EXCHANGE RATES, FOREIGN INTEREST RATES, AND THE MONEY DEMAND FUNCTION IN AN OPEN ECONOMY: AN EMPIRICAL INVESTIGATION IN KOREA *

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1. Introduction

The demand for money has probably been studied more intensively than the demand for any other asset — real or financial. This interest in the demand for money is because of its central importance to both economic theory and policy. This paper introduces an improved demand-for-money function that takes account of foreign monetary developments as summarized by expected short-term foreign interest rates and the expected rate of depreciation of a country's currency. In addition, this paper presents evidence of the superiority of our preferred money-demand function over the closed economy model, using quarterly data from the small open economy of South Korea for the period 1973 through 1985[1].

Relatively little systematic analysis of behavior of private balances in South Korea exists[2]. Such studies are of potential importance in that inappropriate monetary policies can deprive a country of part of the benefits of its development effort no matter how well the economic growth program is in other respects. In the context of economic development, it may seem that monetary policy is irrelevant to developing economies primarily because of the lack of well developed financial and capital markets. However, as stressed by McKinnon (1973) and Bhatia and Khatkhate (1975), monetary policy can still play a major role in mobilizing savings into real capital and promoting financial stability; this would, in turn, contribute to the development of efficient financial and capital markets. Indeed, the South Korean government relied heavily on domestic monetary policies to support its export

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1 As Dornbusch and Park (1987) pointed out, «Korea continues to be in the limelight as one of a handful of developing countries that have adjusted successfully to both the oil shocks of the 1970s and the debt shock of the early 1980s». In this paper we argue that the money-demand function of South Korea has been largely ignored despite the country's recent economic performance.

2 We are not the first to study the determinants of real money demand in Korea. See, for example, Wong (1977) and Khan (1982). Unfortunately, these studies suffer from several shortcomings. For example, either the Koyck mechanism was used or no lagged adjustment was allowed; an arbitrary functional form was imposed; the sample size was too small; lagged dependent variable when included is not instrumented out; violation of linear regression assumptions was not examined; and most importantly, the influence of foreign monetary development was not accounted for. In this paper an attempt is made to avoid many of these problems.

promotion policies in the 1970s and 1980s[3].

The rest of this paper is organized as follows. Section 2 specifies an appropriate money-demand function for South Korea. Section 3 reports the empirical results of this function. A variety of tests pertaining to specification errors and to the stability of this open-economy, demand-for-money function is also provided. The paper ends with some concluding remarks in Section 4.

2. **The Money-demand Model**

A general equilibrium money-demand function for an open economy may be written as:

$$m_t^d = f\,(Y^e,\ p^e,\ r^e,\ S^e) \qquad (1)$$

where m^d is the stock of «desired» real money balances, Y^e is a budget constraint such as real expected income, p^e is the expected rate of inflation used to represent the yield on domestic real assets, r^e is the expected rate of short-term foreign interest rates used to represent the yield on foreign interest-bearing assets, and S^e is the expected rate of depreciation of the domestic currency used to represent the return to foreign money[4]. It is expected that the partial derivatives have the following signs:

$$\partial m^d/Y^e > 0,\ \partial m^d/p^e < 0,\ \partial m^d/r^e < 0, \text{ and}$$

$$\partial m^d/\partial S^e < 0$$

To make equation (1) estimatable, a number of analytical and technical issues warrant comment. The first issue concerns the adjustment process and the replacement of

3 For further discussion on the importance of monetary policy for developing countries, see Eshag (1971). On South Korea, see Park (1988).

