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POLITICAL RISK IN SYNDICATED LENDING: THEORY AND EMPIRICAL EVIDENCE REGARDING THE USE OF PROJECT FINANCE

by

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Abstract:
This paper analyses the incentive effects of project financing in a double moral hazard model with incontractible effort of the firm's manager and of the bank. The theoretical model predicts that project finance is optimal if the degree of moral hazard of the firm's manager is high and either the project faces high levels of political risk or the bank has influence over the political risk exposure of the project. Using a global as well as an Eastern European transition economy sample of project finance loans from 1980 to 2003, we find empirical support of our predictions regarding firm moral hazard and political risk. However, regarding the bank's role only the influence of the IFC is significant.

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1. Introduction

Over the last 30 years, project finance (PF) has become an important financing tool for public and private ventures around the world. Defined as limited or non-recourse financing of a newly to be developed project through the establishment of a vehicle company, the key characteristics can be described as following: A PF deal encompasses the whole contractual structure of the project including, for example, ownership structure or operational and financial risk management and is thus not simply a funding contract.[1] As such the venture's business risk is shared by sponsoring owners, contractors, host governments, suppliers, customers, and even creditors, who commonly would not bear equity risk.[2] The majority of the funding for the project is raised in form of debt, i.e. as internationally syndicated loans where the loan is obtained strictly for the project itself without recourse to the corporate or government sponsor – at least not on a full recourse level.

Whereas some type of limited recourse financings of stand-alone projects has been available for centuries (Kensinger and Martin, 1988), the modern history of PF begins in the 1970s with the development of the North Sea oil fields. From these successful beginnings, PF has found its application in various industries including the development of natural resource, electric power, or transportation ventures. Its geographic spread has been worldwide embracing countries in all continents.3 Since 1980, 962,652 million US dollars have been raised in the global syndicated loan market to fund 6,344 PF deals in 140 different countries.

It appears that for firms in developed countries, PF is just one financing alternative among many. But PF seems to have become a widely used financing method for many governments in the developing world which have otherwise few financial resources due to, for example, low tax revenues or high budget deficits. What is particularly striking for project financing in developing countries is the high political risk of the projects as the success of the projects depends crucially on the host government's political decisions, for instance, on its policy concerning energy or on regulations. For political reasons the acquisition of ownership stakes through foreigners is severely restricted or even impossible. This proviso particularly applies for projects in the natural resource and infrastructure sectors since these are

[1] For details on the contractual structure of PF see Nevitt and Fabozzi (1995) or Kleimeier (1995).
[2] Fahrholz (1998), CEO of Dresdner Bank, one of the leading German banks in project financing, therefore describes PF as loans where "the (non-recourse) creditors rely solely on the cash flow and the assets of the project alone. In fact, they partially take over entrepreneurial risk." (own translation)
[3] For a detailed description of PF arrangements see Kleimeier and Megginson (2000). Whereas these authors survey a long-term sample from 1980 to 1999 and focus on specific features only, Esty (1999) and Esty and Christov (2002) discuss a larger variety of PF characteristics for the more recent period starting in the mid 1990s.

considered to be strategically important. Finally, the syndicate for such types of PF loans now includes not only different Western commercial banks but also international organizations as IFC, EBRD, or national export-import banks.

In this study, we therefore study the relationship between political risk and the use of PF as a preferred financing choice in contrast to on-balance sheet syndicated loans (SL). We focus on PF in transition economies where political risk is high and the role of international lending organizations can be studied in detail. In a first step, we develop a theoretical model of the incentive effects of project financing on borrowers and lenders. In particular, our model is one of double moral hazard. Severe informational problems prevail which cause a moral hazard problem of the firm's manager as well as on the lender's side, because banks are able to influence the outcome of the project, for example, by influencing governmental decisions through using its leverage. Generally, our model shows that the incentives for the firm and the bank have to be traded off when the degree of the recourse is determined. Our model predicts that a non-recourse credit provides the best incentives to the bank and we can thus explain the use of PF in countries with a high degree of political risk. In a second step, we test the propositions of our model on a global sample of countries in general and for the transition countries of Eastern Europe in more depth. Our results provide overall support of our predictions regarding firm moral hazard and political risk for the global sample as well as the Eastern European transition economy sample. However, regarding the bank's role it appears that among the International Organizations only the influence of the IFC is significant.

Our study is related to the existing evidence on PF in a clear way. Despite the growing importance of PF, there exist very few academic studies of PF, both theoretical as well as empirical. Empirical academic work is limited to loan pricing studies (Nguyen and Ross 2002, Kleimeier and Megginson 1998, 2000, 2002) or syndicate structure analysis (Esty and Megginson, 2003) all of which find a clear relevance of political risk in the context of PF. All loan-pricing studies agree that political risk is reflected in the spread of the loan. Nguyen and Ross even find evidence for a political risk premium for Australian PF loans, though it is of relative low importance compared to other risk premia. Their argument that "[i]t is likely that a much higher level of importance would be attached to political risk by Australian lenders for projects conduced in developing countries where political violence, nationalization and expropriation of the property, or foreign exchange transfer blockage and currency inconvertibility often occur" will be directly addressed in our study. The structural choice analyses included in Kleimeier and Megginson's studies furthermore indicate that PF are

more likely the higher the political risk of the host country.[4] Finally, Esty and Megginson investigate the syndicate structure of PF loans and find that in countries with high political risk, i.e. weak creditor rights and poor legal enforcement, syndicates are particularly large and diffuse in order to deter strategic default. In contrast, in countries with strong and enforceable legal rights syndicates are structured to ensure monitoring and low-cost re-contracting. Thus, the syndicate structure is a direct result of the higher political risk. Our theoretical model addresses this lender-risk relationship in a slightly different way by assuming that certain types of banks can directly mitigate political risk. In the empirical part of our study we can then more directly test which type of bank or syndicate is actually able in practice to influence this risk.

Our analysis is related to three areas in the theoretical literature: project finance, bank moral hazard and double moral hazard problems. The few theoretical models on project finance study different aspects of this particular form of finance. In an early theoretical paper, it has been shown that in the case of asymmetric information riskier project receive project finance because thereby the tax advantage is maximized (Shah and Thakor, 1987).[5] Another theoretical model by John and John (1991) is also driven by tax benefits of debt and in addition by agency cost of debt i.e. related to underinvestment. In their model PF leads to an optimal distribution of debt between the existing firm and the project so that the agency cost are decreased and the tax-benefits are increased as compared to the on-balance sheet debt case. Focusing on private benefits of control, Chemmanur and John, (1996) illustrate how the organizational design of a corporation where lenders have limited or no recourse to one of the projects can be used to maximize the management's control benefits. Povel's (1997) model is driven by inefficiencies in the bank loan market. He argues that banks commit not to rescue by syndicating the credit. If the banks fail to determine how to share debt forgiveness, a distressed firm is liquidated. This inefficiency can be used as a commitment device by the banks and prevents some firms with bad projects from demanding credit. Finally, Habib and Johnson (1999) develop a model in which assets can be employed in different uses. Their value in the bad state of the world depends on how much the redeployer has invested *ex ante*. Here, PF can be optimal as it prevents *ex post* bargaining over the value of the assets between

[4] Indirectly related to the PF loans pricing studies is the work by Altunbaş and Gadanecz (2003) who investigate the pricing of syndicated loans to developing country borrowers but control for loan types including that of PF. Overall they find that countries with weaker macro-economic fundamentals and higher sovereign risk pay higher loan spreads. Consistent with findings by Kleimeier and Megginson (2000, 2002), they find that PF have lower spreads than other syndicated loans.

[5] We find Shah and Thakor's conclusion not entirely convincing because the default risk of a biotech or internet start-up, which typically receive finance from venture capitalists, is surely higher than the risk of a power plant,

the firm and the bank, who is the redeployer of the assets. As such PF prevents *ex ante* investment distortions.[6]

We take a different approach by studying the effort choice of the parties involved in a project finance deal, namely the firm's and the bank's choice. Therefore, we analyze in more detail the resulting double moral hazard problem. In the literature, different types of bank moral hazard are studied, as a bank is attributed different tasks. Rajan and Winton (1995) investigate the bank's incentive to gather unverifiable information on the future prospects of the firm after credit is granted. As banks can demand pre-specified additional collateral, collateralization improves their incentive. Manove et al. (2001) study the bank's incentive to exert costly effort for screening projects *ex ante*. For high screening costs, banks screen too little because the low risk-entrepreneurs are not screened but signal their type by accepting a fully collateralized credit.[7]

More realistically, the bank's as well as the firm's efforts are unobservable, resulting in a double moral hazard problem. If the double moral hazard problem exists because the bank has to monitor the effort of the firm, it is optimal to finance firms by a mix of bank credit and external capital (Besanko and Kanatas, 1993). Double moral hazard also arises in venture capital arrangements where the entrepreneur and the venture capitalist have to exert effort (Schmidt, 2003).[8] Neither pure equity finance nor pure debt financing solve both problems simultaneously. Instead, a convertible security with an appropriately set price gives both parties an incentive to exert first best effort.

In contrast to the existing literature, we do not take a firm's liability as given. It is an interesting field to precisely investigate the decision on the liability of a debtor with its implications for the mode of incorporation of different projects and, thus, for the organizational structure. We restrict the analysis to the mode of bank finance, i.e. full recourse loans versus project finance. In the context of international financing this is justified because it is extremely difficult and often impossible for foreigners to acquire ownership stakes or, even more, majority ownership in the firm to be financed.

This paper proceeds as follows. In section 2, we study a model with a double moral hazard problem. The incentives resulting from different degrees of recourse are analyzed for

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which is granted project finance. What is more striking is that the project-financed investments bear a high degree of political risk.

[6] Brealey, Cooper, and Habib (1996) provide an excellent summary of the theoretical papers (except Povel) and also present in a clear fashion the impact of PF in a Modigliani-Miller- world.

[7] Manove et al. (2001) also consider a monopolistic banking model, when the bank has the first best incentive to screen. Schnitzer (2002) obtains the same result in a model with screening but without collateralization.

banks as well as firms. In section 3, we develop empirically testable hypotheses. The data is presented in section 4 followed by the discussion of the empirical results in section 5. Section 6 concludes.

2. A model of double moral hazard

2.1. The basic model

The firm has to finance a project which yields a payoff of X in the case of success and of 0 in the case of failure. It is assumed that the project's assets have a liquidation value of 0.[9] The project costs I. We assume that the investment project is credit financed. The probability of success p is determined by the effort of the firm, denoted by e, as well as by the effort of the bank, denoted by b. On the one hand, the firm's manager determines, for instance, the technical realization of the project. On the other hand, the bank can increase the probability of success by, for example, assisting a firm to get access to markets or experts like an auditor or by influencing governmental decisions. For simplicity, we assume that the impact on the probability of success is independent of the action of the respective other agent.[10] If the firm's manager exerts effort e, the probability of success increases from $\underline{p}$ to $\bar{p}$. The bank decides whether to exert effort b and thereby increase the probability of success from p_L to p_H, or not. Accordingly, the probabilities of success can be $\overline{\overline{p_H}}$, $\overline{\overline{p_L}}$, $\underline{\overline{p_H}}$ or $\underline{\underline{p_L}}$.

The sponsoring firm, which decides on the realization and financing of a new project, has wealth of W. This wealth includes the cash flows generated by all other projects of the firm and all assets of the sponsor. To keep the analysis as simple as possible, we assume that assets are not firm specific.[11]

The timing is as follows: The firm decides whether to incorporate the project within the sponsoring firm or separately. At time 0, the bank offers the credit contract, which specifies the repayment R in the case of success and of V in the case of failure, where V is determined

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[8] Nöldeke and Schmidt (1998) study the more general case of a hold-up problem, when two parties sequentially undertake relationship-specific investments. They show that a contingent ownership structure induces first best investment levels.

[9] The payoff in the case of failure is normalized to zero. Allowing higher liquidation values could change some of the parameter ranges in which a certain result is obtain, but would not change the main insights of our analysis.

[10] Thus, we do not model the bank in its traditional role as monitor.

[11] The impact of asset specificity on the industry structure of the credit market is studied in more detail in Hainz (2003).

by the degree of recourse. Then the contract is signed by the bank and the firm. Next, the firm as well as the bank can exert effort. At time 1, the payoff of investment, i.e. X or 0, is realized and the bank receives repayment R in the case of success or V in the case of failure. Figure 1 illustrates the timing of these events.

