

## **Part I**

# **Theoretical Models of Financial Development**



## **Chapter 1**

# **Keynesian Monetary Growth Models and the McKinnon-Shaw Financial Development Framework**

### **1.1 Introduction**

AS ITS TITLE INDICATES, this book is about the effects of money, interest rates, and banking systems on the rate of economic growth in developing countries. The pervasive theme is the damage that misguided monetary and financial policies can do and have done to developing economies. Part I explores the theoretical literature on the effects of finance and financial policies on the rate of economic growth. Part II surveys the econometric evidence on the practical importance of these effects. Part III analyzes some microeconomic and institutional aspects of financial development. Finally, Part IV examines monetary and financial policies that have been implemented in developing countries to accelerate their rates of economic growth.

Critics of capitalism place considerable emphasis on the pernicious role of the financial system that forms the hub of the capitalist economy (Hilferding 1910). Karl Marx recognized the

importance of the financial system in the process of capitalist economic development over a century ago. Lenin, impressed by the powerful political and economic influence of the European banks in the eighteenth and nineteenth centuries, also understood the crucial role of the financial system. He nationalized all Russian banks immediately after the 1917 revolution as the fastest and most effective way of ending capitalism and assuming control over the entire Russian economy.

John Maynard Keynes was also wary of the potential damage that could be wrought by financial systems in capitalist economies. He believed that without careful management money could disrupt economic growth quite seriously. Keynes's liquidity trap sets a floor to the nominal rate of interest. When the trap is binding, the real interest rate exceeds its equilibrium level consistent with full employment.<sup>1</sup> In a liquidity trap, planned saving at the full-employment level of income exceeds planned investment. This disequilibrium is resolved by a fall in real income that, in turn, reduces planned saving.

Keynes argues that historically there has been a natural tendency for the real interest rate to rise above its full-employment equilibrium level:

The destruction of the inducement to invest by an excessive liquidity-preference was the outstanding evil, the prime impediment to the growth of wealth, in the ancient and medieval worlds. And naturally so, since certain of the risks and hazards of economic life diminish the marginal efficiency of capital whilst others serve to increase the preference for liquidity. In a world, therefore, which no one reckoned to be safe, it was almost inevitable that the rate of interest, unless it was curbed by every instrument at the disposal of society, would rise too high to permit of an adequate inducement to invest. (Keynes 1936, p. 351)

The substitution of "developing world" for Keynes's "ancient and medieval worlds" seems natural.

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<sup>1</sup>All growth, inflation, and interest rates in this book are continuously compounded rates of change ( $\Delta \log$ ). Hence the real interest rate  $r$  equals exactly the nominal interest rate  $i$  minus the expected inflation rate  $\pi^e$ . Using simple interest rates, the real rate  $r$  equals  $(1+i)/(1+\pi^e)-1$  or  $(i-\pi^e)/(1+\pi^e)$ , where  $r$ ,  $i$ , and  $\pi^e$  are all expressed in proportional rather than percentage form.

The relative attractiveness of holding money as an asset instead of holding productive capital is the cause of the inadequate level of investment. The simple Keynesian model resolves the disequilibrium through a reduction in income. In the quotation above, however, Keynes recognizes an alternative adjustment mechanism—a change in the relative returns on the two competing assets, money and capital. If the price level is fixed and expectations about the future price level are therefore static, expansionary monetary policy could reduce the interest rate and at the same time satisfy the increase in liquidity preference. Were an interest rate ceiling imposed by the authorities, investment could still be stimulated by the lower imposed interest rate, provided that an accommodative monetary policy were pursued. This Keynesian solution has strong appeal but ignores the inflationary consequences of monetary expansion or accommodation.

Another strategy is to discourage the demand for liquidity by raising the opportunity cost of holding money without raising the interest rate. Silvio Gesell (1929, Pt. IV, Ch. 1) was the first to advocate stamped money for precisely this purpose. Currency stamps obtainable at post offices would have to be attached to currency notes every Wednesday. Gesell (1929, p. 273) suggests a charge for the stamps of 1 per mil, equivalent to 5.2 per cent a year. Keynes (1936, p. 357), stating that the idea was sound, proposes that the stamp tax on money should equal the difference between the actual interest rate and the equilibrium rate at which full-employment saving and investment plans would be equated.

