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Financial Liberalization, Financial Restraint, and Entrepreneurial Development

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Abstract

This paper considers the interactions between financial sector reform and entrepreneurial development with a focus on identifying policies appropriate for fostering entrepreneurial discovery and learning. Using a simple model of occupational choice with moral hazard, it analyzes the effects of *Financial Liberalization* policies (McKinnon, 1973) on the development of industrial entrepreneurship. The analysis shows that in a fully liberalized and competitive banking economy (i) banks may fail to finance potential industrial entrepreneurs because of poaching externality, and (ii) systematically favor short-term projects with front-loaded returns at the expense of projects with strong learning effects. Policies of temporary entry restraint and deposit rate control as advocated in the *Financial Restraint* paradigm can be effective in encouraging banks to experiment with new industrial entrepreneurs. While deposit rate control can encourage entrepreneurial discovery even in a competitive banking economy, it is not effective in weeding out short-termism in project choice. Entry restraint can be especially useful for reducing the bias against the projects with low initial returns but strong learning and productivity gains later. Our analysis shows that a *dual-track* policy where entry restraint is implemented in the industrial sector lending but competition is preserved in the lending to the competing economic activity (like agriculture) can be useful to tackle the problems of poaching externality and short-termism in project choice.

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(1) Introduction

The *Financial Liberalization* approach that grew out of the critique of *Financial Repression* in developing countries in 1950s and 1960s (McKinnon (1973) and Shaw (1973)) has become a corner-stone of the market-oriented development strategy of the last few decades. Financial liberalization advocates a free market determination of interest rates and increased competition in the financial sector. A liberalized and competitive financial market is viewed as a necessary and enabling factor for the success of private sector led development. In fact, the combination of privatization and financial liberalization has become no less than a new orthodoxy in both theory and practice of development by early 1980s. However, a curious aspect of this development strategy is that, until recently, it largely ignored the most critical factor in a private sector led development, the role of entrepreneurs.[2] As a corollary, the implications of financial liberalization for entrepreneurial development is treated only tangentially, if at all. This paper develops a simple two-sector occupational choice model with moral hazard to explore what kind of financial sector reform policies are appropriate for discovery of entrepreneurial talents and fostering learning in the industrial sector of a developing economy.

The standard approach, both in theory and policy of development, has been to assume (implicitly or explicitly) that either there exists a repressed entrepreneurial class which can be unleashed by reducing government intervention, or a new entrepreneurial class will emerge spontaneously in response to liberalization without any significant time lag. For example, in a very influential book on *financial repression*, McKinnon (1973) assumes that there are household-entrepreneurs dispersed in the rural economy each with an idiosyncratic indivisible investment opportunity. A segmented capital and financial market prevents realization of highly profitable indivisible investment opportunities. In this framework there is no dearth of entrepreneurship, the problem lies with government intervention in financial market that hinders efficient allocation of resources across sectors and also stunts financial mobilization. The implicit assumption of a well-developed private entrepreneurial class has played a critical role in the policy advice of the international

[2]There are alternative perspectives in the literature about the role of entrepreneurs in an economy. For Schumpeter, entrepreneurs are innovators; for Knight, they are basically risk-takers. The concept of entrepreneurship used here is different from the Schumpeterian view and closer to the Knightian perspective. The entrepreneurs in the developing countries are imitators rather than innovators. The critical aspect of good entrepreneurship is the capability to organize, adapt and manage a new venture or new technology, new in the context of the country but borrowed from other developed countries. The entrepreneur in a developing country is thus a risk taker, but the risk is due to the unproven entrepreneurial skill and unfamiliarity with a new technology.

organizations like World Bank and IMF also, especially in the decades of 1980s and early 1990s. [3] Over the last few decades, under the auspices of IMF and World Bank sponsored structural adjustment programs, a large number of developing countries have pursued massive privatization. The growth experience of the private sector has, however, been largely disappointing; the private investment had been sluggish in a large number of countries for a long time following privatization (Serven and Solimano (1994), Chibber et. al., 1992). The standard explanation of slow investment response is that because of macro-economic instability the option value of not committing resources into irreversible investment has been high, and private investors were holding back. But as the evidence accumulated showing that investment sluggishness remained a problem even in economies with stable macro-economic environment (Caprio, 1994, Serven and Solimano, 1994), the plausibility of macro-economic instability hypothesis became suspect. An alternative explanation which has been largely ignored is that the disappointing performance of the private investment reflects a deep-seated structural problem in the economy, the absence of a well-developed entrepreneurial class.

This paper addresses two issues central to the development of industrial entrepreneurship in developing countries where the entrepreneurial base with proven capability is very small. They are: (i) the discovery of entrepreneurial talents, and (ii) incentives for entrepreneurial learning. In contrast to the standard adverse selection models of credit markets in the tradition of Stiglitz and Weiss (1981), we start from the observation that the first order problem for the development of industrial entrepreneurship in a developing country is one of accumulation of information capital, not the asymmetry of information between the bank and an entrepreneur. In the standard models of credit market, the entrepreneur knows its own type, but the bank does not. However, in a developing country, the set of people who know their entrepreneurial type is extremely small. The more realistic assumption, in this context, is one of 'symmetric ignorance' where both bank and the potential entrepreneur do not know the entrepreneurial type.[4] The critical policy issue from this perspective is what kind of financial sector reform will foster experimentation with new entrepreneurs by the banks. The discovery of good entrepreneurs from a vast pool of potential candidates in a developing country may, however, prove extremely difficult due to number of factors including lack of collateral, risk aversion, and time preference (impatience)as emphasized in

[3] There has, however, been a recent revival of interest in the development of private entrepreneurship, especially in the context of transition economies. See, for example, McMillan and Woodruff (2002).

[4] This symmetric ignorance assumption is, however, standard in the occupational choice literature in the tradition of Kanbur (1979) and Kihlstrom and Laffont (1979).

the traditional literature on occupational choice and entrepreneurship. While acknowledging the importance of these factors, we focus on the implications of *inalienability* (Hart and Moore, 1994) of entrepreneurial capital which has largely been ignored in the discussion of financial sector reform policies in developing countries. The return to the discovery of a good industrial entrepreneur is spread over time, and the banks might find it difficult to appropriate adequate share of the future returns to justify the risk taking because of *inalienability* of entrepreneurial capital. This appropriability problem becomes especially severe as the banking sector becomes more competitive. The negative effects of competition in the financial sector on new entrepreneurs due to *poaching externality* (i.e., bidding for good entrepreneurs once the information is revealed) is well recognized in the literature (for a survey, see Cetorelli (2001)).[5] More important, from a policy perspective is the implication that, contrary to the privatization-financial liberalization view of development, financial liberalization may not be conducive to the discovery of entrepreneurial talents as it significantly increases the degree of competition in the financial sector. The second issue under focus in this paper is that of *short-termism* in project choice by private banks which is likely to retard entrepreneurial learning (both active and passive). That the private banks, especially in a liberalized and competitive environment, are averse to financing long-term industrial investment is widely discussed in the policy literature. The private banks tend to concentrate their lending to activities like trading that yield quick returns, but unlikely to confer significant learning benefits for industrialization. The so-called *development banks* were initially conceived in the developing countries to provide finance for long-term industrial projects precisely because of the problem of short-termism[6]. The projects with strong learning effects that result in significant productivity gains later but may not yield adequate returns initially are likely to be red-lined in a regime of financial liberalization. The reason again is that the banks are unwilling to finance learning if it cannot ensure an adequate share of the future stream of profits because of poaching in a competitive financial sector. Learning enriches human capital of an entrepreneur, but absence of indentured servitude, the banks cannot claim "property rights" to this human capital. The upshot of the above discussion is that the two corner-stones of the prevailing consensus in development policy, private sector led development and financial liberalization, seem to work at

