FINANCIAL DEREGULATION AND DEMAND FOR MONEY IN INDONESIA

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Abstract

A stable money demand plays important role to conduct monetary policy as it enables a policy-driven change monetary aggregates to have predictable influences on output, interest rate and price. However, financial deregulation and financial innovation lead to break relationship between money demand, income and interest rate. This paper examines the factors underlying financial deregulation and investigates the implications of such deregulation to money demand stability in Indonesia. The findings show that the relationship between money demand and income is still stable, even though the relationship tends to be lessened. Money demand instability resulted from financial deregulation was transitory and did not have permanent effect.

Introduction

A stable money demand plays important role to conduct monetary policy as it enables a policy-driven change in monetary aggregates to have predictable influences on output, interest rate and ultimately price. In recent years deregulation and innovations in financial markets have had widespread implications for the stability of money demand in several countries. Because of its importance, theoretical and empirical researches on the stability money demand have been conducted worldwide over the past several decades. According to their findings, the relationships between money and income that held in the deregulated framework were less stable than regulated framework (Hall (1983), Judd and Scadding (1982)). Controls on interest rate limited the scope for interest rate to adjust; interest rates are not necessarily reflect market values; thus leading to situation of excess demand or supply in money markets. Quantity rationing in contractionary periods and unwinding of rationing in expantionary periods established statistical correlation between the supply money and income. Consequently lifting of control in financial markets resulted in a deterioration of the old correlation between money and nominal income. Financial deregulation also lead to more competition among financial institutions as the number of banks increases. The competitions then encourage non-bank financial intermediaries to seek business from areas previously directly, which change the process of intermediation and thus to the economic growth. Consequently, determinants of demand for money changed sharply and then lead to change stability real money demand. Meanwhile, Gurley and Shaw (1960) argued that financial deregulation lead to financial innovation and then these financial innovations have led to deterioration in the marginal relationship between real money balances and interest rates.

As developing country, Indonesia have liberalized and deregulated financial institutions since 1983. There were many reforms occurred during the 1983-1988 interval, however the major reform that affect money demand occurred in 1983 and 1988[1] . The first financial deregulation in the June 1, 1983 was three major areas, namely the abolition of the credit ceiling, reducing liquidity credit to commercial bank provided by central bank, Bank Indonesia, and giving freedom to state-owned banks to fix their interest rate and increasing mobilization of fund from the public. These reduced the Government dependence on the issue of fiat money as a source of revenue. This regulation also encourage monetary authorities to switch monetary policy from direct control, such as credit ceiling, to indirect control, such as open market operation. The second major financial deregulation occurred in 1988. Under this deregulation, government allows public to open new banks and bank branches in order to further promote fund mobilization from the public. The other purposes of that deregulation were to increase the efficiency of banks and financial institutions, to raise effectiveness to conduct monetary policy, and to develop capital market. There was a sharp increase in the

number of bank and their branches since the financial deregulation. As a number of bank increased, banks provide more financial services to the public, as a result the public deposits increase dramatically during financial deregulation. As evidence from other countries, financial deregulations lead to more competition among banks that cause changes in interest rate spread quickly. Consequently, they lead to affect the stability and interest elasticity of demand for money (Swamy and Tavlas (1989).

This paper examines the factors underlying financial deregulation and investigates the implications of such deregulation to money demand stability in Indonesia. The remainder of the paper divided by four sections. Section II describes a background Indonesia's financial deregulation started in 1983 and the effects of financial deregulation to money demand. Section III discusses money demand model and two methods of stability test, namely Chow test and Recursive least square test. In addition, this section also explained data that use to estimate regressions. Section IV present empirical results. First, the results of real money demand are analyzed. Second, the stability tests for demand for money are discussed. The concluding observations and the policy implication of results are provided in section V.

The Development of Financial Deregulation in Indonesia

Before the financial system in Indonesia was deregulated in 1983, the system was characterized by the financial repression. During these periods the main monetary policy was credit ceiling policy and an administered interest rate regime. Banks' credit was also allocated directly through selective credit control in which the scale of priorities of the credit uses by economic sector, economic activities and recipients were determined by the authorities.

Monetary authorities imposed the credit ceiling policy in order to limit the loans of each credit institution. Lowering loan to public limited the expansion of money supply to economy. As a result, monetary authority could curb domestic inflation and lessened deficits of balance of payments. In Banking sector, Government also limited to established new banks and bank branches. Most part of bank liabilities came from central bank or government. Government subsidized lending interest for small firms and special sector, such as logistic institution that provide basic necessity to low income.