The welfare-enhancing implications of taxing money and hence repressing financial development received further attention in the postwar period. In James Tobin's (1965) model of money and economic growth, households allocate their wealth between money and productive capital assets. The higher is the return on capital relative to money, the larger is the ratio of capital to money in household portfolios. This in turn produces a higher capital/labor ratio, higher labor productivity, and hence greater per capita incomes. The real rate of economic growth accelerates during the transition from low to high capital/labor ratios that occurs after the relative yield on money falls. Hence reducing the return on money increases welfare. This can be accomplished either by reducing deposit rates of interest, or by taxing money as proposed

by Gesell, or simply by accelerating the rate of growth in the money stock, thereby raising the inflation rate.

The writings of Marx, Keynes, and Tobin have influenced monetary and financial policies pursued in many countries throughout the world. In particular, the objective of low interest rates has been followed at times in most industrialized and developing countries. There are also well-known political and religious objections to high, usurious, or even non-zero interest rates (Galbis 1979a). Institutional interest rates in most developing countries are indeed "curbed by every instrument at the disposal of society." However, the relatively low and uniform institutional interest rate structures found in many developing countries today do not replicate the experience of the developed countries in their early stages of development (Galbis 1974, p. 18).

The prevalence of interest rate ceilings has a number of other economic rationales in addition to Keynes's liquidity preference and Tobin's monetary growth model. Recourse to deficit finance provides another motive for imposing loan rate ceilings; public sector deficits can be financed at lower cost the more the private sector is hindered from competing for available funds (Fry 1973, Nichols 1974).

Development planning models based on fixed input-output coefficients constitute another economic rationale for low interest rate policies. Many developing countries use selective or directed credit policies to implement planned sectoral investment programs derived from an input-output matrix. Institutional loan rate ceilings are a key element of selective credit policies. The ceilings are set deliberately below the equilibrium interest rate so that credit can be allocated on nonprice criteria. In this way, the private sector can be encouraged to undertake the planned investment even though these projects might well be unprofitable at the competitive free-market equilibrium rate of interest. In particular, loan rate ceilings have been used in conjunction with import restrictions to encourage industrialization through import substitution.

Finally, neo-structuralists led by Lance Taylor (1979, 1981, 1983) argue that raising interest rates increases inflation in the short run through a cost-push effect and lowers the rate of economic growth at the same time by reducing the supply of credit in real terms available to finance investment.

Ronald McKinnon (1973) and Edward Shaw (1973) challenge the case for low controlled interest rates and financial repression. They advocate financial liberalization and development as growth-enhancing economic policies. McKinnon and Shaw take direct issue with the monetary models of Keynes, Keynesians, and neo-structuralist economists. Both argue that crucial assumptions in these paradigms are erroneous in the context of developing countries. Both provide theoretical frameworks for analyzing the role of financial development in the process of economic growth. McKinnon produces an alternative model in which real money balances are complements to, rather than substitutes for, tangible investment.

Shaw rejects Keynes's finance motive and neo-classical monetary growth models in favor of the debt-intermediation view that he himself pioneered in the 1950s (Gurley and Shaw 1960). He constructs a monetary model in which money is backed by productive investment loans to the private sector. Money issued as loans to the private sector is termed inside money because it is based on the internal debt of the private sector. Any change in either the nominal or real amount of inside money leaves private sector wealth unchanged; the asset change is matched exactly by a corresponding liability change in the private sector's consolidated balance sheet.

McKinnon, on the other hand, follows Tobin in developing a model based on commodity or outside money in the terminology of John Gurley and Shaw (1960, pp. 72-73). Outside money is issued as loans to the government; it is not therefore available to finance private sector investment. If all the financial institutions' liabilities consist of outside money, their assets must be entirely government bonds or gold. In such case, financial institutions do not intermediate between private savers and investors. Extensions of the McKinnon-Shaw framework by Vicente Galbis, Basant Kapur, Yang-Pal Lee, Donald Mathieson, and myself all use inside money.

