Khan et al., 2021).

The concluding, “Housing shortage is a serious problem in Addis Ababa,” likely elicited relatively stronger agreement in comparison to the other assertions. This result indicates that the people are aware that housing shortage is one of the major urban problems faced in the city,

which affects the accessibility of rental housing. Housing pressures in Addis Ababa have increased due to fast urban population growth, limited land availability and the lack of access to housing that is economically affordable. Housing shortage remains an important urban issue in many developing cities and is a factor that drives up housing costs, overcrowding and reduced affordability for the poor and vulnerable, according to recent findings by UN-Habitat (2020).

Table 4.8. Household Income ($HHIN_i$)

Variable	Mean	Std. Error	95% Confidence Interval (Lower)	95% Confidence Interval (Upper)
HHIN1	2.9544	0.0523	2.8517	3.0572
HHIN2	2.9139	0.0504	2.8149	3.0130
HHIN3	2.9190	0.0505	2.8196	3.0183
HHIN4	2.9114	0.0512	2.8107	3.0120
HHIN5	2.9114	0.0494	2.8143	3.0085

Source: STATA output 2026

The first one, "My monthly income is sufficient enough to meet my housing needs," had the highest mean of 2.954430 with the standard error for the mean being 0.0522685. This is a moderate score on the consensus measure of participants about whether they earn enough each month to cover their housing costs. Although some families may consider their income to be fairly sufficient, the median income is moderate, suggesting that a large portion of the respondents are still experiencing financial stress regarding housing expenses. The hikes in rent and cost of living in rapidly urbanizing cities have consistently shown that households' ability to meet their housing needs adequately is often undermined (Adewale et al., 2023).

The second variable, “My income level allows me to afford better housing,” had a mean score of 2.913924 with a standard error of 0.0503840. The fact that this observation is reported suggests that the participants have a moderate belief in the importance of income level in the determination of access to better housing conditions. The results support the idea that higher income levels are associated with a greater ability to access better quality housing with better infrastructure and amenities. Income inequality has a significant effect on the affordability of housing as reflected in the Organisation for Economic Co-operation and Development (2021) which states that those with higher incomes have better access to quality housing, while those with lower incomes are often excluded from formal housing markets.

Similarly, item 3 "My income has increased in the last few years" yielded a mean of 2.918987 and a standard error of 0.0505326. This indicates moderately positive views toward changes in

household income over the recent period. It can also be interpreted that some households are indeed realizing increased household income, but inflation and the increase in rent are continuing to outweigh increased household income. Recent research in the Ethiopian context found that low-income urban households' financial situation deteriorated due to increased rent, housing price, and limited wage growth due to rising inflation (Gebremeskel & Woldie, 2021).

Item 4 "I am able to save from my income after payment of rent" recorded mean value of 2.911392 and a standard error of 0.0511952. The item suggests that there is difficulty saving income after rent payment for most households. This reflects the huge proportion of rental expenditure faced by urban households of Addis Ababa. A sizable number of urban household expenditure go for rent payment. UN-Habitat (2022) found that large housing cost in cities of developing countries limit household's saving capacity.

The last item "My income determines the type of housing I live in" showed a mean value of 2.911392 and a standard error of 0.0494069. This suggests moderately positive agreement among respondents that household income level impacts the type of dwelling. This implies that income is one of the primary determinants for housing choice and the type of house used by households. The findings support recent literature in housing affordability that underscores income adequacy as the core determinant of accessing a suitable housing (World Bank, 2022).

Table 4.9. Household Characteristics (HHC_i)

Variable	Obs	Mean	Std. Err.	95% Confidence Interval
HHC1	395	2.901	0.051	2.801 – 3.002
HHC2	395	2.916	0.049	2.820 – 3.013
HHC3	395	2.924	0.050	2.825 – 3.023
HHC4	395	2.881	0.051	2.781 – 2.981
HHC5	395	2.878	0.051	2.778 – 2.979

Source: STATA output 2026

The household characteristics variable was operationalized with five Likert-scale items designed to explain the extent to which household size, family structure, needs for housing, and co-residence arrangement affect rental affordability in Addis Ababa City Administration. In relation to the survey administered to respondents, the statements for this variable are rated on a 5-point Likert scale from Strongly Agree (SA) to Strongly Disagree (SD). As presented below, the descriptive statistics show that each household characteristics indicator obtained values near 3, indicating moderate agreement from the respondents on the impact of the demographic situation of the household on housing affordability. Recent studies of urban housing suggest that

household characteristics are significant in determining housing demand, housing expenditures and rental affordability in developing urban areas where rapid urbanization occurs (Adewale et al., 2023).

"My household size affects my housing expenditures": A mean value of 2.901266 (Std. Err. 0.0511482) indicated moderate agreement that size of the household is positively associated with housing expenses. Generally, as the number of people increase in the household there is a need for space (bigger house, more rooms) and energy consumption increase, leading to higher expenditure of housing. The impact of an increasing household size, in general, aggravates housing market pressure in urban areas since they would prefer a larger house and demand for such kind of housing would therefore increase and hence the rent would escalate (UN-Habitat, 2022).

"Larger household size increases rental costs": A mean value of 2.916456 (Std. Err. 0.0491686) also indicates moderate agreement on the contribution of family size to rent payment. The statistical result reveals the actual condition of rental house ownership and acquisition where in order to accommodate many members in a household, a bigger house would be desired and thus demand for a bigger house with higher cost will arise. Recent literature confirms that, in determining rental affordability, demographic aspects such as household size and dependency ratios significantly influence household rent expenditures in urban areas due to increasing proportion of expenditure that allocated to the housing services (Khan et al., 2021).

"My family composition determines the type of house I would want": The result obtained mean value of 2.924051 (Std. Err. 0.0504253), indicating moderate agreement that the type of housing consumed is related to family structure/composition. In such condition, those with dependent children and/or elderly family members may require special facilities such as adequate room space and safety features to satisfy certain household needs and demands. Generally, household demography is an important driver of housing consumption decisions (World Bank, 2022).

