

Accommodation Challenges Facing Internal Migrants in Urban Settlements in Ghana: The Case Study of Bolgatanga Municipality

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Abstract- In this study, we attempted to investigate the main factors responsible for high rent in the Bolgatanga Municipality of Ghana, assess the income levels of internal migrants, and the consequences of high rent on the migrants. The main questions the study proposes to address include what factors influence high rent in the Municipality, what is the relationship between income of the internal migrants and the rent in the municipality and lastly, what effect does the high rent has on the migrants? Using purposive sampling, and secondary data, a total of three hundred and forty-five (345) migrants and house owners from the Municipality and its environs were surveyed. The study concludes that accommodation in the Municipality is scarce as a result of massive movement of youth into the city, and that accounted for the high rent in the Municipality. The Bolgatanga community and its environs were greatly influenced by housing supply deficiencies which have worsened due to increase in population growth in the area. Supply which was associated with high cost of living left much to be desired. The adjusted R^2 obtained is 0.97. This shows that the explanatory variables included in our model accounts for 97 percent variations in rent in Bolgatanga while the remaining 3 percent unexplained variations is due to other extraneous factors that also necessarily accounts for the movement in rent in Bolgatanga which is explained by the stochastic term. The implication is that the models do not suffer from any misspecification error. Complementing this is the F-ratio statistics with 221.958 with probability values of 0.000. This is highly significant at the 5 percent levels; thus, giving credence to the conclusion that the entire model has goodness of fit. In addition, most of the variables have positive values and are also significant. Even though, most migrants engaged in the informal sector as a means of earning income, this money is mostly spent on accommodation and lastly some migrants re-migrate to other places that have fewer costs of living including accommodation. It is recommended that deliberate policies aimed at addressing the rural housing infrastructural gaps must be encouraged and funded by the state or the respective Districts Assemblies and rent out to the youth and workers in the rural areas as part of efforts aimed at addressing the problem.

Index Terms- Accommodation price, Ghana, housing, inflation, interest rates, loans.

I. INTRODUCTION

There are indications that internal migration in Ghana is rising very rapidly and that it has become an important policy variable in the development sermon. The countryside poor may migrate for a number of reasons including economic and the demand for cheap labour in different regions or towns; the desire to break free from traditional cultural rites; inadequate job opportunities at home.

Internal migration has tended to be neglected in the current debate about migration and development. During the last few years the awareness that migration can and does contribute to development and poverty reduction has grown among policy makers worldwide. One reason why internal migration tends to be “less visible” is that internal migration unlike international migration tends to be undocumented in Ghana.

Throughout the world, it has been observed that migration is being adopted as livelihood and income-earning diversification strategy either within or across borders (Awumbila and Ardayfio-Schandorf, 2008; Waddington, 2003; Nyberg-Sorenson, 2002). There is evidence from research that poor households in some developing countries including Ghana use migration in order to cope with relative deprivation (Stark and Taylor, 1989). In sub-Saharan Africa, it is evident that internal migration promotes the pursuit of opportunities for employment and higher education at the post-secondary level (Agyei and Ofosu-Mensah, 2009; Adepaju, 2003; Anarfi *et. al.*, 2003).

The analysis of Ghana’s 2010 Population and Housing Census data shows that the northern regions (Northern, Upper East and Upper West) experience excessive out-migration (GSS, 2013; Anarfi and Kwankye, 2005). In addition, research has shown that the southward migration from these regions constitutes an important internal migration pattern in Ghana (Agyei and Ofosu-Mensah, 2009; Quartey and Yambila, 2009).

It has been observed that migration within Ghana is a common social and economic phenomenon. Internal migration is often employed as a basic survival strategy to overcome social and economic stresses (Agyei, 2012; Awumbila and Ardyfio-Schandorf, 2008; Anarfi and Jagare, 2008; Kabki, 2007). However, another school of thought considers internal migration as the result of poverty and lack of development, or as a factor contributing to poverty in urban or rural areas. Internal migration, therefore, was sometimes considered as an obstacle to development that had to be restricted and controlled (Dang, 2003).

But internal migration can also have a positive impact on development and poverty reduction. It constitutes a crucial livelihood strategy for many poor people, and an important contributor to national economic growth. By supplementing their earnings through off farm labour in urban areas, rural households diversify their sources of income and accumulate more collective capital. An estimated 98 million villagers who had migrated, sent or brought home roughly US\$ 45 billion in 2003 in China alone, an increase of 8.5 per cent from 2002 (World Bank, 2004). Migrants who maintain links with their area of origin are likely to transfer resources (remittances, investments, human capital and information) to their places of origin and thereby help to raise the standards of living in rural communities.

There are perceptions that internal movements are associated with problems such as shortage of accommodation at the destinations, prostitutions, robbery, drug abuse and many others. From 2000 onwards, the cost of accommodation in Bolgatanga Municipality has been described as above average and expensive as seen from other regions in Ghana.

Generally, activities in the housing industry affect the well-being of people in terms of availability and accessibility of household wealth, access to credit, labour productivity, employment and other macroeconomic variables. When house prices rise, the expectation of further appreciation builds into market sentiments, and this expectation boosts demand for homes, which in turn stimulates new construction and aggregate demand. Also, higher prices of residential housing tend to increase the wealth of households who provide these facilities, thus stimulating consumer spending which is a component of aggregate demand.

In Bolgatanga and in Ghana as a whole, demand for housing surpasses its supply. Regardless of many interventions instituted to rectify the acute housing shortage, the situation persists in the country particularly in the urban centres. In the case of Bolgatanga, the challenge persists as building of extra new housing units does not meet existing demand. Housing deficit figures have been projected to be between 35,000 and 40,000 annually (HFC Bank, 2004). A total of 38 percent and 24 percent of households live in one room and two rooms respectively, and only 38 percent of households live in three rooms or more. However, about 50 percent of the households have only one sleeping room according to the 2010 Housing and Population Census (PHC) estimates (Ghana Statistical Service, 2013). In the year 2000, housing demand in Ghana was 3, 708, 250 but housing supply was 2, 181, 975 creating a deficit of 1, 526, 275 (Obeng-Odoom, 2000).

In the recent Census, the GSS classified 'occupied dwellings' into 10 categories as follows: rooms in a compound, the separate house (detached house), semi-detached house, several huts/buildings, improvised house (kiosk/container), living quarters attached to a shop, camps or tent, hotel or hostel, flat or apartment, and others commonly found in the rural settings. The most recent PHC data on the distribution of housing in Ghana reports that there were 2,181,975 houses countrywide even though a total of 3,877,418 dwelling units or places of abode were also recorded. This implies about 1,695,443 'houses' or places of abode inhabited by a number of households are not conventional houses.