Since 1973, there have been numerous theoretical extensions to and empirical tests of the McKinnon-Shaw model on a sizable number of developing countries.<sup>2</sup> This substantial body of liter-

<sup>2</sup>Cho (1984, 1985, 1986b), Fry (1976, 1978c, 1978d, 1978f, 1979a, 1980a,

ature has been attacked by a group of neo-structuralists whose models are based on Tobin's portfolio framework.<sup>3</sup> These models produce the opposite analytical results to the McKinnon-Shaw model. There have been few empirical tests of the neo-structuralist models, with the notable exception of Sweder van Wijnbergen's (1982, 1985) work on Korea.<sup>4</sup> Nevertheless, some of the neo-structuralists take issue with the McKinnon-Shaw school on empirical grounds.<sup>5</sup>

Much of the post-1973 literature of the McKinnon-Shaw camp has focused on transition paths and stabilization issues. These are discussed in Chapter 3. Chapter 2 deals with the medium-run properties of the financial development models that extend the McKinnon-Shaw framework, in particular the linkage between financial development and economic growth. Chapter 4 outlines the medium- and short-run properties of the neo-structuralist models. Chapter 5, the final chapter in Part I, covers some analytical issues raised by the ubiquitous reserve requirement imposed on bank deposits.

## 1.2 Tobin's Monetary Growth Model

Tobin (1965) extends the familiar Harrod-Domar growth model to incorporate money. The nonmonetary economy is illustrated in Figure 1.1. The horizontal axis measures intensity  $k$ , capital per effective man-hour of labor. The vertical axis measures rates of various kinds. The  $AA$  line is the average productivity of capital or the output/capital ratio. Multiplying the output/capital ratio

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1980b, 1980d, 1981a, 1981c, 1982b, 1982c, 1984a, 1986a), Galbis (1977, 1986), Hong (1985), Kapur (1974, 1976a, 1976b, 1982, 1983, 1985, 1986), Kumar (1983), Lee (1980), Mathieson (1979a, 1979b, 1980, 1982, 1983a, 1983b), and Spellman (1976) have extended the McKinnon-Shaw models. These models have been tested empirically on a substantial number of developing economies by Asian Development Bank (1985), Burkner (1980), Cho (1984, 1986a), B. Fischer (1981), Fry (1974, 1978f, 1979a, 1980a, 1980b, 1981a, 1981c, 1984a, 1985, 1986a), Jao (1976), Jung (1986), Lanyi and Saracoğlu (1983a, 1983b). Also see Jao's (1985) survey article.

<sup>3</sup>Buffie (1984), Cavallo (1977), Giovannini (1983a, 1983b, 1985), Taylor (1979, 1981, 1983), van Wijnbergen (1982, 1983a, 1983b, 1985).

<sup>4</sup>Throughout this book, Korea refers to the Republic of Korea, commonly known as South Korea.

<sup>5</sup>For example, Giovannini (1983b).



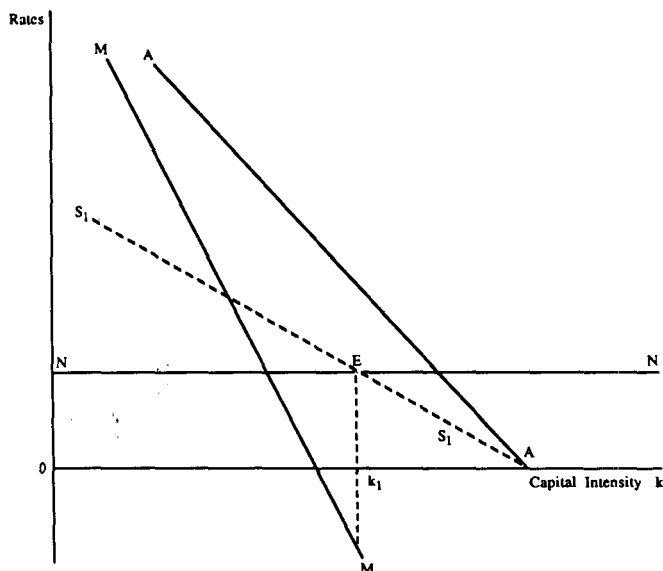


Figure 1.1: Harrod-Domar Growth in a Nonmonetary Economy.

by the capital stock gives the economy's level of output. If saving is a constant fraction of income (output), the saving line  $S_1S_1$  can be drawn in this diagram as a constant proportion of  $AA$ . The  $S_1S_1$  line represents the warranted growth rate. The  $MM$  curve is the marginal productivity of capital. Finally, the  $NN$  line is the rate of growth in the labor force and represents the natural rate of growth.

