SOCIOLOGY | RESEARCH ARTICLE

Drivers of rising residential house rent in Wolkite town, Gurage zone, Ethiopia

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Abstract: Increase in residential house rent prompts social, health and economic problem to society. The problem is more pronounced in developing countries where social welfare programs are not available. Thus, it is imperative to examine the derivers of rising residential house rent to design appropriate housing policies and strategies to curtail the increasing rental price of housing. Previous studies focused on housing amenities, location, house size, construction materials and cost of housing units as the drivers of residential house rent. However, there were scanty of empirical evidences that showed the association of rental price of housing with house brokers, land policy, inflation, rural to urban migration and household size. Therefore, the main objective of the study is to investigate the determinants of rising residential house rent in Wolkite town by integrating these additional variables. Data were collected from 204 renter units by using questionnaire and estimated using ordinary least square method. In addition, keyinformant interview was conducted for triangulation purpose. The study found that on average 27.877% of the monthly income of house renters was spent for residential house rent payment. Houses located at the centre of the town, built from cement or ceramics and with more bedrooms were contributed to the rising residential rent of housing. Increase in household size, being male and literate also increased the rent of housing. The participation of house rent broker has played a significant role in the increasing rent of housing. In addition, the interview result revealed that high rural to urban

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PUBLIC INTEREST STATEMENT
Rental housing is a vital shelter fulfilling options for those who have no owned house. Residential house rent constitutes a substantial share of household expenditure. The rental price of residential housing has been experienced an increasing trend which caused social and economic problems to house renters. This study therefore examined the drivers of residential housing rent in Wolkite town, Gurage zone, Ethiopia. The study indicated that close to 30% of households’ monthly income is spent for residential housing rent payment. The participation of house rent brokers, high rural-urban migration, inflation and the absence of written or legal contract between homeowners and renters have contributed to the increasing rent of house. Moreover, the rent of residential house is increasing for the houses located at the center of the town (business center), built from cement or ceramics and having more bedrooms.
migration, inflation and absence of written contract between homeowners and renters have contributed to the increasing rent of housing. Therefore, government and city administration should regulate housing rent through introducing legal contract between homeowners and house renters. House brokers should be legalized and set a lump-sum service charge in steady of percentage commission. Rural–urban migration should be managed properly by focusing on balanced rural–urban development. It can also be managed by increasing housing supply through cooperative housing, private sector housing investment and government housing development program. Lastly, housing mortgage should be available along with the liberalization of land market.

**Subjects:** Urban Economics; Urban Policy; Urban Sociology - Urban Studies

**Keywords:** Residential house rent; land market; house broker; Wolkite town

1. **Introduction**
   
   Along with food and clothes, housing is one of the basic needs of human being. As indicated on Article 25 of the Universal Declaration of Human Rights, access to adequate housing is the right of every person for themselves as well as their families (UN-HABITAT, 2014). However, not all human beings have access to housing units, particularly the poor or low-income households. Therefore, rent is an important means of an house fulfilling and provision to household that have not their own home. There are two suppliers of rental housing; these are private and public rental housing (UN-HABITAT, 2011a). The public rental housing is relatively cheap and subsidized by the government compared to the private rental housing. In addition, most of the house rental units are rented from private sectors (2015, and increasing rent of housing is common in the private rental units. Therefore, the focus of the present study is on the private rental housing.

   Next to Nigeria, Ethiopia is the second most populous country in Africa. The majority of Ethiopia population is rural residents which are estimated to be 80%, while the remaining 20% are urban residents. For most of its history, Ethiopia has been grouped under the least urbanized country. However, during the last decades, the country has been exhibited an increasing rate of urbanization (ARUP, 2016). For instance, as documented in World Bank (2021), the share of urban population to national total population was increased from 14.74% to 21.69% in 2000 and 2020, respectively. As a result of high population growth and growing urbanization rate, the demand for housing increases persistently (UN-HABITAT, 2011b). Ethiopia is manifested by the deficiency of housing units with poor infrastructure. Tesfaye and Brown (2007) showed the presence of significant gap between house demand and supply in Addis Ababa. The authors such as Dahl and Góralczyk (2017) in Germany showed that the price of house was increased due to the considerable gap between housing demand and supply. In India, a 14.2% increment in the average rent of house was observed from 2008 to 2012 (Kumar, 2016). Moreover, Zhang et al. (2017) have shown that price bubble is one problem observed in the housing markets of China. Similarly, in the major cities and towns of Ethiopia, rental price of housing is increasing continuously, and this makes life challenging for people living in rented house. For instance, based on the researcher scrutiny, the rent of a small size one room house in the study case (Wolkite) town was 400 Ethiopia Birr (ETB) in 2016 and increased to 1000 ETB in 2021. In percentage change, it was increased by 60%, which is terrible for people living in rented house.