In June 1983 the authorities began announcing major fundamental financial deregulation. The reforms made under deregulation measures of 1983 abolished the system of credit ceilings, modified the complex system of liquidity credits and abolished regulations on interest rate as a direct means of the monetary control. The objectives of these measures, among others, were to create a favorable environment in the economic performance and efficient allocation of resources. The policy particularly intended to reduce the reliance of

banks on liquidity credit from Bank Indonesia as the main source of funds for extending credits and to encourage bank to mobilize funds from the public. In addition, the improvement in the efficiency of the banking system helped financial sector to play a significant role in Indonesia's development efforts. However, the deregulation of 1983 did not include either institutional aspects or a climate which would enable banks to create new products and raise efficiency of their operations.

To further develop financial system and to establish a sound financial system, government took further action by undertaking a series of comprehensive policy measures in the financial and monetary sector on October 27, 1988. The purpose of the deregulation was to promote the mobilization funds, the increase of non-oil exports, the efficiency of bank and non-bank financial institutions (NBFIs), the effectiveness in the implementation of monetary policy and to create a climate for development of capital markets. Under this reform, monetary authorities give the same opportunity to public to open new banks and bank branch offices.

The deregulation has changed financial sector dramatically. Since comprehensive deregulation in 1988, the number of banks and their branches boosted from 125 commercial bank (not included rural banks) and 2,358 branch offices in 1987 to 234 banks and 8,717 branch offices in 1993 (Table 1). The larger number of banks and their branches enable bank to expand their market and increase their services to public. As a result financial deepening increased sharply after deregulation, particularly after the deregulation of 1988. Ratio M2 to GDP boost from 19 percent in 1983 to 28 percent in 1988 and 43 percent in 1993 (Table 1).

Table 1. GROWTH IN NUMBER OF BANKS AND BANK OFFICES, AND RATI M2 TO GDP			
Year	Number of Banks	Bank Offices	Ratio M2 to GDP
1982	131	1.475	0,18
1983	130	1.531	0,19
1984	129	1.598	0,20
1985	129	1.665	0,24
1986	125	1.751	0,25
1987	125	1.868	0,26
1988	124	2.044	0,28
1989	158	3.136	0,33
1990	185	4.494	0,40
1991	205	5.380	0,40
1992	221	5.580	0,42
1993	234	5.761	0,43
Not included rural banks			
Sources: Bank Indonesia and Binhadi			

Monetary Policy and Money Demand in the Deregulated Financial System

Financial deregulation has set in motion changes in both manner in which monetary policy is transmitted to the real economy and interest elasticity of demand for money. With regards to the transmission mechanism, the introduction of a tender system of central selling and buying bank securities, namely Bank Indonesia's Certificate and money market securities respectively, in 1984 increased monetary authorities' potential control over injection liquidity into the domestic monetary system, thus enhancing their ability to use open market operations to influence domestic monetary conditions. Financial deregulation also contributed to a weakening of non-price credit flows. Consequently, the effects of monetary policy are increasingly transmitted through open market operations to the real economy through changes in interest rates. Competition among banks lead to change in interest rates that tend to spread quickly through financial assets and liabilities. Nevertheless, the transmission of monetary actions to the real economy has probably lengthened compared with the previous regulated system, which relied on quantity rationing. Specifically, in deregulated financial environment the volume of deposits is determined by both demand and supply. Consequently, any tightening of monetary policy by Bank Indonesia, Central Bank of Indonesia, will induce a rise in deposits' rates, resulting in an increase in the supply of deposits and offsetting to some extent the Bank Indonesia's effort to reduce growth of money. Thus, banks are now better able to protect their deposit base and sustain their lending than they had been in the regulated framework, in which the volume of deposits was primarily demand-determined.

The demand for credit may also have become less sensitive to interest rates in the deregulated system. For example, increased use of floating interest rates and more innovative and flexible loan packages may have resulted in less discouragement to marginal borrowers as rates rise. Borrowers and lenders may also have become more accustomed to interest rate variability and, as a result, may not materially their behavior until interest rates are perceived to have shifted in a sustained manner.