[5]Increased competition in the product market may also be detrimental to the development of industrial entrepreneurship in a developing economy. For an interesting analysis using the general equilibrium framework of occupational choice a la Kanbur (1979, 1981), see Grossman (1984). Grossman (1984) shows that free trade can reduce the pool of industrial entrepreneurs in LDCs relative to autarky when there is no efficient risk sharing mechanism to start with, and, in equilibrium, the developing economy is an importer of the industrial good.

[6]for a discussion, See Aghion (1999).

cross purposes.

The major policy implication of the analysis presented in this paper is that, contrary to the financial liberalization view, measured interventions restricting competition (temporarily) in the banking sector and deposit rate control may be appropriate for development of an industrial entrepreneurial class at an early stage of development. A dual-track policy regime where restriction on competition is implemented in the industrial lending but competition is preserved in agricultural lending is shown to be effective in both discovery of new industrial entrepreneurs and implementing projects with strong learning effects. The analysis shows that the deposit rate control as a policy instrument can induce banks to experiment with new entrepreneurs even in a free-entry banking economy (i.e., fully liberalized financial sector), but it is ineffective in weeding out the projects with front-loaded returns that do no confer any learning benefits. The results of this paper thus provide complementary arguments for the policies of *Financial Restraint* recently advanced by Hellmann, Murdock, and Stiglitz (1996, 1997, 2000), where policies that restrain competition (temporarily) and mild interest rate controls enhance the franchise value of a bank, and thus provide incentives to control moral hazard, and to mobilize savings from previously unexplored segments of an economy (see also, Chiappori et. al. (1995)). This paper also contributes to the emerging literature on *development as self-discovery* a la Hausman and Rodrik (2003).[7] The focus of Hausman and Rodrik (2003) is on the discovery of cost of production of new products in a developing country and the attendant problem of rent dissipation due to imitation by the followers once a suitable product is discovered. Although the focus of our analysis differs from theirs, the issues raised here are closely related to Hausman and Rodrik (2003) view of development as a process of self-discovery.

The rest of the paper is structured as follows. Section 2 places the present research in proper perspective by tracing out its intersections with the existing literature in greater detail. Section 3 presents a two sector occupational choice model with moral hazard in industrial activity. The subsection (3.1) considers a simplified version of the model without moral hazard and discusses the negative effects of poaching externalities in competitive banking on entrepreneurial discovery. The following sub-section (3.2) sets up the details of the model with moral hazard in industrial activity. Section 4 derives conditions for no-industrial-financing trap in an economy and establishes the desirability of a dual-track policy regime for entrepreneurial discovery. The next section (5) is

[7]For an earlier related contribution, see Hoff (1997).

devoted to the analysis of short-termism under alternative policies. The paper ends with a summary of the results and a discussion of the major policy implications for financial sector development in developing countries.

(2) Related Literature

The standard approach to the analysis of entrepreneurial development is that of *occupational choice* models (Kihlstrom and Laffont, 1979; Kanbur, 1979, 1981; Banerjee and Newman, 1993, Eswaran and Kotwal, 1990). The basic theoretical approach is to analyze the effects of differential risk preference and intertemporal discount factor on the choice between safe wage labor and a risky entrepreneurial activity. With the assumption of a perfect capital market, the choice to become an entrepreneur solely depends on time preference and risk aversion parameters (This strand of literature started with the contributions of Kihlstrom and Laffont, 1979; and Kanbur, 1979, 1981). However, the untenability of the assumption of a perfect capital market was soon recognized in the face of pervasive evidence of credit rationing, and internal finance constraints on the investment behavior of firms even in countries with most developed credit and capital markets (see for example, Fazzari et al. 1988, Stiglitz, 1992, Hubbard, 1998). The subsequent literature, both theoretical and empirical, placed increasing emphasis on the critical role played by access to financial capital. On theoretical level, the contributions of Shorrocks (1988), Evans and Jovanovic (1989), Holtz-Eakin et al. (1994), and Eswaran and Kotwal (1990) have shown that differential access to capital results in differential risk-bearing capacity and thus lead to different occupational choice even though time preference and risk aversion parameters are identical across agents. This paper departs from the standard occupational choice model of entrepreneurship in a critical way by assuming that both the entrepreneur and the bank are risk neutral.

The critical difference of our model from the standard Stiglitz-Weiss (1981) type credit rationing models is that a potential entrepreneur may be red-lined from the credit market even in the absence of any informational asymmetry. In fact, in contrast to the adverse selection models, in our analysis of poaching externality, the prospective entrepreneur does not know her type and the crux of the issue is who bears the cost of discovery of the entrepreneurial type.[8] This feature

[8]This ignorance about ones own type and the associated problem of discovery is a feature of the credit market model of Lang and Nakamura (1990). Although there is a generic similarity between their and our analysis, their focus was on the explanation of persistence of boom and bust in an economy.

of the model makes clear the connection of the present research to the literature on patent rights in R&D competition. As in the literature on R&D competition, the private market is inefficient in the present case because it is difficult to ensure that the firm (bank) financing the discovery of a good entrepreneur will be able to capture enough rent to cover its cost before competition dissipates the rent. But there is a critical difference from the standard R&D problem. It arises from *inalienability* of the object of discovery, i.e. entrepreneurial capability. In the R&D case, a contract can be written which ensures sufficient share of the rent to the discoverer and the standard way of doing it is to grant a limited duration patent right to the discoverer. However, in the case of discovery of entrepreneurs, it is not possible to design a patent right for the financier bank. Because it would tantamount to *financial Slavery*. Observe that the rent to good entrepreneurship is not restricted only to the first project undertaken, but accrues to other projects undertaken by the same entrepreneur throughout her lifetime. Thus even if the entrepreneur can be restricted to the bank for refinancing needs for the first project, the entrepreneur has the freedom to go to the lowest bidder for all other projects undertaken after the revelation of her entrepreneurial type. This implies that allowing for equity contracts between the bank and the entrepreneur only partially alleviates the problem, as the bank is still unable to capture most of the future rents associated with the good entrepreneurship.

The problem of commitment failure addressed here has close similarity to a branch of literature on *on-the-job training* (in Becker's phrase *general training*). The problem there is that a private firm always provides less than socially optimal level of training to the employee, because after accumulating the human capital the employee can leave the firm and get a better job with another firm (see, for example, Evans, 1994). A recent contribution that discusses the problems created by poaching externality is Petersen and Rajan (1995) where they point to the negative effects of competition in banking sector on small business financing in USA due to bidding for the good entrepreneurs. However, the focus and the objectives of our analysis is very different from theirs. Unlike Petersen and Rajan (1995), we are interested in analyzing the efficacy of alternative financial sector reform policies (*financial liberalization* versus *financial restraint*) for entrepreneurial discovery and tackling short-termism in project choice, especially in the context of developing countries.

