Modeling Inflation Dynamics in the Construction Sector of a Developing Economy

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Key words: Inflation, model, Nigeria, economy

SUMMARY

The study observed the significance of price stability as economic goal in any economy. It therefore set out to determine in a non-rigorous dimension the inflationary dynamics in the construction sector of the Nigerian economy, using data on quarterly frequency from 1986 to 2003. The study employed three levels of construction data extraction and compares it with the national level statistics measures of inflation in the economy. It was found out that comparatively, the construction industry rate of growth in prices is higher than the economy wide rate of growth of inflation. Models of time the series and the composite price index were constructed. Using the consumer price index as a measure of the inflationary movement in this case, it has been established that the construction sector inflation is a little distance ahead. The simple linear regression model has further offered objective explanations of the relationship. The model can also be developed, by considering various specifications, stationarity properties and incorporating error correction mechanisms to provide economic related variable for estimating purposes

 The study has also shown the inflationary possibilities of various politico-economic regimes. It needs, however, to be further examined, the macroeconomic factors that predispose the construction prices to such perturbations. The study has also provided time series models that can be developed to interactive estimating tools for predicting future prices. However, further refinement of the models will be required after the econometrics properties must have been established

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1. INTRODUCTION

Price stability is one of the principal economic goals in any economy. It is desirable that the overall price level for goods and services remain relatively constant. Inflationary price stability is a major concern to economist. Leaders all over the world see inflation as an economic phenomenon to be worried about. Begg, et al (1991) reported that is the late 1980s president Ronald Reagan, Mrs. Margaret Thatcher, Chancellor Helmut Kohl, and many other world leaders named inflation as public enemy number one. Price stability is always one of the common objectives of economic integration policies and has been a strategic one for monetary policy of the West African Monetary Zone(Tucker,2003) . Inflationary pressure is known to impact negatively on social welfare and disable the domestic economy from performing efficiently (Fullerton, (Jr.) & Ikhide, 1997). Therefore reducing inflationary rates is a top priority in any economic policy agenda.

It is generally held that potential success in any price stabilization effort depends on the understanding of the inflationary dynamics. Inflation simply conceived and operationally defined, as rising price is not a subject of debate as the cause, classification, consequences and cure of the inflationary pressure. Palmer and Faseku (1982) highlighted what might be some conceptual problems in the definition of inflation and hence its measurement. Despite these problems, it is generally agreed that there is need to ascertain the rate of the increase whether it is persistent or sustained or whether high or low. The preponderance of publication of indices is an indication of the need for measuring inflationary pressures somehow. Palmer and Faseku (1982) has pointed out that three indexes are generally used to measure roughly the extent of inflation in any economy. These are

- – The implicit price index (IPI) or the GDP deflator,
- – The wholesale price index (WIPE) and
- – The consumer price index (CPI)

The Central Bank of Nigeria's Statistical bulletin publishes composite consumer price index with decomposition to its urban and rural components, all items consumer price index and consumer price index. The Federal office of Statistical publishes the inflation rate.

However, it has been observed that sectoral analysis of these indices does not exist, particularly the construction sector. Of particular interest to researcher and practitioners is the need to identify, quantitatively the inflationary pressure on the construction industry. Adewumi and Awosika (1982) have observed: "Occasionally inflation might be limited to only certain sectors of the economy or might exist in varying intensity in different sectors of the economy". Going by the fact that where there is little interdependence of the sectors, it is

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possible that inflationary pressures is strictly sectoral. However, it is not possible to have a completely independent sector in an economy and hence the inflationary pressure in one sector is bound to transmit to other sectors. depending on the nearness and degree of dependence. It is certain therefore that there are inflationary differentials across sectors. It is therefore desirable to understand such inflationary pattern within the sector of particular interest. A sectoral analysis performed by Adewumi and Awosika (1982) on 1958/9 – 1965/66 time series data, it was inferred that all sectors, except electricity, contributes to the overall inflationary trend, how be it in different degrees.

From the foregoing, the question of what the value of inflation trend is in the construction sector in Nigerian has remained (yet) unanswered. it is also worthwhile, to discover whether the inflationary pressure in the construction sector is at par with the officially reported price measures and inflation rate or whether or not it lies at the upper or lower bound of the economy-wide inflation spectrum. The stability of the inflationary process is an essential econometric, property that can help in our understanding of the inflationary dynamics in the construction industry. Which basic knowledge will enhance our ability to property articulate analysis of inflationary issues in the construction industry?

