Soft budget constraints, transition and …nancial systems

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1 Introduction

"Soft budget constraints" - a term coined by Janos Kornai[1] which means the re…nancing of loss-making enterprises - were one of the most important incentive problems of socialist economies. The importance and relevance of the concept of soft budget constraints is now also acknowledged beyond socialist economies, due to well known examples concerning big corporations (e.g. Chrysler) or in the banking sector (e.g. the bailout of the US S&L's). Soft budget constraints in the banking sector of East Asian economies are also believed to have played an important role in the big East Asian crisis of the late nineties (Huang and Xu, 1998).

Soft budget constraints have naturally been an important concern in transition economies, in Eastern Europe as well as in Asia. For example, their role has been stressed as an obstacle to:

- the restructuring of loss-making enterprises, because they lack the negative incentives related to the threat of bankruptcy;
- the sectoral reallocation of activity as continued subsidies to loss-making State-Owned-Enterprises (SOE's) prevents e¢cient private …rms from outbidding them for workers (see Castanheira and Roland, 1995);
- macroeconomic stability, because of the di¢culty of keeping government expenditures under control (see Litwack (1993) on Russia in the earlies 1990's).

The necessity of hardening budget constraints of enterprises in economies in transition has clearly been recognized in the literature. How to e¤ectively harden budget constraints has however less been the subject of detailed analysis. Hardening budget constraints is often presented in "reduced form", as a direct choice of action on an exogenous policy variable, without questioning the feasibility of this choice. This is partly because, in an important part of the literature on transition, soft budget constraints are identi…ed with subsidies.[2] Hardening budget constraints is then nothing else than a simple policy decision to cut subsidies.

[1] Janos Kornai (1979, 1980, 1992) has in particular shown the role of soft budget constraints in explaining the emergence and reproduction of shortages in socialist economies.

[2] for example Aghion et al. (1994) and Boycko et al. (1995).

Another line of research, initiated by Dewatripont and Maskin (1995), views soft budget constraints as endogenous to speci…c institutions. Soft budget constraints are seen as a dynamic incentive problem where a funding source, be it a government or a bank, cannot commit to keep an enterprise to a …xed initial budget. Soft budget constraints represent an ine¢ciency in that the funding source would like to commit ex ante not to bail out …rms, but they know they will be tempted to re…nance the …rm ex post because the initial injection of funds is sunk. Here, the interesting question becomes that of the institutional conditions under which one has hard or soft budget constraints. Hardening budget constraints is thus not simply a direct policy variable, but rather the result of institutional design.

An area where this question of institutional design is particularly sensitive is the bailout of banks. Indeed, if macrostabilization programs have drastically cut subsidies, in many transition economies loss-making SOE's have continued to be bailed out via di¤erent channels such as interenterprise credits, and most importantly via bank credit. As a consequence, the quality of bank portfolios has sharply deteriorated, and created a "bad loan problem". This problem illustrates very well the soft budget constraint phenomenon. Early analysts of the bad loan problem have emphasized the need for bank recapitalization as the appropriate solution (Begg and Portes, 1993, Mitchell, 1994). At the same time, analysts acknowledged that such recapitalization could only occur once. Otherwise expectations of future bailouts would seriously dampen banks' incentives. Despite these clear warnings, there have been repeated bank bailouts, as for example in Hungary in 1992-94. Accumulation of bad loans indeed strengthens pressures to bail out banks and expectations of bailouts give fewer incentives to banks to improve their loan portfolio. This is a clear example of the soft budget syndrome.

Kornai's seminal work has focused mainly on the consequences of the soft budget constraint, namely the emergence of pervasive shortages under socialism. He primarily attributes the causes of the soft budget constraint to political constraints, that is, to the desire of "paternalistic" governments to avoid socially and politically costly layo¤s. In his own formalization (Kornai and Weibull, 1983) the government simply bails out loss-making …rms and thus undermines ex ante incentives. Understanding the phenomenon of paternalism, in particular its underpinnings in political economy, is worthwhile in its own right and has an important empirical relevance. However, Dewatripont and Maskin (1995)'s analysis of the soft budget constraint under centralized and decentralized banking has shown that, from a logical

point of view paternalism is neither a necessary nor a su¢cient condition for soft budget constraints. They instead stress dynamic commitment problems in the presence of irreversible investment.[3] This does not mean at all that paternalism is not relevant in our empirical understanding of soft budget constraints. The Dewatripont-Maskin framework however provides the tools to understand soft budget constraints under paternalism but also beyond paternalism, and thereby to understand the causes of soft budget constraints beyond socialism and transition, in cases where paternalism is not an issue.

