

## MONETARY POLICY IN SMALL OPEN ECONOMIES

by

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There are three objectives a central bank in a small open economy may address with monetary policies:

1. If the current account of the balance of payments is too weak or deteriorating too quickly it will be necessary to increase saving and reduce consumption. The current account deficit is financed by the use of foreign saving; in order to reduce it, domestic savings must be increased.
2. If the central bank is creating an excess demand for money by lending too much to government it is necessary to divert credit from the private sector to government.
3. If there is too rapid a build-up of net foreign assets by the private sector the central bank must provide an inducement to switch from foreign to domestic assets.

To achieve its objectives the central bank has the following instruments available to it. It may change the interest rate on its temporary advances to banks and to

other financial institutions which have accounts with the central bank. That rate is usually known as the discount or bank rate. It may purchase or sell government securities from its own portfolio or issue or redeem its own obligations. It may stipulate mandatory limits on credit outstanding with banks and other financial institutions under its jurisdiction. It may change requirements for banks and other financial institutions to hold cash reserves and liquid reserves. And it may set or change one market interest rate such as the minimum interest rate on deposits, the prime rate or the average rate on deposits or loans.

Except for credit limits these are all market-oriented measures intended to affect the profitability of banks and other financial institutions. Banks are expected to respond to the erosion of profit by adjusting their interest rates to the public. As we shall see, it is this ensuing change in the interest rate and the public reaction to it which determines whether the central bank's initiative has the desired effect.

Non-market intervention by the central bank has not been successful in small open economies. For this reason, no interventionist policy other than global credit limits is considered. Because of the fungability of money and widespread facilities for foreign exchange transactions, selective credit controls, foreign exchange

rationing, special deposit requirements and similar instruments are easily evaded and nullified. We shall argue that the same is true, given time, of global credit limits and that they are useful only in the short period. Efforts to restructure interest rates, for example by reducing what are generally thought by economists - but not by bankers - to be unusually wide margins between deposit and lending rates in the developing world, also seem doomed to fail and are not included among the instruments to be discussed.

In order to anticipate banks' reaction to central bank initiatives we must have a notion of their strategy. Banks' objective is to increase their profit and market share, not by increasing loan rates or reducing deposit rates, but by advertisement, incentive schemes, adding services such as credit cards and ATMs, user charges and other non-interest rate policies. Interest rate levels and the relationship between interest rates on bank liabilities and bank assets remain unchanged unless the banks receive some signal that economic circumstances have changed, for example, a significant change in foreign interest rates, a change in the central bank's discount rate, a jump in the public sector's borrowing requirement or a loss of foreign exchange reserves.

In other circumstances, interest rate inertia prevails. Banks satisfy the demand for credit from all credit-worthy customers to the limit of their resources. For large credit worthy customers they may borrow abroad if the finance they raise locally is insufficient. An increase in loan demand brings no increase in loan interest rates since banks have no interest in deterring good customers and they will not lend to those who do not meet their credit criteria, whatever the rate. With no increase in loan interest rates there will be no change in deposit interest rates. If any funds remain after banks have satisfied qualified customers, they are invested in government securities and other official obligations save only the minimum required to satisfy the cash reserve requirements set by the central bank. Unlike big banks in large economies there is no incentive to hold excess cash reserves of any significance. In case of unexpected cash reserve deficiency banks sell government securities to the central bank or borrow abroad temporarily. The occasions when cash flows are interrupted by transactions large enough to require such adjustment are infrequent and predictable - usually debt service payments and payments for products delivered in bulk such as fuel, cereals and motor vehicles. It is therefore not necessary to hold excess cash for contingencies.

If any bank's expected profit is above its target no action is taken. The bank will allow profits to rise so long as other banks take no action. If the expected profit is below target by more than an unknown percentage the bank will raise charges, make economies, increase penalties on late payments and take other action of this kind. There will be no increase in interest rates or in the interest rate spread unless other banks also find themselves in a similar situation of declining profits. The banking sector in a small open economy acts as an oligopoly with the understanding that interest rates will move together at all major financial institutions. Small financial institutions lacking in credibility may deviate from the interest rate norms to compensate for the public's reluctance to do business with them. That is virtually unnoticed in the system. Within the overall interest rate structure there are always special interest rates for favoured customers but these will be tied to the prevailing market norm.