(3) The Model

The economy consists of two sectors called agriculture and industry. Investment in agriculture is divisible and yields a constant rate of return of R^a. R^a is the rate of return net of principal but before deduction of the interest charges. Investment in industry is lumpy and requires a fixed amount of financial capital which is normalized to 1. The return on industrial investment depends on the characteristics of the entrepreneur. There are two types of entrepreneur: good and bad. In case of a good entrepreneur, the success of the project depends on the effort chosen $E \in [0, 1]$. The cost of effort to the entrepreneur is

$$C(E) = \frac{\alpha}{2}E^2$$

The expected return from the industrial investment net of effort cost for a good entrepreneur is:

$$E^* R^m - \frac{\alpha}{2}E^{*^2}$$

where E^* is the optimal effort level and $R^m > R^a$ and $R^m > 1$.[9] If the investment is undertaken by a bad type, the gross return (before deduction of principal and interest charges) from industrial investment is zero irrespective of the effort level chosen. So a failed entrepreneur does not repay anything to the bank. There is no asymmetry of information between the bank and the entrepreneur regarding the distribution of entrepreneurial talents and thus they entertain identical estimate of probability of drawing a good entrepreneur. We denote this common estimate by P.

A bank can lend to three groups of people: (i) safe agricultural sector, (ii) safe loan to industrial entrepreneurs already proven good, or (iii) finance the experimentation of new industrial entrepreneurs. The bank maximizes the expected return on its loan portfolio. When the banking sector is competitive, the banks compete for the proven good entrepreneurs and satisfy zero profit condition for this segment of the market. We denote the interest rate on agricultural loan by i^a. The deposit interest rate at which the banks can get funds is denoted by i^d. It is assumed that the supply of loanable funds at interest rate i^d is perfectly elastic.[10] The zero profit condition for the agricultural loans implies that $i^a = i^d + \tau$ where $\tau \geq 0$ is the unit cost of deposit mobilization for the banks.

[9] This last condition that $R^m > 1$ is needed to rule out negative profit maximizing interest rate by a monopolist bank.

[10] We assume, for simplicity, that the potential entrepreneurs have zero savings. The supply of savings is generated by households which are not explicitly modeled.

A prospective industrial entrepreneur can either apply for an industrial loan or take an agricultural loan and earn a safe agricultural income. If she does not take any loan (agricultural or industrial), her reservation payoff is $\hat{w} \geq 0$. The $\hat{w}$ may reflect the return on agriculture without any purchased inputs (like traditional farming without fertilizer, pesticide etc for which no bank loan is needed). Alternatively, $\hat{w}$ can be interpreted as wage in the labor market. Note that under competition in the agricultural lending, the return on agricultural loan may be higher than the reservation payoff, i.e., $Y^a = R^a - i^a = R^a - \left(i^d + \tau\right) \geq \hat{w}$. The bank that finances the discovery of entrepreneurial type observes the type of an entrepreneur at the end of the first period when the information is revealed. An entrepreneur who is successful in the industrial activity can credibly reveal its type to the outside banks by incurring a cost $\tilde{C}$ at the beginning of the next period. One way to think about $\tilde{C}$ is that it represents the market structure in banking, a higher $\tilde{C}$ reflects higher market power of the incumbent bank. An unsuccessful industrial entrepreneur goes back to the agricultural sector in the second period.[11] We assume that $\tilde{C}$ is small enough so that the entrepreneur finds it optimal to incur the cost and thus reveal its type to the outside banks. To keep the model as simple as possible, we abstract from savings-investment decision, and assume that the entrepreneur needs to borrow the whole amount for industrial investment in the second period even though it can use part of the first period income to incur the information revelation cost at the beginning of the second period.

In this economy, we analyze the decision problem of a bank facing a random applicant for industrial loan from the unrevealed segment of the population. For simplicity, it is assumed that each individual has a life span of two periods and a period is defined to cover the life cycle of the industrial project. Also it is assumed that the subjective time preference of entrepreneur is $\rho > 0$. Both the entrepreneur and the bank are assumed to be risk-neutral.

The time line in the model is as follows: at the beginning of period 1, the potential entrepreneur decides whether or not to apply for industrial loan. If she applies and the loan is approved by the bank, she chooses the optimal effort given the common estimate of the probability of a good entrepreneur in the population. At the end of the first period, the information about the entrepreneurial type is revealed without any cost to the entrepreneur herself and the financier bank, but not to the other banks. At the beginning of the second period, the entrepreneur, if a good type, decides whether or not to switch banks by incurring the information revelation cost

[11] Note that the bank will prefer an untested entrepreneur to finance industrial activity over a failed one.

$\tilde{C}$. Given the assumption that $\tilde{C}$ is small enough it is optimal to reveal information and apply for industrial loan in the second period. A failed entrepreneur, on the other hand, goes back to agricultural sector at the beginning of the second period.

(3.1) A Simple Model of Entrepreneurial Discovery in the Absence of Moral Hazard

We first consider the simple case where there is no effort choice and thus no moral hazard in industrial activity, i.e. set $E = 1$. The rate of return in this case is R^m when the entrepreneur turns out to be a good type. This implies that the bank can set interest rate to the maximum possible given the participation constraint, without worrying about the moral hazard due to high interest rate. The main result in this simple setting is that even without the limits on interest rate arising from moral hazard, an economy can be trapped in an equilibrium where the banks refuse to finance the discovery of industrial entrepreneurs. This is due to binding liquidity constraint faced by an entrepreneur. The liquidity constraint results from the fact that the entrepreneur cannot credibly commit to share the returns to good entrepreneurship in the second period as the entrepreneurial capability is *inalienable*; the entrepreneur finds it optimal to switch banks by incurring the information revelation cost $\tilde{C}$ in the second period. Let i_1^b stand for the minimum first period interest rate needed by the bank for giving loan to the new entrepreneur. From the individual rationality constraint of the bank, we have:

$$i_1^b = \frac{1 + i^a}{P} - 1 \tag{1}$$

Denote the maximum interest rate that the entrepreneur is willing to pay (ignoring the liquidity concerns) and still take the industrial loan by i_1^e. From the participation constraint of the entrepreneur, we have:

$$i_1^e = R^m \left(\frac{1+\beta}{\beta} \right) - R^a \left(\frac{P+\beta}{\beta P} \right) + \frac{i^a}{P} - \frac{\tilde{C}}{\beta} \tag{2}$$

where $\beta = 1 + \rho$ is the discount factor of the entrepreneur. We concentrate on the case where $i_1^e \geq i_1^b$. Then we say that the bank is unwilling to finance a potential new industrial entrepreneur

because of *binding liquidity constraint* if the following holds:

$$i_1^e \geq i_1^b > R^m \tag{3}$$

Note that the entrepreneur is always liquidity constrained in a liberalized competitive banking economy in the sense that the maximum interest rate she is willing to pay is higher than the maximum she can credibly commit, i.e.,

$$i_1^e > R^m \tag{4}$$

But the liquidity constraint can be *non-binding* allowing the bank to give loan to the new industrial entrepreneur. This happens when we have

$$i_1^e > R^m \geq i_1^b \tag{5}$$

Proposition 1 *In a competitive banking economy: (1.a) The likelihood of a binding liquidity constraint is, ceteris paribus, higher (i) the lower is the productivity of the industrial sector,* R^m*, (ii) the lower is the initial probability estimate of a good entrepreneur,* P*, and (iii) the higher is the agricultural interest rate,* i^a*;*

(1.b) Starting from a binding liquidity constraint, a reduction in the deposit interest rate might make entrepreneurial discovery possible.