The Demand for Money

A precondition for the successful implementation of monetary targeting is the existence of stable and predictable relationship between the targeted monetary aggregate and economic activity. The recent financial changes, however, have altered the interest rate elasticity of demand for money and have made it more difficult to differentiate among the various aggregates, thus contributing to money demand instability (Swamy and Tavlas (1989).

With regard to the interest rate elasticity of demand for money, the move to market-related yield on bank deposits has resulted in decline in the interest elasticity of monetary aggregates, such as M2. Financial deregulation has resulted in an increased share of financial

instruments within M2 that offer market-determined rates. The yields on those instruments are closely related to the rates on assets held by depository institutions, leaving differential unchanged. Because the opportunity cost of holding money balances is the spread between the own rate of return on money and the market yield on substitute financial assets, that deposit rates move closely up or down with market rates in the deregulated system signifies that opportunity cost of money varies less than do market rates. Consequently, the demand for deposits, however sensitive to the differential between market rates and deposit rates, has become less sensitive to the general level of interest rates; a larger change in markets yields is required to achieve a particular change in relative yields than was necessary when deposit rates were controlled. Accordingly, if interest rates are used to affect changes in the money supply, large changes in market rates are now required to attain given changes in the money supply than was the case in deregulated financial system. Financial deregulation has also contributed to shifts in the demand for money. The greater number of banks increased competition among financial institutions and encouraged non-bank financial intermediaries to seek business from areas previously financed directly, which added to the process of intermediation and thus to the growth. Consequently, determinants of money demands changed sharply. These factors contributed to a surge in M2 growth. One year after deregulation of 1988, M2 growth reached 39.1 % in 1989 compared with a rate of 22.8% in 1987. As a result income velocity of M2 fell from 3.8 in the end of 1987 to 3.1 in 1989. In line with M2, M1 growth accelerated from 9.2% in 1987 to 15.9% in 1989, however on average M1 growth lower than M2 growth. The lower rate of M1 growth reflected the fact that interest rates on demand deposits, a large component of M1, did not increase in line with interest rates on other financial instruments included in M2, resulting in a shift into deposit.

Figure 1. Velocity of M2
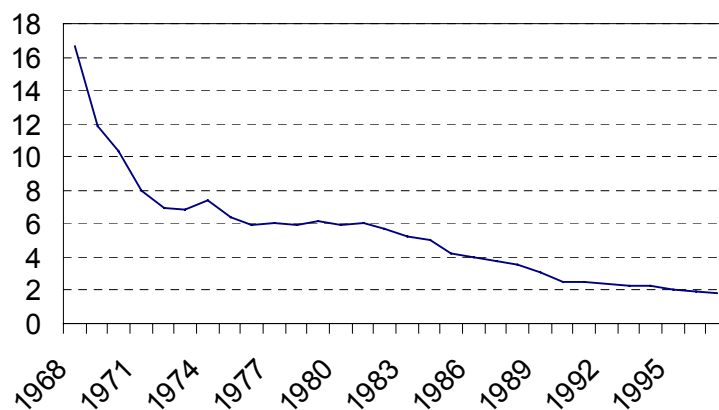
The foregoing shifts in money demand reflect adjustments from one financial regime to another and may, therefore, be transitory. However, financial deregulation may also involve a more sustained degree of instability of money balances. For examples, since M2 now includes a larger proportion of financial instruments yielding market-related rates, deregulation probably induced an increased flow of investment balances into M2, resulting in an amalgamation of funds held for transactions balances with those held for investment balances. Because investment balances tend to be more responsive than transaction balances to small changes in the broad range of interest rate spreads (including common stocks), the potential exists for M2 to be dominated by shifts in the composition of the public's portfolio rather than by changes in income and prices, resulting in a greater degree of instability in the demand for money (Judd (1983)). Meanwhile Gurley and Shaw argued that financial deregulation lead to financial innovations. The more financial products then lead to a deterioration in the marginal relationship between real money balance and interest rate. Fair (1983) conducted test for the stability of money demand before and after 1973 in twenty countries individually. He found that 13 cases rejected at the 5% level and 7 cases were not rejected. Structural instability of money demand are generally moderate, and most happening in the countries that deregulated their financial system.