This paper examines the basic inflation phenomenon, its occurrence in Nigerian and in the construction sector. The methodology discusses the use of period-period growth rate and unweighed indexation of construction prices to provide basis for comparison. The time series models of the price measures are also examined, and the results discussed. The study concluded by offering the models as tools for forecasting inflation in the construction industry.

2. AIMS AND OBJECTIVES OF THE STUDY

The aim is to determine in a non-rigorous dimension, the inflationary dynamics in the construction sector of the Nigerian economy using prices of construction as inputs. Specifically the study is to:

−   To determine the inflationary trend in the construction sector of the Nigerian economy.
−   Determine the inflationary behavior of construction price data vis-à-vis the official inflation rates and other national measures of inflation in Nigeria.
−   To establish the stability or otherwise of the construction prices data so as to ascertain the ability to function as inflation forecasting tools.

3. THE INFLATION PHENOMENON: AN OVERVIEW

By inflation dynamics, we mean the observation of the rate of inflation in the same economy over many years. This is in agreement with Adamson (1996). Palmer and Faseku (1982) see inflation as a very complex set of phenomena, which is difficult to define in precise terms. Turney (1951) sees inflation as a process consisting of alternating and successive increases in prices and costs due to struggle between social groups. Others see inflation as a symptom of disequilibrum or an excess of demand over supply (James, 1962; Wilson, 1961). Adamson

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(1996) defines it as the rate of increase in general price level in an economy. Nwankwo (1982) believes that inflation is an excess of demand over supply. Inflation could be creeping, galloping or hyper depending on the magnitude of its rate in a year.

Ladipo (1982) listed the following as the causes
– Inflation could result when the rate of growth is greater than the required or planned rate of growth. This situation could be observed in Nigeria where, as a result of increase in the price of petroleum, the growth rate increased faster than was anticipated.
– When the government tries to absorb more resources than are released by the private sector at the existing price level.
– Groups of participants in the economy attempt to improve their relative income shares more rapidly than the growth of productivity. The struggle then becomes increasing income through increasing the prices of the goods and services offered without increasing production of their (groups) input.
– When individuals and/or groups of participants have brought expectations such as expectations of income arrears from increases wages and salaries and of prices, then the demand for goods and services will rise more rapidly than the economy can expand output. These four causes of inflation are by no means exhaustive; combination of them could be seen in operation at any given time.

Generally, the rapidly fluctuating inflationary pattern creates high degree of instability in an economy. Where the structure of the economy is weak, the effect could be very devastating. Adamson (1996) itemized the effects of inflation as follows:
– Fall in purchasing power
– Fall in aggregate output
– Fall in the value of money
– Fall in exports
– Fall in the exchange rate
– Increase in foreign debt burden
– Abandonment of currency

All theories of inflation are developed around the theory of price. Based on this theory, the cure of inflation is therefore viewed as a structuralist phenomenon. The structuralist thought incorporates classical and monetarist Keynesian's school of thought. Both schools made use of the equilibrium equation for the aggregate demand and aggregate supply in the economy, but the degree to which they emphasis monetary factors differ.

4. INFLATION THE CONSTRUCTION SECTOR

Pilcher (1994) observed that the effects of inflation can cause serious difficulties for contractors. Fluctuations in the rate of inflation can cause serious problems in the economic processes in the construction industry. This is because of the difficulties inherent in construction contracting. Due to the nature of the process and the rate of return for work undertaken on construction projects, the effects of inflation can cause loss or profit. Understandably, in traditionally project procurement method, the contractor is often paid in

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arrears. Fluctuating inflationary costs may therefore pose serious problem to the contractor. In such cases, the client may be the beneficiary of such fluctuating inflation costs. In some cases, contractors appear protected by some form of indexing as a means of recompenses for future inflationary costs (Pilcher, 1994; 273-4). It is a common practice by well-organised construction companies to make adjustment on current prices. This adjustment is referred to as "anticipated increase in input costs" (AIIC). This is usually based on an inflation forecast using the best possible information available at the time of the project planning and estimating process. Such best possible information on inflation is hard to come by if at all they exist in most developing economies. The Nigerian case is particularly calling for research attention. There exists at present no reliable source of information on the rate of inflation of construction prices. The negative effect of this is not only on the local stakeholders but it may hamper contractor and consultants that may seek to explore the Nigerian market. Globalisation and the country's drive to attract foreign investors will require that such information be readily available to enable prospectors take informed investment decision in construction activities.

