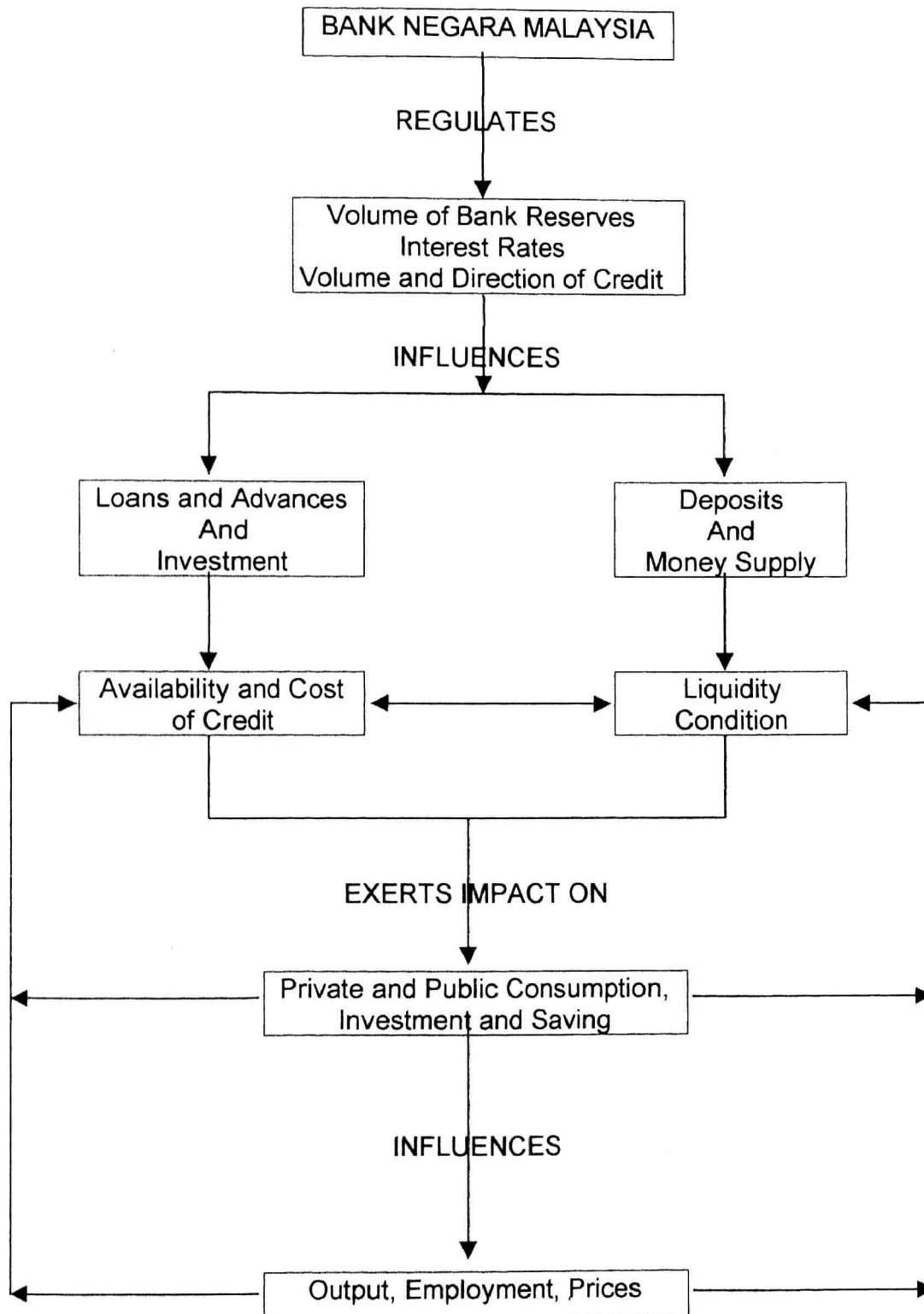# CHAPTER 4.
THE TARGETS OF MONETARY POLICY.

