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Franchise Value and the Dynamics of Financial Liberalization:
The Use of Capital Requirements
and Deposit Rate Controls for Prudential Regulation

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Introduction

Over the last three decades, there has been a substantial shift in financial market policy towards the promotion of financial liberalization. Policy makers around the globe have been preoccupied with deregulating interest rates, lifting restrictions on bank portfolios and enticing competition in financial services.

Financial deregulation is typically accompanied with a change in the system of prudential regulation. As the volume and complexity of transactions has increased, there has been movement away from monitoring individual transactions and more emphasis has been placed on evaluating the risk monitoring systems used by banks. As a part of this trend, greater emphasis has been placed on the use of capital requirements as a tool of prudential regulation, typically using the BIS standards developed in the Basle Accord. While this trend in financial regulation has led to some notable improvement in the provision of financial intermediation, it has also been marred with a surprisingly large number of banking crises. Caprio and Klingebiel (1996) count eighty major financial crises in sixty-nine countries for the period 1974 – 1995, most of which were systemic crises. They argue that while the trigger events of these crises tend to be some macro-economic events, they typically uncover some serious structural problems in the financial sector. The recent crises in East Asia are an example in point.

There is by now strong empirical evidence on the link between financial liberalization and banking crises. Demirgüç-Kunt and Detragiache (1997, 1998) show that countries that have liberalized their financial system are significantly more likely to face a financial crisis, and that the seeds of the crises tend to develop relatively soon after liberalization.¹ It may, however, take somewhat longer before the structural weaknesses of the banks are actually discovered. The question then is whether there is a causal link between financial liberalization and banking crises? Are there particular difficulties created during the process of liberalization that make it more likely that crises will follow in the aftermath of a liberalization episode? In this paper, we argue that the announcement of

¹ See also Fischer and Chénard (1997) for some further evidence.

liberalization in the future causes an immediate decline in franchise value today with a potential adverse effect on bank incentives to invest prudently.

Obviously it is not enough to just note the problems of banking crises. The main policy question is what kind of regulation will be effective in combatting the underlying problems. At the center of problem are the banks' incentives to engage in prudent investment behavior. In particular, there is the well-known moral hazard problem of banks: they may choose to invest their assets in a gambling portfolio, where they can reap the benefits in case of success, but because of limited liability they can pass on the losses to others, such as the government in its role as deposit insurer.

In principle, capital requirements are meant to prevent banks from engaging in such gambling behavior. The idea can be easily shown in a static framework, where a higher level of capital makes banks act more like residual claimants, thus encouraging them not to engage in wasteful gambling activities. However, we note that capital requirements are actually less effective than suggested by this static analysis. Using only the assumption that capital is costly for banks, we show that there is also a negative incentive effect associated with capital requirements. This stems from the fact that a higher capital requirement depresses the future profits of banks. This reduces their 'franchise value,' i.e., the net present value of their future profits, so the net impact of capital requirements are less than that implied by a simple static analysis due to this adverse impact on franchise value.

This argument suggests that an excessive reliance on capital requirements can become costly for the banks. Regulators either need to rely on very high levels of capital requirements, or they need to seek other instruments. In line with our previous line of research we emphasize the usefulness of deposit rate controls as an instrument that can create franchise value for banks.² Deposit rate controls can credibly create an environment where banks will earn profits in the current period and out into the future. The capitalized value of these profits then contributes to the bank's franchise value.

The argument that franchise value matters for the incentives of banks to behave prudently then directly allows us to address the questions of liberalization and banking crisis. First, banks may be more prone to gambling in an environment in which they have lower franchise value. But this is precisely the effect of interest rate liberalization and greater competition in the financial markets. As a consequence, we should not be surprised by the incidence of banking crisis in liberalized economies.