To summarize, financial deregulation has lowered the interest elasticity of the demand for money and has furnished the potential for both transitory and permanent money demand instability, tough among economists do not accept this idea. They believed that the instability of demand for money more likely transitory (Goldfeld 1976, and Simpson and Porter 1980). In terms of the Hicksian IS-LM schedule, other things remaining equal, larger changes in interest rates are associated with given changes in the supply of money. Where money balance are now held for investment purposes, as well as to satisfy transaction needs, however, means that the variance associated with given monetary policy changes has also increased; a wider bank of uncertainty is associated with any given change in the quantity of money.

The-Demand-for-money function and Stability Test

The-Demand-for-money function

A partial adjustment model (PAM) as proposed by Chow and later popularized by Goldfeld (1973) is used to determine the demand for real money balances. In PAM framework, actual money balances adjust to the gap between desired or long-run demand for real money balances and the previous money holding. In general term, the demand for real money balances

is specified as a positive function of real per capita income and negative function of the opportunity cost of holding as reflected in rate of interest. Formally partial adjustment model for the money demand function in log-linear terms can be written as :

$$Ln (M/P) = a0 + a1 \ln yt + a2 \ln R + a3 \ln (M/P)t\text{-}1 + \varepsilon t \quad (1)$$

Where M represents nominal narrow (M1) or broad (M2). M1 define as currency plus demand deposit, while M2 define as M1 plus saving and time deposits; P is the consumer price index (1990=100); y measures real GDP; R is rate of interest, 6-month deposit rate; et stands for an error term; a1 and a2 are the elasticities of money with respect to interest rate and income. They expected that a1 has negative sign and a2 has positive sign. To test the hypothesis that financial deregulation have lowered the interest elasticity money demand and further affect money demand instability, equation (1) will be estimated using quarterly data from 1968.I to 1997.IV. The method as proposed Sims (1980), and Hafer and Hein (1984) will be conducted. The period of estimation will be divided based on the timing of deregulation. The estimation begin with the fifteen-year period 1968.I-1983.IV and increment this initial sample by adding five years to the start and end point. "log-rolling" the sample in the manner yields 4 regression equations, the last of which covers of 1983.I-1997.IV, a period substantial financial deregulation in Indonesia.

Test of Stability

Chow's Test

An econometric relationship is stable if the parameters are not subject to permanent changes over time. Thus, to test the stability of money demand after financial deregulation cannot exclusively derive from the coefficient of money demand function as stated in section II. In order to know the stability of money demand function, two methods of stability test are conducted to money demand functions. In general, statistical tests made to determine whether a regression relationship is stable over the entire period observation have been limited either to using dummy variables when the change in the relationship suspected as proposed by Chow (1960). The Chow test is implemented by estimating the following version of (1):

$$Ln (M/P) = a0 + a1 \ln yt + a2 \ln R + a3 \ln (M/P)t\text{-}1 + a4Dt \; \varepsilon t \quad (2)$$

Where all variables are defined as equation (1) and D is a zero-one dummy that equals 1 in the post-breakpoint period and zero otherwise. The stability of the money demand model is examined by testing the statistical significance of the slope dummies in (2).

The Chow test requires a priori knowledge of the point in time when the function shifts, and this knowledge may not readily available as Khan (1974) pointed out. However, this model is reliable to apply since we know that comprehensive financial deregulation in Indonesia occurred on June 1, 1983 and October 27, 1988.

Recursive Least Square Test

As mentioned above, there are weaknesses the Chow's test, therefore we proposed alternative test that do not require this a priori information as proposed by Brown and Durbin (1968) and devised by Goldfeld and Quandt (1972) and Kahn (1974). Basically, the Brown-Durbin method requires the calculation of one period prediction residuals, which are obtained by applying the regression computed with r-1 observations to predict the rth observation using k explanatory variable (including the constant). The method utilizes a statistic Sr which equals the ratio of the sum of squares of one-period prediction residuals from the k + 1 period to the Tth period, T being sample size. The null hypothesis that the regression is constant over time implies that the expectation of the statistics Sr, E(Sr), will lie along its mean-value line.

Consider the standard regression model:

$$Y_t = X_t'\beta_t + \varepsilon_t \qquad (3)$$

Where Y_t is a vector of observations on the dependent variable, X_t is a column vector of observations on the k regressors, b_t is vector of regression coefficients and e_t is residual with zero means. The first element in each X_t is one, and the remaining are nonstochastic.