The main purpose of this study is to investigate the challenges facing internal migrants in urban destinations. The study assessed the main factors responsible for high rent and other challenges related to accommodation in the Bolgatanga Municipality due to massive movement of the youth. The main question that the study sought to answer was what are the accommodation challenges do migrants encounter at the destination communities? The specific research questions include:

i) Which factors influence high rent in the Bolgatanga Municipality,

ii) What is the relationship between income of the internal migrants, food and the rent in the municipality and lastly, what are the effects of persistent rise in the rent level on the welfare of migrants?

II. RELATED LITERATURE

Housing is usually the largest expenditure item in a family budget. High housing costs can strain a family budget; constrain availability of resources for other household needs such as utilities, education, health care, transportation, saving for retirement and emergencies. High housing costs also drain the family budget of expendable income that might otherwise be spent in the local economy, reducing the expenditure linkages of the household.

According to the Bank of Ghana (2007), a projected housing deficit in 2010 was 74,855. It has been recognized that inadequate housing is experienced across the entire social strata of the country. Based on UN recommended occupancy rate, the Ministry of Works, Housing and Water Resources approximates that housing supply lags behind demand at a rate of about 70,000 units annually. It will take a lengthy time for the recent housing delivery in Ghana to absorb the shortage (HFC Bank, 2004). Housing supply in Ghana is by and large, dominated by the private sector, accounting for more than 90 percent of the total housing delivery. In addition, to the economic benefits of housing, it is also an established fact that housing impacts positively on the social well-being of the people. New commercial construction will have similar macroeconomic effects and add to the productive capacity of the national economy (, Boem and Schlottmann 2002).

Also demand for building materials, jobs and professions of builders and developers, architects, civil engineers, property valuers, contractors, plumbers and furnishers; all thrive when housing activities are booming. Indeed, the economic impact of housing does not end when a home is sold. Housing continues to be an economic force long after the sale is closed through ancillary services such as decorating, property alterations, and repairs.

The above statistics and evidence above clearly indicated that shelter for a Ghanaian generally is in supply deficiency but the situation in Bolgatanga has become increasing difficult due to excessive rural urban migration. It is against this background that this study is statistically significant.

Housing production and consumption affects the socio-economic development process in different ways. It promotes economic growth through the expansion of the construction industry and contributes to reducing poverty by increasing the

demand for low-skilled workers. Hence, the development of housing solutions has proven to be one of the most cost-effective ways of expanding the asset base of low-income households and enhancing both equity and growth. Nevertheless, most developing regions have systematically failed to provide adequate shelter to their people, and therefore unable to take full advantage of the economic benefits of a well-functioning housing sector. Improvements in the housing sector's performance are broadly accepted as a critical public policy with vast social and economic impacts.

In view of the above, many migrants faced numerous challenges in the cities and towns relating to accommodation which we considered very vital in the movement process, hence this study. The essential variables which often influence house prices are interest rates, income levels and inflation (Shiller, 2007). The determinants of building materials such as cement, wood, nails, labour cost in the Bolgatanga can have serious consequence on capital flight out of the Region which translates into higher accommodation prices in Ghana in general. Consequently, far above the ground, business costs, illiquidity and heterogeneity of somewhere to live becomes a serious problem for the migrants. The ethnic conflict in Bawku and, Bukrangu-Youyo Districts, migration of youth from Mamprussi land, coupled with the desire of the youth to stay in towns rather than the villages are seen as factors causing accommodation price hikes in Bolgatanga and its environs.

It has been realized that the factors which influence housing price in Ghana include high interest rates (40% per annum in the 2000s) and inability of the business people to secure loans from commercial banks, (Krinsman, 2007).

Near to the ground domestic interest rates are believed to be the main causal factor triggering the development (boom) in the Ghanaian real estate (Unterman, 2006). As a result of the above, higher demand for houses as mortgage financing become cheaper (Crouhy et al., 2008). This has resulted in rapid increases in rent since 2007. The Mortgage Association of Ghana and Home Finance Company attested to this.

On the other hand, loans borrowed to construct houses in Ghana, though expensive in terms of interest rates, inflation, building materials and cost of labour house owners pass on the cost to residents in Bolgatanga and its environs. It was found again that in January 2014, rent charges was as high as Ghc 180.00 (\$63.00) per month.

Literature indicated that, only a few studies have given serious attention to housing market (Shen et al., 2005; Hu et al., 2006; Leung and Wang, 2007; Hou, 2009; Dreger and Zhang, 2010). Correspondingly, Hou (2009) found empirical evidence to support the contention that house price guides exist in Ghana (Boem and Schlottmann (2002).

Zhou and Sornette (2008), Goodman and Thibodeau (2008) and Abraham and Hendershott (1993, 1996) examined housing prices in the US. The Abraham and Hendershott studies discovered a 30% above-market premium in house price in the Northeast US, and about 15% to 20% premium in house prices on the West Coast. These proxies were found to work well to explain the large, cyclical swings in real estate prices on the West Coast of the US (Abraham & Hendershott, 1993).

According to Fraser, Hoesli and McAlevey (2008) who did a study on accommodation prices in New Zealand, it was found

that an overvaluation of house prices which was an artifact of price dynamics, rather than an overreaction to economic fundamentals. According to them, the authors tested the difference between real house price and equilibrium price, and showed that real house price exceeded the real house value by 25%. Hatzi & Otto (2008) reported a mortgage speculation bubble in major cities such as Sydney. Only a quarter of the variation in the price-to-rent ratio could be explained by changes in economic fundamentals such as rent growth and real interest rates increase. This suggested that a speculative guide existed in the housing market (Bourassa & Hendershott, 1995; Bodman & Crosby, 2004).

Asset prices are determined by both demand and supply factors. Levin and Wright (1997) suggest the most common demand factors used to study cost of house prices are income, inflation and interest rate. A lot of researchers also include construction cost as an important component of the supply side variables in studying house prices (Meen, 1990; Malpezzi et al., 1998; Case & Shiller, 2003). Meen (1990) effectively used construction cost, interest rate, income, inflation and after-tax interest rate.

One critical factor that undermines 'own-building' in Bolgatanga is the lack of secure, transparent access to land title. A study by Gambrah in Ghana (2001) indicates that as at the time of the research, about 30,000 land title applications were in the backlog. The immediate results of such a problem are the lack of transparency and the ease of transfer. As noted in Asare and Whitehead (2006), this will in turn perpetrate the multiple sales of property and insecure title and land tenure with the effect that the land market cannot operate effectively to either enable the development of a formal market for mortgage or to act as security for mortgage finance.