Monetary policy is a key tool utilised by the policy-makers for macroeconomic management. The broad macroeconomic objectives of monetary policy are economic growth, high employment, price and interest stability, and financial and foreign exchange market stability.

In Malaysia, the monetary stability and sound financial stability form a part of broader goals of national economic policy, namely, to sustain the growth of output, employment, investment and consumption under relatively satisfactory price stability condition and external equilibrium. To enhance the efficacy of monetary policy, it is vital to ensure that the financial system is well developed, stable, and efficient so that the transmission mechanism can function efficiently. Knowing this, the Central Bank has promoted the development of a more broad-based, sophisticated and complex financial system. To provide a monetary environment conducive for the attainment of national goals, the Central Bank has been empowered to regulate the availability and cost of money and credit in the economy. The Bank regulates the volume of bank reserves, interest rates and the volume and direction of credit, to influence decisions to spend, lend and save. The impact on loans and advances, investments as well as deposits and money supply would affect private and public consumption and investment, and ultimately output, employment and prices. Below is a simplified presentation of the effect of monetary policy on production, employment and prices.

Chart 1.

THE IMPACT OF MONETARY POLICY ON THE MALAYSIAN ECONOMY.

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┌─────────────────────────────┐
│   BANK NEGARA MALAYSIA      │
└─────────────────────────────┘
              │
         REGULATES
              │
              ▼
┌─────────────────────────────┐
│   Volume of Bank Reserves   │
│        Interest Rates       │
│ Volume and Direction of Credit │
└─────────────────────────────┘
              │
         INFLUENCES
              │
      ┌───────┴───────┐
      ▼               ▼
┌──────────────┐  ┌──────────────┐
│ Loans and    │  │  Deposits    │
│ Advances     │  │    And       │
│ And          │  │ Money Supply │
│ Investment   │  │              │
└──────────────┘  └──────────────┘
      │               │
      ▼               ▼
┌──────────────┐  ┌──────────────┐
│ Availability │◄►│  Liquidity   │
│ and Cost     │  │  Condition   │
│ of Credit    │  │              │
└──────────────┘  └──────────────┘
              │
       EXERTS IMPACT ON
              │
              ▼
┌─────────────────────────────┐
│ Private and Public Consumption, │
│   Investment and Saving     │
└─────────────────────────────┘
              │
         INFLUENCES
              │
              ▼
┌─────────────────────────────┐
│ Output, Employment, Prices  │
└─────────────────────────────┘
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4.1 THE CHOICE OF TARGETS.

Monetary authorities have to decide which intermediate targets are appropriate within the background of the macroeconomic environment. Monetary authorities must ascertain target prices such as interest rate and exchange rates or quantities such as monetary or credit aggregates. Different theories have proposed different targets. Monetarists have advocated money supply as a suitable target because it reflects the relationship between savers, intermediaries and spenders. Neo-Keynesians, on the other hand, proposes the money market condition as the target. This implies that an appropriate interest rate should be the target variable since the rate is an element in the transmission process, directly affecting or determining spending and saving decisions. Hence, the interest rate captures most comprehensively the overall effects of monetary policy. Changes in the relationships among savers, intermediaries and spenders consequently affect the reliability of the relationship between the targets and the ultimate policy goals.

It is generally believed that monetary authorities in an open economy with fixed exchange rates, would not have much control over money supply. Coexistently, given the increased capital mobility, targeting interest rate would not be practical. Monetary targeting would then shift its emphasis on domestic credit. However, if flexible exchange rates apply, monetary authorities have greater control over the conduct of monetary policy, and the choice of interest rate or money supply would be determined by effectiveness of the individual target. Interest rates are preferred when the financial sector is the dominant source of instability, while monetary aggregates should be targeted when the

real sector disturbances are prominent. Ultimately, the monetary authorities have to select the target, which they believe to have the best empirical relationship with the final objective variable.

In addition, the choice of the target also depends on the nature of shocks the economy faces. In particular, if the economy is faced with external shocks, exchange rate targeting would be preferable, while the money supply target would be the choice if the economy faces other types of shocks. However, if the economy suffers from multiple shocks, monetary authorities should monitor the development of a few targets.