In that spirit, we use a variant of the Dewatripont-Maskin model and show that the degree of hardness of budget constraints can shed light on risk-taking and industrial change under the market-oriented Anglo-Saxon vs the Japanese and German bank-oriented …nancial systems. In particular, we show that the Anglo-Saxon market-oriented system imposes harder budget constraints. This may have the disadvantages of short-termism but also some advantages. In particular, it gives more ‡exibility and …nancial resources to …nance innovations, allosing faster expansion of investment in new innovative sectors.

In this paper, we survey the incentive literature on soft budget constraints and we analyze its relevance for transition and its implications for the comparison of …nancial systems. In section 2, we detail the Dewatripont-Maskin model in the context of the socialist economy. In section 3, we look at the e¤ects of various transition reforms on the hardening of budget constraints: privatization, product market competition, government reform and …nancial market reform. Finally, in section 4, we consider the issue of project selection, risk taking, innovation and the hardness of budget constraint under alternative …nancial systems.

2 Soft budget constraints as a dynamic commitment problem

We start with an adaptation of the Dewatripont-Maskin model to the context of socialism. Consider the following adverse selection problem. The government faces a population of …rms, each needing one unit of funds in initial period 1 in order to start their project. A proportion ® of these projects

[3] Scha¤er (1981) also models the lack of commitment of government not to rescue a loss-making …rm.

are of the "good, quick" type : after one period, the project is successfully completed, and generates a gross (discounted) …nancial return $R_g > 1$. Moreover, the manager of the …rm (possibly also workers) obtains a positive net (discounted) private bene…t E_g. In contrast, there is a proportion $(1 ¡ ®)$ of bad and slow projects which generate no …nancial return after one period. If terminated at that stage, managers obtain a private bene…t E_t. Instead, if re…nanced, each project generates after two periods a gross (discounted) …nancial return R_b and a net (discounted) private bene…t E_b. Initially, ® is common knowledge but individual types are private information. A simple result easily follows : if $1 + E_t < R_b + E_b < 2$ and $E_b > 0$, re…nancing bad projects is sequentially optimal for the government, and bad entrepreneurs who expect to be re…nanced apply for initial …nancing. The government would, however, be better o¤ if it were able to commit not to re…nance bad projects, since it would thereby deter managers with bad projects from applying for initial …nancing, provided $E_t < 0$.

Termination is here, by assumption, a disciplining device which allows the uninformed provider of funds to turn away bad types and only …nance good ones.[4] The problem is that termination is not sequentially rational if $R_b + E_b > 1 + E_t$: once the …rst unit has been sunk into a bad project, its net continuation value is positive so that, in the absence of commitment, the soft budget constraint syndrome arises. In this setup, because irreversibility of investment is such a general economic feature, the challenge for theory is more to explain why hard budget constraints prevail rather than why budget constraints are soft in the …rst place.

One can use this analysis as a starting point to understand how transition reforms can alleviate the soft budget constraint problem. We now turn to several such reforms.

3 Soft budget constraints and transition

3.1 Privatization

The soft budget constraint result above is related to the assumption that the government cares about the private bene…ts of the managers and workers inside the …rm. This is consistent with Kornai's notion of paternalism in

[4] This di¤ers from a static problem à la Stiglitz-Weiss (1981) where creditors can at best …nance all types, and at worst …nance bad types.

the socialist economy as the source of the soft budget constraint. From that perspective, privatization changes the objectives of the provider of funds. A profit-maximizing creditor would care only for the return on projects and not for the private benefits of insiders. Does this mean that privatization, by getting rid of paternalism, gets rid of soft budget constraints?

