

COMPETITIVE ALLOCATION OF GLOBAL CREDIT CEILINGS

**Alternative Rules for Direct Control of
Domestic Credit in Developing Economies**

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CONTENTS

LIST OF FIGURES	iv
FOREWORD	v
1. INTRODUCTION	1
2. ALTERNATIVE ALLOCATION RULES	4
3. A CAUTION ON BANK PROFITS	7
4. CONCLUSION	8
APPENDIX A	9
REFERENCES	11

LIST OF FIGURES

1 – Rationed Equilibrium of Credit Market

10

FOREWORD

Increasing concern is being raised over the effectiveness of orthodox macroeconomic policy in Africa, particularly when the policy is accompanied by sectoral policies for structural adjustment of the economy. CFNPP is therefore undertaking a number of studies of macroeconomic policy to complement its work on the causes and characteristics of poverty, food insecurity, and malnutrition in sub-Saharan Africa.

This paper concerns one critical aspect of structural adjustment: liberalization of credit markets. For convenience, many developing countries place global credit ceilings on domestic credit for monetary control (as opposed to the textbook systems of reserve requirements and open market operations typical in industrialized countries). The monetary authorities generally distribute these ceilings to individual banks in proportion to each bank's existing market share of loans. In this paper, Stephen Younger points out two problems with this approach to monetary control: it is likely to thwart the gains of interest rate liberalization, and it generates anticompetitive behavior in the banking sector. He proposes several alternative rules for dividing a global credit ceiling among banks to alleviate the latter problem. All of the rules are as simple as the current practice, but they would provide stronger incentives for competition in the banking sector and, thus, improve economic efficiency. This is especially true for economies that are attempting to liberalize their financial markets.

Washington, DC
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1. INTRODUCTION

Financial liberalization is an important and popular theme in development economics. Even though academic economists continue to debate its merits, international donors and lending institutions appear to have accepted the proposition that financial liberalization is an important aspect of economic development. This belief, along with the economic difficulties of the 1980s that forced many countries to embrace structural adjustment policies recommended by the World Bank and/or the International Monetary Fund, has meant that many economies have moved (with more or less enthusiasm) toward liberalizing their financial markets.

Most of the attention that was focused on financial markets concerns the price in those markets: economists encourage countries to allow interest rates to float, or at least to adjust controlled rates to positive real levels. The fact that *quantities* in these markets are also rationed administratively has received less attention. While I have not found a general treatment of this phenomenon in the literature, the use of credit ceilings on banks' lending appears to be common practice in low-income countries, thus imposing quantity constraints on what is usually the only (formal sector) channel for finance.¹ Even in countries with relatively more sophisticated financial institutions, such as Mexico and Thailand, the authorities occasionally use direct credit controls to impose tight monetary policy (see Johnston and Brekk 1989).

Credit ceilings have their justification: they are a convenient, direct, and observable means of controlling the stock of domestic credit to the nongovernment sectors. In fact, the IMF often insists on such ceilings in its standby arrangements because they provide an easily observable, unambiguous performance criterion. But direct controls often impede the realization of the benefits that should come from financial liberalization: more competitive banking, higher deposit mobilization, and greater and more efficient capital formation. At a macroeconomic level, it is a simple exercise to show that freeing (or tinkering with)

¹ See the following papers: Biggs, Srivastava, and Wakeman-Linn (1990) on Nigeria; Bolnick (1990) on Malawi; Cheng (1988) on the Pacific Rim countries; Lundberg (1968) on Japan in the 1960s; Younger (1991) on Ghana; and Johnston and Brekk (1989) on several other countries. Fry (1988), mentions the practice in general terms, but gives no examples or analysis. In addition to consulting these studies, several experienced policymakers have expressed the opinion that the practice of credit controls is pervasive in Africa, and somewhat less common in Latin America and Asia.

deposit and loan rates in the presence of binding credit ceilings will simply redistribute the rent associated with the quantity constraint, doing nothing to mobilize deposits or increase capital formation (see Appendix A).² This may help to explain the frustration that some policymakers in less developed countries express with financial liberalization: it redistributes income – often toward bankers (hardly everyone's favorite constituency) and away from once-favored borrowers – but it does not noticeably improve efficiency. Even depositors may lose: in Ghana, banks that faced tight credit ceilings responded to a recent freeing of interest rates by *lowering* the savings deposit interest rate. Bolnick (1990) reports that the same would have occurred in Malawi if the Central Bank had not used moral suasion to preempt the move by commercial banks.