III. THEORETICAL FRAMEWORK

The neo-classical equilibrium perspective theory made the first scholarly contribution to migration consisted of two articles by the nineteenth century geographer Ravenstein (1885; 1889), in which he formulated his "laws of migration". He saw migration as an inseparable part of development, and proclaimed that the major causes of migration were economic. Migration patterns were further assumed to be influenced by factors such as distance and population densities (Skeldon, 1997). This perspective, in which people are expected to move from low income to high income areas, and from densely to sparsely populated areas, that is, the general notion that migration movements tend towards a certain spatial-economic equilibrium, has remained alive in the work of many demographers, geographers, and economists ever since (Castles & Miller 2003), and, as we will see and also the underlying assumption of push-pull theories.

Even though the issue of migration has not attracted substantial attention within mainstream economic theory itself (Bauer & Zimmermann 1998; Lee 1966; Passaris 1989), economic explanations have nonetheless dominated popular and scholarly thinking on migration. At the macro-level, neo-classical economic theory explains migration by geographical differences in the supply and demand for labour. The resulting differentials in wages cause workers to move from low-wage, labour-surplus regions to high-wage, labour scarce regions. Migration will cause

labour to become less scarce at the destination and scarcer at the sending end. Capital is expected to move in the opposite direction. In a perfectly neo-classical world, this process of “factor price equalization” (the Heckscher-Ohlin model) will eventually result in growing convergence between wages at the sending and receiving end (Harris & Todaro 1970; Lewis 1954; Ranis & Fei 1961; Schiff 1994; Todaro & Maruszko 1987). In the long run, this process would remove the incentives for migrating. The movement of the people from one place to another is confronted with the problem of accommodation which is the first major problem threatening a migrant in the destination. The challenge that most new migrants cannot get their own accommodation but have to depend on friends and relatives for the time being is so difficult. This has made the accessibility and prices of accommodation more expensive in the destination areas in which Bolgatanga is no exception.

Neo-classical migration theory sees rural-urban migration as a constituent part of the whole development process, by which surplus labour in the rural sector supplies the workforce for the urban industrial economy (Lewis 1954). The main reason for migration in Ghana is economic for development where labour move from low income areas to high income zones.

IV. RESEARCH METHODOLOGY

The study was conducted in the Bolgatanga Municipality, which is the administrative capital of the Upper East Region, Ghana. Inflation which is an important determinant of accommodation price in Ghana was calculated by the changes in a standard basket of goods that cannot adequately estimate the supply costs (material and labour) dynamic. The present study employed both demand factors (income, inflation and interest rate) and supply factors to capture house price movement in Bolgatanga Municipality

4.1 Sampling Technique and Sample Size

The study population included all house owners within Bolgatanga Municipality and internal migrants in the Municipality. The Yikene, Sumbrungu, Zaare, Zuarungu, Estates, and their environs were selected purposively because of accessibility to Bolgatanga Town, nearness, functionality, similarity in terms of culture including language and market access. Purposive sampling procedure was used to select house owners and migrants (173 internal migrants and 172 house owners) for data collection due to resource constraints. The house owners sample for each community was chosen with a probability proportionate to its sample frame size, and then an equal number of migrants who have rented accommodation from each community.

The purposive sampling method was chosen as the most appropriate method for this research, as the researchers could apply their knowledge of the research problem to handpick migrants’ from the public to be typical of the population in question. The burden of the judgment of who should be included in the sample remained with the researchers. It was also, according to Brink (1996:135) more convenient and economical than other sampling methods. In all 345 questionnaires were given out, of which 315 questionnaires were actually retrieved.

Table 1: Sample Size of Respondents Distribution

Destination Towns	2012/2013 House Owners	2012/2013 internal Migrants	Totals
Yikene	35	34	69
Sumbrungu	35	34	69
Zaare	35	34	69
Zuanrungu	35	34	69
Estates	35	34	69
Total	173	172	345

Source: Survey field work, 2014

A disadvantage of this sampling method was that it did not contribute to generalisation. This was expected as the study was done in the Bolgatanga and the findings might not be the same in other regions, cultural groups or socio-economic circumstances. There was also the potential for sampling bias. The researchers however, decided that it would be the most suitable method to use and that the criteria set for a respondent to be selected for inclusion in the sample would be followed closely.

4.2 Data Collection Instruments

Primary data were gathered from the respondents of the study through interviews, questionnaire and observations. Secondary data sources on the other hand, included books, peer-reviewed journal articles, project documents, internet sites and periodicals. Such materials were extensively reviewed. The secondary data helped to put the study into a perspective as well as providing the necessary theoretical underpinning within which the discussions in the study have been framed.

The study used both quantitative and qualitative data from internal migrants on their perceptions of the high rent on seeking greener pastures in urban areas. A semi-structured interviewer questionnaire was the main data collection instrument used. The questionnaire included topics on the demographic characteristics of respondents, their household characteristics, income/consumption patterns, remittances, employment, and cost of building materials like cement, nails, wood, iron rods, sand and the effects of internal migration. Some house owners and migrants were visited and interviewed in order to obtain information on how the accommodation price influenced their choice of place to reside. Data collected from the household survey was entered in SPSS (Version 21) after which it was cleaned. The data was also analysed using SPSS for the regression results, tables and percentages were also used where possible.

The migrants-respondents who were mainly from some parts of Upper East, Upper West and Northern regions numbered one hundred and seventy-two, while house owners 173 and a total of 345 who were selected for the various reasons for greener pastures. Most of the migrants were young, between the ages of 18 and 46 years of age.

Data analysis was guided by the research questions. Qualitative data was manually organized into meaningful themes based on the topical issues addressed in the research. Quantitative results are presented in simple and relevant descriptive and inferential statistical methods such as percentages and frequency distributions and regression results.