The degree of the inflationary burden to be borne by a contractor will depend on the nature or type of contract, the duration of the contract and the availability of credit purchase opportunities, the extent of imported components. When, for instance the contract is of the fluctuating type, the contractor relies heavily on inflationary indexing in order to claim for the increase in price levels of the resource inputs. When the duration of the contract is short, such claim may not be tenable except in cases where there is rapid change in the price level. Credit facilities however, may reduce due to the disadvantage positions it places the creditor. In situations where the contractor strikes a deal for an advance payment, the implication is that inflation is hedged partially. Projects that are financed solely by the contractor during an inflationary period many put the contractors in a difficult position financially except a serious calculation of cost increases both anticipated and unanticipated increased had been included in the estimated process.

Inflationary effects on project appraisal are also very significant and could pose difficulties to property developers. Inflation will affect not only the cash flows of a project but also on the rate at which the cash flows need to be discounted (Pilcher,1994). It has been suggested that the Net Present Value (NPV) method of appraisal offers some flexibility.

The Present Value, (P), of streams of payments A_1, A_2, A_3..., A_n at years 1,2,3,…n is generally given as

$$P = \frac{A_1}{(1+i)} + \frac{A_2}{(1+i)^2} + \frac{A_3}{(1+i)^3} + \ldots \frac{A_n}{(1+i)^n}$$

If a different value of i is used for each year then the above equation becomes

$$P = \frac{A_1}{(1+i_1)} + \frac{A_2}{(1+i_2)^2} + \frac{A_3}{(1+i_1)(1+i_2)(1+i_3)} + \ldots \frac{A}{(1+i_1)(1+i_2)\ldots(1+i_n)}$$

This is very realistic of an unstable economy. However, if inflation is expected to increased by a uniform percentage u each year, then

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$$P = \frac{A_n}{(1+i)^n(1+u)^n} = \frac{A_n}{[(1+i)(1+u)]^n}$$

The effective rate of inflation therefore is:

$(1+i)(1+u)-1$ $= i + d + id$, which is known as Nominal Discount Rate.
$= i + u + iu$. This is known as Nominal Discount Rate.

4.1 Measuring the Inflationary Dynamics: Methods and Procedure

The design adopted in the study is the survey design or "ex-post facto" type otherwise known as "casual-comparative" design. Time series data were collected from about 150 projects .The projects were of divers characteristics in terms of client type, project type and location spread. Effort was made to ensure a national spread of the data colleted. The data are available at individual primary sources, which are scattered over the nation and around the construction project.

Table 1 Data Description and Sources

	Data Name and description	Sources
1	Basic prices of construction materials (11 items)	Primary sources: Market survey of retail outlets ,project sources (schedule of basic rates in bill of quantities, and monthly construction material price list by a national daily(The Guardian Newspaper)
2	Informal market basic labour wages (2 items of labour wages)	Primary sources: Market survey and project sources
3	Unit rates of items of works in bill of quantities	Project sources: Bill rates from completed projects
4	All-item consumer price index	Central Bank of Nigeria statistical bulletin

Three construction data types were used for the analysis .These are: the basic construction materials prices, basic construction labour wages and unit rates for cost significant items. National statistics on all-item consumer index was used as a proxy for the economy wide inflation rate. This restriction however is due to the constraints imposed by the type of macroeconomic data available.

The following analysis procedures were carried out to estimate the inflationary dynamics:
1.Price measure at their level without any form of transformation

2 Unweighed indexing using 1986 as the base year for the computation. Index numbers were employed to discuss the pattern of movement thus observed. The relation:

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$$I = \frac{y_t}{y_{t_o}} \times 100 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1) \quad \text{is}$$

developed,

Where y_t is the value of the variables at period t and y_{to} is the value of the variables at the period 1986:1 (base period).

$$\text{Mean index of the price item} = \frac{\left(\sum I_{yit}\right)}{m} \dots\dots\dots\dots\dots(2)$$

Where Y_{it} is the index of the variables of the price level, at time t: i = 1… N, M is the number of variables in the group constituting the price level. I is the mean of the indices of the variables in the group constituting the price level. These unweighed composite indices have enabled us to compare the prices with the various economic variables being examined.

3. Logarithm transformation of the construction prices
4 .Growth rate transformation. The growth rate is defined as:

$$\text{QQGR} = \left(\frac{y_t - y_{t-1}}{y_{t-1}}\right) \times 100 \quad \dots\dots\dots\dots..$$
(3)

This relation gives the percentage by which the current value of the series has increased or decreased relative to the previous value. This "period to period" percentage change depicts the percentage values at which the series has been growing either at a decreasing rate. This growth rate can be employed to arrive at a forecast equation.