The problem, however, may become even more severe in the transitional period towards liberalization. The problem is that while the actual steps of liberalization may be gradual, the announcement of a financial liberalization has an immediate impact on the franchise value of banks. Even if banks are only told that they will face more competition in the future, their behavior may change immediately, because of the immediate impact of the announcement on their franchise value. After all, a bank's franchise value is the capitalized value of the bank's future profits. The announcement of future competition implies that future profits will fall which implies that the *current* franchise value will fall as well. Interestingly, this announcement effect implies a seemingly counter-intuitive policy recommendation. In order to stem the greater incentives for gambling in the early days of liberalization, regulators need to first tighten their regulation of banks before they can relax the regulations. In particular, it may be necessary to first lower the deposit rate ceiling before it can be relaxed or lifted. This will counteract the adverse effect of lower future profits with higher present profits. It also will make it more difficult for a bank to pursue a gambling strategy by growing rapidly because the bank will not be able to offer high deposit rates to attract new funds. Furthermore, if the policy of lower deposit rates is implemented with short run restrictions on dividend payments, banks will be able to grow their capital base and more readily meet the more stringent capital requirements that are necessary to promote prudent behavior in the liberalized environment. Similarly, it may be necessary to phase out restrictions on asset classes only gradually, allowing banks to invest in new areas only in pace with the development of appropriate controls and capabilities of the regulatory oversight.

² See Hellmann, Murdock and Stiglitz (1996, 1997a-c, 1998) and Stiglitz (1992, 1993).

The main objective in this paper is to provide an intuition of the mechanics of capital requirements and deposit rate controls that we have studied elsewhere, and to explore the implication of these dynamics on the particular problem of transitions to a more liberalized system. In the first section of the paper we explain the logic of capital requirements and deposit rate controls in a steady state, i.e., where banks expect continuity of the policy regime. We note that in a sufficiently competitive system there is an inconsistency between freely determined deposit rates and prudent banking. In particular, banks are tempted to raise their deposit rates in order to attract more resources. But the high interest rates on these deposits make it worthwhile for banks to invest in a gambling portfolio. Without any regulation, competitive banking systems have a tendency to gyrate towards unsound lending. We then show that because capital is costly, capital requirements are a fairly blunt instrument of prudential control. In addition to the well-understood bonding role of capital, it also has less obvious effects. Because capital is costly, capital requirements serve to lower the franchise value of banks, partly undermining the static bonding role of capital. Further, because a capital requirement forces banks to hold more capital as they attract incremental deposits, this reduces the marginal return to deposits and as such capital requirements have the indirect effect of lowering equilibrium deposit rates.

But if capital requirements only work if they indirectly lower deposit rates, why not lower deposit rates directly? Indeed, we show that a deposit rate control naturally complements a policy of capital requirements, and that regulators can gain control over the incentive to gamble at a much lower level of capital if they also use deposit rate controls. Because capital requirements are in effect an indirect instrument for reducing equilibrium deposit rates, the *endogenous* lowering of interest rates is greater than would be required if deposit rate ceilings were applied directly. The standard criticism of deposit rate controls – that by lowering interest rates it discourages savings -- is turned on its head. The regulator can actually implement higher deposit rates using deposit rate ceilings than it can using capital requirements alone.

In the second part of the paper, when we examine the transitional dynamics, the importance of deposit rate controls becomes even more evident. Capital is not only costly, it is also sticky, i.e., banks cannot markedly increase their levels of capital in a short period of time. If in the process of liberalization regulators were to enforce a higher standard of capital immediately, banks would be forced to reduce their lending and sell off assets, which would cause a credit crunch and asset deflation. As a consequence, regulators tend to allow banks to build up their capital more gradually over time. We then show that in the transitional period where banks have not yet attained the desired level of capital, deposit rates would need to be particularly low, to counteract both the lack of capital, and the immediate reduction of franchise value due to the announcement effect. The lower deposit rate also allows banks to accumulate capital more rapidly, which will shorten the duration of the transition period. The key insight to be gained from an analysis of transitional dynamics is thus that a policy of ‘regulatory overshooting’ (where the regulator temporarily imposes stricter regulations) ensures that the transition to the liberalized banking sector is both faster and safer.