It is not easy to find a simple solution to this problem. There are usually very good reasons – inflation and balance of payments problems – to insist on tight monetary policy when the international institutions are called in, so that even under a system of indirect monetary control, credit would have to be made more scarce. In many cases, one cannot hope for better policy than to wait for prices to adjust downwards – or inflation to slow – so that the ceilings, which are always established in nominal terms, are not binding, and the newly liberalized interest rates can begin to affect the allocation of savings and investment. But this does not change the fact that many LDC residents' first impression of interest-rate liberalization is one of redistribution rather than improved efficiency.

Policymakers could, however, greatly improve another aspect of direct credit controls. While macro control often dictates a binding *global* credit ceiling, governments generally distribute that ceiling among individual banks on a market-share basis. Even in countries such as Ghana, where financial liberalization has proceeded to the point where interest rates are floating (or fixed at realistic levels), the usual practice is to establish the global ceiling for a quarter or a year and then divide it among existing banks based on each bank's share of loans outstanding in the preceding period. Such a policy, strictly applied, restricts entry and gives banks no incentive to compete for new borrowers or depositors because they are not allowed to lend the new funds. The result is not unlike the outcome of a collusive arrangement between banks: each bank gets its share of the market without fear of competition and earns excess profits because credit is rationed and entry prohibited. The

² In markets where the government imposes credit ceilings and mandates interest rates at the same time, only one restriction will be binding, of course. Given that most countries liberalize their interest rates only under pressure from the World Bank and the IMF, and that those institutions generally insist on tight monetary policy in their programs, it seems likely that the credit ceiling will often be binding at the time of a financial liberalization, even if it is not usually so.

only novelty here is that the government provides the enforcement mechanism to hold the cartel together.

A move to indirect monetary control – abolishing the credit ceilings and using reserve requirements and open-market operations to control the stock of domestic credit – would obviously solve this problem, and many countries are headed in that direction (see, for example, Duesenberry and McPherson 1990; Johnston and Brekk 1989; or Pereira and Sundararajan 1990). Yet the macroeconomic case for maintaining global credit controls is often made forcefully by Central Banks and their international creditors. Achieving monetary control and macro stability with indirect controls requires sophisticated financial institutions, as well as Central Bank capacity to monitor financial conditions and the overall portfolio performance of the commercial banks. Even if these institutional demands are met, indirect monetary control is less precise, especially with rapidly changing financial markets and other structural changes that are likely to accompany a Bank or Fund program. Given these restrictions, it seems likely that many countries will choose to stick with credit ceilings as a means of monetary control for several more years. What I offer in this paper, then, are several options for distributing a global credit ceiling deemed necessary for monetary control in a way that fosters greater competition and efficiency in the commercial banking sector.

2. ALTERNATIVE ALLOCATION RULES

My suggestions are straightforward, but it may be useful to couch them in terms of a simple model. To that end, consider an economy that has several banks that behave competitively. Each bank takes deposits at interest rate r_D and makes loans at r_L , incurring a cost of financial intermediation that depends on the amount of loans made and a firm/specific shift parameter, γ_j .³ If each bank is subject to a reserve requirement of ρ percent of deposits, its profit maximization problem is written as

$$\max_{\{L_j, D_j\}} \pi = r_L \cdot L_j - r_D \cdot D_j - C_j(L_j, \gamma_j) \quad \text{s.t.} \quad R_j \geq \rho D_j \quad \text{and} \quad L_j + R_j \leq D_j \quad (1)$$

where r_L and r_D are the interest rates on deposits and loans; L_j , D_j , R_j are the loans, deposits, and reserves of bank j ; and C_j is the cost function for bank j , with $\delta C_j / \delta L_j > 0$, $\delta^2 C_j / \delta^2 L_j > 0$, $\delta C_j / \delta \gamma_j > 0$.

