THE MONEY SUPPLY PROCESS

IN SOUTH AFRICA

EXPLANATION, VERIFICATION, IMPLICATION

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INTRODUCTION

Recent Monetary Policy in South Africa has been highly inflationary. This is self evident on an inspection of the behaviour of the important monetary aggregates. The rate of growth of money and near money was roughly 23% per annum in 1973 and continued to grow at about 20% per annum to June 1976. Clearly the acceleration in the rate of price increases over the same period has not been coincidental.

It is not, however, the purpose of this paper to explain why rapid increases in the money supply are inflationary or why sharp fluctuations in its rate of growth are destabilising. This is taken for granted and substantial support for these surely uncontroversial propositions can be found in the recent literature. The object of this paper is to investigate closely the money supply process in order to explain how the present inflation in South Africa came about and what therefore we may hope to be able to do about inflation.

The rate of growth of the money supply has not been regarded by the South African monetary authorities as an appropriate target for monetary policy. Instead policy attention has been concentrated on a variety of credit market phenomena. Control has been exercised over the level and structure of interest and deposit rates. The authorities have also paid particular attention to the level of excess liquid assets of the commercial banks and have periodically varied the banks required liquid asset ratio. The Reserve Bank have indicated their concern with the supply of bank credit and have imposed and removed ceilings on bank lending to the private sector.[1/]

The objects of monetary policy in South Africa have often been stated as the usual desire for internal and external stability. The acceleration in the rate of increase of prices after 1970 points to an obvious failure to satisfactorily realize at least one of the objectives of policy. It is the contention of this study that the

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1/ For details of policy interventions and official explanations of these see the Quarterly Bulletins of the South African Reserve Bank.

Our study will indicate that the balance of payments was the major influence on interest rates and therefore on money supply growth in South Africa. We will show that this is true even for the period of international monetary turbulence between 1971 and 1974. We will show therefore how the largely benign neglect of money supply aggregates before 1970 became malignantly inflationary thereafter.

The all important background to the recent South African inflation is that the United States dollar standard to which we were linked and which had ultimately looked after our money supply became increasingly suspect in the 1960's and in 1971, collapsed. 1/ This is not to say that our own inflation was unavoidable. Our inflation was avoidable but it could not have been avoided without abandoning the previous neglect of the money supply. The consequences of this neglect are revealed with a vengeance in our present rate of inflation. The check on monetary expansion provided by normal balance of payments relationships and fixed exchange rates became inoperative after 1971 and direct control of the money supply should have been put in its place. Had this been done and our own monetary expansion limited to say about 10 per cent per annum growth on average over the last few years South African exchange rates would have strengthened substantially against the rest of the world and so have offset part of the effect of higher import prices.

The South African monetary authorities singularly failed to make this response. They carried on their monetary policy as if nothing fundamentally had changed with the result that because of highly favourable balance of payments developments after 1972 the money supply expanded very rapidly. Furthermore, even after the balance of payments ceased to be as strongly favourable, increases in the price of gold during 1974 increased the real value of the Reserve Banks gold reserves. In the absence, therefore, of any effective balance of payments constraint but with official concern

