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The determinants of the demand for money in developed and developing countries

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This study examined the determinants of the demand for money in developing and the developed countries. The study employed a comparative analysis of the effectiveness of the determinants of the demand for money in both developing and developed countries. It was found out that income related factors or the scale variables are more effective in the developing countries while factors that work through the financial system are more effective in the developed economies and that stock market variables should not be ignored in modeling demand for money even in emerging economies since they constitute an alternative to holding cash. The level of the development of a country's financial system determines which factors will be relevant targets in moping excess liquidity within an economy.

Key words: Demand for money, comparative analysis, excess liquidity.

INTRODUCTION

According to Black (2003), demand for money refers to the amount of money people wish to hold or the function determining this. In other words, it is referred to as the desire to hold cash. The demand for money arises from two important functions of money; medium of exchange and the store of value. The study of the demand for money is not restricted to the money market, but also involves other market such as the commodity, capital and foreign exchange market

According to Jhingan (2004), demand for money arises from two important functions of money. The first is that money act as a medium of exchange and the second is that it is a store of value. Thus individuals and businesses wish to hold money partly in cash and partly in the form of assets.

Why do individuals desire to hold money? In an attempt to answer this question, several economists made several assertions on the reason(s) why people hold money. With his conceptual framework, Keynes (1936) laid the foundation for the development of all modern theories on the demand for money hence regarded as the father of modern theories of money demand.

This paper examines the contribution of various schools of thought in economist on the demand for money. The study then examines the relevance of the determinants of the demand for money in developed and

developing countries. The rest of the paper is organized as follows; theories of the demand for money, comparative analysis of the relevance of the determinants of the demand for money in developed and developing countries and conclusion.

THEORIES OF DEMAND FOR MONEY

The purpose of the theory of demand for money is to look at the variables that motivate people to hold part of there wealth in money as opposed to other assets. According to Jhingan (2004), there are three approaches to the demand for money:

- (1) The classical approach; (a) the equation of exchange; b) the cash balance (Cambridge) approach
- (2) The Keynesian approach
- (3) The post Keynesian approach

Classical approach

The classical economist did not explicitly formulate demand for money theory but they emphasized the transactions demand for money in terms of the velocity of

circulation of money (Jhingan, 2004). This, according to the classical economist, is because money acts as the medium of exchange and facilitates the exchange of goods and services. These views were expressed in the fishers equation of exchange;

$$MV = PQ$$

where, M = the quantity of money; V = its velocity of circulation; P = price level and Q = total output

Here, MV = Money supply, while PQ represents the demand for money. At equilibrium, money demand (PQ) equals money supply (MV). The underlying assumption in the equation of exchange is that people hold money to buy goods and does not explain fully why people hold money.

In a slight contrast to the fisher version introduced by Irving Fisher of Yale in the early 1900's, the Cambridge version introduced by economist of the Cambridge University of England raised a further question: why would individuals want to hold their assets in the form of cash?. The Cambridge demand equation for money is represented by the equation $M^d = KPY$ where M^d = demand for money, K = is the fraction of real money, incomes individuals want to hold in the form of cash, P = is the price level and Y = is the aggregate real income.

Assuming a year consists of 12-4 week months, that is, 48 weeks. Considering the case of an employee who is paid ₦2,800.00 once a month, or ₦33,600.00 a year and who spend his income evenly – ₦100.00 a day – over the 28 day month. The moment the individual received his monthly income, he holds ₦2,800.00. The next day, he holds ₦2,700.00 (having spend ₦100.00) the day after he holds ₦2,600.00 and so on until the 28th and last day of the month when he spends the remaining ₦100.00. Dividing the individual's average money holdings of ₦1,400.00 by his income (expenditure) of ₦2,800.00 we find the Cambridge "K" which is ½ which means that the individual's average holdings of (demand for) money is ½ of his monthly income which is equivalent to 1/24th of his annual income.