Proof:

(1.a) Follows from the condition for binding liquidity constraint:

$$\frac{1+i^a}{P} - 1 > R^m. \tag{6}$$

(1.b) Let $\phi_1 > 0$ such that

$$\frac{1+i^a-\phi_1}{P} - 1 = R^m$$

Since $i^a = i^d + \tau$ under competition in agricultural lending, we have

$$\frac{1+(i^d-\phi_1)+\tau}{P}-1=R^m$$

As long as $\phi_1 < i^d$, a lower deposit rate set at equal to $(i^d - \phi_1)$ makes industrial loan to a new entrepreneur possible. Note that a reduction in the deposit rate does not violate the necessary condition for new industrial loan, $i_1^e \geq i_1^b$. This can be seen from the following:

$$\frac{\partial i_1^e}{\partial i^d}=\frac{\partial i_1^b}{\partial i^d}=\frac{1}{P}. \text{ QED.}$$

Alternative Policy Instrument: Entry Restraint

An alternative policy instrument for encouraging banks to experiment with new industrial entrepreneurship would be to implement *entry restraint* for a limited duration along the lines discussed in Hellmann et. al. (1996, 1997). Note that in the simple two period model used in this paper, a entry restraint can only be implemented for the second period; but in a more realistic multi-period context, the notion of "limited duration" monopoly right is the relevant one. To emphasize that the Financial Restraint does not advocate entry restraint for unlimited time, we use the terminology of *limited duration monopoly right* or *temporary entry restraint.* A limited duration monopoly for the bank investing in entrepreneurial discovery can be modeled as increasing the switching cost $\tilde{C}$ to a prohibitive level so that the bank can share in the returns to good entrepreneurship in the second period. This in effect gives a limited duration "patent right" to the bank in an indirect way over the object of discovery, i.e., entrepreneurial capability. This may relax the binding liquidity constraint in many cases and help in entrepreneurial discovery. However, as we will see in the following, in the presence of moral hazard, a monopoly bank is likely to choose too high an interest rate and thus lead to suboptimal effort choice.

(3.2) The Model with Moral Hazard

We now turn to the analysis of the case when the bank's ability to jack-up the first period interest rate might be limited by the fact that a higher interest rate reduces the probability of success (optimal effort) by a good entrepreneur in the industrial activity. The existence of moral hazard also has important implications for alternative policy instruments like deposit rate control and entry restraint.

The Optimal Effort Choice

The optimal effort choice by an untested entrepreneur solves the following problem in the first period (before revelation of entrepreneurial type):

$$Max_E\ Y_1 = PE_1\left(R^m - i_1\right) - \frac{\alpha}{2}E_1^2 \tag{7}$$

The optimal effort choice as function of interest rate i_1 is:

$$E_1^*\left(i_1\right) = \frac{P}{\alpha}\left(R^m - i_1\right) \tag{8}$$

The maximum income of an entrepreneur as a function of i_1 is:

$$Y_1^*\left(i_1\right) = \frac{P^2}{2\alpha}\left(R^m - i_1\right)^2 \tag{9}$$

In the second period, if the entrepreneur is revealed as a good type, the optimal effort and the expected maximum income are (under competitive banking):

$$E_2^*\left(i_2\right) = \frac{1}{\alpha}\left(R^m - i_2\right) > E_1^*\left(i_1\right) \tag{10}$$

$$Y_2^*\left(i_2\right) = \frac{P}{2\alpha}\left(R^m - i_2\right)^2 - P\tilde{C} > Y_1^*\left(i_1\right) \tag{11}$$

The last inequality in (11) follows from the assumption that the switching cost for a good entrepreneur $\tilde{C}$ is low enough. Observe that the maximum income functions are convex in the interest rate.

Bank's Optimization

The expected net rate of return from an industrial loan to a new entrepreneur for the bank (as a function of interest rate i_1) is:

$$\begin{aligned}\Psi_1\left(i_1\right) &= PE_1^*\left(1 + i_1\right) - 1 \\ &= \frac{P^2}{\alpha}\left(R^m - i_1\right)\left(1 + i_1\right) - 1\end{aligned} \tag{12}$$

Note that $\Psi_1(i_1)$ is concave in i_1. Denote the interest rate that maximizes $\Psi_1(i_1)$ as $\hat{i}_1$, then

$$\hat{i}_1 = \frac{1}{2}(R^m - 1) > 0 \ , \ \text{because } R^m > 1 \text{ by assumption.} \tag{13}$$

The maximum expected return on a new industrial loan is:

$$\hat{\Psi}_1(\hat{i}_1) = \frac{P^2}{4\alpha}[R^m + 1]^2 - 1 \tag{14}$$

Note that in the simple case without moral hazard, the bank could increase the first period interest rate up to R^m which implies an expected return of PR^m.

When facing an entrepreneur revealed as good type at the end of the first period, the maximum interest rate and maximum expected return are:

$$\hat{i}_2 = \frac{1}{2}(R^m - 1) = \hat{i}_1 \tag{15}$$

$$\hat{\Psi}_2(\hat{i}_2) = \left\{ \frac{P}{4\alpha}[R^m + 1]^2 - 1 \right\} > \hat{\Psi}_1(\hat{i}_1) \tag{16}$$

(4) Financial Liberalization and Entrepreneurial Discovery

Proposition 2

In a free entry banking economy, given P, R^m and α, there exists a threshold deposit rate i^d_* such that $\forall i^d > i^d_*$, the economy is trapped in a no information revelation equilibrium with no credit to the new industrial entrepreneurs. The threshold deposit rate i^d_* is a positive function of P and R^m, and a negative function of α.

Proof:

In a free entry banking economy, the bank satisfies the zero profit condition in each period. This implies that a bank gives loan to a new industrial entrepreneur (at an interest rate $i_1 \leq \hat{i}_1$) if the following holds in the first period :

$$\hat{\Psi}_1(\hat{i}_1) \geq i^a = i^d + \tau \tag{17}$$

Define i_*^d by the following equality:

$$\hat{\Psi}_1(\hat{\imath}_1) = i_*^d + \tau \tag{18}$$

Which implies:

$$i_*^d = \frac{P^2}{4\alpha}[R^m + 1]^2 - (1 + \tau) \tag{19}$$

So $\forall\ i^d > i_*^d$, the bank does not provide loans to new industrial entrepreneur. QED.