4.2 Regression Analysis: Estimation and Interpretation of *SMR* Models Results

Simple regressions, which deals with two variables is applicable here. In multiple regressions, a given variable y_t (the construction prices, taken in turns) is dependent on a set of X_t's (the economic variables), thus:
$$Y_t = \alpha + \beta_1 x_{1t} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (4)$$
Where Y_t is the dependent variable .In this study the y_t's are the Basic prices, Unit rates and X_t is the independent (exogenous) variables – the all –item consumer price index
While ε_t is the stochastic error term .The aim is the estimation of α and β's
The models are estimated by the ordinary least squares regression technique (OLS). The summary statistics reported and assessed include: R^2, $\overline{R^2}$, t-values, F-values.
The data collected for the research is processed using E-view (Econometric view) software/application software.

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5. RESULTS AND ANALYSIS

### 5.1 Inflationary dynamics of Construction Prices: Descriptive analysis

Table 2 shows the whole period quarterly growth rate exhibited by the selected basic construction material prices. This rate of growth ranges from about 6% to about 17% with an average of about 9%.The decomposition of the series to three different time periods gives a closer indication of the growth pattern. The period spanning 1986 to 1999 (56 periods) experienced more rapid changes than the period spanning 2000 to 2003 (16 periods).The plausible explanation for this could be posited in the country's political regimes.

Table 2 Growth rate of Basic Construction Material Prices

Name of material	Mean Percentage Growth rate		
	Whole period 1986:1 to 2003:4	1986:1 to 994:4	2000:1 to2003:4
1. Coarse aggregate: Granite	6.12	6.06	6.33
2. Fin aggregate: Sand	7.12	8.20	3.43
3. Cement	7.81	9.78	1.03
4. Water closet	7.81	9.61	1.61
5. Asbestos Ceiling Sheets	7.86	7.85	7.87
6. Block- 225mm thick	7.93	8.49	5.99
7. Reinforcement	8.88	9.83	5.61
8. Emulsion Paint	9.78	5.38	24.89
9. Gloss oil Paint	12.69	9.83	24.97
10. Flush door	17.14	20.03	2.21
11. Asbestos roofing sheet			
Equality of Mean Test: ANOVA-F-Test Statistics	$F_{10, 770}$=0.76 (F=0.66)	$F_{10, 594}$=0.98 (P=0.46)	$F_{10, 16}$=0.826 (P=0.60)
Mean Growth rate	**9.15**	**9.40**	**8.28**

The results also seem to indicate those construction materials which price changes more than the others. While emulsion paint grew by about 10%, gloss oil paint and floor door grew above 10% (about 13% and 17% respectively). Generally the average quarterly growth rate is put at about 9%.Figure shows the graphical pattern of the growth using the logarithm and index transformations of the series.
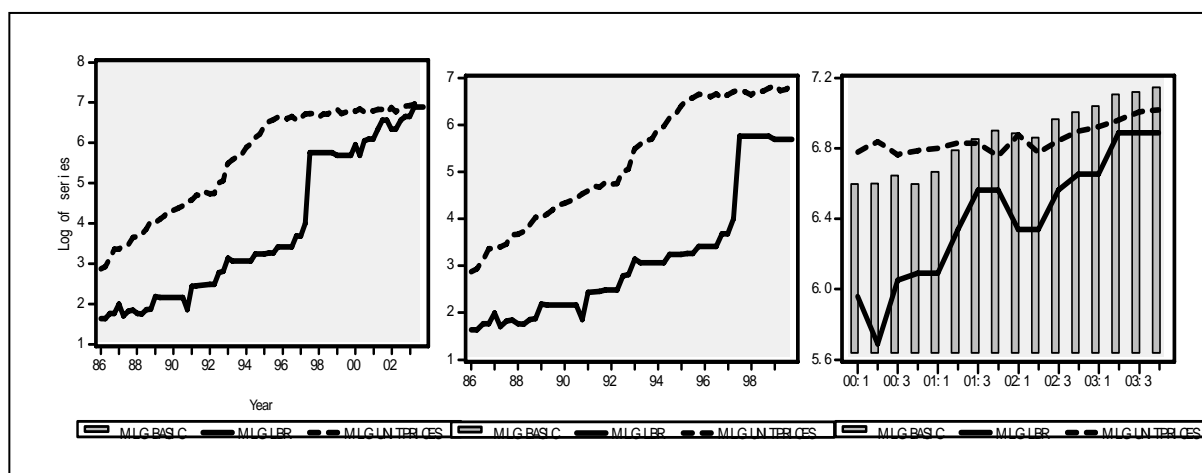
Figure 1 Pattern of growth of the three measures of construction prices.