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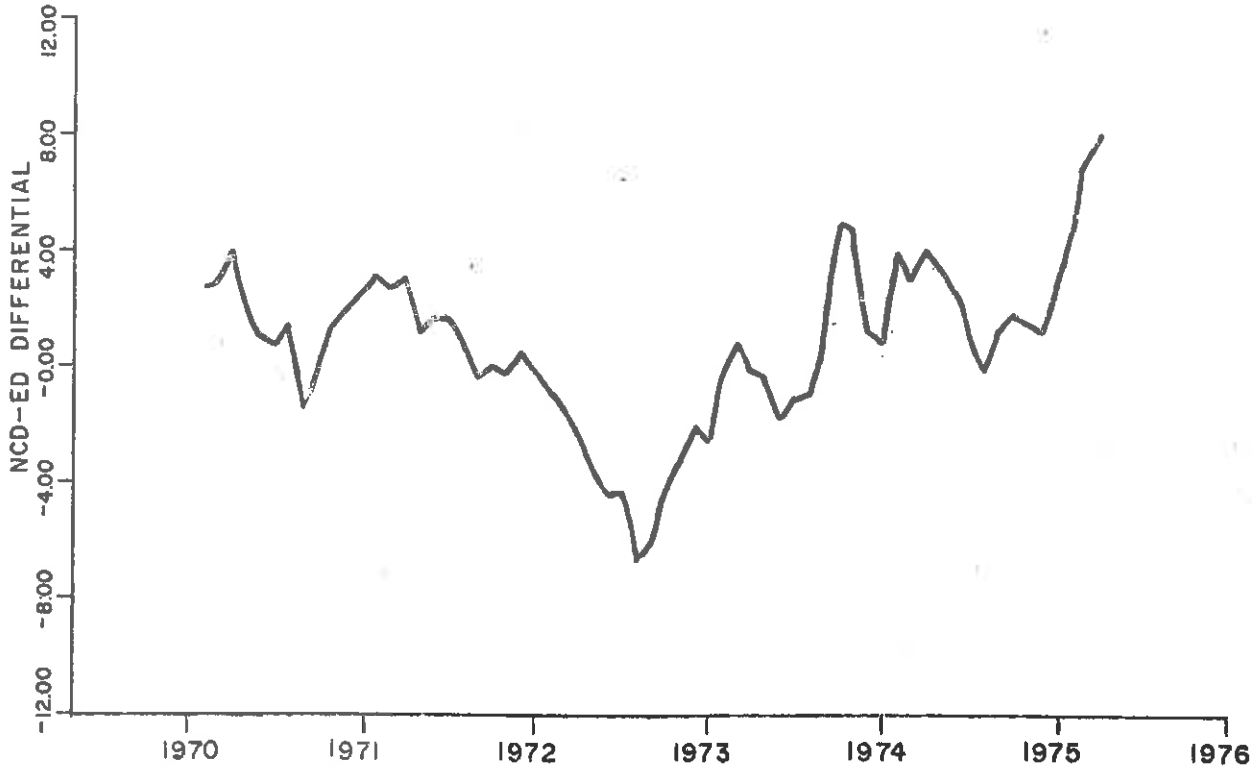
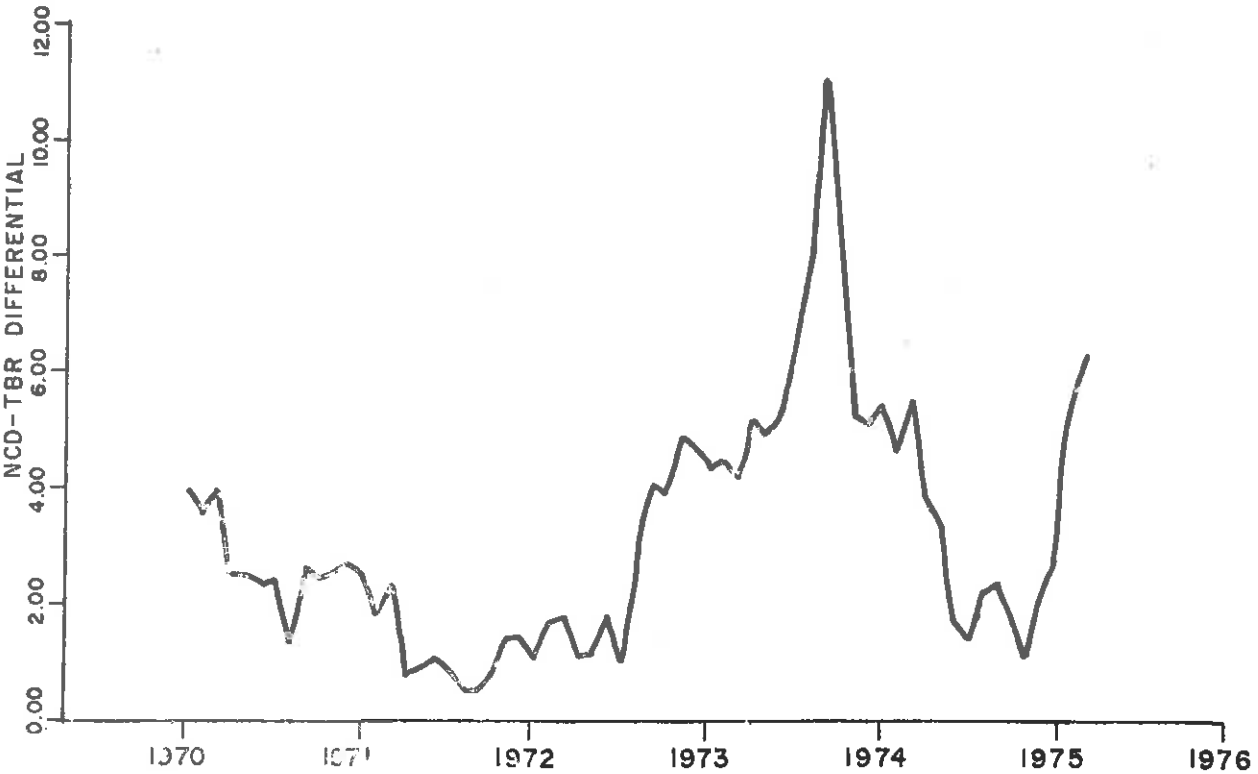
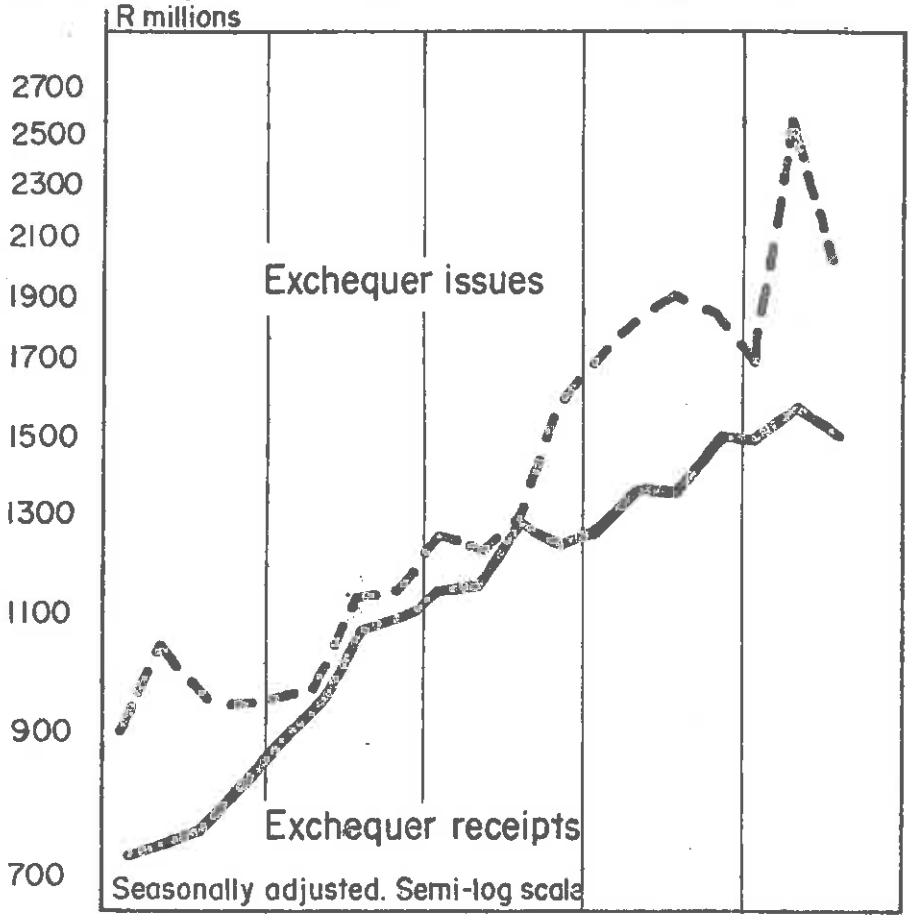
1/ For a recent interpretation of U.S. monetary policy in the '60's see Jürg Niehans, How to Fill an Empty Shell, The American Economic Review, May 1976 p. 177.

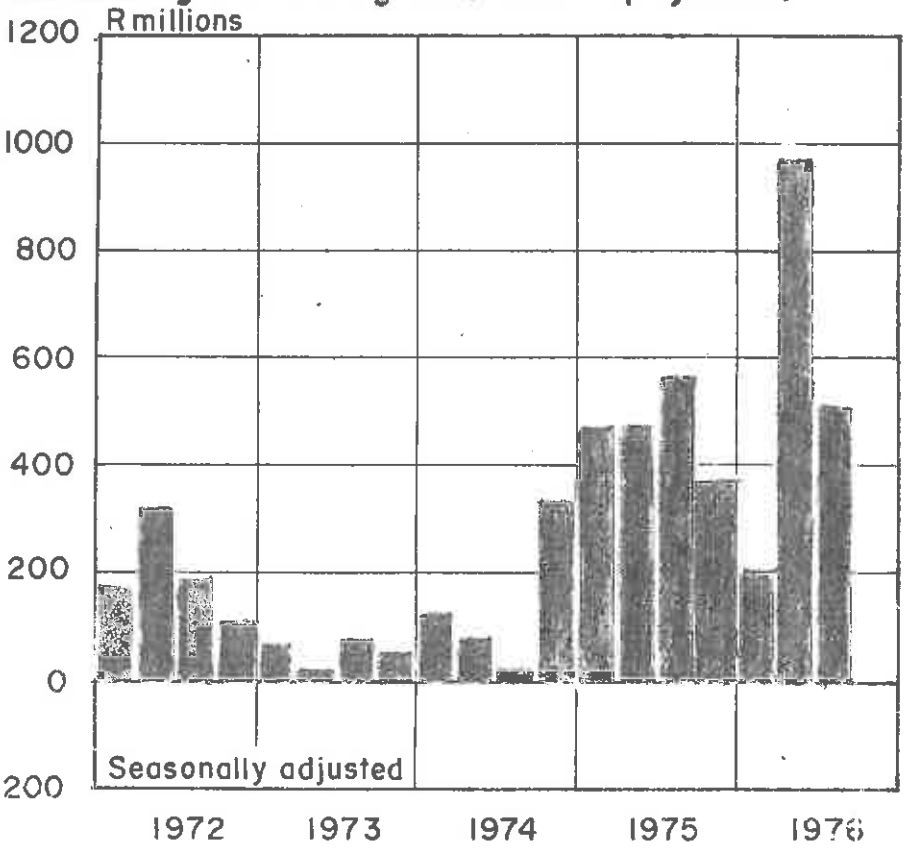

NCD-ED DIFFERENTIAL
12.00
8.00
4.00
-0.00
-4.00
-8.00
-12.00
1970
1971
1972
1973
1974
1975
1976


NCD-TBR DIFFERENTIAL
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1970
1971
1972
1973
1974
1975
1976

Receipts on and issues from Exchequer Account (excluding borrowing and debt repayment)



Deficit on the Exchequer Account (excluding borrowing and debt repayment)



Source: S.A. Reserve Bank Quarterly Bulletin December 1976

have been supported by accommodating foreign borrowing by the Treasury and other public sector borrowers. Unfortunately for the achievement of balance of payments stability at preferred exchange rates government finance came to rely increasingly on money creation in 1975. Despite the balance of payments high rates of monetary growth came to be perpetuated by the unwillingness of government to avoid inflationary finance. The increase in the central governments demands for domestic credit is revealed in figure 2 . It shows how the earlier errors of monetary emmission came to be replaced by classic inflationary commission.