The immediate policy implication of the above result is that deposit rate control may be helpful in the discovery of new industrial entrepreneurs in a competitive banking economy with moral hazard in industrial activity. Note that if $i^d > R^a - \tau$, then there is no demand for agricultural loans in the economy. So it is more realistic to assume that $i^d \leq R^a - \tau$. In this case, proposition 2 is relevant in those cases where $i_*^d < R^a - \tau$. This leads to the following inequality:

$$P < \check{P} \equiv \frac{2}{[R^m + 1]}\left(\sqrt{\alpha(1 + R^a)}\right) \tag{20}$$

The above discussion implies that a no-industrial-lending equilibrium is more likely if (i) the initial estimate of good entrepreneur is low enough to satisfy inequality (20), and (ii) the deposit interest rate is high enough $\left(\text{i.e., } i^d \in \left(i_*^d,\ R^a - \tau\right]\right)$. A straight-forward but important implication of the above observations is that high deposit interest rates that typically follow financial liberalization in a developing country will be especially detrimental to entrepreneurial discovery in a country where the estimated probability of a good entrepreneur (i.e., P) is low.[12]

(4.1) Entry Restraint and Entrepreneurial Discovery: A Dual Track Policy

As discussed before in the context of the simple case without moral hazard, a second policy instrument that can encourage the banks to experiment with new industrial entrepreneurs is to give the relevant banks limited duration monopoly rights. However, a full monopoly right that covers both the agricultural and industrial lending is not likely to be the appropriate policy. The reason is that if a limited duration monopoly is awarded to the bank, it will also increase the agricultural interest rate and drive down the farmers to their reservation payoff $\hat{w}$. The monopoly interest rate charged by the bank for agricultural loan is, in general, greater than the interest rate

[12] For evidence that the deposit rate increased dramatically in many developing countries after financial liberalization in the 1980s, see Honohan (undated).

charged under a liberalized free entry financial sector, i.e., $i^a = R^a - \hat{w} > i^a = i^d + \tau$. As the interest rate on agricultural loan increases, it also attenuates the incentives of a bank for providing risky industrial loans. This suggests that a two track policy that takes advantage of *Liberalization in agricultural lending*, but implements *Entry Restraint in industrial lending* is appropriate for providing the right incentives to the banks to invest in the discovery of industrial entrepreneurs in the economy. The following proposition states the result.

Proposition 3

Assume that the economy is initially in a no industrial lending equilibrium under financial liberalization, i.e., $i^d = i^d_* + \nu$ *and* $\nu > 0$, and $P < \check{P}$, *where* $\check{P}$ *is defined in equation* (20). *Consider a dual track policy regime implemented in this economy where competition is preserved in agricultural lending, but a bank is awarded monopoly for industrial lending. The dual track policy makes lending to new industrial entrepreneurs possible if* ν *is small enough and the initial probability estimate of a good entrepreneur* P *is not too low.*

Proof:

With monopoly over industrial lending, a bank can charge the maximum interest rates in two periods: $\hat{\imath}_1 = \hat{\imath}_2$ with the associated expected rates of returns $\hat{\Psi}_1(\hat{\imath}_1)$ and $\hat{\Psi}_2(\hat{\imath}_2)$. Given deposit rate $i^d = i^d_* + \nu$, the bank incurs loss (ν) in the first period if it gives loan to a new entrepreneur. Now note that if ν is small enough, the bank makes profit in the second period. The second period profit is given by:

$$\begin{aligned} & \hat{\Psi}_2(\hat{\imath}_2) - (i^d_* + \nu + \tau) \\ = & \left[\hat{\Psi}_2(\hat{\imath}_2) - \hat{\Psi}_1(\hat{\imath}_1)\right] - \nu \\ = & \frac{(1-P)P}{4\alpha}\left[R^m + 1\right]^2 - \nu \end{aligned} \tag{21}$$

Denoting bank's discount factor by $\tilde{\beta}$, the bank provides loan to a new industrial entrepreneur under a dual track policy regime if the following holds:

$$\frac{(1-P)P}{4\alpha}\left[R^m + 1\right]^2 \geq \nu\left(1 + \tilde{\beta}\right) \tag{22}$$

An interesting implication of inequality (22) above is that when the initial probability estimate

of a good entrepreneur is either very low or very high, it is less likely that a bank will find it profitable to lend to a new industrial entrepreneur.

To make sure that the credit offered by the bank is not refused by the potential entrepreneur we need to check the participation constraint of the entrepreneur facing interest rates $\hat{\imath}_1 = \hat{\imath}_2 = \frac{1}{2}(R^m - 1)$ and agricultural interest rate $i^a = i_*^d + \nu + \tau$. Note that under entry restraint in industrial lending, the entrepreneur does not incur any switching cost. This means the expected income as a function of interest rate in the second period is given by $\tilde{Y}_2^*(i_2) = \frac{1}{2\alpha}(R^m - i_2)^2$ and $\tilde{Y}_2^*(i_2) > Y_1^*(i_1)$. This along with the fact that a monopoly bank charges the same interest rate in first and second periods (i.e., $\hat{\imath}_1 = \hat{\imath}_2$) imply that if the entrepreneur finds it acceptable to take the loan in the first period, it does so in the second period too. So we check for participation constraint only for the first period. An untested entrepreneur accepts the industrial loan if the following sufficient condition holds:

$$\frac{P^2}{2\alpha}(R^m - \hat{\imath}_1)^2 > R^a - \left(i_*^d + \nu + \tau\right) \tag{23}$$

The inequality (23) implies that the following holds:

$$\nu > \hat{\nu} \equiv (1 + R^a) - \frac{3P^2}{8\alpha}[R^m + 1]^2$$

Now observe that $\hat{\nu} \leq 0$ if the initial probability estimate is higher than a threshold:

$$P > \hat{P} = \frac{1}{[R^m + 1]}\sqrt{\frac{8\alpha(1 + R^a)}{3}} \tag{24}$$

It is easy to check that the open interval $\left(\hat{P}, \check{P}\right)$is non-null. QED.

Note that condition (23) is over-sufficient for satisfying the participation constraint of the entrepreneur. Because even if $Y_1^*(i_1) = \frac{P^2}{2\alpha}(R^m - i_1)^2 < Y^a = \left[R^a - \left(i_*^d + \nu + \tau\right)\right]$, the entrepreneur might still accept the loan if the discounted second period income gain is large enough to more than compensate the income loss in the first period.

