The Impact of Inflation on the Standard of Living:
A Case Study of Navrongo in the Upper East Region of Ghana

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Abstract

The inflation rate of Ghana still remains high in absolute terms and by comparison with many other countries in the sub-region and the world in general. Inflation is simply the general increase in the level of prices of goods and services in an economy over a period of time. When the general price level grows; each unit of our currency buys less goods or services hence, the need for all to know the exact nature of the relationship that exists between inflation and living standards of people. This paper dealt with the effects of inflation on standard of living in terms of expenses on food and non-food items, income, savings, loan and recreation over the period (2010-2013). A sample of 100 heads of families was taken from Navrongo community in Ghana using stratified sampling. Structured questionnaire and interview schedule were used as tools for collecting data. The data was analysed using descriptive statistics and multiple regression model. From analysis of the data, inflation did highly affect the living standard of the people, compelling them to get loans and to do overtime work to meet their family expenditures. It was also revealed that the standard of living of the people worsen form year to year with 2013 been the lowest due to the high inflation.

Keywords: Inflation, Standard of living, Income, savings, Expenses, Navrongo, Ghana

1. Introduction

Inflation is a main problem of most economies in the world and influences a country's growth in diverse ways. According to Zou *et al.* (2011), inflation is a major factor that leads to social and economic instability. It is also viewed to be the most observed and tested economic variables both theoretically and empirically (Farid *et at*, 2012). Ghana, a developing country, is still battling to overcome the persistent year to year increase in inflation, and also its causes and consequences. After remaining relatively low for quite some time, the inflation rate in Ghana had risen over the past few years and is still rising. In the month of September 2011 inflation in Ghana was 8.40% and in month of November 2013 it had risen to 13.20%. A lot of research has been conducted on this issue but the present study was conducted to draw the relationship between inflation and standard of living. Inflation is the general increase in the level of prices of goods and services in an economy over a period of time. When the general price level increases, each unit of our currency buys less goods or services. In other words, inflation reduces the purchasing power of people and thus detrimental to economic growth. This conclusion has been buttress by research such as Fischer (1993) who made a strong conclusion that inflation is not good for longer-term growth of an economy and Barro (1996) who said, price stability of goods and services was viewed to be one of the pillars for economic growth. Inflation does not on its own pressure the macroeconomic indicators; it influences the living standards of the nation. As the percentage of inflation increases, the cost of all commodities also increases. It can also be viewed as a fall in the real value of money being a reduction of purchasing power of consumers and thus making standard of living very high. The effect of inflation has made it very difficult for many households have to get their basic necessities which have gone beyond their purchasing power. They therefore resort to loans to satisfy their needs, which further over burden their family economy, because they have to pay their loans with interest.

To manage household expenditures during times of inflation, most households involve themselves in overtime work, which is a sign to dip down recreational activities hence , inflation decreases standard of living through reduction in real income of households, subjecting them to loans and hardworking which reduces their recreational activities as well as better social and physical health.

The quantity theory of money states that, there is a direct relationship between the quantity of money in an economy and the level of prices of goods and services (Friedman, 1956). It can therefore be said, the amount of money circulating in the Ghanaian economy to some extend has relationship with our inflation rate. The quantum of money supplied in the system will be the "*cause"* and the *"effect"* will be inflation rate.

The high level of inflation causes instability in an economy because money does not hold its value for a long time. Workers therefore have a higher need for better remuneration to cover up the higher costs of living because prices of goods and services are increasing every day. Many of such problems have bedevilled, and still are being faced by the Ghanaian economy. This research therefore focuses on finding the impact of inflation on the standard of living of people in Navrongo in the Upper East region of Ghana.

2. Methodology

The study sought to investigate critically, the impact of inflation on the living of standard people in Navrongo in the Upper East region of Ghana over a four years period (2010-2013). This was done by examining the effects of inflation on households' expenditure including their saving practices over the period (2010-2013). A case study approach was used to describe the relationship between inflation and standard of living of people. Random probability sampling was used to select the sample size where every household of the population under study had equal and non-zero chance of being selected as a sample.

2.1 Sampling Technique

This study was mainly based on data from both primary and secondary sources, using Convenience sampling method with a sample size of 100. We grouped the community into ten (10) zones and selected randomly ten (10) households from each zone, forming a sample size of 100 households.