"I would need bigger housing size for the number of my family members": This obtained mean value of 2.881013 (Std. Err. 0.0507862) also indicates that a lot of respondents perceived household size as a determinant for desiring a bigger dwelling unit. Nevertheless, moderate mean values can be interpreted as some households may not be in the position to have the dwelling of the size that their members would desire to due to financial constraints and limited available housing. It is well known that overcrowding can affect the living standard of those lower income

households who cannot afford decent dwelling in the city since they have no alternative except taking house with larger family size (Ezennia & Hoskara, 2019).

"Sharing a house reduces the rent burden I bear": This statement had a mean of 2.878481 (Std. Err. 0.0510864), again indicating moderate agreement that co-residence may play a significant role in reducing the rent payment burden that individuals carry. Cohabitation can be considered as a means for affordable housing and housing services delivery where low income urban residents who lack economic power are often involved in such kind of housing arrangement in response to rapidly escalating housing costs and insufficient provision of affordable rental housing supply (UN-Habitat, 2020).

Generally, the descriptive statistics indicate that household characteristics play a vital role in defining rental affordability conditions in Addis Ababa City Administration as well. Household size, family structure, dwelling size needs, and co-residence arrangement all appear to play important roles in influencing housing demand, household rent expenditure and housing consumption choices, particularly in rapidly developing cities characterized by burgeoning demand versus a meager supply of adequate, affordable housing.

Table 4.10. Location Characteristics (LOC_i)

Variable	Obs	Mean	Std. Err.	95% Confidence Interval
LOC1	395	2.911	0.049	2.814 – 3.009
LOC2	395	2.914	0.050	2.816 – 3.012
LOC3	395	2.924	0.053	2.821 – 3.028
LOC4	395	2.884	0.050	2.786 – 2.981
LOC5	395	2.952	0.052	2.850 – 3.054

Source: STATA output 2026

The location characteristics variable was captured by five likert-scale items that was intended to measure how residential location, infrastructure access, transport costs, proximity to the work place and service availability affect rental prices in Addis Ababa City Administration. The respondents rated each statement on a five-point Likert scale ranging from Strongly Agree (SA) to Strongly Disagree (SD). From the descriptive statistics, all the location characteristic indicators showed mean values close to 3 which depicts agreement among respondents that location matters a lot in deciding on rent levels and the kind of housing the dwellers wish to occupy. Recent urban housing researches state that location is still one of the biggest determinant of housing prices and rentability, mainly because the provision of infrastructure and urban service directly impact on housing demand (Adewale et al., 2023).

The first item, "houses located close to the city center are more expensive," produced a mean value of 2.911392 with standard error of 0.0494069. This value indicates moderate agreement that apartments/houses that are located at central areas are more expensive than the ones found in peripheral locations. This result can be justified by the economic concept that houses close to the center are in demand due to access to centers of work, commerce and other services thus driving up the rental costs. According to recent literature on housing in urban areas, the prices of houses situated near the central business districts is comparatively more expensive due to the demand for housing in the urban center that ensures access to urban facilities (World Bank, 2022).

The second item, "access to infrastructure affects rent level of housing units," scored a mean value of 2.913924 and a standard error of 0.0497422. This value implies a moderate agreement that the presence of infrastructure facilities such as roads, electricity supply, water supply, health services and schools increase the rent level of housing units. The results confirm with recent studies that show an increase in the housing value as infrastructure provision is improved due to increased demand from consumers who are willing to pay more for better service provision in the city (UN-Habitat, 2022).

Also, the third item, "I want to be closer to my working place though it means paying more rent," got a mean value of 2.924051 with standard error of 0.0526690. This shows a moderate agreement that, proximity to the work place is considered an important factor when selecting housing locations among urban dwellers and households living in the city, and they are more willing to pay a higher rent for shorter commuting trips. Research shows that households opt for accessibility in their search for housing that may result in increased spending on rent at central city locations where there are more employment opportunities than at peripheral areas with less infrastructure provision and services (Khan et al., 2021).

"Transportation costs affect the housing location choice" statement achieved a mean value of 2.883544 and a standard error of 0.0497144. This depicts a moderate agreement from the respondents that transportation costs play an important role in determining their housing choices, indicating that a balance is struck between lower rent costs at peripheral locations versus higher transportation costs when commuting to work and urban centers (Organisation for Economic Co-operation and Development, 2021).

The last item on location characteristics, "Living in areas with high provision of service is part of living quality," obtained the highest mean score of 2.951899 with a standard error of 0.0519544.

This suggests a moderate to strong level of agreement that provision of amenities such as sanitation, road networks, water supply, electricity, schools and health services are vital for human satisfaction and improvement in living quality. Indeed, recent urban housing literature highlight the critical role of urban amenities in influencing housing demand and value and the living quality of city residents in fast growing cities like Addis Ababa City Administration (Ezennia & Hoskara, 2019).

The descriptive analysis above demonstrates that the location characteristics have a significant effect on housing rent and choice of location for residential purposes in Addis Ababa City Administration. Specifically, proximity to the city center, access to infrastructure and services, proximity to the work place, and transportation costs affect rental prices and housing location preferences. These findings emphasize the importance of space and distribution of infrastructure and amenities in housing markets.

Table 4.11. Housing Quality (HQ_i)

Variable	Obs	Mean	Std. Err.	95% Confidence Interval
HQ1	395	3.228	0.033	3.162 – 3.293
HQ2	395	3.203	0.032	3.139 – 3.266
HQ3	395	3.241	0.034	3.174 – 3.307
HQ4	395	3.180	0.032	3.117 – 3.242
HQ5	395	3.157	0.034	3.091 – 3.223

Source: STATA output 2026

The descriptive results indicated that all housing quality items are above 3. This signifies the fact that all housing quality items had moderate to relatively strong level of agreement amongst the respondents than any other variable. This implies that quality of housing is an important aspect and it greatly affects the rent prices as well as affordability of housing in the city of Addis Ababa. A number of recent studies on urban housing argue that housing quality highly affects the rent price because people are ready to pay more for good houses and infrastructure services (Khan et al., 2021).