   There have been substantial literatures about the determinants of residential house rent in various countries. For instance, Darfo-Odoro (2020) and Amenyah and Fletcher (2013) in Accra and Yuan et al. (2017) in Nanjing, China, examined the determinants of rental price of residential house and showed that neighbourhood characteristics, distance to central business and market, house features (number of bedrooms, amenities and facilities), closeness to place of work, costs of
construction, household income, and structure and area of floor determine the rent of housing. Previous studies carried out in Ethiopia by focusing on the determinants of rental price of residential house include Abebaw and Tajani (2021), Belete and Yilma (2020), Dawit and Tsegaye (2018), and Sebsbe et al. (2017). All these empirical studies focused on housing amenities, location and house size and construction materials and cost of the housing units as the determinants of rising residential house rent. However, there has been a lack of empirical evidence that shows the effect of house rent brokers, land policy, agreement between landlord and tenants, inflation, rural–urban migration, and household size on rental price of residential house. Therefore, this study is intended to investigate the effect of these mentioned variables on rent of residential house along with the variables identified by previous literatures.

Now a day, it is impossible to get a house for rent or buying without the involvement of house brokers. Brokers play the role of mediating the landlords and tenants and receive 20% of commission from both parties from the monthly rental price of the house. Thus, to maximize the margin of return, brokers promised the homeowners to rent at higher price which make brokers and landlords better-off while house renters worse-off. Therefore, it is argued that house rent brokers have played a significant role for the increasing rental prices of housing. This study also hypothesized that increasing rural–urban migration, inflation, lack of written agreement and national land policy are important variables that could influence the rental price of housing. The present study incorporated these variables and investigated their effect using quantitative evidence by cross-validating with qualitative information mainly through interview data. Moreover, as per the researcher knowledge, previously no studies have been carried out in the study area about the determinants of residential rental price of housing. Therefore, the objective of the study is to investigate the drivers of residential housing rental price in Wolkite town, the seat of Gurage zone administrative office. The study attempted to answer the causes of rising residential house rent and how many proportions of households’ income were allocated for house rent? Thus, the findings of the study would contribute to housing and residential market literatures, and practically, it would be helpful to policymakers by shedding light on the influencing factors of residential housing rent. The rest of the study is organized as follows: the second section presents the literature review related to the study topic, whereas the third section presents the materials and method of the study. The fourth section presents result and discussion of the study, and the fifth section presents the conclusion and policy implications of the study. Lastly, the limitations of the study and implications for future study were presented.

2. Literature review
Across countries, numerous studies have been conducted about the determinants of the rental price of housing, and there are mixed evidences, for instance Egner and Grabietz (2018) in Germany, Balode and Kamols (2019) in Finland, Darfo-Oduro (2020) and Amenyeh and Fletcher (2013) in Ghana, Luo et al. (2021) and Yuan et al. (2017) in China, Rezaeian et al. (2019) in Iran, Singla and Bendigiri (2019) in India, and Wickramasooriya (2016) in Sri Lanka. The empirical result of these studies indicated that income, house location, house features, availability of amenities and facilities, house area, infrastructure access, education, population size, distance from business centre, neighbourhood characteristics, and the cost of construction materials are the main factors that affect the rental price of housing. Nevertheless, in Ethiopian context, only a few studies have been conducted. The authors such as Belete and Yilma (2020), Dawit and Tsegaye (2018), Abebaw and Tajani (2021), Sebsbe et al. (2017), and Degu (2018) studied about the determinants of residential price of housing. The empirical result indicated that number of bedrooms, location, access to infrastructure and housing amenities, construction materials, access to transport, rent level of neighbouring, and the involvement of brokers are the main factors affecting the rental price of housing.

The summary of the empirical findings of the previous studies conducted about the determinants of residential house and real estate rental price is presented in Table 1. As shown in Table 1, the major factors that influence the rental price of housing can be grouped as housing-specific variables,
Table 1. Summary of the review of literatures for determinants of housing rent

| Author/s                  | Title                                                                 | Methodology                  | Findings                                                                                           |
|---------------------------|----------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------------------|
| Belete and Yilma (2020)   | Market rent determinants of residential apartments in Addis Ababa Ethiopia | OLS                          | Number of bedrooms, access to balcony, security of compound, access to lift, access to road and parking area, area of apartment, type of external wall finish, and location or site affect rent of apartment |
| Dawit and Tsegaye (2018)  | Residential pricing in Addis Ababa: Do urban green amenities influence residents’ preferences for house? | Hedonic pricing approach     | Type of house construction materials, location, size of compound, renovation and access to secondary school, landscape and nature views, and availability and access to parks influence price of house |
| Abebaw and Tajani (2021)  | Determinants of residential house rent price in Debre Berhan Town     | OLS                          | Access to water, age of house, nearness to amenities, floor material of house, number of bedrooms, access to toilet and land influence the rent of house in the study area |
| Sebsbe et al. (2017)      | Rental house price determinants & affordability in Hawasa city        | OLS                          | Number of rooms, total area occupied by house, access to transport or taxi, hospital or clinic and housing typology affect rental house price. |
| Egner and Grabietz (2018) | In search of determinants for quoted housing rents: Empirical evidence from major German cities | Macroeconomic-panel model    | Mean income, size of academic community, housing unit per capita and population are drivers of quoted housing rental prices |
| Darfo-Oduro (2020)        | Determinants of residential house rental prices in Accra Metropolis   | OLS                          | The main factors affecting house rental prices are structural and neighbourhood characteristics, distance to central business district and market |
| Amenyah and Fletcher (2013)| Factors determining residential rental prices in Accra, Ghana          | Chi-square                   | Apartment characteristics such as number of bedrooms, availability of amenities (water and electricity supply) and facilities (toilet and bathroom), sharing of apartment facilities, and closeness of apartment to place of work determine rent price. |
| Luo et al. (2021)         | Determinants of housing prices in Dalian City, China: Empirical study based on hedonic price model | Hedonic pricing model         | The main factors influencing housing price are the location of apartment or house, the nearby quality of higher education resources, and proximity to public transit service |
| Wickramaarachchi (2016)   | Determinants of rental value for residential properties: A land owner’s perspective for boarding homes | Linear regression model      | Floor area, availability of water, electricity, bathroom and neighbourhoods’ characteristics, less congestion or privacy, distance to bus route, tiled floor, and roof with ceiling determine the rental price of housing |