V. EMPIRICAL MODEL

The Ordinary Least Squares (OLS) was emphasized as the main estimation technique for the study. The OLS was preferred in the study because of simplicity and also because the variables were time continuous variables. The choice of OLS is appropriate because it minimizes the sum of squared vertical distance between the observed responses in time series data Koutsoyiannis (1973). Also, the study considers OLS because of its wide use when analyzing the relationship between internal migration and accommodation prices by various economist working on time series data on a particular country. Verbeek (2004) reports that, one of the cornerstones of econometrics is the linear regression and the OLS estimation method. A simple linear regression can be written as; $Y = \beta_0 + \beta_1x_1 + \dots + \beta_kx_k (q)$

5.1 Model Specification

This study specifically employs multiple regression analysis with OLS econometric technique for data analysis to empirically verify whether a significant positive relationship exists between the dependent variable (PT: Price of rooms) and the independent variables (income, domestic interest rate, inflation or Consumer Price Indices, supply) in the Bolgatanga Municipality. Model which specifies that Rent in Bolgatanga (PT) is significantly influenced by income of the migrant, inflation rate, supply and interest rate are formulated as follows;

$PT = f(\text{income, inflation, supply, interest rate})$

The econometrics form of equation is written thus:

$PT = \alpha t + \beta_1 \text{Inct} + \beta_2 \text{Intrt} + \beta_3 \text{Inft} + \beta_4 \text{InCt} + \epsilon t \dots \dots \dots (1)$

In order to measure both the long term trend and short term dynamics of house prices in Bolgatanga. The model consists of the housing demand and housing supply equations, which was reproduced as follows:

$QDt = \alpha_1 + \beta_1 Pt + \beta_2 \text{Inct} + \beta_3 \text{Intrt} + \beta_4 \text{Inft} + \epsilon t \dots \dots \dots (2)$

$Qst = \alpha + b_1 Pt + b_2 Ct + \epsilon st \dots \dots \dots (3)$

Where d = Number of rooms demanded in time t, Qst = Number of rooms supplied in period t,

α_1 and α = intercepts, β_1 to b_4 = independent coefficients variables, Pt = room prices, Inct = income, Inrt = short-term interest rate, Inft = inflation, supply.

Ct = cost for housing supply (nails, cement, labour cost, iron rods, wood, sand, roofing sheets etc)

ϵDt and ϵst = error terms

The equilibrium condition is $QDt = Qst$. A house price equation can be defined as a reduced form equation with house price as the main endogenous variable, such as follows:

$Pt = \alpha + \beta_1 \text{Inct} + \beta_2 \text{Intrt} + \beta_3 \text{Inft} + \beta_4 \text{InCt} + \epsilon t \dots \dots \dots (4)$

Where:

α = intercept,

ϵt = error terms,

Other variables are similarly defined as in equations 1 and 2 Equation 3 examines the long term trend and short-run dynamics of Cost of Accommodation in Bolgatanga. However, quarterly data of these variables are not available hence, it was dropped. Yearly data from 2012 to 2014 was used to look into the long-run trend and to investigate the dynamics of the house price in Bolgatanga.

The Bolgatanga housing price was utilised to measure the change in rent, Bolgatanga, income variable, the consumer price index (CPI) or as an inflation variable and construction cost as the supply. These four series data sets were obtained from the Statistics Department of Ghana and Bank of Ghana Annual Reports for the various years 2012, 2013 and 2014.

Previous studies of house prices suggest that (income of occupants) is a good proxy measure. For example, Green (1997) tested the relationship between income and house price, finding that it was a good predictor of residential investment.

VI. DATA ANALYSIS AND PRESENTATION

In this section, the data gathered between September 2012 and September 2014, through personal interviews and questionnaire enquiries, are analyzed and presented. Efforts had been made to identify the major factors which influence accommodation price increases in Bolgatanga Municipality. This section also includes a comparative analysis of the factors in terms of their degree of importance to tenants in starting up their lives in the Municipality. Information on the relationship between rent prices and accommodation type has been considered and finally, the effects of the high rent prices on the migrants have been analysed. The response rate for the questionnaire that is the number of questionnaire retrieved was 315 representing 91.3% response rate.

6.1. Limitations of the Regression Analysis

Regression analysis is concerned with developing the linear regression equation by which the value of a dependent variable Y can be estimated given a value of an independent variable X.

If simple regression analysis is used, the assumptions for this technique should be satisfied. The assumption required to develop the linear regression equation and to estimate the value of dependent variable by point estimation is:

1. The relationship between the two variables is linear.
2. The value of the independent variable is a set at various values, while the dependent variable is a random variable.
3. The conditional distributions of the dependent variable have equal variances.

The mathematical criterion generally used to determine the linear regression equation is the least squares criterion by which the sum of the squared deviations between the actual and estimated values of the dependent variable is minimized. The standard error of estimate $y_x s$ is the measure of variability, or scatter, with respect to the regression line. It is used to establish prediction intervals for the dependent variable.

Another area of specific concern in multiple regressions and multiple correlation analysis is the possibility that successive observed values of the dependent variables are correlated rather than uncorrelated. The existence of such a correlation is called autocorrelation. The assumption that the successive values of the dependent variable are uncorrelated has already been identified as a principal assumption in simple regression and simple correlation analysis. However, in simple analysis the existence of such a correlation is easier to observe than a multiple analysis. Typically, autocorrelation occurs when values of the dependent variable are collected as time series values, that is, when they are collected in a series of time periods.

In terms of correlation analysis, the coefficients of multiple determinations and multiple correlations are both overstated in value.

VII. FINDINGS

Qualitative Analysis Section

7.1. Background Characteristics of Respondents (Socio-Demographic Factors)

Migrants were made up of males and females aged between 18- 46 years old and in terms of percentages, they formed the majority of the 345 respondents (78%). Those who were aged below 30 years constituted 28 percent, while 16 percent and 36 percent were 31-45 years and over 45 years respectively. In terms of their marital status, majority of them were married (46%), 16 percent was divorced compared to just 6.2 percent who were widowed while 31.8% belong to other categories. In terms of educational attainment, the analysis shows that 48 per cent of them had basic education relative to 24 per cent with secondary and 18 per cent of them indicated that they had received tertiary education. About one out of every 10 migrants (9.9%) had no formal education. Cross-tabulation of educational attainment by gender revealed that there was no significant variation between males and females except that relatively higher proportion of males than their female counterparts had tertiary education.

In terms of occupation, there was comparatively high proportion of migrants engaged in trading or retail sector than agriculture. The others included domestic workers, security, cleaners, gardeners, masons and carpenters', painters, welders, Koko sellers, people employed in the construction sector to carry concrete, shoe sellers and makers, kebab sellers, by road sellers and many others. From the study, it was revealed that almost every migrant had something to do at their place of destination. This simply means that rent in a year increased by 15% between 2013 and 2014 in Zaare and Soe area and the effect this would have on the general prices of goods and services in the municipality. Again, within the same period, rent in the Bolgatanga Municipality increased by 71% in the period. This has affected their ability to remit more to the families left home. The main research questions of this study include investigating the recent accommodation price hikes in Bolgatanga and her environs, and what are the challenges facing the housing industry in Bolgatanga? What causes accommodation price hikes in the region? what is the relationship between income and rent in the region?