2.2 Data Analysis

Data collected from the study was analysed using descriptive statistics and multiple regression model with SAS and Microsoft excel software to determine the relationship that exist between inflation and standard of living in Navrongo over the period 2010-2013.

2.3 The Study Model

The model of the study is as follows:

$$Y_t = \beta_o + \beta_1 HI + \beta_2 I + \varepsilon t$$

Where Households income (HI), and Inflation rate are the independent variables with Household cost of living (Y_t) as the dependent variable

Where εt represent all relevant variables that were omitted from the model like Interest Rates, Unemployment rates, National Income and Poverty rate, etc. Since they are the random errors expected from the estimation process or the effect on cost of living of all other factors outside our control. β_0 is the Y_t intercept and it is the mean of the dependent variable when all the independent variable equal zero. $\beta_1=\beta_2$ is the slope of the regression and describes the change in the dependent variable when there is any unit increase in any of the independent variables.

3. Results and Discussion

3.1 Socio-Demographic Characteristics

Age and sex play a crucial role in conducting a research involving households. Any researcher cannot downplay the significance of sex distribution, if any meaningful data can be elicited and collected for analysis. Data were gathered from 29% of women respondents and 71% of men respondents. The skewed nature of the percentage in favour of men suggests that majorities of households' heads in Navrongo are men. From the table 1 below 43% were within the class of 30-39 years followed by 28% for the age class of 40-49 years which implies that most of the respondents were within the active economic age and were actively employed.

Table1: Age distribution of respondents

Age group	18-29	30-39	40-49	50-59	60-69
Percentage	14	43	28	12	3

Source: Field survey, 2014

3.2 Marital Status of Respondents

Majority of men and women representing 70% are married. This shows that majority of the respondents are likely to stay in the community because of their social responsibility to cater for their families. However, 17% of men and women are single and 13% are divorced. Table 2 below describe the marital status.

Table 2: Marital status of respondents

Marital status	Percentage
Married	70
Single	17
Divorce	13
Total	100

Source: Field survey, 2014

3.3 Educational Level of Respondents

Thompson (1981) asserted that, if a farmer has formal education, all other things remaining constant he/she is likely to be higher in production especially by the usage of modernized methods of farming. This shows how important education is in today's economy. From the survey, 69% of the respondents attained tertiary education

whiles 31% had attained senior high school education. Table 3 below show the educational levels of the respondents.

Table 3: Educational levels

Educational levels	Percentage	Degree
Tertiary	69	248.4
Senior high school	31	111.6
Total	100	360

Source: Field survey, 2014

3.4 Household Size of Respondents

Size of household unit to some extent determines household expenditure and the suffiency of household income. From table 4 and the pie chart below it, Household size (1- 5) represented 54% of respondents who were living with both spouse and children. Household size (6-10) represented 24% living with both spouse and children, household size (11-15) represented 17% of the respondents living with spouse and children, finally, household size (16-20) represented 5% of the respondents living with spouse and children.

Table 4: Household size

Household size	Percentage	Degree
1-5	54	194.4
6-10	24	86.4
11-15	17	61.2
16-20	5	18
Total	100	360

Source: household survey, 2014

Figure1. Household size
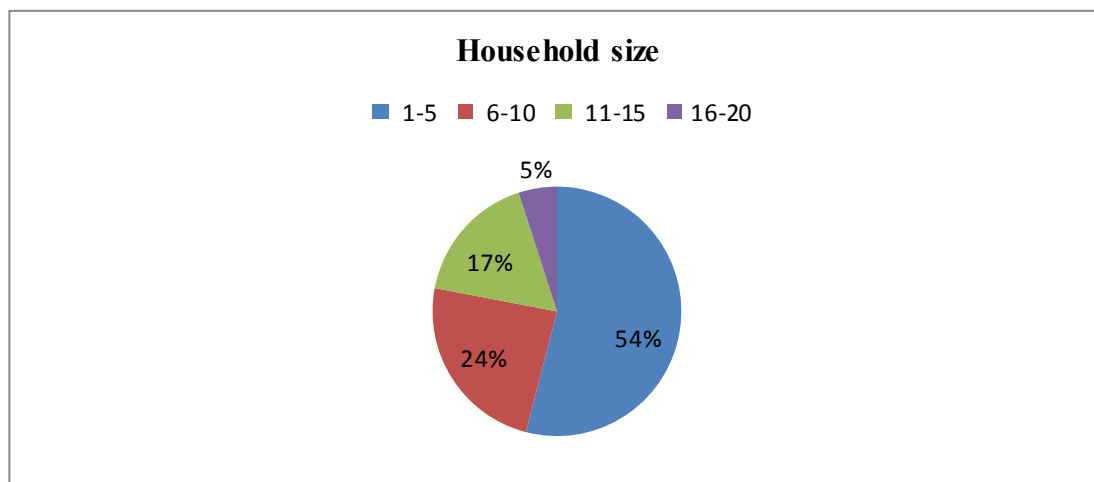
3.5 Monthly Income and Expenditure of Respondents.