(Continued)
| Author/s          | Title                                                                 | Methodology         | Findings                                                                                                                                 |
|------------------|----------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Yuan et al. (2017) | Identifying critical factors influencing the rents of public rental housing delivery by PPPs: case of Nanjing | Structural Equation Model | Construction costs, household income, floor area and structure, transportation, and market rent in the same district and public facilities determine public rental housing in China |
| Degu (2018)      | Determinants of residential real estate prices in Bahir Dar city     | OLS                 | House size, estimated price of building, location, broker, construction material, finishing materials, minor building availability and tenure type determine the residential real estate prices |
| Rezaeian et al. (2019) | The study of determinants of rent housing in Ilam City          | Hedonic spatial model | Physical and socio-economic factors influence the rental of residential units more than the neighbourhood and access variables (market, transport, utilities) |
| Balode and Kamols (2019) | Rental housing market in Riga: Price determinants and lesson keys of Helsinki, Finland | Correlational analysis | Distance from center of business, neighbourhood security, infrastructure, housing quality, employment opportunities, shopping malls, and public transportations have relationship with rent level. |
| Singla and Bendigiri (2019) | Factors affecting rentals of residential apartments in Pune, India | OLS                 | The more the floor area and number of rooms, the higher the rental value. As greater the distance form hospitals, postal service, and government office, the lesser the rental value and vice versa. In addition, distance from employment zones, distance from the nearest school/college and the distance from the nearest public transport terminal affect the rental value. Distance from CBD and hospitals implying that higher distances from these places require higher rental value. |

Sources: Literature review (2022).
infrastructure and socio-economic variables. The housing-specific variables include housing amenities, house size and number of bedrooms, environment, location, and house construction materials. Concerning infrastructure, it includes access to road, school, transport, electricity, water and markets. Lastly, the socio-economic factors include cost of construction materials, education, income of household, and neighbourhood characteristics. Nonetheless, the effects of house brokers, rural-urban migration, tenants and landlord agreement, inflation and land policy on rent of residential housing have not been investigated so far. Therefore, the present study would shed lights on the connection between house brokers, rural-urban migration, tenants and landlord agreement, inflation and land policy and rental price of residential housing by taking Wolkite town as a case study area.

3. Materials and method
The study site is Wolkite town. The location of the town is within 07°10' 08" North Latitude and 37° 37'50" East Longitude. Above the sea level, the town has elevation between 1910 and 1935 m. The town is the seat of Gurage zone administrative office, one of the zones in the Southern Nation Nationality and Regional State of Ethiopia. The town is located on the main road of Jimma 158 km far from Addis Ababa to the south-west direction. Based on the Central Statistical Agency (2007) survey, the town has 28,866 populations where 15,074 are male, while 13,792 are female. Considering the current (2022) national population growth rate of 2.57%, the total estimated population of the town become 42,237. Due to the strategic location of the town, trade and hotel business are the dominant economic activity. With the exceptions of government office workers, majority of the inhabitants are engaged in trade and hotel activities.

The target population of the study is people living in private rental housing unit and living in the town for a minimum of 6 months. The town is selected purposively considering the observed rising rent of housing in the town. Moreover, the town is a business center, and its adjacent areas are more productive; as a result, many people migrate to the town as a casual workers or tenants. In addition, the opening of university, polytechnic, private colleges, hospitals and other institutions has increased the number of people migrating to the town and hence increased the number of renters. Generally, the administrative map of the town is depicted in Figure 1.

There were no well-organized data about the number of rented housing units in the town. The exact numbers of residential house renters were unknown due to underreporting and tax avoidance motive of landlords and the incapability of the city administration to regulate the housing units. As a result, the researcher was determined the sample size by using Cochran (1963) formula for unknown population sample size determination. The formula for the sample size is presented in Equation (1).

\[ n = \frac{Z^2pq}{e^2} \]  

where \( n \) is the sample size, \( Z^2 \) is the standard normal distribution at two side tests, \( e \) is the margin of error, \( p \) is the share of population that has attributes in question, and \( q \) is 1-\( p \) (the share of population that has not attributes in question). In this study, the researcher assumed that 50% of the population in the town are living in rented house, which implied that \( p = 0.5 \), while 1-\( p \) (\( q \)) was 0.5. The confidence level assumed was 95% with 5% margin of error and the \( Z^2 \) at \( e = 0.05 \) is 1.96. Thus, according to Equation (1), the sample size becomes 196 house renters (tenants). The researcher used a contingency of 20 sample households to offset the potential effect of unreturned, lost and properly unfilled questionnaires.

