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Article

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Cogent Economics & Finance

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Suggested Citation: Mekonen, Endalkachew Kabtamu (2022) : The effect of residential house rent on Urban households poverty status in Ethiopia: evidence from Wolkite town, Cogent Economics & Finance, ISSN 2332-2039, Taylor & Francis, Abingdon, Vol. 10, Iss. 1, pp. 1-17, <https://doi.org/10.1080/23322039.2022.2125659>

This Version is available at:

<https://hdl.handle.net/10419/303807>

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To cite this article: Endalkachew Kabtamu Mekonen (2022) The effect of residential house rent on Urban households poverty status in Ethiopia: evidence from Wolkite town, Cogent Economics & Finance, 10:1, 2125659, DOI: [10.1080/23322039.2022.2125659](https://doi.org/10.1080/23322039.2022.2125659)

To link to this article: <https://doi.org/10.1080/23322039.2022.2125659>



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Received: 03 January 2022
Accepted: 14 September 2022

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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

The effect of residential house rent on Urban households poverty status in Ethiopia: evidence from Wolkite town

Endalkachew Kabtamu Mekonen^{1*}

Abstract: The study investigated the effect of residential house rent on urban household poverty status in Ethiopia with evidence from Wolkite town. By using structured questionnaires, primary data was collected from 248 household heads living in rental housing. In addition, a key-informant interview was conducted with the town municipality offices for triangulation purposes. The collected data were analysed by using descriptive and inferential statistic. The inferential statistic was estimated by using logistic regression model. The statistical package used to estimate the model was STATA version 14. The empirical result shows that rising residential house rent increases the poverty status of urban households. The poverty status of households is also negatively associated with access to housing allowance. Policy makers should note that the source and scope of poverty is varied. Poverty reduction policy should account the rental price of housing and integrate it with the broader national policies. Thus, the issue of residential house rent and housing should be part and parcel of the poverty reduction strategy of the government. Housing policies should also be integrated with other objectives of the government. A timely revised housing allowance and housing opportunities should be accessible to the low-income households.

Subjects: Urban Studies; Urban Economics; Urban Policy; Urban Development; Economics

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PUBLIC INTEREST STATEMENT

Rental housing is a vital accommodation mechanism for households. Thus, residential housing rent is the major expenditure item in low-income households' budget. The rental price of housing units has experienced an increasing trend which left low-income households with little money to please other basic needs such as food, cloth, transportation, and health care outlay. Wealth of studies is conducted about the determinants of urban poverty but the association between poverty and housing rent has not been explored. Therefore, the objective of this study is to examine the effect of residential house rent on urban household poverty status in Ethiopia with evidence from Wolkite town. The result shows rising residential house rent increases the poverty status of urban households. Policy makers should integrate the rental price of housing with the broader national policies, and it should be part and parcel of poverty reduction strategy.

Keywords: Residential house rent; Urban poverty; house allowance; Wolkite town

1. Introduction

Ethiopia is the second most populous country in Africa, next to Nigeria. Ethiopia is one of the least urbanized countries on the continent. However, as documented in the Centre for Affordable Housing Finance Center for Affordable Housing Finance (CAHF; 2021) and ARUP (2016), during the past decade, the country has witnessed a growing urbanization rate. For instance, the proportion of the urban population to the total population increased from 14.74% in 2000 to 21.69% in 2020 (World Bank, 2021). As a result of high population growth and massive rural to urban migration, the urbanization rate has been increasing which in turn increase the demand for housing in cities and towns of Ethiopia from time to time (UN-HABITAT, 2017a, 2017b). The report of the Ministry of Urban Development and Housing (MUDH, 2016) revealed that one of the urban housing problems in Ethiopia is shortage of house supply relative to its demand which put households to spend more for accommodation. The high spending for shelter exposes them to diverse economic, social and psychological complications. In response to this problem, during the past years, the government of Ethiopia has been implemented the integrated condominium homeownership programme (ICHP) and other housing development programmes. However, the demand for house remained unmet and living in house rent becomes an alternative means of shelter fulfilling methods. For instance, UN-HABITAT (2011) showed that the housing gap in urban Ethiopia was estimated between 900,000, and 1, 000, 0000 units.

One of the main objectives and focus of the sustainable development goals (SDGs) is to zero poverty and make cities and communities sustainable by using decent and affordable public housing by 2030 (UNDP, 2017). In line with this, MUDH (2016) indicated that housing development programme is important to accomplish shelter needs, improve income as well as to make people homeowners. This suggested that access to house and affordable housing is instrumental to reduce poverty and other material deprivations. In the capital city of Ethiopia, Addis Ababa, Center for Affordable Housing Finance (CAHF; 2021) estimated that 60% of households live in rented houses. Also, in other cities and towns, rent is an important shelter fulfilling mechanism. However, according to UN-HABITAT (2019) strategic plan 2020–2023 and Center for Affordable Housing Finance (CAHF; 2021), most households are unable to afford the expensive private rent or have limited access to kebele rent. As a result, most of them are opted to the informal settlement, which is a manifestation of urban poverty and inequality. Although Ethiopia has made an attempt to tackle the housing problem by building an integrated housing development programme (IHDP) at federal and regional cities, it inadvertently benefited the middle, and higher-income group rather than the poor (Matsumoto & Crook, 2021). Moreover, the programme is not paying more attention to zonal and other lower-level administrative towns.