The SAS System
The MEANS Procedure for the year 2013

Variable	N	Mean	Std Dev	Minimum	Maximum
y	100	783.7380000	457.0656338	109.0000000	2220.00
x	100	687.2463000	336.9165766	80.0000000	1600.00

_Y is the monthly household cost of living (total expenditure) and x is the monthly income.

The SAS System
The MEANS Procedure for the year 2012

Variable	N	Mean	Std Dev	Minimum	Maximum
y	100	716.8885000	505.2690003	54.0000000	2550.00
x	100	612.3660000	285.9294715	50.0000000	1500.00

The SAS System
The MEANS Procedure for the year 2011

Variable	N	Mean	Std Dev	Minimum	Maximum
y	100	661.3407000	833.4254483	55.0000000	8050.00
x	100	554.7460000	287.4325282	100.0000000	1500.00

The SAS System
The MEANS Procedure for the year 2010

Variable	N	Mean	Std Dev	Minimum	Maximum
y	100	602.9710000	673.2062366	45.0000000	5950.00
x	100	505.6445000	290.7251813	60.0000000	1500.00

Mean monthly expenditure per household unit in 2011 was GHC 661.34, an increase of 4.6 percent from 2010 levels. The year 2012 recorded GHC 716.88, also an increase of 4.0 percent from 2011 levels and the mean monthly expenditure per household unit in 2013 was GHC783.74 which also indicates an increase of 4.5 percent from 2012 levels. From the mean of the various years, it can be seen that the monthly expenditure (cost of living) of households boomed up in the year 2013 which is as a result of very high inflation for that year with a corresponding slight increment in household monthly income.

From the mean of variable X for the various years which is the average monthly income per household, we observed an increment from year to year but when compared to the mean of variable Y (cost of living) for these years, it can be concluded that the income of households over the period under study do not meet households expenditure and thus subjecting them to supplement their income with loans and over time jobs.

The standard deviation (Std Dev) for household monthly cost of living and income indicates how the data is spread around the means of the two variables for the various years.

3.6 Loan to Supplement Income
The table 5 and figure 2 show that the year 2013 recorded 85% followed by the year 2012 which recorded 65%, 28% for 2011 and 24% for 2010 of households who resorted to loans in order to supplement household income. The 85% for 2013 was as a result of the very high inflation for that year without a commiserate increase in households income hence subjecting them to loans which they reported was not helpful since the interest rate charge on the loans were very high. It also found that repayments of these loans came with so many difficulties.

Table 5: The use of loans to supplement income

	Percentages			
	2010	2011	2012	2013
Loan	24	28	65	85
No Loan	76	72	35	15
Total	100	100	100	100