The decision on how to incorporate the project determines the debtor's liability, which establishes the degree of recourse and therefore the bank's payoff if the project fails. If the project is incorporated separately, it receives a non-recourse credit unless the sponsor grants limited recourse in form of, for example, additional equity or the reduction of dividend or royalty payments. If the project is incorporated within the sponsoring firm, a traditional full recourse credit is granted. Note that, as Table 1 shows, in the case of full recourse the bank receives R even if the project fails and generates 0. However, in the case of limited or non-recourse the bank only receives V if the project fails with X > V >= 0 in the limited recourse case and V=0 in the non-recourse case.

[Insert Figure 1 and Table 1 about here]

The analysis is restricted to welfare increasing projects characterized by the assumption

$$p(e,b)\,X - I - e - b \geq 0 \tag{1}$$

To establish the incentive problem of the firm, we further assume that in the case of a non-recourse credit the expected net return for the firm's manager is lower than its effort costs:

$$\left(\bar{p} - \underline{p}\right)\left(X - \frac{I}{\underline{\underline{p}}}\right) < e\,. \tag{2}$$

Furthermore, we assume that it is possible to solve the bank's moral hazard problem since the expected return from exerting effort covers the bank's effort costs:

$$\left(p_H - p_L\right)X > b\,. \tag{3}$$

In a first best world with symmetric information the effort levels of the firm as well as that of the bank can be observed, verified by the court and can therefore be fixed by a contract. In practice, these effort levels are not contractible. Thus, the credit contract has to be designed in a way that both parties, namely the firm and the bank, have an incentive to exert effort.

2.2. Moral hazard problem of the bank

By exerting effort b the bank can increase the probability of success, for example, in the bargaining process with the government. It decides to do so if

$$p_H R + (1 - p_H)V - b \geq p_L R + (1 - p_L)V$$
$$\text{or} \qquad \text{(IC-B)}$$
$$(p_H - p_L)(R - V) \geq b$$

The incentive compatibility constraint of the bank (IC-B) is more easily fulfilled if the difference in the bank's state-contingent payoffs is high. Consequently, increasing R and simultaneously decreasing V improves the bank's incentive to exert costly effort. We restrict our analysis to parameters which fulfill the bank's participation constraint (PC-B) given by:

$$\overline{p_H} R + (1 - \overline{p_H})V - I - b \geq 0 \qquad \text{(PC-B)}$$

Proposition 1: The moral hazard problem of the bank can always be solved by granting a non-recourse credit, i.e. V=0.

Proof:

Depending on the parameter constellation two cases can be distinguished:

- Case A

$(p_H - p_L)(R - V) \geq b$ for $V \geq 0$

- Case B

$(p_H - p_L)R \geq b$ for $V = 0$

In Case A, non-recourse as well as limited recourse credits solve the incentive problem. In contrast to Case B non-recourse is not a prerequisite for solving the bank's moral hazard problem. In Case B, the bank needs higher-powered incentives since the impact of effort on the probability of success, i.e. (p_H - p_L), is not as easily obtained, because either effort b is more expensive or not as powerful in terms of increases the probability of success. In order to induce the bank to exert effort, the project has to be incorporated separately and therefore the firm is not liable at all in the case of failure. If it is not possible to induce the bank to exert effort by separately incorporating the project, the moral hazard problem of the bank cannot be solved, which we exclude by assumption (3). Q.E.D.

2.3. Moral hazard problem of the firm

The firm's manager also has to decide whether to exert effort e or not. Therefore, the management considers the expected payoff that is influenced by the probability of success, the repayment R in the case of success, and the repayment V in the case of failure. Effort is exerted if

$$\bar{p}(W+X-R)+(1-\bar{p})(W-V)-e \geq \underline{p}(W+X-R)+(1-\underline{p})(W-V)$$

or (IC-F)

$$(\bar{p}-\underline{p})(X-R+V) \geq e$$

By inspecting the incentive constraint of the firm in more detail, we get the following implication for the organizational structure of the firm and, hence, for its liability.

Proposition 2: The moral hazard problem of the firm can always be solved by making the debtor fully liable, i.e. R=V.

Proof:

As for the bank the design of the optimal contract depends on the parameter constellation; the following cases have to be distinguished:

- Case 1

$(\bar{p}-\underline{p})(X-R+V) \geq e$ for $R \geq V$

- Case 2

$(\bar{p}-\underline{p})X \geq e$ for $R = V$

In Case 1, the first best solution can be reached with limited or full recourse credit. Full recourse is not necessary to solve the problem because either the difference in state-contingent payoffs of the project is high, i.e. X – 0, or the influence of e on the probability of success is strong, i.e. $(\bar{p}-\underline{p})$, what provides good incentives to the firm's manager. In Case 2, full recourse is necessary to induce the firm's manager to exert effort e. By increasing the debtor's liability, the payoff in the case of failure is reduced and, thus, the difference in state-contingent payoffs increases.[12] Q.E.D.

[12] The positive effect of increasing the firm's liability through collateralization has been shown, for example, by Stiglitz and Weiss (1981) and by Holmström (1996).

2.4. Double moral hazard

The empirical facts suggest that both parties, banks and firms, have to contribute effort for the success of an investment project. From Propositions 1 and 2 we know that the debtor's liability influences both the bank's as well as the firm's incentive to exert costly effort. On the one hand, limited recourse increases the bank's incentive. On the other hand, limited recourse has a negative impact on the firm's incentive. In this section we inspect in more detail how both moral hazard problems can be addressed. The solution depends on the parameter constellations. In the Case 1 and Case A there exist parameter constellation where both problems can be solved.

Proposition 3: If both incentive problems are less severe, i.e. $X \geq \frac{1}{\overline{p_H} - \underline{p_H}} e + \frac{1}{\overline{p_H} - \overline{p_L}} b$ in

Case 1 and Case A, limited recourse, i.e. R>V>0, solves both problems.

Proof:

See Appendix.

If the incentive problems are not severe, it is possible to design a credit contract that solves both incentive problems. The exact terms depend on how slack the incentive compatibility constraints are. Since banking is perfectly competitive, the bank's incentive compatibility constraint but not the firm's incentive compatibility constraint is binding. Thus, the contract always generates an expected profit of zero to the bank, i.e. $\overline{p_H} R + \left(1 - \overline{p_H}\right) V - I - b = 0$. Therefore, the relationship between R and V are determined as $R = \frac{I + b - \left(1 - \overline{p_H}\right) V}{\overline{p_H}}$. The credit contract determines $\left\{ R = I + b \frac{1 - \overline{p_L}}{\overline{p_H} - \overline{p_L}}; V = I - b \frac{\overline{p_L}}{\overline{p_H} - \overline{p_L}} \right\}$. The firm's incentive compatibility constraint is fulfilled only if the condition stated in proposition 3 holds. Only in this case, both parties, bank and firm, have an incentive to exert effort. For all other parameter constellations it is impossible to design a contract that solves both moral hazard problems. In these cases, the contract should grant an incentive to the party for which the moral hazard problem is solved most efficiently. In the following proposition we study more formally which of the moral hazard problems should be solved.

Proposition 4: If it is not possible to solve both incentive problems, i.e.

$X < \frac{1}{\overline{p_H} - \underline{p_H}} e + \frac{1}{\overline{p_H} - \underline{p_L}} b$, and the project bears a high degree of political risk, i.e.

$(\underline{p_H} - \underline{p_L})X - b > (\overline{p_L} - \underline{p_L})X - e$, it is optimal to solve the incentive problem of the bank by PF via separately incorporating the new project and via granting a non-recourse credit, i.e. V=0.

Proof:

See Appendix.

For most parameter constellations it is not possible to design a contract which gives both parties appropriate incentives. Therefore, the optimal contract solves the incentive problem of the party whose effort has a relatively higher impact on the probability of success. Accordingly, it is optimal to solve the bank's incentive problem if $(\underline{p_H} - \underline{p_L})X - b > (\overline{p_L} - \underline{p_L})X - e$. For example, if e and b have the same size and b increases the probability of success more than e, then it is optimal to give the bank an incentive to exert effort. To induce the bank to exert effort, the difference in state-contingent payoffs has to be high which is reached by separately incorporating the new investment project. Then the bank gets no return in the case of failure as the payoff of investment is 0 and there is no recourse on the assets of the corporation which sponsors the project.

3. Derivation of testable hypotheses

Our theory answers several questions, the most basic of which is whether or not political risk matters in the design of the credit contract and is as such reflected in the choice between PF and full-recourse SL. This relationship between political risk and financing structure lies at the core of the theoretical model. It is, for example, reflected in the assumption that bank's effort affects the framework in which the project operates, i.e. the political and governmental environment. If the foundations of our theory are correct, we would expect to see a relationship between the use of PF and the political risk in the borrower's country. In particular, PF should be used more frequently for loans to borrowers from countries characterized by high political risk. Focusing on an aggregate country level and recalling our assumption that the investment project is credit financed, this implies the following testable hypothesis:

Testable Hypothesis 1: There exists a relationship between the use of PF and the political risk in the borrower's country. In particular, the higher the political risk of a country, the larger the fraction of PF loans among all syndicated loans made to borrowers of that country.

However, in our double moral hazard model, the likelihood of an investment being financed with PF depends not only on the level of political risk but also on other factors. In principle, more specific testable hypotheses can be developed from all four propositions. Propositions 1 and 2 are derived from 'single' moral hazard models with incentives problems for only the bank or firm, respectively, and as such might be less likely to reflect reality. Propositions 3 and 4, which are derived from the double moral hazard model with incentive problems for both, bank and firm, are the most realistic starting points. We use Proposition 4 as the foundation for our empirical analysis because the incentive problems in reality are severe.

An economic interpretation of proposition 4 relates the use of PF to three factors, the degree of political risk, the firm's moral hazard problem, and the influence of the bank on the host government in the following way:

- The firm's moral hazard problem is reflected in our model by the influence of managerial effort on the probability of success, i.e. $(\bar{p} - \underline{p})$, in relation to the effort costs e. Projects financed by syndicated loans are usually well-standardized operations and are not using innovative technologies. Therefore, the impact of effort on the probability of success is low and the firm's manager has to be provided with rather strong incentives if he should exert effort.
- Political risk is reflected in our model by $(p_H\text{-}p_L)$. The more the government's actions can influence the probability of success of a project, the higher the difference between p_H and p_L will be. On the one hand, the probability of success of the project without any effort by the bank, p_L, will be low in countries with high government involvement and thus high political risk. On the other hand, once the bank exerts effort, the success probability of the project can be increased significantly. Thus, the higher the political risk, the larger the difference between p_H and p_L, and the larger the impact of the bank's efforts can be.
- The bank's influence on the host government is reflected in b. The higher the bank's influence on the host government, the lower are the cost b with which a given increase

in project success probability will be achieved. In other words, the lower b, the cheaper it is to constrain politically adverse moves.

Regarding the direction of the relationship between these three factors and the use of PF, note the following. According to proposition 4, it is optimal to solve the moral hazard problem of the bank if $(\underline{p}_H - \underline{p}_L)X - b > (\overline{p}_L - \underline{p}_L)X - e$. This condition will be more likely to hold the larger the expression on the left hand side. This will be the case if political risk is high, i.e. $(p_H\text{-}p_L)$ high, or the influence of the banks is high, i.e. b low. In international finance, bank effort has a high impact on the probability of success relative to managerial effort when the political risk of the project is high. In this case, international banks together with international organizations can use their leverage vis-à-vis the government to prevent the government from taking decisions which jeopardize the success of the credit financed investment project. Therefore, projects with a high degree of political risk receive project financing. Finally, we can conclude that PF will become more likely the more severe the incentive problem of the firm. The incentive problem of the firm is more severe if the effort cost e increases or the effect of effort on the probability of success, $(\bar{p} - \underline{p})$, decreases. Thus, if the incentive problem increases, the expression on the right hand side decreases, which renders the solution of the bank moral hazard problem relatively more profitable. Alternatively, the effort costs can be interpreted as private benefits, which a manager gets from not pursing the best corporate strategy, i.e. the one that has a probability of success of $\underline{p}$. In an international comparison one would expect that the private benefits or the effort costs are higher in countries with a less developed legal framework. In these economies there are much less restrictions and much less punishments if a manager deviates from the best corporate strategy. Since the difference in the probability of success is about the same for all projects, independent of the country where it is undertaken, the firm's moral hazard problem is higher is countries with a poor legal framework.

To illustrate the role of banks of our model, consider the following situation: If the government perceives the bank to be unimportant to the country – apart from the investment project under consideration – it might be more willing to engage in actions against the project compared to a situations where the government fears wide-ranging consequences of its actions. The government could, for example, be concerned that negative actions regarding one project could spill over onto other projects financed by the same bank. In simple terms, a government might abstain from negative actions against a project if the project bank is lending to a large number of other projects in the country. From the bank's point of view, any

project-specific benefits from its effort will thus be larger if the bank is relatively important to the government and country. As effort is induced by PF, a bank with a high exposure to the country will benefit most from PF.

