Arab Journal of Administrative Sciences

2001, Vol. 8, No. 1, 121 - 135

Naief H. Al-Mutairi

Kuwait University, Kuwait

THE BEHAVIOR AND DETERMINANTS OF THE CURRENCY TO DEMAND DEPOSITS RATIO: SOME EMPIRICAL EVIDENCE FROM KUWAIT

Key Words

Currency; Demand Deposits; Ratio; GDP; Interest Rates; Kuwait.

Abstract

This study examines the behavior of the currency to demand deposits ratio in an oil-exporting country, Kuwait over the period 1972-96. Toward this end, a partial adjustment model is employed. However, before estimating level regressions, the study carried out unit root and co-integration tests to ensure all data are stationary and are of the same order of integration, to avoid spurious regression results. The study has arrived to two important conclusions. The first is that inflation rate, interest rate and, by less degree, the real GDP are important determinants for the currency ratio function in Kuwait. This finding has important implications for the conduct of monetary policy. The second is that some periods of instability, like the period of the Iraqi occupation of Kuwait, don't have a significant influence on the ratio, and hence, inducing no upward shift in the currency ratio function.

Introduction

It is widely recognized that the money supply is a key important determinant for the level of economic activity. The level of money supply is jointly determined by the action of the monetary authorities, through either control of the required reserve ratios, and the monetary base and the non-banking sectors, through the public's desired proportions of currency and deposits. While there has been considerable empirical research devoted to analyzing the monetary authorities'

Submitted December 1999, Accepted July 2000.

ability to control the reserve ratio and demand monetary base, relatively few economists [Tobin (1965), Meltzer (1969), Pesek (1970), Becker (1975), among others] have emphasized the role of the currency ratio in determination of the magnitude of the money multiplier, hence the money supply.

The recognition of the role of the currency to demand deposits ratio, in the money supply process, dated back to Irving Fisher who viewed the behavior of the currency ratio as fundamental in money supply determination and thus the business cycles. Cagan (1965) empirically confirmed this view by his important study of the 18 cycles in the United States from 1877 to 1954. He found that variations in the public's ratio of currency to deposits, accounted for half of the variations in the rate of growth of the money supply. Changes in the monetary base and the bank's ratio of reserves to deposits, jointly accounted for the other half. Therefore, the cyclical variations in the money supply during this period were found to be caused mainly by the factors over which the monetary authority had little control.

One further source of importance for the currency ratio is its evolution in the process of economic development. It is generally believed that as the banking system and banking habits spread in the process of economic development, the currency ratio tends to decline. Therefore the ratio is frequently used in empirical studies as an indicator for the degree of financial development.

Few studies have attempted to analyze the behavior of the currency to demand deposits ratio in the developing countries (see for example, Dadkhah and Mookerjee (1988) and Zaki (1992), among others). As far as a country like Kuwait is concerned, there appears to be no study available on the behavior and determinants of the currency to demand deposits ratio in Kuwait. Accordingly, this study is an attempt to remedy this shortcoming. It presents a theoretical and statistical analysis of the determinants of the currency ratio for Kuwait.

The remainder of this paper is set out as follows: Section II presents a simple model of the money supply process with particular emphasis given to, currency to demand deposits ratio. Section III identifies the determinants of the currency to demand deposits ratio. In section IV, a simple model is proposed to capture the movement of the ratio, while taking into account fluctuations caused by economic and political factors. Section V reports and evaluates the empirical results. Final section summarizes the main conclusions.

Money Supply Process

The importance of the currency to demand deposits for the money supply process can be understood from the following relationship.

$$M = m(B - ER) \quad (1)$$

Where M = money supply

m = money multiplier

B = monetary base (also referred to as high-powered money)

ER = excess reserve held by commercial banks

Following (1), money supply is formally defined as the money multiplier (m) times the net monetary base (B-ER). The monetary base equals currency (C) plus the total reserve in the banking sector (R) or equivalently Bn, the non-borrowed base (the component of monetary base that is under the central bank's control because it results primarily from open market operations) plus DL, discount loans (the amount of borrowing by banks from the central bank, that is less tightly controlled by the central bank). The money multiplier (m) that tells us how much the money supply changes in response to a given change in the monetary base (B), has the following complicated formula.