The analysis showed internal migrants moved into the places such as Zaare, Zuarungu, Yikene, Estates and other places. The Appendix1 indicates the places that migrants stayed and the corresponding house prices in such areas. The study revealed that the average price of rooms in Bolgatanga and its environs in 2012 was Ghc17, Zaare Ghc 14, Estate, GHc 17.6, Zuarungu Ghc 17.2 and Yikene GHc 18.8, annual 2012 average price of a room was GHc 17.4 and 2013 annual average price of a room was Ghc 32.4 and annual average price of 2014 GHc 44. According to the respondents, 328 representing 95 percent of them stayed in Zaare and Soe areas with Ghc 40 in a single room in 2014, Ghc 80 for a double room (two Bed Rooms and a Sitting Hall) in 2014 and finally, Ghc 180 for self-apartment in 2014. Again, 324 respondents representing 94% of the internal migrants stayed in

Bolgatanga Township Ghc 60 for a single room, Ghc 90 for the double room and Ghc240 for self-apartment. Bolgatanga ideally should have higher rent prices, Zaare and Soe areas constitute a large area for majority of the migrants than those in town.

A purchase money mortgage is another common source of financing for land acquisition in Ghana and Bolgatanga. The price of undeveloped land in Bolgatanga differs in terms of location and nearness to water source and electricity or near the road side for people who want to operate petrol filling station and easy access to transport and direction. Within the Municipality, Yekene commands higher price of land between Ghc 120, 000 and Ghc 20,000, followed by Zaare/Bolgatanga and Zuarungu Municipality. Generally, Bolgatanga and her environs had very scarce land for farming and other uses as land per head is very high. No wonder this translates into the pricing of accommodation in the area.

The cost of building materials such as cement, nails, roofing sheets, sand, labour cost and even land have an effect on the total accommodation supply in the Region.

Table 2: Typical House Prices in Bolgatanga

Type of House	Approximate Floor Area M ²	Price(Ghc) PER month
1.Bedroom (semi-detached, expandable)	76	Ghc 150
2.Bedroom (semi-detached, non-expandable)	80	Ghc 200
2.Bedroom (semi-detached, non-expandable)	94	GHc 300
3. Bedroom (semi-detached, expandable)	120	GHc 400
3. Bedroom (semi-detached, expandable)	140	GHc 500

Source: Field Survey, March 2014

Appendix 2 indicated the income levels of the migrant. Migrants engaged in the informal sector performing various activities including security/watch men, carpenters, welders, masons, construction works and koko sellers among others. The income ranged between minimum and maximum. For instance, within Bolgatanga Township a security man earns minimum of Ghc 300 in 2014 to a maximum of Ghc 350 in a month and Ghc 400 minimum for a carpenter to maximum. This is because for the carpenter has less work to do at the centre compared to the outskirts of the town like Yikene where most of the constructions work is going on.

In the case of welding in Bolgatanga town, he earns a minimum of Ghc 400 to a maximum and Ghc 600 minimum in a month at Zaare and Soe areas respectively. The high incomes indicate places where new buildings are coming up.

Appendix 3 shows the effects of rent hikes on the internal migrants in relation with their income they earned in a month. In the year 2014, a carpenter within Bolgatanga township earned Ghc400 and spent 15% on a single room, 23% of Ghc90 on double room and Ghc240 representing 60% of his income on self-contained apartment. For instance, if a carpenter was to pay Ghc240 out of a monthly income of GHc 400, it means that only

GHC160 would be left for other expenditures such as food, school fees, medicals, remittances, transportation and also meeting other social obligations. This situation has compelled some of them to re-migrate to other places seemed to be better than Bolgatanga in terms of cost of living. In the case of a welder in Zuarungu, he earns GHC 500.00 and spent 11.2%, 17% for the double room and 32% of his income on self-apartment. It was clear that the welder

in Zuarungu was a little better than the carpenter in Bolgatanga who almost spent all his income on accommodation, but had some small to remit home. A mason spent 44% of his income on self-apartment in Yikene compared with a welder at the same place who spent 38% of his income on same self-apartment even though only Ghc 4.00 is the difference.

Table 6: Negative Effects of High Rent on Migrants

New destination	Year	No of Migrants	Single Room GHc	Double Room GHc	Self-contained apartment GHc	Transportation in and out GHc	Risk
Yorongo	2014	98	32	45	N. A	5	Accidents
Sumbrungu	2014	146	28	32	42	6	arm-robbery
Nyariga	2014	88	30	36	N. A	4	Killing
Gambigo	2014	78	26	38	40	7	Stealing

Source: Field Survey, 2014

Although the new destination looks more of rural settings, most migrants preferred to stay there and becoming to work on regular basis to staying in town with high rent which they claim consume all their income. The new places though distant from their work places with a lot of risk factors such as frequent robbery of their motor bikes, money, and any other personal belongs, they still want to be there. The columns that have N. A. which means not available, looks more rural settings than their counterparts and hence self-apartments do not exist. Obviously, the prices of accommodation seem to be moderate in such places, self-apartments are not enthusiastically available for migrants with large families and other dependents to easily move. However, the impact is heavily felt as many people are moving deeper into the hinter land as a result of high cost of living. This will automatically redistribute population between urban and rural. The total number of migrants who re-migrated as a result for example to Sumbrungu area was 146.

7.2. Internal Migrants and the cost of building Indicators

From the data provided in Appendix 4, it indicated that migrants who had employment within the municipality acknowledged incomes over the years increased significantly dropping slightly by only 0.5% in 2014. Although inflation also increased over the period it has not affected their remittances potentials of the migrants since mild inflation favoured the poor. the chieftaincy conflict which droved most of the people away into the Bolgatanga and other areas hence eight out of every 10 households have at least a migrant within Bolgatanga and its environments.

The implication for the above, is that most rent prices in Bolgatanga are now above average as cost of building materials such as cement, iron rods, cost of labour, nails, roofing sheets and others have registered high prices in Ghana and Bolgatanga in particular due to the desire of the youth to stay in cities and work.

Table 8: Major Causes of Persistent House Price Increases

Reason	Frequency	Percent
Cost of raw materials	94	27.3
High labour costs	76	22.0

marginally over the period it has not affected their remittances potentials of the migrants since mild inflation favoured the poor.

The analysis revealed that majority of the migrants from the Region were engaged in some form of employment and send their remittances home for various purposes including education, health, agriculture, business, housing and many others. The study revealed further that, migrants into Bolgatanga Municipality used their money for their ward’s school fees and majority of them came from Bawku area probability because most migrants from that side engaged themselves in trading, learning skills, and are ready to do anything for money. They indicated that they could get more earnings in some cases depending on season and the type of purpose for sending the money. According to the migrant, every household has at least a migrant from Bawku probably because of the chieftaincy conflict which droved most of the people away and eight out of every 10 households have at least a migrant within Bolgatanga and its environments from that area.