Therefore International Organizations like the EBRD (European Bank for Reconstruction and Development), the IFC (International Financial Corporation, a member of the World Bank Group) or the German KfW (Kreditanstalt für Wiederaufbau) are frequently among the banks granting syndicated loans. Their bargaining power is due to their special position since they are financing many other projects and decide on financial aid. Therefore, they are called "political umbrella" as they have a high leverage vis-à-vis the government (Buljevich and Park, 1999). Moreover, as a number of international commercial banks is financing the investment project, the government owes them substantial amounts of money. Thus, the group of banks together can exert pressure on the government, for instance, because they have to agree on a rescheduling of sovereign debt. Also banks from countries of major trading partners possess bargaining power, which „(...) may give banks sufficient implied leverage to constrain adverse political moves." (Smith and Walter, 1997, p. 78). For commercial banks, Esty and Megginson (2003) find support of their deterrence hypothesis that in countries with weak and unenforceable legal rights syndicates are particularly large and diffuse in order to deter strategic default. This finding would imply that also commercial banks could influence the host government and thus reduce political risk.

Considering all these factors, we propose a second testable hypothesis:

Testable Hypothesis 2: The fraction of PF loans among all syndicated loans made to borrowers of a country is larger, the higher the political risk in the borrower's country, the higher the moral hazard problem of the manager, and the higher the influence of the lending bank over the host government.

4. Data sources

For our empirical analysis, we have collected two sets of data – one for each testable hypothesis. The first dataset is based on the Loanware database and was obtained from Dealogic[13]. It contains virtually all loans made in the international syndicated loan market,

[13] Loanware was formerly provided by Capital DATA. Whereas project finance data is available from different commercial vendors, Loanware provides a very comprehensive database covering almost the entire population of syndicated loans and has as such been used in a number of empirical studies including Altunbaş and Gadanecz (2003), Esty and Megginson (2003), IFC (1999), or Kleimeier and Megginson (2000, 2002).

which have been signed between January 1980 and February 2003 and provides information on the aggregate annual number and US dollar volume of all syndicated loans and, in particular, project finance loans by country of the borrower and year of signing. This dataset will be used in the first step of our empirical analysis where we are investigating the link between political risk and the use of project finance on a country level. As a proxy of political risk, Euromoney's country risk ratings and ranks available since 1982 are used.

The second dataset combines data from the Loanware database with data obtained from Euromoney and the EBRD. For this dataset, we start with a list of all PF loans to borrowers in Eastern European countries signed between January 1980 and February 2003 for which particular information is available for the borrower (project)'s name and country, signing date, name of the providers and names of all involved banks. Based on the listing of involved banks, we are able to derive proxies for the political influence of the bank. The country specific reform indicators that can be used to derive sector specific political risk proxies and moral hazard proxies are taken from EBRD Transition Reports[14]. The variables will be explained in detail in section 5.

5. Empirical analysis regarding Project Finance and political risk

5.1. Project Finance and the global market for syndicated loans

Between January 1980 and March 2003, companies from 184 countries raised funds in the global syndicated loan market amounting to a total of 100,940 loans worth 20,333,087 million US dollar ($m). Of these loans, 6,344 were PF loans worth 962,652 $m reflecting a wide geographical spread of borrowers from 140 different countries. Figure 2 illustrates this absolute and relative growth of PF over time.[15] Starting from 100 to 150 loans per year in the 1980s, PF reached its peak in 2000 with 559 loans worth $m 139,590. Whereas the growth has been steady during most of the 1980s and early 1990s, the most recent figures show more volatility with reductions in PF lending in 1997-98 and again in 2001-02 as financial crises affect PF supply and demand (see Esty and Christov, 2002). Based on the 38 loans totaling

[14] Other sources of information are the governance indicators provided by Kaufmann, Kraay, and Zoido-Lobatón (1999, 2002) and Kaufmann, Kraay, and Mastruzzi (2003) or indicators of private benefits of control provided in Dyck and Zingales (2001). However, these indicatores are typically available only for a selected number of countries and/or years. In contrast, EBRD provides detailed data for all transition economies since the early 1990s as well as various indicators. The EBRD's statistical data are comparable across countries. Although the national statistics, on which most EBRD data is based on, have been "distorted" by the transition process, the quality of data improved significantly during the last years.

[15] Note that Figure 1 does not include the data for 2003 as this only refers to the first three months of the year.

$m 8,523 signed in the first three months of 2003, it is unclear whether this downward trend is already reversing. As impressive as the absolute growth of PF lending is, the syndicate loan market as a whole has grown even more, leading to a slightly falling share of PF loans in the overall market. Whereas in the 1980s, PF loans amount to as much as 10% of the syndicated loan market in numbers and volume, this share has fallen to 2% to 6% for 2000 and beyond.

[Insert Figure 2 about here]

Moving towards the country and thus political risk features of PF lending, preliminary analysis reveals that of the 184 countries with access to the global syndicated loan market, a majority of these countries has also access to the PF segment of the syndicated loan market. Whereas borrowers from 130 countries borrow both on and off balance sheet, borrowers from 44 countries seem to borrow on balance sheet only and borrowers from as few as 10 countries access exclusively the PF loan market. These latter two groups, however, seem to be infrequent borrowers. The median (mean) numbers of loans per country for the off-balance-sheet-only group equals 2 (2.4) and for the on-balance-sheet-only group equals 3 (5.9) compared to the much more active borrowers in both segments of the syndicated loan markets with a median (mean) of 13 (48.6) off-balance-sheet project finance loans and 80 (774.2) syndicated loans per country. Focusing on the number of countries with access to the PF loan market over time, supports Esty and Christov's (2002) argument that the geographic reach of PF has been expanding. Our sample reveals that in the five-year periods from 1986-90, 1990-95, and 1996-00 the number of countries with first time PF borrowers equaled 20, 21 and 16 respectively. Thus, comparing the national reach of PF in 1985 of 80 countries with that in March 2003 of 140 countries shows a total increase of 75%.

Table 2 provides more details regarding the relative use of PF and all syndicated loans (SL) by borrower nationality.[16] The first 4 columns provide the total $m volume of PF and SL from January 1980 to March 2003 as well as the relative size of PF to the country's total SL and to the total global PF lending during this period. The remaining columns provide the same information for four five-year periods spanning the 1980s and 1990s. This table can answer several questions: Which countries are dominating the PF market? Which countries prefer PF over on-balance-sheet SL or vice versa? Are these geographic patterns stable over time?

Regarding the first question, it becomes clear that over the whole sample period, the main allocation of PF funds goes to borrowers in Western Europe, North America, and Asia

as their share in the overall PF market amounts to 29%, 21%, and 22% respectively. Whereas the PF market share of borrowers from Western Europe and North America has been relative stable, Asian borrowers' market share has been steadily increasing from 1981 to 1995 but suffered a reduction caused by the financial crises of the late 1990s.

However, looking only at the market shares of different regions is misleading due to the simple fact that larger countries might simply have greater demand for loans. Looking, therefore, at a country's PF borrowing relative to its total SL borrowing controls for this issue and reveals that in comparison to their total syndicated lending, PF is not a very important source of funds for Western European and North American borrowers. In the US, for example, only 2% of all syndicated lending is in form of PF and figures for Europe are only slightly larger with 6 to 7%. A quite different group of borrowers from Latin American, Eastern European, Middle Eastern, African, and South-East Asia display a reverse pattern. Whereas their total market share in the PF market of 1% to 9% is small, PF is a main source of funds accounting for 16% to 30%. As this latter group of countries appears to include countries with higher political risk, we have the first indication that political risk influences the PF versus on-balance sheet lending decision of banks and borrowers.

[Insert Table 2 about here]

5.2. Project Finance and Political Risk

To support this first impression of the predominant use of PF in high-risk countries and to test our empirical hypothesis 1, each country's relative PF borrowing is matched to the Euromoney country risk indicator in the year of signing of the loan. In particular, the following proxies for the relative use of PF are calculated as

$$PF\_vol_{it} = \frac{PF^{\$}_{it}}{SL^{\$}_{it}} * 100 \qquad \text{or} \qquad PF\_no_{it} = \frac{PF^{\#}_{it}}{SL^{\#}_{it}} * 100$$

where

$PF^{\$}_{it}$ = total volume of PF loans in US$m of all borrowers of country i in year t

$SL^{\$}_{it}$ = total volume of SL in US$m of all borrowers of country i in year t

$PF^{\#}_{it}$ = total number of PF loans of all borrowers of country i in year t

$SL^{\#}_{it}$ = total number of all SL of all borrowers of country i in year t

[16] Note that PF loans are a subset of syndicated loans. As such our syndicated loans (SL) sample consists of PF loans and on-balance sheet loans.

Three alternative proxies defined as follows measure political risk[17]:

$rank_{it}$, $\quad rel\_rank_{it} = \frac{rank_{it}}{countries_t} * 100$, and $\quad score_{it} = 100 - EMscore_{it}$

where

$rank_{it}$ = Euromoney's country risk rank of country i in year t where the safest country is ranked first and the riskiest country is ranked last.

$countries_t$ = number of countries rated by Euromoney in year t

$EMscore_{it}$ = Euromoney's country risk score for country i in year t. EMscore ranges from 0 for the highest risk to 100 for the lowest risk.

Note that Euromoney published its country risk ratings and scores annually in the autumn of each year from 1982 to 1991 and semi-annually in March and September from 1993 to 2002.[18] Whereas for this study the autumn rating is used as this is the one most commonly available, for 1993 and 2003 only the March rating is available and has been used instead. Furthermore, the number of countries rated by Euromoney increased over time from 58 in 1980 to 112 in 1982 and finally 185 in 2002. Thus, the same level of country risk could be reflected in 1983 by a rank of 15 but in 1993 by a rank of 30. To improve the comparability of the rankings over time, the second proxy rel_rank_{it} is calculated which re-scales the country risk to 0 to 100. Finally, as ratings increase with an increase in country risk, Euromoney's score decreases with an increase in country. To enhance the comparability of the coefficients in the later panel regression analysis, the score has been redefined so that it also increases with the increase in country risk.

The resulting panel dataset contains 970 country- and year-specific observations as described in Table 3. Note that based on the total of 184 countries and 23 years only those observations are included which fulfilled all of the following criteria: (1) at least one of the political risk proxies rank, rel_rank, or score is available for the country and year under consideration, and (2) in a given year, there was at least one PF loan made to a borrower of

[17] These country risk measures are rather rough proxies of political risk as they contain both political as well as economic risk factors. The latter could very well reflect moral hazard. Separate listings for political and economic risk are available only since 1993. Thus, in the interest of maintaining a long sample period, the country risk measures are used here. The results now attributed to political risk could thus be read to also reflect moral hazard.

[18] Ranks are also available in 1980 and 1981. However, the number of countries rated is significantly lower with 58 and 67 countries in 1980 and 1981, respectively. Due to this incomparability of the data, these two years are not included. Note that Euromoney themselves has taken a similar decision when not including these two years in their online database of country risk ranks and score. Regressions including these ranks reveal lower explanatory power but in general the same results.

the given country. These requirements explicitly exclude all countries, which do access the SL market but do not borrow in form of PF in a given year.

As Table 3 shows, the total sample covers the whole span of the political risk range with a minimum country risk score of 0.0 and a maximum score of 93.0. The average score of 34.88 roughly reflects the country risk of Thailand and China in 1993 or Greece and United Arab Emirates in 1999. Overall, about one third of all loans and funds are raised via PF[19]. However, splitting the sample into quartiles based on the score proxy reveals a clear relationship between political risk and the use of PF. As the political risk increases from low to moderately low country risk, the relative use of PF rises from about 10% to 25% in both volume and number. For countries with moderately high and high political risk, PF becomes even more important as a financing source and amounts to 37% and 59% respectively.

[Insert Table 3 about here]

To investigate this relationship in more depth, an OLS panel regression is conducted with the results reported in Table 4. The most basic specifications are represented in regressions 1, 5, and 9 using PF_vol_{it} as the dependent variable and regressions 13, 17, and 21 using PF_no_{it} instead. For all six regressions the results are consistent and in line with the previous findings of Table 3 and our empirical hypothesis 1: *More syndicated loan funds are raised in form of PF in countries with higher political risk.*

For example, the estimated coefficient of the political risk proxy score in regression 9 of 0.83 indicates that an increase of a country's score by 10 points is associated with an 8.3% higher use of PF. Two sample observation illustrate this relationship well: Whereas Hong Kong in 1990 with a score = 28.8 (Euromoney's score of 71.2) borrowed 11% of all SL funds in form of PF, India in 1994 with a score = 40.3 (Euromoney's score of 59.7) borrowed 19% of all SL funds in form of PF.