4 Assuming that no interest is paid on foreign money balances, the expected rate of return on foreign money would simply equal the expected rate of appreciation of the exchange rate (defined as the price of foreign money). Thus, the possibility of currency substitution can be tested by examining whether expected exchange rate change is a significant determinant of the demand for domestic money.

desired (unobservable) money holdings with actual (observable) values. A procedure that has gained popularity particularly in money-demand literature is the Koyck lag mechanism. However, this lag structure is highly restrictive since it constrains the distributed lag pattern to be decaying geometrically and, furthermore, requires that the distributed lag pattern be identical for each explanatory variable. Some researchers (e.g., Boughton, 1981 and Coghalan, 1978) have found these assumptions to be partly responsible for the conclusion reached in several studies that the money-demand function is structurally unstable. Another defect which is often ignored in the money-demand literature is the ad hoc assumption that the underlying lag weights are all positive. As Griliches (1967) points out, there is no theoretical justification for such an assumption. Furthermore, researchers have yet to agree on the appropriate adjustment mechanism, that is, whether nominal or real partial adjustment should be used. See, for example, Milbourne (1983).

Therefore, this study employs an alternative and perhaps superior adjustment-lag procedure, namely the Almon procedure[5]. The lag structure in the Almon technique is approximated through replacing each explanatory variable in equation (1) by a distributed lag variable of its own current and past values. According to the Almon scheme, the lag weights are assumed to lie along a polynomial function of a certain degree chosen by the researcher. In the absence of prior knowledge, the degree of polynomial and the lag length are determined here following Schmidt and Waud (1973) and Giles and Smith (1977) on the basis of Theil's (1971) residual-variance criterion. In addition, as suggested by Schmidt and Waud, no endpoint constraints on the regressors are imposed in our estimation.

Another issue concerns the appropriateness of including foreign interest rates and exchance rates in the function while excluding domestic interest rates[6]. Many researchers have suggested that, for developing countries, the domestic interest rates should be

5 Obviously the Almon technique is not without drawbacks. For an account of these problems, see Schmidt and Waud (1973) and Thomas (1977). Other techniques to estimate distributed lags can be found in econometric literature. Attractive among these is the Error-Correction procedure employed by Hendry and Mizon (1978). However, the computer program, COMFAC, required to implement this alternative procedure was not available to this author.

6 As Park (1988, p. 1025) points out, the domestic interest rate in South Korea is not market determined. The government has always set the domestic interest rate above short-term foreign interest rates to encourage Korean firms to borrow abroad.

dropped from the money-demand function[7]. They argue, in essence, that the financial assets in these developing economies are so scant that the choices of asset holders are largely limited to holding money balances and real goods[8]. Therefore, most empirical studies on money demand in developing countries have used expected inflation as the sole measure of the opportunity cost of holding money. However, as pointed out by Arango and Nadiri (1981), these traditional studies ignore the openness of small developing economies; therefore, they may be unduly restrictive and unrealistic.

In contemporary open economies where capital movements are not completely controlled, international opportunity costs of holding domestic money balances should not be ignored. On foreign interest rates the hypothesis is that an increase in foreign interest rates *ceteris paribus* may induce domestic residents to increase their holdings of foreign securities. Such increases in holdings of foreign securities would be financed by drawing down domestic money holdings. Therefore, it can be postulated that a change in foreign interest rates has a negative impact upon domestic money demand. This argument is especially relevant to South Korea because, as shown recently by Dornbusch and Park (1987, p. 417), there is a severe lack of domestic financial securities in which asset holders can keep their wealth.

The inclusion of some measure of foreign currency has been a practice in an increasing number of studies, including those of Brissimis and Leventakis (1985), Arango and Nadiri (1981), and Blejer (1978). In a flexible exchange-rate system, expectations of exchange-rate depreciations, lower interest rates on domestic currency holdings, and actual or expected reductions in the value of domestic money holdings (in terms of the current or future command over goods and services) resulting from increased domestic inflationary pressures may lead to currency substitution. Currency substitution is largely a process in which foreign-currency-denominated money has replaced, either wholly or in part, domestic money in serving as store of value, medium of change, and unit of account. This phenomenon which, in essence, reflects the efforts of individuals to protect the value of their wealth and income usually has taken place in the context of deteriorating economic conditions (El-Erian, 1988)[9].

7 For instance, see Khan (1980) and Driscoll and Lahari (1983).

8 Dornbusch and Park (1987, p. 417) have pointed out that Korea's domestic financial market is underdeveloped and that market information is not readily available.