$$m = \frac{1 + C/D}{r_d + r_t((T/D) + C/D + ER/D} \quad (2)$$

Where

C/D = Currency to demand deposits ratio

T/D = Time deposits to demand deposits ratio

ER/D = Excess reserve to demand deposits ratio

r_d = required reserve ratio on demand deposits

r_t = required reserve ratio on time deposits

The above formula expresses the multiplier as a function of ratios, $C/_D$, $T/_D$, $ER/_D$, and the required reserve ratio set by the central bank r_d, r_t[1]. Substituting (2) for m in equation (1), taking into consideration that $B = B_n + DL$, and assuming that banks hold no reserve in excess of their required reserves (ER = o), we have[2]

$$M = \left[\frac{1 + C/D}{r_d + r_t(T/D) + C/D}\right] (B_n + DL) \quad (3)$$

(1) For the money supply (M2), money multiplier requires slight modifications to reflect the definition of M2. After these modifications, the formula for M2 money multiplier is given as

$$m = \frac{1 + C/D + M/D}{r_d + r_t(T/D) + C/D + ER/D}$$

Where $M/_D$ = the ratio of other deposits included in the definition of M2 to demand deposits. For more details, see Mishkin (1992), PP. 297-99.

(2) The money supply model as stated in (3) reflects the behaviors of four "players"- the central bank; the depositors; the commercial banks and the borrowers. The central bank enters by setting the required reserve ratios, (r_d, r_t) and by controlling the unborrowed reserve (B_n) through the open market operations. The behavior of deposits is mirrored in the movement of ratios ($C/_D$), ($T/_D$). The commercial banks enter through their decisions regarding excess reserves (ER) and their borrowing from central bank (DL). The fourth player is the borrowers from banks who enter indirectly by influencing commercial banks decisions about (ER) and (DL). For further details, see Jordan (1969), PP. 10-19, and Mishkin (1992), PP, 273-95.

An important characteristic of the above model, is that an increase in the currency to demand deposits ratio ($C/_D$), holding the other determinants of the money multiplier constant, will lead to reduction in the value of multiplier. Conversely, a reduction in the ratio would lead to an increase in the value of multiplier. Unless the commercial bank (through borrowing from the central bank or holding less (higher) excess reserve) or the central bank take action to offset the reduction or the increase in the value of multiplier, the money supply (M) varies inversely with the change in ($C/_D$). Holding the ratio $C/_D$ ($T/_D$) constant, the value of the multiplier is now determined by the required reserve ratios which are under the control of the central bank. Therefore, this allows the central bank to achieve desired changes in the money supply by determining how much the monetary base must be changed. Uncompensated changes in the ratio ($C/_D$) lead to fluctuations in the value of multiplier and create unstable relationship between the monetary base and the money supply. This would have important implications for the conduct of monetary policy by the authorities.

It is generally expected that the currency to demand deposits ratio in developing countries will decline over time due to the process of economic and financial development that usually accelerates the rate of growth in demand deposits. Exceptions of that, are the early stage of development when the ratio will increase due to increasing monetization of the economy resulting from the development and increase use of money. Also are the periods of economic and political instability, where the public's lack of confidence in the banking system is likely to lead to a rise in the ratio.

Kuwait, like other developing countries has witnessed a secular decline in the ratio over the last few decades. The currency ratio ranged from a high of 1.2 in mid 1960's to about 0.88 in 1970 and then to 0.53 in 1975. This decline in the ratio was exceptionally high compared to other developing countries, which might be ascribed to the rapid economic and financial developments, which occurred in 1960's and 1970's. The ratio continued to decline however, with lower rate and greater volatility during the last two decades. It ranged from 0.50 in late 1970's to 0.45 in 1987 and then to 0.39 in 1996. This downtrend in the ratio was interrupted during 1988-89, when the amount of demand deposits, for unexplained reasons, fell down leading to an increase in the ratio and also in 1991 when the ratio significantly increased to 0.59

following the Iraqi invasion to Kuwait.

