Monetary and Fiscal Policy Factors That Affect Construction Output in Kenya

Emmanuel Thyaka Mbusi, Titus Kivaa Mbiti, Githae Wanyona

Abstract - The main role of construction industry is provision of physical constructed facilities to give other activities space for taking place Hillebrandt, (2000). She further observes that, these constructed facilities are referred to as construction output and are quantified on monetary terms. This quantification is done by Kenya National Bureau of Statistics in this country. Construction industry in Kenya mostly maintains an upward trend in its growth. Recently; 2013 and 2014, an economic survey report released by KNBS showed Kenya's building and construction as having contributed 4.8% to the Gross Domestic Product (GDP). The GDP rose from Kshs.4.73 trillion to Kshs.5.36 trillion in 2014 Macharia, (2015). This gives an indication that the sector is growing, though at a slow pace. Description of monetary and fiscal policy factors in Kenya was thought of, as a way of sensitization to the construction sector stakeholders and players about them. These factors play a key role in decision making concerning construction projects, but are usually not accounted for carefully at this crucial stage of decision making. Time series data was collected on quarterly bases for the period between 2000 and 2013, for the five factors. This data showed normal distribution for all the variables with the mean and median being very close. It was concluded that in Kenya, there are five monetary and fiscal policy factors that affect construction output and hence policy makers, stakeholders and players in the sector should give these factors a fair consideration during decision making stage. This will foster growth in the sector and push the country's GDP towards the ardently desired two digit growth.

Keywords: construction output, time series, fiscal policy, monetary policy.

I. INTRODUCTION

Constructed facilities are referred to as construction output. The method used in practice to quantify constructed facilities is by expressing them in monetary values, as long as the very money values are not the ones which are under investigation Hillebrandt, (2000). In Kenya, this quantification is usually done by Kenya national Bureau of Statistics (KNBS).

The main role of construction industry is provision of physical constructed facilities to give other activities space for taking place. Hillebrandt, (2000) observed that the value in monetary terms of *all the buildings and civil engineering works* in the industry produced within a given duration of time, usually a calendar year, is said to be the construction industry's gross output. According to her, this output is almost 10% on average, on the whole world's Gross National Product (GNP).

In Mawdesley & Qambar, (2000), construction industry is seen as one of those industries which pose many challenges and it is among the leading in the world in terms of size. However, Mawdesley & Qambar, (2000), felt that construction industry holds the key to the emerging and industrialized countries' prosperity in diverse forms.

In Bon, (1992), it is pointed out that, the pattern of the relative amount of construction output, as compared to the Gross Domestic Product (GDP), in any nation evolves as the nation develops. This implies that, as the nation is developing from the state of being less developed country (LDC), to the state of being newly industrialized country (NIC), and moving towards being an advanced industrialized country (AIC). He further states that the relative quantity of construction activity in any country displays a bell-shaped outline, whose highest point happens at the centre of the NIC phase. Minimum points occur near the beginning of the LDC phase and at the last stages of the AIC phase. A most important feature which explains this trend is "the dwindling portion of physical assets in investment" that occurs as a country's economy grows. This is a long term change which occurs and takes place alongside the normal happenings of economy's Kuznets and Kondratiev cycles. The period for Kuznets is estimated at 15 – 25 years and that of Kondratiev is 45 – 60 years. The upward trend would be ideal for a developing nation with continuous construction activity growth. See fig.1 below.
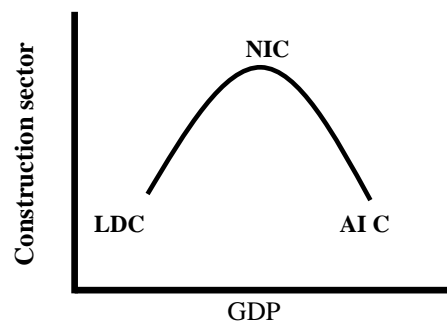
Figure 1(source: Bon, 1992)

While noting the above relationship which was initially proposed by Bon, (1992) and further saying it is importantly empirical, Girardi & Mura, (2013) say that the literature which has discussed the model is just a mere description. They identified this as a gap and went ahead to provide a stronger substantiation to support Bon's hypothesis using panel data for world countries for the period 2000 – 2011. They actually found the relationship to work only when logarithmic transformation of the data is done. This implied that the curve was asymmetric with respect to its maximum.