Entrepreneurial Discovery: Deposit Rate Control versus Entry Restraint

As discussed in propositions (1)-(3) above, both a reduction in the deposit interest rate and a temporary entry restraint (limited duration monopoly right) can induce banks to experiment with

new industrial entrepreneurs. The cost of entry restraint is that it leads to higher interest rate and thus less than optimal effort choice in the second period. This adversely affects the probability of success in the second period. Note that a reduction in the deposit rate actually reduces the interest rate charged to the new industrial entrepreneurs under competition and thus improves optimal effort. But the cost of deposit rate reduction is the potential negative effects on the household savings which is not explicitly modelled in this paper. The potential adverse effects on savings, however, is likely to be moderate, as the available evidence clearly shows that the interest rate elasticity of savings is very low as long as the real interest rate is positive and, in most cases, is not statistically significant (see Agenor and Montiel (1999) and Bandiera et. al. (2000)). There is an important caveat to the above though; one should be careful about not pushing an economy to very low deposit interest rate as the supply of savings (intermediated through banks) may be very sensitive around zero real interest rate. This high sensitivity is due to the fact that a lot of inflation hedges (like land, gold etc.) become attractive as savings instruments when the real interest rate on bank deposits is close to zero or negative. Also, as emphasized by Hellmann et. al. (1996) and Chiappori et. al. (1995), among others, an appropriately chosen deposit rate ceiling can, in fact, increase the aggregate savings mobilization through financial deepening. This may be especially important in the context of developing countries where the rural areas are usually not served by the private banks[13].

The costs of entry restraint due to moral hazard caused by monopoly interest rate depends on the slope of the maximum income function with respect to interest rate. If the degree of moral hazard as captured by the parameter α is high enough, then deposit rate control in a free entry banking might dominate as a policy instrument for entrepreneurial discovery. However, there are limits to deposit rate control as a policy instrument for the development of industrial entrepreneurship. As we discuss in more detail in what follows, deposit rate control may be ineffective in weeding out short-termism in project choice; entry restraint is a superior policy instrument for reducing the bias against long gestation industrial projects with strong learning effects.

[13]For evidence that deposit rate ceiling can help in financial deepening and deposit mobilization in the context of USA, see Sarr (2000).

(5) Financial Sector Reform and Short-Termism

(5.1) Tackling Short-Termism in Project Choice: A Special Role for Entry Restraint

As noted in the introduction, one of the central concerns in developing countries is that the private banks are, in general, not willing to finance long gestation industrial projects, especially those with strong dynamic learning effects and productivity gains. It is thus extremely important to structure incentives for the banks to reduce the short-termism in project choice. The policies of financial liberalization creates perverse incentives for the banks to concentrate their lending to quick-yield projects with front-loaded returns at the expense of long-gestation projects with significant learning effects. The reason behind this type of short-termism in project choice in a free-entry banking economy is again the poaching externality discussed before. The banks that finance the initial investment and thus make learning and productivity gains possible are unable to appropriate a sufficient share of the productivity gains because of poaching by other banks waiting in the sidelines. This may create an equilibrium where every bank waits for others to move first so that they can reap the benefits of both information revelation about entrepreneurial type and also the productivity gains from learning by doing.

The policy of deposit rate control, however, may not be effective in tilting bank's incentives in favor of projects with low initial return but high net present value due to strong learning effects later. This is due to the fact that the reduction in the deposit rate makes entrepreneurial discovery possible by making agricultural lending relatively less attractive to the bank (under the dual track policy regime). This policy thus works at the margin of intersectoral returns, but the banks still need to satisfy zero profit condition in each period. This implies that the banks still finance those projects first which give them maximum return in the first period. A policy of entry restraint on the other hand allows the bank to look at the net present value of different projects and finance the ones with highest NPV irrespective of the intertemporal pattern of the returns.

In the context of our model, dynamic learning can take two different forms: (i) a low initial return and a higher return in the second period, i.e., $R_1^m < R_2^m$, (ii) a reduction in the cost of effort to the entrepreneur in the second period, i.e., $\alpha_1 > \alpha_2$ where subscripts denote the periods. Before presenting the results on relative effectiveness of deposit rate control vis a vis entry restraint, we note an interesting implication of the information revelation about entrepreneurial type at the

end of the first period for net present value of alternative industrial projects. This also yields rich policy implications regarding appropriate policies for fostering entrepreneurial learning in an economy.

Proposition 4

Consider two alternative industrial projects with return profiles $[R^m, R^m]$ *and* $[(R^m - \xi), (R^m + \xi)]$ *where* $\xi \in (0, R^m)$. *Given an interest rate* i, *the expected net present value of the second project with back loaded returns (i.e, productivity gains through learning) is higher than the expected net present value of the first project with flat return profile (i.e., no learning) if the following holds*:

$$P < Min\left[\frac{1}{\tilde{\beta}}, \frac{1}{\beta}\right] \tag{25}$$

Proof:

Consider the case when $\xi > 0$ is arbitrarily small. In the limit, the proposition implies the following inequalities need to be satisfied:

$$\frac{1}{\tilde{\beta}}\frac{\partial \Psi_2(i)}{\partial R^m} > \frac{\partial \Psi_1(i)}{\partial R^m} \tag{26}$$

$$\frac{1}{\beta}\frac{\partial Y_2(i)}{\partial R^m} > \frac{\partial Y_1(i)}{\partial R^m} \tag{27}$$

It is straight forward to check that inequality (26) holds if $P\tilde{\beta} < 1$ and inequality (27) holds if $P\beta < 1$. The proof then immediately follows for any arbitrary $\xi \in (0, R^m)$. QED.

The intuition behind the result is that the projects with back-loaded returns (i.e. strong productivity gains through learning by doing) enjoy the returns to a reduced moral hazard in the second period as a result of the revelation of the entrepreneurial type. A marginal reduction in R^m in the first period with an offsetting marginal increase in R^m in the second period changes the sum of optimal efforts across two periods by $\left(\frac{1-P}{\alpha}\right)$. Since $P < 1$, this implies that the effort increase in the second period more than offsets the effort reduction in the first. The net present value of a project thus increases when more of the returns come in the second period provided that the discount factor is low enough.

One can readily check that under condition (25) results similar to proposition 4 holds also for the second type of learning mentioned above, i.e. a reduction in costs of effort (α) in the second period, and we omit a discussion of this case for the sake of brevity.

Policy Implications

An important implication of the above result in proposition 4 when coupled with proposition 3 is that, under entry restraint, both the banks and entrepreneurs will try to avoid projects with front-loaded or flat return profiles in favor of projects with back-loaded returns. This is because the banks rely on the net present value of the projects for screening. The banks thus finance the projects with low initial return but strong productivity gains later through learning by doing. A free-entry banking economy on the other hand forces the banks and entrepreneurs to implement the projects with front-loaded returns as the banks satisfy zero profit condition in each period. Note that by proposition 4, banks might finance projects with high initial returns even when there is *obsolence effect* and thus the return profile is a decaying one over time. However, financing this type of projects can be especially costly from a social point of view.

Another important implication of propositions 3 and 4 is that a dual track policy might be critical for an entrepreneur to be able to invest in productivity gains or cost reduction using internal funds (i.e., active learning). To see this in a simple setting, consider a project where the entrepreneur can invest at the end of the first period to increase productivity or reduce cost in the second period. For concreteness, let us consider the case of productivity enhancing investment. If ξ is invested at the end of the first period, it gives a return of $f(\xi) \geq \xi$ in the second period (i.e., the total return from the project is $R^m + f(\xi)$ in the second period). A special case of this formulation is when $f(\xi) = \xi$ which gives us the setup used in proposition 4. Then propositions 3 and 4 imply that the banks will encourage the entrepreneurs to invest in productivity enhancement and/or cost reduction under the dual track policy regime, but may resist such investment under a free-entry banking economy because of possible binding liquidity constraint. A related issue is that of investment in quality improvement and quality control which is critical especially for success in the export market. Similar arguments make it clear that a dual track policy rather than full financial liberalization will be appropriate for encouraging such investments by the entrepreneurs through internal finance.