Part 1 of this paper provides a detailed explanation of the money supply process in South Africa. In Part II a simple money supply model will be prepared and the evidence to support it presented. The conclusion will draw in the implications of the analysis for the future conduct of monetary policy.

The study provides an analysis of monetary developments in South Africa that differs from the official method. Some attempt however will be made to reconcile the alternative approaches.

PART I

An all-important monetary relationship is that between the money supply and what is called the money base, or more evocatively the high powered money of the system. The money base consists of the sum of coin, notes and other non-government deposit liabilities of the South African Reserve Bank. The coin, notes and privately held deposits (mainly commercial bank deposits) with the Reserve Bank constitute the cash reserves of the monetary system. The money supply is erected upon this foundation. The money base-money supply relationship, the money multiplier, depends on a number of factors. For example, the cash reserves banks prefer to hold and are required to hold against their deposit liabilities will in part determine this multiplier. The preferences of the public to hold either bank deposits or alternatively Reserve Bank notes also influence the multiplier as do their preferences for current rather than time deposits.[1/] The authorities therefore

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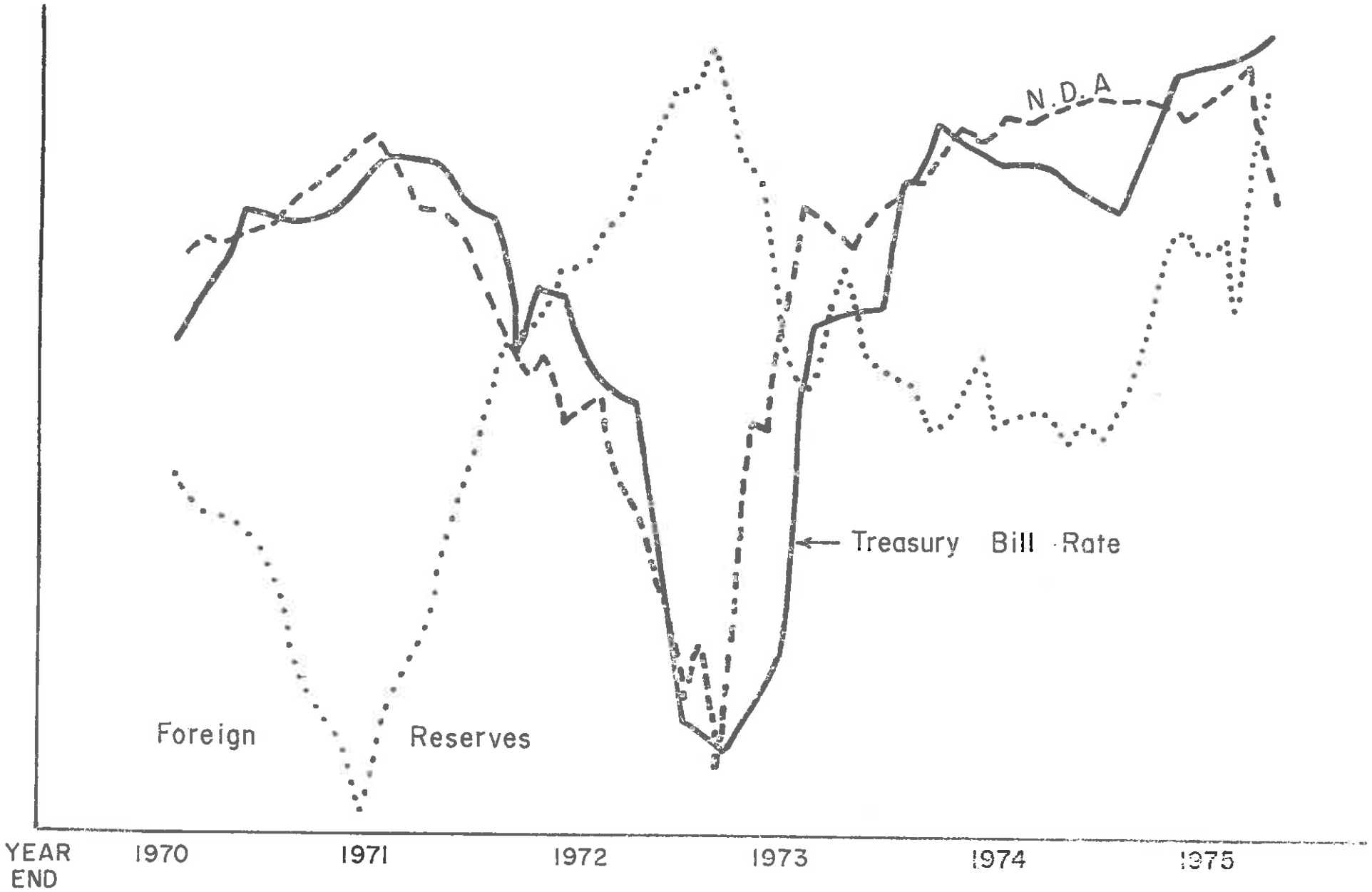
1/ See Karl Brunner and Alan H. Meltzer, Liquidity Traps for money, Bank Credit and Interest Rates, The Journal of Political Economy, January - February 1968.

The money base will have increased. When the balance of payments is unfavourable the banks will draw on the Reserve Bank for foreign exchange. The money base decreases. When the Reserve Bank buys securities from the public or the banks the deposit accounts of the commercial banks with the Reserve Bank will be credited. When the Reserve Bank sells securities commercial bank deposits will decrease. Similarly when the Treasury receives taxes or the proceeds of loan issues the government balance with the Reserve Bank increases while those of the commercial banks decrease. Accordingly the money base decreases. The opposite results occur when government spends. If the government balance is subtracted from the domestic securities held by the Reserve Bank one gets what is called the Net Domestic Asset position of the Reserve Bank, i.e. Money Base (MB) = Foreign Assets (FA) + Net Domestic Assets (NDA). It has not been thought useful to distinguish between those cash reserves the banks or discount houses acquire from the Reserve Bank (borrowed reserves) and these acquired by running down excess liquid assets or via open market operations.

The money base over any period responds to changes in the sum of the foreign assets and the net domestic assets of the Reserve Bank. As suggested previously when the money base increases the money supply will tend to increase unless the banks prefer to hold excess cash reserves. However the causation may well run the other way because of the opportunities the discount houses and banks have to borrow from the Reserve Bank. If the money supply expands independently of the money base the banks will require extra cash reserves to meet their required cash reserve ratios. To do so the banks may recall funds from the discount market and the discount houses may in turn approach the Reserve Bank for additional assistance. If the Reserve Bank supplies additional reserves in this way or if the banks and discount houses start reducing their holdings of Treasury Bills and other government securities and by their doing so redemptions of government debt exceed new debt issues, the government balances at the Reserve Bank will decrease and the money base will increase. In such circumstances changes in the money supply will have led changes in the money base. Clearly, if the Reserve Bank did not provide extra reserves in


N.D.A
Treasury Bill Rate
Foreign Reserves
YEAR END
1970
1971
1972
1973
1974
1975

the Reserve Bank and net domestic assets will automatically increase. Again the degree of pressure on the net domestic assets position will depend on the simultaneous bouyancy of demand for bank credit. The stronger the demand for bank overdrafts the higher the level of market interest rates and the greater the tendency for net domestic assets to expand. Again the increase in NDA may be smaller or greater than the decrease in reserves.