Both probability and non-probability sampling techniques were employed. The probability sampling, mainly the simple random sampling technique, was employed to collect the survey data from household heads living in rented house. On the other hand, the non-probability sampling, specifically purposive sampling method, was employed to collect the key informant interview data from city municipality and administration officers. To accomplish the study objective, data were
collected from both primary and secondary sources. The primary data sources were collected through questionnaires and key informant interview. However, the secondary sources of data were collected from various documents and literatures related to the study topic that are mainly used to associate the findings of the study with the existing body of knowledge.

The study employed questionnaires, key informant interview and document analysis as data collection tools. Both closed and open-ended questions were included in questionnaires which were designed to households living in rented house. The English version of the questionnaires was translated into Amharic version. In doing so, questionnaires were checked and validated by experts before distributed to respondents to reduce possible errors that could occur during the data collection process. Similarly, the key informant interview was conducted with town municipality that was deemed to have adequate information about the topic under study. In addition, interview was conducted with selected household units living in rented housing or tenants. The objective of conducting interview was to triangulate qualitative information with quantitative information. Finally, document analysis was carried out to compare the empirical findings of the study with previous studies. The study was employed both the descriptive and empirical methods of data analysis. The descriptive analysis includes average, percentage and standard deviation that were presented by using table and graph.

The empirical method was used to show the causal relationship between residential price of housing and the explanatory variables. In order to show the relationship between the dependent variable and predictive variables, multiple linear regression model was employed. This model is important to make an inference about each predictive variable based on their influence on the causal effect on the dependent variable. The model is interpreted based on the assumptions of other things remain the same which helps to exclusively know the influence of one independent variable on the dependent variable. One of the most common methods used to estimate multiple linear regression model is the ordinary least square (OLS). Therefore, in this study, the empirical model was estimated by using the ordinary least square technique. This method is employed to show the relationship between the dependent variable and the independent variables. It estimated the partial effects of the independent variables included in the model on the dependent variable. In this study, the dependent variable was rental price of residential house, while the
socio-economic variables, house-related factors, market condition, government policy and inflation were explanatory variables. Therefore, the model of the OLS is written in Equation (2).

\[ P_i = \beta_0 + \sum_{i=1}^{n} \beta_i X_i + e_i \] (2)

By considering the variables represented in Table 2, Equation (2) can be written as Equation (3) in an extended way.

\[ P_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \ldots + \beta_{15} X_{15i} + e_i \] (3)

where \( P_i \) is the monthly rental price of housing paid by each household units (tenants) to homeowner or landlord and \( \beta_0 \) is the intercept of the model that measures the average rental price of housing paid by the house renter if the other variables are held constant. Similarly, \( \beta_1, \beta_2 \ldots \beta_{15} \) are the unknown slopes (partial coefficient) of explanatory variables which measure the effect of change in an independent variable on the dependent variable keeping all other explanatory variables held constant. The value of the unknown parameter can be obtained by taking the partial derivatives of the dependent variable with respect to the interest of the independent variable while keeping the other variables constant. However, stata software would do the estimation within a small fraction of time. On the same manner, \( X_{1i}, X_{2i}, X_{3i}, \ldots X_{15i} \) are the independent variables indicated in Table 2, and \( e_i \) is the error term (residual) which measures the unexplained portion of the regression model by incorporated explanatory variables in the regression model. Diagrammatically, the conceptual framework of the model is presented in Figure 2 based on the variables described in Table 2.

The OLS model has important assumptions that need to be checked and tested before the presentation and analysis of the estimated output of the model. These assumptions include no

| Variables                          | Measurement and description of variable                        |
|-----------------------------------|----------------------------------------------------------------|
| Rent of house (Pi)                | Continuous variable measured in ETB paid to landlord by renter |
| Education status o(X1)            | Dummy variable, 1 if literate and 0 otherwise                  |
| Sex of respondents (X2)           | Dummy variable, 1 if male and 0 otherwise                      |
| Age of respondents (X3)           | Continuous variable, measured in year                         |
| Marital status (X4)               | Dummy variable, 1 if married and 0 otherwise                  |
| Household size (X5)               | Continuous variable, measured by the number of people in house |
| Income (X6)                       | Continuous variable, measured in ETB                          |
| Residency nature (X7)             | Dummy variable, 1 if permanent and 0 otherwise (migrant)      |
| Broker involvement in rent (X8)   | Dummy variable, 1 if yes and 0 otherwise                      |
| Number of bedrooms (X9)           | Continuous variable measured in number                        |
| Access to bathroom (X10)          | Dummy variable, 1 if yes and 0 otherwise                      |
| Access to water (X11)             | Dummy variable, 1 if yes and 0 otherwise                      |
| Access to electricity (X12)       | Dummy variable, 1 if yes and 0 otherwise                      |
| Flour materials of house (X13)    | Dummy variable, 1 if cement or ceramics and 0 otherwise       |
| Location of the house (X14)       | Dummy variable, 1 if located at the center of the town and 0  |
| Size of the house (X15)           | Continuous variable, measured in square meters                |

Source: Author and literature review (2022).
multicollinearity among independent variables, homoscedasticity (same variance of the error term), absence of autocorrelation, and the normality of the error term. Nonetheless, the most severe problems in relation to the OLS model are multicollinearity and the absence of the same error variance or heteroscedasticity. Therefore, only the two assumptions were checked.