The hypothesis to be tested is

$$\beta_1 = \beta_2 = \ldots = \beta_t = \beta$$

Consider β_r be the least-squares estimate of β from the sample of the first r observations, and let

$$W_r = \frac{y_r - x_r'\beta_{r-1}}{\sqrt{1 + x_r'(X'_{r-1}X_{r-1})^{-1}x_r}}, \quad r = k+1,\ldots,T \qquad (4)$$

where $X'_{r-1} = [x_1,\ldots,x_{r-1}]$.

The variable we can be obtained without repeated matrix inversion by the relations

$$\beta r = \beta r\text{-}1 + (X'rXr)^{-1}x'r(yr - x'rbr\text{-}1 \tag{5}$$

and

$$(X'rXr)^{-1} = (X'r\text{-}1Xr\text{-}1)^{-1} - \frac{(X'r\text{-}1Xr\text{-}1)^{-1}x'r(X'r\text{-}1Xr\text{-}1)^{-1}}{1 + x'r(X'r\text{-}1Xr\text{-}1)^{-1}} \tag{6}$$

If βt is constant up to time t = to and different from then on, the wr will have mean zero up to to and nonzero mean from then on. Brown and Durbin suggest plotting the following variable against time as follows:

$$Sr = (\sum wt^2) / (\sum wt^2) \qquad r = k + 1,\dots,T \tag{6}$$

The value of Sr will lie between zero and one: Sr = 0 if r < k+1; Sr = 1 if r = T. The expectation of Sr is E(Sr) = (r-k)/(T-k), and on the null hypothesis that β's are constant, the plot of Sr should be lie along this mean value-line.

Empirical Results

The "rolling over" regression results for equation (1) are presented on table 2 as follows:

Table 2
Money Demand Regression Result : 1968.I - 1997.IV

Estimation Period	Estimated Coefficients*)				Summary Statistics**)		
	Constant	Yt	Rt	(M/P)t-1	R^2	σ	ω
M1:							
1968.I - 1982.IV	-3,938	0,483	-0,040	0,758	0,993	0,053	2,164
	(-2.505)	(3.018)	(-0.671)	(14.585)			
1973.I - 1987.IV	-3,311	0,461	-0,035	0,703	0,992	0,039	1,970
	(-3.699)	(3.847)	(-2.642)	(9.520)			
1978.I - 1992.IV	-0,976	0,154	-0,003	0,875	0,985	0,042	1,909
	(-0.986)	(1.234)	(-0143)	(13.039)			
1983.I - 1997.IV	-1,293	0,192	-0,020	0,845	0,979	0,048	2,189
	(-2.137)	(2.098)	(-0.958)	(11.034)			
M2:							
1968.I - 1982.IV	-3,214	0,389	-0,050	0,822	0,995	0,052	2,305
	(2.308)	(2.834)	(-0.868)	(22.700)			
1973.I - 1987.IV	-4,467	0,556	-0,042	0,732	0,997	0,033	2,001
	(-4.050)	(4.083)	(-2.868)	(11.032)			
1978.I - 1992.IV	-3,082	0,360	-0,003	0,871	0,996	0,040	2,483
	(-1.968)	(1.997)	(-0.175)	(13.527)			
1983.I - 1997.IV	-1,700	0,208	-0,017	0,907	0,996	0,041	2,538
	(-1.724)	(1.785)	(-0.849)	(18.073)			

*) All variable enter logarithmically. Absolute values of t-statistics are shown in parentheses
**) R2 is the cefficient of determination adjusted degrees of freedom, s is the standard error of the regression, w is Durbin-watson statistic

As Melnick (1995) pointed out that the instability of money demand possible come from the improper use of the traditional econometric approach. Therefore, before testing it's stability, we need to check whether or not money demand function is not miss-specified. According to above results, adjusted R^2 for all regressions are between 97.9 percent and 99.7 percent and all coefficients of independent variables have correct sign. Income has positive relationship with money demand, while interest rate has negative relationship with money demand. Hence, we can conclude that the above money demand function is appropriate to test the stability demand for money. An interesting pattern emerges from the estimated coefficients. All estimated coefficient of income on both regression in each period are significant at five percent level. The coefficients decline overtime, except from 1973.I – 1988.IV for M2

regression. These results showed that financial deregulation affect the coeeficient of income and further affect the stability of money demand.