These are some of the automatic effects. On the other hand the impact of changes in reserves on net domestic assets will also depend, as intimated, on the relationship between the costs to the banks of acquiring or holding additional liquid reserves, and the returns to be gained from other kinds of bank lending. The costs to the banks of holding liquid reserves or acquiring additional reserves is reflected in the rate of interest obtained on liquid assets or implicitly by the rate charged by the Reserve Bank for accommodation. If the borrowing from the Reserve Bank is undertaken by the discount houses after the banks have recalled funds from them, this will be reflected in the discount houses call-rate.

The importance of the interest rates available on liquid assets and the rate charged by the Reserve Bank relative to the returns available from additional other bank lending should be apparent. The greater the differences between the cost of and the returns from additional bank lending to the private sector the faster, it may be assumed, will tend to be the rate of expansion of the money base.

These differences in interest rates will be maintained if the interest rates on liquid assets, controlled by the authorities, do not respond to changes in the conditions effecting market demands for and supplies of funds. In an upswing phase of the business cycle, associated as it will be with additional demands for credit, any tendency for these rates to lag behind will cause the money base to expand procyclically. Notice in figure 4 how the Treasury Bill Rate came to lag behind the market determined, negotiable certificate of deposit rate in 1972 and 1973. In the downswing phase, as market rates approximate official rates more closely, the tendency to repay the Reserve Bank

relationship between local and foreign interest rates. With the expansion of the money supply, and unless the demand for funds continued to increase proportionately (or more than proportionately), local interest rates would tend to fall. Depending then further on the trend in credit markets abroad, any relative decline in local interest rates will influence the capital account of the balance of payments. If conditions unattractive to foreign borrowing persist the balance of payments will sooner or later turn around.

Let us assume at a further stage in the cycle that the balance of payments then becomes unfavourable. As the foreign reserves decline the net domestic assets of the Reserve Bank increase and the ultimate effect on the money base will then depend on the inverse relationship between them. The net effects on the money base therefore will come to depend on the demand for funds in the economy and the opportunity costs to the banks of lending to the private sector. If the demands for funds remain bouyant and the official interest rate structure remains unchanged net domestic assets will expand relatively quickly, local interest rates will remain low, and no adjustments to the changed balance of payments situation by way of reductions in the money supply will have been effected.

If the balance of payments deficit continues, sooner or later, the authorities out of their concern for fixed exchange rates will take action. They may tighten exchange and import controls. If such measures prove inadequate they would be forced to adjust their interest rate structure. Official interest rates will then be increased. Consequently local free market rates will tend to rise relative to foreign rates. If official rates rise relative to other local interest rates and local rates rise relative to foreign rates, these adjustments will serve to take the pressure off, firstly, the net domestic assets position, thereafter the money supply, and subsequently the balance of payments.

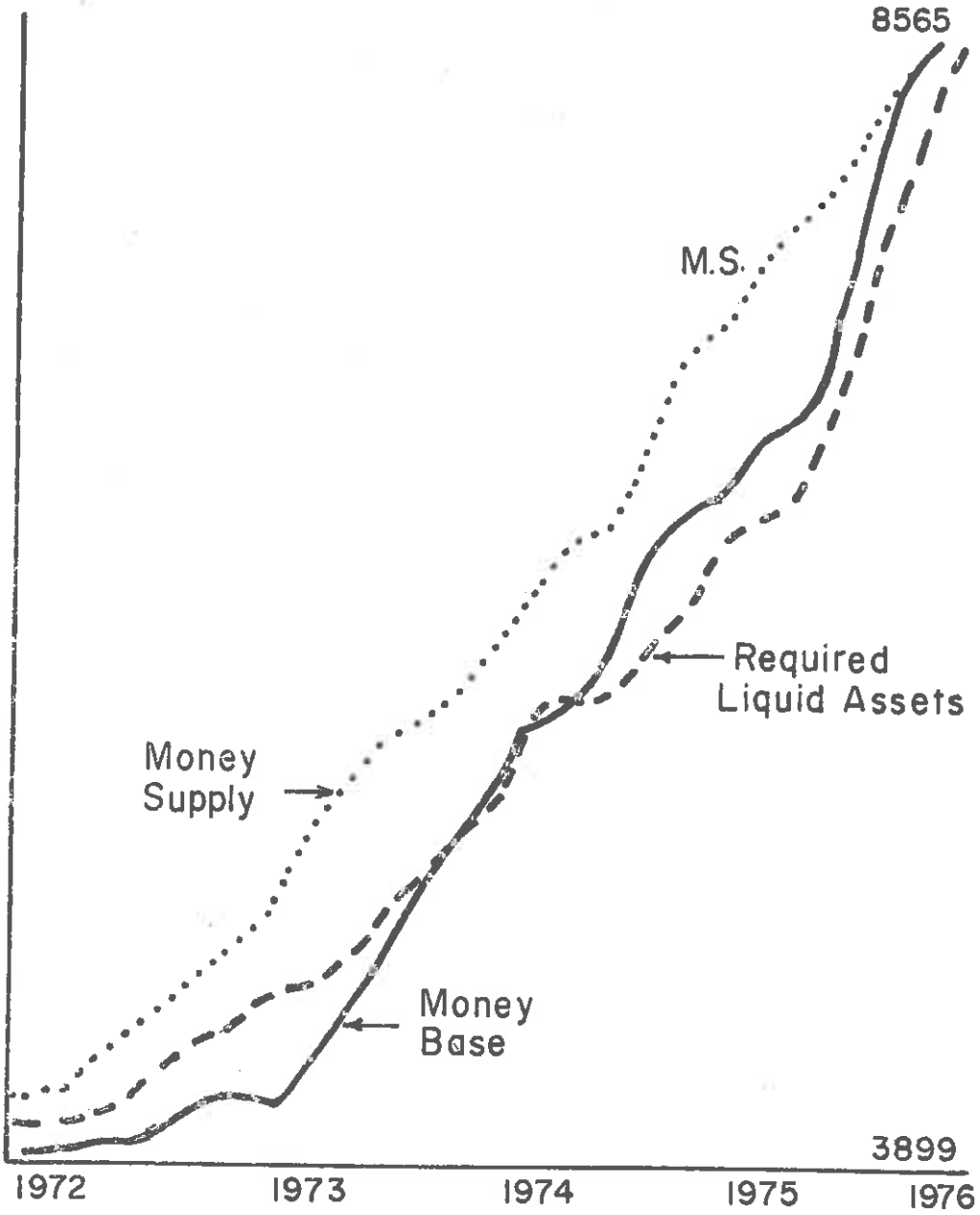
In this way, out of concern for the balance of payments and by way of the adjustments made to interest rates, the money supply will have

and other special approved securities in their portfolios with the effect of guaranteeing a minimum demand for government securities independently of the rate of return offered. The requirement of banks to hold minimum and variable minimum proportions to deposits of "liquid" assets form an important part of the captive market. By calling for increased minimum holdings of liquid assets the authorities may avoid, as the assistance of the captive market may generally help avoid, increases in the money base as a method of financing government expenditure.