Determinants of the currency to demand deposits ratio

Determinants of the currency ratio stems from the quantity theory of money which is essentially a theory of money demand. According to the quantity theory of money, the transaction demand for money defined to include currency and demand deposits should grow as the national income grows. But demand deposits are more preferred because they are safe and more convenient medium of exchange. As a result, demand for deposits will rise faster than for currency, so that one could expect to see the currency ratio fall with the rise in income. Thus, nominal GDP should be introduced as the scale variable in the currency ratio function.

Real income as a scale variable can also be introduced in the model based on the following two propositions. First, currency and demand deposits are not perfect substitute in making payments. Smaller payments, mostly to purchase non-durable goods are made with currency, whereas the purchases of durable goods and assets which require larger payments are made with demand deposits (checks). Increased income growth is likely to lead to an increase in the proportion of expenditure on durable assets and hence have the effect of lowering the currency ratio. Second, the currency ratio is expected to decline over time in the developing countries, as the process of economic and financial development proceeds. In this respect, economic growth can serve as a good proxy for financial development and the spread of banking opportunities and habit. Accordingly, real income ought to be introduced into the model to gauge the impact of financial deepening and the availability of other alternative financial facilities on the currency ratio.

The relative demand for currency and demand deposits is also affected by the inflationary expectations. This is because the expected inflation rate is the best proxy for the rate of return on physical assets. However, in countries such as Kuwait, which has a stable and low inflation rate, actual inflation rate could also be used as proxy for the rate of return on physical assets. It is believed that inflation, which serves as the rate of return on physical assets, would produce a positive influence on the ratio. On the other hand, inflation may produce negative influence on the ratio, if it results in income redistribution in favor of higher income classes with banking habits.

With no interest payment on currency, the return on currency holdings is derived from its function as a convenient or cost effective medium of exchange. Demand deposits combine the advantages of being an effective medium of exchange and interest-earning asset. Thus, the interest rate on demand deposits should be introduced into the model to reflect the opportunity cost of holding currency. Some studies in the U.S. context went beyond using the interest rate on demand deposits and have estimated the rate of return on demand deposits (which also includes the imputed value for the services provided by banks to deposits holders) and employed it explicitly in their currency ratio function. In Kuwait, as in many developing countries, no interest paid on demand deposits and the type of data required to construct an estimate of services rendered on demand deposits is not available.

Some studies carried out on developing countries such as Dadkhah and Mookerjee (1988), and Zaki (1992), employed the interest rate paid on saving deposits or on time deposits in the currency ratio function to reflect the opportunity cost of holding currency. Their argument was based on the observations that, in the developing countries, public usually uses currency as a primary medium of exchange in daily transactions, while time and saving deposits are primarily held for precautionary uses. Demand deposits are unattractive for many individuals because checks clear very slowly and most businesses don't accept personal checks. Therefore, interest rate on saving deposits could be a determinant of currency holding. In that, an increase in the rate paid on saving deposits lead to a decrease in currency holding and hence in currency to demand deposits ratio. In this study, because a complete series of interest rate does not exist, the discount rate (the only complete and consistent interest rate data that could be found over the period of estimation) is used in the model to reflect the opportunity cost of holding currency.

Uncertainty arising from economic and political instability, whereby the public may lose its confidence in the banking sector or feel the importance of holding a large amount of currency for emergency in the case banks may be closed for a long period. In this study a dummy variable would be used to account for the effect of economic and political uncertainty on the currency ratio.

The Empirical Model

From the discussion of the Key explanatory variables of the currency ratio cited earlier, the long run desired of currency ratio can be formulated as follow:

$$(C/D)^* = F\left(Y_1, \left(P_1/P_{t-1}\right), R_1, D\right) \quad (4)$$

Where C/D is the desired currency to demand deposits ratio at period t; Y_t is alternatively nominal and real GDP at period t; P_t is the consumer price index at period t; R_t is the discount rate which is the only complete and consistent series of interest rate available over the period of estimation; D is a dummy variable taking the values 1 for the years 1982-83 (a period of economic crisis due to the collapse of Kuwait Stock Market), and 1990-1991 (a period of Iraqi invasion and occupation of Kuwait) and O for all other years.