Finally, most coeffients of interest rate are insignificant event at ten percent level. The coeffient of interest rate is just significant at five percent level in M1 regression during period 1973.I-1987.IV. However, interest elasticities for M1 and M2 tend to be lower as sample period close to financial deregulation period. The results are in line with propositon that financial deregulation has lowered the interest elasticity to money demand due to money balance are now held not just for transaction motive but also for investment. However, the findings show that there are no significant cange in money demand function as shown on high R^2 and no significant changes on R^2 for M2 regression, although R^2 for regression M1 tend be lower after financial deregulation.

Based on rolling over regression it is not clear money demand function is stable during period of financial deregulation, eventhough coefficien of interest elasticities tend to be lower during the financial deregulation. In order to find out whether money demand stable over time, chow test is conducted. Before conducting chow test, I examine money demand regression for whole sample, 1968.I – 1997.IV. The results are reported on table 3. All coefficients of

Table 3

Money Demand Regression and Chow Test Result

Description	Estimated Coefficients*)				Summary Statistics**)		
	Constant	Yt	Rt	(M/P)t-1	R^2	σ	ω
1968.I - 1997.IV							
- M1	-1,548	0,229	-0,015	0,835	0,996	0,051	2,252
	(-4.221)	(4.542)	(-1.240)	(26.194)			
-M2	-2,830	0,345	-0,042	0,840	0,999	0,046	2,350
	(-5.326)	(5.426)	(-4.295)	(30.888)			
Chow Test ***)	M1 Equation		M2 Equation				
- Break Point:	F-statistics	p-value	F-statistics	p-value			
- 1983.II	1,416	0,233	0,632	0,640			
- 1983.III	1,260	0,290	0,636	0,638			
- 1983.IV	1,163	0,331	0,631	0,641			
- 1984.I	0,873	0,483	0,622	0,648			
- 1988.IV	1,681	0,159	2,048	0,093			
- 1989.I	1,383	0,244	2,292	0,064			
- 1989.II	2,117	0,083	1,678	0,160			
- 1989.III	1,515	0,203	3,262	0,014			

*)   All variable enter logarithmically. Absolute values of t-statistics are shown in parentheses
**) R2 is the cefficient of determination adjusted degrees of freedom, s is the standard error of the regression, w is Durbin-watson statistic
***) Break points are determined from closet quarter period after deregulation until the next three period (to implement new regulation need time)

money demand regressions have the correct sign, however coefficient of interest rate for M1 regression is not significant even at ten percent level, while coefficient of interest rate for M2 is significant at one percent level.

Chow test then is conducted based on full sample data by using equation (2) and setting dummy variable that equals 1 in the post-breakpoint period and zero otherwise. The money demand stability is conducted by testing the statiscal significance of the slope of dummy variables. As described on section two, financial ocurred on June 1, 1983 and on October 27, 1988, therefore the selection of break point started from the closest period after financial deregulation ocurred until the next three periods (I assume that there are time lag to implement the new measures). The results of implementing chow test are reported on table 3. According to those results, the probability value of F-statistics for M1 regression are generally low. These results imply that the reforms in 1983 and 1988 do not change structural stability of M1 demand. The reform of 1983 also do not affect the stability of real M2 demand. However, the second financial deregulation has shifted structural stability of demand for M2 as reflected in the value of F-statistics at period 1989.III that rejects the hyphotesis of structural stability for M2-money demand at 5 percent level. This result is in line with Hall (1982), since allowing public to open new banks and their branches lead to more competition among financials institution. The competition encourage financial institution to create new financial services. Consequently, it leads to change determinant of money demand and thus the stability of money demand function.