Note first that the condition for hard budget constraints under privatization is easier to fulfill than under government ownership. There will be hard budget constraints as soon as $R_b < 1$ whereas the relevant condition under government ownership is $R_b + E_b - E_t < 1$. Given that $E_b - E_t > 0$, the condition for hardening budget constraints is more stringent under government ownership compared to private ownership. This comparative statics results implies that there will be harder budget constraints under privatization compared to state ownership. This is an application of the well-known idea that the incentives of an agent can be improved if the principal 's objective function is less comprehensive than social welfare, and in particular if it is insensitive to the private interests of the agent. A very similar idea to the one here can be found in Li (1992) also in the context of privatization and in a paper by Schmidt and Schnitzer (1993) on the design of privatization agencies.

Note however that if privatization can alleviate the soft budget constraint problem, the latter will not be eliminated if $R_p > 1$! The model shows that the soft budget constraint problem may persist even after the privatization of firms and after banking reform (i.e., when banks are profit-maximizing). We can even go one step further. The model predicts soft budget constraints to be widespread since it is the existence of sunk costs that drives a wedge between ex ante and ex post efficiency. From the logical point of view, paternalism is thus neither a necessary nor a sufficient condition for soft budget constraints. In the initial Dewatripont-Maskin model, the investor is not a government but a profit-maximizing bank. We should thus observe soft budget constraints as a very general phenomenon. Judging from the empirical evidence, soft budget constraints are however not as pervasive as suggested by this analysis. The challenge is therefore less to explain soft budget constraints than to explain why they are not so prevalent under a capitalist economy.

In the model anove, we have not taken into account the effects of enterprise size on the degree of hardness of soft budget constraints. Bigger firms may have a higher levels of $E_b - E_t$ or of R_b for various reasons such as concentration of political influence, smaller relative liquidation or collat-

eral value, externalities from re…nancing, etc..and thus be more prone to soft budget constraints than smaller …rms (on this see Qian and Roland, 1996).

To conclude, privatization is not an automatic route to hard budget constraints. This issue is particularly relevant in transition economies where governments have gone for "insider privatization", giving away control to existing management teams, as in Russia. In this case, Debande and Friebel (1996) stress the fact that managers may have a bias in favor of excessive size (i.e. be "empire-builders") and that the reluctance of the government to re…nance …rms is, if anything, reduced by the fact that its …nancial stake in the company is diminished by privatization : since the government does not get the …nancial reward of pro…t-maximizing strategies after privatization, why should it care at all about the pro…t consequences of the …rm's actions ? Faure-Grimaud (1996) stresses moreover the fact that, by o¤ering more precise signals about the …rm's future pro…tability (through stock market valuation), privatization may worsen the soft budget constraint problem : if the manager is con…dent that the stock market will value future pro…ts R_b appropriately, he will not be afraid to have to report zero pro…t in period 1, while otherwise he might abstain altogether !

3.2 Product market demonopolization

The opportunity cost of re…nancing a bad project can also be raised by reducing the cost of terminating it. The cost of termination is in turn related to substitution possibilities across projects, as stressed by Segal (1998). While Segal makes the point that the soft budget constraint can at times be seen as the result of underprovision of cost-reduction e¤ort by a monopolist in order to extract subsidies from the government, the argument can also be made directly in our framework. Indeed, assume that the government can split each project it …nances into two halves at some e¢ciency cost, for example because of increasing returns to scale. In other words, two entrepreneurs are selected, and each receives 1=2. In case of a good project, the gross return will only be $\mu R_g=2$ with $\mu < 1$, and similarly, in case of a bad project that is re…nanced by injecting 1=2 in the second period, the gross return will be $\mu R_b=2$. If we assume that there is demand only for the equivalent of one full project, the game stops if both entrepreneurs have good projects. But what if one project is bad ? The soft budget constraint problem could remain if $\mu R_b=2 > 1=2$. Assume however that, if only one project is good, it is optimal for the government to expand its activities instead of re…nancing the bad

entrepreneur. In other words, if an increase in capacity of the good project through injection of another 1=2 yields $(2 ¡ \mu)R_g=2 > \mu R_b=2$, bad projects will not be re…nanced whenever they have been …nanced together with a good project. Bad projects thus get re…nanced only with probability $(1 ¡ ®)$. If $®E_t + (1 ¡ ®)E_b < 0$, then there is always a unique equilibrium where only good entrepreneurs apply for funds, because then a bad entrepreneur will not …nd it pro…table to submit a project in the …rst place.

