The study examines the microeconomic foundation of money demand in Nigeria. It adopted weighted aggregate value of wealth to examine the problem of aggregation of monetary variables in Nigeria. Empirical analysis of the data from 1980 to 2004 using a co-integration test reveals an equilibrium behavior of money demand, wealth, composite consumer price index, and private consumption. It reinforces the fact that co-integration is purely a means to an end in analyzing the long-run relationship among variables. However, the use of simple sum aggregated variables in this study despite its being problematic yields different results. The micro attempt at aggregating these variables is therefore a probable solution to the problem at hand. The result shows that a positive impact of private consumption on money demand is negligible. On the other hand, the increase in inflation continues to pose a serious challenge to money demand, thus raising the desire to hold money. The demand for money consequently increases significantly as the wealth of few Nigerians increases.

**Key words:** Demand for money, value of wealth, monetary variables, co-integration test, Nigeria.
1. Introduction

The continued interests in the area of demand for money could be attributed to its central importance to economic theory, monetary theory effectiveness, seigniorage and inflation. However, controversies have trailed the empirical results of the subject. The controversy borders on the issue of an appropriate definition of money stock, the appropriate specification of the money demand function and the opportunity cost variable. Stability of money demand and the specific variable that might affect the demand for money function (Ewis and Fisher 1984; Alayande 2003).

In the literature, there are macro- and microeconomic methods provided for resolving the controversies. The macro approach has been adopted by many authors and it relies on the simple—sum monetary aggregate. However, the method has been proved to be of dubious validity because the simple sum quality index is a special case of the linear index and the price dual to the linear index is the Leontief price index. The implication of linearity is that the macro method assumes perfect substitutes among component assets forming the aggregates, and the assets are also perfect substitutes in identical ratios (Belongia 1995). There is also the problem of internal consistency of the variables used by the conventional macromethod and the variables at times do not relate in a valid manner with economic theory because little consideration is paid to the non-linear functional forms implied by demand theory. The rationalization for ignoring the implications of economic theory is the potential damage to economic theory produced by aggregation over economic agents (Barnett, Fisher and Serletis 1992).

In addressing these pitfalls, some of the macro methods assume a linear or (log linear) function for the demand for money (Tornori 1972; Ajayi 1974; Adejugbe 1988; Jimoh 1990; Oresotu and Mordi 1992). In these series, some macro studies focus on the role of money as a buffer stock asset which absorbs unforeseen monetary shocks disturbing the balance between receipts and payments (Laidler 1985; Cuthbertson and Taylor 1989).

Some have also focused on the analysis of shift or stability in the money demand function (Brunner and Meltzer 1972; Hetzel and Mehra 1989; Adam 1991; Laidler 1996). Others have applied the co-integration and error correction model for establishing a long run relationship in the money demand function (Miller 1991; Adam 1992; Teriba 1974 and 1996; Akinlo and Folorunso 1999).

In spite of all these traditional analytical approaches, some issues remain unresolved in the literature. These include an appropriate definition of money, substitutability of monetary assets, and the issue of money measurement. The application of a micro-economic foundation to address the problems becomes paramount. However, this study intends to assess money demand in Nigeria from the perspective of utility maximization.

The paper is structured into five sections with the introduction in section 1. The related literature is reviewed in Section 2 while the theoretical framework that underpins the empirical analysis including the model is presented in Section 3. The empirical results are presented and interpreted in Section 4 while the last section is the concluding remarks.
Model 3. Theoretical Framework and the Money Demand in Nigeria.

It was found that the choice of inappropriate proxy as scale variable could account for the different misconceptions on the issue of money demand in Nigeria.

### 3. Theoretical Framework and the Model

The study is based on the theory that 

\begin{equation}
\text{The cost function is concave and homogenous of degree one in the second order Taylor approximation to the cost function in (1), we obtain:}
\end{equation}

\begin{equation}
\log l(p) = \alpha 0 + \sum \alpha_i \ln P_i, \quad p_i + \frac{1}{2} \sum \theta_i \ln P_i \ln P_j
\end{equation}

\begin{equation}
\log m(p) = \log l(p) + \beta Y_i R_i p^a.
\end{equation}

By substitution of the expressions for \( l(p) \) and \( m(p) \) into the cost function in (1), we have

\begin{equation}
\log c(u,p) = \alpha_0 + \sum \alpha_i \ln P_i, \quad \sum \theta_i \ln P_i \ln P_j, \quad \sum \theta_i \ln P_i, \sum \theta_i \ln P_i, \sum \theta_i \ln P_i, \sum \theta_i \ln P_i
\end{equation}

\[ \sigma \sigma \]