It is straightforward to show that these banks will maximize their profits by taking deposits and making loans up to the point where

$$r_D = \left(r_L - \frac{\delta C_j(L_j, \gamma_j)}{\delta L_j} \right) \cdot (1 - \rho). \quad (2)$$

³ This contrivance implies that the banks are not identical, and that an efficient allocation of resources will have some banks with larger market shares than others. Further, if the γ_i 's change over time, the efficient share for each bank will also change. Failure to adjust to these changes is the key problem with the current practice of fixing credit quotas on a market-share basis.

Several other realistic assumptions about the structure of the banking industry would yield similar results. For example, if banks have customer markets so that their clients (either depositors or borrowers) cannot move costlessly from bank to bank, then changing circumstances of the banks' clients will imply that each bank's efficient share of loans outstanding should vary. In this case, each bank would have its own set of interest rates, but the ideas in the paper go through just the same.

It is theoretically possible to use credit ceilings, rather than reserve requirements and control of the money base, to establish this equilibrium by choosing each \bar{L}_j to be equal to the values determined by Equation 2. But in practice the authorities would need to know each bank's cost function to be able to do this, and they would need to adjust each bank's quota every time the bank's cost functions shift in different ways over time. In the absence of these adjustments, even an initially efficient set of quotas will become inefficient as banks that develop relatively higher costs are allowed to persist beside more competitive institutions that are not permitted to expand their market share.

Using past market shares as a basis for allocating global credit ceilings seems so obviously flawed that it is hard to see why it persists. One possible reason is that a simple and observable rule allows the government to avoid other more serious costs of "rent-seeking" than could be incurred if the quotas were distributed in a more discretionary manner. Distribution on a market-share basis is also widely seen as "fair," probably in comparison to an allocation based on political favoritism.

Yet there are other equally simple and arbitrary rules that could be used to avoid "rent-seeking," while distributing credit ceilings among banks more efficiently. Suppose, for example, that the ceilings were distributed on a basis of each bank's share of deposits rather than loans. Each bank would maximize Equation 1 subject to the constraint:

$$L_i = \left(\frac{D_i}{D} \right) \cdot \bar{L} \quad \text{where } D = \sum_{i=1}^n D_i. \quad (3)$$

Again, it is simple to show that, if the global credit ceiling is set at the same amount of loans determined by Equation 2, the outcome for each bank and the market as a whole will be identical to the indirect monetary control equilibrium. That is, by allocating each bank's credit ceiling on the basis of share of deposits rather than past loans, the authorities could replicate the competitive solution. More importantly, if there are changes in an individual bank's cost of financial intermediation that make it more competitive, it can now adjust its share of the market by simply generating more deposits – the loan share follows automatically. In this way, the gross inefficiencies likely to develop over time under the standard practice can be avoided.

As a practical matter, the rule for assigning quotas would have to be based on lagged deposits, and this would drive a slight wedge between the indirect control equilibrium and the deposit shares solution, since banks would first have to generate deposits, then carry them at an interest cost until the quotas are reassigned. But as long as the quotas are adjusted frequently, this difference will be small compared to the efficiency costs

of ceilings based on past loans.⁴ It is also worth noting that lagged deposits are equal to lagged loans plus excess reserves, so distributing quotas based on each bank's share of lagged loans, plus excess reserves, would yield exactly the same result as a rule based on lagged deposits.⁵

Another scheme that is more forward-looking would be to ask the banks to bid for a share of the overall credit ceiling by promising to deposit a certain amount of reserves in the Central Bank during the period in which the ceiling is to be in effect. Each bank would then be given a share of the global quota proportional to the amount of reserves it pledges to deposit. Formally, the constraint on each bank's optimization would be

$$L_i + R_i \leq D_i ; \quad L_i = \left(\frac{R_i}{R} \right) \cdot \bar{L} \quad \text{where } R = \sum_{i=1}^n R_i. \quad (4)$$

Again, as long as the global credit ceiling is set at the same level as the amount of loans under the indirect credit regime, the equilibrium is identical to the indirect control equilibrium and allows the allocation of ceilings to each bank to change with changing competitiveness.