This simply means that, most prices in Bolgatanga are now above average as cost of building materials and others have registered high prices in Ghana and Bolgatanga in particular due to the desire of the youth to stay in cities.

High cost of land	88	
High interest rates	122	35.4
Unavailability of land	102	29.6
Inefficient Technology	98	28.5

NOTE: Percentages do not add to 100 due to multiple responses by respondents

On the causes of persistent hikes in housing price in Bolgatanga, majority of respondents (122 out of the 345) cited high domestic interest rate (about 35.4% of the respondents). This is followed by unavailability of land as second highest reason behind appreciable increases in the house prices in the Region, which makes it impossible for the poor to afford these facilities. Table 8 shows the other related causes of increasing house prices in the region.

Table 9: Effect of Domestic Interest Rate on rent in Bolgatanga

Effect	Frequency	Percent
Strongly Negative	62	50.8
Negative	30	24
Strongly	16	13
Positive	8	6.6
Neutral	6	4.9
Total	122	99.3

Source: Authors' calculations, 2014

The housing survey also revealed that high domestic interest rate tends to affect activities of the sector directly since most housing projects are normally financed partially by loans from the domestic financial institutions and Non-Governmental Organisations. The high cost of loans impacts negatively on housing projects, which indirectly feeds into the final price of houses in the Region.

Table 10: Some Key Challenges facing the Housing Sector in Bolgatanga

Problem	Frequency	Percentage
Land Litigation	38	11
Land Tenure/access to land	62	18
Cost of inputs	60	17.4
Access to Credit	58	17
Interest Rates	49	14.2
Cost of labour	26	8
Infrastructure	18	5.2
Legal Framework	16	5

Source: Authors' calculations, 2014

According to the respondents, the main challenges facing the housing industry in the Region are presented in Table 10. The results suggest that cost of inputs and access to domestic credit remain the key challenges facing the housing sector.

This is followed by inadequate access to land by investors due to poor land tenure system and weak legal framework. Most of the respondents stated that poor infrastructural developments around the country inhibits housing development in the country since most developers bear the entire cost of infrastructure within the project area, which according to them eventually feeds into the final house prices, thus making them unaffordable to the low-income households.

Table 11: Types of finances available to landlords for building purposes

Sources	Frequency	Percentages
Bank Loan (Domestic)	88	26
Self-Financing	32	9.3
Loans from NGOs	90	26
Loans from Money lenders	44	13
Loans from friends	54	16
Credit from suppliers	26	8

Source: Authors' calculations, 2014

The results of the survey showed that real estate developers finance their housing projects from a wide range of sources. Due to the Multiplicity of responses, most respondents reported a dominant source of finance and a less dominant source. Table 11 indicates that most housing projects embarked by real estate developers in Bolgatanga were loans from NGOs, representing about 26 per cent and Bank loans respectively of the entire finance options available to the developers. This development is not encouraging at a time when efforts are being made to bridge the housing deficits gap the Region is currently confronted with. Additionally, some significant numbers of real estate developers depend on loans from domestic banks to partially finance some of their housing projects. Majority of the migrants borrowed money from the money lenders due to the fact that majority of them do not have savings account at the banks but resort to borrowing from the non-banking sector and also assistance from the Non-Governmental Organisations which came into assist artisans with small loans.

7.3. Econometric Section

Table 12 displays a regression result of determinants of rent on the migrants in Bolgatanga. As specified above, the results were obtained using the linear regression method of estimation. From the empirical evidence, we can infer that the coefficient of the regression which is the coefficient that depicts the estimated coefficient appears to be somehow good as well as standard error, the values of t-statistic and the p-values as shown.

The result indicates that rent (PR) have significant positive impact on the independent variables in Bolgatanga; a close examination of this impact appears to be either fluctuating in some periods and sometimes impacts negatively on rent when given cognizance to its lag values. Similarly, inflation rate (Infr) and interest rate (Inrt), have positive but not significant values and income (Incm) has positive but significant value with the exception of labour cost appears to have significant and negative impact on rent in Bolgatanga. A close examination at the result of the equation reveals that some signs were in line with the opinion expectation in literature review.

From the result, the difference in beta coefficient of the variables representing the contributions of independent variables shows the different contributions of the variables to the Bolgatanga Housing project which is been represented by the rent. In this result, using the beta coefficient, inflation rate is a positive of constant 0.004. This means that when all variables are held constant, there will be a positive variation up to the tune of 0.004 units in rent. Similarly, a unit change in rent when all variables are held constant will lead to an increase in rent by almost 0.0 percent. However, a unit change interest rate (0.323) will produce a positive impact on the rent of the Bolgatanga. This means that when interest rate is held constant, it will increase rent by 0.323 percent. In this result, using the beta coefficient, rent is a positive of constant 53.392 This implies that a unit change in labour cost when all variables are held constant will lead to an increase in rent by 1.497 percent while interest earning (INTR) has a positive but significant impact on supply.

The adjusted R² obtained is 0.97. This shows that the explanatory variables included in our model accounts for 97

percent variations in rent in Boltanga while the remaining 3 percent unexplained variations is due to other extraneous factors that also necessarily accounts for the movement in rent in Bolgatanga which is explained by the stochastic term. The implication is that the models do not suffer from any misspecification error. Complementing this is the F-ratio statistics with 221.958 with probability values of 0.000. This is highly significant at the 5 percent levels; thus, giving credence to the conclusion that the entire model has goodness of fit. More so, the Durbin Watson (DW) statistics of 0.598 imply that the model is free from autocorrelation or serial correlation problem.

7.4. Findings of the Study

- The R Square of 97% shows that the model is good (predictive power)
- The Dubin Watson test of 0.598 is positive autocorrelation
- The F. test or the overall model is significant at 0.000
- In this model interest rate is not significant
- Consumer Price Index is not also significant (inflation)
- Income factor is significant
- Supply factor is significant (cost of raw materials, labour cost)
- The high rent led to re-migration
- Some of the migrants could not remit because of high rent
- Most landlords built their houses from the loans they took from banks
- Most of the internal migrants representing 70% rented their rooms through private money lenders followed by NGOs
- Rent is expensive compared to income of the migrants
- Rent are not equal within the township just as jobs
- Domestic interest rate had negative effect on housing and business expansion
- Major key challenges facing the housing industry in Bolgatanga is the cost of input

7.5. Discussion of Findings

The main objectives of the study were to investigate the recent accommodation price hikes in Bolgatanga and her environs, to determine the relationship between income, food and Rent in Bolgatanga, how does accommodation price in the Municipality affect internal migrants' and the research questions related to the study included the following: What is the average price per month per room in recent times, for example, single room, double room, self-apartment? What is the relationship between rent and income in Bolgatanga? What specific factors contribute to the accommodation price increase in Bolgatanga? To what extent does accommodation price hikes in Bolgatanga affect internal migrants?