In cities of Ethiopia, rent of housing is continuously increasing which make life challenging for people living in rented house. Particularly, low-income households, and people living with disabilities are extremely affected by the rising rent of housing. As per the researcher observation, as a result of inflation and rural to urban migration, homeowners increases the rental price of their house. In addition, the involvement of house rent brokers contributed to the rising price of house in the Ethiopia in general and study area in particular. For instance, a study by Simon (2011) indicated that on average, house buyers pay 1.3% more for homes if they purchased houses through real estate brokers. However, Benjamin et al. (2000) in their review indicated that the effect of brokerage on housing prices is mixed. In Ethiopia, housing rent has no market like other goods and service, i.e., as an indication of market failure. Thus, house renter and homeowner deal through the house broker by paying a fixed proportion of money from the house rent. In the study area, brokers received a 20% commission from the renter and homeowner. Thus, to maximize their return brokers inclined to raise the house rent which has played vital role for the continuous increasing of house rent.

In addition to its economic effect, living in rented houses may negatively affect the privacy and health of people as various utilities and amenities are shared with homeowners and other tenants. Living in a rented home may also reduce the educational performance of students as their family move from one home to another. As documented in Enterprise Community Partner (2014), students whose family have no house education performance was low compared to students whose family-owned house. Although living in a rented house has multidimensional effects, its direct and strong effect is on poverty. The empirical study by Tunstall et al. (2013) showed that the rental price of housing has significant and direct impact on household poverty and material deprivation. Welle (2018) also examined the impact of living on house rent on household welfare in Addis Ababa and found that poverty is fairly higher for households living in rented house than living in own house. Moreover, Welle (2018) explored the relationship between house rent, income inequality and consumption and found that house rent has negative effect on household consumption.

There are a few studies conducted in Ethiopia and the study area particularly about the effect of residential house rent on the poverty status of urban household. Only Welle (2018) examined the impact of living in a rented house on the welfare of households in Addis Ababa city. The result exhibited poverty increase for households living in a rented house relative to households that live in own house. This study however argued that living in rented house will not be a severe problem for the welfare of households if the rent of housing is reasonably low or tenants have adequate income to pay the rent. Therefore, the present study hypothesized that the welfare of households could be affected by the level of rental price of housing and the availability and amount of house allowance. Because, residential house rent is assumed as the major expenditure item in low-income households' budget (Zedlewski, 2002). Author such as Hone (2019) showed that affordability is a main concern in Ethiopia housing markets because most household income is low. A study by Enterprise Community Partner (2014) indicated that the high cost of housing left low-income households with little money which forced them to budget trade-off with other basic need such as food, clothing, transportation and health care spending. Wide-ranging studies are available about the determinants of urban poverty in Ethiopia such as Mekonnen (1999), Jayamohan and Kitesa (2014), Yonas (2014), Debeli and Endegen (2019), Chewaka et al. (2017), and Mekonen et al. (2022) but none of them consider the association between poverty and residential house rent and access to house allowance. This study therefore explored the effect of residential house rent and access to house allowance on urban household poverty status. The rental price of housing competes with other economic decisions of household such as spending decision on food, cloth, education, health, transport, and saving decisions. For instance, the empirical findings of Welle (2018) shown that increase in house rent by 1 Rupiah reduced food and non-food expenditure of households by 0.01 and 1.46 Rupiah, respectively.

The findings of the study would have theoretical and practical implications. Theoretically, the findings would contribute to the literature and stock of knowledge about the association between poverty and rental housing price. Practically, the findings of the study would inform policymakers about the effect of rising house rent on poverty reduction effort of government. It would show policymakers the connection between house rent and household poverty to incorporate housing as poverty reduction strategy. It would also help to design an appropriate urban housing policies and strategies to curtail the increasing rental price of housing. To this end, the study attempted to answer the following research questions: How many proportions of household monthly income is allocated for residential house rent payment? And, what is the implication of residential house rent and access to house allowance on household poverty status? The rest of the study is planned as follows: the second section present the literature review whereas the third section highlight the materials and method of the study. The fourth section present the result and discussion of the study, the fifth section present the conclusion and policy implications of the study. Finally, the last section presents the limitations of the study and implication for future studies.

2. Literature review

Housing is one of the important basic human needs together with food and cloth. Housing service provide various benefits such as shelter, collateral, protection, independence, a place for taking recreation and so on. As documented in UN-HABITAT (2017a), the issue of housing is at the centre of the new urban programme and indicated that increasing housing opportunities will help to achieve the sustainable development goals (SDGs). However, only few country governments framed policy that would help to improve and control the rental housing. Rental housing is understood as an asset possessed by a landlord other than the dwellers, for which the inhabitant has to pay a period of rent to the owner as per their agreement. An author such as Gary and Taffin (2013) defined rental housing as either a formal or informal arrangement between a tenant and a landlord to rent a housing unit for a specific period of time at an agreed rental price. In Ethiopia, rent is computed or paid on a monthly bases, and most of the time it is paid in advance.

There have been various literatures that shown rental housing unit as a vital shelter fulfilling mechanisms for the poor people and literatures people migrating from rural-urban areas. Therefore, in many countries, rental housing is an important accommodation pleasing mechanism of society. UN-HABITAT (2014) exhibited that in many cities and towns of Africa, Asia and Latin America, there are hundreds of millions of renters. For instance, Mohammed (2017) indicated that among people living in condominium housing in Addis Ababa city, 64% were renters while the remaining 36% are homeowners. As the WB (2019) documented that in Ethiopia, the income of most household was trivial; as a result, majority of the residents were unable to afford the rent of housing which forced them to live in the informal housing. The bank also showed that about 60% of households in large cities live in rental housing units. Another study by Kihato and Karuere (2021) revealed that around 54% of urban households are living in rental units.