In a similar vein, Duesenberry and McPherson (1990) mention the idea of creating a "pseudo-market" in which banks would have to bid for a "chit" that allowed them to make loans. This would not generally produce the same solution as indirect monetary control, since the cost of buying chits from the Central Bank would drive a larger wedge between deposit and loan rates. While this could be compensated by lowering the reserve requirement, that might not be prudent.

⁴ This problem could be minimized if the Central Bank were willing to pay interest on reserve deposits.

⁵ It is possible that something like this happens in actual practice. Even though each bank's share of the global ceiling is sticky, it is not completely rigid in most countries. One way a bank might gain a higher share is by showing the Central Bank that it held large amounts of excess reserves, and by arguing that it should be allowed to lend them out.

3. A CAUTION ON BANK PROFITS

To the extent that current credit ceilings distributed on a market-share basis are binding, they generate rents that are captured by the commercial banks.⁶ Each of the schemes outlined here would transfer those rents to someone else – depositors, in the case of using deposit shares to allocate quotas; the Central Bank in the other two. If the banks have been using those rents to cover losses on a weak portfolio or to support a bloated staff, then a change in policy may cause them to fail.⁷ While this sort of competitive pressure is precisely what the authorities should hope for in the course of a financial sector liberalization, some care in the transition is necessary to ensure that the financial system can, in fact, weather it without a major crisis.

⁶ Reserve requirements transfer some of that rent to the Central Bank. But if the ceilings rather than the reserve requirements are binding, not all of the rent will be captured by the authorities. Similarly, ceilings on loan rates or floors on deposit rates transfer some of the rent to borrowers or savers.

⁷ This has clearly been the case in Ghana in recent years, and apparently was also true of Chile before the banking reforms there (see de la Cuadra and Valdés 1989).

4. CONCLUSION

Even though a case for global credit ceilings can be made on the grounds of monetary control and/or institutional constraints, it is clear that binding credit ceilings distributed on a market share basis will impede competition in the banking sector and will generally thwart the promised gains of financial liberalization. This is true even if interest rates are free of restriction and other credit market interventions (sectoral allocations, etc.) are absent. Nevertheless, simple and practical rules for the allocation of a global credit ceiling to individual banks that promote competition can be devised. In this paper, I have suggested three such rules:

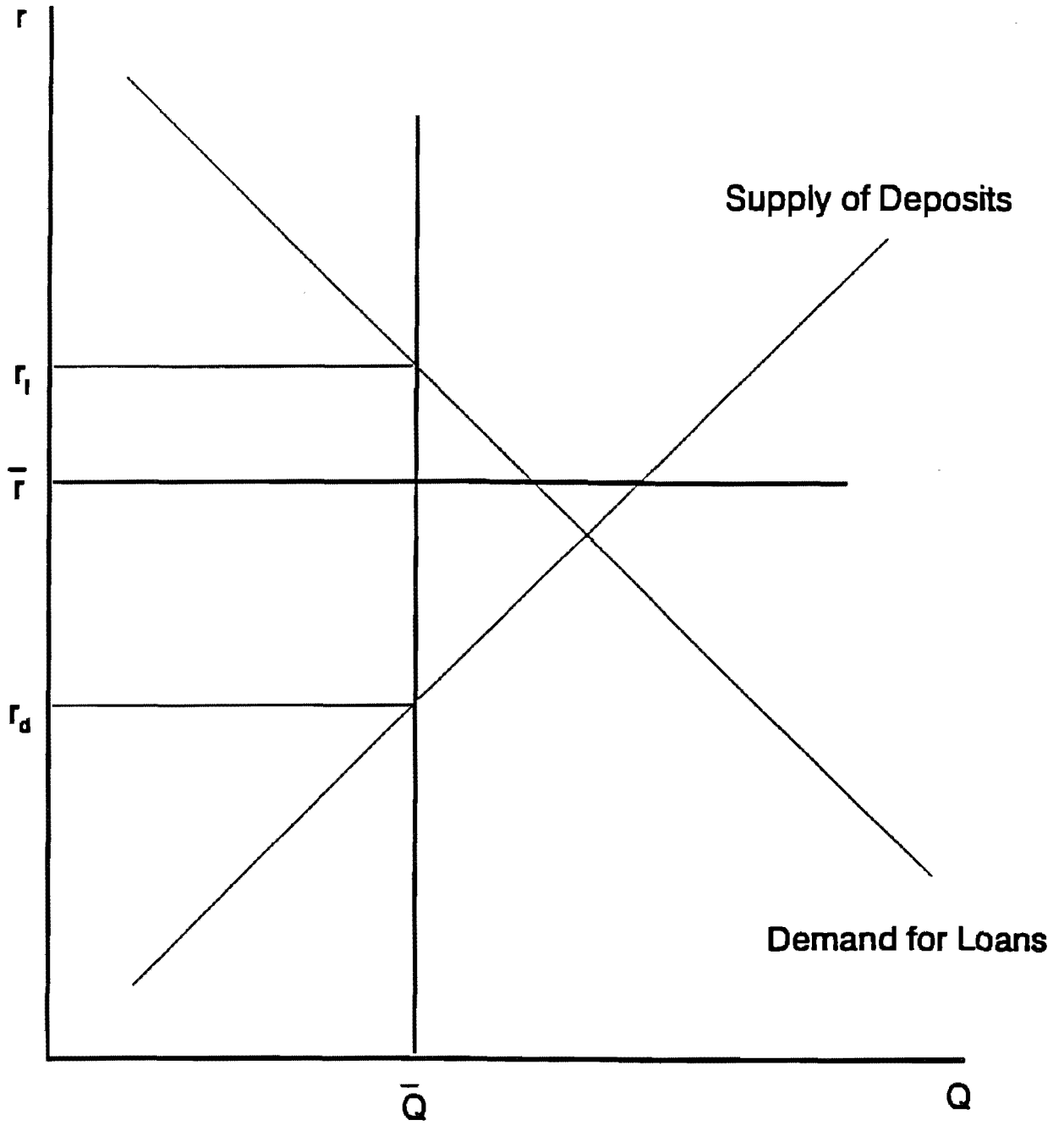
- (1) distribute the ceilings based on each bank's share of (lagged) deposits;
- (2) distribute the ceilings based on lagged loans plus excess reserves; or
- (3) ask banks to bid for a share of deposits by promising to place a certain amount of reserves in the Central Bank.

While these rules allocate the rents associated with monetary control differently, they each have the advantage that an individual bank's market share will expand or contract with the competitiveness of that bank (or its clients) in a way that mirrors the response of an indirect control regime to a similar change in circumstances. This flexibility, in the face of market changes, would be an improvement over the current practice in many developing economies, a useful intermediate step between the highly controlled monetary regimes commonly employed, and full financial liberalization with indirect monetary control in the Western tradition.

APPENDIX A

This appendix presents a brief argument that interest rate liberalization will have no efficiency effects in the presence of binding credit ceilings. Consider Figure 1, which could apply to an individual bank or the banking sector as a whole. Interest rates are expressed in nominal terms with the understanding that the rate of inflation is an argument of the supply and demand functions. The quantity of credit is also expressed in nominal terms, meaning that the supply and demand functions will shift out continuously with inflation, even if the inflation rate is constant. If the credit ceiling, \bar{Q} , is binding then the interest rate ceiling, \bar{r} , must be below the interest rate that banks would charge in the absence of the interest rate restriction, r_2 . This implies that when the interest rate is liberalized, it will jump from \bar{r} to r_2 , but the quantity of loans will not change. Consequently, there will be no improvement in the allocation of resources – the quantity of loans does not change, nor does the interest rate on deposits (if it is unrestricted) – but the part of the rent associated with the quota that previously went to borrowers, $(r_1 - \bar{r}) \cdot \bar{Q}$, will be shifted to the bank(s). Exactly the same argument would apply to the liberalization of deposit rates. If the banking industry is competitive and entry is unrestricted, then new banks will open and bid for deposits, driving the deposit rate up to the point where the spread just covers banks' costs. But, if entry is prohibited (because ceilings are applied to individual banks, or for any other reason), then existing banks will earn a rent indefinitely.

Figure 1 – Rationed Equilibrium of Credit Market



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