Multicollinearity problem would arise when two or more explanatory variables are linearly related and resulted in less reliable inferences. Therefore, the researcher checked the presence of linear association between the variables before estimating the model by using correlation matrix and Variance Inflation Factor (VIF). As indicated in Wooldridge (2016), if the VIF of each explanatory variable is less than 10, it proved the absence of multicollinearity. If there is an indication of multicollinearity between variables, various measures would be taken, such as checking the specification of model, log transformation and dropping of highly collinear variables. Similarly, heteroscedasticity violates the vital assumption of the error terms which showed the equality of variance of the error term which in turn invalidate the test statistics. The researcher would detect the presence of heteroscedasticity using Breusch–Pagan or white test (Gujarat, 2004). If there is an evidence of heteroscedasticity, then the robust standard error would be reported. Still, if the problem is not solved, the weighted least square (WLS) model could be used. The researcher used STATA Version 14 software to estimate the specified model. Finally, the measurement and description of the variables used in the model are presented in Table 2.

4. Result and discussion
In this section, both the descriptive and empirical results of the study were presented and discussed. The descriptive analysis was presented in the first sub-section, while in the second sub-section, empirical analysis was conducted. From the total 216 questionnaires distributed, 204 (94.4%) were returned and filled properly, while the remaining 10 (5.6%) were lost, unreturned and filled inaccurately. Therefore, as various literatures agreed, the response rate of the study is good and would give a reliable inference.

4.1. Descriptive analysis
In this section, the descriptive statistics of the variables included in the study were presented and discussed. The frequency and percentage distribution of categorical and binary variables were displayed in Table 3. However, mean, standard deviation and minimum and maximum value for the discrete and continuous variables are presented in Table 4. As shown in Table 3, in relation to sex of respondents, 51.96% were male headed, whereas 48.04% were female headed. The marital
status of the majority (67.65%) respondents was married, while 32.35% were otherwise (unmarried, widowed, etc.). Regarding education level, the majority (65.69%) of the respondents were literate household heads; however, 34.31% were illiterate household heads. Rural–urban is an important variable that influences the rent of residential housing in many countries’ cities and towns. Likewise, most of the renters in the study area were rural–urban migrants. The majority (66.67%) of the respondents were migrants or non-permanent residents of the town. In contrast, 33.33% of the respondents were permanent residents of the town. The involvement of house broker facilitates house renting for tenants and landlords. In the study area, majority (86.27%) of the respondents accessed house for rent through the involvement of house broker. However, only
13.73% of the respondents accessed house for rent without the involvement of house broker through family, friendship or self-searching. Therefore, brokers have been played a vital role in housing markets more than social capital.

Concerning housing services, 95.59%, 96.57% and 36.76% of the respondents have shown that the house they rented have access to electricity, water and bathroom, respectively. In contrast, 4.41%, 3.43% and 63.24% of the respondents revealed that the house they rented has no access to electricity, water and bathroom services, respectively. Majority (66.67%) of the respondents revealed that the floor of the house rented was built from earthen or wooden. Conversely, 33.33% of the respondents revealed that the floor of the house rented to them was built from cement or ceramics. Concerning inflation, 48.04% of the respondents have shown that due to the increase in overall price in the economy, homeowners increase the rental price of housing. However, 51.96% of the respondents indicated that the rental price of housing was not increased by landlord in response to the overall inflation in the country. The majority (62.75%) of the respondents indicated that the house they rented was located at the peripheral of the town, while 37.25% of the respondents’ house was found at the center of the town.

As shown in Table 4, the average age of the respondents was 31.99 years with standard deviation of 7.12. The minimum and maximum age of the respondent was 19 and 50 years, respectively, which has shown that the respondents’ age was within the working (productive) age group. In the study area, the average size of household was 2.04 (0.87 standard deviation), which is less than 4.6 of the national urban household sizes. The minimum household size was 1, while the maximum was 5. The average monthly income of the respondents was 7758.1 ETB with standard deviation of 2431.5. The minimum and maximum monthly income of the respondents was 2500 and 20000 ETB, respectively. The average monthly house rent paid by the respondents to the landlord was 2162.75 ETB with standard deviation of 919. The minimum and maximum average monthly house rent was 700 and 7500 ETB, respectively. Associated with this, household spent 27.877% of their monthly income for house rent. The average number of bedrooms per house is 1.16 with standard deviation of 0.8. There were renters who live without bedroom that is why the minimum bedroom becomes zero. The maximum numbers of bedroom were three per a house. The average house size (area) was 43.36 square meters with standard deviation of 11.60. The minimum and maximum size (area) of the house was 25 and 70 square meters, respectively.

### 4.2. Empirical analysis

In OLS regression, the classical linear regression model assumptions such as the linearity, normality, homoscedasticity, and autocorrelation need to be satisfied. The independent variables must not be linearly related each other (no multicollinearity), which could be checked by using the correlation and Variance Inflation Factor (VIF). Though the exact cut-off value of VIF is not known, many literatures such as Senaviratna and Cooray (2019), Wooldridge (2016), and Gujarati (2004) indicated that VIF greater than 10 indicated the presence of multicollinearity. Therefore, the researcher checked the multicollinearity, and the result showed that the VIF of all predictor variables was far less than 10. As shown in Table 5, the association between the variables is low and proved that there is no multicollinearity among the explanatory variables.