There is wealth of studies about the determinants of urban household poverty of Ethiopia. For instance, Chewaka et al. (2017) using cross-section data set conducted a study about the determinants of urban household poverty in Nekemte town, Oromia regional state. The result revealed that the probability of being poor for male headed households is lower than the female headed households. Moreover, large household size and migrants from rural-urban have high probability of poverty status. In addition, increase in literacy level of households and being salary employed has decreased the probability of household poverty status. A study by Mekonen et al. (2022) exhibited that in addition to income, age of household head, household size, dependency ratio, and marital status, financial behaviour (such as saving, budgeting, insurance and debt behaviour) of urban households has vital implications on urban household poverty status in Wolkite town of Gurage zone. The result indicated that increase in household size, age and income of household heads decreased the probability of being poor. In contrast, the probability of poverty increased as the dependency ratio increase, household head is married, and the household head owned house.

Jayamohan and Kitesa (2014) investigated the gender aspects of poverty in urban household of Ethiopia and revealed that the gender poverty difference is significant in Addis Ababa. Households with educated members, active labor force and increase household size have a lower probability of falling into poverty. Another author such as Yonas (2014) examined the persistence of household poverty among heterogeneity occupations in urban poverty. The result exhibited that household headed by educated head and being receiving international remittance reduce the probability of being poor. In addition, households with higher number of own-account workers, casual workers, unemployed members, out of labor force members and child members are more likely to be in the poverty. Mekonnen (1999) also explored better educated households have high probability of reducing poverty, however large families with many elderly and children have high probability of moving into poverty. A study by Welle (2018) examined the impact of living on house rent on household welfare in Addis Ababa city. The result shown that household living in a privately rented house have high incidence of poverty than living in own house. In addition, the study exhibited that as the household is being married and household size increase, the incidence of poverty in turn increase whereas educational attainment and income level of household reduce the incidence of household poverty living in rented house.

The connection between housing rent and poverty status of household is little studied areas in economics and social science. There are trivial evidences with the exceptions of Alcántara and Vogel (2021), Freeman and Schuetz (2017), and Van Dam et al. (2003) that showed the association between housing cost and poverty and Welle (2018) and Mekonen et al. (2022) that showed the connection between homeownership and poverty status of urban household. Alcántara and Vogel (2021) investigated the association between rising housing costs and income poverty among the elderly in Germany using time series data from 1996–2017. Accordingly, the finding indicated that increase in housing costs has increase poverty among elderly in German.

In addition, Freeman and Schuetz (2017) underscored that in many US cities, increasing housing costs create an anxiety in the financial health of the lower, and middle-income households. Nonetheless, the rate of poverty changes if it is calculated by considering housing costs and current income. For example, Van Dam et al. (2003) indicated that the use of housing costs is resulted in higher poverty level and welfare inequality relative to the state where only current income is used to compute poverty as well as welfare distribution. A study by Welle (2018) in Addis Ababa city, in case of Woreda 8 indicated that being living in rented house increase the probability of being poor and reduce income. Another study by Mekonen et al. (2022) shown that the probability of households to fall into poverty is less by 10% for household that owned house relative to these household that have not owned house.

In a nutshell, researchers have undertaken an extensive study about the determinants of urban household poverty. Only a few researchers have examined the association between housing cost and house ownership with welfare of household. However, the relationship between rental price of residential housing with urban household poverty and that of house allowance with poverty was not investigated so far. Thus, this study would address these issues.