Table 3 shows the quarter –quarter growth behaviour of the informal sector labour wage ratio. The non-trade tested artisan has shown higher variability in prices than the general labour counterpart. The average quarterly growth rate for the whole period under investigation is about 14%. There appears to be a slow down to about 10% in the 2000-2003 period. The graph of the logarithm of the series displays the virtual pattern obtainable.

Table 3: Average QQGR of Labour wages

Variable	1986:1 to 2003:4 MEAN(%)	1986:1 to 1999:4 MEAN (%)	2000:1 to 2003:4 MEAN (%)
General Labour	11.8	12.86	8.96
Non-trade tested Labour	15.76	17.02	11.41
Equality of Mean test:ANOVA-F test statistics	$F_{1,140}=0.134$(p =.72)	$F_{1,108}=0.101$(p=.75)	$F_{1,30}=0.080$(p=.78)
Mean	**13.80**	**14.85**	**10.18**

The rate of growth of the prices of unit items ranges from about six per cent to about 13% for the 13 items considered (Table 4). The growth rate during the 1986-1999 period experienced greater rate during the 2000-2003 period. It is to be observed that prices of finishes items of construction work appear to exhibit weaker tendency to grow than the structural items of construction work.

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Table 4 . Growth rate of Unit Prices of Construction work items

	Mean Percentage Growth rate		
	1986:1 to2003:4	1986:1 to 1994:4	2000:1 to 2003:4
PVC Floor Tiles	6.47	8.41	-0.19
Texture Paint	7.05	9.65	-2.03
Mineral Fibre Ceiling Sheet	7.34	9.64	-0.55
Ceramic wall Tiles	7.67	9.54	1.23
Terrazzo floor finish	8.03	10.21	0.53
General Formwork	8.05	9.60	2.74
Screeding in Cement and Sand	8.21	9.63	2.52
Rendering in Cement and Sand	8.85	10.45	6.16
225mm Block work	9.08	10.78	4.38
Aluminium roof covering	9.90	14.16	2.86
1:2:4 mix Concrete	11.99	14.10	4.55
Reinforcements	12.80	10.50	8.30
Equality of Mean Test: ANOVA-F-Test Statistics	$F_{12,910}=0.27$ (P=0.99)	$F_{12, 702}=0.16$ (P=0.99)	$F_{12, 195}=0.94$ (P=0.92)
Mean Growth rate	**8.71**	**10.50**	**10.19**

Comparatively, the labour wages exhibited greatest tendency to explode above 10%. Consistently, the other price measures were growing at quarterly rates which are below 10%. The unit rates (Prices) trails the basic material prices in terms of inflationary tendency. The political regimes also appear to have bearing on the growth pattern recorded in all cases. The all-item consumer price index exhibited slower growth rate tendency of about six percent.

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Table 5 Comparative Growth rates (Natural and indices Price measures).

Mean Growth Rate of:	Mean Percentage Growth rates		
	All Period	1986:1 to 1999:4	2000:1 to 2003:4
Basic material Prices	9.15	9.40	8.28
Basic labour Wages	13.80	14.85	10.19
Unit Rates (Prices)	8.71	10.50	2.54
Index of Basic material Prices	6.91	7.63	4.43
Index of Labour wages	13.15	14.20	9.58
Index of Unit Prices (rates)	6.50	8.11	1.00
All-item Consumer Price index	6.45	7.19	3.88

5.2 Inflationary Dynamics: Time Series models

To further capture the inflationary dynamics in a correlation dimension, the time series models (TSMs) of the variables were estimated as specified elsewhere in the study. Equations represent the models obtained.

$$P_{Bt} = \alpha_1 + \beta_1 P_{Bt-1} + \varepsilon_1$$

$$= 0.4742 + 1.0262\ P_{Bt-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(5)$$
$$1.1786(0.24)\quad 96.9127(0.00)$$
$$\overline{R^2} = 0.99,\ F_{1,71} = 9392.07;\ D.W = 2.25$$

$$P_{lt} = \alpha_2 + \beta_2 P_{lt-1} + \varepsilon_2$$

$$= 1.4048(0.37) + 1.0349(0.00)$$
$$\overline{R^2} = 0.96;\ F_{1,71} = 1814;\ D.W = 2.18$$

$$P_{ut} = \alpha_3 + \beta_3 P_{ut-1} + \varepsilon_3$$
$$= 0.8411 + 1.0023\ P_{ut-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.(7)$$
$$2.1527\ (0.034) + 95.2739(0.00)$$
$$\overline{R^2} = 0.99;\ F = 9077;\ D.W = 2.25$$

