

Financial Liberalization and Price Stability: A Microeconomic Approach

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I. Introduction

Since the seminal works of McKinnon (1973) and Shaw (1973), the idea of financial liberalization for the development of the financial sector and higher economic growth has become an orthodoxy in academia as well as in international economic institutions. With the seal of approval, many developing countries followed, experimenting with their own economy. Yet most of the results so far have been puzzling. Instead of prosperity, the countries have found themselves in financial crisis and instability. They have been forced back to the repressive financial policy, regressing back to economies riddled with bankruptcies and lacking in capital.

Observing these disappointing experiences, economists have tried to investigate the cause of failures and to provide new policy recommendations: there have been many studies on the experience of Southern cone countries' experiences (Corbo, de Melo and Tybout 1986; Diaz-Alexandro 1985; McKinnon 1982, 1986; Tybout 1986). These studies do not, however, provide an answer to the question on what would be an appropriate financial liberalization policy.¹ The studies fall short of identifying the fundamental factors that drove the financial liberalization policy to end up with disastrous outcome.

In this paper we investigate what would be an appropriate approach to financial liberalization. By an appropriate policy, we mean a policy which can simultaneously achieve the solid growth of

* This paper has been written in the personal capacity of the author and does not represent the views of the World Bank.

¹McKinnon (1986), discussing the prerequisites of liberalization, is an exception. [Seoul Journal of Economics 1988, Vol. 1, No. 3]

both financial and nonfinancial sectors, and hence make the financial liberalization sustainable. To find such a policy, we examine in this paper the corporate financial structure of an economy. We examine how interest rate policy affects the corporate profitability under different degrees of inflation.

To say the conclusion first, we find that if a certain level of real interest rate is to be secured in times of high inflation rate, strong pressure will be imposed on the corporate sector profitability. The economy will then eventually be in danger of insolvency which limits the sustainability of financial liberalization. On the other hand, if a certain level of corporate sector profitability is to be maintained to encourage the industrial sector development in times of high inflation, a nominal interest rate must not be set high enough to secure a certain level of positive real interest rate. This may then result in negative real interest rate and lead to a low savings level and poor industrial investment. Thus, the only way the government can achieve both solid financial sector development and industrial sector development is to keep inflation rates low, so that reasonably low nominal interest rate could generate a substantially high real interest rate to properly reflect the productivity of capital. The price stability is thus most important in order for financial liberalization policy to be successful. This conclusion, derived from our microeconomic analysis, consolidates the conclusions on the order of liberalization and stabilization (i.e., stabilization should precede liberalization) previously noted by McKinnon (1986).

The remainder of the paper proceeds as follows: Section II develops a model examining the relationship between the corporate profitability and interest policy; Section III investigates the experiences of developing countries, such as Korea, the Philippines, and Argentina; Section IV concludes with outlines on optimal financial liberalization policy.

II. Financial Liberalization under High Inflation

In this section, we investigate whether inflation would be neutral to corporate profitability when the interest rate is moving with inflation in such a way to secure a positive real interest rate (r) on deposits. Often the policy recommendation has been given to LDCs by academia and international institutions, such as the World Bank and International Monetary Fund, that in order to have a sound financial market development and to facilitate the resource mobi-

lization of an economy, the real interest rate should be maintained positive reflecting the productivity of capital. This recommendation has been given against financial repression policy, which often drives the real rate of interest to a negative level. However, when the recommendation was given, the level of inflation rate did not receive sufficient attention. This has been an oversight, particularly for inflationary developing countries. The level of inflation is, in fact, an important factor to the corporate sector's profitability. That is, if the interest rate is fully indexed to inflation under the policy of positive real interest rate, then the corporate profitability suffers from a high nominal interest rate and will eventually lead to insolvency, making the liberalization policy unsustainable. However, if the inflation rate is low, then a real positive interest rate would be a sustainable policy without much imposition on the corporate profitability.

To see this more formally, consider the following simple model:

A Model

Definition of Variables

Y = Total output of corporate sector.

K = Total asset.

D = Debt = bK where b is the proportion of debt in total asset.

E = Equity = $(1-b)K$.

C = Cost of output. C is supposed to be composed of input cost (Q), wage bills (W), and financial cost (R).

L = Liquid asset = sK where s is a proportion of total assets held in the liquid form.

r = The targeted level of positive real interest rate.

I = Inflation rate.

P = Normal profit ratio = $(Y-C)/K$.

We assume that the output/capital ratio (d) is fixed, i.e., $Y/K = d$. We also assume that when there is inflation I , the real value of physical asset $((1-s)K)$ and real value of output (Y) is constant. We further assume, for simplicity, that corporate debt/equity ratio ($b/(1-b)$) is constant. This means that the real value of debt is fixed in order to produce the given real value of output. We also assume that liquid asset is held as cash or demand deposit which is not fully hedged to inflation.

Under these assumptions and definitions, the corporate profitabil-

ity is as follows.