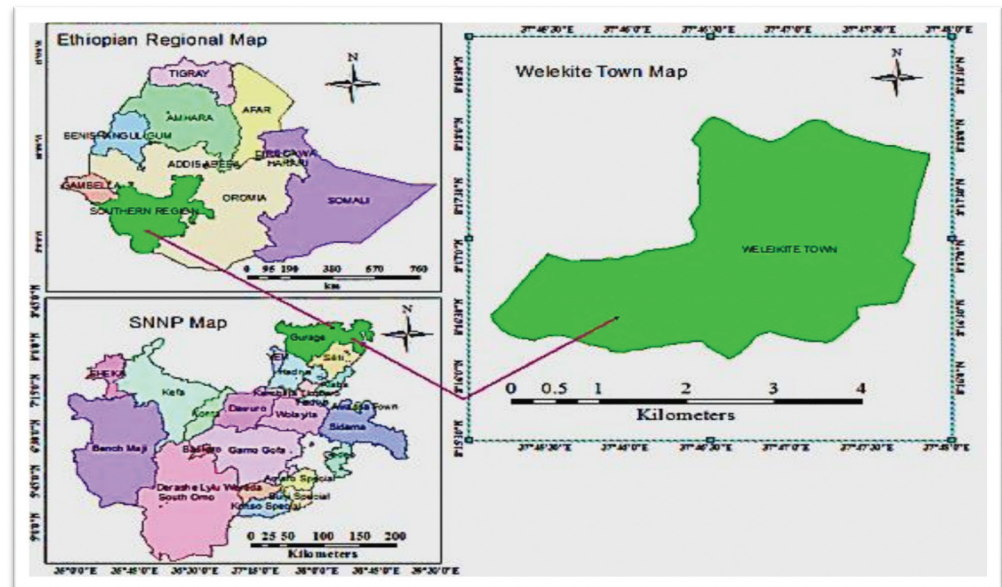
3. Materials and method

3.1. Descriptions of the study area

The study site is at Wolkite town, which is the seat of Gurage Zone administrative offices in the southern nation nationalities and regional state (SNNRS) of Ethiopia. The astronomical location of the town is 07°10' 08" North Latitude and 37° 37'50" East Longitude. The town is located on the main route to Jima from the country capital city (Addis Ababa) which is 158 Kilometres faraway to the south-west direction. As per the national population survey of Ethiopia conducted by Central Statistical Agency (2007), the town has 28,875 population. From this figure, 15,074 were male residents whereas 13, 801 were female residents. Concerning age, 17,476 (61%) of the population were within the age group of 16–60 years, which is in the productive working age groups. On the other hand, 10, 814 (37%) and 585 (2%) of the population were within the age group of 0–15 years and above 61 years, respectively. The main economic activity in the town are wholesaler and retailer trade. Moreover, service in hotels and restaurants, factory work in flour, and textiles, construction works and public and private sector employment are also important economic activities in the town. The town has also accommodated significant number of causal or daily labor migrating from various parts of the country. These migrants were searching job into agriculture sector from the adjacent woredas, as well as employment in manufacturing, construction and hotels activities.

The study area is selected purposively considering the large numbers of migrants to the town from the nearest districts and different parts of the country relative to other towns. Due to the unveiling of industrial developments, private colleges, university, hospitals, technical and vocational education training centre and relative stability, the town hosted many education, job and business seeker. As a result, the demand and rental price of housing increased in the town. Moreover, the administrative map of the town is displayed on Figure 1.

Figure 1. Administrative map of Wolkite town.



3.2. Sample size determination and sampling techniques

The target population of the study is people living in rental housing units in Wolkite town at least for half a year. However, there is no adequate data about the number of house renters in the town. It could be due to the poor housing units auditing and recording practice by the city administration, municipality and revenue office. As a result, the sample size for the study was determined by using Cochran (1963) way for unknown population sample size determination, which is presented as equation 1.

$$n_0 = \frac{Z^2 pq}{e^2} \quad (1)$$

Where, n_0 is sample size to be computed, Z is the standard normal distribution, e is the margin of error, p is the proportion of the population that has attributes in question (households that live in a rented house). Finally, q is the proportion of population that has not attributes in question, or it is equivalent to $1-p$. Considering the absence of data about the number of house renters, the researcher assumed 40% of the residents live in rented house, which implies $p = 0.4$ while $1-p$ (q) is 0.6. The confidence level is 95% with 5% margin of error, and the value of Z^2 at $e = 0.05$ is 3.84. According to equation (1), the sample size for the study became 368 household heads living in rental housing units. The study employed the combinations of both the probability and non-probability sampling techniques. First, the researcher deliberately identified household units living in a rented house. Then, using a simple random sampling technique, questionnaires were distributed to the target respondents. In contrast, purposive sampling technique was used to collect the qualitative information using the key-informant interview. Moreover, purposively selected documents were employed to associate the findings of the study with previous literatures.

3.3. Data collection instruments and methods of analysis

In order to collect the relevant data that are helpful to achieve the study objectives, three tools were employed. These were questionnaires, key informant interviews and document analysis. The questionnaires were designed to household heads living in rented house. It includes both closed-ended and open-ended questions. Due to the fact that the majority of the residents can comprehend Amharic language, the English version of the questionnaires were translated into Amharic language. Key-informant interview was also conducted with municipal heads and administrative officials that were deemed to have adequate information about the topic under study. Finally, document analysis was carried out to compare and contrast the findings and discussion of the study with government policies

and other study findings. The participation of respondents in the study was voluntarily. All the respondents have clear understanding about the objective of the study and no respondents were forced to participate in the study without their interest. Thus, consent form was set to respondents which confirmed their willingness to participate into the study. The data collection activity was carried out from April/15/2021-May/30/2021 by qualified enumerators under the direct supervision of the researcher. The statistical package used to run the model was STATA version 14.

Both descriptive and empirical methods were employed to analyse the collected data. The descriptive analysis was made by using mean, percentage, frequency and standard deviations and presented by using table. However, the empirical model was estimated by using the econometric method, mainly logit model. The dependent variable was relative poverty, while monthly rental price of residential house and other covariates were independent variables. The probability of household heads being in poverty and not within the poverty is specified by a binary random variable (y_i) that takes the value of one if the household head is recognized as poor and zero otherwise. The basic model of the binary response is specified in equation 2.

$$y_i = \begin{cases} 1 & \text{if household is in poverty} \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

Where, y_i is a binary outcome (dependent) variable which reflects the poverty status of household heads. As documented in Verbeek (2004), the theoretical base of the logistic model is presented as equation (3).

$$\frac{p_i}{1 - p_i} = \frac{1 + \exp(z_i)}{1 + \exp(-z_i)} \quad (3)$$

Nonetheless, equation (3) is a non-linear function; thus, it could be linearized by taking the natural logarithm and the model is written as equation (4).

$$\ln\left(\frac{p_i}{1 - p_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \quad (4)$$

Where P_i is the probability that the household heads is poor and $(1-P_i)$ is the probability that the household head is not poor. In addition, X_i represents the independent variables such as the rental price of residential housing, access to housing allowance, the demographic and socio-economic variables of households heads that were supposed to determine the poverty status and incorporated in the regression model. In this study, vital diagnostic tests such as the multicollinearity, model adequacy and fitness tests were also undertaken. Finally, in order to check the validity of the estimated model coefficients, a robustness check was conducted at different measure of relative poverty, mainly at \$1.90 and \$3.20 World Bank poverty line. The descriptions of the dependent and independents variables are presented in Table 1.