Equilibrium occurs at  $E$  in Figure 1.1. Here the marginal productivity of capital happens to be negative. To the right of  $E$ , saving and investment as a proportion of the capital stock is lower than the rate of growth in the labor force. Capital is accumulating at a slower rate than the rate at which the labor force is growing, and hence capital per man-hour or capital intensity decreases to  $E$ . Conversely, to the left of  $E$ , saving and investment is raising the capital stock at a rate faster than the rate of growth in the labor force. Hence capital intensity rises to  $E$ .

Tobin now introduces money. It has two effects. First, savers can substitute money for productive capital in their portfolios. In the simplest case, money is a perfect substitute for capital. For any investment to take place at all, the marginal productivity of

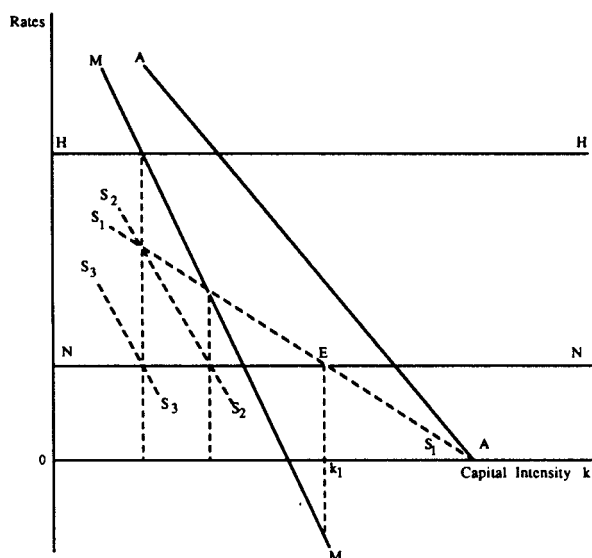


Figure 1.2: Harrod-Domar Growth in a Monetary Economy.

capital must be  $HH$ , the implicit return on money, in Figure 1.2. This required rate of return has no rationalization in the absence of a substitute asset. With  $S_1S_1$  unchanged, planned investment falls short of planned saving at  $E$  and income declines.

Money's second effect is to reduce saving available for investment. Some saving is now used for the accumulation of money balances, the rest for investment. The saving curve shifts leftwards from  $S_1S_1$  to  $S_2S_2$ . The government could restore full employment by increasing the money supply at a rate sufficient to absorb all excess saving at full employment. This policy reduces saving available for investment to  $S_3S_3$ . Clearly, per capita incomes in the monetary economy are far lower than they are in the nonmonetary economy, since capital intensity is so much lower in the former.

Raising the opportunity cost of holding money and thereby lowering its implicit yield reduces the required return on capital and so brings down the  $HH$  curve. Introducing the Gesellian stamp tax or deliberately creating inflation to raise the opportunity cost of holding money brings down the  $HH$  curve and hence raises the full-employment capital intensity ratio. In the transition

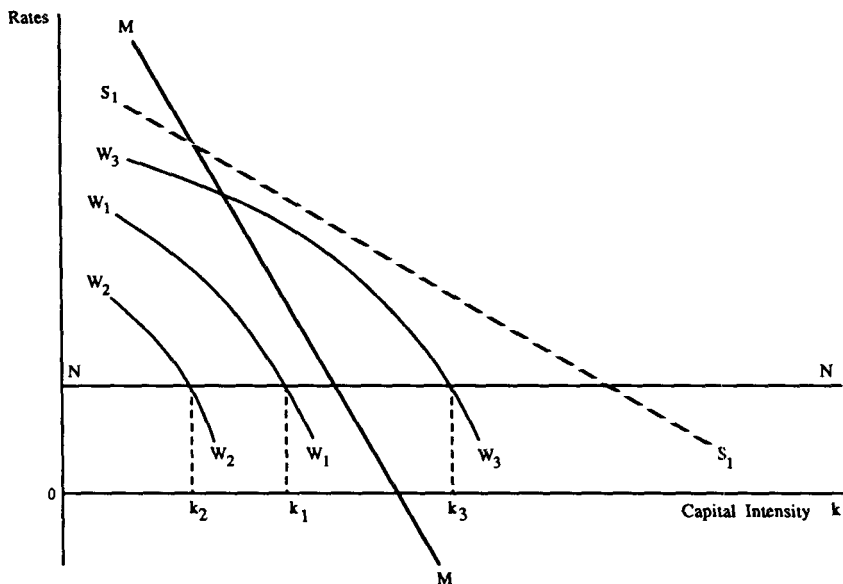


Figure 1.3: Growth in Tobin's Portfolio Allocation Monetary Economy.

from a lower to a higher capital/labor ratio, the rate of economic growth accelerates. In the new equilibrium per capita incomes are higher.