(1) Corporate Profit under No Inflation

$$\begin{aligned} P &= \frac{(Y-C)}{K} \\ &= \frac{dK-(Q+W+R)}{K} \\ &= d - \frac{(Q+W)}{K} - rb. \end{aligned} \quad (1)$$

The normal profit of corporate sector depends on the real level of interest rate (r) and the debt ratio (b).

(2) Corporate Profit under Inflation(I)

Suppose the inflation rate is I and the nominal interest rate is $(I+r)$.

$$\begin{aligned} Y' &= (1+I)Y + (1-s)KI \\ &= (1+I)dK + (1-s)KI. \end{aligned} \quad (2)$$

The total revenue is composed of sales revenue and the appreciation of the non-liquid asset value (in nominal dollars).

$$C' = (1+I)(Q+W) + (I+r+rI)(bK+IsK). \quad (3)$$

The total cost is composed of input cost, wage bill, financial cost, and the cost of the additional loan (IsK) needed for the production Y' . While the cost of input and wage bill increase proportionally to inflation rate, the financial cost increases more than proportionally to inflation rate.

$$\begin{aligned} P' &= \frac{(1+I)dK + (1-s)KI - (1+I)(Q+W) - (I+r+rI)(bK+IsK)}{(1+I)K} \\ &= P + \frac{I}{(1+I)} (1-s-b-sI-rs-rsI). \end{aligned} \quad (4)$$

The normal profit ratio is equal to the normal profit ratio P under no inflation, plus an additional term that is a function of (b,s,r,I) . This additional term is ambiguous in sign. If the condition

$$(1-s-b-sI-rs-rsI) < 0 \quad (5)$$

is satisfied, the term is negative indicating a lower normal profit ratio under inflation. Otherwise, it implies a higher normal profit ratio.

Differentiating the normal profit ratio P' with respect to the variables (b, s, r, I) , we get

$$\frac{dp'}{db} = - \frac{I}{(1+I)} - r < 0, \quad (6)$$

$$\frac{dp'}{ds} = - \frac{I}{(1+I)} (1+I+rI) < 0, \quad (7)$$

$$\frac{dp'}{dr} = - \frac{I}{(1+I)} (s+sI+b+bI) < 0, \quad (8)$$

$$\frac{dp'}{dI} = \frac{1-s-b-rs-2sI-2rsI-sI^2-rsI^2}{(1+I)} \leq 0. \quad (9)$$

Notice that the normal profit ratio P' decreases with respect to b, s , and r . That is, when there is inflation and interest rate is fully indexed in order to generate a certain real level of interest rate r , the profitability of the corporate sector deteriorates as: (1) the proportion of the debt increases; (2) the proportion of the liquid asset increases; and (3) the real interest rate increases.

For the derivative of P' with respect to inflation rate, the sign is ambiguous as it depends on values of (b, s, r, I) . That is, if the condition

$$(s+b+rs+2sI+2rsI+sI^2+rsI^2) > 1$$

is satisfied, then the profit ratio will decrease as inflation rate increases. Otherwise, the profit ratio will rise as inflation rate increases.

Also of interest is the change in sensitivity of corporate profitability to real interest rate, as the inflation rate increases. This change is captured by the second derivative

$$\frac{d^2P'}{dI dr} = \frac{-s-2sI-sI^2}{(1+I)^2}. \quad (10)$$

Since it is negative, an increase in the real interest rate is more damaging to the corporate profitability under high inflation rates.

III. Experiences of Developing Countries

In this section we examine the experiences of developing countries, such as Korea, the Philippines, and Argentina. Common across the developing countries are inadequately developed financial markets which limit the opportunity of hedging corporates' working

TABLE 1
KOREA: INFLATION RATE, DEBT RATIO, AND LIQUID ASSET RATIO
(MANUFACTURING FIRMS)

	1973	1974	1975	1976	1977	1978	1979
Inflation Rate % (CPI)	3.2	24.5	25.2	15.3	10.2	14.5	18.3
Debt Ratio %	73.1	76.0	77.2	78.5	77.8	78.6	79.0
Liquid Asset Ratio %	20.0	21.2	20.4	20.3	20.3	20.0	19.7

Source: *Financial Statement Analysis*, various issues, Bank of Korea; *International Financial Statistics Yearbook*, International Monetary Fund, 1987.

capital against inflation. As a result, substantial parts of corporates' working capital are in the form of cash, demand deposit, and trade credits. Also most of the debts incurred are interest-paying loans from the governments and private lenders.

In Table 1, we present the debt ratio, b , liquid asset ratio, s , and the inflation rate, I , of Korea throughout the years of 1973-1979. Over the years, the debt ratio has averaged about 77.2%, the liquid asset ratio, of 27.3%, and the inflation, of 15.89%. Applying this to the equation (4), we have

$$P' = P - 0.0088 - 0.034 r.$$

Thus, for any policy of positive real interest rate, the corporate profitability would have decreased. Even for a policy of substantial negative real interest rate, e.g., $r < -25\%$, the profitability would not have recovered from the negative effects of inflation. From the equation (9), we also have

$$\frac{dP'}{dI} = -0.093 - 0.273 r.$$

This implies that as the inflation increased, more damage would have been incurred by the positive interest rate policy on the corporate sector of the economy. Note also that

$$\frac{d^2P'}{dI dr} = -0.273.$$

The trade-off value of the real interest rate, in terms of the corpo-

TABLE 2
THE PHILIPPINES AND ARGENTINA:
INFLATION RATE, DEBT RATIO, AND LIQUID ASSET RATIO

	Argentina 1980	The Philippines 1983
Inflation Rate % (CPI)	104.0	50.4
Debt Ratio %	52.0	83.4
Liquid Asset Ratio %	42.5	29.32 ¹

Note: 1. Current asset/total asset.