3.4. Poverty indices

In the study of poverty, it is sensible first to measure its extent, gap and severity. Generally, there are three fundamental measure of poverty, head count index, poverty gap level, and poverty severity index. According to Haughton and Khandker (2009), the method used for calculating the three measure of poverty are shown in equation 5, 6 and 7. The head count index (HC) measures the proportion of poor household from the total sample, which is computed based on equation 5.

$$HC = \frac{N_p}{N} \quad (5)$$

Where, N_p is the number of households below the poverty line (poor), while N is the total sample size. On the other hand, the poverty gap measures the degree to which individuals on average fall

Table 1. Description of the Dependent and Independent Variables

Variables	Description of variable
Poverty status (PS)	Measured by consumption expenditure of households, if consumption spending is less than poverty cut-off point, it takes value of 1, and otherwise it takes 0
Income/ wage	Monthly income of households from various sources (wage and non-wage income)
Expenditure	Household monthly spending on food and non-food items
Rent of residential house	The amount of money (measured in Birr) paid by renters for residential house rent to homeowner
Access to house allowance	Binary, 1 if households receive house allowance, 0 otherwise
Sex of household head	Binary, sex = 1 if respondent sex is male, otherwise 0
Age of household head ¹	Categorical variable, early, prime and mature working age
Household head education	Binary, 1 if the household head is literate, and 0 otherwise
Marital status	Binary, 1 if respondent is married, and 0 otherwise
Household size	The number of people living in one roof
Employment status	Binary, 1 if respondent is employed, and 0 otherwise
Occupation sector	Government, private sector, and own business employed

Source: Author and literatures (2021)

below the poverty line. The poverty gap (G_i) of the poor household is the difference between poverty line (Z) and actual income (Y_i), i.e. $G_i = (Z - Y_i)f$ or individual ($Z < Y_i$). Then, the poverty gap index (P_1) is written as equation 6.

$$PI = \frac{1}{N} \sum_{i=1}^N \frac{G_i}{Z} \quad (6)$$

The third measure of poverty is poverty severity (square poverty gap) index which measure inequality among poor, and it is the square of poverty gap index (P^2) as shown in equation (7).

$$P^2 = \frac{1}{N} \sum_{i=1}^N \left(\frac{G_i}{Z} \right)^2 \quad (7)$$

The poverty line (Z) is calculated based on the World Bank (2011) at \$1.9 per day, which is converted into Birr based on the current (July 2021) official exchange rate (\$1 = 43.51 Birr). Finally, the monthly expenditure of a household is multiplied by the official exchange rate and the poverty line becomes 2480 Birrs per month. To check the robustness of the estimated model coefficients, the relative measure of poverty was also checked by using the \$3.20 per day poverty line threshold. Thus, the monthly relative poverty cut-off line become 4176.96 ETB.

4. Result and discussion

All the questionnaires distributed to the respondents were not returned. From the total of 368 sample size, only 340 questionnaires were distributed to respondents. This is due to the reason that some respondents were unwilling to fill the questionnaires. Therefore, from the total of 340 questionnaires distributed, only 248 questionnaires were properly filled and returned while the remaining were lost, unreturned and filled incorrectly. Accordingly, the response rate of the study was 72.94% which is considered as a very good response rate as indicated in Babbie (2010).

4.1. Descriptive analysis

As presented in Table 2, the relative poverty rate using the head count index in the study area was 12.1% despite the fact the national urban poverty rate was 25.7%. This suggests that the proportion of poor people living below the poverty line in Wolkite town is less by more than 50% compared to urban national. However, if the relative measure of poverty was calculated at \$3.20 - per day, the head count index of poverty indices was increased to 22.99%. Similarly, the poverty gap index calculated at \$1.9 in the study area was 2.8% which is less than urban national poverty gap index of 7.3% and the zone poverty gap index of 4.9%. On the other hand, the poverty gap index in the study area which is computed at \$3.2 was 5.71%. Last, poverty severity index (1.7%) at \$1.9 in the study area was also smaller than urban national poverty severity index (2.9%). In addition, an attempt was made to compare the zone seat (study area) and the zone poverty measure index. The poverty severity index computed at \$3.2 was increased to 3.86%. The empirical result about Gurage zone poverty indices was taken from the findings of Mohamed (2017). In a nutshell, as shown in Table 2, head count, poverty gap and poverty severity index in Wolkite town is smaller than the zone and national urban poverty indices. Moreover, the relative measure of poverty was varied when computed at different level of poverty line.

Table 3 showed that 52.8% of the respondents were male, while the remaining 47.2% of the respondents were female headed households. Concerning age, 36.3% of the respondents were within 15–24 year, 44.8% were within 25–54 year, and the remaining 19% were within 55–64, year age category. This implies that the majority of the renters are the lower or mid-level of age. The marital status of households indicated that the majority (64.9%) of the respondents were married, while the residual 35.1% were single head households. Education is a vital variable in the study of household socio-economic conditions. As displayed in Table 3, the education status of the respondents revealed that the majority (84.7%) of the house renters were literate while trivial renters were illiterate or have no education which accounted 15.3% of the respondents. Among the entire respondents, significant (86.3%) of the respondents have a job (employed) while the remaining 13.9% of respondents have no job (unemployed). Among employed respondents, regarding the sector they work, majority (66.9%) of them were employed in the public sector, 20.2% were employed in the private sector, and 12.9% were worked or running their own business. Moreover, among the government and private sectors employees, 19.4% of the respondents indicated that their employers pay house allowance while majority (80.6%) of the respondents responded that their employer did not pay house allowance.