Source: Field survey, 2014

Figure 2: The use of loans to supplement income
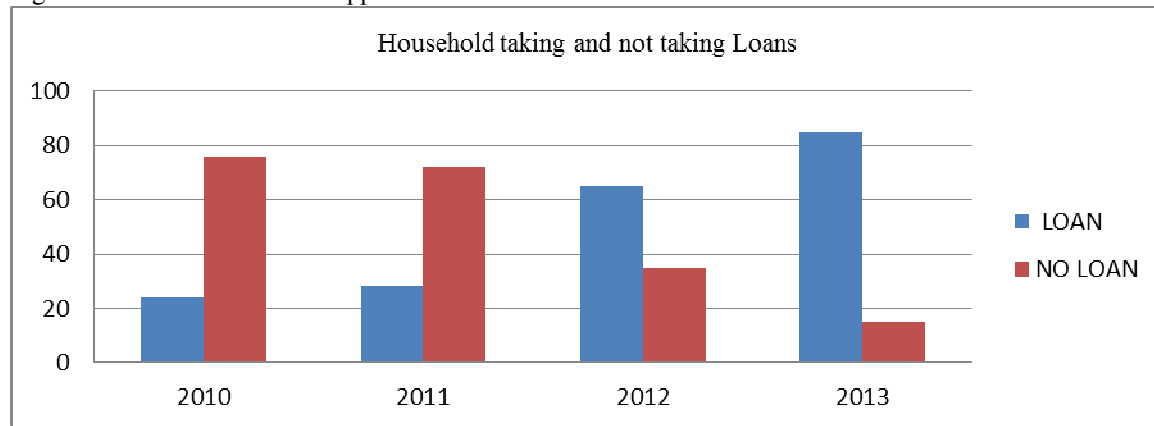
*3.7 Resorting to Overtime/Part Time Job*

87% of the respondents reported that they go on overtime/part time jobs with a range of (GHC65-1000) of monthly earnings during the year 2013 as compared with that of 2010 showing 29% of respondents who worked overtime jobs with a range of (GHC50-GHC400) of monthly earnings from the overtime jobs. Table 6 indicates that the percentage of households who worked overtime jobs increased over the year 2010 through to the year 2013 being the highest percentage. During the data collection most respondents reported that they suffered some sicknesses such as bodily pains, increasing blood pressure among others as a result of the overtime/part time jobs. This result confirms the conclusion reached by Cardoso (1992) when he studied the effect of inflation on poverty between 1970 and 1990 in the Latin American countries. Cardoso stated that, if nominal wages increase less than the price of goods consumed by wage earners, workers' real income will decline and this affects standard of living of people. Because households have to cut down consumption expenditure or sort to over-time jobs in neglect of leisure which finally leads to ill-health and in most cases unable to save.

Table 6: Households on and not on any overtime/part time jobs

	Percentages			
	2010	2011	2012	2013
On overtime/part time jobs	29	33	77	87
No overtime/part time jobs	71	67	23	13
Total	100	100	100	100

Source: Field survey, 2014

Figure 3: Households on and not on any overtime/part time jobs
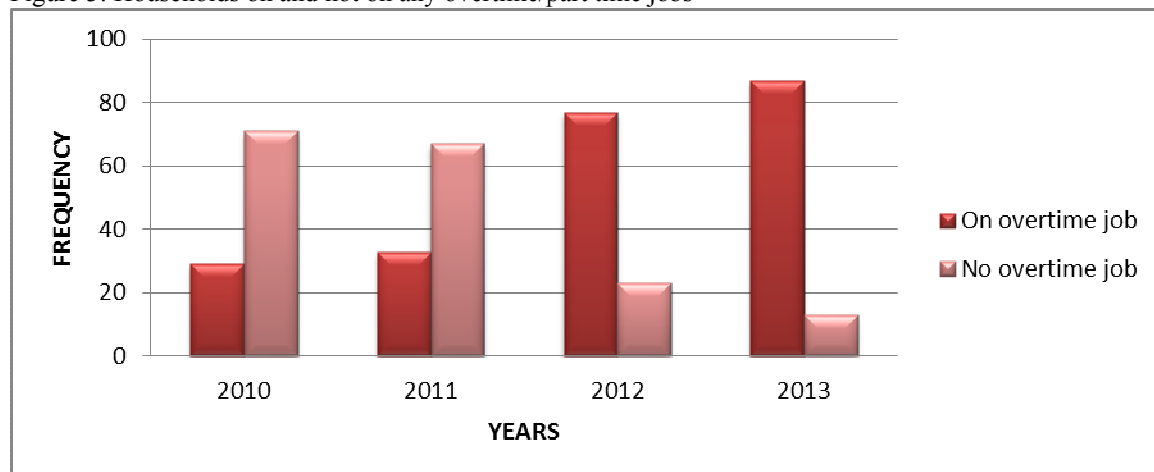
3.8 Number of Times of Meals Taken Per Day, Quantity and Quality of Household Meals

The survey indicated that most households' heads could not feed their families a balanced diet because they could not afford it and therefore had to reduce the quantity and quality of the meals and even the number of meals taken per day. Alarmingly, 73% and 79% of households decreased the quantity and quality of food eaten

respectively during the year 2013 against 0% and 5% of households who reduced the quantity and quality of meals respectively during the year 2010. Table 7 evidenced the reduction in meals for the various years together with its chart below.79% of the households reported that they could not afford enough food hence reduced the number of times they eat a day to two for the year 2013 which is 57% higher than the percentage of households who reported feeding two times a day during 2010 and 2011 and 55% higher than 2012. The analysis also indicates that the percentage of households who reported eating once a day during the periods under study is insignificant.