9 As Miles (1984, p. 1203) has noted recently, «significant currency substitution does not require every little old lady on Main Street to hold foreign money. All that is required is a significant subset of individuals and enterprises which on the margin are indifferent between holding another dollar of their money portfolio in domestic versus foreign money».

Currency substitution has important implications for the working of flexible exchange rates. If the degree of currency substitution is high, small changes in the money supply would induce large changes in the exchange rate. Furthermore, currency substitution would transmit the effect of monetary disturbances from one country to another. Indeed, significant currency substitution would seriously undermine the ability of flexible exchange rates to provide monetary independence[10]. Therefore, during periods in which foreign currency is considered an important alternative to domestic money in the wealth portfolio, omission of such a variable may bias a model towards overstating the influence of inflation in the context of domestic currency devaluation.

As early as the late 1970s, the South Korean government adopted a rather liberal foreign exchange policy with respect to exporters. Overseas borrowing was emphasized more than direct foreign investment. Accounts denominated in foreign currencies was allowed, and the major foreign currency involved was the U.S. dollar. It is noteworthy to mention that although Korea officially moved from a fixed U.S. dollar parity to a unitary floating system in 1964, its operation was little different in practice from what would be expected from a fixed-parity system tied to the U.S. dollar. This system of pegging the exchange rate to the U.S. dollar was abandoned in January 1980, and a managed floating system was adopted pegging the Korean currency's value to the average of both the SDR basket value of the dollar and the Korean trade-weighted basket value of five foreign currencies. Under this system the Korean won-to-U.S. dollar is the exchange rate the monetary authorities use to set the appropriate level of Korean external value against foreign currencies. For more on these issues, see Dornbusch and Park (1987), Park (1988), and Kwack (1988). In this paper expected depreciation of domestic currency is proxied by the index of foreign exchange in terms of South Korean wons per dollar. The coefficient on this variable is expected to pick up the direct opportunity cost effect of holding foreign exchange as an alternative to domestic real balances[11].

The third issue is how to define the money stock. In this paper the two conventional money stock definitions, the narrow M1 definition (currency plus demand deposits) and the

10 For example, multinationals, among others, hold various currencies simultaneously in order to reduce the costs of foreign transactions and to provide certain decreasing benefits typically associated with asset diversification.

11 It is noteworthy to mention that from 1970 to 1979 the won depreciated three times: 13 percent in June 1971; 7.6 percent in August 1972; 21 percent in December 1974 and January 1980. To stimulate its exports, the exchange rate was adjusted gradually and frequently and reached W827 per U.S. dollar at the end of 1984. See Kwack (1988).

broad M2 definition (M1 plus time and savings deposits) are examined. For space consideration, we report only the monetary aggregate that survived the various diagnostic tests shown below. These tests suggest that the preferred monetary aggregate is M1.

3. **The Model and the Empirical Results**

Based upon the preceding discussion, the South Korean money demand equation becomes:

$$\log (M)_t = a + \sum_{j=0}^{n_1} b_j \log Y_{t-j} + \sum_{j=0}^{n_4} ej \dot{S}_{t-1-j} + \sum_{j=0}^{n_2} C_j \dot{P}_{t-1-j} + \epsilon_t + \sum_{j=0}^{n_3} d_j \log r_{t-1-j} \qquad (2)$$

where M denotes the demand for real money balances (defined as nominal demand deflated by the price level P); Y denotes the level of real income; $\dot{P}$ denotes rate of inflation; r is short-term foreign interest rates; S is exchange rate index; n_1 (i = 1, 2, 3, 4) relates to the lengths of the Almon lags and ϵ is a white-noise disturbance term[12]. Note that a dot above a variable denotes rates of change. The theory suggests the following a priori signs for the coefficients: $\Sigma b_j > 0$, $\Sigma c_j < 0$, $\Sigma d_j < 0$, and $\Sigma e_j < 0$. Note that as specified in equation (2), the contemporaneous values of the inflation rate, short-term foreign interest rates, and the expected change in the exchange rates are omitted from the estimation. In developing economies the system of collecting and disseminating