From time to time the financial system is disturbed by maverick behaviour of a major financial institution, perhaps a new entrant or an established entity under new ownership or management. A period of great uncertainty then ensues with a wide range of deposit and loan interest rates and the possibility of an interest rate war. In these circumstances, monetary policy becomes impossible since banks'

reaction to any central bank initiative cannot be foreseen. The central bank has no option to sit it out until the major players in the market arrive at an understanding. The central bank's only role under the circumstances is to facilitate that process.

The central bank exerts policy using instruments which affect the profits of all banks. The efficacy of policy depends on the magnitude of the impact and the cost of the options open to banks. If the central bank action increases profit there may well be no action whatever, even if the increase is substantial. Moral pressure brought to bear by an informed public opinion is the only curb on the growth of bank profits. If the central bank policy reduces profits only slightly there may also be no reaction. However, if the decline in profits threatens to be considerable the banks will either switch between foreign borrowing and domestic deposits (for their sources of funds) or expand or curtail lending to the private sector. Which strategy is chosen depends on opportunity costs: that is, how much the bank stands to lose compared with the alternative. The opportunity costs of borrowing abroad are the foreign currency transactions costs that must be covered. The opportunity costs of cutting back on credit are what are known as "switching costs". If the foreign currency transactions costs are lower than the switching costs, banks will

tend to borrow abroad rather than raise loan interest rates to ration the demand for credit. If the foreign currency transactions costs are greater the reverse will be true.

Foreign currency costs include margins on foreign exchange conversions and telecommunications costs as well as the costs of insuring against any risks of currency depreciation. Switching costs are more subtle. They are the costs of alienating good customers with whom the banks have invested time in building a dependable relationship. Penalizing these customers with high interest rates may result in a loss of business to non-bank financial institutions or to foreign financial institutions. If a bank, faced with the rising cost of funds because of central bank action, prefers to borrow abroad to lend to creditworthy customers rather than raise his loan rate, we may infer that switching costs are greater than foreign currency costs.

The third category of player whose behaviour determines the outcome of central bank policy is the non-financial private sector. As a result of banks' reaction to central bank action the private sector is faced with an increase in interest rates or a credit limit. The reaction to an increase in interest rates depends on whether it

is thought to be temporary or permanent and how large it is. If the increase in the interest rate is thought to be temporary the private sector may postpone expenditure. In this case, the interest rate has a short-term effect on expenditure which disappears in the medium-term. This change in expenditure patterns over time will not be observed if the change in interest rates appears to be permanent. A small change in interest rates is unlikely to have a measurable impact on expenditure or on demand for credit. The profit margins of firms and the credit capacity of households will not be sufficiently affected. In the Caribbean, "small" in this context is in the region of two percentage points. It varies, though it is usually more than this in other developing countries.

A large increase in loan interest rates may cause a significant response by households - most importantly, a decline in the demand for mortgages and a consequent fall in house construction. There is unlikely to be any change in the demand for other credit but the credit available will finance a smaller real value of expenditure because of the higher interest costs. That, in effect, represents an increase in the price of consumer goods financed by credit. Firms faced with rising interest rates may borrow abroad through increasing their trade credits or raising foreign loans directly. Firms in the non-tradable sector which do not face

foreign competition may raise the product prices in order to cover the additional finance costs. But firms in the tradable sector are unable to do likewise because of the danger of losing custom to foreign competition. They may therefore reduce their output to achieve lower cost per unit and they may also cut back on investment. The relative significance of these effects is an empirical matter.

The burden of these observations is that a large increase in deposit interest rates is unlikely to affect consumption even though consumers may economize on their use of credit and accumulate deposits a little more quickly so as to take advantage of the interest rate. Households may switch to non-bank financial institutions and other forms of informal credit if these institutions do not respond with similar increases in interest rates. Firms will, on balance, use more foreign trade credit and other foreign credit and keep higher local deposit balances. There may also be short-term capital inflows. Consumption may be postponed if the deposit interest increase is expected to be temporary (and funds placed on deposit to earn a windfall) but there is no permanent increase in savings.

The motive for saving is quite different from the motive for financial accumulation. Savings are held for precautionary purposes, for insurance against

contingencies and for targetted expenditures on durables. A permanent increase in deposit interest rates may well see a decline in savings because expenditure targets or a targetted amount of insurance cover are achieved sooner, so long as there is no acceleration in inflation as a result of the higher interest rates. (Cheryl-Ann Cumberbatch, whose recent paper 'A Model of Inflation in Barbados' analyses the evidence for 1964-1993, finds that interest rate increases have an infinitesimal effect on prices in Barbados.) The motives for financial accumulation are capital gains and windfalls from high interest rates. Interest rate changes therefore provoke switches between financial accumulation at banks and non-bank institutions as well as between local and foreign financial instruments.