This had a meaning that, a construction activity relative level tended to go up in countries which are developing, peak during industrialization and start reducing at a slow pace in countries which are fully industrialized, approaching stabilization in economies which are completely mature. Construction industry in Kenya mostly maintains an upward trend in growth. Recently; 2013 and 2014, an economic survey report released by Kenya National Bureau of Statistics showed Kenya's building and construction as having contributed 4.8% to the Gross Domestic Product (GDP). The GDP rose from Kshs.4.73 trillion to Kshs.5.36 trillion in 2014 giving a nominal rise of 13.3% Macharia, (2015). This gives an indication that the sector is growing, though at a slow pace.

II. MONETARY POLICY FACTORS THAT AFFECT CONSTRUCTION OUTPUT IN KENYA

In Masinde, (2015), while reporting on Monetary Policy Committee decision on base lending rate of CBK, he said that the major concerns of CBK touch on three areas. These three areas are:-

i) Interest Rate

ii) Inflation and

iii) Exchange Rate

And hence are the monetary policy factors that affect construction output in Kenya. These factors are further amplified below.

1) INFLATION

Inflation is defined by Gruneberg, (1997) as the average rate at which prices rise. The inflation rate according to him, is normally issued on yearly basis, but can also be done monthly. This is an economic factor which brings uncertainty to forecast construction budgets and impacts strongly on construction industry. This is due to prices going up unexpectedly and negatively affecting cash flows.

Similar to all products, the cost of replacing construction equipment is usually affected by economic inflation as well as industrial inflation, Gransberg, Popescu, & Ryan, (2006). The definition of economic inflation is said to be the loss of purchasing power of a nations' currency.

Industrial inflation is as well defined as the construction costs change because of long-term as well as short-term commodity pricing fluctuations. A good example is the consumer price index (CPI) which is an extensively reported index of inflation that models the U.S consumer dollar power to purchase. According to Gransberg, Popescu, & Ryan, (2006), inflation index measures the inflation in general across the economy and therefore, it seeks to measure economic inflation. He continues to say that the 2004 to 2005 unprecedented increase in the cost of steel is a good example which is specific to construction industry on the effects of industry inflation. While discussing decision making regarding equipment replacement, Gransberg, Popescu, & Ryan, (2006) says consideration of inflation is very necessary.

The inflation being witnessed in Kenya currently has hit an all high of 7.08% for the last eight months from September, 2014. This is according to Kenya National Bureau of Statistics and reported by Wahome,(2015) and Wokabi,(2015) in the Daily Nation.

2) Exchange Rate

This is the cost of a nation's currency when expressed in terms another country's currency. The exchange rate is composed of two main components. These are local currency and foreign currency Investopedia, (2015). The two components Investopedia, (2015) say that they can be directly or indirectly quoted. For the indirect excerpt, the cost of single component of local currency is articulated to conform to the alien currency. Investopedia, (2015), continue to explain that there are those exchange rates which do not have a domestic currency component. They say in that case, the exchange rate can either be referred to as cross rate or cross currency.

According to Macdonald, (2007), *nominal exchange rate is defined as home currency price of a unit of foreign exchange.* Nominal exchange rate exists in two types. They are namely forward exchange rate and spot exchange rate.

He goes on and explains the spot exchange rate as a bilateral one at "*which foreign exchange can be bought and sold for immediate delivery, usually between one and two days.* He also defines *bilateral forward rate, as that rate negotiated today (time t) at which foreign exchange can be bought and sold for delivery sometime in the future*".

Exchange rate effects can be felt when a construction projects' materials or components of a building are being imported in greater proportions Gruneberg, (1997). It is also explained by Gruneberg, (1997) that, if the sector of construction operates at or near maximum capacity, contractors will be unable to meet their demand for construction and this will raise prices for tenders which in turn brings about inflationary pressures.