Similarly, after running the regression, heteroscedasticity test was checked by using Breusch–Pagan test. As indicated in Table 6, the null hypothesis which stated that the error variances are homoscedastic is accepted. This is because the “p” value is greater than 0.05 or calculated chi-square is less than the tabulated chi-square.

In the succeeding sections, the empirical analysis which examined the drivers of residential house rent on Wolkite town is presented and discussed. The value of R-squared is 0.7031 which revealed that 70.31% of the variation in the model is explained by the variation in the explanatory variables. The “F” statistics also indicated that the overall predictive power of the model is good. Generally, eight explanatory variables have statistically significant effect on the residential rental
Table 5. Multicollinearity test

| Variable                                      | VIF   | 1/VIF  |
|-----------------------------------------------|-------|--------|
| Number of bedrooms                           | 3.03  | 0.32996|
| The house-built materials or floor materials | 3     | 0.33353|
| House size                                    | 2.64  | 0.37949|
| Household size                                | 2.4   | 0.41668|
| Location of the house                        | 2.31  | 0.43242|
| Natural logarithm of monthly income of households | 1.62   | 0.61768|
| Education level of households                 | 1.54  | 0.64922|
| Involvement of house broker while renting home| 1.32  | 0.75918|
| Access to electricity at house                | 1.23  | 0.81219|
| Access to water at house/compound             | 1.18  | 0.84906|
| Access to bathroom at the house/compound      | 1.06  | 0.93943|
| Increase in rent due to the current inflation | 1.17  | 0.85705|
| Sex of households                             | 1.09  | 0.92036|
| Residency nature of households                | 1.05  | 0.9523 |
| Mean VIF                                      | 1.76  |        |

Source: Survey Result (2022).

Table 6. Heteroscedasticity test result

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Ho: Constant variance and H1: No constant variance

\[ \chi^2(1) = 34.19; \text{Prob} > \chi^2 = 0.0650 \]

Source: Survey Result (2022).

price of house, while others are not. The monthly house rent and monthly income were transformed to their natural logarithm. The estimated regression output of the OLS model is reported in Table 7.

The intercept of the model indicated that citrus paribus, the average monthly residential rental price in the study area was 432.4 ETB. Regarding income, the empirical result indicated that the income and residential house rent price has a positive association. Holding all other variables constant, a 1% increase in the income of the house renter or tenants resulted in a 0.296% increase in the monthly residential rental price of housing. Assuming housing a normal good, it could be true because, as income increases people want to live in a relatively better house with comparatively higher rent. The result supported the findings of Egner and Grabietz (2018) which indicated that an increase in the mean income of the population as the drivers of quoted housing rental prices in Germany. Moreover, Yuan et al. (2017) indicated that income of the household as a critical factor to influence the rent of house in China. Another important variable that influences the rental price of housing is location. When we say location, it refers to whether the house is found at the center or peripheral of the town. It is hypothesized that houses that found around the center of a town are close to market, transport, public institution and other amenities compared to houses that found around the peripheral of the town. As a result, the rental price of a centrally located house would increase. For instance, Balode and Kamols (2019) indicated that the further away
Table 7. The estimated results of the OLS model

| Ln monthly rent (dependent variable) | Coef.  | Std. Err. | t     | P > t  | [95% conf. interval] |
|--------------------------------------|--------|-----------|-------|-------|----------------------|
| Ln monthly income                    | 0.243  | 0.060     | 4.02  | 0.000 | [0.124, 0.362]       |
| House location                       | 0.296* | 0.053     | 5.620 | 0.000 | [0.192, 0.400]       |
| Inflation                            | 0.013  | 0.038     | 0.350 | 0.728 | [-0.061, 0.088]      |
| House size (area) in meter square    | 0.004  | 0.002     | 1.550 | 0.123 | [-0.001, 0.009]      |
| House-built material/floor material  | 0.195**| 0.062     | 3.140 | 0.002 | [0.072, 0.317]       |
| Access to bathroom                   | -0.022 | 0.035     | -0.620| 0.535 | [-0.092, 0.048]      |
| Access to water                      | 0.108  | 0.101     | 1.070 | 0.287 | [-0.091, 0.307]      |
| Access to electricity                | 0.131  | 0.090     | 1.460 | 0.147 | [-0.046, 0.309]      |
| Number of bedrooms                   | 0.186* | 0.038     | 4.920 | 0.000 | [0.112, 0.261]       |
| Involvement of house broker          | 0.155* | 0.056     | 2.780 | 0.006 | [0.045, 0.264]       |
| Residency status                     | -0.010 | 0.041     | -0.250| 0.801 | [-0.091, 0.071]      |
| Education level                      | 0.076***| 0.045     | 1.700 | 0.092 | [-0.012, 0.164]      |
| Household size                       | 0.074**| 0.030     | 2.420 | 0.016 | [0.014, 0.134]       |
| Sex of respondent                    | 0.064***| 0.035     | 1.860 | 0.065 | [-0.004, 0.132]      |
| Age of respondent                    | -0.001 | 0.002     | -0.320| 0.747 | [-0.006, 0.004]      |
| _cons                                | 4.324* | 0.557     | 7.760 | 0.000 | [3.225, 5.423]       |

* , ** and *** represent significance level at 1%, 5% and 10%, respectively. Number of Obs. = 204, F(15,188) = 29.6, Prob. > F = 0.0000, R-Squared = 0.7031, Adj. R-squared = 0.6794.
Source: Survey Result (2022).

a rental unit from the central business area, the lower the level of rent and vice versa. The result presented in Table 7 revealed that keeping all other variables held constant, as the location of the house is at the center of the town, the average monthly rental price of housing is increased by 29.6% compared to houses located at the peripheral of the town. The result is consistent with the findings of Belete and Yilma (2020), Dawit and Tsegaye (2018), Singla and Bendigiri (2019), and Darfo-Oduro (2020) that indicated location and distance from CBD as one determinant of residential price of housing rent.