#### Monetary Policy and Expenditure Switching<sup>1</sup>

Consider the options open to a central bank in a small open economy where consumption is too high and saving is too low. Will any of the monetary instruments at the central bank's disposal help to raise the savings rate?

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<sup>1</sup>Analysis of the three objectives of monetary policy is described in this and the following two sections, and shown schematically in Tables 1-3.

An increase in the central bank's discount rate has no effect. Emergency borrowing from the central bank is too rare an event to reduce profits below the threshold where banks need to take corrective action.

The central bank may offer for sale to banks its own securities or government securities from its portfolio. If the discount taken by the central bank is modest there are unlikely to be any sales since banks typically have no free cash reserves. The discount must be large enough that banks will increase their profits significantly if (a) they borrow abroad to buy securities from the central bank or (b) they raise the loan interest rate sufficiently to reduce the demand for credit by the private sector thereby making available financial resources for purchase of government or central bank securities. There is a danger of policy failure at this point. The amounts offered for sale are often small in relation to the average bank's portfolio of assets. A very large premium must be offered to make it worthwhile to switch into official securities. Modest premiums may offer only a small increase in profits, insufficient to persuade banks to take action.

If the volume of open market sales and the discount taken by the central bank are sufficiently attractive the efficacy of policy hangs on the relationship between

foreign currency costs and switching costs. There is a chance of success only if banks prefer to ration domestic credit through the loan interest rate rather than borrow abroad. Where banks decide to raise the loan interest rate by a large amount we may expect, following the discussion earlier, a significant fall in the demand for mortgages and a fall in house construction. This is both a fall in savings and in investment. We may also expect a fall in the real value of consumption goods financed by bank credit. Firms may replace domestic borrowings by foreign borrowings such as trade credits. There may also be some inflation in the non-tradable sector and a possible decline in output in tradables.

If the central bank chooses to impose a ceiling for global credit to the private sector it cannot, as a practical matter, insist on an amount lower than the credit outstanding less reflows to the banks on that credit. That amount may be insufficient to have any effect. Bank profits may not be noticeably impaired and the private sector may be able to arrange its balances to maintain spending patterns at target levels. It will not help to keep the credit ceiling in place for a long time so that reflows may accumulate. After a few months, both firms and households will have rearranged financial portfolios to nullify credit limits. The options available to them include reducing average deposit holdings, switching to non-bank

financial institutions, increasing foreign trade credit, the issue of marketable securities and other IOUs and informal financial arrangements.

In the event that credit limits reduce their profitability to a degree that banks think action is necessary, they may minimize the loss of profit by purchasing government securities with the reflows, lending abroad or reducing deposit interest rates, raising loan interest rates or doing both at the same time. Only where interest rates are adjusted is there an impact on the private sector. From previous discussion (of the impact of open market sales on interest rates), an increase in the loan interest rate and a reduction in the deposit interest rate are both unlikely to have the desired effect of switching consumption to saving.

The central bank may raise the requirement for banks to hold liquid assets such as cash and official short-term paper. To be effective, the requirement must be raised by enough to account for any excess liquidity and to require further adjustment. If banks may borrow abroad and bid up government security rates to levels comparable with credit to the private sector (after discounting for greater risks of lending to the private sector) the intention of monetary policy again comes to nought. If it is necessary to reduce credit to the private sector to fund additional

holdings of government securities the loan interest rate will rise substantially. As discussed earlier that might curtail output and consumption but savings may fall as well.

As an alternative, the cash reserve requirement may be raised, with generally similar results. In this case, the loan interest rate is more likely to rise provided the impact on bank's profits is significant and the deposit interest rate may be reduced as well. However, the reserve requirement is usually very low - between 5% and 10% of deposits - and a considerable increase is necessary in order to meaningfully threaten bank profits.

The central bank may increase the indicator rate for banks' dealings with their customers: the prime rate, the minimum savings deposit rate or some other general rate. The bank should set only one rate, leaving the market to structure other rates around it, so as to avoid creating distortions. In this case, all rates may be expected to increase. If the increase in loan rates is large there is the possibility (discussed earlier) that output, consumption, investment and saving may all decline though it is very doubtful that these effects will be very large. It is far more likely that a large increase in loan rates will bring a net foreign inflow, diverting credit

demand abroad. A large increase in deposit interest rates will reinforce that effect, acting as an incentive for the inflow of short-term funds to be placed on domestic deposit.