As one sees demonopolization introduces substitutability between projects which can harden budget constraints because money for re…nancing bad projects can be diverted to more productive use by expanding the good projects. Thus, even though re…nancing bad projects may be ex post profitable, competition from good projects increases the opportunity cost of soft budget constraints, thus making re…nancing unpro…table.

3.3 Decentralization of government decisions

Qian and Roland (1998) take a similar perspective to that in subsection 3.1 above, assuming $R_b + E_b ¡ E_t$ to be too high because of the paternalistic attitude towards insiders. However, instead of privatization, they investigate decentralization of government as a method for reducing R_b. Government remains in control of the …nancing decisions, and the focus is on altering its incentives by creating competition between local governments through decentralization. Qian and Roland argue that this is one of the main speci…cities of Chinese reforms so far. Indeed, important improvements in enterprise incentives have taken place in China despite the absence of privatization programs. Most of these improvements have taken place in the township and village enterprises which are not privately owned but started booming after the beginning of the reform process.[5]

Qian and Roland insert the setup of section 2 in a general equilibrium framework with the following objective function W for the government :

$$W = x(K; I) + y + u(z)$$

where K is the level of foreign capital investment into the area and I and z are, respectively, the level of public infrastructure investment and public consumption. Moreover, y is the net return of …nancing and re…nancing

[5] see, e.g., Weitzman and Xu, 1993 ; Che and Qian, 1994 ; Bolton, 1995 and Li, 1995.

…rms (including managerial private bene…ts), while x(:) and u(:) are the net returns of the two forms of investment and of public consumption. Assume positive decreasing marginal returns as well as complementarity between K and I.

The degree of decentralization of decisions can be seen to in‡uence the budget constraint …rms face through the intensity of capital mobility across regions. Maximizing the objective function W implies re…nancing bad …rms, and thus a soft budget constraint, if and only if :

$$E_b - E_t + R_b - 1 \geq \frac{\partial x(K;I)}{\partial I} + \frac{\partial x(K;I)}{\partial K}\frac{dK}{dI} = u'(\bar{z})$$

where the left-hand side of the inequality is the net increase in y when one unit of funds is used to re…nance bad …rms, while the right-hand side is the net return to infrastructure investment or public consumption ($\bar{z}$ being the equilibrium level of public consumption). Decentralization can then harden the budget constraint of …rms because local governments will compete with one another to attract foreign capital to their region by investing more in infrastructure. In other words, decentralization leads to an increase in dK=dI (for simplicity, Qian and Roland assume that dK=dI is zero for the country as a whole, but positive at the regional level). Regional governments will thus divert funds towards infrastructure investment and away from public consumption for the purpose of …scal competition. Simultaneously, re…nancing bad …rms will have a higher opportunity cost, since $u'(z)$ has increased. Call $\bar{z}$ the equilibrium level of public consumption with decentralized government. Provided $u'(\bar{z}) > E_b - E_t + R_b - 1$, only good projects are …nanced under decentralization, since bad entrepreneurs expect to be terminated. Note that hard budget constraints and decentralization are self-enforcing. Once the central government has handed …scal authority to the local government, it cannot recentralize …scal authority ex post for the sake of bailing out SOE's because the local governments will by then have spent their budget. The commitment e¤ects of decentralization are thus strong and more e¤ective than decisions to prohibit soft budget constraints which were taken regularly in the socialist economy but had no e¤ect because of the lack of credible precommitment.

It is interesting to compare the results of Qian and Roland (1994) with those of Wang (1991), who sees decentralization as increased autonomy given to enterprises. The latter receive from the central planner …xed investment

and circulating capital which are combined using a Cobb-Douglas production function. Increased autonomy allows enterprises to decide how to allocate funds between …xed investment and circulating capital, thereby raising the risk that …rms might strategically misallocate their funds in order to force the government to increase spending in their favor. This can lead to in‡ation if government spending is …nanced by money creation. Partial enterprise autonomy can thus lead to a softening of budget constraints because it gives more room for strategic distortions.

3.4 Decentralization of credit and banking reform

3.4.1 Decentralization of credit

As we have seen, the setup of section 2 is compatible with pure pro…t-maximization motives of the funding source. Indeed, in the presence of sunk costs, sequential pro…t maximization can be inferior to ex ante pro…t maximization. Since privatization alone cannot solve the soft budget constraint problem if $R_b > 1$; we must ask what other institutional changes are necessary to obtain hard budget constraints. Dewatripont and Maskin (1995) show that the decentralization of credit may be a crucial element in hardening budget constraints. As in the previous sections, this is achieved through a reduction in R_b.