12 We also considered an alternative model (M2) and examined the effects of discount rates on both M1 and M2. These equations did not perform very well in the empirical work. Khan (1982) did not report the results with M2 definition of money for Korea because of serial correlation. Using the Cochrane-Orcutt technique in addition to a different specification of the money-demand function did not improve the Durbin-Watson statistic. Needless to say, that interest rates are omitted from the preferred money-demand equations does not necessarily imply the complete absence of financial assets in South Korea. The M1 and M2 equations with discount rates are available upon request from the author.

statistical data is so inefficient and slow that economic agents are likely to form their future expectations of these variables on the basis of past data alone. The omission of current inflation ($\dot{P}$) is also meant to avoid possible spurious correlation since the dependent variable is defined as the logarithm of current money stock deflated by current prices. Furthermore, seasonal dummy variables were tried in the estimation, but they were determined to be unimportant.

The empirical results of our preferred equation are contained in Table 1. As can be seen, the statistical fit of the equation to the data is excellent as indicated by values of Theil's $\bar{R}^2$, standard error of estimate (SEE) and the F value for testing the null hypothesis that all the right-hand side variables as a group except the constant term have a zero coefficient. All of the three explanatory variables bear the anticipated signs. An encouraging aspect of our results is that the estimated sum-coefficient of expected rate

Table 1

ESTIMATES OF THE MONEY DEMAND EQUATION FOR SOUTH KOREA, 1973:1 THROUGH 1985:4

$$\log (M)_t = a + \sum_{j=0}^{n_1} b_j \log Y_{t-j} + \sum_{j=0}^{n_2} C_j \dot{P}_{t-1-j} + \sum_{j=0}^{n_3} e_j \dot{S}_{t-1-j} + \epsilon_t$$

	[a]Estimates of the sum coefficients on					Summary statistics					
Constant	logY		$\dot{P}$		$\dot{S}$	F	R^2		SEE	DW	N
2.43 (5.57)	0.884		—0.044		—0.036	88.6	0.9656		0.0497	1.83	44
Lag Quarters	0	1	2	3	4	5	6	7	8	9	
logY	0.104 (3.97)	-0.336 (1.89)	-0.329 (1.74)	0.349 (2.36)	0.983 (4.85)	0.857 (4.91)	-0.744 (2.61)				
$\dot{P}$	-0.001 (0.17)	-0.002 (0.5)	-0.007 (2.80)	-0.012 (3.97)	-0.014 (3.74)	-0.008 (1.99)					
$\dot{S}$	-0.005 (2.26)	-0.007 (3.46)	-0.009 (4.88)	-0.010 (5.67)	-0.006 (3.49)	0.001 (0.49)					

Notes: The numbers in parentheses are absolute values of t-statistics. $\bar{R}^2$ is the coefficient of multiple determination corrected for degrees of freedom. F-value is for testing the null hypothesis that all the right-hand side variables, as a group, except the constant term, have zero coefficient. SEE is the standard error of the regression. N = sample size after lag operations. The regression equation is estimated using unconstrained Almon technique. Third-degree polynomial used and lag lengths shown above were empirically superior.

a. The F-value to test the estimates of the sum coefficients on logY, $\dot{P}$, and $\dot{S}$ are 5.27, 4.42, and 4.96, respectively. The critical value is 2.65 at the 5 percent level and 3.93 at the 1 percent level.

of depreciation is significantly different from zero at the 1 percent level. The significance of this coefficient indicates that foreign money is considered as an attractive alternative to holding domestic money balances in the South Korean economy. A further and perhaps more substantive evidence for the importance of expected change in the exchange rate is that the inclusion of this variable appears necessary for the estimated equation to exhibit non-autocorrelated residuals and structural stability, as will be discussed below. In short, this finding suggests that for developing economies the openness of the economies should be taken into account in estimating the demand for real cash balances.