Our monetary analysis has given comparatively little attention to the banks liquid asset ratio. The monetary authorities however, as has been mentioned, do pay particular attention to the liquid asset ratios of the banks of which the cash ratio is a part. We will now attempt to show how the effect of changes in required liquid asset ratios may be easily reconciled with the money base analysis.

Any extra demands for liquid assets by the banking system, whether induced voluntarily, or acquired under compulsion of increased liquid asset ratios, have the same effect on the net domestic asset position of the Reserve Bank. The net effect is an increase in the exchequer balance with the Reserve Bank and so a decline in net domestic assets. The same results would follow from any net increased demands for government securities of whatever kind.

It is, however, very important to make the distinction, a distinction that is seldom made in the South African monetary context, between actual, required and desired liquid asset holdings. It should be noted that any required holdings of liquid assets are not really liquid in the proper sense of that term. Since the banks are required to hold them they cannot be sold and used for any other purpose. The banks are therefore locked into their required liquid asset holdings. If the bank wishes to preserve some portfolio flexibility it would have to hold genuinely liquid assets in excess of the required asset holding. Therefore actual liquid asset holdings at any moment in time are usually in excess of required liquid assets and may be greater



3 Month moving average, to same scale

Money supply R3899 in 1972
" " R8565 " March 1976

One important part of any explanation of the banks demand for excess liquid assets would be their consequent ability to satisfy extra demands for overdrafts. If such demands are met automatically the banks' liquid asset holding decline and the Treasury balance decreases. The money base accordingly increases. It is such a possibility, inherent in banks holdings of excess liquid asset reserves, that so excite the concern of the authorities. Nevertheless the authorities cannot prevent the banks holding such reserves. What the authorities are able to do is to make such excess holdings more attractive, either by periodically calling for extra required liquid assets or, less directly, by raising the rate of interest paid on government securities, including Treasury Bills. In addition the Reserve Bank may make its own borrowing and rediscounting facilities more costly so as to discourage reliance upon them. It should be understood therefore that excess liquid assets by no means necessarily imply inflationary increases in the money supply. It is only any excess of actual over desired liquid assets that have this implication. The banks excess liquid asset position indicates the degree of excess demand for bank credit. When excess liquid assets fall demands for credit are abnormally high. Similar indications are provided by the NCD - Treasury Bill differential.

Financing government expenditure by means of Treasury Bills or indeed even non-interest bearing government debt is not necessarily inflationary or even necessarily more inflationary than financing the same expenditure by issues of long term debt. If the extra holdings of Treasury Bills are voluntarily held there need be no further repercussions for the system. It is only the actual not potential attempts to switch out of liquid assets that other things equal will increase the money base and the money supply. The role that needs to be played by appropriate interest rates to discourage any revealed preference for private sector rather than government sector lending is obvious. We have explained that it has usually been pressure from the balance of payments that has promoted a changed structure of interest rates with consequent effects for the money base and the money supply.

The discussion presented above clearly departs from the method of monetary analysis provided by the South African Reserve Bank. The Reserve Bank does not offer an account of the money base and its determination or

between the money base and the money supply. This equation is added for the purpose of justifying the attention given to the money base. It is not meant to imply cause and effect. As was indicated above this may well run from demands for bank credit to money supply and then to money base.

The model consists of four equations and one identity.

$$MB = R + NDA \quad (1)$$

$$R = f((i-i^e), R_{-1}) \quad (2)$$

$$NDA = f(R, gd, (i-i^t)) \quad (3)$$

$$i^t = f(R, i, (i-i^t)) \quad (4)$$

$$MS = f(i, i^t, Y, MB) \quad (5)$$

Where

MB = Money Base

R = Foreign Reserves of the Central Bank (including gold)

R_{-1} = Reserves at the end of the previous period

NDA = Net Domestic Assets

i = South African free market interest rates

i^e = foreign interest rates

gd = government deficit

i^t = South African target or controlled interest rates

MS = Money Supply

Y = the level of economic activity

The equations represent the general form of the model. After experimentation the specific forms of the equations presented below were adopted. These equations incorporate some simple one period lags. The data used to estimate the model was very short term, monthly data. Weekly data might be even more accurate a reflection of the speed of policy reactions.

The explanations for the relationships between the dependent and independent variables of the equations were provided extensively in Part I. We include a brief resumé of the previous discussion below emphasizing those assumptions that may require further elaboration.

The 'target' or government controlled interest rates are assumed to vary inversely with the level of Reserves positively with the level of free market rates and negatively with the free market-controlled interest rate differential. We found a consistent and statistically significant negative relationship between the target interest rate and the target-free market interest rate differential. These relationships perhaps requires some further explanation. There are two possible explanations for an increase in this differential. The differential may increase either because the private non government demands for finance have increased or because the supply of funds to satisfy private demands have been reduced. The latter would appear to be the correct explanation. An increase in the differential appears to reflect an unexpectedly large flow of funds to the Treasury and a consequent shortage of cash reserves for the banking system. This larger flow seems to encourage the Treasury to reduce the Treasury Bill rate. Similarly a reduction in the differential may reflect an unexpectedly large outflow from the Treasury balances and may therefore require increases in the official rates to restore the preferred flows of funds.

The differential may also therefore reflect unexpected changes in the banks required liquid asset holdings. If these are larger than were expected the banks may have to bid more actively for cash to satisfy the ratios so forcing up market rates. Similarly if the banks were required to hold fewer liquid assets than they expected to have to hold market rates would tend to drop.

The money supply equation is a modification of the standard money multiplier equations.

$$MS = K. MB$$

Where K is the money multiplier. This specification has been evolved by Brunner & Meltzer [1] K being considered functionally related to interest rates, reserve requirement ratios, economic activity, etc.

1/ (op cit.)

R^2 = Coefficient of Determination
D.W.= Durbin Watson Statistic
S.E.= Standard Error of the estimate
n = number of observation points used

The following four regression equations show the Ordinary Least Squares (OLS) results for the four equations of the model:

$$R = \underset{(-1,18)}{-0,400609} + \underset{(2,5144)}{0,065446} \cdot (i-i^e)_{-1} + \underset{(22,7102)}{1,04131} \cdot R_{-1} \qquad (1A)$$

(R^2 = 0,9175; SE = 0,07721; DW = 1,506; n = 64)

$$NDA = \underset{(0,3942)}{0,50503} - \underset{(-14,788)}{1,9619} \cdot R + \underset{(11,0545)}{2,1857} \cdot gd_{-1} + \underset{(2,5475)}{0,10199} \cdot (i-i^t) \qquad (1B)$$

(R^2 = 0,82755; SE = 0,20436; DW = 0,497; n = 65)

$$i^t = \underset{(1,022)}{0,40619} - \underset{(-3,4379)}{0,16809} \cdot R_{-1} + \underset{(18,3519)}{1,2939} \cdot i_{-1} - \underset{(-13,3964)}{0,38969} \cdot (i-i^t)_{-1} \qquad (1C)$$

R^2 = 0,90161; SE = 0,03734; DW = 0,986; n = 64

$$MS = \underset{(4,0976)}{0,46963} + \underset{(9,2541)}{0,43916} \cdot MB + \underset{(19,870)}{0,7056} \cdot Y_{-1} - \underset{(-2,7979)}{0,034989} \cdot i \qquad (1D)$$

(R^2 = 0,9920; SE = 0,02413; DW = 0,821; n = 65)

Considering the Durbin-Watson statistics we find that for n = 60, at the 95% significance level the following significance points apply:

k = 2		k = 3	
dL	du	dL	du
1,51	1,65	1,48	1,69

Where k = number of explanatory variables
dL = lower significance bound
du = upper significance bound

This indicates that all equations show significant positive first-order autocorrelation. However, for equation 1A, it should be noted that the use of the Koyck lag invalidates the strict use of the DW statistic.