3) Interest Rate

This is the annualized cost of credit or debt-capital computed as the percentage ratio of interest to the principal amount Businessdictionary.com (2014). According to this Businessdictionary.com (2014), a bank can choose to determine its own interest rate on loans but, practically, local rates are almost the same from one bank to the other. Generally, interest rates tend to rise in times of inflation, high demand for credit, tight money supply, or even due to greater reserve requirements for banks. An upward trend in interest rates for any reason tends to dampen activities of businesses, construction business included.

In Handbook, (1998), it is pointed out that investments into the real estate are very sensitive to interest rates and therefore, this should form a careful consideration in the real estate industry lending. When sourcing for funds for real estate project, the availability and cost of financing is usually affected by interest rates. Also affected by this interest rate are the real estate financial viability and construction costs. Looking at the rate of floating for a number of money owing and many leases which are on fixed rate, escalating rates of interest are injurious to projects of real estate capacity of repayment in the future. Real estate market liquidity is usually reduced by increased interest rates especially when investors are attracted by alternative investments Handbook, (1998).

III. FISCAL POLICY FACTORS THAT AFFECT CONSTRUCTION OUTPUT IN KENYA

i) Taxation

An economic growth can be fuelled through tax rate reduction by the government. Lower taxes paid by people means that they have more money which they can spend or put in an investment like a building which is a construction output. Improved economic growth is brought about by increased consumer spending or investment. Economic regulators would somehow wish not see too much of this spending increase since it triggers increased inflation Investopedia, (2014). Kenyan tax payers are regarded as heavily taxed. This is due to number of taxes and levies that they have to comply with. The taxes range from income tax, value added tax, customs duty, exercise duty, dumping duty, Kenya Bureau of Standards Levy, industrial Training Levy, insurance levy, business permit fees (payable by Nairobi residents to the city County), Transport Licensing fees and various other (payable to the City County). Others are catering levy, the national hospital insurance fund, the fuel levy, the motor vehicle road license fees, the import declaration form fees, television and radio license, driving license fees, the rural electrification levy, the electricity regulatory board levy, the exchange rate surcharge (levied by Kenya Power and Lighting), the stamp duty, the dairy board levy and finally the Sugar Authority levy (Kalinga et al, (2003).

ii) Government Spending

The other possibility as explained by Investopedia, (2014) is by the government where it decides to amplify its own spending. A good example is initiating construction projects like by constructing additional highways or building structures.

  This scenario was seen recently in this country when the government initiated Economic Stimulus Projects (ESP). The thought is that the extra spending of government comes with job creations and unemployment rate is usually lowered. A number of economists, though, dispute the concept that employment can be created by the government, this is due to the fact that taxation is the main source of government's money – this is to say, from the private sector's productive activities.

Method

In order to describe the monetary and fiscal policy factors that affect construction output in Kenya, statistical descriptive method was used. The factors as found out earlier are five in number. They are namely; Interest Rates, Inflation and Exchange Rate which fall under monetary policy. Fiscal policy factors are government expenditure on construction and taxes.

Data

Time series data was collected from Kenya National Bureau of Statistics (KNBS) and Central bank of Kenya (CBK). The data was collected for the period between 2000 and 2013 on quarterly bases.

IV. STATISTICAL DESCRIPTION OF THE FACTORS

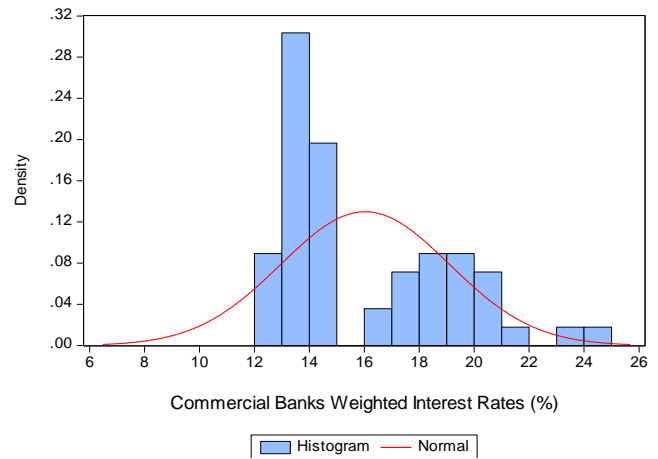### Descriptive of Commercial Banks Weighted Interest Rates (CBWR)

Figure 2: Histogram of Commercial Banks Weighted Interest Rate

Mostly the commercial banks weighted interest rates operated around a mean of 16%. Although the skewness is a little bit high, the kurtosis is slightly below 3. The median is very close to the mean. It can be concluded that the distribution of the commercial banks weighted interest rates are almost normal. The definitions of the other characteristics of the curve are as given in table 1 below.