The theoretical justification for the importance of exchange rate changes can be found in Dornbusch and Park (1987), Park (1988), and Kwack (1988). These researchers suggest that over the sample period the range of competitive domestic assets was small in the economy of South Korea; legal risk premiums attached to holdings of foreign currency balances was minimal; the transaction costs involved in acquiring such balances was also small; the rate of inflation was close to those of Latin American economies; and the Korean won was depreciated several times to stimulate exports. Thus, in such an environment foreign currency balances increasingly become a more remunerative form of savings to avoid losses associated with the deterioration in domestic purchasing power resulting from worsening economic and financial conditions.

Turning to the traditional variables, the expected (permanent) real income is statistically significant at the 5 percent level. The estimated sum is positive and less than unity implying that M1 balances are not a luxury good. This finding disagrees with studies such as Khan's (1982) which used the closed economy model; annual observations (1960-1978); and which reported a very low Durbin-Watson statistic and reported neither specification tests nor stability tests. These criticisms apply to the study by Wong (1977) which included fifteen annual observations from 1957 through 1971. Such a limited sample decreases the power of the statistical tests and, therefore, the confidence one can place in the results. In this paper quarterly instead of annual data are used. The number of observations is fifty-two. In addition, diagnostic and stability tests are presented. Furthermore, the openness of the South Korean economy is accounted for in our model.

As mentioned before, the use of the discount rate in place of expected inflation in both M1 and M2 equations produced statistically non-significant negative coefficients. In addition, the equations failed to pass the specification tests used in this study. It is noteworthy to mention that the data on interest rates showed very little variation over time, perhaps because of government controls. See Park (1988, p. 1025) for more on in-

terest rate controls in South Korea. As can be seen in Table 1, the sum coefficient on expected rate of inflation is negative and statistically significant at the 5 percent level. This finding suggests that inflationary expectations play a significant role in determining real money demand.

Diagnostic Tests

In applied econometric research it is not uncommon to estimate a totally meaningless model and yet obtain «correct signs» and a high coefficient of multiple determination. This is in line with Granger and Newbold (1984) and Lovell (1983) who point out the ease with which high t-values can be obtained without there being any relationships between variables whatsoever. For example, the high-adjusted coefficient of determination of 0.9656 reported in Table 1 may be caused by spurious correlation arising from the model being inappropriately specified. Krämer et al. (1985) have suggested that conventional regression output be supplemented with a battery of specification tests since this will make it harder for results to appear significant because of a researcher's intentional or unintentional data mining process. See also Davidson and Mackinnon (1985), who have pointed out that «it is only from a model that appears to be consistent with the data that one can hope to make valid inferences». In Table 2 we provide a battery of diagnostic tests in support of the empirical results presented in Table 1.

Table 2

DIAGNOSTIC TESTS

Test Statistics*	Tests	LM Version	F Version
(A) Post-sample Predictive Failure	Chow Forecasting	—	F(16,15) = 0.58
(B) Parameter Constancy	Farley, Hinich and McGuire	—	F(15,12) = 1.09
(C) Functional Form & Omitted Variables	Ramsey RESET	—	F(2,23) = 2.69
(D) Serial Correlation	Breusch and Godfrey (B-G)	X^2 (4) = 7.56	—
(E) Heteroscedasticity	Variance Ratio	—	F(31,28) = 0.78
	Breusch and Pagan (B-P)	X^2 (12) = 9.32	—
	Hal White	X^2 (10) = 11.75	—
	Engle's ARCH	X^2 (4) = 1.084	—
	Pesaran	X^2 (1) = 0.013	—
(F) Normality	Bera and Jarque	X^2 (2) = 1.84	—

* (A) For predictions from 1981 through 1985. (B) Each variable is expressed as a linear function of time. (C) Used the square and cube of the fitted values.

As Johnston (1984, p. 507) points out, «a very important indicator of the quality of a functional specification is the stability of the parameters over various data sets». To check for approximate constancy of the parameters, we re-estimated the model over the quarterly period 1973 through 1981 and then tested whether the variance of the above period is statistically the same as that of the full sample period, 1973 through 1985. To test the null hypothesis of variance equality (not conditional on coefficient equality), we use the variance ratio, (VR) test. See Theil (1971). The VR test has the advantage of being independent of the Chow test—see Phillips and McCabe (1983). The computed VR of 0.78 was not statistically significant at the 2.5 percent level.

