Bank Lending in Transition Economies

by

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Abstract

Bank privatization and tighter credit enforcement are believed indispensable to facilitate the Eastern European transition process. We analyze lending by value-maximizing banks, the only source of capital in the transition, faced by non-performing loans to the state-owned sector. We show that banks have a perverse incentive to fund former debtors, although less efficient and more risky, because they gain the potential repayment of previous debts. This leads to a lower productivity of investment and a greater concentration of risk; the expansion of more efficient private firms is delayed, leading to a slower recovery and a greater risk of financial crisis.

Introduction

"An unchecked flow of finance to loss-making enterprises undermines incentives to control costs or achieve greater efficiency ... where state-run banks have acted as intermediaries, enterprises have run up debts to them that will prove unpayable. To deal with all this, reformers need to impose financial discipline on enterprises. That will require curbing or halting the flow of credit.. **they need to create a commercial bank system that cares about its own profitability**."

The Economist, February 1992

Bank credit represents by far the main source of capital in Eastern Europe; its allocation is therefore a crucial issue in the transition process. In principle, since the state sector is shrinking and selling assets, it should be expected to stabilize its borrowing; while the private sector, which needs to finance its acquisition of capital stock, should receive a rapidly increasing fraction of credit flows. However, there is a diffused perception among observers that state-owned banks in Eastern Europe are showing a marked preference to lend to state-owned firms. For instance, Polish data suggests that credit to the private sector as a fraction of domestic bank assets is rising quite slowly: it was 16.6 % in December 1990, and rose to 17.3 in mid 1991. This contrasts with the evidence of a vibrant private sector. Johnson (1992) reports that the Polish private sector already in 1990 accounted for about 14.7 % of output, and has kept a very rapid rate of expansion; recent estimates indicate it may account for well over one third of GNP. The situation appears to be similar in Czechoslovakia; although credit to the private sector is rising fast, it is nowhere as fast as the rising importance of private activity. In the period January through September 1991, it rose from 5 to 40 billion korunas, reflecting in part borrowing to invest in small scale privatization. At the same time the state sector increased its borrowing by 70 billion korunas, to a total of 600 billion (Dyba and Svejnar, 1992).

Currently, several reasons exist for excessive bank lending to state-owned firms. There may be reluctance by the bankers to cut off their former clients, since it also implies admitting the difficult state of their institutions. Certainly a major cause is the political opposition to restructuring and layoffs which would follow a declaration of insolvency of

the old state-owned sector.[1] The large banks in Eastern Europe are still largely controlled by the state. Thus, even when the former state-owned firms are privatized, the state retains enormous indirect control and financial responsibility for these enterprises.[2] The implication is that the banking sector is being covertly used to finance subsidies to the corporate sector, and to reduce the reported budget deficit; under the socialist regime, bank lending were practically the only form of nonmonetary financing of the budget deficit. Finally, a legacy of the old order's bias in favour of producers is the fact that banks are in part owned by state-owned enterprises; this is true in Yugoslavia, Latvia, Estonia, Russia, Hungary and Czechoslovakia (see e.g. Varhegyi, 1992).

It may appear therefore that privatization of banks is really a precondition to ensure efficient credit decisions. This paper examines whether profit-maximizing behavior by banks is sufficient for efficient lending in the transition phase of a post socialist economy.

We attempt to capture the crucial features of this economic stage with the following assumptions. First, banks are, at least in the short term, the only source of capital for investment. We argue that the main reason why potentially bankrupt banks still attract funds is that private citizens perceive an implicit government guarantee behind their deposits. Banks do not face immediate competition, largely because of a highly underdeveloped financial system.[3] Foreign investment and internal wealth accumulation will provide competition in the medium term. However, as these new intermediaries are not part of the core banking sector, they are not likely to enjoy a similar government guarantee for their liabilities. As a

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[1] A related reason is the existence of economic costs of bankruptcy, in addition to social costs.

[2] This pressure does not need to be explicit, as legislation often grants them limited powers to enforce liquidation (Mitchell, 1993).