Table 1: Descriptive Statistics of commercial banks weighted interest rates (2000 – 2013)

Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
16.03	14.76	24.76	12.20	3.07	0.78	2.72	5.95

As can be observed from table 1 and figure 2 the commercial banks weighted interest rates are positively skewed.

Descriptive of Inflation Rate

Table 2: Descriptive Statistics of Inflation rates (2000 - 2013)

Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
8.49	7.60	19.18	1.22	4.82	0.50	2.19	3.89
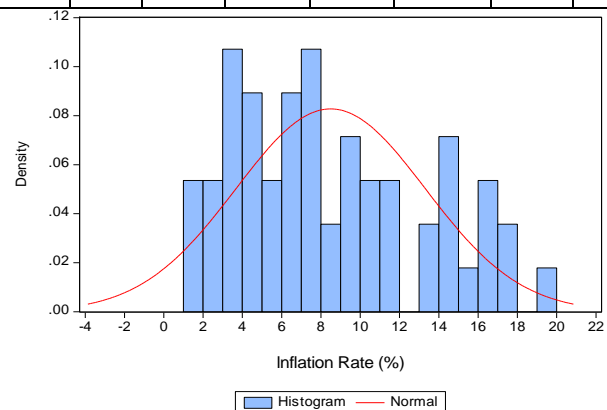
Figure 3: Histogram of Inflation Rate

This variable displays characteristics of a normal distribution. The skewness is 0.5 and kurtosis is 2.19. These values are not far off from those of a normally distributed data. The mean and the median are also too close; 8.48% and 7.6% respectively. It can be concluded that the data for this variable is normally distributed. Table 2 gives complete statistical description of this variable.

Description of Exchange Rate (Dollar/Kshs.)
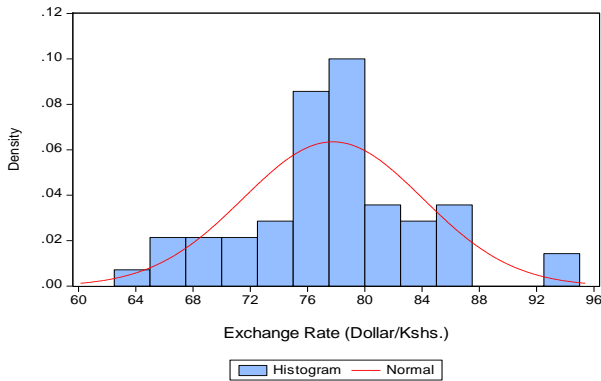

Figure 4: Histogram of exchange rate

The dollar/Kshs., exchange rate appears to follow a normal distribution with skewness tending almost to zero and kurtosis of 3.38. A mean of Kshs. 77.77 and a median of Kshs. 78.21 are very close to one another. The exchange rate for the period between 2000 and 2013 can conclusively be said to be normally distributed. The rest of the characteristics of this variable can be found on table 3 below, which gives complete statistical descriptive of the variable.

Table 3: Descriptive statistics of Dollar to Kenya shilling exchange rate (2000 – 2013)

Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
77.77	78.21133	93.86967	62.64600	6.284389	0.078021	3.388732	0.409409

From table 3, the exchange rate data is positively skewed. The skewness value is 0.078 which is very close to the normal zero value.