In log linear form, the currency ratio function is formulated as

$$\text{Ln } (C/D)^* = b_o + b_1 \text{ Ln } Y_t + b_2 (\text{Ln } P_t - \text{Ln } P_{t-1}) + b_3 \text{ Ln } R_t + e_t \quad (5)$$

Where et is a random error term. The above equation is equilibrium relationship in the sense that it implies instantaneous adjustment on the part of public to changes in explanatory variables. Because the desired level of $(C/D)^*$ is generally not achieved in the current period, a partial adjustment mechanism is incorporated into model. This partial adjustment is expressed as

$$\Delta \text{ Ln } (C/D)_t = \text{Ln } (C/D)_{t-1} = \lambda \left[\text{Ln}(C/D)_t^* - \text{Ln } (C/D)_{t-1}\right] \quad (6)$$

where $(C/D)_{t-1}$ are actual level of currency to demand deposits ratio at period t and t-1 respectively, and λ is the coefficient of adjustment, where $0 \leq \lambda \leq 1$.

Substituting equation (5) in to (6) and rearranging the terms, yields the following distributed lag equation

$$\text{Ln}(C/D)_t = B_o + B_1 \text{Ln } Y_t + B_2 (\text{Ln } P_t - \text{Ln } P_{t-1}) + B_3 \text{ LnR}_t + B_4 \text{Ln}(C/D)_{t-1} + B_5 D + U_t \quad (7)$$

where the estimates of the parameters are $B_o = \lambda b_o$; $B_1 = \lambda b_1$; $B_2 = \lambda b_2$; $B_3 = \lambda b_3$; $B_4 = (1-\lambda)$; $B_5 = \lambda b_4$; and $U_t = \lambda e_t$. Once λ, the speed of adjustment coefficient is computed from B_4, the estimates of the parameters in equation (5) are obtained by dividing the estimated coefficients of equation (7) by λ.

Empirical Results

This study uses time series data for the period 1972-1996. Data is collected from the Quarterly Statistical Bulletin (several issues) published by the Central Bank of Kuwait. However, prior to estimating the model in log levels, it is important to examine the characteristics of the data using the appropriate tests to ensure the series of all variables are stationary and are of the same order of integration. This is because the application of Ordinary Least Squares (OLS), in estimating the relationship between the dependent variable and the explanatory variable, could lead to faulty results (known as spurious regres-

sions) when the variables don't have constant and independent of time mean and variance. The series whose means and variance change over time are known as non-stationary or integrated of order one. On the other hand, it is conceivable that the individual variables are not stationary, but that a linear combination of them may be. The variables are then said to be co-integrated and this allows for testing relationships among the levels of economic variables.

Before testing for co-integration, the order of integration of individual variables must be established. The tests used to investigate the order of integration are based on the Augmented Dickey-Fuller test (ADF). The regression for ADF presented below-Equation (8).

$$\Delta \text{Ln } Y_t = \alpha + a_1 \text{ Ln } Y_{t-1} + \sum_{i=1}^{n} a_i \Delta \text{Ln } Y_{t-i} + \sum_t \qquad (8)$$

Where Y_{t-1} is the one-year lag of the relevant time series, $\triangle$ is the first difference operator and $\sum_t$ is the error term. The null hypothesis is that the variable under investigation is integrated of order one (non-stationary). If the computed t-statistic of a_1 is significantly different from zero, using critical values tabulated by Mackinnon (1991), then the null hypothesis is rejected, suggesting that the variable is integrated of order zero (stationary). Table 1 presents the results of the ADF tests for each of the variables in the basic model (4). According to the results in Table 1, the null hypothesis of non-stationary is rejected for all variables both at the 5% and 1% levels. This suggests that each variable is integrated of order one (non-stationary). The ADF tests are run again after taking the first difference of all variables. The results shown in Table 1, indicate that each variable in its first difference is integrated of order zero (stationary).