Section 1: Prudential regulation in a steady state environment

The purpose of this section is to analyze instruments of prudential regulation in an environment where banks may be tempted to engage in moral hazard behavior. The underlying issue is that banks have discretion in how they allocate their investment portfolio and that their actions cannot be perfectly observed by a government regulator. Because of the limited liability nature of deposit contracts, banks may have incentives to engage in excessive risk taking, exploit the imperfect supervision of the banking regulators and put together an asset portfolio that is excessively risky. We consider a bank to be engaged in gambling when it puts together an asset portfolio that is privately optimal but only because the downside risk is born by the depositors (or the government insurer). The goal of prudential regulation is to create an environment where banks will choose to invest in a prudent asset portfolio where those lending decisions are predicated

on the full social costs and benefits of the investment, rather than exploiting the limited liability nature of deposit contracts.³

There are two main classes of instruments available to combat moral hazard: those that create constraints and those that affect incentives. Direct supervision and restrictions on lending activities are examples of the former. Their main role is to limit the degrees of freedom available to banks within which banks can pursue strategies that engage in excessive risk.⁴ In contrast, policies such as capital requirements and deposit rate controls are aimed at affecting bank incentives. In an environment where direct supervision is imperfect, then banks will always have some ability to distort their portfolios and engage in gambling activities. It is then incumbent upon this latter class of instruments to create an environment where the banks choose to invest in a prudent portfolio of assets.

The focus of this paper is to analyze instruments of prudential regulation aimed at altering bank incentives. It is well understood how capital requirements affect bank incentives. When a bank places more of its own capital at risk, it internalizes a greater proportion of the downside risk of the asset portfolio. Only after losses on the portfolio exceed bank capital will those losses be imposed on the bank's depositors (and their insurer). If the bank has sufficient capital at risk, then the bank will choose to invest in a prudent portfolio.

What is less widely understood is the role of deposit rate controls as an instrument of prudential regulation. The main idea is that deposit rate controls provide a mechanism to

³ See also Besanko and Kanatas (1996), Bhattacharya (1982), Dewatripont and Tirole (1994), Genotte and Pyle (1991), Gianmarino, Lewis and Sappington (1993) and Rochet (1992).

⁴ Restraints on lending activities can also have an adverse effect on franchise value by limiting the opportunity set of the bank for investment. The important issue is that there are two effects due to these restrictions. First, they limit the ability of the bank to invest in gambling assets but second they also reduce the expected future profits of the bank, reducing franchise value and potentially increasing the bank's incentives to gamble.

create franchise value for the bank. When the government imposes a binding deposit rate ceiling, banks will capture an economic profit due to its lower cost of funds. Provided that the government will credibly maintain this ceiling in the future, banks will expect to continue earning this rent. The franchise value of the bank is the capitalized value of this future stream of rents. Of course, for the bank to earn that rent stream, it must stay solvent. This creates a large opportunity cost to gambling because if the bank's gamble fails, it will be shut down and lose its claim on this future rent stream. In contrast, by investing in a prudent portfolio, the bank can be largely assured that it will retain its franchise value.⁵

It is interesting to note that these seemingly disparate instruments of prudential regulation affect bank incentives in a qualitatively similar manner – by raising the opportunity cost of gambling. Capital requirements force banks to place their own capital at risk so that if the gamble results in an adverse outcome, the bank bears the cost up to the amount of capital at stake. Deposit rate controls create a franchise value for the bank which is really just a form of intangible capital. If the bank's gamble fails, the bank forfeits its franchise value so that it too bears the cost up to the amount of its franchise value.