Assume that the continuation value of bad projects depends on an e¤ort level "a" to be exerted by the initial creditor. Speci…cally, assume that the gross (discounted) …nancial return of a bad project that is re…nanced is either 0 or $\overline{R}_b$, and that the probability of $\overline{R}_b$ is a. Finally, assume a to be private information to the initial creditor, who incurs e¤ort cost $\tilde{A}(a)$, assumed to be increasing and convex in a.

In this case, centralization of credit means that the initial creditor will also be the one re…nancing a bad …rm, so that the chosen e¤ort level a^{α} will fully internalize the bene…t of monitoring:

$$R_b^C = \max_a \left\{ a\overline{R}_b - \tilde{A}(a) \right\}, \quad \text{and} \quad \overline{R}_b = \tilde{A}'(a^{\alpha}):$$

Under decentralization, the initial creditor is liquidity constrained, and re…nancing has to be performed by a new creditor who has not observed monitoring e¤ort. Given an expected e¤ort â and limited resources for the

…rm and the initial creditor, assuming perfect competition among new creditors, the re…nancing contract will grant 1=â deducted from $\overline{R}_b$ whenever the bad project ends up being "successful" (since, by assumption, no resources are available if the project is unsuccessful). Given â, the e¤ort level privately chosen by the …rst creditor will lead to:

$$R_b^D = \max_a \left\{ a\overline{R}_b - 1/\hat{a} \right\} - \tilde{A}(a) :$$

In equilibrium, this e¤ort level $a^{\alpha\alpha}$ is equal to â, and satis…es : $\overline{R}_b = \tilde{A}'(a^{\alpha\alpha}) + 1/a^{\alpha\alpha}$. Consequently, $a^{\alpha\alpha}$ is lower than a^{α}, and the associated continuation value of the project R_b^D is lower than R_b^C. If $R_b^D < 1 < R_b^C$, decentralization of credit, as de…ned above, hardens the budget constraint of the …rm.

Note that, in the above setup, if R_b^D is bigger than 1, decentralization of credit is worse than centralization, since the re…nancing of bad projects is not prevented, but occurs with ine¢ciently low monitoring. If one allows endogenous creditor size in a market economy, it is however possible to show that, in this case, a market economy will simply replicate the centralized …nancing pattern : in equilibrium creditors will have su¢cient resources to perform the re…nancing themselves (see Dewatripont and Maskin (1995)). While decentralization is thus unambiguously better than exogenous centralization, this is not always true under alternative model speci…cations. Indeed, while the Dewatripont-Maskin paper shows the bene…ts of having small banks, there may be also bene…ts to having bigger banks. For example, Berglöf and Roland (1997) show that banks may invest in prescreening of projects which has the e¤ect of increasing ® and thus leading to less soft budget constraints because of better ex ante monitoring. Such investments in prescreening induce economies of scale which bene…ts bigger banks. Better ex ante monitoring may however also reduce the costs of ex post monitoring and increase R_b^C which worsens the soft budget constraint problem.

The general insight behind this result is that decentralized …nance may lead to externalities that reduce the attractiveness of re…nancing. This suggests that bond or equity …nance will typically involve a harder budget constraint than bank …nance, a point also stressed by von Thadden (1995).[6]

[6] Other models explaining why multiplicity of creditors can change re…nancing outcomes include Bolton and Scharfstein (1995), Berglöf and von Thadden (1994), Dewatripont and Tirole (1994) and Hart and Moore (1995).

The above model rests on the assumption that the initial investor only has one unit of funds, an assumption that suits well projects with important indivisibilities. Nevertheless, the fundamental insight that decentralization of credit reduces R_b is robust and holds in models using alternative assumptions. Huang and Xu (1998) for example do not assume liquidity constraints. They assume that projects are …nanced by multiple investors who have con‡icts of interests with respect to the reorganization strategy that is to be implemented when a project is re…nanced. They receive con‡icting signals about the right reorganization strategy and their con‡ict of interest with respect to the payo¤ they get under each reorganization plan can make it impossible for them to truthfully reveal their signal to each other. This then leads to no re…nancing and to hard budget constraints. Another model is due to Povel (1995). There the ex post ine¢ciency between the investors is due to a war of attrition. An agreement on a restructuring plan is necessary to re…nance a poor project. Valuation by each bank on the continuation value of the project is private information and each of the two banks tries to convince the other to write down a larger fraction of its claims. While the two banks are busy bargaining, the expected ex post value of re…nancing the project declines[7]. If bargaining delays are big enough, then re…nancing of poor projects is not pro…table.