The estimated equations (5), (6), and (7) used the lag values of the dependent variable. In all the three models, the dependent variables are positively signed. The gradient of the relationship are also significant and are greater than zero. On the other hand, the intercepts are also positively signed but not significant at 5% level of significance. Statistically, the dependant variable can be explained by over 96% of the independent variable. The existence of serial correlation in minimal as the Dublin-Watson statistics indicate. The within- data forecasting is also robust as indicated by the Theil's inequality coefficient.

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6. MODELING WITH CONSUMER PRICE INDEX

The relationship between the construction price measures and the other item consumer price index was examined and estimated as indicated in the three equations below:

$$P_{B2t} = 0.9178 + 0.0143\ CPI_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(8)$$
$$t = 0.0143(0.159)\ ,\ 59.25(0.00)$$
$$\overline{R^2} = 0.98;\ F= 3511.39(0.00);\ D.W=$$
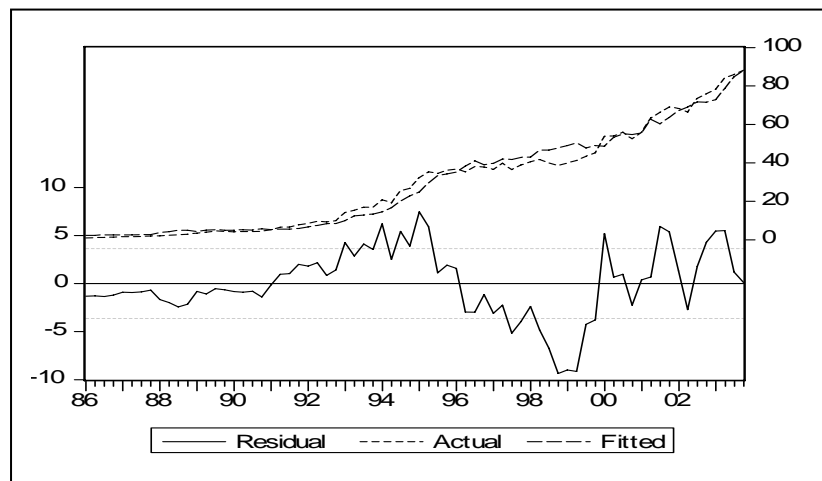
$$P_{l2t} = -17.80 + 0.0284\ CPI_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(9)$$
$$t = 4.08(0.001)\ ,\ 17.48(0.00)$$
$$\overline{R^2} = 0.81;\ F=305.50(0.00);\ D.W=0.23$$

$$P_{u2t} = 4.37 + 0.0216\ CPI_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(10).$$
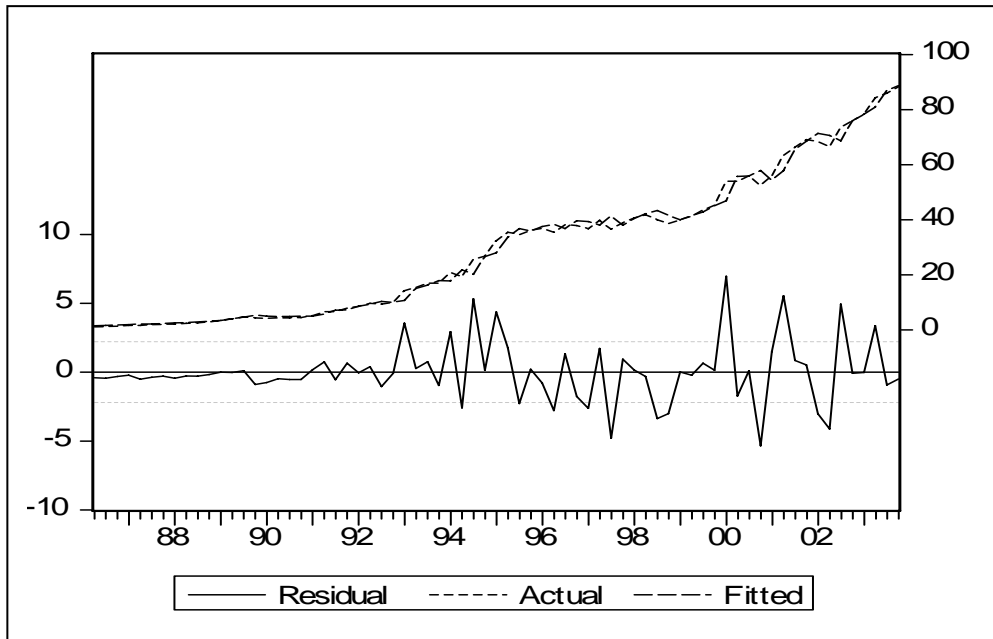$$t = 3.848(0.00)\ ,\ 29.71064(0.00)$$
$$\overline{R^2} = 0.9255;\ F=882.77(0.00);\ D.W=0.1298$$