"Good quality houses are charged more for rent" obtained a mean score of 3.227848 and standard error of 0.0333884. It shows that there is relatively strong agreement amongst respondents that houses with good quality receive more for rent. The statement means that an improved quality of house entails higher rental prices. This can be understood in terms of economic theory that there is a positive relationship between price and quality of goods or

services and that a better quality product is sold at higher prices. As compared to poor quality of housing units, houses that consist better construction materials, better infrastructure and better sanitation receive higher prices from renters. In line with this, World Bank (2022) states that in the developing countries, there is a strong and positive relationship between the housing quality and rent price due to the willingness of households to accept a premium rent for having access to basic infrastructure services and suitable living environments.

"My house has reliable water and electricity access" received a mean score of 3.202532 and standard error of 0.0322433. This statement received moderately strong agreement from respondents in relation to the accessibility of the basic services. This implies that services like electricity and water access to their houses are among the factors that contribute to the quality of houses. It is worth to note that modern literature on urban housing reveals that quality of infrastructure is important because of its impact on tenant satisfaction and rental prices (UN-Habitat, 2022).

Likewise, "the condition of my house affects how much I pay for rent" obtained the highest mean score of 3.240506 and standard error of 0.0338336. The result shows that respondents are strongly in agreement that their housing conditions matter when paying for rent prices. This implies that apartments that have better structural quality and better living conditions are charged higher rents. The results are consistent with hedonic pricing theory and that good quality of housing is attributed with a higher rent price (Adewale et al., 2023).

"I am satisfied with the quality of my house" got a mean score of 3.179747 and a standard error of 0.0318866. This shows that people are moderately satisfied with their housing condition. The statement shows that some households are satisfied with the quality of their housing conditions and they believe that their housing quality is better than others. The moderate mean score is in line with the reality that access to adequate infrastructure and good quality houses can be a concern to the people living in urban areas and have a better satisfaction from their houses. According to recent literature that investigates on housing affordability, tenant satisfaction is determined by a wide range of factors such as infrastructure services, sanitation services, neighborhood environmental quality, physical condition of the house and safety (Ezennia & Hoskara, 2019).

"Improvement in the quality of my house can raise the amount of rent paid" received a mean score of 3.156962 and standard error of 0.0336543. This means that respondents are generally in

agreement that a house that has better quality can generate higher rent from tenant. In other words, people accept a rise in rent price for a better quality house. This shows the trade-off between housing affordability and quality; hence improvement in housing quality necessitates an increase in rent. According to UN-Habitat (2020), enhancing the quality of houses is important to the improvement of the living standards but has the negative effect of pushing low income population out of affordable and quality housing units because of the increased prices of such housing.

To conclude, based on the descriptive statistics, quality of housing is significant variable for affecting rent price in the city of Addis Ababa City Administration. Higher quality housing has the impact to raise the housing rent price. Therefore, enhancement of quality of housing among tenants of the city is important for better standard of living among others. However, in this context, efforts should also be made to bring down rent prices of quality houses so that low income populations can still afford quality housing.

Table 4.12. Rental Affordability (RA_i)

Variable	Obs	Mean	Std. Err.	95% Confidence Interval
RA1	395	2.914	0.052	2.812 – 3.015
RA2	395	2.924	0.048	2.830 – 3.018
RA3	395	2.932	0.051	2.832 – 3.031
RA4	395	2.937	0.051	2.837 – 3.036
RA5	395	2.911	0.051	2.811 – 3.011

Source: STATA output 2026

From the descriptive statistics presented, the five rental affordability measures have a relatively similar mean value that ranges close to 3, indicating a perception of moderate difficulty regarding housing affordability. Existing literature also indicates that descriptive analysis on the mean value is important in gauging households' perceptions on housing affordability constraints and conditions in highly urbanizing cities (Ezennia & Hoskara, 2019).

The first indicator, 'I spend a large part of my income on rent' had a mean value of 2.913924 with a standard error of 0.0516435. It indicates a moderate perception that a majority proportion of income allocated to paying rent. The result suggests growing burden among households on rental costs which can be attributed to the rapidly growing demands and prices of housing in Addis Ababa. Studies show that in developing nations, households allocate large shares of income on housing and the fact that the amount is so huge reduces the ability to afford basic amenities such

as food, healthcare and education services. World Bank (2022) indicates that urban households in developing countries are highly indebted when it comes to housing expenses.

The second item 'My rent has increased significantly over recent years' had a mean of 2.924051 and standard error of 0.0478089, indicating moderate perceptions on the increment of housing rental prices over the recent years in Addis Ababa. The finding agrees with the existing urban housing studies which identify rapid urbanization, limited housing supply, inflation and increased population as key contributors to the growing rents in African cities. UN-Habitat (2022) reports that continuously increasing demand without parallel growth in affordable housing is the main reason for spiraling rental costs and shrinking rental affordability among low-income households.

The third item 'Finding housing to afford in Addis Ababa is difficult' had a mean of 2.931646 and standard error of 0.0506435. This finding means that respondents perceived moderately that finding affordable housing in Addis Ababa is difficult. The response can be attributed to a considerable disparity between the supply and demand of rental housing in Addis Ababa. Studies on the Ethiopian urban housing market show that scarcity of affordable housing remains a problem, with high volumes of migrants entering Addis Ababa without increase in housing construction. Gebremeskel & Woldie (2021) shows that insufficient construction is a main issue facing Addis Ababa urban housing market and rental affordability constraints are aggravated by housing shortages and ever-increasing influx of population in the capital.

The fourth item 'I can afford to pay rent and meet all other living expenses' has the highest mean value of 2.936709 and standard error of 0.0506602. Although the mean value is moderate, this may imply that although housing affordability is a challenge for some of the respondents, some have income that is just sufficient for paying rent. Organization for Economic Co-operation and Development (2021) states that housing affordability analysis should include the assessment of income affordability, by measuring whether household income can cater for housing expenditure while not impacting other essential expenditures. OECD notes that a household is stressed financially if its housing expenditure represents too great a share of disposable income.