Suppose that employees are paid once a week instead of once a month, with the same income the employee will receive ₦700.00 a week which he spends. The individual's average income is ₦350.00 which is ½ of his weekly income and 1/96th of his annual income in cash. This demonstrates that the more frequently employees are being paid; the lower will be their demand for money. It is evident therefore, that the Cambridge approach stressed the importance of other variables that influence the demand for money at any point in time.

The Keynesian perspective

According to Jhingan (2004), one of the major criticisms of the Cambridge version is their neglect of the store of

value function of money – even though they expanded the scope of the demand for money. Keynes, a product of Cambridge, further extended the concept of the demand for money in two of his works on money, a trade on monetary reform (1923) and a treatise on money (1930). Examining why the demand for money depends negatively on interest rate, Keynes published "The General theory of employment, interest and money" in 1936.

Keynes (1936) introduced three reasons or motives for holding money; the transactionary, precautionary and the speculative or portfolio motive. Each of these motives is associated with one component of the demand for money examined by Keynes.

Transactionary demand for money

This arises from the need to hold cash for current personal and business expenditure. There is hardly any economic unit whose cash receipt perfectly matches its cash payments at all times. Monthly salary earners receive their remuneration on monthly basis, some weekly and some on bi-monthly basis but not all foodstuffs could be bought and stored up till the next salary period. Even if this possible, other expenses like transport to work and newspaper will have to be on daily basis or at shorter intervals than receipt or income.

The situation appears similar for most business goods may have to be sold on credit or on monthly billings but daily expenses have to be made. Even for government, most company profit tax and trading surplus of government owned corporations accrue mostly at year ends but again daily expenses will have to be met. The diversity in the timing of inflow and outflow of funds create the need to hold some cash to meet daily expenses till the next cash inflow period.

Therefore, the higher the level of income of an economic unit, the higher will be the transactions demand for money and vice versa, hence $M_t = F(Y)$ where $F > 0$. The important thing to note here is that while Keynes explicitly recognize that the transactions demand for money (M_t) depends on interest rate, he argued that the influence of interest rate was minor compared to that of income

Precautionary demand for money

The precautionary demand, according to Keynes arises from the need to provide for unforeseen event requiring sudden expenditures. Unforeseen events as ill health, accidents and robbery/theft happen so sudden hence the need to hold cash to meet such unexpected cash needs. The higher the level of income of an economic unit, the higher will be the precautionary demand for money by the individual or the higher will be the money needed to meet unexpected expenditures and vice versa. Hence $M_p =$

$F(Y)$, $F > 0$. While Keynes explicitly recognized that precautionary money demand depends on interest rate, he argues that the influence of interest rate was minor compared with that of real income.

The speculative demand for money

The speculative demand according to Keynes arises from uncertainty about future interest rate. Keynes emphasized risk and the uncertainty of expectations as the reasons behind the negative relationship between the interest rate and the speculative demand for money. For example, in general theory, he wrote that “uncertainty as to the future course of the rate of interest is the sole intelligible explanation of this relation.” Through speculative demand for money, Keynes extended another function of money, that is, store of value. In this function, there are two component parts; the transaction demand which is a positive function of income while the demand for securities (bonds) are negatively related to interest rate. The determinant of the demand for bonds is the price of bond and the interest on bonds. The higher the level of interest rate, the lower is the speculative demand for money and vice versa.

The speculative demand for money is fairly elastic initially, but after a level, it becomes perfectly elastic. This perfectly elastic region of the demand curve for money is called the liquidity trap. The critical interest rate is at its lowest level and cannot go below that. According to Keynes, if a person decides to keep bond instead of cash, he is speculating that the future interest will not rise but if he speculate it will increase, then there will be no need to buy it. Therefore, it is the uncertainty in the future level of interest that induces the speculative demand for money.

An inverse relationship exists between the price of bonds and the interest on bonds ($P_o = R/(1 + r)^1$). Anybody buying a bond has an expectation that in future, market conditions will be such that the rate of interest will not change in a way that a capital loss will be anticipated. Anybody who switches from bond to money holds the expectation that market interest will increase while the person that switches from money to bond expects market interest to fall. The belief is that the current market interest rate is too high and those who switch from bond to money hold the opposite expectation. Therefore, the higher the level of interest today, the lower is the amount of money left for speculative reasons and vice versa.