As presented in Table 4, the average household size in the study area was 2 people with standard deviation of 0.67 which suggests that renters' household size was lesser compared to the national average of 5 people per household. This may due to the fact that 35.1% of the

Table 2. Relative measure of Poverty (%) at \$1.9 and \$3.20

Poverty indices	Wolkite town	Gurage zone (2015)	Urban national (2010)
Head count index at \$1.9	12.1	17.83	25.7
Poverty gap index at \$1.9	2.8	4.9	7.3
Poverty Severity Index at \$1.9	1.7	1.96	2.9
Head count index at % 3.20	22.99	-	-
Poverty gap index at % 3.20	5.71	-	-
Poverty Severity Index at % 3.20	3.86	-	-

Source: Survey Result and review (2021)

Table 3. Frequency and Percentage of variables

Variables	Category	Frequency	Percentage (%)
Sex of respondent	Male	131	52.8
	Female	117	47.2
Age of respondent	15–24 year	90	36.3
	25–54 year	111	44.8
	55–64 years	47	19
Marital status	Married	161	64.9
	Single	87	35.1
Education status	Illiterate	38	15.3
	Literate	210	84.7
Employment status	Employed	214	86.3
	Unemployed	34	13.7
Sectors employed	Public office	166	66.9
	Private sector	50	20.2
	Own business	32	12.9
Does employers pay house allowance	Yes	48	19.4
	No	200	80.6

Source: Survey Result (2021)

respondents are single, and house renters that have large family size cannot afford the house rent as a result they limit their family size. The average dependency ratio in the study area was 1 person per household with standard deviation of 0.91. As demonstrated on Table 4, the average monthly income of households was 4250.46 Ethiopian Birr (ETB here after) with standard deviation of 2535.9. However, the minimum and maximum income was 1100 and 21,000 ETB, respectively. On the other hand, average monthly expenditure of households was 5602.54 ETB with standard deviation of 3001.94. In a nutshell, the difference between the mean income and expenditure of the respondents indicated that the presence of dissaving. Concerning residential house rent, the average residential house rent in the study area was 905.95 ETB per month with standard deviation of 467.70. The minimum and maximum residential house rent was 400 and 3500 ETB, respectively. The gap between the maximum and minimum house rent was 3100 ETB which indicated the presence of difference in the price of house rent in the study area. As indicated earlier in Table 3, 19.4% of the employers paid house allowance for their employees or alternatively, 19.4% of employees were received house allowance and the average payment was 1152.08 ETB per month. The minimum allowance payment was 500 ETB while the maximum was 3000 ETB,

Table 4. Mean and standard deviation of discrete and continuous variables

Variables	Minimum	Maximum	Mean	Std. deviation
Household size	1.00	5.0	2.13	0.67
Number of dependencies	0.00	3.0	0.90	0.91
Average monthly income	1100.0	21,000.0	4250.46	2535.90
Average monthly expenditure	1100.0	16,500.	5602.54	3001.94
House allowance (Birr)	500.00	3000.0	1152.08	689.85
Monthly rent (Birr)	400.00	3500.0	905.95	467.70

Source: Survey Result (2021)

which revealed that there was a gap of 2500 ETB. In general, the result presented in Table 4 suggested that households spend significant portion of their income for house rent, and on average it was 20.24% of their monthly income which is less than the national (30.5%) average household spending on rent. On the top of that, the house allowance paid for employees is trivial and most of them were unpaid.

4.2. Empirical analysis

In logistic regression, the classical linear regression model assumptions such as linearity, normality, homoscedasticity, and autocorrelation which are based on the ordinary least square model need not be satisfied (Hyeoun, 2013). However, independent variables must not be linearly related to each other (not collinear) which is tested by using correlation and Variance Inflation Factor (VIF). In logistic regression, the test of VIF is undertaken by using Collin test. Although there is no clear cut-off value about VIF, most empirical literatures such as Senaviratna and Cooray (2017), Wooldridge (2016), and Gujarati (2004) indicated that VIF greater than 10 shows evidence of multicollinearity. The VIF of most predictor variables is close to 1 which suggested that the linear association between variables is low.

In logistic regression, the overall fit of the model was also checked by using various techniques. One of the methods is the likelihood ratio (LR) test, which measures how well the independent variables jointly affect the dependent variable. As shown in Table 5, the likelihood ratio with the degree of freedom, $LR(11) = 42.97$ is the likelihood ratio chi-square statistic, and the probability (prob) $> LR = 0.000$ is the p-value for the LR (11) test. Therefore, the results suggested the independent variables used in the model have a high effect in jointly predicting the dependent variable. Another measure of goodness of fit of a model is the Pearson or Hosmer–Lemeshow goodness of fit test. The null hypothesis of the Hosmer–Lemeshow test stated that the model fit well the data against the alternative hypothesis. As revealed in Table 5, the Hosmer–Lemeshow test statistics (245.25) is insignificant at (prob. > 0.2337) suggesting that the model well fitted to the data.