An analysis of the autocorrelation is undertaken below.

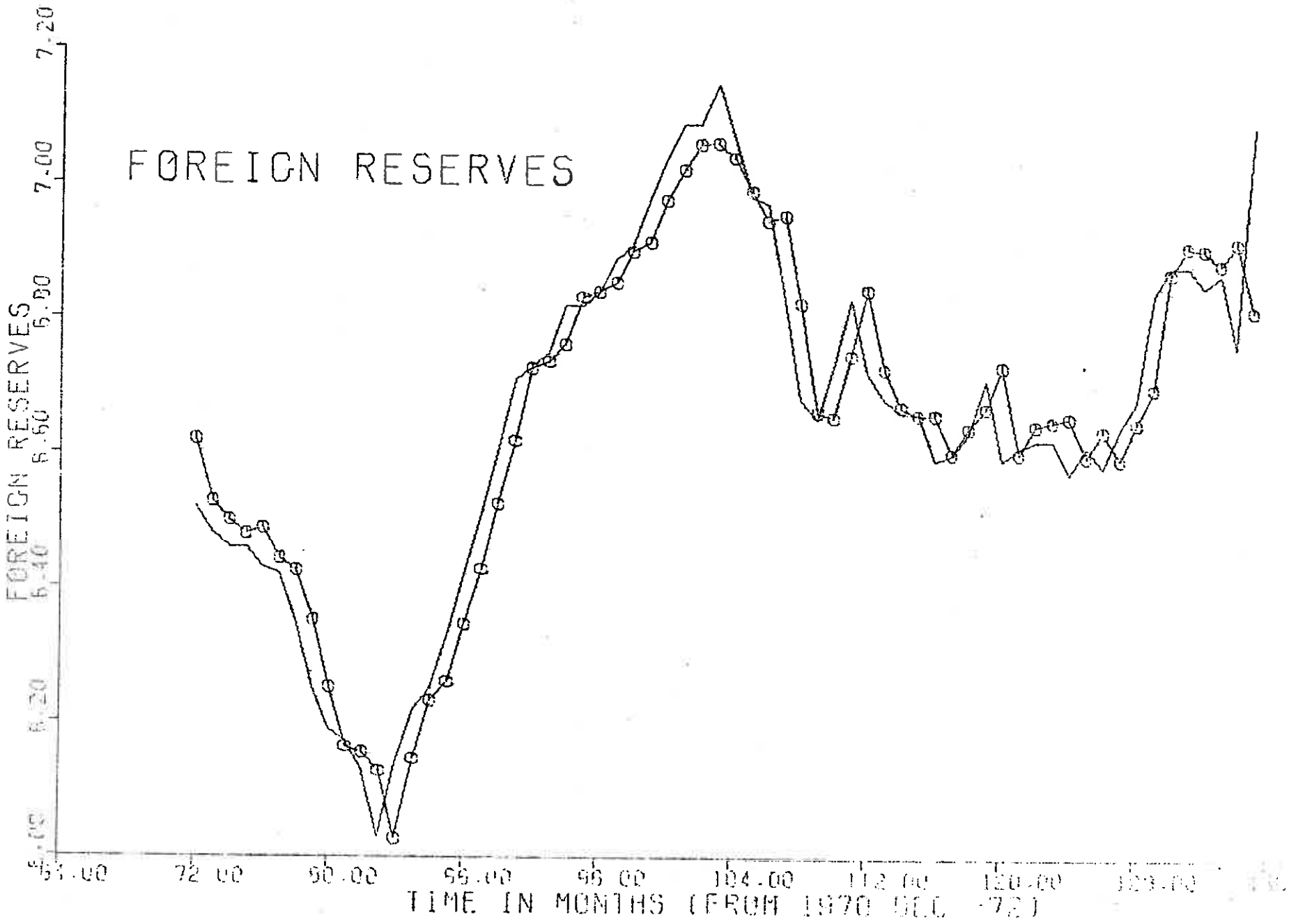
A further feature of concern is the evidence of possible multicollinearity in equations 1C, 1D and 1E, as evidenced by the following correlations:

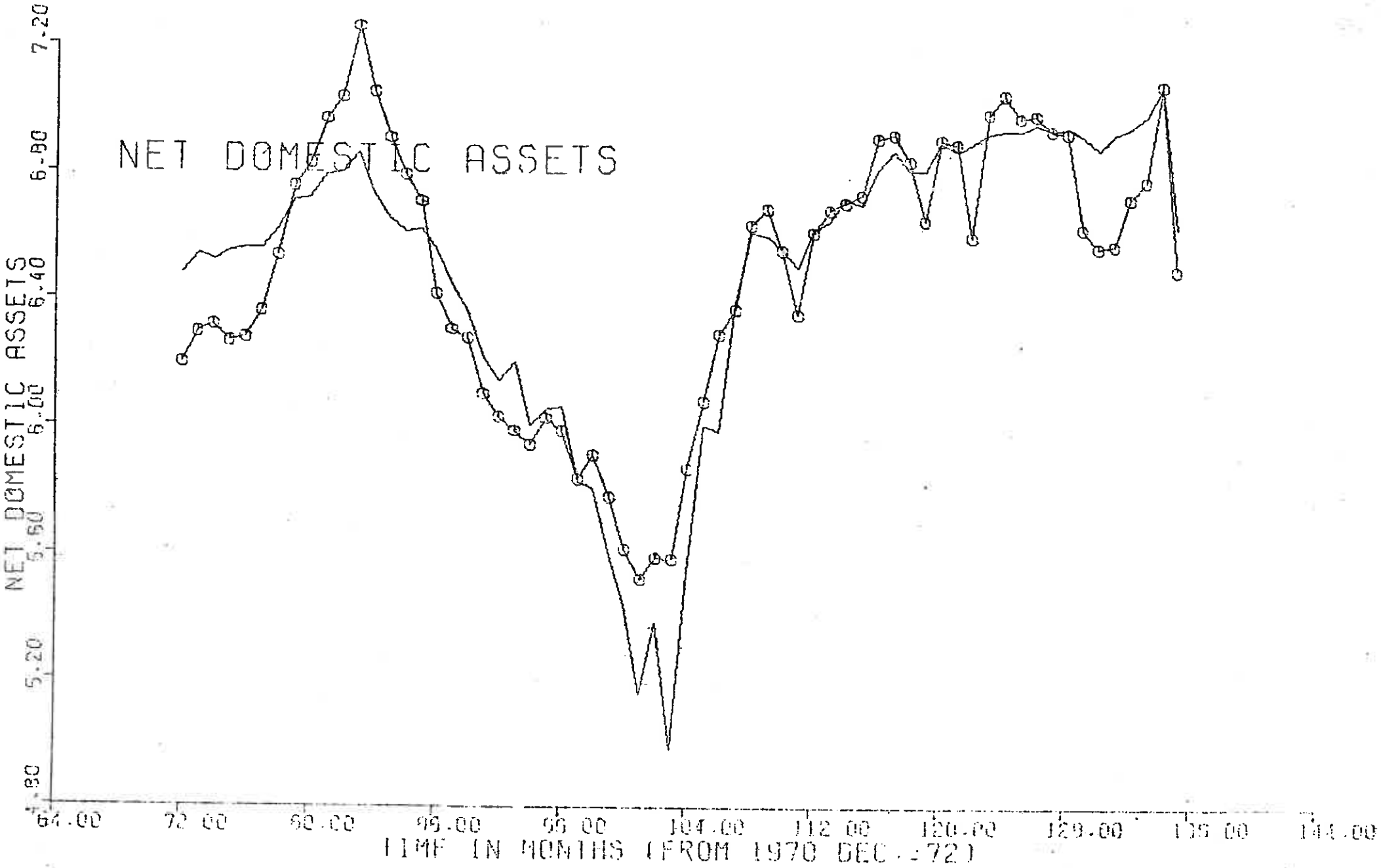
(i) between i_{-1} and $(i-i^t)_{-1}$ = 0,906