Post Keynesian approach

By using the store of value function of money, Keynes introduced the interest rate as one of the factors affecting money demand through the speculative motive. This however, suffered from a shortcoming; Keynes predicted

that individuals would hold their wealth in bonds or money, that is, they would not diversify their portfolios. This was remedied by Harry Markowitz and James Tobin. In addition William Baumol and James Tobin also provided the theory that explains why the transactions demand and even the precautionary demand depends on the interest rate.

James Tobin's explanation

Tobin noted that the Cambridge approach merely asserts that an individual must hold one-half of the periods receipts (and expenditure) as transactions balances. It does not specify the form in which these balances are held. According to Tobin, if an employee is paid salary (for example N3,000 in 30 days), he can deposit all in bonds and then visit the broker to liquidate N100 worth of bonds until the holding is completely liquidated. The demand for money diminished as the number of transfers between money and securities increases. The marginal revenue (MR) from each transaction with the broker is the extra interest earned by holding more securities and fewer money balances. As the number of transfers increases, the marginal revenue from each transfer diminished. The marginal cost (MC) consists of the brokerage fees, or transaction costs, of transferring securities to money and vice versa. The cost includes the “time and trouble” of switching between securities and money. The marginal cost (MC) curve is horizontal indicating a constant marginal cost (MC) of each transfer.

The optimum number of transfers is determined at the point of equality between the MR and MC. The number of transfers determines the demand for money (Figure 1).

William Baumols explanation

Baumol called his approach the inventory – theoretic approach. To find the optimal quantity of transactions balances that an individual should hold, Baumol applied optimizing techniques previously used to find the optimal inventory of goods that a firm should hold. In Baumols analysis, the demand for transactions balance depends on brokerage costs and the opportunity cost of deposits. Baumol assumes that every time an individual buys or sells bond, he or she incurs a brokerage fee, denoted by b , with “ n ” transactions. The brokerage costs equals “ bn ”. Brokerage costs are one of two components of the total cost of security transitions balances. The second component is interest forgone by holding wealth in money (deposits) rather than in securities. This opportunity cost of money equals $(i - r_D) M^d$. Thus total costs, TC , are