Source: *International Financial Statistics*, IMF, 1986. 1,000 Top Corporations in the Philippines. *Business Day*, 1984. Petri and Tybout(1984).

rate profitability, would have thus increased by 0.0273% for every 1% rise in the inflation rate.

Similar findings are found for the Philippines and Argentina. Table 2 shows their experiences.

For the Philippines, we have

$$P' = P - 0.92 - 0.148 r$$

$$\frac{dP'}{dI} = 0.0740 - 0.283 r$$

$$\frac{d^2 P'}{dI dr} = - 0.283.$$

For Argentina, we have

$$P' = P - 0.197 - 0.442 r$$

$$\frac{dP'}{dI} = 1.289 - 0.667 r$$

$$\frac{d^2 P'}{dI dr} = - 0.667.$$

Both countries show that the policy of positive real interest rate would have been costly to corporate sectors in terms of profit ratios under the given financial structure of corporate sector and high inflation. Also, as inflation rates rise, the cost would have increased, both absolutely and relatively, in terms of the corporate profitability.

IV. An Optimal Interest Rate Policy

We learned that financial repression with interest rate ceilings, which often put real interest rate negative under inflationary economy, hinders the financial market development and resource mobilization for economic development. With this understanding, McKinnon (1973) and Shaw (1973) correctly argue that financial liberalization, which brings positive real interest rate that correctly reflects depositors' time preference and capital productivity, will encourage higher resource mobilization for industrial investment. The higher interest rate was also proposed as a means of price stabilization (Kapur 1976), as increased demand for money responding to higher interest rate will reduce inflation.

However, if high inflation continues after financial liberalization for one reason or another, the high interest rate policy through financial liberalization will gradually erode the corporate sector's profitability and may lead them to insolvency, as found by the previous sections. This limits the extent of financial liberalization policy. In the experience of Korea, the interest rate reform of 1965, which doubled the nominal interest rate to generate significantly positive real interest rate while inflation rate was high, was not sustainable long. By 1972, the Korean government went back to a low nominal interest rate, which generated negative real interest rate in order to relieve corporate's profitability.

Then, in order to secure a certain level of corporate sector's profitability and a solid development of industrial sector under high inflation, the nominal interest rate has to be pushed down even to the level that generates negative rate when inflation rate is very high. However, we know that if nominal interest rate is pushed down below to negative real rate, it discourages financial savings and would reduce the volume of financial intermediation, ultimately, limiting the funds available for investment in the industrial sector. Here is a *dilemma* of interest rate policy under high inflation. That is, under high inflation, it may not be possible to achieve both a sound growth of financial intermediation and industrial sector growth.

So, if we wish to secure the industrial development by pushing down the nominal interest rate low, the disincentive to financial savings will eventually limit the funds available for industrial development. Thus, the industrial growth would not be sustainable

unless a country depends on foreign savings. The Korean experience of financial repression in the 1970s may be a good example of this. On the contrary, if a country wants to secure a financial sector development by increasing nominal interest rate high enough to generate a substantially high positive real rate, then the poor industrial profitability will put the industrial sector in great trouble, and eventually may trigger massive bankruptcies and financial crises. The Latin American experience in the late 1970s and early 1980s, after financial liberalization, may be a good example of this case. This suggests that in order to secure the solid development of both industrial sector and financial sector, a country should have a low inflation rate in which a relatively low nominal interest rate can generate a substantially high positive real interest rate. In this way, the real level of interest rate, which correctly reflects the depositors' true preference and productivity of capital in the real sector, can encourage both the financial sector development and industrial investment which combined to contribute to high and stable economic growth of the country.

This analysis then leads us to the conclusion that, in order to achieve a sustainable financial liberalization policy which helps the development of financial sector as well as industrial sector, the price stability is most important. *Unless the price stability is secured, a country may have to be forced to choose either financial repression or financial crisis.* In this regard, the paper provides a microeconomic foundation for the widely accepted argument that stabilization should precede the liberalization (Edwards 1985). This paper, however, is based on partial, static model. If the government uses the inflation tax collected from industrial sector for industrial subsidy (in the case of financial liberalization) or uses the inflation tax collected from both depositors and industrial sector (in the case of financial repression) for some kinds of depositor subsidy, inflation may become neutral. However, we assumed away this kind of almighty government. This paper also neglects the effects of interest policy on the inflation rate in the dynamic context. The purpose of this paper was to draw attention to microeconomic factors, which can shed some light on the appropriate financial liberalization policy in addition to macroeconomic factors that have been actively discussed in the literature so far.

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