Descriptive of government expenditure on construction
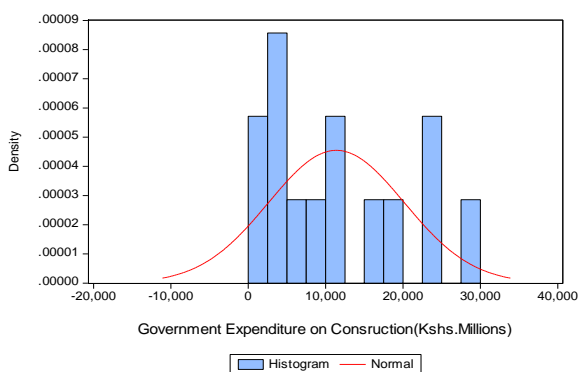
**Figure.5: Histogram of Government Expenditure on Construction**

This distribution curve has a positive skewness of 0.54 and a positive kurtosis of 1.9. The mean and the median are quite close. The mean is Kshs.11391.83 millions and a median of Kshs.9695.225 millions. The curve behavior shows that the government expenditure on construction is almost normally distributed as can be observed from figure 5 above. The other characteristics can be seen on table 4 below.

Table 4: Descriptive of government expenditure on construction (2000 – 2013)

Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
11391.83	9695.2	28079.28	2166.85	8772.73	0.54	1.91	5.52

The distribution curve has a positive skewness of 0.54 and a kurtosis of 1.91. These values suggest that the data is symmetric and platykurtic.

Descriptive of Total Tax on Products
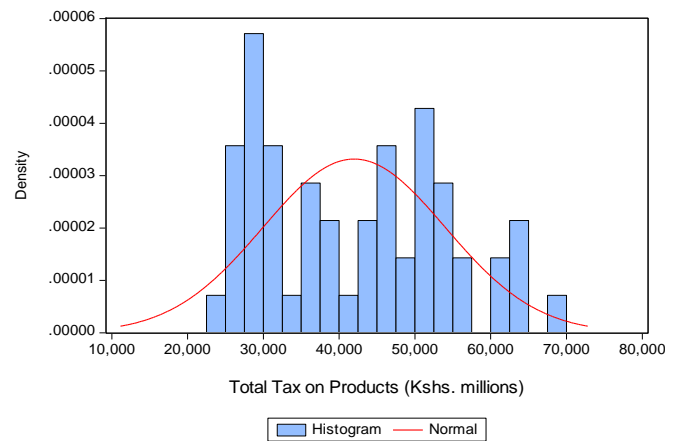
Figure 6: Histogram of Total Tax on Products

Like the rest of the variables, total tax on products displays the characteristics of a normal distribution. The skewness and the kurtosis are 0.3 and 1.93 respectively. The mean is Kshs. 41981.48 and the median is Kshs.42582. As observed from figure 6 above, total tax on products is normally distributed. The rest of the characteristics of this variable can be found on table 6 below.

Table 5: Descriptive of total tax on products in Kenya (2000 -2013)

Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-e-Bera
41981.48	42582.00	67884.00	24921.00	12027.88	0.305638	1.939867	3.494262

Although the data for this variable appears to be symmetric, the kurtosis indicates a platykurtic characteristic.

V. CONCLUSIONS

In conclusion, monetary and fiscal policy factors which affect construction output in Kenya are five. They are namely commercial banks weighted interest rates-the rate used to lend money to commercial banks' clients in Kenya. The others are Exchange rates, inflation rate, government expenditure on construction and taxes. All these fiscal and monetary policy factors in Kenya appear to be almost normally distributed. Stakeholders and construction sector players in Kenya are therefore advised to take these factors into consideration when making decisions on construction projects undertaking.

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AUTHORS PROFILE

Emmanuel Thyaka Mbusi, Msc. Studendent At Jkuat, B Phil Tech construction management (UON), HDIP Valuation and estate management (KPUC), MISK, **Specialization:** Construction management, construction project management, valuation and property management.

Dr. Titus Kivaa Mbiti, PhD (RMIT, Australia), MA (Bldg Mngt, UON) BA (Bldg Econ, UON), CIQSK, RQS **Specialization:** Quantity surveying, Construction Management, Project Management & Construction research

Dr. Wanyona Githae, B.A Blding Econs (U.O.N), M. Engineering (Kyoto University, Japan), PHD (UCT), RSA. **Specialization:** Construction Project Management, Construction Contract Documentation, Project Risk Management, Project procurement Systems and General Qua ntity Surveying.