3.4.2 Competition from new projects

In transition economies, the creation of a decentralized system of credit and …nancial intermediation has been at the heart of recent policy debates aimed at hardening budget constraints of enterprises. The literature on soft budget constraints in banking has emphasized the importance of the quality of the loan portfolio in determining whether banks are e¤ective in disciplining enterprises. For example, Berglöf and Roland (1997) take a variant of the model in section 2 but endogenize banks' opportunity cost of re…nancing. Assume at time 0 a capital of C_0 is handed over by government to a pro…t-maximizing bank. This capital is used to …nance C_0 projects with the same characteristics as above. At time 1, the bank can use the returns generated in the …rst period to …nance new projects (assumed to be in in…nite supply) and/or to re…nance bad projects …nanced at time 0. After time 1, everything is exacly like in section 2: new projects …nanced at time 1 can be re…nanced

[7] The precise assumption is that there is a probability at each moment in time that the information leaks out to the public that rescue negotiations are taking place, which then makes the rescue impossible or ine¤ective.

at time 2 and will be since $R_b > 1$.

Will bad projects be submitted at time 0 ? This depends on the opportunity cost of re…nancing these projects at time 1 given the possibility to …nance new projects. Since there will be soft budget constraints at time 2, the expected net return to a new project …nanced at time 1 is $\alpha(R_g - 1) + (1 - \alpha)(R_b - 2)$ while the net return to re…nancing a bad project is $R_b - 1$. One easily sees that hard budget constraints obtain at time 1 (and thus no bad project are submitted at time 0) if:

$$\alpha > \hat{\alpha} = \frac{1}{R_g - (R_b - 1)}:$$

Instead, if $\alpha < \hat{\alpha}$, soft budget constraints obtain at time 1. One also sees that $\hat{\alpha}$ increases with R_b but decreases with R_g. In other words, if the expected quality of projects is high enough, hard budget constraints obtain because, even though re…nancing a bad project is in itself pro…table, it is less so than …nancing a new project. Note that by assuming that new projects would be subject to soft budget constraints at time 2, we have made the …nancing of new projects less attractive than if hard budget constraints were expected.

The …rst lesson is that soft budget constraints are not an issue if new projects are of su¢ciently good quality. This may explain why soft budget constraints are not a more pervasive phenomenon in advanced market economies and why they still are in transition economies, where entrepreneurial skills are only developing. The second lesson is that, when there are soft budget constraints at time 1, new projects are crowded out by the re…nancing of bad projects. Indeed, under hard budget constraints, funds in amount of $C_0(R_g - 1)$ can go to new projects. Instead, under soft budget constraints, it is only $C_0[\alpha(R_g - 1) - (1 - \alpha)]$ that is available for new projects because: (i) fewer returns are generated from the projects …nanced at time 0, and (ii) bad projects must be re…nanced.[8]

3.4.3 Rent-seeking by banks

Another important issue in transition economies is the relation between banks and government. We have seen above that banks may be soft because of sunk

[8] We assume $a > 1=R_g$, so that the returns from the good projects can always serve to re…nance the bad ones.

costs. Berglöf and Roland (1995) show that enterprises may still have soft budget constraints even in the case where banks have no intrinsic interest to re…nance …rms, i.e. when R_b 1. Indeed, even in that case, banks may bene…t from exploiting the softness of government. This will be the case if the government, who cares about total welfare, would favor re…nancing because $R_b + E_b ¡ E_t > 1$. Banks may then, under certain conditions, prefer rent-seeking, in order to obtain subsidies for bailout, rather than being hard towards enterprises. Softness of banks is here related to the weakness of government. As above, softness will depend on the average quality of projects as expressed by ®.