Even though these two instruments may affect bank incentives in a qualitatively similar ways, they are different instruments with differing mechanisms for how those incentives are effective and with potential issues that would affect their implementation. As a consequence, it is worthwhile to develop a more concrete framework within which these two policy instruments can be evaluated.⁶ One of the main results that we will derive within this framework is that the regulator can implement *Pareto superior outcomes when capital requirements are implemented in conjunction with deposit rate ceilings compared to the best outcome that can be achieved using capital requirements alone.*

Restrictions on lending make sense as an instrument of prudential regulation only if succeed to deter gambling without significantly interfering with prudent investment.

⁵ See Caprio and Summers (1996) for a discussion of franchise value. Keeley (1990) and Demsetz, Saidenberg and Strahan (1996) also provide some empirical evidence.

⁶ In Hellmann, Murdock and Stiglitz (1998) we develop the formal model.

As a starting point for our analysis, we begin with three assumptions:

- 1) Direct supervision is imperfect. This implies that banks do have some scope for diverting their investment portfolios into gambling activities. Obviously, with perfect direct supervision, the bank regulator could simply preclude banks from gambling.
- 2) Banks have either explicit or implicit deposit insurance. The main import of this assumption is that depositors will not play a strong disciplinary role in monitoring banks.⁷
- 3) Capital is costly. There is an opportunity cost of capital so that banks would prefer to mobilize deposits rather than increase their own capital at stake. If there was no opportunity cost of capital, then prudential regulation would be simple and straightforward – banks could be required to hold an arbitrarily large capital base and thus would never have any incentive to gamble. Because this is not observed in practice, this assumption seems both practical and relevant.⁸

We can think of banks engaging in two primary activities: mobilizing deposits and allocating investments. For simplicity, we can think of banks choosing between two investments: a prudent asset and a gambling asset. In reality, of course, banks invest in a mixture of assets in their portfolio. We can think of the prudent asset as the bank's optimal portfolio given that the bank is not trying to exploit its limited liability. In contrast, we can think of the gambling asset as the optimum portfolio that the bank chooses when the bank engages in excessive risk to maximize its private returns at the

⁷ This assumption seems to reflect reality – most countries that do not have explicit deposit insurance tend to have some implicit insurance, especially for those banks that are too large to fail. We note, however, that deposit insurance necessary; in Hellmann, Murdock and Stiglitz (1998) we derive the same qualitative results in a model where the government can credibly commit to a regime of no deposit insurance.

⁸ Gorton and Winton (1997) develop a general equilibrium model and derive that bank capital has positive opportunity cost. Further, Hellmann, et. al. (1998) derive that provided that capital requirements are a binding constraint on bank behavior, the opportunity cost of capital is positive.

expense of depositors. These two assets (portfolios) differ in two important respects. The prudent asset has higher expected return than the gambling asset, but the gambling asset has a higher return if the gamble succeeds. The reason why the bank may choose to invest in the gambling asset is because the depositors bear the cost if the gamble fails.

We begin by considering how the bank would choose to invest its assets, *taking the deposit rate and the amount of assets it has available as a given*. Once we understand how banks will invest a given portfolio, we then consider how that affects the manner in which banks compete for deposits. Finally, we can compare how the two instruments of prudential regulation can be implemented to insure that the prudent outcome is selected.

When the bank is investing a given portfolio of assets, it faces a simple trade-off. If the bank gambles, it will earn a higher expected return in the current period than if it invests prudently. If the gamble fails, however, the bank will be shut down and lose its franchise value. A number of factors determine whether the bank will choose to gamble or invest prudently: the expected return on the prudent asset, the gambling return when the gamble succeeds, the probability the gamble succeeds, the opportunity cost of bank capital, the discount factor at which the bank values future earnings, the deposit rate, and the ratio of bank capital to deposits. Most of these factors are determined by the environment in which the bank is investing, but these last two of these are determined by the two policy instruments which we are presently considering, i.e., deposit rate controls and capital requirements.