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where \( \alpha_i, \beta_i, \) and \( \theta_i \) are the parameters to be estimated. The derivative of the cost function with respect to prices using shepherd's Lemma gives us the Hicksian demand functions.

\[ \frac{\partial \ln c(u, p)}{\partial \ln P_i} = \frac{P_i q_i}{c(u, p)} = w_i. \]

Here, \( w_i = \text{wealth share of good } i. \)

\[ \theta = \frac{1}{2} (\theta_i + \theta_j). \]

Under the assumption of utility maximization, the total expenditure (E) is equal to cost (u(p)). Hence if we substitute E for c(u,p) in the cost functions and solve for u as a function of E and P, we get the indirect utility function. If the indirect utility is used to substitute for u in the wealth share equation in (6), the wealth share will be expressed as a function of prices, p and total spending E. Hence we obtain the Marshallian demand equations for the AIDs in the wealth share form as:

\[ W_i = \alpha_i + \sum \theta_i \ln P_i + \beta \ln(P^e_{P}). \]

where \( P^e = \text{Price index defined by:} \)

\[ \ln P^* = \alpha_i + \sum \alpha_i \ln P_i + \frac{1}{2} \sum \theta_i \ln P_i \ln P_j, \]

The restrictions on the parameters of equation (6) in addition to equation (9) imply restrictions on the parameters of the share equation (8). This may be represented by:

\[ \sum \alpha_i = 1; \sum \beta_i = 0; \sum \theta_i = 0, \]

Condition (10) is the adding up restrictions which derives from the definition of wealth shares and total spending E that the sum of the shares over all nth goods adds up to total expenditure. If equation (10) to (12) hold, then equation (8) represents a system of demand function equations which add up to total expenditure (\( \sum \alpha_i - i \)). This is homogenous of degree zero in prices and total expenditure taken together which also satisfies Slutsky symmetric conditions (the compensated cross price effects are equal).

In order to model money demand, we introduced money directly into the indirect utility function which was used to substitute for wealth share equation in (6). By so doing, we obtained our tested empirical model for the study:

\[ Md = \alpha_0 + \alpha_1 \ln W + \alpha_2 \ln P + \alpha_3 \ln C \]

\[ W = \text{Wealth}. \]

And are parameters of the model estimated. Wealth is obtained through simple aggregation of treasury bills, commercial papers, bankers’ acceptances, total fixed assets and savings.

For the purpose of meaningful regression analysis, the orders of integration of the variables were determined using the Augmented Dickey Fuller and Phillips Perron tests. The model for both tests is specified as:

\[ y_t = y_{t-1} + \sum \theta_i. \]

\[ \sum \rho \sum u_i. \]

where u with noise variable is:

\[ \Lambda = \rho \sum u_i. \]

The fact that variables are co-integrated implies that there is an adjustment process that prevents errors in the long-run relationship from becoming larger and larger. It also showed that co-integrated series has an error correction presentation, suggesting that co-integration is a necessary condition for an error correction model. We employed an error correction dynamic specification of the form:

\[ \Delta Md_t = \alpha_0 + \alpha_1 \Delta E + \alpha_2 \Delta P + \alpha_3 \Delta W. \]

4. Empirical Results and Interpretation

This section begins with unit order of in-
The Phillips Perron test reveals that the composite price index and consumer price indices are stable. The empirical evidence discussed, aggregation of wealth value as one of the determinants of money demand seems to be inappropriate when total fixed assets in the economy are excluded.

Co-integration analysis in economic research is not an end but only a means to an end. The study reveals that it is actually one requiring test and test exercises. Definitive and more accurate approaches need to be sought out. Adopting the logarithm of monetary variables and analyzing without the logarithm exhibits different co-integration results.

Lack of internal stability in the Nigerian economy still affects money demand. It is imperative that money should be regarded as a commodity for which satisfaction wealth holders will struggle to maximize from time to time. On this note, the fluctuations in demand for money can be predicted in the monetary policy formulation or evaluation as against the macroeconomic foundations of demand for money.

The government of the day must closely examine the problem of inflation and unemployment in the country among others. In addition, it should also ensure that all leakages from the monetary system are excluded.

References