To determine if a long run relationship exists between the variables included in the model, we use the multivariate co-intigration technique proposed by Johansen and Juselius (1990). This technique is superior to the two-step technique developed by the Engle and Granger (1987) because it captures the underlying properties of the time series and yield estimates of all the co-integration vector that may exist among a vector of variable.[3]

(3) Engle and Granger (1987) indicates that if X_t and Y_t are individually non-stationary, then the two variables are said to be co-integrated if the residuals obtained from the co-integrating regression equations $Y_t = BX_t + U_t$ and $X_t = BY_t + U_t$ form stationary time series. There would be a number of co-integrating regressions equals to the number of variables in the model.

Table 1
Testing for the order of integration (ADF)

Variable	at levels	First difference
Ln ($C/_D$)	-0.724	-4.65*
Ln Y		
Nominal GDP	-2.37	-4.22*
Real GDP	-1.29	-4.87*
($Ln P_t$ - $Ln P_{t-1}$)	-2.88	-6.54*
Ln R	-2.32	-4.94*

Note: * significant at 1% level (-3.72).

For the Johansen and Juselius technique, there is two test statistics for the number of co-integrating vectors: the trace and maximum eigenvalue statistics. In the trace test, the null hypothesis is that the number of co-integrating vectors is less than or equal to K, where K is 0,1 or 2. In each case, the null hypothesis is tested against the general alternative. Unlike the trace test, the maximum eigenvalue tested against explicit alternative. In the maximum eigenvalue test, the null hypothesis $K = 0$ is tested against the alternative that $K = 1$, $K = 1$ against the alternative $K = 2$, etc. Johansen and Juselius (1990) report critical values for systems with a constant and up to five variables. These critically extended by Osterwald - Lenum (1992) for a system of up to eleven variables(4). The Johonsen and Juselius's multivariate trace and maximum eigenvalue co-integration tests are applied to the variables in equation (7) without the dummy variable (D). The tests are applied to the equation twice, first when the scale variable (Y) is the nominal GDP and second when the scale variable is the real GDP. Both trace and eigenvalue tests give similar results. The findings reported in Tables 2 and 3, show that the null hypothesis is rejected for $K = 0$ for both trace and eignvalue tests at the 5% level. That is, there exists one co-integrating vector. Therefore, although, the variables individually are non-stationary, linear combinations of the variables are stationary. Consequently, the model would be estimated using the levels of the variables.

(4) for further details, the reader is referred to Johansen and Juselius (1990), and Dickey et al., (1991).

Table 2
Johansen-Juselius co-integration tests results for the currency ratio function using nominal GDP as a scale variable

K	Trace	5% critical value	Max. eigenvalue	5% critical value
$K = 0$	77.17*	68.52	39.61*	33.26
$K \leq 1$	31.05	47.21	21.15	27.34
$K \leq 2$	15.77	29.68	11.34	21.27
$K \leq 3$	6.45	15.41	8.42	14.59

Note: * Significant at the 5% level.

Table 3
Johansen-Juselius cointegration tests results for the currency ratio function using real GDP as a scale variable

K	Trace	5% critical value	Max. eigenvalue	5% critical value
$K = 0$	72.39*	68.52	40.82*	33.26
$K \leq 1$	31.87	47.21	25.26	27.34
$K \leq 2$	14.27	29.68	12.34	21.27
$K \leq 3$	8.31	15.41	8.12	14.59

Note: * Significant at the 5% level.

Annual data for the period 1972-96 was used to estimate the nominal (nominal GDP is a scale variable) and real (real GDP is a scale variable) specifications of the currency ratio function on the basis of model (7). Table 4 presents the results of both specifications of the model. The results in both specifications are statistically significant at the 5% level, with exception of the coefficients of the nominal GDP variable and the dummy variables. The overall performance of both specifications as indicated by the adjusted R^2 is quite good; both equations explain about 80% of the total variations in the ratio function. Both estimations are free of the serial correlation problem as indicated by the low Durbin-h statistics (below the critical value).

The results show that the nominal GDP is insignificant, but has the correct sign. The real income variable on the other hand, is statistically significant and has a low coefficient (elasticity), but with the correct sign. The insignificant coefficient of nominal GDP in currency ratio function may reveal that nominal GDP is not an important determinant for the behavior of currency ratio. The study, on the other hand, employed instead other transaction scale variables, such as total and per capita consumer ex-

penditures in nominal and real terms, as well as, different proxies for financial deepening. All these experiments did not improve the results.