Tobin extends this model by making money and capital imperfect substitutes. Portfolio choice can now be analyzed using Tobin's (1958) earlier work on liquidity preference as behavior towards risk. Figure 1.3 shows the imperfect substitute model. Saving available for investment is illustrated by the  $WW$  curves. The lower the yield on capital, the larger the fraction of saving that goes into money holdings, as shown by the fact that the  $WW$  curves are steeper than the  $SS$  curve. The horizontal gap between  $SS$  and  $WW$  is greater the lower is the marginal product of capital.  $W_1W_1$  is the warranted rate of growth of capital (saving available for investment) if the money supply is adjusted continuously to maintain price stability. The yield on capital in equilibrium is not necessarily equal to the yield on money  $r_1$ .

If the money stock is held constant, growth necessitates falling prices at a rate of  $n$ , the natural growth rate. Hence the real yield on money is  $r_1 + n$ , and the  $WW$  curve shifts from  $W_1W_1$  to  $W_2W_2$ .

But if the money stock is increased at a rate faster than  $n$ , the real yield on money will be below  $r_1$  at  $r_1 - \pi$ . In this case the  $WW$  curve lies to the right of  $W_1W_1$  at  $W_3W_3$ . Lowering the real yield on money through inflation raises the equilibrium capital intensity from  $k_1$  to  $k_3$ . The growth rate accelerates during the transition from lower to higher per capita incomes.

Miguel Sidrauski (1967) shows that the steady-state capital/labor ratio in Tobin's model is invariant to the relative return on capital when individuals optimize over an infinite horizon. However, Allan Drazen (1981b) replicates Tobin's results in a finite horizon optimizing framework. Stanley Fischer (1979a) presents a dynamic model incorporating the Tobin effect. Elsewhere, Fischer (1979b) demonstrates that, even in Sidrauski's model, the speed with which the economy approaches the steady state can be affected by the rate of monetary growth and hence the relative yield on money in the way asserted by Tobin. Drazen (1981a) shows that the properties of the steady state itself may depend on the transition path if technical progress takes the form of learning-by-doing.

The money analyzed by Gesell, Keynes, and Tobin is dead-weight money. Gold specie exemplifies this kind of money. Credit money has now displaced commodity money everywhere, a fact that still continues to be ignored by some of Tobin's followers.<sup>6</sup> Even with outside money, however, Tobin's conclusions can be reversed if the real money stock is included in the aggregate production function (Kapur 1986, Chs. 1, 2; Khan and Ahmad 1985; Levhari and Patinkin 1968).

The most striking contrast between inside and outside money models is presented by Yang-Pal Lee (1980). Lee modifies Tobin's (1965) model, as extended by Sidrauski (1966), by substituting inside for outside money and irreproducible tangible assets held as inflation hedges (such as artwork, antique furniture, jade carvings, postage stamps) for productive capital in household portfolios. Inside money is backed entirely by loans for productive investment purposes. In this situation it is clear that higher inflation (a lower relative return on money) reduces real money demand and hence also reduces funds available to finance productive invest-

<sup>6</sup>For example, Carmichael (1982), Drazen (1981b), Fischer (1979a, 1979b, 1981), Stockman (1981).

ment. The same conclusion is reached using "rational" (Sidrauski 1967) and life-cycle saving functions. In all cases the portfolio shift from money to inflation hedges reduces productive investment and hence the rate of economic growth during the transition from higher to lower capital/labor ratios. Tobin's results concerning the relationship between inflation and economic growth are completely reversed by substituting inside money for outside money and inflation hedges for productive capital in household portfolios.

Clearly, all economies use credit money rather than commodity money today. Using a broad definition of money, most of it is inside rather than outside money. There is, however, an important issue over the choice of the alternative asset or assets in monetary growth models. McKinnon and Shaw include money (outside money for McKinnon, inside money for Shaw) and productive physical assets in their formal models but discuss inflation hedges elsewhere. The neo-structuralists develop richer models in which households hold three assets—inside money, curb market loans, and inflation hedges. More complexity and ambiguity is introduced when households can also hold equities or productive physical capital.