The fifth indicator of rental affordability is 'I feel the current housing that I am residing in is affordable' and it obtained a mean value of 2.911392 and standard error of 0.0508173. This suggests a perception of moderate housing affordability by respondents. The result indicates that whereas a fraction of the population in Addis Ababa perceives their dwelling to be affordable, it

is still a challenge to the larger populace as the increasing rental costs and insufficient housing supply continue to pressure the affordable housing. The result of descriptive analysis confirms that housing affordability remains a major issue within Addis Ababa City Administration, supporting recent studies by UN-Habitat (2020) where rental affordability problems in African cities due to high population growth, lack of housing supply among others remain a critical issue.

4.4. Correlation analysis

Table 4.13. Correlation Analysis

Variables	RA	HS	HHIN	HHC	LOC	HQ
RA	1.0000					
HS	0.8828	1.0000				
HHIN	0.8806	0.8876	1.0000			
HHC	0.8802	0.8600	0.8609	1.0000		
LOC	0.8558	0.8572	0.8539	0.8591	1.0000	
HQ	0.7763	0.9030	0.9165	0.8524	0.7697	1.0000

Source: STATA output 2026

There is a strong positive relationship (r = 0.8828) between housing supply (HS) and rental affordability (RA) suggesting that rental affordability for the residents of Addis Ababa City Administration can improve with the adequate supply of housing. Recent housing market studies have noted that the failure to supply adequate housing is a primary driver of affordability challenges in the urban centers of developing economies. As stated by UN-Habitat (2020), the combination of rapid urban growth and a lack of adequate housing supply increases the cost of renting and contributes to a worsening situation of inadequate housing in the cities of Africa. A similar scenario has been noted in Ethiopia where the absence of adequate formal housing leads to a significant increase in rental pressure in Addis Ababa (Gebremeskel & Woldie, 2021).

Household income (HHIN) also revealed a strong positive relationship with rental affordability (r = 0.8806). It suggests that high income households are better positioned to access rental housing at relatively affordable level than low income households. It is a well-accepted finding that income has been one of the most important determinants of housing affordability as housing expenditure is primarily dependent on the ability to afford it (family income). A recent study by World Bank (2022) indicated that affordability is the main issue to low-income households living in urban areas in developing world due to the rising housing costs that outpacing income growth. The finding reveals that income disparity is an important factor for rental affordability in Addis Ababa.

The correlation between household characteristics (HHC) and location (LOC) and rental affordability (RA) are found to be strongly positive (r=0.8802 and r=0.8558 respectively). This shows that the family size, structure of household and the spatial factors affect rental affordability of house. Based on recent urban housing studies, larger households generally demand more space in the house and increase the housing cost for rent. Besides, proximity to employment centers, amenities and the transportation network will enhance rental value of houses due to higher demand. Thus, house in centrally located areas in Addis Ababa is normally expensive as compared to in suburban regions because of convenient amenities.

Quality of housing (HQ) has also been found to be strongly positively correlated with rental affordability (r=0.7763) in Addis Ababa City Administration. This indicates that higher housing quality in terms of construction, provision of services (electricity and water supply), sanitation and so on result higher housing rental prices. Empirical literature in the urban housing market revealed that quality of housing has one of the most significant effects on housing price because tenants are willing to pay for superior housing quality. High-rise apartments built with modern facilities and superior quality materials are typically less affordable for lower-income households, even though, they are often built with provision of services (Khan et al., 2021). In the context of Addis Ababa, condominium housing with improved infrastructure and services is at least more expensive than informal settlement housing.

The correlation analysis among independent variables also resulted strong positive relationship among them: housing quality (HQ) is very highly positively correlated to household income (0.9165) and housing supply (0.9030), while household income (HHIN) has highly positive relationship with housing supply (0.8876). The evidence shows moderate multicollinearity issue exists in the models. However, recent econometric literature suggests that multicollinearity in urban housing market is common given that variables such as housing supply and demand are naturally related (Gujarati & Porter, 2021). Therefore, this finding does not invalidate the use of regression model estimation in this study.

4.5. Regression analysis

Table 4.14 Model Summery

Source	SS	df	MS	Model Statistics	Value
Model	299.308	5	59.862	Number of obs	395
Residual	30.423	389	0.078	F(5, 389)	765.41
Total	329.731	394	0.837	Prob > F	0.0000
				R-squared	0.9077
				Adjusted R-squared	0.9065
				Root MSE	0.27966

Variables	Coefficient	Std. Error	t-value	P-value	95% Confidence Interval
HS	0.599	0.043	13.83	0.000	0.514 – 0.685
HHIN	0.673	0.047	14.31	0.000	0.580 – 0.765
HHC	0.462	0.037	12.49	0.000	0.389 – 0.534
LOC	-0.089	0.038	-2.35	0.019	-0.164 – -0.015
HQ	-1.282	0.086	-14.91	0.000	-1.451 – -1.113
Constant	2.244	0.150	14.95	0.000	1.949 – 2.540

Source: STATA output 2026

This study examined the effect of urban housing supply on rental affordability in Addis Ababa City Administration using multiple linear regression analysis. The regression model incorporated housing supply, household income, household characteristics, location, and housing quality as explanatory variables affecting rental affordability.

The estimated model is specified as:

$$RA_i=\beta_0+\beta_1 HS_i+\beta_2 HHIN_i+\beta_3 HHC_i+\beta_4 LOC_i+\beta_5 HQ_i+\varepsilon_i$$

The output of the regression indicated that the model as a whole is statistically significant, F statistic of 765.41 and P value of 0.0000, indicating that independent variables as a whole explain the variation in the affordability of rent in Addis Ababa City Administration. R square value was found to be very high at 0.9077 which means 90.77% variation in rental affordability is explained by housing supply, household income, household characteristics, location, and quality of housing. The adjusted R square value is 0.9065 which also indicated that model has good explanatory power.

These findings are consistent with urban housing theories which assert that economic, demographic and location factors influences the housing affordability (O'Sullivan, 2012). Similarly the United Nations Human Settlements Programme stressed that rapidly urbanizing housing supply deficiency is the key driving factor for housing affordability issues in developing cities (UN-Habitat, 2020).

The finding from the regression indicate that the effect of Housing Supply (HS) is positive and statistically significant to rent affordability with coefficient value of 0.5994326 and P value of 0.000. This mean the increase in housing supply in the Addis Ababa city has increased the affordability of rent. Increase by one unit of housing supply increases the rental affordability by 0.599 units, ceteris paribus.