Total costs = Brokerage costs + opportunity cost

$$TC = bn + (i - r_D) M^d \quad (n = Y/T)$$

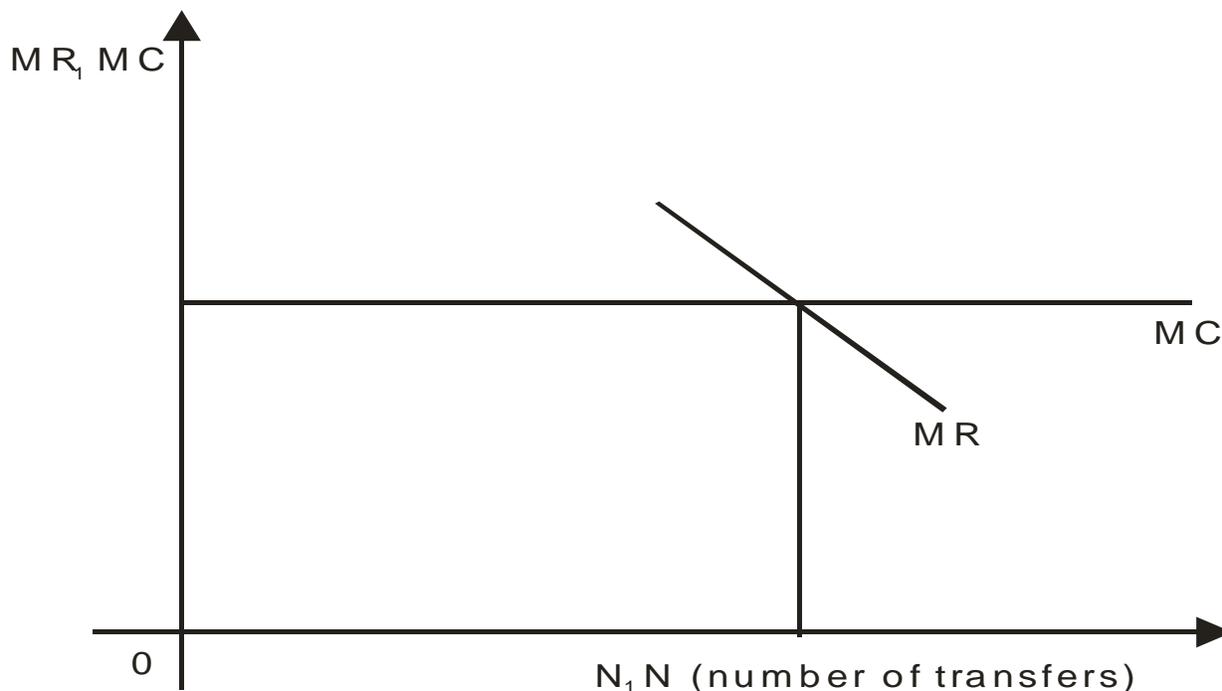


Figure 1. Marginal Revenue and cost of switching from money to securities and vice versa.

Therefore the brokerage cost are $b(Y/T)$ also, $M^d = T/2$
 $TC = b(Y/T) + (i - r_D) \times (T/2)$

The individual is now faced with the problem of deciding on the amount of funds to convert from bonds to cash at each withdrawal in order to minimize total costs. Determining the optimal size of T also gives us the size of money demand. The investor's aim is to choose the level of T that minimizes total cost, that is the optimal values of T . Therefore by differentiating TC with respect to T , setting the derivative equal to zero and solving for T we obtain;

$$T = \sqrt{2bY/i - r_D}$$

Since $M^d = T/2$ it follows that

$$M^d = \frac{1}{2} \sqrt{2bY/i - r_D} \text{ (the famous square - root rule)}$$

Where, Y = Income; b = Brokerage fee; T = number of transaction; i = Interest rate; r_D = Deposit rate

The transaction demand is directly proportional to the square root of the quantity of transactions and inversely proportional to square root of the opportunity cost. In other words, if the opportunity cost increases, it will be profitable to invest in bonds and the optimal cash balance will reduce.

Milton Friedman's explanation

Friedman's contributions to the quantity theory of money are a restatement of money demand by the classical economist. According to Friedman, investors can hold their wealth in the form of money, bonds, equity shares and commodities. He concludes that the demand for money depends on rates of return of the four assets and upon income. Assuming bond and equity capital are perfect substitutes, with equal rates of return, Friedman's money demand function is;

$$M^d = M^d(i, r_D, \Delta p/P, Y, W)$$

where M^d = money demand; P = price level (positive); i = Interest rate (negative); Y = income (positive); W = Wealth (positive); r_D = deposit rate (negative)

According to him, all things being equal, an increase in the expected rate of inflation increases the demand for commodities and reduces the demand for money and vice versa.

COMPARATIVE ANALYSIS OF THE EFFECTIVENESS OF THE DETERMINANTS OF THE DEMAND FOR MONEY IN DEVELOPED AND DEVELOPING COUNTRIES

According to Jhingan (2004), money refers to demand

deposits with commercial banks plus currency with the public which are together denoted as M_1 . This is regarded as a narrower definition of money. Friedman (1956) proposed a broader definition to include time deposits of commercial banks hence the broader demand for money is $M_2 = M_1 + \text{time deposits}$. Even though time deposits possess liquidity hence regarded as money, Friedman (1956) referred to it as a temporary abode of purchasing power as it stresses the store of value function of money.

In any case, depending on the level of development of the financial system of a country, some assets that are not liquid can be categorized as money due to their moneyness as created by the development of a financial system. The more developed the financial system of a country, the higher the liquidity of illiquid assets. According to Kumar et al. (2011) many developing countries have underdeveloped, undiversified financial markets that lack financial sector instruments and payment technologies such that most transactions involve the use of narrow money.