The inflation appears to have exerted a positive significant effect in both nominal and real specification of the currency ratio function. Since the inflation rate is used as a proxy for the rate of return on physical assets, the analysis indicates that an increase in inflation results in public shifting from monetary assets (in form of demand deposits) into physical assets, leading to a reduction in bank deposits and hence raising the currency to demand deposits ratio.

The interest rate variable is found to be statistically significant and have positive sign in both specifications. These results are expected and could be interpreted as follows: in a country such as Kuwait, currency is used primarily as a medium of exchange in daily transactions mostly by a low income group, whereas non-interest bearing demand deposits are mostly held and used as a medium of exchange by medium and high income groups. Thus, with the increasing interest rate, accompanied by the increasing income level (due to an increase in oil prices) since early seventies, economizing on monetary asset (currency and demand deposits) takes the form of shifting from currency to assets (mostly time and saving deposits) by low income group and (by greater extent) by medium and high income groups, resulting in a positive relationship between the interest rate and the currency to demand deposits ratio.

The lagged dependent variable significantly explains fluctuations in the currency ratio and in particular has the expected positive sign. The speed of adjustment (λ) in nominal and real specifications are 0.582 and 0.625 respectively indicating that 58.2% and 62.5% of the total adjustment in nominal and real specifications respectively occur in the first year. Finally, the dummy variable, introduced in the model to capture the impact of economic and political uncertainty on the currency ratio, is found to be statistically insignificant. Thus, the dummy variable does not cause any perceptible shift in the currency ratio function, according to both specifications. These results seem to suggest that the public did not view any of these events as fundamentally destabilizing to the country. The Iraqi occupation of Kuwait did not influence the currency ratio function.

Given the type of risk associated with the Iraqi invasion and the continuous threats on borders with Iraq, this may not be expected. However, the case of Kuwait may be relatively different from other countries for several reasons; First, Kuwait is endowed

with a substantial foreign reserve base, estimated to be $ 100 billions in early 1990's. This reserve base gives trust in the economy. Second; successive governments in Kuwait always stand ready to interfere in order to save the banking system from any dangers of bankruptcy. This happened several times in the past. Finally, the continuous threats represented by the Iraqi's are paralleled by strong commitments of major international forces, notably USA, to protect the security of Kuwait. For these reasons, uncertainty may be minimum.

Conclusions

This study has examined the determinants of currency to demand deposits ratio in Kuwait for a period nearly three decades. Five variables have been identified, namely transaction scale variable; alternatively nominal and real GDP; inflation ratio; interest rate; lagged currency ratio and a dummy variable accounting for the changes in the economic and political environments, as the most important determinants of currency ratio. The study employs partial adjustment models to empirically identify which of the previous variables is a key determinant of the behavior of the ratio. However, prior to estimating

Table 4
Estimated Results for the period 1972-96

nominal GDP as a scale variable

$$\text{Ln}(C/D)_t = 1.42 - 0.121\ \text{Ln}\ Y_t + 0.051\ (\text{Ln}\ P_t - \text{Ln}\ P_{t-1}) + 0.44\text{Ln}R_t + 0.418\ \text{Ln}\ (C/D)_{t-1} + 0.224D$$

(1.72) (1.07) (2.61)** (2.18)** (2.95)** (1.39)

$\bar{R}^2 = 0.803$ DW = 1.96 Durbin-h = 0.14

Speed of adjustment (λ) = 0.582

Real GDP as a scale variable

$$\text{Ln}(C/D)_t = 0.651 - 0.015\ \text{Ln}Y_t + 0.064\ (\text{Ln}\ P_t - \text{Ln}\ P_{t-1}) + 0.035\text{Ln}R_t + 0.375\text{Ln}\ (C/D)_{t-1} + 0.091D$$

(.972) (2.23)** (2.37)** (2.94)** (4.13)* (1.10)

$\bar{R}^2 = 0.845$ DW = 1.72 Durbin-h = 0.784

Speed of adjustment (λ) = 0.625

Notes:(C/D) = currency to demand deposits ratio; Y_t = scale variable (nominal and real GDP); Ln P_t - Ln P_{t-1} = inflation rate; R_t = discount rate; D = dummy ratio.