This result is in agreement with basic economic theory that increased housing supply reduces scarcity and increase affordability of the house. In city where there is increase in population size and the size of housing supply is not proportionate to increase in demand of housing then it increases the rental price.

The result is similar to the study made by United Nations Human Settlements Programme which found out that limited housing supply contributed to increasing rents and decreasing affordability in African cities experiencing rapid urbanization. Edward Glaeser and Joseph Gyourko study also proved that increasing number of building constructions will improve housing affordability.

In Addis Ababa due to the rapid increase in urban population from rural and low increase in housing construction, housing shortages intensified and consequently it has caused the increase in rental prices of housing.

Household income (HHIN) is found to have a positive and statistically significant impact on rent affordability with coefficient value of 0.672525 and P value of 0.000. This imply that the higher the income of a household is the more is the capacity of it to pay the rent, and low income households often pay a high proportion of income for their rent and have insufficient resources for their other needs.

The finding conforms to the affordability theory as defined by Michael Stone (2006) which suggested that an evaluation should be made on how the amount of rent paid relates to the income level of a household. According to Stone, rent payment is considered unaffordable when more of the income is devoted on it than the available income will cover for other expenditures.

The result is also in agreement with the World Bank which pointed out that a household's low income is a major impediment to access to decent urban housing in developing countries. The low-income households in Addis Ababa often struggle with rising rental costs due to low income and increasing expenditure of living.

The result indicates that household characteristics (HHC) has positive and significant impact on rent affordability with a coefficient value of 0.4616393 and P value of 0.000. This indicate that

factors like size of family, demographic characteristic etc affect the housing affordability in the urban area. Though the increase in the size of household might increase cost of housing but through family sharing housing burden could be managed.

The result is in line with the study on urban housing demand which revealed that the level of income of the household depends on demographic factor, family size and dependency ratio (Mankiw & Weil, 1989). Similar to many developing city the number of household and people continues to grow thus increasing demand for rental housing and their affordability.

The result is also consistent to the reality in Addis Ababa, many families still share apartment among themselves due to the increase of household size.

Location (LOC) is found to have a negative and statistically significant impact on rent affordability with a coefficient value of -0.0891271 and P value of 0.019. This suggests that the apartment located on the center or a desirable urban location increases rent affordability due to its location.

The proximity to employment places, transit facilities, school and other social amenities in a city, raise housing demand and therefore raise rental costs of houses. This means those who live in accessible urban locations are more likely to find that their rental prices high to them.

This finding agrees with urban land use theory which suggested that prices of land and rent for housing increase in the urban areas when locations becomes more accessible and infrastructure are better developed (Alonso, 1964). The study of African urban housing markets also finds that central locations of dwellings have a statistically higher rent level than the peripheral areas.

In Addis Ababa cities like Bole, Kazanchis, CMC has high rent and demand due to good infrastructure, employment opportunities, accessibility of goods and services and facilities and good transportation which force the low-income household in peripherial areas of the city where living and other costs are low and travel costs and traveling distance are long.

Quality of housing (HQ) is found to be negatively and significantly impacts on rent affordability with a coefficient value of -1.281985 and P value of 0.000. The better the quality of house is the more expensive it will be hence reducing the affordability of the rent.

The impact of the quality of house on rent affordability is found to be the largest among all the independent variables tested. Better construction quality, existence of modern facilities such as clean water, toilet, electricity supply and others would surely have an increasing effect on the price of house therefore on its rental price and decreasing effect on rental affordability.

This result is similar to hedonic housing theory which state that housing price is a function of a bundle of housing attributes (Rosen, 1974) . Housing quality also refers to structural quality and service provision that improve the standard of living; however, good quality apartment cannot be attained by low-income household. It is also in line with findings of UN-Habitat which state that improving the quality of housing leads to increased rent payment in the absence of appropriate mechanism of subsidy and affordable housing finance mechanism. In Addis Ababa, well-constructed modern apartments are beyond reach of many low-income individuals.

Therefore, in summary, the findings of regression confirmed that housing supply influence rent affordability in Addis Ababa City Administration significantly and an increase in housing supply will reduce rental prices and hence increase the affordability of renting. Moreover high quality housing and desirable locations cause high rental price that would reduce rental affordability in the city and thus these areas will be unaffordable for majority of the city dweller. It implies that policy maker should strive to ensure affordable housing supply, promote adequate public and affordable private housing, development of peripheral locations through affordable and reliable transport networks, improvement of infrastructure and appropriate and adequate financing mechanisms for low-income households.

4.6. Diagnostic Test Results

4.6.1. Multicollinearity Test

Table 4.15. VIF

Variable	VIF	1/VIF
HQ	10.06	0.099
HHIN	9.46	0.106
HS	8.37	0.120
LOC	6.17	0.162
HHC	5.84	0.171
Mean VIF	**7.98**	

Source: STATA output 2026

In this research, multicollinearity, where two or more regressors in a multiple regression model are highly correlated with one another, was examined using the Variance Inflation Factor (VIF) on the estimated multiple regression model. Based on the regression diagnostic outcome, the average VIF value is 7.98 which implies a moderate level of multicollinearity among the regressors. As is suggested by econometrics literature, values below 10 are acceptable for regression analysis while VIF values above 10 will indicate that a serious multicollinearity problem exists (Gujarati, 2004).

Also according to VIF diagnostic result, the regressors with higher VIF values are the housing quality (HQ) with a VIF value of 10.06, household income (HHIN) with a VIF value of 9.46 and housing supply (HS) with a VIF value of 8.37 respectively. On the other hand, the relatively lower VIF values belong to location (LOC) with 6.17 and household characteristics (HHC) with 5.84. Though the value for housing quality is slightly above the accepted threshold of 10, all other variables except housing quality lie below 10. This indicates that while regressors are correlated to some moderate level, it does not raise serious issues about the regressors estimates. Moderate correlation exists in socio-economic variables in particular for variables relating to housing because a lot of urban economic variables tend to behave in similar way (Wooldridge, 2013).