In summary, in small open economies monetary policy should not be employed to correct imbalances on the external current account caused by excessive domestic consumption and inadequate saving. None of the instruments available to the central bank has any chance of provoking a switch from consumption to saving. The most likely outcome is an inflow of short-term foreign capital at the cost of a high domestic interest rate. That will be the result of open market sales, increases in liquidity requirements, increases in interest rates - provided they result in a large increase in rates - whenever banks are reluctant to cut off credit to creditworthy borrowers. This aggravates the balance of payments problem by financing the current account deficit in an unsustainable fashion. Moreover, the increase in interest rates, to the extent that it becomes an additional cost to consumers and producers, may result in a decline in output, investment, consumption and saving.

### **Crowding Out Credit to the Private Sector**

The second objective to which monetary policy may be directed is inducing banks to switch credit from the private sector to government. A sustainable fiscal deficit may be inferred as the sum of prudent foreign financing (which does not sharply increase the debt service ratio or raise it beyond modest levels) and lending to government by domestic financial institutions and the private sector. The aim of contractionary monetary policy is to influence banks to lend more to government and less to the private sector and to influence the private sector to retain less of its own financing and contribute more to financing of government.

An increase in the central bank's discount rate has no effect.

Open market sales may fail because the volume and the interest rate premium offered by the central bank are together insufficient to induce a commercial bank reaction. If banks stand to increase profits significantly by borrowing abroad to purchase official securities, open market sales have a perverse effect, financing the excess government deficit with short-term foreign borrowing. Only if banks prefer to ration the demand for credit to the private sector by raising the loan interest rate by a large amount will there be a significant shift of credit from the private sector

to government by financial institutions. Monetary policy is not yet assured of success because the private sector may (a) sell holdings of government securities to offset the loss of its liquidity; (b) reduce deposits to compensate so that financial institutions are unable to purchase official paper despite the decline in credit to the private sector and/or (c) replace credit to the private sector from financial institutions by trade credits and foreign borrowings thereby effectively financing the government deficit by short-term capital at one remove. Open market sales have the intended effect only if mortgage demand and construction decline, prices rise and output of tradables falls or there is a combination of these effects.

Realistic credit controls may have insufficient impact on bank profits to ensure an interest rate response on the part of banks. Reflows may be too little or, if large, be channelled abroad directly or indirectly. Credit controls will succeed only where the loan interest rate rises sufficiently to cut output and raise prices.

Tightening the liquidity requirements for banks beyond what is necessary to eliminate excess liquidity may have the desired effect if it is more profitable for banks to ration credit to the private sector than to borrow abroad to buy additional government securities and so long as the private sector is unable to borrow abroad

or from non-bank financial institutions to avoid paying the higher loan rates. The switch from credit to the private sector to credit to government would, in that case, be accompanied by declining output, inflation or both.

An increase in the prime rate for bank lending to the private sector or other indicative interest rate is unlikely to secure a switch from credit to the private sector to credit to government. The probable outcome for a large increase in interest rates is short-term capital inflows, as discussed above, although a decline in output and an increase in price are possibilities.

In sum, crowding out the private sector to avoid money creation through central bank lending to government seems a legitimate objective of monetary policy but a close look at the mechanisms suggests the instruments of monetary policy will have this effect only in particular circumstances. Specifically, it must be less profitable for banks to borrow abroad than to raise lending rates beyond what creditworthy customers can afford and the customers affected must have no recourse to foreign trade credits other foreign loans, compensating reductions in deposits or switches to non-bank financial institutions. If the credit switching

policy is successful it will be accompanied not only by a large increase in interest rates but also by a decline in output and/or an increase in prices.

#### **Reversing Short-Term Capital Outflows**

It will have become clear from the discussion so far that the only reasonably assured objective that may be pursued with monetary policy in a small open economy is to avoid or reverse short-term capital outflow other than one which is precipitated by exchange rate uncertainty or speculative attack on the domestic currency. Even when policymakers hope for some other outcome short-term capital flows are the most probable result if the instruments of policy are pushed far enough to have any effect at all.