### 1.3 Financial Restriction and Financial Repression

The main intellectual bases for financial sector analysis and policy advice over the past 15 years are those propounded by McKinnon (1973) and Shaw (1973). Other important academic influences include Alexander Gerschenkron's (1962, 1968) examination of the role of banks in German economic development, and Joseph Stiglitz and Andrew Weiss's (1981) analysis of credit rationing, which draws heavily on the adverse selection theory used in labor market analysis.

The developing economy analyzed by McKinnon and Shaw is financially repressed. The central argument is that financial repression—indiscriminate "distortions of financial prices including interest rates and foreign-exchange rates"—reduces "the real rate of growth and the real size of the financial system relative to

nonfinancial magnitudes. In all cases this strategy has stopped or gravely retarded the development process" (Shaw 1973, pp. 3-4).

Many developing countries appear to have slipped into financial repression inadvertently. The original policy was aimed not at indiscriminate repression but rather at financial restriction.<sup>7</sup> Financial restriction encourages financial institutions and financial instruments from which government can expropriate significant seigniorage, and discourages others. For example, money and the banking system are favored and protected because reserve requirements and obligatory holdings of government bonds can be imposed to tap this source of saving at zero- or low-interest cost to the public sector. Private bond and equity markets are suppressed through transaction taxes, stamp duties, special tax rates on income from capital, and an uncondusive legal framework, because seigniorage cannot be extracted so easily from private bonds and equities. Interest rate ceilings are imposed to stifle competition to public sector fund raising from the private sector. Measures such as the imposition of foreign exchange controls, interest rate ceilings, high reserve requirements, and the suppression or nondevelopment of private capital markets can all increase the flow of domestic resources to the public sector without higher tax, inflation, or interest rates (Fry 1973, Nichols 1974).

Successful financial restriction is exemplified by a higher proportion of funds from the financial system being transferred to the public sector and by three effects on the demand for money: a rightward shift in the function, a higher income elasticity, and a lower cost elasticity. Successful financial restriction makes income velocity of circulation low and falling. All this permits a greater public sector deficit to be financed at a given rate of inflation and a given level of nominal interest rates.

Selective or sectoral credit policies are common components of financial restriction. The techniques employed to reduce the costs of financing government deficits can also be used to encourage private investment in what the government regards as priority activities. Interest rates on loans for such approved investment are subsidized. Selective credit policies necessitate financial restriction, since financial channels would otherwise develop expressly

<sup>7</sup>See Fry (1969, 1970, 1971a, 1972, 1973).

for rerouting subsidized credit to uses with highest private returns. For selective credit policies to work at all, financial markets must be kept segmented and restricted.

The following quotation referring to Portugal describes a typical case of financial restriction: "To finance its deficit, the government has largely preempted the supply of domestic savings by preserving a 'sheltered' market for its own bond issues. Recourse of the private sector to the domestic bond market was, moreover, effectively curtailed by maintaining the maximum interest rate for bond issues at 5 per cent" (Lundberg 1964, p. 40). The ceiling on after-tax returns from private bonds in Portugal was lower than the rate offered on government bonds. Even with these interest rate ceilings on competitive financial instruments, returns on government securities were so low that virtually no voluntary purchases took place: "In actual fact, the vast majority of the public debt bonds were taken up by the welfare institutions, the commercial banks, the Caixa Geral de Depósitos and insurance companies" (Banco de Portugal 1963, p. 52). However, the seigniorage base in the form of the money supply (broadly defined to include currency in circulation, sight deposits, and time deposits— $M_2$ ) was large and growing. Velocity of circulation in Portugal fell smoothly from 1.46 in 1962 to 1.09 in 1973.

Financial restriction was also successful in Turkey during the 1960s. Velocity of circulation (again using  $M_2$ ) fell from 5.26 to 3.66 between 1963 and 1970, a period of price stability and rapid economic growth. Interest rate ceilings protected banking, the government's golden goose, from outside competition (Fry 1972, Chs. 3, 6). As soon as private bonds showed signs of becoming a serious competitive threat in the early 1970s, controls were tightened up. Similar phenomena have been detected in Korea since 1965 (Min 1976).