Figures in parentheses are the absolute values of t-statistic.

* significant at 1% level.

** significant at 5% level.

the models in levels, the characteristics of the time series of the variables included in the models are examined. In this regard, appropriate tests are carried out to ensure all variables are stationary and are of the same order of integration, to avoid spurious regression results. These tests show that although the individual variables are non-stationary, they are co-integrated. Thus, the models of the currency ratio function are estimated using the levels of the variables.

The estimation of the partial adjustment models produces satisfactory results. According to the estimated coefficients of the speed of adjustment, the duration of the adjustment of currency ratio function to its desired long run value is approximately less than two years, which seems to be similar to results obtained by other studies for other countries. The analyses show that the estimated model with real GDP as a scale variable generally produces better results. The nominal GDP variable is unexpectedly found to be insignificant. This could be explained however, by the poor quality of the GDP data, which is a common problem in many developing countries. If however, the results of insignificance of nominal GDP are proved, then this has an important policy implication in that the monetary authorities can base their policies on the assumption that the currency ratio will remain at its previous level despite of possible increase in the level of nominal income. Thus, in the short run, there is no significant systematic variation in the money multiplier, due to the currency ratio that the authorities can forecast and utilize for attaining their goals.

The estimated models uniformly show that inflation rate has a significant influence on the currency ratio. This finding is consistent with the findings of similar studies for other developing countries. The interest rate variable is found to have significant positive influence on the currency ratio. This finding is in contrast to the finding obtained by other studies for other developing countries. Finally, the dummy variable, which accounts for economic crisis in 1982 and for the Iraqi invasion and occupation of Kuwait during 1990-91, is found highly insignificant in both models. This suggests that these events did not induce any upward shifts in the currency ratio function.

References

Becker, William E. 1975. Determinants of the United States Currency-Demand Deposit Ratio. *The Journal of Finance*, 30: 57-73.

Cagan, Pillip. 1965. *Determinants and Effects of Changes in the Stock of Money, 1875-1960*. Colombia University Press, New York.

Campbell, Colin D. and Campbell, Rosemary G. 1984. *An Introduction to Money and Banking*. CBS College Publishing, New York.

Central Bank of Kuwait (various issues) *Quarterly Statistical Bulletin.* Kuwait.

Dadkhah, K. and Rajan Mookerjee 1988. The Behavior of the Currency Deposit Ratio in India, 1870-1982. *The Journal of Developing Areas,* 22:359-372.

Dickey et al., March 1991. A Primer on Co-integration with an Application to Money and Income. Federal Reserve Bank of St. Louis. *Review*, 58-78.

Engle, Robert F. and Granger, C. W. J. 1987. Co-integration and Error Correction: Representation, Estimation, and Testing. *Econometrica*, 55:251-276.

Jordan, Jerry L. October 1969. Elements and Money Stock Determination, Federal Reserve Bank of St. Louis. *Review*, 10-19.

Johansen, S. and Juseluis, K. 1990. The Maximum Likelihood Estimation and Inference on Co-integration - With Application to Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52:169-210.

Mackinnon, J. 1991. Critical Values for Co-Integration Tests, in R. F. Engle and C. W. J. Granger (eds). *Long-run Economic Relationships.* Oxford University Press, UK.

Meltzer, Allen H. 1969. Money, Intermediation, and Growth. *Journal of Economic Literature*, 7:27-56.

Mishkin., Frederic S. 1989. *Money, Banking and Financial Markets.* Mishkin Economics, Inc., New York.

Osterwald-Lenum, M. 1992. A Note with Quintiles of the Aasymptotic Distribution of the Maxium Likelihood Co-integration Rank Statistics. *Oxford Bulletin of Economics and Statistics*, 54:461-472.

Pesek, Boris P. 1970. Bank's Supply Function and the Equilibrium Quantity of Money. *Canadian Journal of Economics*, 3:357-385.

Tobin, James 1965. The Monetary Interpretation of History, *American Economic Review*, 55:464-485.