In cases where monetary authorities use prices as the target such as interest rate or exchange rates, they have to rely heavily on inferences from the price axis in the financial markets and the signals from the economy. Interest rates, have shortcomings as indicators of the effect of the policy. These may be due to several factors. Firstly, it is difficult to differentiate between nominal and real interest rates and the effects on these rates of the shifting demand for money and credit arising from developments in the economy and those caused by bank actions. Secondly, both the interest and exchange rate provide very little guidance for achieving specific inflation goals. While the exchange rate would anchor the home inflation rate over time, adjusting policy harmony with the market interest rate expectations would lock in the expected rate of inflation.

On the other hand, if money supply were selected as a target, monetary aggregates would need to be determined. Monetary aggregates to be determined must be the best leading indicators of economy activity and price pressures, considering changes in the definition of money supply, changes in the structure and functions of financial institutions and availability of new form of monetary substitutes. Any changes occurring in the relative demand for money would increase the variability in the velocity of circulation of money, hence needing broader a definition of money. This might be the major shortcoming due to unavailable instruments, limited, unorganised and under developed financial markets as well as capital markets, and financial innovations.

4.2 MONETARY TARGET – THE MALAYSIAN CASE.

In spite of the attractiveness of adopting a single target for monetary policy, monetary authorities seldom adopt one strict target. Most authorities will adopt a pragmatic approach to monetary management, examining a broad range of indicators rather than merely responding to a single indicator on some predetermined target.

In the case of Malaysia, the concentration before the 1980s was on M1 (narrow money) since it had been empirically proven to have a stable and consistent relationship with aggregate income. The 1980s saw changes in the liquidity preference of the public and high interest rates resulted in the public, particularly the savers, becoming sensitive to interest rate movements. The concentration inevitably shifted to the broader monetary aggregates, M2 and

M3, which were less affected by interest-induced fluctuations. M2 however was found to be inappropriate due to its movements distorted by the disintermediation of deposit of the commercial banks to the other non-bank financial institutions. In 1984, the central bank selected M3 as the target since the aggregate included the commercial banks, finance companies, the Islamic Bank, merchant banks and discount houses.

In practice, the central bank does not conduct monetary policy based on one single aggregate. In fact the central bank took a broad range of indicators to evaluate the impact of monetary measures on the financial system in particular and the economy in general. Table 1 shows the principal intermediate/operating targets for monetary policy in selected countries.

Table 1.

Principal Intermediate/Operating Target for Monetary Policy.	
Hong Kong	Exchange rate against US Dollar.
Indonesia	Monthly target range for monetary base; target range for the real effective exchange rate.
Korea	M2 + MCT (M2 + CDs + Money in trust)
Malaysia	Interbank interest rate, M3 is indirect target.
Singapore	Exchange rate against a basket of currencies.
Thailand	Money market liquidity; interbank lending rate; exchange rate.
Argentina	Exchange rate against US Dollar.
Brazil	Four monetary aggregates; the monetary base, M1 and two broader aggregates.
Mexico	Net domestic credit; monetary base.
Russia	Money supply and money base (including upper ceilings on net domestic assets of the money authorities and minimum floors on net foreign assets); exchange rate band.
Source: BIS policy papers No.3; January 1998.	

It has been suggested earlier that monetary authorities have to decide on target prices such as interest rates or exchange rates or quantities such as monetary or credit aggregates. Other countries experiences have shown that

targeting monetary or credit aggregates is most common. Germany for instance used the interest rate act as a target while Singapore used exchange rates. Canada targets the money supply and simultaneously, sets target for inflation. New Zealand, in the same way, conducts monetary policy with the explicit intention to achieve and maintain price stability. It is evident that different countries have used different targets. Table 2 shows the primary instrument of monetary policy in selected countries.

Table 2.