We now return to the issue of ineffectiveness of deposit rate policy in eliminating short-termism in project choice, and the need for complementary policy of financial restraint. The proposition 5 below states the result.

Proposition 5

A reduction in deposit interest rate alone fails to provide banks with incentives not to finance low NPV projects with front-loaded returns. Under entry restraint, the banks have the appropriate incentives to finance projects according to NPV and thus help implement projects with low initial returns but strong productivity gains or cost reduction later due to learning effects.

Proof:

Consider three deposit interest rates $i^{d1} < i^{d2} < i^{d3}$, and two industrial projects with the first period expected returns for the bank $\Psi_1^1(i) > \Psi_1^2(i)$, and the net present values (NPV) as follows:

$$\Psi_1^1(i) + \frac{\Psi_2^1(i)}{\tilde{\beta}} < \Psi_1^2(i) + \frac{\Psi_2^2(i)}{\tilde{\beta}} \tag{28}$$

Choose the deposit interest rates such that the following holds:

$$\left(i^{d3} + \tau\right) > \hat{\Psi}_1^1(\hat{\imath}_1^1) > \left(i^{d2} + \tau\right) > \hat{\Psi}_1^2(\hat{\imath}_1^2) \geq \left(i^{d1} + \tau\right) \tag{29}$$

In inequality (28) and (29), the superscripts to Ψ denote the projects and the subscripts the time periods. What inequality (29) says is that (i) the maximum expected return in the first period for a monopolist bank from project 1 is less than the agricultural interest rate at the deposit rate i^{d3} but higher than the agricultural interest rate when deposit rate is i^{d2}, (ii) the maximum expected return in the first period for a monopolist bank from project 2 is less than the agricultural interest rate at the deposit rate i^{d2} but higher than the agricultural interest rate when deposit rate is i^{d1} (assuming competition in agricultural lending). Now, consider a fully liberalized banking sector with competition both in agricultural and industrial lending. Starting from an initially high deposit rate i^{d3}, a policy that reduces it to i^{d2} makes it profitable to finance the project with front loaded return (project 1). A further reduction of deposit rate to i^{d1} induces the bank to lend to the entrepreneur with the back-loaded but higher NPV project (project 2). But it is still profitable for the bank to finance project 1. A dual track policy on the other hand allows the bank to rank the industrial projects according to NPV. In this case, given an appropriate deposit rate, the bank finances the socially efficient projects first, i.e., with the highest NPV. QED.

Note that an implication of the proposition 5 is that a deposit rate policy alone will be unable to induce entrepreneurs to invest in productivity increase or cost reduction discussed earlier in

the context of proposition 4; entry restraint is a necessary condition for a successful policy in this regard.

Discussion: Additional Policy Issues

Using simple models of occupational choice with moral hazard, the analysis above shows that (i) a *Laissez Faire* financial liberalization in the industrial sector might retard the development of an entrepreneurial class, and (ii) a dual track policy regime where entry restraint is implemented in industrial lending but competition is preserved in agricultural lending can help in both entrepreneurial discovery and tackling short-termism in project choice, especially when deposit interest rate is chosen judiciously. We have, however, not discussed any policy related to the transactions costs in banking as captured by the parameter τ in the model so far. Note that in the context of the simple model used in this paper, a reduction in transactions costs in savings mobilization is a perfect substitute for reduction in deposit interest rate from a bank's point of view since it is costless. However, the kind of policies that might reduce the transactions costs (or intermediation costs) without involving any costs for the bank are also the ones usually not chosen by the banks, like transport and communications infrastructure in the rural areas of a developing country. A straight forward implication of the above discussion is that the efficacy of financial restraint policies will depend on other policies pursued by a government in a developing country. An important observation is that while reduction of transactions costs involve real investments, either by the bank or the government, the deposit rate as a policy instrument does not. This makes deposit rate an attractive instrument relative to transaction cost efficiency. However, when the deposit rate is already low in an economy, investments in reduction of transactions costs in deposit mobilization becomes an useful policy tool in a dual-track regime advocated in this paper.

There are, however, other standard policy instruments not considered in our model like establishing specialized public banks and provision of subsidy for industrial lending which one might argue to be effective in solving the problems of poaching externality and short-termism in industrial finance. Although it is true that historically, specialized public banks have been successful in providing long-term finance (see, Cameron, 1967, Aghion, 1999), the more recent evidence in the context of developing countries shows that the performance of such public banks is mixed, at best. Endemic incentive problems in the public sector may give rise to "lazy" and corrupt banks that squander resources without helping in the process of entrepreneurial discovery. A hallmark of the financial restraint school is that it advocates policy instruments that can

exploit the comparative advantage of the private banks in (i) addressing agency problems, and (ii) utilizing local information available to the bank but not necessarily to the government.

One might argue that a policy which subsidizes the bank directly can be a better approach to entrepreneurial discovery as it does not entail monopoly distortion associated with the policy of limited duration monopoly (i.e., a higher interest rate and thus lower effort by the entrepreneur). This seems to accord well with the *theory of targeting* familiar from the trade literature which says that interventions closest to the margin of distortion is the optimal policy. But as emphasized by Hellmann at. al. (1996) in the context of deposit mobilization under financial restraint, such a policy may create the problem of excessive experimentation by the banks. Moreover, it also ignores the idiosyncratic information available to the banks about relative entrepreneurial potential of different villages.[14] Moreover, a policy of subsidy implies a deadweight loss because of the distortionary taxes employed to finance the subsidy which can be substantial in a developing economy. A policy focusing on the entry restraint, on the other hand, does not encourage excessive experimentation, and is not costly in terms of government budget. In fact, such a policy can raise revenue for the government if appropriately designed which makes it especially attractive (so-called Win-Win policy). One such option is to charge an entry fee for the later entrants who free ride on the information generated by the first entrant.

(6) Conclusions

This paper, using a simple model of occupational choice with moral hazard, shows that financial liberalization in the form of competition in the banking sector and free market determination of interest rates is likely to be a constraining factor for the development of industrial entrepreneurship in a developing economy. The two corner-stones of current development policy consensus: private sector led development and financial liberalization thus work at cross purposes. The analysis focuses on two issues: (i) discovery of entrepreneurial talents, and (ii) tackling short-termism in project choice to foster learning. We show that poaching externality in a competitive banking can result in binding liquidity constraint and thus banks in a liberalized competitive market may fail to finance entrepreneurial discovery. A policy of temporary entry restraint that awards limited duration monopoly right to a bank investing in entrepreneurial discovery can avoid such no industrial financing trap. Deposit interest rate reduction can encourage banks to experiment with

[14] In terms of our model, the estimated probability of a good entrepreneur P is likely to vary across different villages. It is plausible to assume that the probability estimate is known to the bank and the villagers but not to the government.

new entrepreneurs even in a competitive banking economy. But deposit rate control is ineffective in weeding out short-termism in project choice. Entry restraint is necessary for inducing banks to rank projects according to the net present value, and thus finance those projects which yield low initial returns but strong learning and productivity gains later on. Our analysis points to the importance of a dual-track policy regime where temporary entry restraint is implemented in the industrial sector, but competition is preserved in the lending to agricultural sector. Such a dual-track policy regime when coupled with an appropriate deposit rate policy can be effective in tackling the problems of poaching externality and short-termism. The conclusions of this paper thus run counter to the current consensus in development policy that a completely liberalized competitive financial sector is a necessary and enabling factor in private sector led development strategy. Since development of industrial entrepreneurship is at the heart of a private sector led development, the results presented here suggest that policies of *Financial Restraint* (Hellman et. al. (1997, 2000)) instead of *Laissez Faire* financial liberalization are appropriate for the success of a decentralized private sector led development strategy.