In determining the variables of the demand for money function, there are two sets of variables. The first sets are referred to as the scale variables (related to the impact of income or wealth) while the second set are the opportunity cost variables (related to substitution based on relative attractiveness of assets regarded as substitutes of money). Owoye and Onafowora (2007) opined that economic agents may hold money either as an inventory to smooth differences between income and expenditures, or for its yield as an asset in a portfolio. According to them, either motive suggests a specification in which the demand for money depends on a scale variable such as real income or wealth and the rates of returns to money and that of alternative assets.

Therefore, we specify the demand for money function by adopting the model used by Kumar et al. (2011);

$$\ln M_t = \theta_0 + \theta_y \ln(Y_t) + \theta_R R_t + \theta_E \ln E_t + \theta_\pi \pi_t + E_t$$

where θ_0 = intercept, Y = real output; R = short term interest rate; M = real narrow money stock; E = effective exchange rate

We specify our demand for money function based on this model as

$$M^d = F(Y, R, E, INF)$$

where Y = income; R = interest rate; E = exchange; INF = inflation rate

But there are other determinants of lesser impact which were captured by the disturbance term in their model which we may want to include in the work. Hence the demand for money function will be thus;

$$M^d = F(Y, R, E, INF, W, r_D)$$

where W = wealth; r_D = deposit rate.

Level of income and money demand

The major determinant of a nation's demand for money is the volume of payments that must be undertaken. A good measure of the volume of payments, in turn, is the level of national income (Y). All things being equal, the higher the level of income, the greater the need for money and, hence the greater the demand for money and vice versa.

Realities in developed economies

In the developed world, with an organized financial market, an individual's income is of a lesser degree in determining the amount of money an individual will hold. In the first instance, their payment system is convenient and not in the form of liquid cash. More so, the easy access to credit compared with the developing world means more expenditure can be made without cash, for example mortgages, telephone bills, hospital bills, newspaper delivery. This reduces the public desire to hold cash. Even though lesser income elasticity is expected in developed countries compared with the developing world, Mark and Sul (2003) cited in owoye and Onafowora (2007) found income elasticity greater than one in 10 of the 19 advanced countries they examined in their study.

Realities in developing countries

Income is the most significant determinant of money demand in the developing countries. The higher the income of an individual, the higher will be that individual's demand for cash and vice versa. The relative underdeveloped financial system means that individuals cannot finance their deficits from funds derived from the financial market hence the need to keep large proportion of their income in cash. The relative absence of financial assets means that even if the people want to buy them, they will not get them hence hold more cash balances. According to kumar et al. (2011), Many developing countries have underdeveloped, undiversified financial markets that lack financial sector instruments and payment technologies such that most transactions involve the use of narrow money hence one should expect income elasticity slightly above unity. Anoruo (2002), Akinlo (2005), owoye and onafowora (2007) and Nwafor et al. (2007) found income elasticities of 5.700, 1.094, 2.067 and 5.430, respectively for Nigeria while Darrat (1986), Nell (2003) and Drama and Yao (2010) found income elasticities of 1.843, 1.480 and 5.312 respectively for Kenya, south Africa and Cote d'Ivoire.

The interest rate and money demand

The level of interest as a major determinant of money demand was first introduced by Keynes and has since, been a major determinant of money demand. The theory holds that the higher the level of interest, the lower will be the individual's desire to hold cash because of the increase in the opportunity cost of holding cash as opposed to interest bearing assets and vice versa. This means that there is an inverse relationship between the demand for money and the level of interest.

Realities of developed economies

In the developed economics there is an existence of an organized financial market with wide range of financial assets. Therefore, the substitution between money and financial assets is highly existent hence more people are predisposed to holding at least one form of financial assets or the other. With limited or no asymmetric information, individuals demand those securities with higher interest in line with theory that the higher the interest rate, the more the demand for that asset and the lesser will be the desire to hold cash (money demand) and vice versa. With the developed financial market specialization leads to efficiency by reducing the transaction cost hence relatively high demand for assets compared to the developing world.