It was revealed in the study that internal migration in Ghana has contributed significantly to improving people's livelihood in the areas of health, education, employment, income generation, business formation, consumption, agricultural activities expansion, food supply for families and housing among others. These findings collaborate with the research work of (Meen, 1990; Malpezzi et al., 1998; Case & Shiller, 2003). Meen (1990) who found an important component of the supply side variables in studying house prices effectively used construction

cost, interest rate, income, inflation and after-tax interest rate as variables to influence migration.

According to the respondent's, income was a key determinant to influencing migrants to move, using income as proxy for influencing factor to migrate which had positive correlation with house price that also confirms with the study by Pillay & Rangel (2005). Previous studies of house prices suggested that (income) is a good proxy measure. For example, Green (1997) tested the relationship between (income) and house price and found that it was a good predictor of residential investment.

Again, this study showed that income has a positive relationship with internal migration and the rent in the Municipality. The income of the affected areas grows substantially due to internal migration. In comparison with previous research findings to confirm, or disconfirm or proved otherwise to revise, extend and expand our knowledge on internal migration and associated problems in Ghana. The study shows that there is a strong positive relationship between interest rate and accommodation prices in Bolgatanga which was evident by the coefficient of 53.392 of the regression results and was contrary to the prediction by Kau & Keena (1980) and Levin and Pryce (2007).

Indeed, a greater number of pupils' enrolments in schools have increased as a result of remittances sent to them by their relatives who travelled to the major cities, a number of them can now afford three square mails a day which initially was not possible for some households.

The implication for the above analysis in the first place is that, a greater number of households can access health care due to the fact that they have registered with the national health insurance scheme through the remittances they received. Also number of children are now enrolled into schools because they can afford to pay fees and even attain higher education at the tertiary level as a result of the benefits of internal migration.

The second research question related to what factors influences the rent prices According to literature, asset prices are determined by both demand and supply factors. The study by Levin and Wright (1997) suggested the most common demand factors used to study cost of house prices are income, inflation and interest rate, house location. A lot of researchers also include construction cost as an important component of the supply side variables in studying house prices (Meen, 1990; Malpezzi et al., 1998; Case & Shiller, 2003). Meen (1990) effectively used construction cost, interest rate, income, inflation and after-tax interest rate which were captured in this model as part of supply factors. The major aim of this study was to determine factors were responsible for high rent in the municipality. According to the study, positive coefficients of the regression results indicated that major determinants were domestic interest rates, inflation, construction cost and supply deficiencies were the main features. According to this study, it was revealed that high interest rates affected a majority of the internal migrants who could not remit enough money as a result of their inability to borrow from the official sources to expand their business, make profit, and take good care of their children and the old aged and the less vulnerable in society. This means that interest rate has a strong positive relationship with internal migration.

However, some previous studies have documented a negative relationship between interest rate and house price Kau & Keenan, 1980; Levin & Pryce, 2007. This appears to be because most consumers cannot afford to pay cash for a house; thus, they will be forced to take out housing loans. Therefore, an increase in interest rate will increase borrowing cost, which in turn will decrease housing demand.

However, some researchers have also reported an opposite conclusion. The study by Yun, Wang and Seabrook (2003) showed a positive relationship between house price and interest rate in the Hong Kong housing market, known as the Gibson paradox, as introduced by Keynes (1930). The same conclusion also appears in that of Ayuso, Blanco and Restoy (2006) as well as Mc Quinn and O 'Reilly (2006) in a study of housing prices in Spain and in Ireland respectively. In China's housing market, most researchers (for example Gao & Wang, 2009; Wang & Zhao, 2010) have found a positive relationship between house price and interest rate. Our research showed a negative result in (the interest rate coefficient is 0.050, which is statistically insignificant at the 10% level). This is likely because the interest rate variable not only negatively impacts on house price by increasing the borrowing cost for buyers, but also positively affects house price via the growth of borrowing cost for developers (Huang & Wang, 2007).

When interest rate followed up, the extent of the upward pressure from house developers would have been lower than the downward pressure from the house buyers. From Table 1; it is clear that R-Square is about 83% and, the overall significance of the model stood at 0.002 with Durbin Watson is also 2.2 which was free from autocorrelation.

Our findings support that of Lv (2011) and Guo and Duan (2008). Lv (2011) analyzed house price dynamics using income and cost of supply while Guo and Duan (2008) modelled house price using cost of supply and the supply-demand relationship. Both studies reported a positive relationship between supply cost and house prices.

In overall terms, the country still faces lots of youth movement into cities to look for non-existing jobs and ends up creating numerous problems including accommodation. Available statistics indicates that asset prices are determined by both demand and supply factors. Levin and Wright (1997) suggest the most common demand factors used to study cost of house prices are income, inflation and interest rate. A lot of researchers also include construction cost as an important component of the supply side variables in studying house prices (Meen, 1990; Malpezzi et al., 1998; Case & Shiller, 2003). Meen (1990) effectively used construction cost, interest rate, income, inflation and after-tax interest rate.

The statistics also indicate that Fraser, Hoesli and McAlevey (2008) who did a study on accommodation prices in New Zealand found an overvaluation of house prices which was an artifact of price dynamics, rather than an overreaction to economic fundamentals. According to them the authors tested the difference between real house price and equilibrium price, and showed that real house price exceeded the real house value by 25%.

Inflation which is an important determinant of accommodation price in Ghana was calculated by the changes in a standard basket of goods that cannot adequately estimate the

supply costs (such as material and labour costs) dynamic. The present study employs both demand factors (income, inflation and interest rate) and supply factors to capture house price movement in Bolgatanga municipality.

VIII. CONCLUSION AND POLICY IMPLICATIONS

Internal migration is seen as livelihood strategies or diversification for many people in low yield agriculture areas to industrial and high yield agriculture zones, it is so vital to the migrants. Shelter is also a basic human need and operations that promote a housing sector capable of supplying adequate shelter to the population are fundamental goals of government's social development strategy. Thus, well-designed policies supporting the production and consumption of housing services have significant impact on development. Not only do they promote the expansion of the construction industry, they increase the welfare of the population, particularly the poor, by improving living conditions and expanding their physical assets. Also the intention of this paper is not to stop internal migration but to make it more safe, humane and more orderly in our societies than its current status.