Primary Instrument of Monetary Policy.						
	Open Market Operation	Credit Ceiling	Reserve/Liquid Asset Requirement	Discount Rate	Forex Market Operation	Moral Suasion
Hong Kong	X			X	X	X
Indonesia	X		X	X		X
Korea	X			(X)		(X)
Malaysia	(X)[1]	X	X			X
Singapore	X				X	
Thailand	X					X
United States	X		X	X		
Japan	(X)	X	X	X		
Germany	(X)	X	X	X		
United Kingdom	X		X	X		

[1] Lending guidelines for development purposes and occasional recourse to selective credit controls to reduce undue demand.
Source: BIS policy Papers No.3; January 1998.

4.3 CORRELATION BETWEEN TARGET AND ULTIMATE OBJECTIVE.

A correlation test was conducted by a group of the Central Bank of Malaysia's officer to examine the correlation between M3 and real GDP and inflation separately. The group used quarterly data from 1977–1993. Real GDP was

used as the real income variable, while CPI was the proxy for inflationary expectations. CPI was used with the assumption that the expected rate of inflation equals the actual rate. The results revealed that M3 growth and GDP growth are not highly correlated (correlation coefficient of 0.34). M3 and inflation however, are positively and highly correlated. The correlation coefficient between inflation and M3 growth lagged for five quarters is the highest at 0.73. The results show that, the impact of any change in M3 on inflation will be felt only five quarters later[14]. However, the relationship holds for the period 1977-86 only, after that the relationship becomes blurred.

4.4 STABILITY OF MONEY DEMAND FUNCTION.

In theory, the demand for money is associated with the transaction, precautionary and speculative motives. In Malaysia, the demand for money is fairly orthodox. The demand for M1 balances is dependent mainly on income and to a smaller extent, on the rate of interest.

A study by Merris and Rosli (1987) examining the demand for M1 confirmed the importance of income on desired money holdings, where the short-run elasticity estimate was 0.214 (refer table 3). In their analysis, they specified the monetary aggregate as dependent on real income (GDP), the interest rate (fixed deposit rate and savings rate at the commercial banks), current and lagged values of the price level (GDP deflator) and the one period lagged value of holdings of the particular aggregate. The money demand equation

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[14] Latifah Merican et al. "Monetary Policy and Inflation", Bank Negara Discussion Paper No.30, March 1994.

was specified in log-linear form and the empirical estimation used quarterly data from 1970 –1984. While the demand for real M1 balances was homogenous of degree zero in the price level, the weighted average interest rate on bank deposits had a fairly small but significant effect on M1.

Table 3.

Empirical Results For Money Demand								
Real Money	Constant	Real Permanent Income	Interest Rate	GDP Deflator	Lagged GDP Money	Lagged Money	R2	Φ
M1	-0.025 (0.10)	0.214 (2.6)	-0.069 (1.7)	-0.798 (10.6)		-0.798 (10.6)	0.99	0.86
M2	-3.81 (2.5)	0.892 (3.1)	-0.020 (0.55)	0.081 (1.3)	0.104 (1.7)	0.556 (4.5)	0.99	0.71
M3	-4.86 (2.9)	1.07 (3.3)	-0.029 (0.89)	-0.015 (0.23)	0.190 (3.1)	0.508 (3.9)	0.99	0.60
Note: All variables are in the log forms; t-ratios are in parentheses; Φ is the final estimate of the first-order serial correlation coefficient from the Hatanaka procedure; sample period 1970 Q3 – 1984 Q4. Source: Merris and Rosli (1987).								

In an another analysis (refer table 4) by a group of Central Bank of Malaysia staff on the demand for M1 balances from 1986-1992 showed that income, the rate of interest as well as the rate of growth in prices were statistically significant in determining money holdings. In these analyses quarterly data were used with income represented by real GDP, the rate of growth in prices by the CPI while the proxy for the interest rate is the three-month fixed deposit interest rate of the commercial banks.

The small negative sign (-0.0082) for the effect of price increases on money demand indicates that people minimise their holdings of non-earning assets when prices rise. The income elasticity for M1 of 0.6545 which is consistent with the belief that the demand for transaction balances rise in consonance

with increased economic activity and rising incomes. The interest rate elasticity of –0.0046 suggests that a 1 percent increase in interest rates would lead to a decline of 0.0046 percent in money holdings.