We would like to summarize the bank's trade-off by considering the threshold deposit rate at which the bank would switch from prudent investment to gambling. It should be evident that when the deposit rate is sufficiently low the bank will invest prudently and if it is sufficiently high, the bank will gamble. (Consider the case where the deposit rates are so high that the bank earns no profit by investing prudently. By gambling, the bank has a positive probability of earning a positive profit.) In our previous work (Hellmann, et. al. 1998) we derive the critical level of deposit rates, denoted by \hat{r} . The level of \hat{r} is determined by the following expression:

$$(1) \quad \hat{r} = (1-\delta) * \text{capital-at-risk effect} + \delta * \text{franchise value effect}$$

This threshold is important for our subsequent analysis, so it bears some further discussion. There are two main components that determine the threshold – the capital-at-risk effect and the franchise value effect. This first effect is largely a result of the bonding role of capital. As the bank has more capital at stake, it internalizes more of the static inefficiency of investing in the gambling asset and so the bank is more likely to invest prudently. The more capital the bank has invested, the bank will bear more of the downside risk when a gamble fails. This allows the bank to pay a higher deposit rate before its incentives switch to gambling. The franchise value effect follows directly because the bank values the future stream of rents it will capture if it invests prudently. The higher the future return on invested deposits, the greater the deposit rate that the bank can pay before it switches to gambling. The δ term is the discount factor. When δ is zero, the bank is myopic and the capital-at-risk effect determines the bank's incentives, whereas as δ goes to one, the bank becomes perfectly far-sighted and franchise value is all that matters.

As we have drawn in Figure 1, this threshold will in general be upward sloping in the capital requirement. When the bank holds more capital, it can pay a higher deposit rate and still choose to invest in the prudent asset. This is consistent with the traditional analysis of capital requirements – that they reduce a bank's incentives to gamble.

This threshold defines the Pareto frontier. All gambling outcomes are socially wasteful, so it is Pareto efficient to implement prudent outcomes. Along the $\hat{r}(k)$ line, depositors can capture a higher return only if banks also hold a higher level of capital. The next part of our analysis is designed to determine what prudent outcomes each instrument of prudential regulation can implement.

We still need to analyze how capital requirements affect the deposit rate that is paid in equilibrium. To analyze deposit rates, we begin by assuming that banks will invest

prudently and then we determine what policies of prudential regulation are necessary to make sure that banks do not gamble in equilibrium. Assuming that banks are investing prudently, the bank will offer deposit rates such that the marginal benefit of increasing rates equals their marginal cost. The marginal benefit is the amount of incremental deposits that the bank will capture times the profit margin the bank gets from investing those deposits in the prudent asset. What is really important to understand is that *the bank's profit margin is adversely affected by capital requirements*. A capital requirement forces the bank to hold capital in some proportion to its deposits. Because capital is costly (relative to deposits), a higher capital requirement reduces the profit margin on incremental deposits.

As we have drawn in Figure 1, this implies that the deposit rate is downward sloping in the level of the capital requirement. This is interesting to consider because it implies that *capital requirements are an indirect instrument for reducing deposit rates*. An increase in the capital requirement results in a lower deposit rate because the marginal return on deposit falls. Note that capital requirements lower deposit rates by raising the bank's cost structure.

There is one further issue with capital requirements that can be understood by examining our current framework – capital requirement can only implement outcomes that are strictly inside the Pareto frontier. When deposit rates are freely determined, the only outcomes that could potentially be equilibrium outcomes are those along the r_p line. The only Pareto efficient outcome is $(\underline{k}, \underline{r})$. See Figure 2. But even that outcome is not feasible because banks would have an incentive to deviate to gambling. Consider a capital requirement of \underline{k} . If prudent investment were the equilibrium outcome, then banks would offer a deposit rate of \underline{r} and a Pareto efficient outcome would be implemented. Unfortunately, with a capital requirement of \underline{k} , banks have an incentive to deviate to gambling because they will offer a higher deposit rate, collect more deposits and thus earn a higher total return from gambling than from prudent investment. To understand why, recall that along the $\hat{r}(k)$ line, banks are just indifferent between prudent investing and gambling, *given a fixed amount of assets to invest*. But banks have a higher