The floor material used in the construction of the house is a crucial driver of the rental price of housing. Citrus paribus, if the house is built from cement or ceramics, the average monthly rental price of housing is increased by 19.5% compared to houses that are built from earthen or wooden materials. The result is in line with the findings of Abebaw and Tajani (2021) and Dawit and Tsegaye (2018) that indicated floor material of the house is an important factor which influences the rental price of housing in Ethiopia. The numbers of bedrooms in a house is expected to influence the rental price of housing in the rent market. All other variables held constant, as the number of bedrooms per house increase by one room, the average monthly rental price of housing is increased by 18.6%. Particularly, household with a relatively large household size demanded
house with more bedrooms which would trigger the rental price of housing to increase. Therefore, in line with the findings of Abebaw and Tajani (2021), Belete and Yilma (2020), and Amenyah and Fletcher (2013), the findings of the present study revealed that as the number of bedrooms increase, it has the effect of increasing the average monthly rental price of housing.

House rent has no market like other goods and services. Therefore, house broker serves as a middleman between the homeowners and renters. Although working with broker is important to reduce the time spent to find a house and associated cost such as transport and psychic cost, it is argued that broker has played a significant role to increase the rental prices of housing. As presented in Table 7, keeping all other variables constant, as broker has participated in connecting homeowners and house renters, the average monthly rental price of housing is increased by 15.5% compared to the non-participation of broker in connecting landlords and tenants. As Shitaye and Tajani (2022) indicated, illegal house brokers inflate the rental price of house, which forced people to pay more than what they can pay. As an implicit rule, both house renter and homeowner agreed to deal house rent through the house broker by paying a fixed percentage of commission from the agreed rent of the house. Currently, in Ethiopia in general and study area in particular, broker received 20% of the agreed rent of housing from house renter and homeowner. However, to maximize their return, brokers insisted to increase the rent of house, which has played a vital role for the continuous increase in residential rental price of housing. As a profit-maximizing agent, in this case, both the brokers and landlords are beneficiaries, while tenants are incurring higher cost because of such behaviour.

Household size is an important variable that drives the rental prices of housing. Citrus paribus, a one-person increases in housed size rise the rental prices of housing by 7.4%. This is because, as the size of household increases, the consumption of various housing services such as toilet, bathroom, water and electricity and the need for more bedrooms would also increase. In response to this, homeowners demand to charge higher rental price of housing. Interestingly, sex of house renter is also a significant factor which influences the rental price of housing. Keeping other things constant, as the renter is being male, the rental price of housing is increased by 6.4% compared to female house renters. This could be due to the social attitudes towards male and female in proper utilization of house amenities and services. Similarly, the education level of house renters influenced the rental price of housing. Keeping other things constant, the rental price of housing is 7.6% larger for literate renters compared to illiterate renters. This could be due to the fact that literate renters need house that found at the center of the town where major government organization are found, with more amenities and higher quality.

4.3. Triangulation with qualitative information

The main objective of the interview narration is to triangulate or cross-validate the findings of the quantitative information. The researcher asked the interview participants two major questions that focus on current residential rental price of housing and the causes of the increasing rental price of housing. Regarding the current state of rental price of housing, the interview participants responded that the rental price of housing is escalating from time to time constantly. One of the interview participants who live in rented house described the trends of rental price of housing as follows:

I come to Wolkite town before 10 years ago. At that time, the rental price of housing was relatively low. However, after three years, the trend of the rental price of housing showed a persistent increasing trend. Currently, I have made a deposit of 2500 ETB monthly to the bank account of the homeowner, which is far greater than what I was deposited in the last years. Surprising, while the rent of housing is increasing, I paid it by sacrificing other expenditures. Stated alternatively, rent of house compete other expenditure of my family.

The researcher asked the drivers of the increasing rental prices of housing in the study area and narrated as follows. Majority of the interview participants responded that the causes of rising
rental rapid urbanization and rural–urban migration has caused price of housing were high rural to urban migration, overall inflation, rising cost of construction materials, an informal agreement between the homeowner and house renter, house rent brokers and the current land policy of the country. The interview participants elaborated the above-mentioned root causes of rising residential house rent as follows. Currently, the rental price of housing is triggered by rural to urban migration. Many people have been migrating to the town in response to economic and social factors, for instance to job search, to live a better life, to run a business and to attend education etc., which increased the demand for housing and hence its rental price of housing. In addition, the opening of university, colleges and other industries in the town attracted many job seekers, businessmen and students to the town. Consistent with this, the finding of Gebre-egziabher (n.d) revealed that rapid urbanization and rural–urban migration has contributed to the increasing housing needs and demand in Ethiopia. Moreover, a study by Garriga et al. (2015) showed that rural–urban migration has accounted for the increasing housing prices in China. UN-HABITAT (2011) also revealed that, due to rural–urban migration, the demand for rent increases, which in turn increases the rental price of housing in African cities.