Several additional proxies have been included as explanatory variables in the regression in order to analyze whether the results are robust over time and across countries. In particular, the dummy d_emerging is coded as 100 if the borrower originates from a developing country (Africa, Asia, Eastern Europe, Latin America, the Middle East, or the Carribean) and zero otherwise (Australia, North America, Western Europe, and all supranational borrowers). Furthermore, additional political risk proxies for the 1990s only are

[19] Note that this average is higher than the average of 5% reported in Table 2 as all those countries are excluded that do not borrow in form of PF in any given year.

constructed. Rank_90s is set equal to the rank proxies in all years after 1989 and to zero otherwise. The same applies to score_90s and rel_rank_90s. These three proxies allow us to investigate whether the relationship between PF use and political risk has become stronger or weaker over time.[20] As the estimated coefficients in Table 4 reveal, there is some slight evidence that the relationship is stronger for developing country borrowers, however, the estimated coefficient is small in relationship to the main political risk proxy coefficient and only significant in the regressions including rank and rel_rank. This can be interpreted as evidence that there is a slightly non-linear relationship which seems to be better reflected by the score proxy than by the rank based proxies for political risk. Regarding the robustness of the results over time, the positive and significant coefficients of the additional proxies rel_rank_90s and score_90s reveal that the relationship has indeed become stronger over time. Thus, based on the data available so far, we cannot support Esty and Christov's (2002) argument that due to the effects of the Asian, Russian financial crises and economic problems in Latin American, PF has and will further shift to safer countries.

Overall, the explanatory power of the regressions is high with 30% to 40%. This difference is mainly driven by the use of number versus volume of PF but not by the alternative time and regional variables included. Thus, our conclusion of an increasing role of PF in countries with high political risk appears robust.

[Insert Table 4 about here]

5.3. Project Finance in the transition economies of Eastern Europe

In the second part of our empirical analysis we focus on the transition economies of Eastern Europe, which have attracted growing amounts of foreign capital since the early 1990s. The annual total net capital flows have increased more than tenfold from 1986 to 1997 (Lankes and Stern, 1998). An important source of capital is syndicated lending by commercial banks, which has been growing continuously and amounted to a total of $ 175 billion as Table 2 shows. As for other higher risk countries, the share of PF is substantial with an average of 18.2% for the region. Table 5 illustrates the use of PF in these transition economies in more detail. The total volume of PF lending of just below $ 34 bn[21] is primarily financing projects

[20] Various versions of these and additional country and year specific dummies, that are not reported here, were also tested but did not change the overall results. Furthermore, the sample size was expanded to up to 1100 observation by filling in missing political risk proxies. Again the results remain unchanged.

[21] This figure is larger than the $ 31.9 bn reported in Table 2 due to the fact that some of the now independent republics of the former Soviet Union are coded to belong to Asia.

in Russia (32% of total PF volume), Poland (26%) and to a lesser extent the Czech Republic and Hungary (10% each). In Eastern Europe, PF is particularly important to finance infrastructure project especially in the telecommunication and power sector. In these sectors, which were owned and are often still owned by the state, decisions of the government are of great importance. Thus, these kinds of projects bear a high degree of political risk and would, according to our model, be financed with PF. This theoretical prior is reflected in the industry distribution of PF with 53% of the total volume (65% of known industries in these sectors. Whereas in some countries, such as Croatia or Hungary, PF is spread across several sectors, others exhibit very specific patterns. Azerbaijan, for example, raises PF funds to exclusively finance its oil industry. Estonia and Slovenia use PF primarily for the development of the power and telecom sector, respectively.

[Insert Table 5 about here]

In order to investigate in more detail the link between PF and political risk, moral hazard and bank influence proposed in hypothesis 2, we proceed as follows: First, we define alternative proxies for each of the three factors. Second, we run regressions with one right-hand-side variable at a time to investigate which of the alternative proxies can (best) explain the use of PF. Third, we select those proxies with the highest explanatory power and construct indicators of political risk, moral hazard and bank influence which will then be used in a multiple regression. As a benchmark, however, we can already obtain a first impression by simply replicating the regression 9 of Table 4 for the Eastern European sample. As expected, the aggregate measure of country risk, Euromoney country risk score, is highly significant with a coefficient of 0.86 and a t-statistic of 5.25. The explanatory power of this model is with 21.56% slightly lower than for the global regression 9 in Table 4. This lower explanatory power is most likely driven by the lower variation in country risk among Eastern European countries as compared to the global sample of Table 4. With the more specific risk measures defined in the remainder of this section, we should be able to explain in more depth the use of PF in transition economies.

5.3.1. Bank Influence

In order to investigate the role of banks in PF and in particular their influence on the host government, we obtain for each PF loan in Eastern Europe a list of all lenders and their function within the syndicate from Dealogic. The financial institutions that we consider to be

best able to influence political risk are not necessarily commercial banks but rather supranational institutions. Investigating the type of lenders in detail reveals that among the supranational institutions, the EBRD and IFC seem to be the most prominent lenders. Other institutions such as export-import banks, KfW, or ADB are only infrequent providers or arrangers of PF loans. We therefore design the following proxies, which measure in different ways the role of either the EBRD or the IFC within the syndicate. All proxies are aggregates by country and year and are scaled from 0 to 100. [22]

$EBRD_{\$,partic}$	$ volume of PF loans in which EBRD participates relative to total $ volume of PF loans
$IFC_{\$,partic}$	$ volume of PF loans in which IFC participates relative to total $ volume of PF loans
$EBRD_{\$,arr}$	$ volume of PF loans in which EBRD is arranger relative to total $ volume of PF loans
$IFC_{\$,arr}$	$ volume of PF loans in which IFC is arranger relative to total $ volume of PF loans
$EBRD_{\#,partic}$	number of PF loans in which EBRD participates relative to total number of PF loans
$IFC_{\#,partic}$	number of PF loans in which IFC participates relative to total number of PF loans
$EBRD_{\#,arr}$	number of PF loans in which EBRD is arranger relative to total number of PF loans
$IFC_{\#,arr}$	number of PF loans in which IFC is arranger relative to total number of PF loans

In order to investigate whether commercial banks as a group are able to influence the host government and thus reduce political risk, we include 3 proxies related to the syndicate structure:

allbank	average number of total banks across all PF loans to country x in year t
arrbank	average number of arranging banks across all PF loans to country x in year t
provbank	average number of providing banks across all PF loans to country x in year t

[22] Descriptive statistics for these bank influence proxies and the later defined moral hazard and political risk proxies can be found in Table A1 of the appendix.

These proxies are comparable to Esty and Megginson's (2003) syndicate size proxies based on total number of banks, number of arranging banks, and number of providing banks on a loan level. They find evidence in favor of their deterrence hypothesis. In particular, banks form dispersed syndicates in countries with legal uncertainty. This makes default more costly for borrowers and, thus, should deter adverse behavior. On the other hand, in countries with legal certainty, syndicates are more concentrated. Here, deterrence is not so important and banks structure syndicates in order to minimize cost of refinancing and monitoring. Whereas our definition of political risk is different from Esty and Megginson's legal uncertainty, a broad interpretation of their findings would indicate that the higher the number of banks in a syndicate, the higher the influence on governments.

Table 6 presents the results of regressing our bank influence proxies on the relative number of PF loans.[23] As the table indicates, PF is indeed used more often when banks can exert power over the host government and thus influence the political risk of the host country. This, however, seems to be only possible for the IFC but not for the EBRD or commercial banks. There are different possible explanations for the surprising result that among the International Organizations only the IFC is able to mitigate political risk. This result can be understood when looking at the total PF and non-PF amount of lending by country. For funds flowing into these countries, EBRD funds amount on average to only 44% of the IFC funding volume.[24] On a country level, relatively few EBRD funds (less than 30% of IFC) flow into Bulgaria, Russia, Hungary, Romania, and Kazakhstan whereas relatively large amounts of EBRD funds (more than 100% of IFC) flow into the now independent republics of the former Soviet Union, Slovenia, Slovakia, and the Czech Republic.[25] Moreover, the influence of an International Organization should depend on its reputation. If we assume that takes time to build up a reputation as a tough creditor, the IFC has a clear advantage because it has already been operating for 35 years when the EBRD was founded in 1991. Furthermore, the IFC is able to reap reputational benefits from the fact that it is part of the World Bank Group, which also include the International Bank for Reconstruction and Development (IBRD), the International Development Agency (IDA) and the Multilateral Investment Guarantee Agency

[23] We also conduct these regressions on the relative $ volume of PF loans and find similar results. The same is true for the regressions in tables 7 to 9.

[24] This number seems to be in line with figures reported by the IFC (1999) for 1998. Whereas the total private sector finance of the EBRD, Inter-American Development Bank, Asian Development Bank and African Development Bank combined amounted to $ 7.6 bn, the IFC's private sector financing alone amounted to $ 2.8 bn. PF is estimated to account for about one quarter of these funds.

[25] Repeating regressions 1 to 4 only for those countries in which EBRD has significant financial flows, i.e. more than IFC, did not improve the results. The estimated coefficients are still insignificant.

(MIGA). All of these financial organizations of the World Bank Group increasingly work together in the same PF and thus pool not only their comparative advantages[26] but also their reputational capital. From a sovereign borrower's perspective, adverse behavior in one project is very likely to have spillover effects onto other activities funded by the Group and deterrence is thus very high. Finally, since the EBRD's mission is to support the transition process in Eastern Europe and the former Soviet Union[27], the threat not to grant future credits or fund certain projects in the future may be less credible.

Regarding commercial banks, the regression results show that they cannot mimic the IFC. The only slight support for Esty and Megginson's hypothesis in the sense that syndicate structure is a response to country risk, can be derived from the correlation between Euromoney's country risk score and all syndicate proxies, which is around +0.2.

[Insert Table 6 about here]

5.3.2. Political Risk

Whereas the global analysis has shown that the Euromoney country risk scores and ranks have a high explanatory power and are thus a good proxy for political risk, they include not only political but also economic risk elements and are as such not very specific. Given that a more specific Euromoney political risk index and a wide variety of EBRD transition indicators are available since the beginning of the Eastern European PF sample in the early 1990s, it is possible to investigate more specifically the nature of the political risk.

In principle, political risk can be divided into three broad categories including traditional political risk, regulatory risk, and quasi-commercial risk (Smith, 1998).[28] The first category of traditional political risk includes such risks relating to expropriation, currency convertibility and transferability, and political violence such as war, sabotage, or terrorism. The second category of regulator risk covers risks arising from un-anticipated regulatory changes. These could include taxation or foreign investment laws applicable to the whole economy but could

[26] For a discussion see Benoit (1996, 1997).
[27] See for example the EBRD's own mission statement as given on their homepage: "The European Bank for Reconstruction and Development was established in 1991 when communism was crumbling in central and eastern Europe and ex-soviet countries needed support to nurture a new private sector in a democratic environment. Today the EBRD uses the tools of investment to help build market economies and democracies in 27 countries from central Europe to central Asia."
[28] Schnitzer (2002) distinguishes between outright expropriation through e.g. nationalization and "creeping expropriation" through e.g. increases in taxes or import/ export duties. She analyzes how the choice of the entry mode of foreign firms, which are licensing and credit financing or foreign direct investment, is influences by the different forms of expropriation.

also be industry specific. A substantial part of PF funds is invested in infrastructure as Table 5 shows. A typical example would be the price setting in the utility sector where the commercial operator and thus the lender are interested in a sufficiently high price to allow for the profitable operation of the project whereas the government would like to keep prices low in order to gain popular support or to avoid popular unrest. Finally, quasi-commercial risks reflect those risks that arise when the project is facing state-owned suppliers or customers, whose ability or willingness to fulfill their contractual obligations towards the project is questionable. This is again especially important in the infrastructure sector. To capture these risks, we define the following proxies[29]:

pol_risk	25 - Euromoney political risk score for country x in year t. Source: Euromoney.
forex_trade	EBRD index of foreign exchange and trade liberalization. Source: EBRD.
democrat	cumulative democracy (years since free and fair elections). Source: EBRD.
state_cap	EBRD state capture index (aggregate of different EBRD indices)
gov_chg	initial government turnover (in early 1990s) with Yes=3, No=2, War=1. Source: EBRD.