Finally, recursive least sequare test are conducted by calculating cumulative square error of regressions. The results are presented on figure 2 and 3 below:
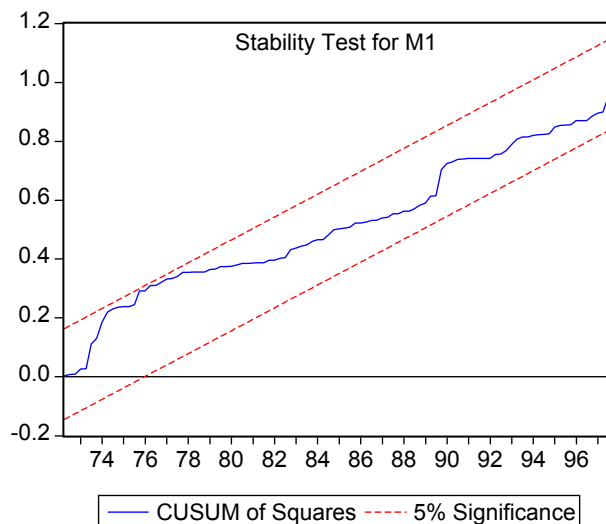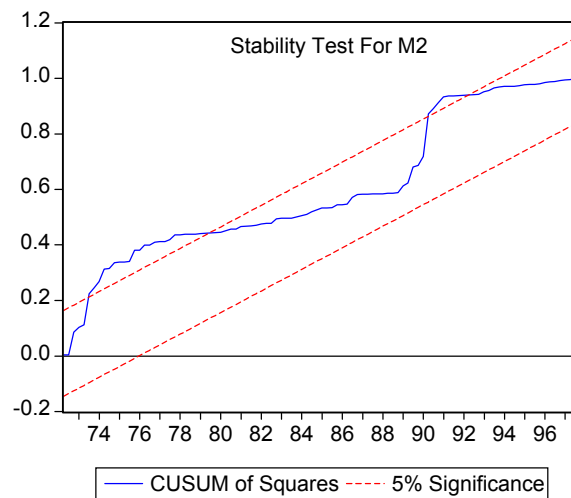
According to the results, the CUSUM squares for M1-money demand function during period 1976.IV move to top boundary, however the values still lies within the boundry for the whole periods. During the first deregulation of 1983, the CUSUM squares of M1 regression just slightly move upward. During the second deregulation of 1988, a series dramatic jump and then after the forth quarter went down to initial series, however the series still lie within the boundary. These findings implies that demand for M1 are stable after both financial deregulations. Shock from financial reforms to money demand was temprorary effect and do not change structural stability of M1 demand. These results are in line with Fair's finding (1983) that showed money demand in developing country tend to be stable, since public still used currency as the most part of transaction.

Interesting results are shown on CUSUM squares of M2 regression. During period 1973.IV – 1979.IV, the series of CUSUM squares lie over its upper boundary at five percent level. The deregulation of 1983 did not much affect the value of CUSUM squares, the values just go up slightly. The results are reasonable since government just remove credit ceiling and interest rate ceiling for stated banks, while institutional reforms do not included in this reform. However, the second deregulation of 1988 has big effect to the values of CUSUM squares. After the reforms, the CUSUM squares raises sharply and the values passed upper bound during period 1990.III – 1992.I before going down again. The results show that huge financial deregulation in 1988 changes structural stability of demand for M2. However, the structural change tend to be transitory since the values of CUSUM squares go back to band at five percent of significant level.

Concluding Remark and Policy Implications

Hal (1982), and Swamy and Tavlas (1989) pointed out that deregulation and innovations in financial markets in recent years had implication to relationship between money, income and interest rate. The lifting of controls in financial markets and financial innovation resulted the break down of stable and predictable relationship. Financial deregulation has resulted in an increased the share of financial instruments within M2 that offer market-determined rate, where interest rate spread quickly through assets and liabilities. Consequently, determinants of money demand change sharply and lead to change structural stability of money demand. The evidence presented in this study suggests that the interest elasticity and income elasticity tend to be lower after financial reforms, however, relationship between money and income is still stable and predictable.

Financial deregulation in 1983 and 1988 do not change structural stability of demand for M1 as shown in low F-statistics and the values of CUSUM squares lie within the band at five percent level. The reform of 1988 just moved demand for M1 temporary. These results imply that there is no significant change for M1-money demand. The results make sense since public still use currency and demand deposit as main medium of exchange. However, there shifted structural stability of demand for M2 since the second financial deregulation. Chow test indicates that the hypothesis of structural stability was rejected at 5 percent in 1989.III. It makes sense since allowing public to open new banks and their branches lead to more competition among banks and to increase saving and time deposit banks, as part of components of M2. The competition also lead to create financial innovation and the last lead to change determinant of money demand and thus stability of money demand. However, the money demand instability was transitory and did not change money demand stability permanently.

An implication of these results that quantity targeting is still reliable since money demand for M1 is stable and income elasticity to money is stable, though elasticity lessen but statiscally the change is insignificant. However, since relationship between money and interest rate is unstable and insignificant, monetary authority cannot be totally use interest rate targeting to implement monetary policy. Hence, eclectic approach is more reliable as means to conduct monetary policy.

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