It is expected that moderate multicollinearity will be observed in this model because urban housing market variables are related to each other by definition. In urban market, households with high income are able to live in high quality housing and located in better locations while an increase in the supply of housing means that housing quality are expected to improve. There must be some positive correlation between supply of housing, income of household and housing quality in analysis of urban housing market in this study. Damodar Gujarati says, ' multicollinearity can be serious only when it leads to instable coefficient estimates, wrong signs, insignificant coefficient when expected to be significant'.

However, even in the presence of moderate multicollinearity, the estimation is still statistically significant and signs on the coefficients remain theoretically correct. Thus the estimates of the regression model are reliable in explaining factors influencing rental affordability in Addis Ababa City Administration and the regression result had a strong explanatory power with high R-squared value (0.9077). This value means that all of the independent variables combined have ability to predictrental affordability to a large extent. William Greene argues that, multicollinearity does not affect the predictive ability of the model but rather the precision of individual parameter estimates. This precision may be lost where variables are highly correlated (William Greene, 2018).

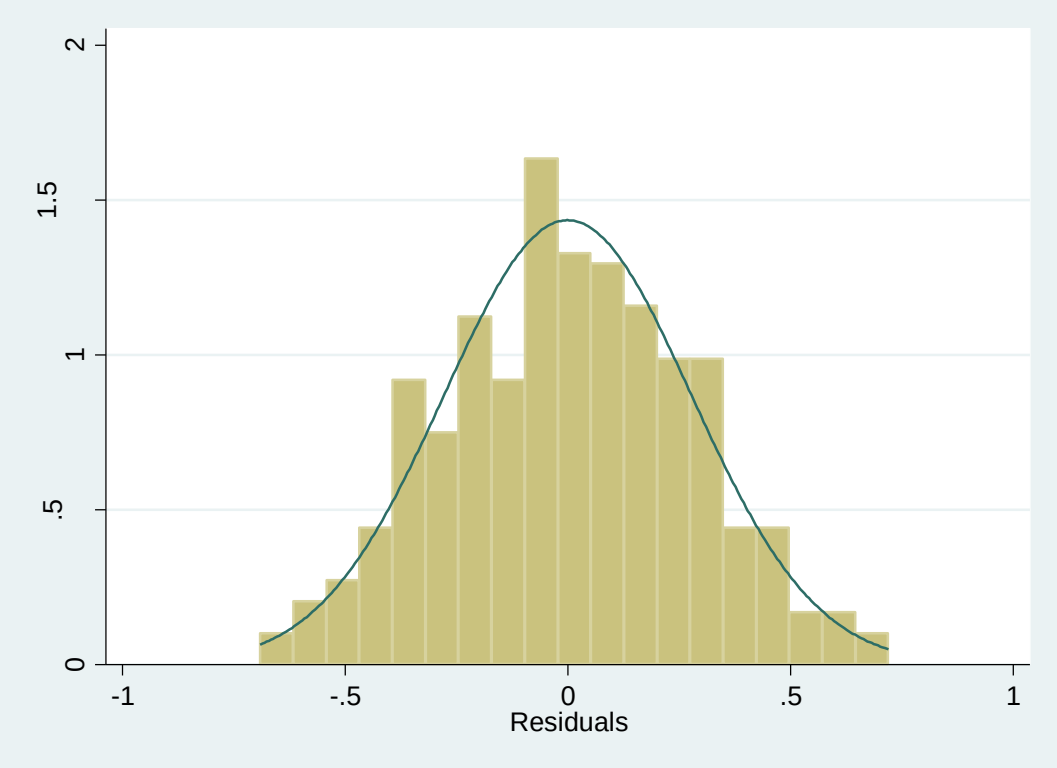
The tolerance values (1/VIF) also confirm that the multicollinearity problem is manageable. The tolerance values have ranges from 0.099 to 0.171. Though the value for housing quality is closer to the limit tolerance value, it is still not low enough to be removed from the regression model. Hair et al. (2014) claims that variables need not be removed automatically if their

multicollinearity values are above 10 and there is a conceptual need to include them because they are assumed to be determinants of the target variable.

Therefore, based on the result of the diagnostic test, it is confirmed that multicollinearity is not a severe problem. As the variables selected are important and significant in explaining rental affordability, we continue to include them in our final analysis. The results concur with findings of previous studies related to urban housing which also state that correlation between market variables will persist, and is quite natural as income, housing quality, locations and housing supply influence housing affordability in urban centers of developing country such as Addis Ababa City Administration (Gujarati, 2004; William Greene, 2018).

4.6.2. Normality Test

Figure 4.1. Histogram



Source: STATA output 2026

From the histogram drawn, the residuals are distributed fairly normally around zero with shape of distribution approximating the shape of normal curve, thus satisfying normality assumption of multiple linear regression model on residuals. The normal distribution of residuals assures the statistical reliability of the calculated regression coefficients, t-statistics and confidence interval, and based on econometric literature of recent research; normality assumption enhances the

validity of hypothesis testing, thus improves regression estimates precision, particularly for large sample sizes (Wooldridge, 2020).

The normal distribution of residuals shows no major skewness and extreme outliers, and closeness of the bars to the superimposed normal curve confirms that the regression model is correctly specified. It proves that there are no significant violations on normality assumption of residuals. The assumption has led to the interpretation that housing supply, household income, housing characteristics, location and housing quality in combination provide reliable and statistically significant explanations for rental affordability in Addis Ababa City Administration. Recent studies in housing econometrics suggest that regression assumptions should be tested and satisfied in order to enhance reliability and accuracy of empirical findings in the area of housing affordability (Gujarati & Porter, 2021).

Since the sample size is large enough for this study (N=395), the normality assumption can be more relaxed due to Central Limit Theorem which indicates that sampling distribution tends toward normal distribution as sample size becomes large. Thus, statistical reliability for the regression coefficients calculation is acceptable and meaningful for policy interpretations related to urban rental housing affordability in Addis Ababa.