Pol_risk is an overall political risk measure provided by Euromoney defined as "the risk of non-payment or non-servicing of payment for goods or services, loans, trade-related finance and dividends, and the non-repatriation of capital. … This does not reflect the risk of individual counterparties" (Euromoney, methodological notes to country risk ratings). As such, pol_risk relates more to the traditional political risk category. More specific EBRD indices are available such as forex_trade, which measures convertibility and transferability risk, democrat and gov_chg, which are most closely related to regulatory risks, and state_cap, which can be interpreted as a proxy for quasi-commercial risks. As many of the Eastern European PF loans are used to fund infrastructure projects, a proxy for industry-specific regulatory risks would be relevant. Thus, an indicator is constructed that links the industry distribution of PF per country and year to the reform process in these industries by using industry specific reform indicators provided by the EBRD. Since 1990, an index of enterprise reform and an aggregate index of infrastructure reform are available. Since 1998, specific

[29] Note that the forex_trade and statecap indicators are originally scaled by the EBRD from 0.7 to 4.3 with a higher number indicating more liberalisation, privatisation, or reform. For our analysis, the direction has been reversed via (4.3 – variable). Note that for democrat the direction has been reversed via (1 / variable) and for

indicators are available for the infrastructure sectors power, rail, and telecommunication. Since 1999, road and water sector indicators are additionally available.[30] These indicators have been used in the empirical analysis as the following proxies:

$$\text{indicator} = \frac{\sum_i \text{reform\_index}_{\text{sector=i}} * \text{PF\_no}_{\text{sector=i}}}{\sum_i \text{PF\_no}_{\text{sector=i}}}$$

where

$\text{reform\_index}_{\text{sector=i}}$	EBRD reform index for specific sector i for country x in year t
$\text{PF\_no}_{\text{sector=i}}$	number of PF loans to projects in sector i for country x in year t

Four such sector-based political risk indicators have been calculated. Note that the sector 'other' contains all non-infrastructure projects, which are matched to the EBRD enterprise reform index. For projects for which the industry sector cannot be established (unknown) the reform indicator is calculated as the average of the EBRD infrastructure and enterprise reform index[31].

sector_infra	including PF in infrastructure sectors i = power, rail, road, telecom, and water.
sector_industry	including Pf in non-infrastructure sector i = other only.
sector_all	including PF in all sectors i = power, rail, road, telecom, water, other and unknown.
sector_known	including PF in known sectors i = power, rail, road, telecom, water, and other

The results of the regression regarding political risk are shown in Table 7. The traditional political risk measure, pol_risk, is positive and significant. Among the other political risks, it appears that only foreign exchange and trade liberalization (forex_trade) is relevant. State capture, initial government change, and democratic process do not seem to matter. Among the sector specific political risk indicators, all proxies are positive as expected.

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govchg via (3 – variable). Now, higher proxies indicate more political risk and positive coefficients are expected. Finally, all proxies are re-scaled from 0 to 100.

[30] The indicators are also originally scaled by EBRD from 0.7 to 4.3 and have been converted accordingly.

[31] In order to create a sector indicator, which is available for each country and year, the following has been done to avoid missing values: In 1990 to 1997 only the EBRD overall infrastructure and enterprise reform indices are available. Thus, the infrastructure reform index has been used for all infrastructure sectors. In 1998, the specific infrastructure sector indices have been used for power, telecom, and rail but the overall EBRD infrastructure

The strongest result can be found for the broadest indicator sector_all. The fact that the coefficient of the infrastructure reform indicator sector_infra is insignificant could either be interpreted as resulting from a measurement problem (for example, only aggregate infrastructure reform indices are available before 1998) or as conveying actual economic information: It seems that for non-infrastructure projects, the lower the reform progress in the industry, the more influence the state can exert, the higher the political risk of this sector and thus the more PF is used. For infrastructure projects this does not hold true. It is possible that there are two offsetting effects at work, which lead to the overall insignificance of the infrastructure reform index. On the one hand, infrastructure projects could be like industry projects with more risk leading to more PF. On the other hand, there could be an additional demand side effect. Here, the more reforms are undertaken, the more dynamic the sector, the more investment is made, and thus the more PF is used as the government runs out of money and decides to finance project via PF instead of using it public budget. As these two effects, the risk and demand effect have opposite effects, we might not find any significant coefficient.

[Insert Table 7 about here]

5.3.3. Moral Hazard

To measure moral hazard, we employ the following proxies, which are based on findings by Dyck and Zingales (DZ 2001) regarding the empirical estimation of private benefits of control:[32]

price_lib	EBRD index of price liberalization.
small_privat	EBRD index of small-scale privatization.
large_privat	EBRD index of large-scale privatization.
comp_policy	EBRD index of competition policy
law_ext	EBRD rating of legal extensiveness (company law).
law_eff	EBRD rating of legal effectiveness (company law).
privat_1	primary privatization method as indicated by EBRD in 2002, dummy = 100 if primary method is direct sale.

reform index has been used for road and water sectors. In 1999 and later, all specific infrastructure sector indices have been used with the 2002 EBRD indices used for PF loans signed in 2003.

[32] As for all proxies before, the EBRD original scale runs from 0.7 to 4.3 for all indices and is converted here to a scale of 0 to 100 with higher number indicating more moral hazard.

privat_12	primary and secondary privatization method as indicated by EBRD in 2002, dummy = 100 if primary or secondary method is direct sale.
$eqmkt_{gdp}$	stock market capitalization as percent of GDP as indicated by EBRD.
$m3_{gdp}$	broad money to GDP as indicator of financial development as indicated by EBRD.

The proxies price_lib, small_privat, large_privat, comp_policy measure product market competition and thus follow DZ's argument that product market competition reduces private benefits of control. Note, however, that DZ do not find a significant coefficient in their analysis. The proxies law_ext and law_eff reflect DZ's results that a higher degree of law enforcement are associated with lower private benefits of control. Privat_1 and privat_12 have been included due to DZ's findings that private sales in privatizations reflect higher private benefits whereas public sales reflect lower private benefits. Finally, $eqmkt_{gdp}$ and $m3_{gdp}$ reflect DZ's findings that less financial market development reflects higher private benefits.

[Insert Table 8 about here]

The results in Table 8 indicate that most coefficients except privat_12 are positive as expected. Looking at the significance of individual proxies, we find support for hypothesis 2 based on moral hazard proxies for market competition, and financial market development but not for law enforcement or privatization based proxies. For specific proxies, the following limitations should be noted. Our proxy for large-scale privatization large_privat might suffer from an endogeneity problem in our analysis. As PF is in its organizational dimension clearly leading to private sector operations of a project, it might go hand in hand with the privatization of a sector. Regarding small-scale privatization it should be noted that small firms, maybe with the exceptions of hotels, clearly do not qualify for PF loans. However, small-scale privatization is interpreted here as an indication of the competition in the market with more small-scale privatization implying more competition. The results for law_ext and law_eff are insignificant possibly due to the design of the indicators as perception indicators. They are derived from interviews of lawyers in the transition countries and at the EBRD. The EBRD itself gives the advice to use these indicators only together with other indicators.[33]

[33] Hainz (2003) has, for example, shown for Estonia and Romania that the indicators can be misleading.

Therefore, whereas time-series comparisons seem to be feasible, cross-country comparisons are particularly difficult.

5.3.4 Testing hypothesis 2 in a multiple regression framework

From the simple regressions, various proxies appear to be significant and could thus be included in a multiple regression model that would test hypothesis 2 as a whole. However, with the exception of the IFC involvement proxy, all proxies are highly correlated with each other with correlation coefficient typically exceeding 0.7. Thus, we proceed by first combining individual proxies into 3 indicators for moral hazard, bank influence, and political risk. Based on the results reported in Table 6, the bank influence indicator is simply defined as IFC participation. Political risk and moral hazard indicators are calculated in two different ways each: An adjusted R^2 based indicator (rsq) is defined using all proxies with a single-regression adjusted R^2 of more than 2.5% and as weights the adjusted R^2 reported in tables 7 and 8. This design is based on the idea that a proxy that explains more of the variation in PF should have a higher weight in the indicator. However, such indicators could suffer from the problem that proxies with small R^2 might reduce the overall explanatory power of the indicator. As an alternative, an equally weighted indicator (eq) is calculated which includes only those variables whose explanatory power is larger than 10% in tables 7 or 8. Thus for this latter alternative the moral hazard indicator is based on the proxies large_private and $eqmkt_{gdp}$ whereas the political risk indicator is based on the proxies sector_all and pol_risk. In a second step, the 3 indicators are orthogonalized[34] and included in the regression model as follows:

$$PF\_no = \beta_0 + \beta_1 \, bank\_influence + \beta_2 \, moral\_hazard + \beta_3 \, political\_risk$$

Finally, we allow for yet unspecified country risk characteristics to have explanatory power regarding the use of PF. Thus, we also conduct the following 2-step regression

[34] Note that in order to orthogonalize the 3 indicators and thus eliminate all multicollinearity from the above regression, we apply the principal components method to extract 3 components from the 3 variables. After this initial component extraction, the components are uncorrelated with each other. To aid interpretation, the components can be rotated, that is a nonsingular linear transformation can be applied. Note that if the transformation is orthogonal, the rotated components are also uncorrelated. Among the different orthogonal transformation methods available, we opted for the 'varimax' rotation method. By applying this rotation, we achieve a matrix of correlations between variables and the components that is close to a diagonal identity matrix. In other words, correlations of each component are close to zero for 2 of the 3 variables and close to 1 for the remaining variable. As such, each component can be easily attributed to one of the underlying variable. In the case of regressions 1 and 2 in Table 9, Panel B, the correlations for one component ae 0.093 for the moral hazard indicator, 0.057 for the political risk indicator, and 0.996 for the bank influence indicator. As such this component has been interpreted as reflecting bank influence.

approach where res_score is the estimated residual of the first regression and as such reflects the unspecified country risk characteristics[35].

$$\text{Step 1: score} = \delta_0 + \delta_1 \text{ bank\_influence} + \delta_2 \text{ moral\_hazard} + \delta_3 \text{ political\_risk} + \text{res\_score}$$

$$\text{Step 2: PF\_no} = \mu_0 + \mu_1 \text{ bank\_influence} + \mu_2 \text{ moral\_hazard} + \mu_3 \text{ political\_risk} + \mu_4 \text{ res\_score}$$

The results in Panel A of Table 9 are consistent with the earlier results from tables 6 to 8 in terms of coefficient and explanatory power. The multiple regression results in Panel B reveal that each of the 3 factors is individually relevant in explaining the use of PF in transition economies. Here the results for the equally weighted indicators appear more convincing due to possible definition problems mentioned above and supported by the higher R-squares for these indicators reported in Panel A. Overall, we find support for our theoretical model of PF as the solution to the double moral hazard problem and can support our hypothesis 2: *The higher the political risk in the country of the borrower, the larger the moral hazard problem of the manager, and the larger the influence of the bank in case of a globally influential institution such as the IFC, the more syndicated loan funds are raised in form of PF*. However, the significance of the country risk residual res_score and the intercept indicates that there might be additional, yet unspecified factors driving the use of PF.

[Insert Table 9 about here]

6. Summary and Conclusions

We start this paper with the observation that countries with a high political risk receive relatively more PF loans than less risky countries. In order to explain this surprising empirical fact, we develop a double moral hazard model that allows to study the incentives of banks and firms to exert costly effort. It can be shown that when determining the degree of recourse the incentive effects for bank and firm have to be traded off. In the single moral hazard case, a non-recourse loan would always solve bank moral hazard and a full recourse loan firm moral hazard. From the theoretical results we predict for the empirical analysis that the higher the political risk of a country, the larger the fraction of PF loans among all syndicated loans. This hypothesis is highly significant for a global sample of syndicated loans provided between

[35] The idea of using regression residuals as proxies for unobserved risk has been used in other studies. For example, Eichengreen and Mody (2000) use a country credit rating residual when investigating the pricing of syndicated loans. In the context of syndicate structure analysis, Esty and Megginson (2003) use the residual of a regression of loan spreads on project risk factors in order to measure unobserved project risks.

1980 and 2003. With a restricted sample of syndicated loans to transition countries in Eastern Europe, we test the hypothesis that the share of PF loans increases the higher the firm's moral hazard problem, the higher the political risk and the higher the influence of the bank syndicate. In a first step, all three factors are tested individually. The results support the hypothesis regarding political risk and firm moral hazard. With respect to bank influence only the involvement of the IFC increases the share of PF loans significantly. In a second step, the hypothesis is tested in a multiple regression framework and our previous results are confirmed. In the latter regression, the residual country risk is still significant as well as the intercept.

The last result raises questions for future research such as in which way banks can exert their influence and which factors determine their leverage. From our sample we find that in contrast to the EBRD the influence of the IFC is significant. This seems surprising at first sight. However, data shows that IFC involvement is much higher in most transition countries than those of the EBRD. Moreover, the threat point of the EBRD might be reduced since its task is to support transition countries.