marginal return from gambling than they do from prudent investing, so at the deposit mobilization stage, they have incentive to offer higher deposit rates, capture more deposits, and gamble. With freely determined deposit rates, banks always have the option of offering a high deposit rate and gambling. An effective capital requirement must then force banks to hold sufficient capital such that the best possible gambling deviation is less attractive than investing prudently. This forces the government to impose a capital requirement that is strictly greater than \underline{k} . For concreteness, let's assume the minimum feasible capital requirement is \bar{k} .

We have identified three issues with using capital requirements in the context of freely determined deposit rates: 1) capital requirements are an indirect instrument for lowering deposit rates; 2) capital requirements reduce bank franchise value because they increase the bank's cost structure; and 3) capital requirements can only implement outcomes strictly inside the Pareto frontier.⁹ In contrast, deposit rate controls directly lower deposit rates, increase franchise value by creating future rents for banks, and can implement outcomes along the Pareto frontier.

In particular, consider a deposit rate ceiling of $\hat{r}(k_0)$ combined with a capital requirement of k_0 . This outcome yields the exact same deposit rate while lowering the capital requirement from \bar{k} to k_0 . Depositors are indifferent while banks are much better off because they are forced to hold substantially less costly capital. Thus it is possible to implement a Pareto dominant outcome by using a deposit rate ceiling in conjunction with a lower capital requirement.

⁹ There are additional problems with capital requirements. For example, it is exceedingly difficult to define adequate risk classes. And because capital is an accounting-based measure (unlike deposit rate controls, which are price-based) there may be many creative ways to circumvent the regulation. This implies that the quality of supervision itself affects the effectiveness of capital requirements. For example, banks may satisfy those requirements by selling off assets which have increased in value and while retaining those that have decreased in value. This has no real effect on the economic value of the bank's capital but it increases the accounting measure of capital. Over time, this can result in a significant distortion in the book value of capital. Furthermore, in anticipation of the future need to selectively dispose of assets, banks may invest more in assets with high variability and with less reliable market indicators of value.

Section 2: Transitional dynamics and the need for regulatory overshooting

Our analysis so far considers the trade-offs faced by a policy maker in a dynamic environment that is in steady state. In the context of financial liberalization, however, policy makers are not only concerned with the regulation of the steady state system, but also with the question of how to get the banks to safely attain this liberalized steady state. In the period of transition the regulator may have some constraints on what regulation can be implemented immediately. In addition, the regulator may need to be particularly sensitive to the incentives and the behavior of banks in the period of transition. In this section we therefore examine some of the transitional challenges associated with financial liberalization.

We have already seen that in a steady-state dynamic environment the usefulness of capital requirements is limited by the fact that *capital is costly*. If we consider the problem of policy transitions, we are faced with an additional problem, namely that *capital is sticky*. In general it is difficult for banks to increase their capital rapidly. Finding new sources of capital is time consuming, and raising the additional capital is expensive on the margin. Apart from the information problems of moral hazard and adverse selection - discussed extensively in the large literature on credit and equity rationing (see, for example, Stiglitz and Weiss (1981), Myers and Majluf (1984), Hellmann and Stiglitz (1999)) - there may be additional market liquidity problems, due to the fact that a number of banks may all be trying to raise capital at the same time. And these problems may be further compounded if a country also has a legacy of underdeveloped stock markets and/or a financial system that is relatively closed to foreign investors.