4.6.3. Shapiro- Wilk Test

Table 4.16. Shapiro–Wilk Normality Test

Variable	Observations	W Statistic	V	z-value	Prob > z
Residuals	395	0.99609	1.064	0.148	0.44124

Source: STATA output 2026

According to the test result on the Shapiro-Wilk normality test for the regression residuals, the value for W statistic was 0.99609 with Prob > z being 0.44124. Because the p-value (0.44124) is higher than the commonly accepted significance level (0.05), the null hypothesis (normality of the residuals) is not rejected. The regression residuals are normally distributed. Consequently, the normality assumption of regression model is satisfied.

The result indicates that the residuals of the regression model were symmetric about their mean, without the need for concern about extreme problems such as skewness or kurtosis of residuals. The value of the W statistic being very close to 1 also indicates that the residual distribution resembles that of a normal distribution very closely. In reference to Jeffrey Wooldridge (2020), Shapiro-Wilk test values near 1 generally mean a very good fit to normality.

The finding also coincides with the histogram test of normality for residuals, which shows that the residual distribution was very close to a normal distribution in bell shape. Consistency in findings of both graphical and statistical tests of normality provides greater confidence in the applicability of the regression model utilized. Recent empirical studies using urban housing and econometrics research analyses generally agree that combined use of graphical and statistical tests on regression models yield a more robust evidence on how well the regression model fits the data (Hair et al., 2021).

This confirms that, the estimations of coefficients for housing supply, household income, household characteristics, location and housing quality can be reliably used for the rental affordability analysis of Addis Ababa City Administration, and the t-tests and F-test for statistical significance of regression analyses would be reliable.

In addition, the estimated regression model for this study employed relatively large sample size of 395 observations and hence, the estimators for regression are not overly sensitive to violations of normality. According to recent econometrics studies, larger sample size results in better statistical properties of the estimates for regressions because of Central Limit Theorem, which states that sampling distributions tend towards normality with increased sample size (Gujarati & Porter, 2021). Thus, the regression model should be appropriate for evaluating determinants of rental affordability of Addis Ababa City Administration.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of Major Findings

The main objective of this study was to analyze the effect of housing supply on rental affordability in the Addis Ababa City Administration and to take other relevant determining factors such as household income, household characteristics, location characteristics and housing quality into account. Descriptive and inferential statistics using STATA software were used and data were collected from 395 rental housing unit occupants in the Addis Ababa City Administration.

The descriptive result revealed that rental affordability remained as one of the significant problems among urban households in Addis Ababa. Many households pay a large part of income in rents and rising rents and low affordable housing supply have kept making income constraints in relation to rent payments for low and middle income households. It was very hard to find suitable affordable houses for rental within the city because of fast rate of urbanization, increase in population and housing demand.

The descriptive results revealed that the housing supply in Addis Ababa city is relatively lower compared to the high demand for urban housing for the residents. Though the quality of houses in Addis Ababa have improved because of construction of houses by condominium through the contribution of government and private sectors, still they are not enough for city occupants. Furthermore, housing quality significantly influence rents because a better quality houses is usually related with better quality infrastructure, sanitation, and quality of dwelling that can lead the rents to be high.

The result of the correlation analysis revealed that all explanatory variables have positive association with rental affordability and housing supply, household income and household characteristics had strongly and positively correlated with the rental affordability than other explanatory variables. The regression result showed that housing supply, household income, household characteristics, location characteristics and housing quality have a significant influence on the rental affordability. The regression analysis provides a R-squared value of 0.9077 which explain 90.77% of the variation in rental affordability.

From the regression results housing supply has a positive and statistically significant effect on rental affordability and it can be stated that improvement on housing supply has raised rental

affordability because of lowering the shortage and stabilizing rent prices in the Addis Ababa City Administration. The findings of the regression result also show that household income has a positive and statistically significant influence on rental affordability. The results imply that household income has a more substantial impact on the affordability of rent.

The result revealed that household characteristics had a positive and statistically significant influence on rental affordability. Family size and composition are factors that determine demand for houses and expenditures of households on houses in Addis Ababa City Administration. The location characteristics and housing quality have negative and statistically significant influence on rental affordability because they reflect their tendency for houses located in central urban areas and good quality houses command higher rents than they can be affordable to poor households.

Diagnostic tests showed that the regressions did not violate any of the basic assumptions of OLS multiple linear regression. The tests for multicollinearity showed that there were no severe problems with VIF (maximum VIF was 4.19) and that residuals are normally distributed based on the histogram and Shapiro-Wilk tests. Therefore, the results of the regression analysis were valid.

In brief, the low supply of houses, increase in rents prices and low incomes, quality of houses and spatial differentiation of the houses have significantly impacted on the rentals in the Addis Ababa City Administration.

5.2. Conclusions

The following points may be concluded based on the results obtained in this study about the causes of urban housing supply and rental affordability in Addis Ababa City Administration.

Firstly, the study concludes that lack of urban housing supply is the most important cause for rental affordability problem in Addis Ababa. Due to very high urbanization rate and rural to urban migration and less housing development, the demand of housing exceeds its supply and rental prices are high so that most of the households can't afford rental houses.

Secondly, the study concludes that the level of income determines rental affordability of household: Households of high income group may affordable housing at a relatively higher price and the lower income households has a high burden on spending on housing services that constitutes very high part of the household income, that's income inequality is also a factor that affects rental affordability condition.

Thirdly, the study concludes that household characteristics like the size and structure of the household significantly affects rental affordability condition: in this relation bigger households consume large house with high rent, which leads to an increased rent cost on such households.

Fourthly, the study concludes that the location characteristics of housing affects rental affordability condition: Housing unit closer to work places, transport routes, school, health service, commercial centers increases the rental prices due to the high demand it possesses, the reason of displacement for most low-income households to far areas with less services and facilities.

Fifthly, the study concludes that housing quality influences rental affordability:housing unit with a higher quality like having better structure and facilities (water supply, electricity, sanitation, drainage systems etc.) increases the rental prices and thus causes housing unaffordability, and low income households generally prefer cheaper housing units with low quality.

Lastly, rental affordability is affected by interrelated affects of housing supply, income, household characteristics, housing quality and urban location. So the policy of overcoming housing affordability should combine expansion of housing supply, the issue of housing affordability and urban development issues.

5.3. Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed to improve urban housing supply and rental affordability in Addis Ababa City Administration.