References

1. Agenor, P, and P. Montiel (1999): Development Macroeconomics, Second Edition, Princeton University Press.

2. Aghion, B (1999): "Development Banking", Journal of Development Economics, Vol. 58, pp. 83-100.

3. Akerlof, G (1970): "The Market for Lemons: Quality Uncertainty and the Market Mechanism", Quarterly Journal of Economics, Vol 84, No.3, pp. 488-500.

4. Akerlof, G, and P. Romer (1993): "Looting: The Economic Underworld of Bankruptcy for Profit", Brookings Papers on Economic Activity, No.2, pp. 1-73.

5. Bandiera, O, G. Caprio, P. Honohan, and F. Schiantarelli (2000): "Does Financial Reform Raise or Reduce Savings?", Review of Economics and Statistics, May 2000.

6. Banerjee, A and A. Newman (1993): "Occupational Choice and the Process of Development", Journal of Political Economy, Vol. 101, No.2, pp. 274-298.

7. Cameron, R (1967): Banking in the Early Stages of Development: A Study in Comparative Economic History, Oxford University Press.

8. Caprio, J (1994): "Banking on Financial reform? A Case of Sensitive Dependence on Initial Conditions", in Capirio, J, I. Atiyas, and J. Hanson ed. Financial Reform: Theory and Experience, Cambridge University press.

9. Caprio, J and L. Summers (1993): "Finance and Its Reform: Beyond *Laissez Faire*", World Bank.

10. Cetorelli, N (2001): "Competition Among Banks: Good or Bad?", Economic Perspectives, Federal Reserve bank, Chicago.

11. Cetorelli, N, and M. Gambera (2001): "Banking Market Structure, Financial Dependence, and Growth: International Evidence from Industry Data", Journal of Finance, Vol. 56, No.2, pp. 617-648.

12. Chiappori, P, D. Perez-Castillo, T. Verdier (1995): "Spatial Competition in the Banking System: Localization, Cross Subsidies, and the Regulation of Deposit Rates", European Economic Review, 39, 889-918.

13. Chibber, A, M. Dailami, N Shafik (eds) (1992): Reviving Private Investment in Developing Countries, North Holland, 1992.

14. Dell'Ariccia, G (2000): "Learning by Lending, Competition, and Screening Incentives in the Banking Industry", mimeo, IMF.

15. Eswaran, M and A. Kotwal (1990): "Implications of Credit Constraint for Risk Behavior in Less Developed Economies", Oxford Economic Papers, Vol. 42, pp. 473-482.

16. Evans, and B. Jovanovic (1989): "Entrepreneurial Choice and Liquidity Constraint", Journal of Political Economy, August, 1989.

17. Fischer, K. H (2000): "Acquisition of Information in Loan Markets and Bank Market Power: An Empirical Investigation", Mimeo, Goethe University, Frankfurt.

18. Hart, O and J. Moore (1994): "A Theory of Debt Based on Inalienability of Human Capital", Quarterly Journal of Economics, Vol. 109, No.4, pp. 841-879.

19. Hausman, R and D. Rodrik (2003): "Economic development as Self-Discovery", Journal of Development Economics, Vol. 72, No.2, pp. 603-633.

20. Hellmann, T, K. Murdock, and J. Stiglitz (2000): "Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough?", American Economic Review, Vol. 90, pp. 147-165.

21. Hellmann, T, K. Murdock, and J. Stiglitz (1997): "*Financial Restraint*: Towards a New Paradigm", in M. Aoki, H. Kim and Okuno-Fujiwara ed, "The Role of Government in East Asian Economic Development: Comparative Institutional Analysis", Oxford University Press.

22. Hellmann, T, K. Murdock, and J. Stiglitz (1996): "Deposit Mobilization Through *Financial Restraint*", in N. Hermes, and R. Lensink (eds), Financial Development and Economic Growth: Theory and Experiences from Developing Countries, Routledge, London.

23. Hoff, K (1997):"Bayesian Learning in an Infant Industry Model", Journal of International Economics, 43, 409-436.

24. Honohan, P (undated): How Interest Rates Changed Under Financial Liberalization; A Cross-country Review, World Bank.

25. King, R and R. Levine (1993): "Finance and Growth: Schumpeter Might be Right", Quarterly Journal of Economics, vol. 108, No. 3.

26. Kanbur, R (1979): "Impatience, Information, and Risk Taking in a General Equilibrium Model of Occupational Choice", Review of Economic Studies, Vol 46, No. 4, pp. 707-718.

27. Kihlstrom, and J. Laffont (1979): "A General Equilibrium Theory of Firm Formation Based on Risk Aversion", Journal of Political Economy, August, 1979.

28. Lang, W and L. Nakamura (1990): "The Dynamics of Credit Markets in a Model With Learning", Journal of Monetary Economics, October, 1990.

29. Mckinnon, R (1973): Money and Capital in Economic Development, The Brookings Institution.

30. McMillan, J and C. Woodruff (2002): "The Central Role of Entrepreneurs in Transition Economies", Journal of Economic Perspectives, Summer, 2002.

31. Nabi, Ijaz (1989): "Investment in Segmented Capital Markets", Quarterly Journal of Economics, August, 1989.

32. Petersen, M and R. Rajan (1994): "The Benefits of Firm-Creditor Relationships: Evidence from Small Business Data", Journal of Finance, Vol. 49.

33. Petersen, M and R. Rajan (1995): "The Effect of Credit Market Competition on Lending Relationships", Quarterly Journal of Economics, Vol. 110.

34. Sarr, A (2000): Financial Liberalization, Bank Market Structure, and Financial Deepening: An Interest Margin Analysis, Working Paper, IMF, Washington DC.

35. Schumpeter, J (1934): The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle, Harvard University Press.

36. Serven, L and A. Solimano (1994): "Striving for Growth after Adjustment: The Role of Capital Formation", The World Bank.

37. Sobhan, R (1990): Development of the Private Sector in Bangladesh: A Review of the Evolution and the Outcome of the State Policy, Bangladesh Institute of Development Studies, Research report No. 111.

38. Stiglitz, J and A. Weiss (1981): "Credit Rationing in Markets With Imperfect Information", American Economic Reveiw, Vol 71, No.3.

39. Stiglitz, J (1992): "Explaining Growth, Competition and Finance", Revista di Politica Economica, November, 1992.