Zaki, Mokhlis Y. 1992. Behavior and Determinants of the Currency to Demand Deposits Ratio in Egypt. *The Journal of Developing Areas*, 26:357-370.

الملخص

سلوك ومحددات نسبة العملة المتداولة إلى ودائع تحت الطلب: بعض الأدلة التطبيقية من الكويت

نايف حمد المطيري
جامعة الكويت

تهدف هذه الدراسة إلى تبيان سلوك نسبة العملة المتداولة إلى ودائع تحت الطلب في بلد مصدر للنفط كالكويت وذلك في الفترة ١٩٧٢ – ١٩٩٦. ومن أجل تحقيق هذا الغرض، قامت الدراسة بتوظيف نموذج للتعديل الجزئي. وبهدف التخلص من مشكلة الانحدار الزائف، لجأت الدراسة قبل تقدير معدلات الانحدار باستخدام مستويات المتغيرات، إلى تطبيق اختبارات أحادية الجذر والتكامل المشترك للتأكد من أن جميع البيانات المستخدمة ساكنة. وقد توصلت الدراسة إلى نتيجتين غاية في الأهمية وهي أولاً أن معدل التضخم وسعر الفائدة وبدرجة أقل الناتج المحلي الحقيقي تعد محددات مهمة لدالة نسبة العملة المتداولة إلى ودائع الطلب في الكويت، وهذه النتيجة لها انعاكسات مهمة على تنفيذ السياسة النقدية. وثانياً أن بعض فترات عدم الاستقرار كفترة الغزو العراقي لدولة الكويت لم يكن لها تأثيراً يذكر على النسبة ولم يترتب عليها بالتالي انتقال الدالة إلى أعلى.

Naief H. Al-Mutairi: (Ph. D. in Economics, George Washington University, 1991), Associate professor, Department of Economics, Kuwait University. Teaching and Research Interests: Macroeconomics, Applied Econometrics, and Mathematical Economics.

مجلة العلوم الاجتماعية

فصلية - أكاديمية - محكمة

تصدر عن مجلس النشر العلمي جامعة الكويت

تعنى بنشر الأبحاث والدراسات في تخصصات السياسة والاقتصاد والاجتماع وعلم النفس والأنثرويولوجيا الاجتماعية والجغرافيا السياسية والبشرية

تفتح أبوابها أمام

- **أوسع مشاركة للباحثين الاجتماعيين العرب للإسهام في معالجة قضايا مجتمعاتهم.**
- **التفاعل الحي مع القارئ المثقف والمهتم بالقضايا المطروحة.**
- **المقابلات والمناقشات الجادة ومراجعات الكتب والتقارير.**
- **تؤكد المجلة التزامها بالوفاء والانتظام بوصولها في مواعيدها المحددة إلى جميع قرائها ومشتركيها**

الاشتراكات

الكويت والدول العربية:

أفراد: ٣ دنانير سنوياً داخل الكويت، ويضاف إليها دينار واحد في الدول العربية.

مؤسسات: في الكويت والدول العربية ١٥ ديناراً في السنة، ٢٥ ديناراً لمدة سنتين.

الدول الأجنبية:

أفراد: ١٥ دولاراً.

مؤسسات: ٦٠ دولاراً في السنة ، ١١٠ دولارات لسنتين.

تدفع اشتراكات الأفراد مقدماً نقداً أو بشيك باسم المجلة مسحوباً على أحد المصارف الكويتية ويرسل على عنوان المجلة، أو بتحويل مصرفي لحساب مجلة العلوم الاجتماعية رقم 07101685 لدى بنك الخليج في الكويت (فرع العديلية)

توجه جميع المراسلات إلى:

رئيس تحرير مجلة العلوم الاجتماعية - جامعة الكويت

ص.ب ٢٧٧٨٠ صفاة، الكويت 13055

تليفون ٤٨١٠٤٣٦ - ٤٨٣٦٠٢٦ فاكس ٤٨٣٦٠٢٦/ ٠٠٩٦٥

E-mail:JSS@kuniv.edu.kw

Visit our web site
http://kuc01.Kuniv.edu.kw/~jss