Appendix

Proof of Proposition 3:

A parameter constellation as in Case A and Case 1

Case A: $(p_H - p_L)(R - V) \geq b$ for $V > 0$ (A.1)

Case 1: $(\overline{p} - \underline{p})(X - R + V) \geq e$ for $R > V$ (A.2)

contains the cases in which both incentive problems can be solved simultaneously since limited liability solves the firm's problem and the positive payoff for the bank in the case of failure does not destroy the bank's incentive.

The optimal credit contract specifies R and V according to the solution of the following optimization

$$\max_{R,V,e,b} \quad p_H(W + X - R) + (1 - p_H)(W - V) - e$$

$$\text{s.t.} \quad (\overline{p_H} - \underline{p_H})(X - R + V) - e \geq 0 \qquad (IC\text{-}F)$$

$$(\overline{p_H} - \overline{p_L})(R - V) - b \geq 0 \qquad (IC\text{-}B)$$

$$\overline{p_H}R + (1 - \overline{p_H})V - I - b \geq 0 \qquad (PC\text{-}B)$$

Neither the bank's nor the firm's incentive compatibility constraint (strictly) binds, the difference between the state contingent payoffs is

$$R - V \geq \frac{b}{\overline{p_H} - \overline{p_L}} \qquad \text{from (IC - B)}$$

$$R - V \leq X - \frac{e}{\overline{p_H} - \underline{p_H}} \qquad \text{from (IC - F)}$$

The bank's participation constraint strictly binds because there is perfect competition in the banking sector. Accordingly, the terms of the contract are given by

$$R = \frac{I + b - (1 - \overline{p_H})V}{\overline{p_H}} \text{ or}$$

$$R - V = \frac{I + b - V}{\overline{p_H}}$$

Thus, the condition, which has to hold to solve both problems simultaneously, is given by

$$X \geq \frac{I + b - V}{\overline{p_H}} \geq \frac{1}{\overline{p_H} - \underline{p_H}} e + \frac{1}{\overline{p_H} - \overline{p_L}} b \text{ . Q.E.D.}$$

Proof of Proposition 4

In the following cases it is always impossible to solve both incentive problems.

- Case 1 and Case B:

  Due to the incentive problem of the bank it is necessary that V=0. This implies for Case 1 $\left(\bar{p}-\underline{p}\right)\left(X-R\right)-e\geq 0$ where $R=\frac{\bar{I}}{p}$. This is, however, ruled out by assumption as in this case there would be no incentive problem of the firm.

- Case 2 and Case A or Case B:

  Case 2 requires R=V. But this cannot solve the bank's incentive problem as $\left(p_H-p_L\right)0\geq b$ is not fulfilled.

The firm maximizes its profit by solving the moral hazard problem which has the higher return.

(1) Return of managerial effort

To solve this problem the contract has to specify R=V. Thus the effect of e is:

$$\left[\overline{p_L}\left(W+X-R\right)+\left(1-\overline{p_L}\right)\left(W-V\right)-e\right]-\left[\underline{p_L}\left(W+X-R\right)+\left(1-\underline{p_L}\right)\left(W-V\right)\right]=$$
$$\left(\overline{p_L}-\underline{p_L}\right)\left(X-R+V\right)-e=$$
$$\left(\overline{p_L}-\underline{p_L}\right)X-e$$

(2) Return of bank effort

To solve this problem the contract has to specify V=0 and R where R is such that $\bar{p}R - I - b = 0$. Thus, the effect of b is

$$\left[\underline{p_H}\left(W+X-\frac{I+b}{\underline{p_H}}\right)+\left(1-\underline{p_H}\right)W\right]-\left[\underline{p_L}\left(W+X-\frac{I}{\underline{p_L}}\right)+\left(1-\underline{p_L}\right)W\right]=$$
$$\left(\underline{p_H}-\underline{p_L}\right)X-b$$

Depending on which expression is higher, the firm's manager decides which incentive problem to solve:

$$\left(\overline{p_L}-\underline{p_L}\right)X-e>=<\left(\underline{p_H}-\underline{p_L}\right)X-b$$

If $(\overline{p_L} - \underline{p_L})X - e > (\underline{p_H} - \underline{p_L})X - b$, the firm's incentive problem should by solved by a credit contract specifying R=V. For parameters like in Case 1, the contract might also specify R>V.

If $(\overline{p_L} - \underline{p_L})X - e < (\underline{p_H} - \underline{p_L})X - b$, the bank should be granted an incentive to exert effort by a credit contract specifying V=0. In Case A the bank also gets the first best incentive when it has limited recourse, V>0. Q.E.D.

[Insert Table A1 about here]

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Figure 1: Timeline of the double moral hazard model

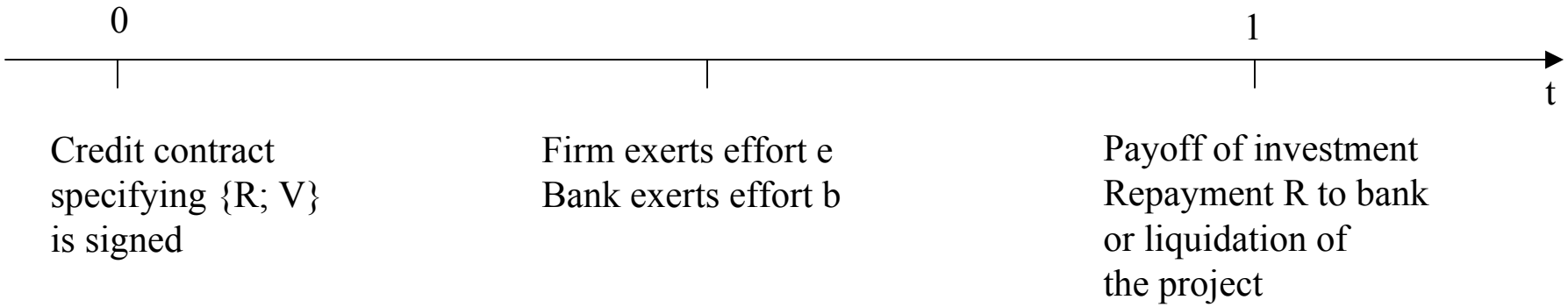
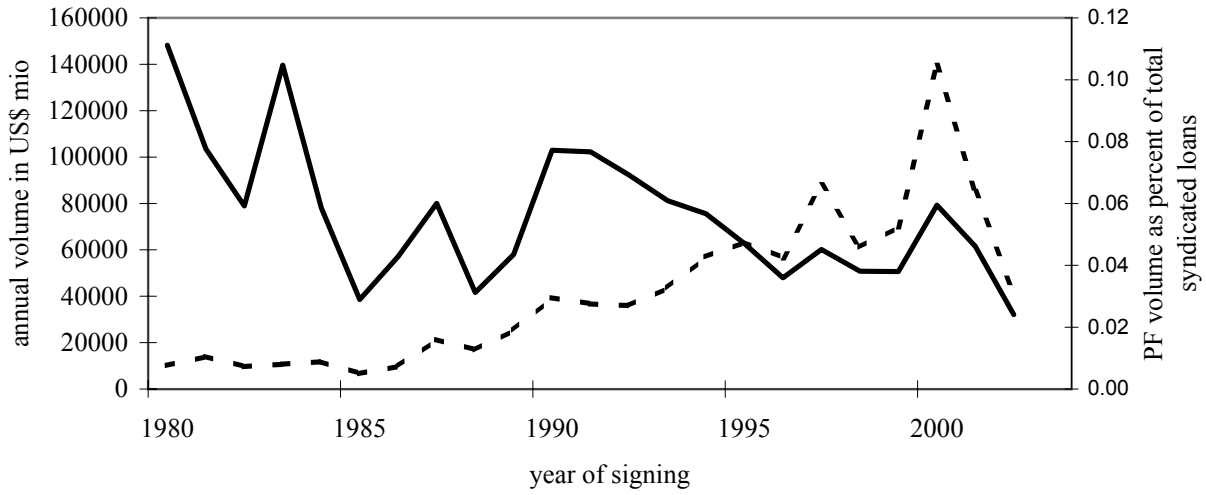
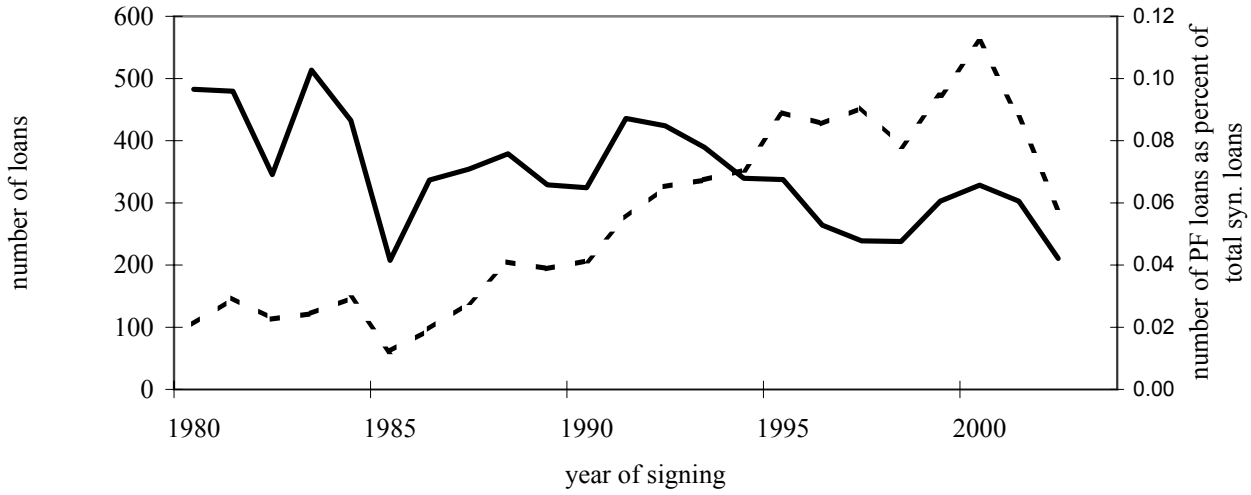


Figure 2: PF in the global syndicated loan market between 1980 and 2002

Panel A: Volume of PF loans per year



Panel B: Number of PF loans per year



Note that in Panel A, the dotted line indicates the total annual volume of PF loans in millions of US$ with the scale given on the left-hand-side achses. In the same panel, the solid line indicates the volume of PF loans relative to all syndicated loans with the scale given on the right-hand-side achses. For Panel B, the same structure is used now referring to the number of PF loans.

Table 1: Payoffs at time 1

recourse structure	state	inside collateral	cash flows project	sponsor	bank lender
full recourse					
	1	V=R	X	W+X -R	R-I
	2	V=R	0	W-R	R-I
limited recourse					
	1	0<V<R	X	W+X -R	R-I
	2	0<V<R	0	W-V	V-I
non recourse					
	1	V=0	X	W+X -R	R-I
	2	V=0	0	W	0-I

Table 2: Geographic distribution of Project Finance (PF) and all syndicated loans (SL)