Next, as suggested by Wilson (1978), Johnston (1984), Pesaran et al. (1985), and Kivit (1986), we use the Chow forecasting test to examine whether the next sixteen observations have been generated by the same model estimated for the period 1973 through 1985. The Chow test yields F (16,15) = 0.58, whereas the critical value is 2.48 at the 2.5 percent level. The results provide no evidence against the null. Note that because of the independence of the VR and Chow tests, the overall size of the joint test is $1 - (1 - \alpha_1)(1 - \alpha_2)$, where α_1 and α_2 are the sizes of the two tests. Thus, the overall size here is 5 percent. See Phillips and McCabe (1983).

To test for a gradual shift in the parameters over the full sample period, we applied the Farley, Hinich and McGuire (1975) test. The computed F (15,12) = 1.09 was below the critical value of 2.62 required to reject the null hypothesis of no gradual shifts in parameters at the 5 percent level.

To test for omitted variables and functional form misspecification, we applied Ramsey's RESET (Regressor Specification Error test). The resulting F(2,23) = 2.69 was below the critical value of 3.42 at the 5 percent level. Again, the results provide no evidence of misspecifications.

In Table 1 we reported the Durbin-Watson (DW) test statistic for first-order serial correlation in the residuals since no lagged dependent variable appears on the right-hand side. As a further check for a higher order autoregressive process (needed since the data is quarterly), we applied a more general Lagrange multiplier (LM) test of misspecification. This test is known in the literature as the Breusch-Godfrey (B-G) test.[13]

13 The test involves regressing the ordinary least squares (OLS) residuals on their first four lags and the vector of right-hand variables and obtaining the R^2. Then referring the product of the number of observations times the R^2 to the $\chi^2(4)$ distribution and rejecting the null hypothesis residuals iid $(0,\sigma^2)$ if a significantly large value is found.

The computed LM value of $\chi^2(4) = 7.56$ is below the critical value of 9.45 required to reject the null hypothesis at the 5 percent level.

As Johnston (1984) argues, the advantage of the B-G statistic over the traditional D-W is that it is a robust test and tests against the general autoregressive and moving average serial correlation processes.

As is well known, a key assumption in linear regression is that the error term should have a constant variance (that is, an absence of heteroscedasticity). Violation of this assumption leads to inefficient estimates and to invalid test statistics. To determine whether the assumption of homoscedasticity is violated in our model, three other tests were performed. The first is the Breusch and Pagan test (see, Johnston, 1984, p. 300) which yields $\chi^2(12) = 9.32$ that is less than the critical value of 21.03. The second test is the White (1980) test for general forms of heteroscedasticity. The test is based on the auxiliary regression of the squared residuals on the elements of the upper triangle of the regressor cross-product matrix. The computed $\chi^2(10) = 11.75$ is below the critical value of 18.3; therefore, we fail to reject the null hypothesis of homoscedasticity. The third test performed is Engle's (1982) test on ARCH residuals with an AR-order of four. Testing for the fourth order linear ARCH process, the chi-squared statistic with four degrees of freedom was 1.084, which is statistically non-significant at the 5 percent level. Following Pesaran (1988) we also regressed the squared residuals on the constant and squared fitted values. The computed $\chi^2(1) = 0.0533$ is below the critical value of 3.84. These tests for heteroscedasticity suggest that the empirical results do not violate the assumption of homoscedasticity.

Finally, we calculated the chi-square test for normal residuals described in Bera and Jarque (1980). See also Spanos (1986). The calculated $\chi^2(2) = 1.84$ is not greater than the critical value of 5.99 at the 5 percent level. Therefore, the null hypothesis of normal residuals is not rejected. In sum, the above diagnostic tests indicate a well fitting money-demand equation for South Korea that fulfills the conditions of serial noncorrelation, homoscedasticity, structural stability, normality of residuals and zero disturbance mean (i.e., no specification errors).