The table 8 below shows the number of meals per day together with its chart below for the various years. The results about the consumption pattern of households confirms what Fengler (2011) stated, "if you are exposed to high inflation, there is no choice but to cut down on food or on other expenses, many of which are vital, such as school fees or health care". Furthermore, this is also supported by the conclusion of Cardoso (1992) that if nominal wages increase less than the price of goods consumed by wage earners, workers' real income will decline and this affects standard of living of people since households have to cut down consumption expenditure or sort to over-time jobs in neglect of leisure which finally leads to ill-health and in most cases unable to save.

Table 7: Number times of meal per day

Number Times of meal per day	Percentage			
	2010	2011	2012	2013
Three	78	73	69	19
Two	22	22	24	79
One	0	5	7	2
Total	100	100	100	100

Source: Field survey, 2014

Table 8: Reduction in quantity and quality meals

Reduction in meals	Percentage			
	2010	2011	2012	2013
Quantity	0	7	57	73
Quality	5	11	71	79

Source: Field survey, 2014

Figure 4: Reduction in quantity and quality of meals
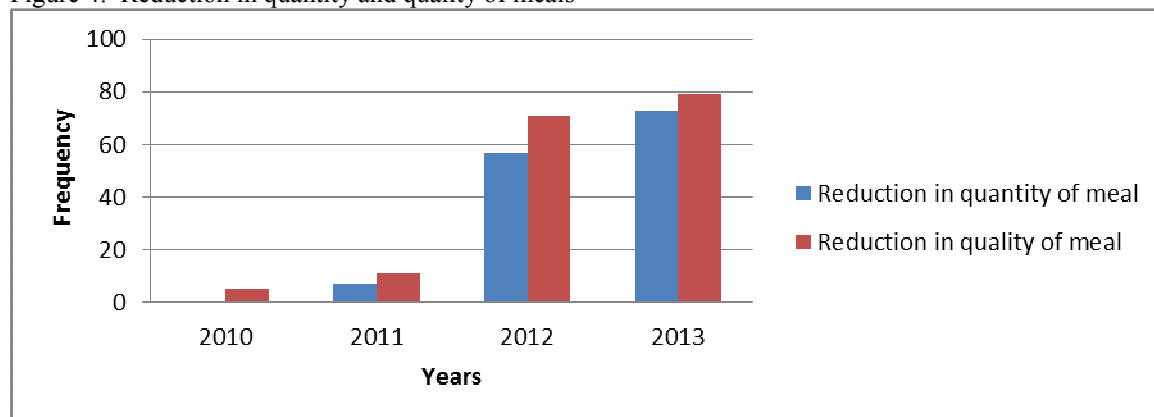
3.9 Respondents Comparison of Standard of Living.
The survey revealed that 71% of the respondents classified their living standard to be poor for the year 2013, 12% for 2010 due to substantial increases in prices with a slight increment in income. The table 9 below evidenced the self-classification of standard of living.

Table 9: Respondents perception of their standard of living

Year	Excellent	Very good	Good	Average	Poor
2010	3	19	22	44	12
2011	0	21	25	41	13
2012	0	1	13	19	67
2013	0	9	11	9	71

Source: Field survey, 2014

3.10 Savings Pattern of Respondents

From Table 10, 2010 recorded 29%, 2011 recorded 28%, and 2012 also recorded 30% whiles 2013 recorded 19% for households who were able to save or invest during the periods under study. For none saving, 2010 recorded 71%, 2011 recorded 72%, 2012 recorded 70% and 2013 also recorded 81%. The analysis also implies that the year 2013 recorded the highest percentage for respondents who were not able to save.