	January 1980 - March 2003				1981-85				1986-90				1991-95				1996-00			
	PF	SL	PF as % of		PF	SL	PF as % of		PF	SL	PF as % of		PF	SL	PF as % of		PF	SL	PF as % of	
country	US$m	US$m	national SL	global PF	US$m	US$m	national SL	global PF	US$m	US$m	national SL	global PF	US$m	US$m	national SL	global PF	US$m	US$m	national SL	global PF
Africa	**21127**	**109766**	**19.2**	**2.2**	**4285**	**20176**	**21.2**	**8.1**	**1888**	**11024**	**17.1**	**1.8**	**6768**	**25291**	**26.8**	**2.9**	**3166**	**32984**	**9.6**	**0.8**
South Africa	4632	38960	11.9	0.5	550	3282	16.8	1.0	122	1010	12.1	0.1	1320	5333	24.8	0.6	1176	20699	5.7	0.3
Algeria	4194	21889	19.2	0.4	1310	5421	24.2	2.5	576	2948	19.5	0.6	2111	11249	18.8	0.9	0	282	0.0	0.0
Nigeria	3556	10726	33.2	0.4	1291	5694	22.7	2.4	0	1784	0.0	0.0	332	352	94.5	0.1	190	480	39.6	0.0
Asia	**211303**	**1250942**	**16.9**	**22.0**	**8339**	**74489**	**11.2**	**15.8**	**20569**	**100170**	**20.5**	**19.9**	**75973**	**250800**	**30.3**	**32.1**	**81999**	**501111**	**16.4**	**19.8**
China	39476	103452	38.2	4.1	330	4458	7.4	0.6	5485	16243	33.8	5.3	13786	32862	42.0	5.8	8334	35276	23.6	2.0
Indonesia	32292	90269	35.8	3.4	1224	8084	15.1	2.3	4447	11330	39.2	4.3	13247	32495	40.8	5.6	12927	34783	37.2	3.1
Hong Kong	27761	231519	12.0	2.9	1406	11194	12.6	2.7	3401	24506	13.9	3.3	9534	51263	18.6	4.0	11321	93720	12.1	2.7
Taiwan	22044	81089	27.2	2.3	0	1698	0.0	0.0	136	2780	4.9	0.1	2201	8412	26.2	0.9	17958	50958	35.2	4.3
Malaysia	21497	83014	25.9	2.2	291	7938	3.7	0.6	2428	6670	36.4	2.4	10341	25674	40.3	4.4	6617	30714	21.5	1.6
Thailand	20540	73748	27.9	2.1	99	3767	2.6	0.2	1865	6052	30.8	1.8	12506	31637	39.5	5.3	4781	24735	19.3	1.2
India	10645	47090	22.6	1.1	926	4383	21.1	1.8	1013	6878	14.7	1.0	1655	8598	19.3	0.7	6919	21875	31.6	1.7
Philippines	9747	33200	29.4	1.0	665	4331	15.3	1.3	97	402	24.2	0.1	3949	5632	70.1	1.7	4442	16573	26.8	1.1
South Korea	9441	116172	8.1	1.0	2611	21650	12.1	4.9	880	6984	12.6	0.9	3009	26238	11.5	1.3	1794	39708	4.5	0.4
Japan	4203	311784	1.3	0.4	331	1828	18.1	0.6	49	8993	0.5	0.0	0	5501	0.0	0.0	1919	126338	1.5	0.5
Australia & Pacific	**54520**	**438729**	**12.4**	**5.7**	**12158**	**59020**	**20.6**	**23.0**	**6773**	**102817**	**6.6**	**6.6**	**5975**	**89232**	**6.7**	**2.5**	**19844**	**118007**	**16.8**	**4.8**
Australia	50533	369843	13.7	5.2	11269	47169	23.9	21.3	6463	87476	7.4	6.3	4981	76313	6.5	2.1	18717	101489	18.4	4.5
Papua New Guinea	1742	3386	51.5	0.2	800	1185	67.5	1.5	100	341	29.4	0.1	744	1184	62.8	0.3	98	458	21.5	0.0
New Zealand	1656	52275	3.2	0.2	69	10268	0.7	0.1	202	13464	1.5	0.2	237	9455	2.5	0.1	633	7829	8.1	0.2
Caribbean	**6601**	**125125**	**5.3**	**0.7**	**43**	**3492**	**1.2**	**0.1**	**261**	**12208**	**2.1**	**0.3**	**1510**	**27543**	**5.5**	**0.6**	**4400**	**60517**	**7.3**	**1.1**
Eastern Europe	**31907**	**175343**	**18.2**	**3.3**	**454**	**20022**	**2.3**	**0.9**	**1839**	**23450**	**7.8**	**1.8**	**7196**	**25437**	**28.3**	**3.0**	**18451**	**70757**	**26.1**	**4.4**
Russia	10651	51938	20.5	1.1	91	6056	1.5	0.2	182	2823	6.4	0.2	3075	7125	43.2	1.3	7048	24379	28.9	1.7
Poland	8628	27059	31.9	0.9	0	4706	0.0	0.0	94	257	36.5	0.1	1038	2030	51.1	0.4	5690	11859	48.0	1.4
Czech Republic	3421	17134	20.0	0.4	0	186	0.0	0.0	0	805	0.0	0.0	1634	3831	42.6	0.7	1715	10609	16.2	0.4
Latin America	**82421**	**501706**	**16.4**	**8.6**	**5709**	**93437**	**6.1**	**10.8**	**4503**	**20743**	**21.7**	**4.4**	**13550**	**66818**	**20.3**	**5.7**	**42583**	**232082**	**18.3**	**10.3**
Brazil	18395	100703	18.3	1.9	2320	24740	9.4	4.4	527	1675	31.4	0.5	585	5843	10.0	0.2	9338	46888	19.9	2.2
Mexico	17362	151313	11.5	1.8	214	32900	0.6	0.4	495	9560	5.2	0.5	3739	28175	13.3	1.6	9821	56184	17.5	2.4
Argentina	11033	72701	15.2	1.1	1045	5252	19.9	2.0	1008	1351	74.6	1.0	2020	9214	21.9	0.9	5581	47243	11.8	1.3
Venezuela	8715	46797	18.6	0.9	360	15262	2.4	0.7	1502	2047	73.4	1.5	2583	7653	33.8	1.1	3286	10565	31.1	0.8
Chile	8093	50045	16.2	0.8	152	3767	4.0	0.3	564	1655	34.1	0.5	1394	3656	38.1	0.6	4102	32676	12.6	1.0
Colombia	7031	30159	23.3	0.7	994	4653	21.4	1.9	350	3245	10.8	0.3	2687	6297	42.7	1.1	2461	13166	18.7	0.6
Middle East	**79849**	**268302**	**29.8**	**8.3**	**5738**	**27737**	**20.7**	**10.9**	**3610**	**22974**	**15.7**	**3.5**	**19657**	**70789**	**27.8**	**8.3**	**36000**	**103778**	**34.7**	**8.7**
Turkey	19423	80242	24.2	2.0	604	5344	11.3	1.1	2241	11767	19.0	2.2	6722	16651	40.4	2.8	7832	36413	21.5	1.9
Saudi Arabia	16644	62166	26.8	1.7	2549	7282	35.0	4.8	56	1018	5.5	0.1	3190	20746	15.4	1.3	8709	24016	36.3	2.1
Qatar	12671	18654	67.9	1.3	0	175	0.0	0.0	400	600	66.7	0.4	5574	6389	87.2	2.4	4565	6930	65.9	1.1
North America	**199029**	**12826189**	**1.6**	**20.7**	**5125**	**385983**	**1.3**	**9.7**	**30204**	**1155513**	**2.6**	**29.3**	**56479**	**2813030**	**2.0**	**23.9**	**82150**	**6154534**	**1.3**	**19.8**
United States	176280	12202771	1.4	18.3	3279	333688	1.0	6.2	26157	1092176	2.4	25.4	49534	2699307	1.8	20.9	73156	5880517	1.2	17.6
Supranational	**848**	**31664**	**2.7**	**0.1**	**14**	**12855**	**0.1**	**0.0**	**0**	**9187**	**0.0**	**0.0**	**734**	**5001**	**14.7**	**0.3**	**0**	**1332**	**0.0**	**0.0**
Western Europe	**275020**	**4598368**	**6.0**	**28.6**	**10933**	**178610**	**6.1**	**20.7**	**33512**	**541890**	**6.2**	**32.5**	**48675**	**691642**	**7.0**	**20.6**	**126556**	**2035515**	**6.2**	**30.5**
United Kingdom	127547	1913594	6.7	13.2	5419	29026	18.7	10.3	28424	350111	8.1	27.6	24673	294929	8.4	10.4	48686	859734	5.7	11.7
Italy	31666	318395	9.9	3.3	314	28883	1.1	0.6	356	33250	1.1	0.3	2242	44908	5.0	0.9	15881	124011	12.8	3.8
Germany	26393	363443	7.3	2.7	146	4721	3.1	0.3	188	14625	1.3	0.2	2802	35255	7.9	1.2	19289	161794	11.9	4.6
Spain	22960	286167	8.0	2.4	573	22104	2.6	1.1	0	13367	0.0	0.0	4438	72318	6.1	1.9	7745	106253	7.3	1.9
Netherlands	15843	297023	5.3	1.6	522	5740	9.1	1.0	587	18533	3.2	0.6	3246	40014	8.1	1.4	9627	169195	5.7	2.3
Portugal	11111	53443	20.8	1.2	50	8281	0.6	0.1	180	4316	4.2	0.2	3186	10733	29.7	1.3	5902	19937	29.6	1.4
France	10627	517191	2.1	1.1	90	24535	0.4	0.2	2349	36490	6.4	2.3	2279	46983	4.8	1.0	5510	255111	2.2	1.3
Total	**962625**	**20326134**	**4.7**	**100.0**	**52799**	**875821**	**6.0**	**100.0**	**103160**	**1999976**	**5.2**	**100.0**	**236516**	**4065582**	**5.8**	**100.0**	**415149**	**9310617**	**4.5**	**100.0**

Table 3: Descriptive statistics of regression sample by quartiles based on country risk score

	observations	mean	standard deviation	minimum	maximum
Low country risk quartile	243				
country risk score		7.08	3.82	0.00	13.88
country risk rank		10.49	6.41	1.00	24.00
country risk relative rank		6.37	3.73	0.53	14.29
relative number of PF loans in % of all syndicated loans		10.74	11.40	0.54	100.00
absolute number of PF loans		9.54	14.66	1.00	96.00
relative volume of PF loans in % of total syndicated loan volume		11.31	14.86	0.02	100.00
absolute volume of PF loans in US$m		1920.98	3658.76	8.90	37036.08
Moderately low country risk quartile	241				
country risk score		24.73	6.03	14.00	34.99
country risk rank		29.19	7.46	9.00	48.00
country risk relative rank		19.23	4.81	6.92	32.76
relative number of PF loans in % of all syndicated loans		23.74	21.51	0.85	100.00
absolute number of PF loans		7.05	10.59	1.00	65.00
relative volume of PF loans in % of total syndicated loan volume		27.45	26.40	0.13	100.00
absolute volume of PF loans in US$m		991.78	1799.75	2.00	17415.98
Moderately high country risk quartile	243				
country risk score		43.64	4.74	35.00	52.12
country risk rank		52.08	10.39	3.00	79.00
country risk relative rank		31.97	6.14	1.67	47.41
relative number of PF loans in % of all syndicated loans		35.82	26.84	1.94	100.00
absolute number of PF loans		5.69	8.22	1.00	95.00
relative volume of PF loans in % of total syndicated loan volume		37.88	30.44	0.50	100.00
absolute volume of PF loans in US$m		702.88	1367.19	10.00	17727.87
High country risk quartile	243				
country risk score		63.97	8.71	52.37	93.00
country risk rank		92.34	29.74	51.00	175.00
country risk relative rank		58.75	16.09	31.95	100.00
relative number of PF loans in % of all syndicated loans		59.20	35.58	1.89	100.00
absolute number of PF loans		2.46	2.68	1.00	22.00
relative volume of PF loans in % of total syndicated loan volume		59.51	38.79	0.13	100.00
absolute volume of PF loans in US$m		221.15	398.63	1.00	3440.84
Total sample	970				
country risk score		34.88	22.09	0.00	93.00
country risk rank		46.06	34.73	1.00	175.00
country risk relative rank		29.10	21.44	0.53	100.00
relative number of PF loans in % of all syndicated loans		32.39	31.02	0.54	100.00
absolute number of PF loans		6.18	10.33	1.00	96.00
relative volume of PF loans in % of total syndicated loan volume		34.05	33.79	0.02	100.00
absolute volume of PF loans in US$m		959.13	2244.38	1.00	37036.08

Table 4: Political risk regressionts for a global sample of countries with at least 1 PF loan in a given year

Panel A: US$ volume of PF loans relative to total syndicated loan volume as dependent variable

regression	1	2	3	4	5	6	7	8	9	10	11	12
intercept	9.66	9.34	7.27	7.15	9.68	9.22	7.18	7.00	4.98	4.91	4.97	4.96
	6.38	6.09	4.15	4.07	6.24	5.99	4.04	3.98	2.93	2.90	2.75	2.76
rank	0.53	0.58	0.48	0.52								
	20.19	11.78	14.88	9.43								
rank_90s		-0.06		-0.04								
		-1.26		-0.91								
rel_rank					0.84	0.67	0.75	0.60				
					19.52	11.78	14.13	9.40				
rel_rank_90s						0.25		0.24				
						4.47		4.29				
score									0.83	0.73	0.83	0.73
									20.23	12.88	14.63	10.74
score_90s										0.14		0.14
										2.77		2.77
d_emerging			0.07	0.06			0.07	0.06			0.00	0.00
			2.67	2.52			2.85	2.58			0.01	-0.09
adj R^2	29.6%	29.6%	30.0%	30.0%	28.2%	29.6%	28.7%	30.0%	29.6%	30.1%	29.6%	30.0%
observations	970	970	970	970	970	970	970	970	970	970	970	970

Panel B: Number of PF loans relative to total syndicated loan number as dependent variable

regression	13	14	15	16	17	18	19	20	21	22	23	24
intercept	7.35	7.04	5.91	5.78	7.30	6.83	5.76	5.58	2.64	2.57	3.37	3.36
	5.59	5.29	3.88	3.78	5.41	5.12	3.72	3.65	1.78	1.75	2.14	2.15
rank	0.54	0.60	0.51	0.56								
	23.87	13.87	18.33	11.66								
rank_90s		-0.06		-0.05								
		-1.42		-1.18								
rel_rank					0.86	0.69	0.81	0.65				
					23.08	13.95	17.47	11.72				
rel_rank_90s						0.26		0.26				
						5.38		5.26				
score									0.85	0.74	0.90	0.79
									23.80	15.16	18.19	13.43
score_90s										0.15		0.15
										3.29		3.34
d_emerging			0.04	0.04			0.04	0.04			-0.03	-0.04
			1.85	1.67			2.01	1.67			-1.38	-1.50
adj R^2	37.0%	37.1%	37.1%	37.2%	35.4%	37.2%	35.6%	37.4%	36.8%	37.5%	36.9%	37.6%
observations	970	970	970	970	970	970	970	970	970	970	970	970

Note: For each independent variable, the estimated coefficient is reported in the top row whereas the t-statitistic is reported in the bottom row.