4. **Concluding Remarks**

Previous studies on the demand for money in South Korea have tended to ignore the fact that in an increasingly interdependent world, monetary developments in one coun-

try may affect the demand for money in other countries. In this study we have taken explicit account of «openness» variables (e.g., short-term foreign interest rates and exchange rate expectations) by estimating the South Korean demand for money for the recent flexible exchange rate period 1973:1 through 1985:4. In addition, we have provided several diagnostic and stability tests in support of our preferred model. Our empirical results indicate inter alia that in the South Korea exchange rate expectations influence real money demand. As predicted by the theory, the effect of this variable is negative. Another alternative measure of expected exchange rate that may be considered in future research is the forward rate (when available). Short-term foreign interest rates did not perform well here but should be considered in studying other economies.

In contrast to the traditional demand functions for money, it is clear that: (1) failure to take account of exchange rate expectations and foreign interest rates produces biased results, and (2) the significance of exchange rate expectations has an important implication for the effectiveness of the South Korean monetary policy. Monetary policy actions aimed at stabilizing the economy and counteracting the impact of external shocks upon the domestic economy must take into account the response of domestic money demand to these external factors. If adjustments in money demand induced by external monetary influences are ignored, monetary policy actions can only generate, at best, uncertain results.

In concluding, if the present results are accurate, we may note that the poor performance of the previous demand-for-money equation of South Korea can therefore be attributed to a combination of the widespread use of the traditional partial adjustment model, ignoring higher-order lags without justifications; inappropriate and insufficient diagnostic testing especially with respect to parameter stability; and autocorrelation.

Appendix: Description and Sources of Data

This study covers the period from 1973 through 1985 on the basis of quarterly observations. The empirical definitions of the variables are as follows:

M1 = Currency plus demand deposits (narrow definition)
M2 = M1 plus time and savings deposits (broad definition)
P = Consumer Price Index with 1980 as the base year
X = Real Gross National Product (at constant 1980 prices)
$\dot{P} = (\log P_{t-1} - \log P_{t-2}) * 100$

R^f = Short-term foreign interest rates. This variable is constructed as the average of quarterly short-term interest rates in major OECD countries. Professor Ali Darrat kindly provided us with his data.
S = exchange rate index (won per dollar)
$\dot{S} = (\log S_{t-1} - \log S_{t-2}) * 100$

All the data series are obtained from various issues of the IMF, *International Financial Statistics*, except for the short-term foreign interest rates, which are derived from *OECD Main Economic Indicators* (various issues) provided by Professor Darrat).

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Abstract

The demand for real cash balances in an open economy is shown to depend upon domestic variables and external monetary developments. The model is estimated using quarterly data for South Korea. The results indicate unambiguously that the demand for money is affected not only by changes in domestic variables such as permanent real income and expected inflation, but also by fluctuations in exchange rate expectations. The conclusion is that monetary policy actions aimed at stabilizing the economy must take account of adjustments in money demand induced by external monetary influences if the optimal results are to be achieved.

TAUX DE CHANGE, TAUX D'INTÉRÊT SUR LES MARCHÉS ÉTRANGERS ET LA FONCTION DE LA DEMANDE DE MONNAIE DANS UNE ÉCONOMIE OUVERTE: UNE ANALYSE EMPIRIQUE EN CORÉE DU SUD

RÉSUMÉ

On a pu démontrer que la demande d'actifs monétaires en termes réels dans une économie ouverte dépend des variables internes et des conditions monétaires de l'environnement extérieur. Le modèle presenté a utilisé des données trimestrielles pour la Corée du Sud.

Les résultats montrent sans ambiguïté que la demande de monnaie est influencée par les variables internes telles que, par exemple, le revenu réel de caractère permanent et les prévisions d'inflation mais aussi par les fluctuations des taux de change attendues. On peut conclure que les interventions de politique monétaire visant à stabiliser le système économique doivent tenir compte des ajustements de la demande de monnaie provoquée par les phénomènes monétaires dans le contexte international. Seulement de cette façon la politique de stabilisation peut réaliser des résultats optimaux.