In this section, the empirical analysis which examined the effect of residential house rent on urban household poverty status is presented and discussed. In addition to the rent of residential housing and house allowance, various set of variables such as demographic characteristics of household, and income or wage were included in the logistic regression model. The odd ratio and marginal effect of the two models were demonstrated in Table 6 along with their robust standard errors. Model 1 represent the estimated logit model when the poverty line was considered at \$1.9. However, model 2 denoted the estimated logit model when the poverty line was computed at \$3.20. The two models were used in order to check the robustness of the estimated coefficients. However, for analysis and discussion purpose, the researcher was employed the estimated coefficients of model 1.

Although Table 6 showed that ten explanatory variables were included in the logit regression model, only five of them are statistically significant and influence the poverty status of urban households. It is expected that as the size of the households increases, the probability of households being poor could also increase. The result presented in Table 6 indicated that as household size increase by one person, the probability of households being poor increased by 1.4%. The

Table 5. Overall Model Evaluation and Goodness of Fit test

Test	Categories	χ^2	df	Prob.
Overall model evaluation	Likelihood ratio test	31.88	11	0.000
Goodness-of-fit test	Hosmer–Lemeshow	245.25	11	0.2337

Source: Survey Result (2021)

Table 6. Logit Regression Model Estimated Results

Poverty (dependent variable)	Model 1 (Relative poverty line = \$1.90)		Model 2 (Relative poverty line = \$3.20)	
	Odd ratio	Marginal effect	Odd ratio	Marginal effect
Household size (number)	1.09** (0.266)	0.014** (0.042)	1.39 (0.38)	0.03* (0.02)
sex (dummy Variable)	0.684 (0.294)	−0.066 (0.042)	0.55 (0.24)	−0.061 (0.05)
Marital status (dummy variable)	2.04 (1.63)	0.12 (0.124)	0.61 (0.34)	−0.05** (0.06)
Age dummy (55– 64) years	1.22 (0.622)	0.035 (0.011)	2.58 (1.84)	0.09 (0.07)
Age dummy (25– 54) years	1.82 (0.92)	0.11 (0.095)	2.44 (2.28)	0.09 (0.10)
Education status	0.32*** (0.18)	−0.18*** (0.08)	1.47 (0.40)	0.04 (0.02)
Number of dependencies	0.99 (0.21)	0.0017 (0.037)	0.65 (0.15)	−0.04 (0.02)
Wage/income	0.99* (0.0007)	−0.215* (0.001)	1.20*0 (0.100)	−0.402** (0.021)
House rent price	1.00** (0.005)	0.103** (0.001)	1.20** (0.020)	0.30** (0.130)
Access to house allowance	3.69** (2.34)	−0.213** (0.106)	1.67*** (1.37)	−0.28*** (0.08)

Where, *, ** and *** is significance level at 1%, 5% and 10%, respectively. Moreover, the robust standard errors are reported in the parenthesis.

Source: Survey Result (2021)

finding of the study is in line with the conclusions of Jayamohan and Kitesa (2014) which indicate the positive association between rise in household size and urban poverty in Ethiopia. Moreover, Chewaka et al. (2017) indicated that large household size is associated with higher poverty status in Nekemte town. Welle (2018) also indicated that the probability of poverty increases with an increase in household size in Yeka sub city of Addis Ababa.

Education status of households has positive and significant effect on poverty status of households. Based on the empirical result indicated in Table 6, the probability being poor for educated (literate) households is less by 18% compared to the illiterate households (with no education). The implication is that educated households' probability of being poor (poverty status) is less relative to households with no education. The finding is consistent to the finding of Debeli and Endegena (2019), Jayamohan and Kitesa (2014), Araya et al. (2010), and Awan and Iqbal (2010) which shown that the poverty status of households with no or less level of education is high compared to households with high level of education. The result is further supported by the findings of Chewaka et al. (2017) and Welle (2018), which established the fact that the probability of being in poverty could decrease as the level of literacy increases. It is expected that wage and income could reduce the probability of households being poor. Consistently, the empirical result revealed that a small increase in the average monthly wage or income of households reduces the probability of households being in poverty by 21.5%. This implies that the income level of households and their poverty status is negatively associated, which is consistent with the finding of Welle (2018).

Regarding residential house rent, it has significant effect on the poverty status of households. As demonstrated in Table 6, an increase in residential house rent upsurges the probability of household being to fall into poverty by 10.3%. This suggested that the probability of households being

poor and rent of residential house is positively associated. The result is consistent with the findings of Debeli and Endegen (2019) and Welle (2018) that revealed that households who live in rented house are more susceptible to poverty than households that live in own house. As documented in Crisp et al. (2016), increase in the cost of house increase the rental price of housing, but it decreases the income of households which has the effect of increasing poverty. The authors also indicated that housing expenditure is one of aggravators of poverty in England. The finding is also in line with the finding of Dewilde (2022) indicated that higher housing prices are connected with increased deprivation of the living conditions of renters and low-income owners in Europe.