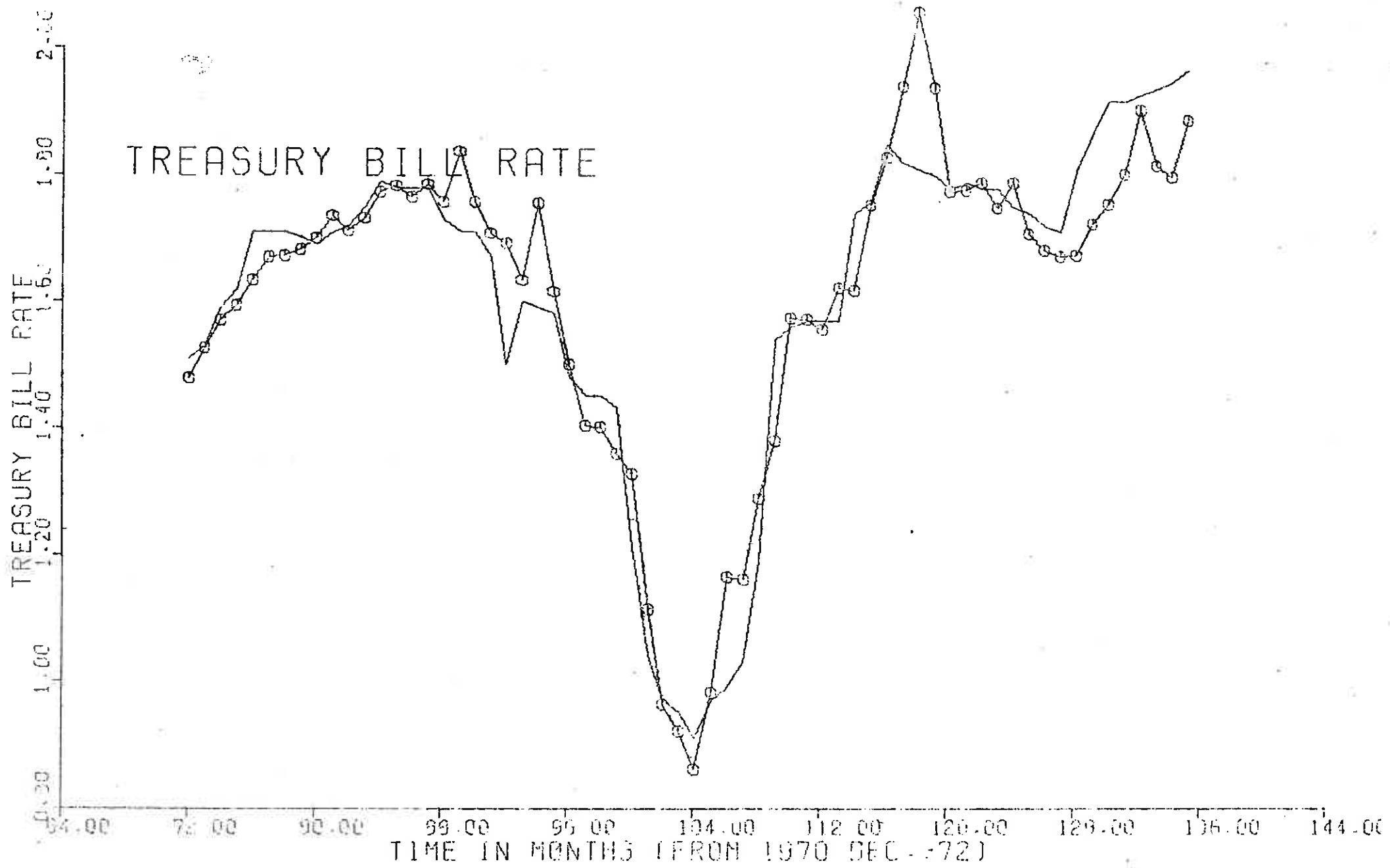
(ii) between MB and Y_{-1} = 0,935

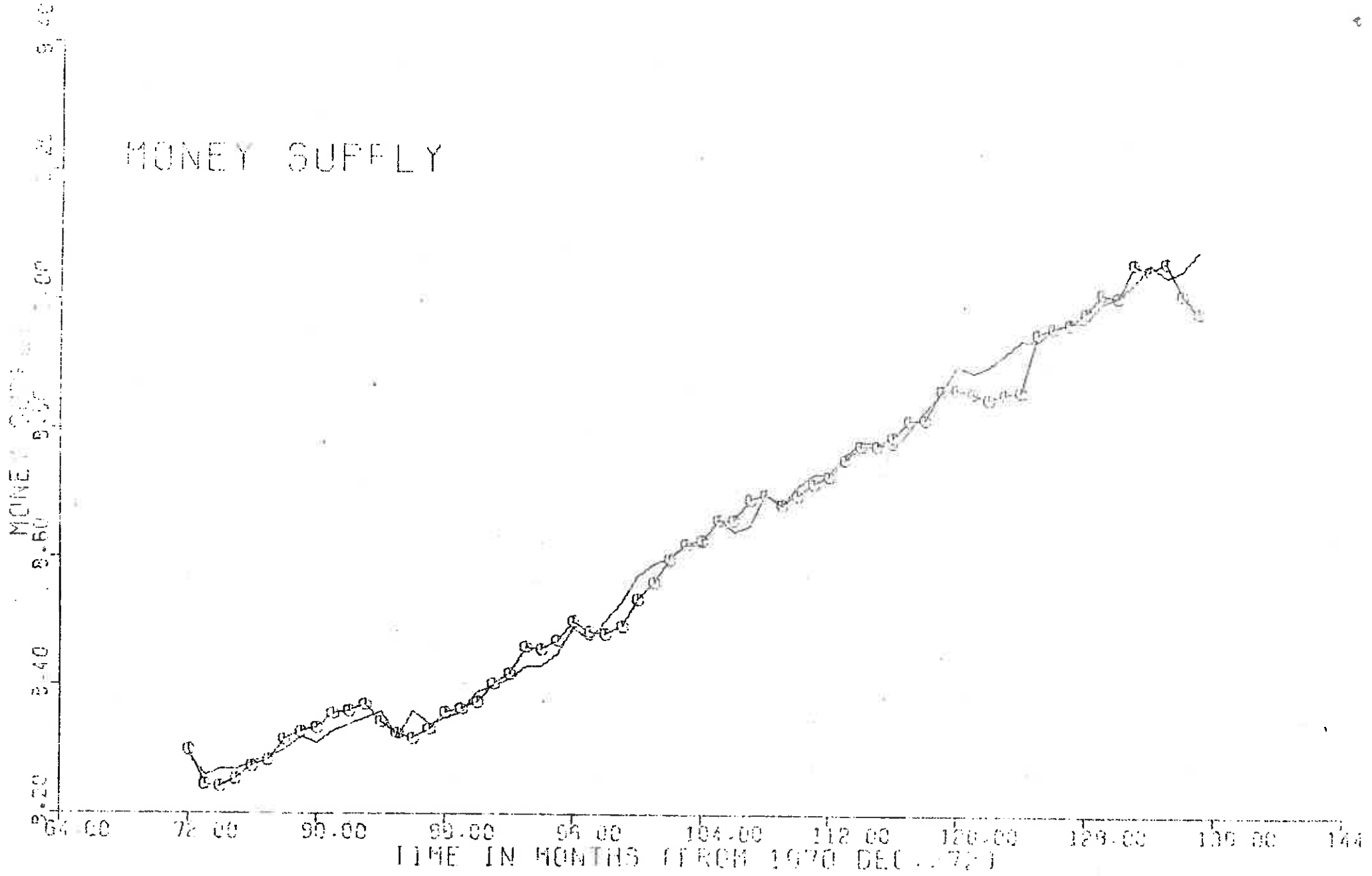
As will be shown below, however, these high correlations do not affect the regression estimates.