Table 11 shows that out of the 29 households who were able to save/invest in 2010, 19 of them invested in real assets while the remaining invested in financial assets. From the table, it can be concluded that majority population investments are directed towards real assets as compared to financial asset for the period under study. Most households heads reported that they feel comfortable investing in real assets due to inflation and also due to the low returns on financial assets as compared to the appreciation in real assets in recent years.

This result about the saving pattern confirms what Sturm (2012), found out in his paper (the interaction of taxation and inflation and their effect on saving) that if interest rates do not adjust instantaneously to changes in the inflation rate, the relative rate of return on financial and real assets will change, and people will re-arrange their portfolios, increasing their holdings of real assets at the expense of financial assets, because their real assets include consumer durables which they feel comfortable with.

Table 10: The saving pattern of the respondents

	Frequency			
	2010	2011	2012	2013
Saving	29	28	30	19
Not saving	71	72	70	81
Total	100	100	100	100

Source: Field survey, 2014

Figure 5: Savings Patterns
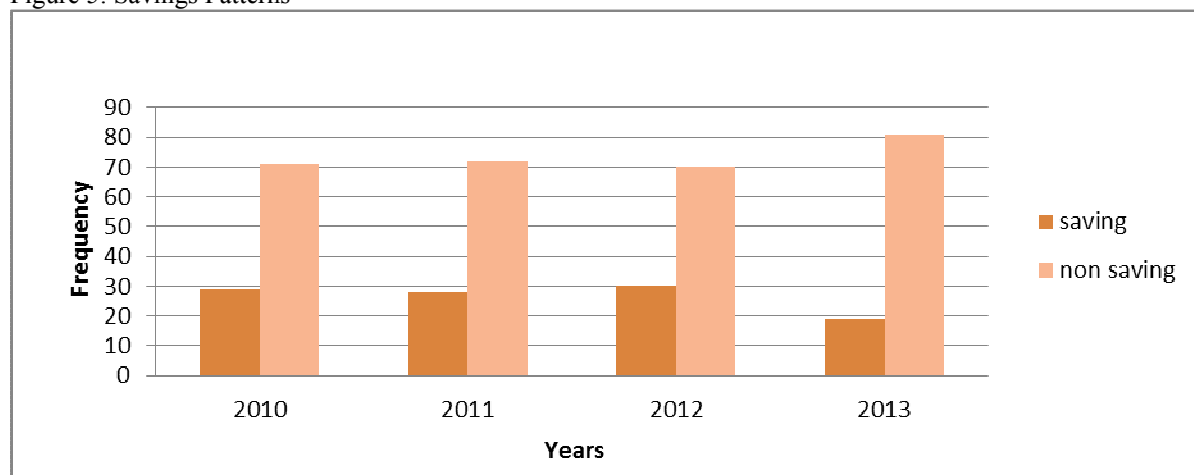
Table 11: Type of Investments

Types of Investments	Frequency			
	2010	2011	2012	2013
Real Assets	19	15	21	17
Financial Assets	10	13	9	2
Total	29	28	30	19

Source: Field survey, 2014

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Figure 6: Type of Investment
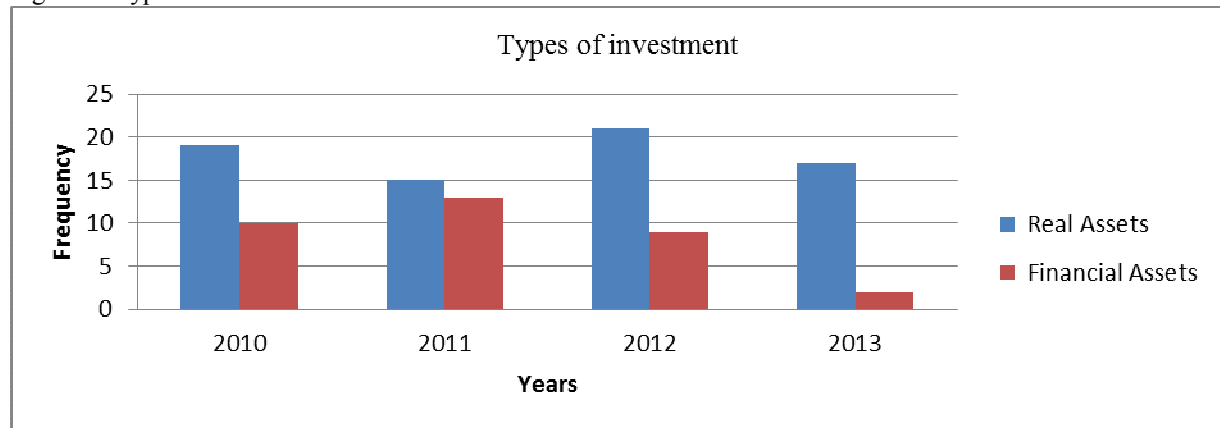
3.11 Inferential Data Analysis