Finally, the demand for housing increased significantly as a result of increase in rural urban migration first from the conflict zones and second from the desire of the youth to stay in towns and cities and finally economic. The high cost of accommodation led to high re-migration from areas associated with high rent such as Yikene and Zaare/Soe areas to much lower places like sumbrungu and others.

Ghana's internal migration policies have not received much attention from the state and the private housing sector to mitigate the negative effects associated with migration and its housing problems. remains undeveloped and faces multitude of problems such as land acquisition, over-priced houses by private sector. Our survey has shown that although real estate developers are performing a major role to minimize Ghana's huge housing deficit, majority of ordinary workers cannot afford decent houses due to low-levels of income. Thus, remittances are playing a significant role in developing families left home.

We recommend the following policies for the housing sector in general:

- A well-defined and integrated system of housing finance is needed to fund the construction of new structures and to finance the trading of existing properties
- Alternative strategies to mortgage financing that will benefit low to middle income earners and increase their access to affordable housing, also needs to be considered.
- Establishment of land courts to handle and clear the huge backlogs of land-related cases in the courts which are inimical to the housing industry.
- Land banks should be created by government for estate developers to put up affordable housing units to the populace since the high price of land acquisition affects prices of their products.

In addition, policies actions, aimed at addressing the rural infrastructural gaps must be encouraged to allow the youth stay in the rural areas. There must be special targeting especially in granting loans for housing purposes. There must be quick and

deliberate policies aimed at addressing communities disputes to prevent them from degenerating into serious conflicts that will force the mass of the people to migrant to the cities.

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Appendix

Table 3: The Average Rent in the Municipality

Year	Towns	Respondents	Single Room GHS (1)	Double Room GHS (2)	Self-Apartment GHS (3)
2012	Bolgatanga& Environs	286 (83%)	15	40	70
2012	Zaare& Environs	198 (57.4%)	10	30	60
2012	Estates & Environs	264 (77%)	20	25	68
2012	Zuarungu& Environs	298 (86.4%)	18	26	68

2012	Yikene& Environs	188 (54.5%)	22	28	72
2013	Bolgatanga& Environs	302 (88%)	22	60	100
2013	Zaare& Environs	286 (83%)	20	40	98
2013	Estates & Environs	286(83%)	42	55	90
2013	Zuarungu& Environs	304 (88.1%)	22	42	120
2013	Yikene& Environs	278 (81%)	45	65	140
2014	Bolgatanga& Environs	324 (94%)	60	90	240
2014	Zaare/Soe& Environs	328 (95.1%)	40	80	180
2014	Estates & Environs	308 (89.3%)	56	90	140
2014	Zuarungu& Environs	322 (93.3%)	45	78	156
2014	Yikene& Environs	312 (90.4%)	56	84	160

Source: Authors Calculations, 2014

Table 5: Correlation of Income on Rent of migrants and others

Location	Year	Type of Work	Income Ghc	Single room Ghc	Double room Ghc	Self-Apartment Ghc
Bolgatanga	2014	Carpenter	400	60 (15%)	90 (23%)	240 (60%)
Zuarungu	2014	Carpenter	500	45 (09%)	78 (16%)	156 (31.2%)
Zaare/Soe	2014	Carpenter	600	40 (07%)	80 (13.33%)	180 (30%)
Yikene	2014	Carpenter	700	56 (08%)	84 (12%)	160 (23%)
Estates	2014	Carpenter	650	56 (09%)	90 (14%)	140 (22%)
Bolgatanga	2014	Welder	400	45 (11.3%)	78 (20%)	156 (39%)
Zuarungu	2014	Welder	500	56 (11.2%)	84 (17%)	160 (32%)
Zaare/Soe	2014	Welder	600	58 (10%)	88 (15)	186 (31%)
Yikene	2014	Welder	584	62 (10.6%)	92 (15.8)	220 (37.7%)
Bolgatanga	2014	Mason	300	72 (24%)	94 (31.33)	250 (83.3)
Zuarungu	2014	Mason	600	65 (10.8%)	87 (14.5%)	210 (35%)
Zaare/Soe	2014	Mason	700	64 (9.14%)	90 (13%)	260 (37.1%)
Yikene	2014	Mason	580	68 (11.7%)	98 (17%)	258 (44.5%)

Source: Author's Calculations

Table 7: Internal Migrants and the cost of building Indicators

Cost of building materials Indicators	2012	2013	2014	2015
CPI	8.1%	13.5	17.0	12.0
Real Interest Rates (91 days T.B)	23.1%	19.2	25.38	NA
Incomes	8.9%	8.9	8.4	7.7
Cement price (Average) per bag	19	24	35	38
Construction cost per week	Ghc 100 to 300	Ghc 200 to 400	Ghc 250 to 500	Ghc 350 to 600
Sand per 1 trip	120	180	250	300
Wood 2 by 7	8	16	27	40

Source: World Bank and IMF Staff calculations, MOF and Bank of Ghana (BOG).

Table 12: Model Summary b

Model Summary^b

Model	R	R Square	Adjusted Square	Std. Error of the Estimate	Durbin-Watson
1	.985 ^a	.969	.965	8.04985	.598

a. Predictors: (Constant), supply, inflation rate, interest rate, income

b. Dependent Variable: PT

Table 12: ANOVA b

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57531.656	4	14382.914	221.958	.000 ^a
	Residual	1814.404	28	64.800		
	Total	59346.061	32			

a. Predictors: (Constant), supply, inflation rate, interest rate, income

b. Dependent Variable: PT

Table 12c: Estimated multiple linear regression coefficients of contributing factors on rent in Bolgatanga facing migrants

Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1(Constant)	54.175	11.292		4.798	.000	31.045	77.305
inflation rate	.004	.069	.002	.056	.956	-.138	.146
interest rate	.323	.275	.055	1.174	.250	-.241	.886
Income	.387	.043	1.372	9.012	.000	.299	.475
Supply	-1.497	.602	-.368	-2.485	.019	-2.731	-.263

a. Dependent Variable: PT, **5: significance level

$$Pt = \alpha + \beta_1 \text{Inct} + \beta_2 \text{Intrt} + \beta_3 \text{Inft} + \beta_4 \text{In Ct} + \epsilon t$$

$$PT = 54.175 + 0.387\text{income} + 0.004\text{Inft} + 0.323 \text{Irate} - 1.497\text{SS}$$