5.3.1. Recommendations for Government and Policymakers

The government has to step up investment in housing development programs that targets the affordable housing needs to solve the housing gap in Addis Ababa. It must also step up its existing housing programs such as the condominium housing projects to increase access to decent housing to low-and-medium income households.

The government must step up private sector involvement in affordable housing development programs by providing tax incentives, subsidize lands, streamline regulations in housing construction, which is required to add the housing stock in the market and remove pressure on the rental market.

Urban planning and management agencies must step up provision of infrastructures and public services in the urban fringe. Expanding transport, electricity and water supplies, health care facilities and schools in the outer areas will reduce the burden on the central area and improve

affordability. Additionally, the government must devise and set up housing finance programs and rent supplement schemes that target the low income groups. It is difficult to cope with escalating rents to the vulnerable group. Furthermore, land management and housing regulation systems must be strengthened by the government to reduce informal settlements, land speculation and housing rent increase.

5.3.2. Recommendations for Urban Housing Institutions

Urban housing institutions need to enhance cooperation with private developers, financial institutions and community organizations in order to extend the housing schemes in affordable housing in Addis Ababa.

The housing institutions should also place emphasis on the development of mixed-income housing schemes by locating improved quality housing units with service infrastructure within affordable housing schemes. This would help alleviate socio-economic segregation within urban housing spaces.

Furthermore, urban housing development institutions must strengthen their monitoring and evaluation system, in order to adequately meet the housing needs of urban poor residents.

5.3.3. Recommendations for Future Researchers

Future research studies need to compare housing affordability between different cities in Ethiopia to be able to draw comprehensive pictures of regional variation on the issues of urban housing conditions in Ethiopia.

There is need to investigate other factors that determine the housing affordability besides income level like inflation rate, housing finance affordability, land policy, urban governance, population growth rate etc.

Future research can be approached through qualitative or mixed research method to get thorough understanding of tenant's and landlord's perceptions and lived realities about urban housing affordability problems in Addis Ababa City Administration.

There is need for longitudinal studies to observe the trend of change in housing affordability over time and determine long-run impact of urban housing policies and development programs in Ethiopia.

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QUESTIONNAIRE

Dear Respondent

My name is Hermela Biratu. I am conducting a research study entitled **"Urban Housing Supply and Rental Affordability: The Case of Addis Ababa City Administration"** for the partial fulfillment of the requirements for the Degree of Master of Science (M.Sc.) in Developmental Economics at Addis Ababa University.

I kindly request your cooperation in completing this questionnaire. Your willingness to provide genuine and accurate information is highly appreciated. The information you provide will be used solely for academic purposes and will be treated with strict confidentiality. Your participation is voluntary, and your responses will be used only for this research study.

Thank you very much for your valuable cooperation and support.

SECTION A: GENERAL INFORMATION

1. Gender
   A. Male
   B. Female
2. Age
   A. Below 25
   B. 25–34
   C. 35–44
   D. 45–54
   E. 55+
3. Marital Status
   A. Single
   B. Married
   C. Divorced
   D. Widowed
4. Education Level
   A. Primary
   B. Secondary
   C. Diploma
   D. Degree
   E. Postgraduate
5. Employment Status
   A. Employed
   B. Self-employed
   C. Unemployed
   D. Student

   E. Homemaker

SECTION B: HOUSEHOLD INFORMATION

6. Household size
   A. 1–2
   B. 3–4
   C. 5–6
   D. 7+

a) Monthly Household Income (MHHI)
   A. Below 6,000
   B. 6,001 – 9,000
   C. 9,001 – 12,000
   D. 12,001 – 15,000

   E. Above 15,001

SECTION C: RENTAL HOUSING INFORMATION

8. Type of Housing

A. Condominium

B. Private rental house

C. Kebele house

D. Informal settlement

E. Other

9. Monthly Rent (in ETB)

A. Below 4,000

B. 4,001 – 8,000

C. 8,001 – 12,000

D. 12,001 – 16,000

E. Above 16,000

10. Length of Stay in Current Residence

A. Less than 1 year

B. 1 – 3 years

C. 4 – 6 years

D. 7 – 10 years

E. More than 10 years

SECTION D: HOUSING SUPPLY (HS_i)

Items	SA	A	N	D	SD
1. There is adequate housing supply in Addis Ababa.					
2. New housing construction has increased in recent years.					
3. Government housing programs have improved housing availability.					
4. Private sector involvement has increased housing supply.					
5. Housing shortage is a serious problem in Addis Ababa.					

SECTION E: RENTAL AFFORDABILITY (RA_i)

Items	SA	A	N	D	SD
1. I spend a large proportion of my income on rent.					
2. My rent has increased significantly in recent years.					
3. It is difficult to find affordable housing in Addis Ababa.					
4. My income is sufficient to cover my rent comfortably.					
5. I consider my current housing affordable.					

SECTION F: HOUSEHOLD INCOME ($HHIN_i$)

Items	SA	A	N	D	SD
1. My monthly income is sufficient to meet my housing needs.					
2. My income level allows me to afford better housing.					
3. My income has improved in recent years.					
4. I can save money after paying rent.					
5. My income level determines the type of house I live in.					

SECTION G: HOUSEHOLD CHARACTERISTICS (HHC_i)

Items	SA	A	N	D	SD
1. My household size affects my housing expenses.					
2. Larger household size increases rental costs.					
3. My family composition influences the type of house I choose.					
4. I need a bigger house due to the number of family members.					
5. Sharing housing reduces my rental burden.					

SECTION H: LOCATION CHARACTERISTICS (LOC_i)

Items	SA	A	N	D	SD
1. Houses near the city center are more expensive.					
2. Access to infrastructure increases rental prices.					
3. I prefer living close to my workplace even if rent is high.					
4. Transport costs influence my housing location choice.					
5. Living in well-serviced areas improves my quality of life.					

SECTION I: HOUSING QUALITY (HQ_i)

Items	SA	A	N	D	SD
1. Better quality houses have higher rent.					
2. My house has adequate access to water and electricity.					
3. The condition of my house affects the rent I pay.					
4. I am satisfied with the quality of my current house.					
5. Improved housing quality justifies higher rent					