[3] Modigliani and Perotti (1991) offer evidence that a major cause of underdeveloped security markets is the lack of a reliable legal framework for the protection of outside investors, which discourages equity and more generally security financing vis-a-vis bank debt. This view appears very relevant for Eastern Europe, and is complementary to the more common approach that intermediaries are in a better position to gather information on firms than disperse investors (e.g., Diamond, 1984).

result, their required rate of return and cost of capital will be higher.

On the other hand, banks are saddled with a large amount of bad loans, which reflect their former role as passive channel of subsidies to the state-owned sector (Brainard, 1991). These loans are also concentrated, so that very few or even just one bank typically hold the bulk of borrowing of individual companies (Estrin, Hare and Suranyi, 1992).

The second set of assumptions concerns the productive sector. The state-owned enterprises compete with new firms for productive ventures, but are less efficient.[4] Neither type of firms have liquidity for investment, so they must borrow.

Under these assumptions, we show that the effect of accumulated bad loans and their concentration may cause a bias against the financing of new, more profitable ventures. This will lead to a concentration of risks on the banks' balance sheet, and a slower recovery in the transition period. The consequence may be a very inefficient outcome if a rapid transition is necessary to avoid the collapse of the public budget, perhaps because there exist significant spillover effects among private sector firms (Roland and Verdier, 1991, and Lacan and Wolf, 1991).

While the model does not portray the causes of the current excess lending to the state-owned sector (which are probably political), it highlights the potential for even further concentration of risks and credit misallocation following bank privatization. Profit-maximizing behavior by banks, while certainly desirable, is not sufficient to establish proper lending incentives in absence of a thorough restructuring of bank balance sheets. The effect of substandard loans is to create incentives for state-guaranteed deposit-takers to increase their exposure with their state-owned borrowers, increasing the concentration of risky loans by sectors and on the balance sheet of individual banks.

Finally, it is important to stress that the thrust of the paper is to describe the damaging effect of a tightening of credit enforcement in the

[4] This reflects weaker incentives; a concentration of skills in activities unprofitable at market prices; and the flight of more talented employees towards self-employment or private firms.

presence of old, non performing debt. These concerns are appropriate in transition economies which have completed a macroeconomic stabilization policy, such as Czechoslovakia and Hungary. However, several Eastern European nations are still struggling to achieve this goal; for these countries the very essence of decentralized credit markets is still in question, precisely because of the legal difficulty of credit enforcement. In Perotti (1993) we develop a classification of post-socialist financial systems, and examine the different challenges along these dimensions.

Section I The model

Consider a two period economy. In the first period, the only source of investment capital is bank lending. There are N privatized banks, each with a lending capacity equal to one. These banks enjoy a (possibly implicit) government deposit guarantee. As a result, their liabilities are not priced according to the risk of their lending choices. In the second period, a competitive fringe of new intermediaries emerges as a source of funding. The riskless interest rate is normalized to zero. Lenders and firms are risk neutral. Because investors are risk averse, intermediaries without state deposit guarantees have a positive cost of capital.

There exist two types of borrowers: N state-owned enterprises (SOEs) and N new private enterprises (PE). They both must borrow the entire investment cost, which is normalized to 1. New firms have no old debt and no collateral. On the other hand, each SOE has outstanding senior debt equal to F with an existing bank, and market value of assets equal to V. Because of losses accumulated in the past, or possibly because of asset stripping by firm insiders, the value of the collateral is below the nominal value of the loan, i.e., $V < F$; if all debt were due today, these firms would be bankrupt. SOEs can invest in projects which cost one unit of investment that succeed with probability p. In case of success, the gross return is R, and zero otherwise. These projects are not specific to the SOEs; if they are not undertaken by them, private firms may invest in them later. We assume that $pR > 1$, so the gross return is positive.[5] If no further credit is extended, the firm will become insolvent in the second period and the bank would recover V.[6]

Private firms have access to better projects, with a probability ϕ of success, in which case they return R, and a probability $(1-\phi)$ of a zero

[5] Later we consider the case when some SOEs are value-subtracting enterprises.