Table 5: Project finance in Eastern European transition economies

Panel A: Cumulative PF volume from 1980 to 2003

	PF volume		Percent of all national PF by industry						
country	in $m	in % of SL	telecom	power	road	rail	water	other	unknown
Azerbaijan	200	100	0	0	0	0	0	100	0
Bulgaria	378	95	18	61	0	0	0	20	0
Croatia	774	18	16	20	42	0	0	0	23
Czech Republic	3421	23	19	34	0	0	0	38	8
Estonia	347	81	0	73	0	0	0	27	0
Hungary	3329	18	35	26	14	0	0	12	14
Kazakhstan	411	58	0	0	0	0	0	0	100
Kyrgyzstan	323	100	0	0	0	0	0	77	23
Latvia	28	47	0	0	0	0	0	100	0
Lithuania	209	47	45	0	0	0	0	55	0
Moldova	50	100	50	0	0	0	0	50	0
Poland	8628	47	52	16	3	0	0	15	13
Romania	763	20	39	0	0	0	0	24	38
Russia	10651	24	0	46	0	0	0	46	8
Slovakia	929	29	26	12	4	0	0	36	23
Slovenia	525	40	87	11	0	0	0	0	2
Turkmenistan	458	65	0	0	0	0	0	10	90
USSR	1582	7	0	0	0	0	0	1	99
Uzbekistan	539	48	0	0	0	0	0	37	63
Yugoslavia	171	5	0	0	0	0	0	0	100
all countries	**33715**	**25**	**23**	**27**	**3**	**0**	**0**	**28**	**19**

Panel B: Number of PF

	PF number		Percent of all national PF by industry						
country	absolute	in % of SL	telecom	power	road	rail	water	other	unknown
Azerbaijan	2	100	0	0	0	0	0	100	0
Bulgaria	5	71	20	60	0	0	0	20	0
Croatia	10	15	30	10	50	0	0	0	10
Czech Republic	35	27	26	29	0	0	3	26	17
Estonia	4	67	0	25	0	0	0	75	0
Hungary	52	22	29	21	12	0	0	19	19
Kazakhstan	4	80	0	0	0	0	0	0	100
Kyrgyzstan	4	100	0	0	0	0	0	75	25
Latvia	2	50	0	0	0	0	0	100	0
Lithuania	3	27	33	0	0	0	0	67	0
Moldova	2	100	50	0	0	0	0	50	0
Poland	78	39	27	21	3	0	0	35	15
Romania	17	28	41	0	0	0	0	35	24
Russia	46	14	2	11	0	0	0	61	26
Slovakia	16	30	31	13	6	0	0	38	13
Slovenia	12	38	75	8	0	0	0	0	17
Turkmenistan	2	33	0	0	0	0	0	50	50
USSR	19	25	5	0	0	0	0	5	89
Uzbekistan	7	37	0	0	0	0	0	71	29
Yugoslavia	6	11	0	0	0	0	0	0	100
all countries	**326**	**25**	**23**	**15**	**4**	**0**	**0**	**33**	**25**

Note: The total volume of PF loans in Panel A is higher than the total reported for Eastern Europe in Table 2. This is due to the fact that Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan are included under Asia in Table 2.

Table 6: Regressions of relative number of PF loans on bank influence proxies

regression	variable	coefficient	t-statistic	probability	adj R^2	observations
1	intercept	38.31	11.35	<.0001	-0.0038	103
	$EBRD_{\$,partic}$	0.07	0.79	0.4339		
2	intercept	38.50	10.98	<.0001	-0.0066	103
	$EBRD_{\$,arr}$	0.05	0.58	0.5657		
3	intercept	38.05	11.10	<.0001	-0.0021	103
	$EBRD_{\#,partic}$	0.08	0.89	0.3774		
4	intercept	38.47	10.78	<.0001	-0.0068	103
	$EBRD_{\#,arr}$	0.05	0.56	0.5789		
5	intercept	36.90	12.90	<.0001	0.1264	103
	$IFC_{\$,partic}$	0.70	3.97	0.0001		
6	intercept	36.33	12.02	<.0001	0.0831	103
	$IFC_{\$,arr}$	0.33	3.20	0.0018		
7	intercept	36.96	12.80	<.0001	0.1134	103
	$IFC_{\#,partic}$	0.68	3.75	0.0003		
8	intercept	36.33	12.02	<.0001	0.0836	103
	IFC#,arr	0.36	3.21	0.0018		
9	intercept	42.61	9.96	<.0001	-0.0001	103
	arrbank	-1.18	-1.00	0.3216		
10	intercept	44.00	9.91	<.0001	0.0079	103
	provbank	-0.73	-1.35	0.1810		
11	intercept	43.82	9.75	<.0001	0.0058	103
	allbank	-0.67	-1.26	0.2090		

Table 7: Regressions of relative number of PF loans on political risk proxies

regression	variable	coefficient	t-statistic	probability	adj R^2	observations
1	intercept	7.28	0.75	0.4534	0.1340	84
	pol_risk	0.64	3.72	0.0004		
2	intercept	38.10	6.07	<.0001	-0.0092	102
	state_cap	0.08	0.28	0.7835		
3	intercept	36.76	9.54	<.0001	0.0315	88
	forex_trade	0.26	1.96	0.0537		
4	intercept	37.48	10.66	<.0001	0.0021	103
	gov_chg	0.15	1.10	0.2727		
5	intercept	33.59	7.84	<.0001	-0.0138	64
	democrat	0.04	0.37	0.7092		
6	intercept	33.68	4.54	<.0001	-0.0230	45
	sector_infra	0.02	0.10	0.9179		
7	intercept	36.76	9.10	<.0001	0.0227	88
	sector_industry	0.24	1.74	0.0858		
8	intercept	23.51	2.77	0.0071	0.0349	75
	sector_known	0.38	1.92	0.0591		
9	intercept	17.48	2.18	0.0320	0.0984	87
	sector_all	0.55	3.22	0.0018		

Table 8: Regressions of relative number of PF loans on firm moral hazard proxies

regression	variable	coefficient	t-statistic	probability	adj R^2	observations
1	intercept	9.99	0.94	0.3477	0.0885	88
	comp_policy	0.68	3.07	0.0028		
2	intercept	20.04	1.76	0.0824	0.0302	88
	price_lib	0.66	1.92	0.0576		
3	intercept	22.23	3.94	0.0002	0.1425	88
	large_privat	0.62	3.93	0.0002		
4	intercept	34.87	8.89	<.0001	0.0618	88
	small_privat	0.39	2.59	0.0111		
5	intercept	30.67	7.35	<.0001	-0.0043	50
	law_eff	0.24	0.27	0.3738		
6	intercept	35.40	7.51	<.0001	-0.0205	50
	law_ext	0.04	0.39	0.9011		
7	intercept	-48.98	-1.95	0.0541	0.1019	102
	$eqmkt_{gdp}$	0.97	3.55	0.0006		
8	intercept	23.20	2.32	0.0228	0.0287	88
	$m3_{gdp}$	0.29	1.89	0.0622		
9	intercept	39.43	9.48	<.0001	-0.0067	88
	privat_1	0.04	0.65	0.519		
10	intercept	52.70	6.14	<.0001	0.0125	88
	privat_12	-0.13	-1.45	0.151		

Table 9: Regressions of relative number of PF loans on indicators

regression	variable	coefficient	t-statistic	probability	adj R^2	observations
Panel A: Single regressions using indicators						
1	intercept	36.90	12.90	<.0001	0.1264	103
	bank_influence	0.70	3.97	0.0001		
2	intercept	-2.66	-0.24	0.8087	0.1570	88
	$moral\_hazard_{rsq}$	0.64	4.15	<.0001		
3	intercept	-18.57	-1.40	0.1641	0.1897	88
	$moral\_hazard_{eq}$	0.99	4.62	<.0001		
4	intercept	17.01	1.86	0.0676	0.0695	74
	$political\_risk_{rsq}$	0.52	2.54	0.0132		
5	intercept	7.49	0.80	0.4233	0.1429	84
	$political\_risk_{eq}$	0.71	3.85	0.0002		
Panel B: Multiple regressions with orthogonalized indicators						
1	intercept	38.83	12.82	<.0001	0.1679	74
	bank_influence	4.52	1.48	0.1430		
	$moral\_hazard_{rsq}$	8.98	2.95	0.0044		
	$political\_risk_{rsq}$	7.98	2.62	0.0108		
2	intercept	38.83	13.66	<.0001	0.2671	74
	bank_influence	4.52	1.58	0.1190		
	$moral\_hazard_{rsq}$	8.98	3.14	0.0025		
	$political\_risk_{rsq}$	7.98	2.79	0.0068		
	res_score	1.31	3.24	0.0019		
3	intercept	41.37	14.84	<.0001	0.2793	84
	bank_influence	8.54	3.05	0.0031		
	$moral\_hazard_{eq}$	12.35	4.40	<.0001		
	$political\_risk_{eq}$	7.15	2.55	0.0126		
4	intercept	41.37	15.41	<.0001	0.3319	84
	bank_influence	8.54	3.16	0.0022		
	$moral\_hazard_{eq}$	12.35	4.57	<.0001		
	$political\_risk_{eq}$	7.15	2.65	0.0097		
	res_score	1.07	2.70	0.0086		

Table A1: Descriptive Statistics of moral hazard, political risk, and bank influence proxies

Variable	N	Mean	Std Dev	Minimum	Maximum
year	103	1995.24	5.46	1980.00	2003.00
$EBRD_{\$,partic}$	103	7.20	23.14	0.00	100.00
$EBRD_{\$,arr}$x	103	9.22	26.17	0.00	100.00
$EBRD_{\#,partic}$	103	7.46	22.55	0.00	100.00
$EBRD_{\#,arr}$	103	9.61	25.97	0.00	100.00
$IFC_{\$,partic}$	103	1.53	10.23	0.00	100.00
$IFC_{\$,arr}$	103	3.93	18.19	0.00	100.00
$IFC_{\#,partic}$	103	1.54	10.05	0.00	100.00
$IFC_{\#,arr}$	103	3.65	16.89	0.00	100.00
arrbank	103	2.60	2.54	0.00	11.50
provbank	103	6.09	5.49	1.00	37.00
allbank	103	6.41	5.67	1.00	38.00
pol_risk	84	52.93	17.76	24.80	86.92
state_cap	102	18.43	10.15	6.00	41.00
forex_trade	88	17.05	23.99	0.00	76.74
gov_chg	103	13.92	22.15	0.00	66.67
democrat	64	30.60	32.40	9.09	200.00
sector_infrax	45	34.30	17.26	6.98	60.47
sector_industry	88	18.38	23.07	0.00	76.74
sector_known	75	39.84	16.47	6.98	76.74
sector_all	87	43.69	18.10	6.98	76.74
comp_policy	88	45.51	13.74	30.23	76.74
price_lib	88	32.19	9.27	23.10	76.74
large_privat	88	30.58	18.86	6.98	76.74
small_privat	88	15.94	20.44	0.00	76.74
law_eff	50	22.98	14.53	0.00	53.49
law_ext	50	16.52	10.24	6.98	46.51
$eqmkt_{gdp}$	103	96.48	7.84	58.30	100.00
$m3_{gdp}$	88	61.28	20.38	23.10	89.50
privat_1	88	40.91	49.45	0.00	100.00
privat_12	88	86.36	34.51	0.00	100.00
bank_influence	103	1.53	10.23	0.00	100.00
$moral\_hazard_{rsq}$	88	68.31	19.03	39.81	113.05
$moral\_hazard_{eq}$	81	58.29	12.16	35.29	87.22
$political\_risk_{rsq}$	74	42.03	15.78	14.23	77.63
$political\_risk_{eq}$	84	47.99	16.69	15.89	77.73
score	98	50.14	16.74	15.00	81.59