At the beginning of financial liberalization, a bank may thus typically not be able to satisfy the regulator's desired capital requirement with the existing assets. Suppose now that it is also unable to raise the required amount of capital in short time. If the regulator were to strictly enforce the steady state capital requirement immediately, then the only option for a capital-constrained bank is to sell off a substantial part of its assets, and to

reduce the amount of lending, recalling old loans and refusing new loans. Both of these policies would have severe consequence. If many assets are all sold off at the same time, asset prices are likely to fall, since assets markets respond to the sudden increase in supply (Shleifer and Vishny, 1992). This means that banks receive fewer proceeds from the asset sale, thus weakening the capital base. Falling asset prices may also weaken the existing loan portfolio, leading to further deterioration of the bank's balance sheet. The reduction in lending might have even more serious implications, as it can have disastrous effects on economic activity, especially if a number of banks do this simultaneously. If no new loans are made, and existing loans are recalled or not renewed, the economy experiences a credit crunch; industrial investment falls and economic activity is severely impacted.

With the understanding that a credit crunch would undermine the liberalization policy itself, policy makers tend to be understanding toward the problems of banks not being able to immediately satisfy the desired capital requirement. The critical question then becomes whether it is acceptable for a regulator to settle for a compromise where banks phase in capital requirements over time, but all other elements of the financial liberalization program remain unchanged? The answer is no! This is where there is an important trap in the adjustment process of moving toward a new steady state. In fact, there are a number of reasons why regulators temporarily need *stricter* regulation in order to have an orderly transition to a liberalized steady state banking equilibrium.

In fact, we need to be careful about bank behavior in the adjustment process, and the possibility that banks may be tempted to gamble especially in the early days of liberalization. The problem can be reduced to one simple but profound observation: *the announcement of financial liberalization creates an immediate shock to the franchise value of banks*, even if the process of liberalization and the adjustment path to a new steady state are very gradual in nature. The incentives faced by a bank change in a discontinuous fashion the moment that a liberalization policy is announced. Even if the environment will only change gradually, and even if actual competition is several years

away, the incentive for a bank to engage in gambling appears immediately at the beginning of the liberalization process.

Why does the announcement of financial liberalization matter so much for the incentives of banks? This is where the dynamic analysis of the previous section comes in. The incentive to gamble is governed largely by the franchise value, i.e., the discounted net present value of the future profit streams. Even if nothing else changed today, bank actions are guided by the benefit of still being in operation tomorrow. The announcement of future liberalization thus reduces the franchise value of the incumbent bank today.¹⁰

What is the implication of the sudden fall in franchise value? We can see from the equation derived in the previous section that the highest possible interest rate consistent with a prudent investment strategy (given by \hat{r}) falls. Supposing that the economy had been in equilibrium with a deposit rate at \hat{r} , the announcement of liberalization means that at the old deposit rate banks now have an incentive to gamble. Now consider that in the short run the amount of capital of the bank is sticky. In order to induce a bank to invest in a prudent portfolio in the period of transition, the regulator now needs to lower deposit rates, essentially to counteract the sudden decline in franchise value caused by the announcement of financial liberalization.

This is a striking result. In order to get to a steady state regime of liberalization with higher deposit rates, we need to go through a transitional period where deposit rates are particularly low. This stringency is actually necessary for two reasons. First, it provides the appropriate incentives for banks not to gamble in the short run, as the system moves toward the steady state. And second, lower deposit rates allow banks to more quickly accumulate capital. This will speed up the adjustment process, as banks can build up

¹⁰ Note that in some instances there may be a few stronger banks that might benefit from liberalization, if they are expected to take market share away from other banks. The point, however, is, that many or most of the existing banks do not benefit from the increased competition. The decline in franchise value may be particularly dramatic for the weakest bank in the system, and the ‘average’ incumbent is hurt, as there will be more competition both among the existing banks and from potential new entrants.

internal capital to ready themselves for the higher capital requirement. This is the irony of transitional dynamics: *in order to get towards the liberalized banking equilibrium, it is faster and safer to enforce temporarily stricter deposit rate controls.*