[6] If all SOE debt were immediately due, the banks would have even greater monopoly power over their former borrowers and could charge them more. Our model aims at showing lending bias even without such an asymmetry in banks' bargaining power over different firms.

return, where $\phi > p$. We assume that all firms' success probability is common knowledge.

Both the private entrepreneurs and the SOEs have the choice of accepting the rate offered by the bank; in alternative, they can wait until the second period, when more private capital becomes available, in the form of a competitive fringe of lenders. These intermediaries are not covered by state deposit insurance, so they will demand a risk premium which reflects the riskiness of the project.

We denote the risk premium on private ventures by k_ϕ and on SOE's projects by k_p, where $k_\phi < k_p$. Thus, if the new intermediaries lend an unit amount of capital to a private firm, they will demand a nominal value of the debt $F(\phi)$ so that:[7]

$$\phi F(\phi) = 1+k_\phi \tag{1}$$

which implies $F(\phi) = (1+k_\phi)/\phi$. Similarly, the cost of borrowing for a SOE **in absence of old debt** is equal to $F(p) = (1+k_p)/p$. Clearly, $F(p)$ is larger than $F(\phi)$.

Lending and investment decisions

We now examine the lending decision by banks and new intermediaries. We examine first the payoff to a loan to a new firm. The bank is risk neutral, so it is in principle willing to lend at a lower cost than risk averse investors. However, in the absence of competition from other banks, the bank will not lend at a rate below $F(\phi)$, which is the firm's best alternative. Since a higher quote will result in the firm postponing investment until it can be financed by the new lenders, the maximum possible return to the bank is $\phi F(\phi) = 1 + k_\phi$.

Consider next the return to lending to a SOE. As in the case of a private firm, a SOE may decide to wait to borrow; therefore, the maximum

[7] Note that under our assumption on the distribution of return, this financing may be also interpreted also as equity.

nominal value of the debt cannot exceed F(p). We distinguish two cases.

a) $F - V \geq R - F(p)$ (2)

In this case (which we characterize as strong debt overhang), the firm's net financial position before new investment is so negative that even if it received financing at market rates and were successful, it will be bankrupt.[8]

b) $F - V < R - F(p)$ (3)

In this case (moderate debt overhang) a SOE can repay all debts if successful.

Although in principle a SOE can borrow from a different source than from its previous lender, the old debt represent an obstacle. Since the new debt is junior to the old bank debt, the old loan must be paid in its entirety before any other claim is repaid.[9]

Consider initially the case when $V + R - F > F(p)$. This implies that a new lender, either bank or new intermediary, would be paid its entire credit if the investment is successful. The junior lender's return is $(1-p)0 + pF(p) = 1 + k_p$. In addition, the old lender receives a net benefit, since the value of its debt claim increases from V to V + pF. In the case when the bank lends to its old client, its expected return is $(1-p)0 + p[F - V + F(p)] = p[F - V + F(p)] = 1 + k_p + p[F-V]$. This implies that if any loan is extended to SOEs, it is more profitable for each bank to lend to its former debtor than to compete to lend to other banks' clients.

b) If instead $V + R < F + F(p)$, even if the project turns out to be successful, a junior lender will not receive a complete repayment on its loan. On the other hand, an original creditor still has an incentive to lend, as a successful project would provide some repayment toward the old loan as well. Therefore, a SOE would receive credit only from its original

[8] We assume that the SOE always prefers to continue operations.

[9] We assume here that the old debt cannot be diluted through an issue of a claim with equal or superior seniority, as it is usually the case with bank debt. Since the government is the ultimate guarantor behind the bank system, it may in fact protect bank loans through seniority to avoid holding claims which are easily diluted.

lender at a price F(p).[10]

Table I summarizes the return to all lending decisions; we can now determine what type of firms banks will choose to finance. A bank will prefer to lend to its old debtor as soon as:

$V + pR > V + \phi F(\phi)$ under strong debt overhang (case a)

$V + pF(p) > V + \phi F(\phi)$ under moderate debt overhang (case b)

**********Table I approximatively here**********

A bank always prefers to lend to its old SOE borrower in case b, since $k_p > k_\phi$. This is a feature of the deposit-insurance provision: an increase in riskiness of borrowers produces higher interest charges by the competitive fringe, and therefore raises profits for the lender. A bank prefers to lend to its former debtor SOE also in case a) as long as:[11]

$pR > 1+k_\phi$ (**Condition C1**).