The hypothesis test is conducted at 95% confidence interval that the findings shall be the true result on the ground. The premises for the data analysis are that;

H0: There is no relationship between inflation rate and household income on household cost of living.

H1: There exist a relationship between inflation rate and household income on household cost of living.

The Study Regression Model

$$Y_t = \beta_o + \beta_1 HI + \beta_2 I + \varepsilon t$$

The SAS System

The REG Procedure

Model: MODEL1

Dependent Variable: y

Number of Observations Read   100

Number of Observations Used   100

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F- VALUE	P-VALUE
MODEL	1	5315709	5315709	33.90	<.0001
ERROR	98	15366281	156799		
TOTAL	99	20681990			

R-Square   0.7250

   Adj R-Sq   0.7120

Parameter Estimates

VARIABLE	PARAMETER ESTIMATE	STANDARD ERROR	T-VALUE	P-VALUE
INTERCEPT	311.07343	90.32176	3.44	0.0008
X	0.68777	0.11812	5.82	0.0001
Z	0.72153	0.23641	4.65	0.0003

X is household monthly income (HI) and Z is inflation rate (I).

The estimated multiple regression equation becomes;

Y_t = 311.07343 +0.6877 HI +0.72153 I +εt

Where the constant or intercept is 311.07343   and the gradients are households monthly income and inflation rate which are (0.6877) HI and (0.72153) I; depicting a positive relationship between the dependent and independent variables. This implies that, the more households earn during period of inflation the higher the cost of living notwithstanding the external shocks. The standard errors for the dependent variable is (90.32176) and that of the independent variables are (0.11812) for income and 0.23641 for inflation rate, which depicts how well the variables are spread out.

β_2 value of 0.72153 indicates that if inflation rate increase by one percent, the cost (standard) of living will increase by 0.72153 pesewa which implies that when there is a change in inflation rate, the cost of living

would be affected since households would either have no option than to cut down their consumption in relation to the changes in the relative prices or resort to loans and overtimes jobs which will result in injection in income with which they can buy more of the goods. β_1 value of 0.6877 shows the changes in the cost of living when there is a unit change in households monthly income and also mean that, it is of individual significant in explaining the cost (standard) of living.

The models R-Square estimate accounts for the total variation in the dependent variable that has been explained by our model. R-Square value of 0.7250 means that, about 72.5% of the total variation in the dependent variable is been accounted for by our model.

The explanatory power implication is that some cost of living determining factors have not been included in the model. Some of such factors are dependent rate, unemployment rates, National Income and Poverty rate and so on, which have not been included in the model due to lack of time, finance and data. This therefore calls for further research to expand the model in order to include most of these factors.

Pr value (significant value) of less than 0.0001 indicates that there is significant evidence at 95% confidence interval to reject H0 and conclude by accepting H1,implying that income and inflation rate have a relationship on the cost of living.

4. Conclusion

The economy of Ghana has been shaken in recent times making life of the average household difficult and the depreciation of the cedi is viewed to be the core problem of the economy. The inflation rate of Ghana still remains high in absolute terms and by comparison with many other countries in the sub-region and the world in general.

The current account deficit in Ghana is overwhelming as a result of our trade imbalances. The Ghanaians economy is an import driven one and much change to an export driven if we want to reduce inflation and the rate at which our cedi is depreciation or better still to appreciate against other currencies. We therefore recommend that government should pay attention to the Agric sector of the economy in order to increase the supply of households' essentials.

Fiscal discipline is necessary in attaining single digit inflation as current resources generated are channelled towards the payment of large-scale financing deficit. Lastly, it is also recommended that government should always use the expected annual inflation for the year to determine the minimum wage level and adjust it as and when it is necessary so as to have/maintain a good standard living for Ghanaians.

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