Table 4.

Results of Money Demand Regression							
Real Money	Constant	Real GDP	Inflation	Interest Rate	Lagged Money	Adjusted R^2	Durbin-h
M1	**-3.1753** (-3.3590)	**0.6545** (3.1039)	**-0.0082** (-5.6995)	-0.0046 (-1.6998)	**0.7090** (6.4129)	0.9885	-0.7242
M2	**-0.8598** (-2.2194)	**0.2418** (2.1904)	**-0.0097** (-8.7990)	0.0028 (1.4068)	**0.8752** (12.5192)	0.9909	0.8956
M3	**-1.4332** (-4.3875)	**0.3283** (3.8747)	**-0.1073** (-12.4686)	**0.0039** (2,1751)	**0.8594** (17.1749)	0.9960	0.3300
Money demand equation: Log $M\tau$ = b0 + b1 log $Y\tau$ + b2 inflτ + b3 log $M\tau$–1+ Intτ + Uτ Where, M = Real money balances $\quad\quad$ Y = Real GDP $\quad\quad$ Infl = Quarterly change in log CPI $\quad\quad$ Int = Mode 3-month fixed deposit rates of commercial banks Note: t-values are in the parentheses. Coefficients significant at the 5% level are in bold.							

Source: BNM Discussion Paper No. 30.

On the broader monetary aggregates M2 and M3, the regression result showed a lower income elasticities of demand at 0.2418 and 0.3283 respectively. The lower relationship of M2 to the aggregate income was due to the disintermediation of deposits from the commercial bank to other non-bank financial institutions. While the low elasticity of M3 reflected the effects of financial innovation and sophistication, in particular, the shift in liquidity preference towards new financial instruments with the new development in the capital and stock markets.

The effect of price increases and interest rate changes on M2 and M3 was similar to that of M1. The significant influence of income was also evident in

the study by Merris and Rosli (1987). Demand for M2 and M3 failed to satisfy the homogeneity-in-prices hypothesis, with estimated elasticities of 0.081 and –0.015 respectively. In addition, the weighted average interest rate on bank deposits did not have a significant effect on either M2 or M3.

In general, the regression equations above have captured the effects of financial liberalisation on money demand. The Malaysian financial system has evolved from a simple, rudimentary structure to become more sophisticated and varied in terms of its institutional structure and financial instruments. Ineluctable, this transformation in the process of financial deepening is accompanied by portfolio shifts to changes in income, interest rates and prices from sensitivity of money demand.

Lucas (1988) proposes that, in the static institutional environment money demand is likely to be a stable function of income, prices and interest rates. Therefore, it is believed that changes in the institutional environment have caused a long-run cycle in the income velocity of money. In general, money velocity trends downwards. Developing countries are experiencing money growth exceeding income growth while more developed economies see a reverse trend. The process of monetisation is believed to be the main factor influencing the trend. Indeed, the role of money in determining economic activity and the relative importance of monetary and fiscal policies can be considered within the framework of the relative stability over time of the money demand function.

The group, in determining the money demand function in Malaysia, conducted a statistical analysis (Chow Test) to test the stability of the money demand function over the period from 1981 – 1992. The test was run on money demand with variables like income, prices, and interest rate. While broad monetary aggregate M3, was used as the proxy for money demand, real GDP was used as the proxy for income, the inflation rate was used as a proxy for prices, and the interest rate was represented by the three-month fixed deposit rate for commercial banks. The test was conducted over the period 1981-1992 and for the sub-periods 1981-1986 and 1987-1992. The results show that, the F-statistic of 1.095 was lower than the critical value [$F_{(5,38)}=2.5$] at the 5 percent level of significance. Therefore it can be concluded that the relationship between the explanatory variables and the dependent variables are stable over time.