In conclusion, banks will choose to lend only to SOEs under moderate debt overhang; under strong debt overhang they will also prefer a SOE borrower as long as its expected return covers the cost of capital of the **private firm**'s project. Note that C1 does not imply that the SOE's projects have positive net present value, since k_ϕ is the required rate of return for a private sector project.

Since all capital available in the first period is then allocated to state-owned firms, the new firms wait until the second period to be financed.

When C1 is not satisfied, the banks fund the new firms, and the SOEs

[10] While the old lender is now a monopolist lender, note that a face amount above F(p) does not increase its return as the lender is already the residual income claimant.

[11] Note that under case b), condition C1 is always satisfied, since $pR - (1 + k_p) > p[F - V]$ implies $pR > 1 + k_p > 1+k_\phi$.

are liquidated. This is the efficient solution; the SOE's projects will be undertaken by private firms in the second period, provided they satisfy the NPV condition $pR/(1+k_p) > 1$.

From inspection of Condition C1, it becomes apparent that if private firms are refused credit in the first period, in the second period they will be financed, even if they have to pay a risk premium. To see this, notice that their net present value is

$$\phi R/(1+k_\phi) - 1 \tag{4}$$

but $\phi R > pR > 1 + k_\phi$ under C1.

Finally, Table I clearly illustrates that banks prefer to lend to their former SOE debtors rather than spread their lending to other state-owned firms. This implies a further concentration of lending, and a resulting greater concentration of risk. Note also that the return for the bank to lending to its old debtor firm is riskier than to a loan to a new venture:[12]

$$p(1-p)R^2 > \phi(1-\phi)[(1+k_\phi)^2/\phi^2] \qquad \text{as long as } \phi > p. \tag{5}$$

The intuitive reason for the bias in lending to SOEs is due to the fact that the bank is the residual claimant in the case of SOEs, while it earns only a 'normal' rate of return when lent to a private firm.

Notice that banks prefer to lend to riskier ventures with an expected return k_p than to the less risky projects earning a market risk premium equal to k_ϕ. Moreover, the state deposit guarantee ensures that its liabilities are not repriced according to the degree of risk assumed. However, the next section clarifiers that even if all investors are risk neutral, the bias toward bank lending to indebted SOE remains. The debt overhang renders the old lenders partial residual claimants in the SOEs but not in the private firms: even though the value created by private firms is larger, the fraction of SOEs' value gained by the banks is greater.[13]

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[12] The variance of the overall return is greater for SOEs' than for private ventures as long as $\phi + p > 1$, which is certainly true if $p \geq ½$.

[13] As Merton (1978) demonstrated, deposit insurance is equivalent to a call option on the bank value, since their owners receive the net value of the bank if positive but in case of insolvency their loss is nil. This

Section II The extent of lending bias

Our basic results suggests that because of risk-shifting, the bank may prefer higher risk projects even though they have negative net present values, given their appropriate risk-adjusted discount rates. We show here that even when the future lenders are risk neutral, so that risk premia are zero, in the presence of deadweight debt the banks will still allocate an excessive amount of credit with less efficient former borrowers.

Consider the following modifications to the basic model. First, let all agents be risk neutral, so that $k_p = k_\phi = 0$. Assume that each bank faces the choice between lending to new and old firms as before; however, now the old borrowers have different probabilities of success s, which are common knowledge and are distributed according to some cumulative probability function F(s) on the interval [p, q], while as before all the private firms have a constant ex ante probability ϕ of success. We assume $\phi > p$, but not necessarily $\phi \geq q$; thus some state-owned firms may be very efficient. Bank credit is perfectly divisible, so each bank chooses the proportion of its lending to the private and SOE sector. Since the bank faces a risk-neutral competitive market tomorrow, the amount charged by a bank to a new venture cannot exceed $F(\phi) = 1/\phi$, and similarly the loan to a SOE cannot exceed their alternative cost F(s) = 1/s.