This type of regulatory overshooting applies not only to interest rate controls. In order to transition toward a regime of more competitive banking, it may be necessary to go through a period of more stringent regulation overall. One can think of a number of other policies that might help to bridge the period of transition, during which banks are particularly prone to gamble, and during which they still have only relatively modest levels of capital. First, there might be a temporary moratorium on all dividend payments of banks to their shareholders. This would ensure that retained earnings go toward the building of the capital base. It would also prevent shareholders from looting their banks by taking out the bank's value through high dividend payments before letting the bank go under, with the government bearing the liabilities to depositors (see Akerlof and Romer (1993)). Another way of curtailing imprudent bank behavior is to be careful with lifting restrictions on the asset classes that banks are allowed to invest in. For example, it might be argued that banks should not be immediately allowed to invest in real estate or financial derivatives, asset classes that are particularly prone to gambling behavior. The problem here is not only that certain asset classes are inherently more risky than others, but also that it is more difficult to account for the true risk for these assets.

The lack of understanding about the true risks of certain asset classes suggests an even broader problem, namely the quality and intensity of regulatory oversight in the transitional period. The greater freedom of banks after financial liberalization necessitates a closer regulatory scrutiny. During the transition period the need for prudential supervision is greatest: as banks experience falling franchise value, and as an industry shake-out occurs, greater desperation among the banks leads to a greater incentive to gamble on resurrection. In addition, banks intending to invest prudently may make mistakes or seek high returns without fully appreciating the risks. This further exacerbates the need for sound regulation. The greater need for prudential oversight is unfortunately typically coupled with a great difficulty to provide effective supervision. In

the early stages of liberalization there is a lack of experienced regulators and greater uncertainty about the type of supervision required. Furthermore, there is a huge increase in private sector demand for well-trained individuals. The public sector cannot meet the salaries offered by the private, so that typically precisely at the time when there needs to be greater strength in the public sector its capabilities are weakened. These difficulties thus further point to the need to control the speed at which banks are allowed to invest in new, poorly understood asset classes.

In summary, examining the dynamic incentives of banks to invest prudently, we note that there is a particular danger of gambling behavior in the early stages of financial liberalization. Even if the liberalization program is gradual – and we have seen that in order to avoid a credit crunch, the imposition of capital requirements needs to be gradual – the announcement of financial liberalization reduces the franchise value of banks immediately. This implies that stricter policies are needed in the transition period. In particular it is necessary to maintain a particularly low level of deposit rates. Moreover, restrictions on investing in certain asset classes should only be lifted gradually, keeping in mind that they require better prudential oversight, at a time when the regulatory institutions themselves are typically in the process of being revamped. It is only once banks have accumulated sufficient levels of capital that deposit rate controls should be relaxed. Obviously, as we have seen in the previous section, even then there might be an argument for mild deposit rate controls.

Conclusion

In this paper we have argued that the reason that financial liberalization has often lead to banking crisis can be understood if one applies a dynamic framework of analyzing bank incentives. Banks may have incentives to invest in an inefficiently risky portfolio when they see their franchise value erode. The sole reliance on capital requirements is inadequate since the high cost of holding capital may actually harm the franchise value of banks and may thus undermine incentives for prudent investing. Instead, a policy of deposit rate controls may be more beneficial, as it allows regulators to lower the burden

of capital requirements. In a period of transition the problems of bad banking tend to become more severe, as banks are experiencing significant declines of franchise value. Even if the liberalization process is gradual, the announcement of financial liberalization may have an immediate effect on bank behavior. In these circumstances a regulator may first want to tighten deposit rate controls before relaxing them. Especially if banks have difficulty to raise external capital, a lower deposit rate will also allow them to build up internal capital at a faster rate. This suggest that in order to have a faster and safer transition to a liberalized banking system, regulators need to accompany the announcement of liberalization with a temporarily stricter regime of regulation.

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