Discount rate changes are ineffective but open market sales in sufficient volume and with a large enough premium to buyers open a lucrative opportunity for banks and the non-bank private sector to borrow abroad to lend to government. (However, if the switching costs are lower than foreign currency transactions costs and the interest rate increase is considered to be temporary, the private sector may postpone consumption to take advantage of the high interest rate in the short run, thereby frustrating policy.) An increase in liquidity requirements larger than the

amount of excess liquidity has similar effects and so does a large increase in loan and deposit rates. In every case, the increase in domestic rates must be sufficiently large that bank and private sector profits increase at the margin when they buy government securities, increase bank deposits and take up other domestic financial obligations with the foreign loans secured for this purpose, even after account is taken of foreign currency transactions costs and the costs of exchange rate uncertainty.

Monetary policy is of dubious provenance when the cost of exchange rate uncertainty are high, for example in a regime of fluctuating exchange rates. The very large interest rate premium required to accommodate uncertainty drives up all domestic interest rates. Monetary contraction may secure foreign exchange inflow but the domestic financial costs have ruinous effects on output, prices and investment in such circumstances. Monetary policy may be vigorously employed to defend against speculative capital flows only when the private sector is comfortable with the exchange rate and when the fiscal deficit is held to a level that does not require central bank finance or unsustainable foreign borrowing. In these circumstances, the premium for exchange rate risk is small and a domestic

interest rate in the neighbourhood of comparable foreign rates is sufficient to make short-term capital outflows unprofitable after foreign currency transactions costs.

### Conclusions

Monetary policy is effective if the monetary instruments are used in appropriate circumstances for limited objectives. Central banks should avoid using monetary policy to induce switches from consumption to saving. None of the instruments will achieve that, even temporarily. Monetary policy instruments used in such a way as to induce a large increase in interest rates may have perverse effects, cutting investment more than consumption and therefore reducing savings *ex poste*.

For dampening credit to the private sector temporarily to finance a larger public sector borrowing requirement central banks might try open market operations, credit limits or an increase in interest rates together with open market operations. In the case of credit limits, they should be removed within about six months. These measures may succeed temporarily if they persuade the private sector to postpone expenditure, for example if they expect a reversal in the near future. Also, it will take the private sector some time to make alternative financial arrangements if the increase in interest rates is thought to be permanent. In the

case of open market operations and interest rate increases the success of the measures depends on engendering a sufficiently large increase in the interest rate. There remains a danger that the policy may be frustrated by short-term capital inflows. Central banks should not expect these monetary policy instruments to divert finance to government for more than a few months.

For switching between domestic and foreign financial assets it is best to mandate an increase in interest rates to be charged by the financial sectors directly because of the large increase required. That increase may also be achieved by open market operations but there is some risk of perverse reaction in the short-run if the public believes the interest rate increase to be temporary. Moreover, the volume of open market operations required to effect a large increase in interest rates may be so great that the process of driving the rate up takes an inordinately long time, especially in an environment of stable exchange rates and confident, bullish expectations.

### Symbols used in Tables

C:	consumption
cc:	currency conversion cost
CRG:	credit to government
CRP:	credit to the private sector
CR:	credit
D:	deposits
E( ):	expected value
OMOs:	open market operations
NBFI:	non-bank financial institution
oc:	opportunity cost
o/s:	overseas
r:	interest rate
$r_b$ :	discount rate
$r_d$ :	deposit interest rate
res:	reserves
$r_l$ :	loan interest rate
$\Delta r$ :	change in interest rate

RR: reserve requirement  
 s: switching cost  
 Sa: saving  
 sec: securities  
 STK: short term capital  
 XL: excess liquidity  
 Z: spread between deposit and loan rates  
 Δ: change  
 π: profit

Table 1 OBJECTIVE: SWITCH C → S<sub>1</sub>

	Instrument	Effect	Comment
1a.	$r_b$	none	discounts too rare
1b.	OMOs	small $\Delta r$ : none  large $\Delta r$ $\Delta r > s < cc$ $E(\Delta r) = 0$ : none $E(\Delta r) \neq 0$  $\Delta r > cc < s$ : perverse	no sales/purchases: switching & foreign curr. costs (s) (cc)  banks cut CRP before borrowing O/S  expenditure postponed until $r$ reverts; or accelerates if $\Delta r < 0$ ; no $\Delta$ in underlying C/Sa balances  temporary adjustment for financial restructuring; switch to NBFIs, foreign borrowing  sucks in STK instead of cutting C
1c.	CR limits	none	temporary pause in expenditure for financial restructuring
1d.	Liquidity requirement	none	XL > 0, no $\Delta$ XL = 0, same effect as CR limits
1e.	ΔRR Modest  Massive	XI > 0: none  XI = 0: none  perverse	switch sec → res, small loss of $\pi$ ; insufficient to provoke $\Delta Z$  switch CRR → res provokes $\Delta Z$ because banks lose $r_1 + s$ (cc to banks); but $\Delta r_1$ doesn't effect switch (see 1b.)  CRP → res ⇒ big $\Delta Z$ ⇒ switch from CRP to foreign borrowing
1f.	$r_d, r_l$	small: none  large: $E(\Delta r) = 0$ none $E(\Delta r) \neq 0$ $\Delta r > s < cc$ perverse  $\Delta r > cc < s$ perverse	temporary expenditure adjustment only  temporary adjustment for firm restructuring; switch from CRP to NBFIs, O/S  banks borrow abroad to fund CRP