Take the same framework as the one just analyzed above. Assume that the government …rst gives a bank funds to …nance n projects at time 0. At time 1, the bank can decide to be hard and liquidate bad projects or instead to ask the government for subsidies to re…nance those bad projects. Assume that the bailout money provided by government just covers the di¤erence between the total re…nancing requirements of the bank and its total funds at time 1, that is $(1 ¡ ®)n ¡ ®nR_g$, which we shall call G. Assume moreover that the government cannot recover this bailout money, which in e¤ect represents subsidies. The government can however monitor the use of funds so that the bank cannot "take the money and run" but has to re…nance …rms.

Assume the bank has initially attracted a proportion $(1 ¡ ®)$ of bad projects. At time 1, it will prefer rent-seeking towards government and softness towards enterprises compared to termination of bad …rms if :

$$G ¡ (1 ¡ ®)n(1 ¡ R_b) = n[(1 ¡ ®)R_b ¡ ®R_g] ¸ 0;$$

or:

$$® < \hat{®}^H = \frac{R_b}{R_g + R_b}:$$

As above, one obtains soft budget constraints when the proportion of good projects is below a given threshold. In this case, it is because a lower ® generates less revenue at time 1 for the bank and thus enables it to obtain more subsidies. In other words, the lower the ®, the lower is the share of the bank in the costs of re…nancing bad projects.

Berglöf and Roland (1995) further show that initial bank recapitalization allows to harden budget constraints provided banks are free to choose the

number of projects they want to …nance. It is then in the interest of banks to set aside enough reserves as a commitment to be hard. The lower the ®, the higher this level of reserves must be, and thus the smaller the number of projects that can be …nanced. Low initial average project quality thus implies that hardening budget constraints has a high cost in terms of enterprise liquidity. Moreover, hard budget constraints can be obtained if at time 1, a proportion of bad loans are taken away from banks and put into a "hospital bank", which can remove banks' incentives for rent-seeking and softness. It is however costly for the government, who will then bear all the cost of re…nancing. One can show that such a solution is attractive for the government only if ® is above a given threshold.[9]

4 Budget constraints, risk taking and …nancial systems

While hard budget constraints can deter bad entrepreneurs from starting projects, von Thadden (1995) and Dewatripont and Maskin (1995) have pointed out that they can also induce short-termism among good entrepreneurs. This may shed light on some of the trade-o¤s between the more centralized German or Japanese bank-oriented …nancial system and the more decentralized market-oriented anglo-saxon …nancial system where bond and equity …nancing is more prevalent.

Speci…cally, introduce into the Dewatripont-Maskin model the ability for good entrepreneurs to choose between their good, quick project that yields $R_g > 1$ and E_g after one period and a good but slow project that yields a …nancial return of 0 after one period (and a private bene…t E_t if terminated) but a gross …nancial return $R_l > 2$ and a positive private bene…t E_l if re-…nanced. These projects thus have a positive net present value but, at the end of period 1, they cannot be distinguished from bad projects.

Compare thus a centralized with a decentralized banking system. Under centralization, there will be soft budget constraints for bad projects if $R_b^C > 1$ but the long term projects of good entrepreneurs will also be re…nanced. Under decentralization, since good slow projects cannot be distonguished from bad projects, there will be hard budget constraints but no re…nancing

[9] For an analysis of the hospital bank solution, see also Mitchell (1995) and Aghion et al. (1996).

of good slow projects if $\alpha R_l + (1 - \alpha)R_b^D < 1$. Decentralization is then not necessarily better than centralization from the welfare point of view and even from the point of view of returns to bank …nancing. Indeed, under a short-termist hard budget constraint equilibrium with decentralized banking, the net return to lending is $R_g - 1$. Under centralized banking with soft budget constraints but better liquidity provision for good projects, the net return to lending is $\alpha R_l + (1 - \alpha)(R_b^C - 1) - 1$. The latter dominates if $\alpha R_l + (1 - \alpha)(R_b^C - 1) > R_g$. The hard budget constraint equilibrium can thus induce "short-termist" behavior which more than o¤sets the gain from deterring bad long-term projects from being started.[10]

This discussion rationalizes the idea that a market-oriented system, as in Anglo-Saxon countries, can be short-termist (Corbett, 1987) compared to the Japanese (or German) bank-based system which provides more long-run …nance and liquidity to …rms (Aoki, 1990; Hoshi et al., 1992). On the other hand, the latter system also su¤ers from comparatively soft budget constraints.