An overall inflation observed in the country prompts the homeowners to transfer the effect of inflation to house renters by raising the rent of housing. Inflation also increased the cost of construction materials, which reduces the construction of new house and supply of houses. A study by Yuan et al. (2017) showed that construction cost is one critical factor that affects the rent of housing in China. In Ethiopia in general and study area in particular, usually homeowners and house renters made an informal agreement which is not enforceable by law. To avoid property tax payment, homeowners have intentionally chosen the informal contract and even they are reluctant to rent their house in case house renters need formal agreement. Therefore, the absence of formal agreement prompts landlord to revise and increase the rental price of house, which is a burden to house renters. A study by Matsumoto and Crook (2021) indicated that due to government’s limited regulation and lack of transparency between tenants and landlords, Ethiopia’s formal rental market development was hindered. Stated alternatively, the rental market in Ethiopia is fragmented and rental information is not available. Similarly, in most African cities, rent contract between the renters and homeowners is usually personal and informal without formal legal agreement (UN-HABITAT, 2011). The involvement of brokers in house rent is the concern of the participants. The participants described the house rent brokers as “artificial creator of rising rental price of housing.” To maximize their return which is a 20% commission from the total monthly rent of housing, brokers promised homeowner to rent their house at a higher rent. This effect is transferred to the house renters and increased its monthly house rent payment. Finally, the land policy of the country is another factor contributing to the increasing rate of residential house rent. As land is a public-owned property, no one can buy and sell it freely like other goods and services. As a result of this distorted land market, the supply of land for house construction and construction of new house is limited and which partly in turn played a role for the growing of house rent.

5. Conclusion and recommendations

Housing is one of the vital requirements to human, the others being food and cloth. Everyone has the right to adequate housing as stipulated in the Universal Declaration of Human Rights. In contrast to this, a large number of household units in developing countries generally and Ethiopia particularly have no access to house and the basic rights indicated in the declaration. As a result, household units are forced to live in rental housing. On the other hand, housing demand and supply in these countries have remained unmet. Due to this and other factors, the rental price of residential house is increasing. Therefore, the main objective of this study is to investigate the drivers of rising residential house rent in Wolkite town. The findings of the study would have theoretical and practical implications. Theoretically, the findings of the study would increase the stock of knowledge and elucidate on the literature regarding house brokers, urban residential housing rent, rent regulation and control, the link between rural–urban migration and rental price of housing and land policy. Practically, the findings of the study would have
contributions to government and city administrations. Firstly, the finding of this study would inform policy makers and urban planners that rising residential housing rent is the major problem of urban households. Secondly, it would serve as a policy impetus in designing urban housing, regulation and welfare program. Thirdly, the findings would help by showing the ways by which rising rental price of housing could be managed and controlled.

Even though adequately recorded data were not available, a significant number of house renters have been found in the study area. On average, household spend 2162.75 ETB for residential house rent per month which accounted 27.877% of the monthly income of renters. As the share of rental housing expenditure increases, it competes spending on education, healthy food, cloth, and transportation as well as the saving of households. Thus, the rental price of residential housing has an important policy implication on the poverty reduction and saving mobilization objectives of the government.

It has been shown that the rental price of house is continuously increasing, and various factors were identified as the drivers to the increasing rental price of housing. House-specific factors such as number of bedrooms, location of the house and floor materials of the house have played a vital role for the increasing rental price of housing. It was found that house located at the centre of town, built from cement and ceramics and with more bedrooms has positively contributed to the rising residential rent of housing. Demographic features of households such as household size, sex, and education level were also influenced the rental price of residential housing. Increasing household size, being male and literate has increased the monthly rental price of housing. The participation of house rent broker has played a significant role in the increasing rental price of housing. In addition, high rural to urban migration, the current land policy, inflation and absence of written agreement between landlord and tenants have played a role in the increasing rental price of residential house. In a nut shell, it could be concluded that the factors determining the rental price of residential housing are complex and multifaceted, which necessitates multiple strategies and policy measures.

Considering the findings of the study, the following recommendations were proposed. The government and city administration should design housing program that would benefit those people who have no home. This could be achieved through encouraging cooperative housing program, government condominium development program and the private construction sector to partake in housing investment by creating attractive investment climate. Government should also control residential house rent through registration of house property of landlord and enforce the legally binding agreement between the landlord and tenants so as to prevent landlord from increasing rent instantly and increase the security of tenants. Moreover, for the aim of societal benefit, government should authorize house broker which mediate homeowner and renter instead of informal brokers which are playing the major role for increasing house rent. The problem of rising residential house rent could also reduce through the arrangement of house credit (mortgage) to individual, investors and other entities. In addition, the liberalization of land market and management of rural–urban migration could tackle the problem of the rapidly growing rent of residential housing.

6. Limitations of the study and implication for future study
The major challenge faced while undertaking the study was the lack of appropriate and organized data about the number of house renters and their related information in the study area. The study is undertaken at a single town based on cross-sectional data set. Thus, future studies should address these limitations by studying the rent of housing in large cities or country level by using panel or time-series data where the social and economic conditions are multifaceted. Moreover, the study covers only private rental housing by excluding other rental housing units. Future studies should study by including other rental options such as informal rent and examining the demand for public housing in urban areas.
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