Table 2

## OBJECTIVE: CRP → CRG

	Instrument	Effect	Comment
2a.	$r_b$	none	
2b.	OMOs	<p>small <math>\Delta r</math>: none</p> <p>large <math>r</math></p> <p><math>\Delta r &gt; s &lt; cc</math></p> <p><math>E(\Delta r) = 0</math> yes; temp.</p> <p><math>E(\Delta r) \neq 0</math> yes; temp.</p> <p><math>\Delta r &gt; cc &lt; s</math>: perverse</p>	<p>banks raise <math>r_t \Rightarrow</math> CRP → CRG, exp. postponed until rate falls</p> <p><math>\Delta r_t \Rightarrow</math> CRP → CRG <math>\Rightarrow</math> time for financial restructuring; restructuring <math>\Rightarrow -\Delta D</math> or <math>-\Delta CRG</math> (by private sector)</p> <p>banks borrow O/S to lend to gov't, short term</p>
2c.	CR limits	yes; temp.	financial restructuring by firms and HHs deprived of CRP
2d.	Liquidity requirement	<p><math>XL &gt; 0</math> none</p> <p><math>XL = 0</math>: yes, temp.</p>	financial restructuring
2e.	<p><math>\Delta RR</math></p> <p>Modest</p> <p>Massive</p>	<p><math>XL &gt; 0</math>: none; on CB's bal. sheet switch from advances to banks (net) to advances to gov't</p> <p><math>XL = 0</math></p> <p>perverse</p>	<p>gov't sec. <math>\rightarrow</math> res <math>\Rightarrow -\Delta \pi</math>, too small to provoke <math>\Delta Z</math></p> <p>CRP <math>\rightarrow</math> res. <math>\Rightarrow \Delta Z [OC_{crp} &gt; OC_{gov't sec}]</math>, but not enough to provoke <math>\Delta D</math> or <math>\Delta CRP</math></p> <p>foreign borrowing to fund CRG</p>
2f.	$r_a, r_t$	if combined with OMOs: yes, temp.	reasoning as at 2b

Table 3

## SWITCH BETWEEN DOMESTIC AND FOREIGN ASSETS

	Instrument	Effect	Comment
3a.	$r_b$	none	
3b.	OMOs	small $\Delta r$ : none large $\Delta r$ : $\Delta r > s < cc$ $E(\Delta r) = 0$ : perverse, temp. $E(\Delta r) \neq 0$ : yes $\Delta r > cc < s$ : yes	CRP $\rightarrow$ CRG instead of foreign borrowing; private sector postpones exp. private sector borrows abroad: subs. for CRP, $\Delta D$ same as previous
3c.	CR limits	possibly yes, but risky	yes if borrowers rationed out of market have access to foreign CR; but more likely they will resort to NBFIs
3d.	Liquidity requirement	$XL > 0$ none $XL = 0$ : same as for CR limits	
3e.	$\Delta RR$ Modest  Massive	$XL > 0$ : none  $XL = 0$ : none reasoning as at 3b	switch from gov't sec. to res. $\Rightarrow -\Delta\pi$ , too small to provoke $\Delta Z$ ; on central bank bal. sheet from (net advances to banks) to (advances to gov't) switch CRP $\rightarrow$ res $\Rightarrow -\Delta\pi \Rightarrow \Delta Z$ , but not enough to trigger foreign borrowing $\Delta RR \Rightarrow CRP \Rightarrow res \Rightarrow -\Delta\pi \Rightarrow$ large $\Delta Z \Rightarrow$ exp. postponement, switch to NBFIs, foreign borrowing or $\Delta RR \Rightarrow$ foreign borrowing $\rightarrow$ res.
3f.	$r_d, r_f$	as at 3b	