Realities in developing countries

In the less developed economies, the financial sector is underdeveloped, hence limited financial assets supplied by the market. Most individuals do not have easy access to financial institutions and with the high transaction cost, the attractiveness of financial assets decline. Furthermore, with the negative influence of asymmetric information, the interest of individuals in financial markets diminish as the implicit cost of transactions increase, hence, they keep more of their wealth in the form of cash (the higher the demand for money balances). The low level of income means people hardly satisfy their basic needs hence limited speculative demand which reduces the influence of interest rate in the demand function for money in these countries. According to Owoye and Onafowora (2007), the structure of the financial markets in less developed countries renders interest rate targeting ineffective. Taylor (2004) cited in their work stated that if financial markets are weak, the effectiveness of transmitting policy through interest rates will be limited.

Deposit rate and the demand for money

Deposits are asset in the balance sheet of the public, who are the demanders and a liability in the balance

sheet of banks who are the suppliers. Other things being equal, the quantity of deposits rises as the deposit rate increases hence positively – sloped (Figure 2). The supply of deposits increase when the net marginal revenue of issuing deposits $[(1 - rr) l = r_D]$ rises. Therefore all things being equal, when the deposit rate falls, profit maximizing banks want to issue more deposits because the net marginal revenue rises hence negatively sloped. Demanders and suppliers of deposits interact in the market for deposits in which the deposit rate moves to make their plans match at point 'E' in the diagram /AB/ shows excess demand where the public wants to hold more deposits than banks would want to issue, the converse is denoted by /CD?

Realities in developed economies

With a developed financial system with limited asymmetric information, people are more likely to be influenced by the deposit rate and take notice when it increases or decreases. The higher the deposit rate, with individuals doing more transactions through banks, the higher will be the demand for deposits and the lower the money demand. More transactions through banks increase the likelihood of the demand for money balances to be affected by the deposit rate in the economy.

Realities in the developing countries

In the developing economies, most people handle their transactions through the unorganized informal sector, and are mostly unaware of activities in the organized market hence not likely to be influenced much by deposit rate. Therefore any policy aimed at moping liquidity through the deposit rate will not yield much hence undermining deposit rate as a determinant of the demand for money in the developing countries.

Wealth and the demand for money

Wealth is a major determinant of the demand for money. An individual who has large wealth would be expected, within the framework of portfolio theory, to have more of each of the various assets that are accommodated in his wealth portfolio. These assets would include money. When the wealth holding increases, demand for money will be expected to increase just as the demand for other assets will be expected also to increase within the portfolio framework.