The relationship in each case shows goodness of fit and high degree of explanation of the price variable by the consumer price index (over 81% in the worst case-equation?). The signs are positive, indicating direct proportionality among the dependent variables. The low values of the Dublin-Watson statistics indicate presence of negative serial correlation and the possibility of non-stationarity character in the variables. Thus the predicting ability of the model for long run purposes may be suspect.
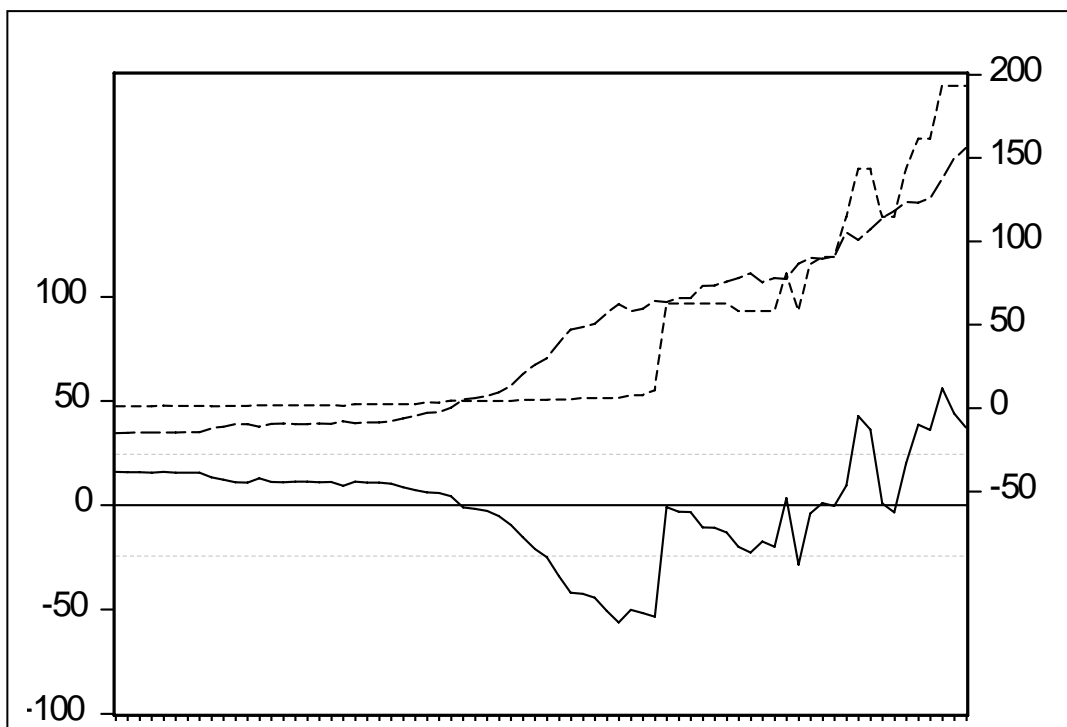
It could be observed that except for the intercept of the model of the basic prices, all the other modal parameters are statistically significant. The forecasting performance is as indicated in the figure that follows.

Figure 3. Estimated and forecast of the unit rates

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Figure 4. Estimated and forecast of the basic material prices

Figure 5. Estimated and forecast of labour wages

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7. DISCUSSION

Generally, results obtained from the descriptive statistics of the series being used in measuring construction prices in this study, it is apparent that the rate of growth ranges from between six percent and about 14%. This growth rate is higher than the country-wide, all-item consumer price index. In an earlier study ,Oyediran (2003), the range of the growth rate varies from about eight percent to about 21% for the period ranging from 1986 to 1999. Understandably, the period in that study experienced political uncertainties that affected the economy adversely and resulted in the observed prices instability. This study reports a similar trend, however with slightly different values of growth rate ranging from about nine percent to about 15%. As expected in most economies, price stability is highly correlated with the political situation. The political economy of the late 1980's and the political struggles occasioned by transition from military to civilian regime of the 1990s all exerbated price instability. However, in it all prices of construction inputs did not grow beyond 15% rate.