A study by UN-HABITAT (2010) in Ghana also publicized the presence of a positive association between housing and poverty reduction because housing accounted the highest share of household expenditure item. Moreover, Desmond and Bell (2015) exhibited that housing is one of the key expenditure items for significant low-income families. For instance, as shown on the descriptive analysis of this study, on average households spend 20.24% of their income for residential house rent payment which in turn increase the probability of household poverty status. In line with the empirical result, the key informant interview participants revealed that rising the rent of housing is one contributing factors to the poverty status of renters. One of the interview participants from municipality responded that household spending on house rent reduced the non-shelter spending such as food, clothes, transport, health, transport which aggravate the poverty status of households. Another interview participant from the town administration office highlighted that currently rising residential house rent is one public concern because house rent spending alone accounted the lion share of household budget which in turn reduce the income left for other consumptions of goods and services.

Similarly, access to house allowance has significant effect on the poverty status of household heads. Although house allowance is common to welfare states, in Ethiopia selected sectors have been paying house allowance after deducting tax for employees on monthly basis. All things remain constant, household heads that have no access to house allowance probability of being to fall into poverty is about 21.3% greater than households that have access to house allowance. The finding is in line with the finding of Zedlewski (2002) who indicated that housing support (allowance) can make substantial variation in the economic welfare of low-income people. In relation to this, the key informant interview participants exhibited that paying house allowance is one technique to increase household's rent affordability. As the discussion with the key informant interview participants indicated, house allowance is considered as an insurance for employees to cover their consumption. Particularly, a timely revised house allowance in accordance with the inflationary situation is vital for households.

4.3. Robustness check

In order to check the validity of the estimated coefficients, robustness checks at different line of relative poverty measure were carried out. The three indices of poverty such as head count, poverty gap and poverty severity indices are different when computed at \$1.90 and \$3.20. All the poverty indices computed at \$3.20 were greater than the poverty indices calculated at \$1.9 poverty line. As presented in Table 6, the magnitude and the significance level of the estimated coefficient of the explanatory variables in module 1 and module 2 are different. The estimated logit model at \$1.9 (base line) and \$3.2 poverty line indicated that qualitatively there was no sign difference in the estimated coefficient between the two models. However, the marital status of household become significant in model 2 but insignificant in model 1. In a nutshell, it can be concluded that the estimated results are relatively robust to generalize the findings of the study.

5. Conclusion and recommendations

Housing is one of the basic necessities of human being, the others being food and shelter. Although adequate data were not available, it is anticipated that significant number of house renters were exist in the study area. In spite of the rise in the rental price of residential house, only few employed people received house allowance, which was not adequate enough to cover the

rising house rent or revised as per the changing rent of house. Households spend about 20.24% of their income for house rent per month, which in turn has posed problem on the poverty reduction effort of the government. From the empirical result, it was found that there is a positive relationship between residential house rent and financial poverty status of urban households. That means a rise in house rent in turn increase the poverty status of urban households. In addition, households that have no access to house allowance probability of being poor are higher than households that have access to house allowance. Therefore, this study exhibited that the rental price of residential housing and access to house allowance have an important implication on the poverty reduction effort of the government and poverty status of households. On the top of that, the findings of the study will have theoretical and practical implications. It would contribute to the housing literatures by shed lights the association between household poverty and rental housing price. Practically, the findings would inform policymakers about the effect of house rent on household poverty and to design appropriate urban housing policies and strategies to curtail the growing rental price of housing and hence poverty.

Based on the findings of the study, the succeeding policy implications are forwarded. Policymakers, needs to pay a cautious attention on the association between house rental price and poverty. One of the sustainable development goals (SDGs) is zero poverty. In line with this, one of the macroeconomic objectives of many countries particularly developing countries is poverty reduction. To reduce poverty, policymakers should integrate the issues of housing with other broader social, legal and economic objectives and policies. As housing rent is the single greatest spending item of households, government should include housing provisions and house allowance as part and parcel of the poverty reduction strategies. Although the right to adequate housing is specified on Ethiopia constitution, significant households remained tenants particularly the lower and middle-income groups. Thus, as a poverty reduction policy, government should target the lower and middle-income groups to house provision and social housing programmes. In addition, the city administrations and government should work to increase the stock of housing units through government housing development programme, encouraging the private sector to involve in the housing investment, housing cooperatives and incorporating and directing financial institutions to arrange housing loan scheme as a national priority to poverty reduction. To conclude, housing allowance, which paid is to employees should be periodically revised as per the changing cost of living and rental price of housing.

6. Limitations and future research directions

This study shed light the effect of residential house rent on the financial poverty status of households by using the minimum expenditure approach. One of the major problems faced during the research process was the lack of adequate data about the tenants and landlords. The researcher resolved the problem by using indirect method to collect the data from rental household units. In addition, poverty by its nature is a multidimensional and complex issue which encompassed social, political, health, and educational issues. Therefore, future study should examine the effect of house rent on household poverty using a multidimensional poverty measure. This could help to highlight the health, education, political, social and economic effect of house rent on household units. In this study, only head count index was employed to measure the rate of poverty. Therefore, future study should use alternative poverty indices such as poverty gap and severity index to estimate poverty related models. In addition, despite that house rent is an important source of income for the landlords, the focus of the present study is on the demand side of rent, tenants. Therefore, future studies should investigate the importance of house rent for landlords from the supply side.

Funding

The author received no direct funding for this research.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Citation information

Cite this article as: The effect of residential house rent on Urban households poverty status in Ethiopia: evidence from Wolkite town, Endalkachew Kabtamu Mekonen, *Cogent Economics & Finance* (2022), 10: 2125659.

Note

1. Following the Ethiopia Age Structure (2020), in this study considering the respondents age, it is categorized into three components. These are the early working age (15–24) years, the prime working age (25–54) years, and the mature working age (55–64) years.

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