Realities in the developed countries

Although wealth is expected to influence the demand for

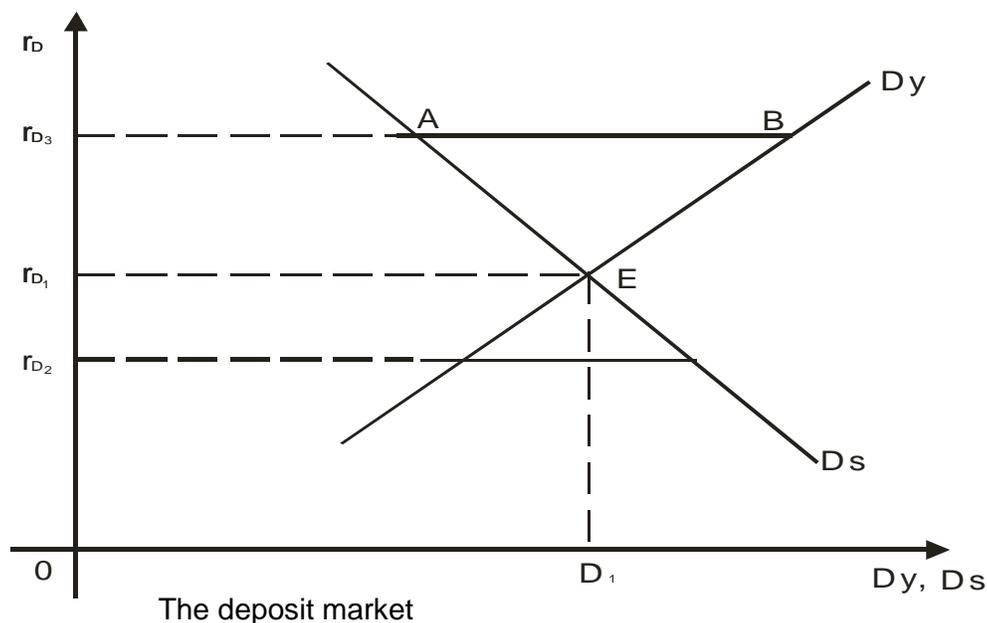


Figure 2. The demand and supply of deposits.

money by individuals in every society, the impact of wealth is smaller in the developed economies compared to the developing countries. The reason is due to the developed financial system where the individual has other interest-bearing assets at his own disposal and the value system which is not inclined towards ostentation. In the first instance, holding cash is expensive to him and the value system does not encourage unnecessary spending hence, likely to keep smaller fraction of wealth in cash. In contrast, he invests in acquiring interest-bearing assets.

Realities in the developing economies

The size of wealth influences people's choices between money and interest-bearing assets. With an underdeveloped financial market, and the value system of ostentation, wealthy people keep more cash balances (wealth) to show-off, hence, wealth is an important variable of money demand in the less developed economies (LDC's).

Inflation and the demand for money

When people expect general price level to rise, there is a mad rush to purchase commodities and hence less demand for money balances. The uncertainty and instability in the level of prices reduces people's desire to hold more of cash by increasing panic demand for goods and other properties hence lesser demand for money.

Realities in the developed economies

The developed economy is associated with relatively stable prices; hence, panic demand is not frequent therefore undermining price changes as a determinant of money demand. Stable prices mean stable demand for money balances over time.

Realities in the developing economies

With the unstable prices in developing countries at any point, prices are expected to rise hence panic demand is the order of the day. With inflationary tendencies high, the demand for money balances will be low due to the unexpected demand for goods and services, for example petrol in Nigeria, therefore, price is an important determinant of the demand for money in the developing countries.

Other factors include

There are other minor factors that influence the demand for money in developing and developed countries.

Exchange rate and the demand for money

The return on the holdings of foreign assets will be influenced by the expectation of exchange rate movements (Essien et al., 1996). According to them, depreciation of

depreciation of the domestic currency relative to foreign currencies would lead to a rise in the return on foreign assets to domestic holders and vice versa. They stated further that attempt should be made to capture the influence of exchange rate expectations on the return on foreign assets. That this could be done by either adjusting the foreign interest rate for exchange rate expectation or by introducing the exchange rate expectation as a separate variable in the money demand function to be able to identify the separate effects. They however used exchange rate rather than foreign interest rate as a measure of currency substitution in Nigeria.

Stock market and the demand for money

Conceptually, money is an asset with a particular set of characteristics, most notably its liquidity (Carpenter and Lange, 2002). Like other financial assets, demand for money is part of a portfolio allocation decision, in which an agent's wealth is distributed among competing assets based on each asset's relative benefits (Tobin, 1969). To a certain extent, agents are willing to give up the higher return of alternative assets in order to receive the benefit of liquidity that money provides.

Thus, according to Carpenter and Lange (2002), standard money demand equations include an interest rate or interest rate spread to measure the opportunity cost of holding non-interest earning money. This is true in the sense that since opportunity cost is the cost of alternative foregone, a higher return on alternative assets depletes liquidity (cash holding). In their work, Carpenter and Lange (2002) concluded that a standard money demand model can be improved by including equity market variables.

Individual preferences and the demand for money

The importance that people attach to money as a form of wealth, given the same level of opportunity cost, will vary and thus will affect the individual's demand for money. Some people attach enormous value to the convenience of liquidity and confidence which money possess, such individuals believe that the liquidity and confidence that money generates constitutes some form of implicit yield and it is a comparison of this implicit yield with the explicit yield, which is the interest foregone. This actually influences a person's propensity to hold cash.