The advent of democratic governance seems to usher in the era of price stability and minimal upward trend in construction prices. The rate of acceleration in price variation reduced in the first three years of the 2000s. The value ranges from about three percent to about 10 percent. It is noteworthy to observe that labour wages have raised farter than material prices during the period under investigation. A closer study showed that this was not the case in the late 1990s. However the turn of events in the late 1990s has not been reserved. While it is easy to position this trend in the context of the late 1990s wage increase especially in the public sector, a plausible explanation can be situated in the disequilibrium in the demand and supply of construction labour needs. Oyediran (2003) observed that the increasing construction work load coupled with shrinking quantity of available site operatives and artisans could constitute major disequilibrium variables. Poroye (1999) had reported the declining trend in the choice of bricklaying as vocation generally. There are unconfirmed reports that most unemployed people who form the bulk of generally labour now find it more lucrative to change to the booming micro-transport sector which is prevalent in most urban centers. This disequilibrium will not only be intra sector but also inter-sector.

The lower growth rate of unit prices incorporates the composite nature of these rates. Unit rate comprises the music materials, labour, profit and overhead components of construction costing. However, the unit rates constitute the closest measure of the competition among contractors. Keenness of competition forces contractors to reduce their profit allowance while deploying all operational strategies to enhance business efficiency and economy. The lower rates could be indicative of this possibility.

To what extent the nation wide-all-item consumer price index be used as a measure of the inflationary tendencies for the construction industry has been indicated by the results of this study. Obtaining values less than any other price measures should serve as caution to operators and stakeholders in the industry. The question that needs to be answered is that should capital goods procurement experience higher inflationary dynamics than general consumption goods? In view of the enormity of capital involved, the answer should be in the negative. Again, is this trend as peculiar to developing nation? What obtains in developed

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nations may provide comparative information. It is however known that the inflationary rates in the developed economies are much lower than what is obtainable as reported us this study. The time series models offer tools for forecasting the future quarter's value of any of the series. Using the lag values of the dependent variables is in agreement with Adejugbe (1982) explanation that once a price level has been attained in an economy, it exerts considerable influence upon the future successive price levels. He further observed that once a price level has been not always fall.

The linear regression equations is providing a new approach to estimating the future prices of construction inputs using the economy wide consumer price index.

8. CONCLUSION

The results of the study have shown that construction prices have exhibited greater tendencies to rise than as reported in the consumer price index. In an economy where information about sectoral inflationary dynamics is not available, it may be necessary to assume that the construction industry inflation may not be equal to the economy wide inflation measure. Using the consumer price index as a measure of the inflationary movement in this case, it has been established that the construction sector inflation is a little distance ahead. The simple linear regression model has further offered objective explanations of the relationship. The model can also be developed, by considering various specification, stationarity properties and incorporating error correction mechanisms to provide economic related variable for estimating purposes.

The study has also shown the inflationary possibilities of various politico-economic regimes. It needs, however, to be further examined, the macroeconomic factors that predispose the construction prices to such perturbations.

The demand-supply disequilibrium in the construction labour market has been brought to the fore. It will require policy thrust that will address the disequilibrium. The labour-capital substitution is a possible path to adopt, as has been adopted in most develop economies. The technological base of most developing economies is still very weak. In consequence, the economics advantage attendant to labour-capital substitution may take quite some time to materialise. Thus the labour wages may still continue to pose great challenge of instability to policy matters and construction managers at industry level and policy makers at the national level.

The study has also provided time series models that can be developed to interactive estimating tools for predicting future prices. However, further refinement of the models will be required after the econometric properties must have been established.

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BIOGRAPHICAL NOTES

Dr Oyediran graduated from University of Ife Ile Ife Nigeria, with a Bachelor of Science degree in Quantity Surveying. He obtained his doctorate degree in construction management with special interest in construction economics, from the University of Lagos in 2003. He started his teaching career in 1989 at the Polytechnic Ibadan. He joined Obafemi Awolowo University a year after. After about five years of teaching and research he joined University of Lagos. His research interest is in economic analysis of construction project, IT in construction and international construction.

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