Denote the share of private firms which do bank financing by w. The first best allocation of credit would be to lend to private firms a fraction equal to w^* as given by the maximand to:

$$\max_x \quad w\phi R + \int_x^q sR \, dF(s) \tag{6}$$

$$\text{s.t. } (1-w) = \int_x^q dF(s)$$

For simplicity, assume that s is distributed uniformly on [0, q]. Then the constraint can be rewritten as w = x/q; substituting for x into

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convex payoff induces banks to favour a higher variance of investment in order to maximize the value of the option.

the formula yields the following maximization problem:

$$\underset{w}{\text{Max}}\ w\phi R + \int_{wq}^{q} sR\, dF(s) = w\phi R + \tfrac{1}{2}(1-w^2)\, qR \tag{7}$$

so that $w^* = \phi/q$, namely one minus the proportion of SOE's projects whose probability of success exceeds ϕ.

Consider now the optimal lending policy of a bank. The return to lending one unit to a private firm is $\phi F(\phi) = 1$. As before, the bank has no interest in lending to other banks' former borrowers. The return to a former borrower with a probability s of success is sR when $F - V \geq R - F(s)$, and $sF(s) + s[F - V] = 1 + s[F - V]$ otherwise. Therefore it certainly will not lend to a former borrower whose probability of success is so low to represent a certain capital loss. This occurs when $s < s^*$, where $s^* \equiv 1/R$. Moreover, notice that since a low probability of success s implies a higher cost F(s), the threshold value s^{**} such that the bank is a residual claimant is given by

$$s^{**} \equiv \frac{1}{R + V - F}. \tag{8}$$

Therefore the bank chooses w as to maximize:

$$\text{Max}_w\ w\,\phi F(\phi) + \int_{x}^{s^{**}} sR\, dF(s) + \int_{s^{**}}^{q} s[F(s)+F-V]\, dF(s) \tag{9}$$

$$\text{s.t.}\quad 1 - w = \int_{x}^{q} dF(s)$$

$$x^* \geq s^*.$$

The fraction w^* lent to the private sector under this objective function is equal to s^*/q. This implies a strictly lower percentage of private lending than the first best level of ϕ/q, since $\phi R > 1$.

The average expected profitability of each unit of capital in the first best allocation of credit equals

$$V^* \equiv w^* \phi R + \int_{w^*q}^{q} sR \, dF(s) =$$

$$= w^* \phi R + ½ (1-w^{*2}) qR = ½R [q + \phi^2/q] \tag{9}$$

while in the case of debt overhang it equals

$$V^{**} \equiv w^{**} \phi R + \int_{w^{**}q}^{q} sR \, dF(s) = s^* \phi R + ½ [qR - 1/(2qR)] \tag{10}$$

so the net loss per unit of capital due to the lending bias is given by:

$$V^* - V^{**} = \frac{(\phi^2R^2 - 2\phi R + 1)}{2qR} = \frac{(\phi R - 1)^2}{2qR} > 0 \tag{11}$$

A final extension of the model would evaluate the efficiency loss due to the presence of productive spillover effects which increase in the size of the private sector, to capture the notion of "critical mass effect" in the spirit of Roland and Verdier (1991). Suppose that the profitability of all successful firms (including SOEs) depends on the total share of private firms in the economy, so that $R = R(w)$, with $R' > 0$ and $R'' < 0$. Since banks do not internalize entirely the spillover effect of early investment by private firms, the overall impact of the lending bias will be greater than in this basic case.[14]

[14] Roland and Verdier (1991) offer a list of possible reasons for this effect: a higher fraction of private firms may improve business services, the diffusion of skills and technologies, and higher competitive incentives.