Brokerage fees and risk

Other things being equal, an increase in brokerage cost increase in brokerage cost increase money demand and vice versa. So also an increase in the appetite for risk decreases the demand for deposits and hence increases the desire of the public to hold cash (demand for money).

Required reserve and the demand for money

An increase in the reserve requirement ratio reduces bank profit per naira of attracted deposits, thereby inducing banks to reduce the deposit rate. Similarly, an increase in the marginal cost of servicing deposits also reduces banks' profitability inducing banks to lower the deposit rate, thereby, increasing the public's demand for deposits and reducing the public's demand for money and vice versa.

Payment habit and the demand for money

Payment habits differ from society to society – some monthly, bi-monthly, weekly and daily. The more the frequency of income payment (salary) per period, the less will be the demand for money in the society and vice versa.

Conclusion

In the analysis, there are several factors that determine the demand for money in both developing and developed economies. Factors such as income, interest rate, price level, deposit rate, wealth, required reserve, individual preference, payment habit and brokerage fee/risk, all determines the desire of people to hold cash (demand for money).

In any case, the development of the financial system of a country determines which factors are more relevant in determining the demand for money in that country. There are factors that work through the financial system such as the interest rate, the deposit rate, required reserve ratio and brokerage fee (opportunity cost variables). When the financial system is underdeveloped, these factors work less or are not effective in determining the demand for money. Therefore, any policy aimed at moping liquidity through these factors will likely not yield any result.

Finally, the underdeveloped nature of the financial systems of the less developed economies (LDC's) means income-related factors (scale variables) are more effective in determining the demand for money balances. Changes that are income related will proof effective in changing the level of liquidity in any economy of the less developed countries.

REFERENCES

- Akinlo AE (2005). 'The stability of money demand in Nigeria; an autoregressive distributed lag approach'. *J. Policy Model.*, 28: 445-452.
- Anoruo E (2002). 'Stability of the Nigerian M2 money demand function in the SAP period'. *Econ. Bull.*, 14: 1-9.
- Black (2003). 'Oxford Dictionary of Economics'. Oxford University Press, p. 114.
- Carpenter SB, J Lange (2002). "Money Demand and Equity Markets". Board of Governors of the Federal Reserve System and Cornerstone

- Research, October, pp. 1-22.
- Darrat A (1986) 'The demand for money in some major OPEC members, Regression estimates and stability results'. *Appl. Econ.*, 18: 127-142.
- Drama BHG, Yao S (2010). 'The demand for money in Cote d'Ivoire: evidence from the cointegration test'. *Int. J. Econ. Finan*, 3(1): 188.
- Essien EA, Onwioduokit EA, Osho ET (1996). "Demand for money in a debt-constrained Economy": A case study of Nigeria. *CBN Econ. Financial Rev.*, 34(2): 579-605.
- Friedman M (1956). "The Quantity Theory of Money – A Restatement; in M. Friedman (ed): *Studies in Quantity theory of Money*, (Chicago University press).
- Jhingan ML (2004). *Monetary Economics*. 6th ed. Vrinda Publications (P) Ltd, Delhi, India, pp.174-192.
- Keynes JM (1936). *The General Theory of Employment, Interest and Money*, Vol. 7, Cambridge: MacMillan.
- Kumar S, Webber DJ, Fargher, S (2011). 'Money Demand Stability: A Case of Nigeria'. Auckland university of Technology, Auckland, New Zealand, pp. 1-20.
- Nell KS (2003). 'The stability of M3 money demand and monetary growth targets: The case of South Africa'. *J. Dev. Stud.*, 39: 151-180.
- Nwafor F, Nwakanma H, Nkansah P, Thompson F (2007). 'The quantity theory of money in a developing economy: Empirical evidence from Nigeria'. *Afr. Econ. Bus. Rev.*, 5: 1-9
- Owoye O, Onafowora OA (2007). 'M2 targeting, money demand and real GDP growth in Nigeria: Do rules apply? *J. Bus. Public Affairs*, 1: 1-20
- Tobin J (1969). "A general equilibrium Approach to Monetary Theory. *J. Money Credit bank.*, February, 1: 15-29.