Nominal interest rate ceilings established to limit competition under policies of financial restriction are highly destabilizing in the face of inflationary shocks. Just as deposit rate ceilings in the United States and other industrial countries have caused disruptive disintermediation in periods of rising inflation and rising free-market interest rates, so all-embracing interest rate ceilings in developing countries cause destabilizing portfolio shifts from financial to tangible assets when inflation accelerates (Lee 1980,

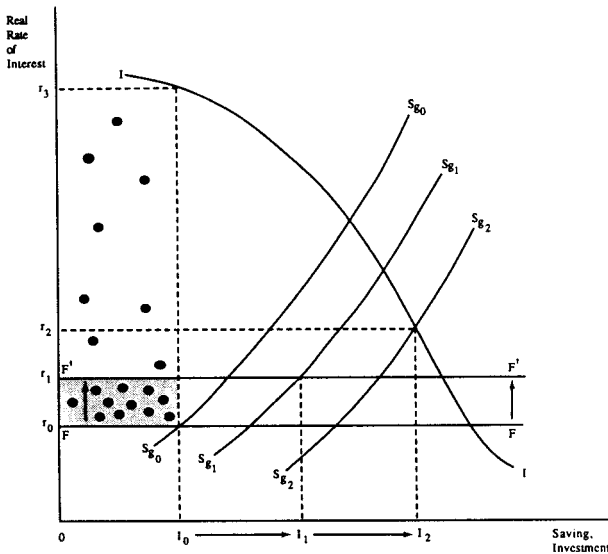


Figure 1.4: Saving and Investment under Interest Rate Ceilings.

Shaw 1975). Clearly such reaction magnifies the initial inflationary shock. Typically, it seems, financial repression is the unintended consequence of low, fixed nominal interest rates combined with high and rising inflation.

## 1.4 McKinnon-Shaw Financial Development Models

McKinnon (1973) uses outside money in his formal analysis but inside money elsewhere. The essential common elements of the McKinnon-Shaw inside money model are illustrated in Figure 1.4. Financial institutions intermediate between savers and investors. Saving  $S_{g_0}$  at a rate of economic growth  $g_0$  is a positive function of the real rate of interest (McKinnon 1973, p. 67; Shaw 1973, pp. 73, 77–78).  $FF$  represents financial repression, taken here to consist of an administratively fixed nominal interest rate that holds the real rate  $r$  below its equilibrium level (McKinnon 1973, pp. 71–77; Shaw 1973, pp. 81–87). Actual investment is limited to  $I_0$ , the amount of saving forthcoming at the real interest rate  $r_0$ .



If the ceiling applied only to savers' interest rates (only to deposit but not to loan rates of interest), the investor/borrower would face an interest rate of  $r_3$ , the rate that clears the market with the constrained supply of saving  $I_0$ . The spread  $r_3 - r_0$  would be spent by a regulated but competitive banking system on non-price competition (advertising and opening new bank branches). These nonprice services, however, may not be valued at par with interest payments. Certainly, real money demand invariably declines with a decrease in the explicit real deposit rate of interest.<sup>8</sup> In the monobank case, Lee (1980, pp. 26–27) assumes that monopoly profits are paid out as transfer payments.

One effect on saving of declining real interest rates when inflation accelerates is illustrated in the case of nondepreciating assets in fixed supply. Suppose that inflation hedges take the form of a fixed supply of land. Land prices are expected to increase at least as fast as the general price level. Now, as real interest rates fall, land becomes an increasingly attractive repository for savings compared with deposits. Clearly, however, buying land does not constitute investment for the economy as a whole; by assumption, the amount of land is fixed. As the real interest rate falls, more households will remove savings from the banks to buy land. Hence the price of land will be bid up faster than the increase in the general price level. With higher real land prices and no change in real incomes, the household sector's wealth/income ratio rises. All saving theories based on intertemporal utility maximization show that more wealth raises consumption both now and in the future. It therefore induces a decline in saving out of current income (Fry and Williams 1984, pp. 286–288).

In fact, there are loan rate ceilings as well as deposit rate ceilings in most financially repressed economies. Furthermore, there are very few competitive banking systems in the developing world. Although private commercial banks can evade loan rate ceilings through compensating balances, they seem to be generally ob-

<sup>8</sup>To the extent that the real deposit rate is reduced by a higher inflation rate rather than a lower nominal deposit rate of interest, this phenomenon could be caused by the implicit tax imposed on financial intermediation through the reserve requirement. This tax rises in step with inflation. Provided loan demand is not completely interest inelastic, depositors will bear some of the increased tax burden. This will take the form of reduced nonprice services. See Courakis (1984, 1986) and Chapter 5.