Implications and Concluding Remarks

We have advanced a rationale for bank lending in a post socialist economy to continue to be biased in favour of state-owned enterprises as a consequence of the legacy of old lending. We point to the potential for excessive risk concentration and misallocation of lending even after bank privatization, when banks are maximizing profits and no further political influence is exercised.

The cause of the distortion is the stock of accumulated losses by state-owned enterprises on the banks' balance sheets, the "deadweight debt" mentioned in Rybczynski (1990). A policy solution is for the government to recognize the extent of the banks' bad loans, and force them to write them off, as suggested by Begg and Portes (1992). Since these bad loans reflect an history of subsidization of industry by the state, and should be recognized as a component of the budget deficit. In fact, recognition is little more than an accounting procedure if the state is indeed the ultimate guarantor of deposits. However, this should not be allowed to put in question the solvency of the banks: their role in the payment system should not be compromised.[15] A solution has been advanced by Calvo and Frenkel (1991), namely to substitute these claims in the banks' balance sheets with long term government bonds. The paper suggests that loans should be reduced to the point where there is no longer a strong residual claim by the banks on the enterprises.[16]

The resulting allocation of credit leads in our model to a postponement of efficient investment, so in the transition stage capital is less productive than in an efficient allocation. This is because initially

[15] In addition, it would be very dangerous to discredit the most basic store of value available to household, as it may devalue all financial investments implicitly or explicitly guaranteed by the state.

[16] A reason for resistance to this solution may be the reluctance by the government to recognize the true extent of its liabilities. In fact, it may be in the (short-term) interest of the state to allow the banks to try to avoid recognizing their quasi-bankrupt state by taking a gamble on their lending; nor would investors withdraw their funds if they are reassured about the state guarantee.

only the less profitable projects receive financing, leading to a smaller rate of growth and a greater risk of project failure. Moreover, banks continue to lend to the same firms as before, and may actually increase their overall financial involvement with their debtors; this may cause an unnecessary concentration of risks, since diversification (either through lending to new firms or to other SOEs) would permit greater financial stability. Finally, the private sector is financed only in a later stage, delaying the onset of beneficial features of private sector development. This may have an amplified effect for various reasons. A slower recovery in the transition stage may cause political instability. Moreover, there may be spillover effects from the emergence of new enterprises. Roland and Verdier (1991) indicate that the failure to achieve rapidly a critical mass of private firms may lead to increased budget expenditure and a collapse in private incentives. A similar systemic effect in Lacan and Wolf (1991) leads to a worse underinvestment equilibrium.

The degree of insolvency of the state-owned sector, the shortfall F-V in the model, is likely to be an increasing function of the interval before a transfer of control from the state to private interests takes place. Anedoctal evidence suggests that in this phase of transition, state-owned firms are being damaged, in addition to the serious recession, by the short-term orientation of their management and labor, who engage in decapitalization and monetization of firm assets to appropriate firm value or simply to prolong its existence. This causes the collateral of banks' loans to shrink, transforming them in residual claimants.[17] Thus, once banks are privatized and operate in a profit-maximizing fashion, the more severe is the degree of insolvency of their debtors, the stronger will be the banks' incentive to attempt to regain their capital by gambling more money on these firms. Some proposals for a strong role for banks to control large privatized firms (Sachs and Lipton, 1989; Corbett and Mayer, 1991)

[17] Privatization by share distribution of highly indebted firms is really a transfer of only a small fraction of their capital to the private sector. Bank reform is therefore an integral part of privatization, as the lenders are likely to emerge as the residual income (and therefore control) claimants in most states of nature.

must then address such potential risks.

Our analysis seems quite unfavourable to state-owned firms. Resistance to face the necessity of rapid restructuring, unfortunately, is not a solution, as it leads to greater future losses. In any event, it is important to stress that their closure does not entail loss of valuable investment opportunities, as long as the liquidated assets are sold to the best bidders. Liquidation may be precisely the ideal procedure to fully recognize the true market value of the debt and remove the debt overhang which discourage incentives and equity investment; it may be shaped to assign rapidly control over the assets to their more efficient user (Aghion, Hart and Moore (1992)).

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