The conclusions of the above analysis are similar to those of other similar studies conducted by SEACEN (1993) and the study by Merris and Rosli (1987). The SEACEN Study examines the stability of the money demand function in the South East Asian countries using a two-stage estimation procedure. In the first stage, the test for co-integration between money, income and interest rates provide information about the existence of stability in long-run money demand relationships. In stage two, conventional statistical tests were used to gauge whether the coefficients of the model were stable across different sub-periods of the data that is to determine whether the long-run relationship between the variables deviated in the short-run. Quarterly data from the period 1970-1989 were used for individual countries. Results

revealed that in Malaysia, the estimated long-run narrow money demand function was likely to be a co-integrating relationship, while the broad money demand function showed a weak co-integrating relationship. The results also confirmed the stability of both the narrow and broad money demand function over the short and long run.

Tests by Merris and Rosli for structural change did not indicate significant shifts in the relationship between M1, M2 and M3 over the estimation period. The Chow test applied to re-estimate for M1 demand equation also did not show any structural shift in the equation.

Other researchers like Semudram (1980) also conducted a similar study on the demand for money in Malaysia. He presented the estimates of the Malaysian demand for money and a formal test of the stability of this function over time using the varying parameter technique developed by Cooley and Prescott (1973). The main assumption in this technique is that the parameter vector in an economic relationship is subject to sequential variation over time due to problems of structural change, misspecification and aggregation. He conducted stability tests on the demand for money (both M1 and M2) with variables including income, the interest rate, and prices and lagged demand for money, using data for the period 1959-1977. The test revealed that on the assumption that the changes in the parameters were correlated, the money demand function was stable for both (M1 and M2). The coefficients of adjustment between desired and actual money balances in both equations M1 and M2 were small (20 percent a year), suggesting that it takes five years to

complete adjustment. The study also confirmed that variables influencing the aggregate demand for money balances included income, the rate of inflation and the short-term interest rate. However, considering the state of banking facilities and the organisation of the money and capital markets, a faster rate of adjustment was expected and the use of the effective exchange rate could be the other factor influencing money demand.

4.5 EMPIRICAL ANALYSIS ON THE EFFECTIVENESS OF MONETARY POLICY.

A same group of Central Bank of Malaysia's staff conducted a study on the impact of monetary policy on expenditure. They used secondary (yearly) data from 1972-1992 except for two important equations where yearly data from 1980-1992 were used. All the variables were estimated in log form and ordinary least squares estimation was used for all regressions. The coefficients significant can be interpreted as the elasticity. The regression table is shown in table 5.

Table 5.

Regression Results for the Expenditure Equation.						
Dependent variable	Constant	Income	Interest rate	Lagged dependent	Adjusted R^2	F-values
Private Consumption	0.18359 (0.27367)	**1.2613** (2.8445)	0.15147 (1.6861)	-0.39416 (-0.80349)	0.9466	77.8161
Private Investment	-0.87887 (-0.28618)	0.12859 (0.20694)	-0.1544 (-0.76058)	**0.9845** (2.0571)	0.86958	29.8935
Construction Output	-1.0084 (-0.11038)	**0.43354** (3.6364)	**0.25025** (3.6429)	**0.34492** (2.2597)	0.87767	32.0887
Import of Consumer Durable.	-7.9988 (-1.3274)	1.0688 (1.4278)	0.022109 (0.11939)	0.46874 (1.2133)	0.89878	26.6395
All the variables are in log form. t-values are in parentheses. Coefficients significant at the 5 percent level are in bold. Source: BNM Discussion Paper No.30.						

The results reveal that in general the interest rates do not significantly affect any of the major components of spending. Only construction expenditures are most likely to be interest-sensitive. However, the sign of the coefficient for interest rate does not support the common belief that a higher interest rate could dampen growth in construction spending. Instead of a negative sign, the coefficient for the interest rate is positive.

Although, the results reveal insignificant effect, it would not be appropriate to immediately conclude that monetary policy is ineffective. The small sample (14 annual observations) was not satisfy the assumption of normality of residuals and as a consequence it could lead to errors in the estimation.