The period for our first regressions was 1971 to 1974. This was chosen because of the unavailability before this of short-term market-determined interest rates. Given the greater degree of exchange rate flexibility


FOREIGN RESERVES
FOREIGN RESERVES
7.20
7.00
6.80
6.60
6.40
6.20
72.00
88.00
96.00
104.00
120.00
TIME IN MONTHS (FROM 1970 DEC -72)


NET DOMESTIC ASSETS
NET DOMESTIC ASSETS
7.20
6.80
6.40
6.00
5.60
5.20
4.80
72.00
88.00
96.00
104.00
112.00
120.00
128.00
136.00
144.00
TIME IN MONTHS (FROM 1970 DEC. =72)


TREASURY BILL RATE
TREASURY BILL RATE
1.00
1.20
1.40
1.60
1.80
2.00
84.00
72.00
90.00
96.00
104.00
112.00
120.00
128.00
136.00
144.00
TIME IN MONTHS (FROM 1970 DEC.=72)


MONEY SUPPLY
3.40
72.00
96.00
104.00
112.00
120.00
128.00
144
TIME IN MONTHS (FROM 1970 DEC.)

MULTICOLLINEARITY

A s indicated above, it is possible that collinearity between explanatory variables is producing unstable estimates 1C, 1D and 1E. With this in mind the coefficients of equations 1C and 1D were re-estimated, this time using a technique known as Explicit Ridge Regression [1] that eliminates the effects of multicollineanity. A computer program developed to undertake this type of estimation was applied: [2]. The results were as follows:

$$i^t = 0{,}4031687 - 0{,}1648 \cdot R_{-1} + 1.28744 \cdot i_{-1} - 0{,}3864 \cdot (i - i^t)_{-1}$$

$$MS = 0{,}4960655 + 0{,}4484 \cdot MB + 0{,}6926 \cdot Y_{-1} - 0{,}03237 \cdot i$$

It is immediately obvious that the coefficients do not differ materially from the OLS coefficients; (t-statistics were not available). It is not clear whether the TSLS coefficients of 1E are being advesely affected by multicollinearity, but because the R^2, DW and SE statistics are more favourable in the case of 1D than in 1E it was decided at this stage to accept the OLS results as being more accurate.

AUTOCORRELATION ANALYSIS

The OLS and TSLS results, equations 1A to 1F, indicate significant autocorrelations with respect to the NDA, i^t and MS specifications. It is the purpose of this section to examine some possible models of autocorrelation and to try and eliminate these effects from the regressions. The effect of autocorrelation is to give inefficient, though unbiased, estimates of the coefficients.

1/ Hemmerle, W.J. "An Explicit Solution for Generalised Ridge Regression" Technometrics 1F, (1975) pp. 309 - 314.

2/ Explicit Ridge Estimation Program written by Patrick Wong Fung; Department of Mathematical Statistics, University of Cape Town (1976).

$$MS = \underset{(2,848)}{0,607} + \underset{(5,562)}{0,4275} \cdot MB + \underset{(11,448)}{0,694} \cdot Y_{-1} - \underset{(-1,0268)}{0,020} \cdot i \qquad (2D)$$

($\bar{R}^2$ = 0,992; SE = 0,022; DW = 1,920; n = 59; $\hat{r}$ = 0,54).

Comparing these with the previous OLS results we note that good explanation is again achieved; no signs change, and all significant OLS coefficients remain significant (except for i_{-1} in the MS equation). Furthermore, the first-order iterative regression has elimated significant autocorrelation.

On the other hand the size of the regression coefficients in the two equations with high estimated r (ie. 2B and 2C) have altered noticeably. Because of this , it was decided to make further investigations into the nature of the residual correlation. The AUTO package provides a facility for specifying a "second-order" scheme (ie. $u_t = r_1 u_{t-1} + r_2 u_{t-2} + e_t$), and various (r_1, r_2) combinations were tried out for the NDA and i^t specifications

The 2nd order results did not however alter the first-order conclusions substantially; The $\bar{R}^2$, DW and SE statistics did not improve dramatically (in fact the first-order results appear to eliminate autocorrelation entirely). Furthermore, most of the 2nd order regressions showed consistency with the 1st order results in regions of high $\bar{R}^2$ and low SE's; for example, with $r_1 = 0_1 90$, $r_2 = 0,20$:

$$i^t = \underset{(3,405)}{3,5106} - \underset{(-2,93)}{0,393} \cdot R_{-1} + \underset{(2,84)}{0,435} \cdot i_{-1} - \underset{(-2,516)}{0,132} \cdot (i-i^t)_{-1}$$

($\bar{R}^2$ = 0,939; SE = 0,068; DW = 1,987; n = 58).

and, with $r_1 = 0_1 70$, $r_2 = 0,10$:

$$NDA = \underset{(1,95)}{4,6334} - \underset{(-8,16)}{1,488} \cdot R + \underset{(4,16)}{1,342} \cdot gd_{-1} + \underset{(3,00)}{0,132} \cdot (i-i^t)$$

($\bar{R}^2$ = 0,933; SE = 0,127; DW = 1,748; n = 58).

The negative association between net Reserves and interest rates over this period would surely be sustained.

The instability of the NDA equation has always been problematic

The disadvantage of having to estimate NDA as a residual, (i.e. MB - R), rather than measure it directly means that we are excluding from it factors which may be important, eg. 'Other Liabilities' in the Reserve Bank balance sheet (see Appendix I); ('Other Liabilities form on average about 10% of Total Liabilities).

The Money Supply equation is, as mentioned above, a highly simplified form of the Brunner-Meltzer (2) type model; implying causation from MB to MS; as suggested previously the causation may well be the other way.

The model that we have presented has the advantages of simplicity, and high explanatory power. As we have noted however this specification should be looked upon as a very useful first approximation to any future attempt to build a more realistic monetary model. A model incorporating dynamic partial adjustment mechanism would be a more realistic approach.

An additional improvement would be gained by an appropriate integration of the demands for and supplies of money base, money supply and bank credit.

CONCLUSION

The degree of independence of South African monetary policy from balance of payments considerations has been nominal despite the panoply of exchange and import controls with which we have attempted to insulate ourselves. The South African economy has remained an extremely open one which is inevitable given the extent to which the economy engages in foreign trade and depends on imports of foreign capital. The study indicates that official preferences for relatively stable exchange rates cannot necessarily prevent inflationary monetary developments. That, on the contrary, international monetary developments to which fixed exchange rates provide a direct link may prove highly inflationary as indeed they have done in other periods of South African monetary history particularly during the World Wars. 1/ The only way in

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1/ See Brian Kantor, The Evolution of South African Monetary Policy, The South African Journal of Economics, March 1971.