Ideally, one would want to have screening instruments so as to select only the good long term projects and not the others. This is not the case in the real world situation pictured in this model. Note however that compared to the Stiglitz-Weiss (1981) model, the hard budget constraint decentralized …nancial system screens out certain types of projects: the bad projects and the long run good projects.

The trade-o¤ between hard budget constraints and the costs of short-termism is however not the only trade-o¤. Short-termism can also have advantages. In particular, the …nancial system may be more ‡exible and prove to be faster in injecting …nancial resources into new innovative sectors. To see this, add now, as in the Berglöf and Roland (1997) model discussed in section 3.4.2., the possibility in the second period of funding new projects. Assume, to make the comparison simple between centralization and decentralization, that there is one exogenous unit of funds available both at $t = 0$ and at $t = 1$ and that new projects arising at $t = 1$ are homogenous and have a return $R_n > 1$. At $t = 1$, using one unit of funds for new projects will yield R_n whereas the alternative use of re…nancing projects from $t = 0$ will be $\alpha R_l + (1 - \alpha)R_b^D$ under decentralized banking and $\alpha R_l + (1 - \alpha)R_b^C$ under centralized banking. As $R_b^D < R_b^C$, it is easy to see that there will be re…-nancing and soft budget constraints under centralization and no re…nancing

[10] The original Dewatripont and Maskin (1995) model endogenizes the size of banks.

and hard budget constraints under decentralization if

$$(1 - \alpha)R_b^D < R_n - \alpha R_l < (1 - \alpha)R_b^C \qquad (1)$$

In this case, the trade-off between centralization and decentralization is not only one between hard budget constraints versus short-termism. There is now an additional cost to soft budget constraints namely the loss of financing of new and potentially more innovative projects. Indeed, under the condition (1), under centralization, there will be no funds at $t = 1$ available for financing the new projects whereas there will be $(1 + R_g)$ funds available under decentralization. This will create an inefficiency if $R_n - \alpha R_s \in [(1 - \alpha)R_p^C - 1; (1 - \alpha)R_p^C]$. In that case, the ex ante return to new projects at $t = 1$ is higher than the ex ante return on projects from $t = 0$ but the old projects nevertheless get refinanced, including the ex ante unprofitable ones because their expected continuation value is higher than the ex ante return on new projects.

New projects have thus a harder time being funded when we have soft budget constraints, and this for two reasons: (i) because projects funded earlier do not generate interim returns (in contrast to the situation where good, quick projects would have been funded initially), and (ii) because new projects would have to have a higher net present value than the continuation value of initially funded projects. This comparison is "unfair" towards new projects, since they are being compared with projects whose initial costs has been sunk, and is thus ignored in the comparison of net returns. This leads to a status quo bias in the soft budget constraint equilibrium.

This formulation thus implies three basic differences between the hard budget constraint equilibrium and the soft budget constraint equilibrium:

1. soft budget constraints fail to deter bad entrepreneurs from starting their projects;

2. soft budget constraints allow good entrepreneurs to choose risky-but-profitable long-run projects;

3. soft budget constraints introduce a status quo bias against new projects.

These differences are suggestive when we think of the nature of risk taking in the US relative to Germany and Japan. In the 1980s, analysts were stressing the role of financial discipline on firms in the US (effect 1), but were

lamenting their "short-termism" relative to Japan and Germany (e¤ect 2). At that point, many people thought the bank-oriented system was superior. Today however, people are stressing the ability of the US of funding new …rms and allowing them to expand fast (e¤ect 3) as a key of the US perceived superiority. This is consistent with the above analysis: starting with a situation where there are no new projects arising after the initial period, and where the soft budget constraint equilibrium is superior to the "short-termist" equilibrium, the balance shifts in favor to the equilibrium with hard budget constraints, and short-lived projects when the expected pro…tability of new projects is su¢ciently high. If the …nancial system is slow to adapt to technological change (which in‡uences the probability of emergence of new pro…table projects), a more "stable" bank-oriented economy with long-run risk taking can thus start being outperformed by a more "‡exible" market-oriented economy dedicated to short-run projects when technological progress suddenly accelerates.

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