

Project Finance versus Corporate Finance¹

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Abstract

When corporations make large investments, what benefits do they derive from Project Finance vis-à-vis Corporate Finance? We develop a simple model and provide empirical evidence to show that Project Finance mitigates the agency costs of free cash flow, and the deadweight costs of bankruptcy that are encountered in Corporate Finance. We embed the ‘Cash Flow Separation’ and ‘Non-recourse Financing’ features of Project Finance in a model of debt financing to predict that in countries where investor protection against managerial self-dealing is weaker, Project Finance is more likely than Corporate Finance. In particular, in such countries, Project Finance is *disproportionately* more likely than Corporate Finance in industries with larger free cash flows. We empirically verify this prediction by comparing, across forty countries, loans provided to project companies against loans provided to corporations, using the measure of free cash flow to assets for 4-digit SIC industries across these countries, and using the same measure for US 4-digit SIC industries as an *instrument* for the cross-country measure. Second, our model predicts that in countries that provide stronger protection to creditors, the effect of weaker protection against managerial self-dealing in encouraging Project Finance is *disproportionately* lower. Using exogenous country-level changes in creditor rights, and using cross-sectional tests, we find empirical support for this prediction. Third, we theoretically predict and empirically verify that in countries where the bankruptcy procedure results in greater deadweight losses, Project Finance is more likely than Corporate Finance. Finally, we find support for all the above predictions using a smaller firm-level sample.

JEL classification: G32, G33, G34, K22

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1 Introduction

Companies across the world frequently employ Project Finance for their large investments. Their importance is underscored by the following fact: Though US corporations used Project Finance less often than their foreign counterparts,¹ their investment of \$34 billion in Project Finance in 2004 exceeded the \$25 billion that venture capital funds invested in startups in that year, and was about half the \$73 billion raised by US companies through IPOs in the same year (Esty, 2005). While academic research in finance has provided many insights into venture capital financing and IPOs, Project Finance has received scant attention.² An obvious question arises: What factors drive the choice of Project Finance vis-à-vis Corporate Finance?³ As Esty (2003a) points out, Project Finance involves significant costs compared to Corporate Finance.⁴ What are the offsetting benefits then of Project Finance vis-à-vis Corporate Finance? Why were 64% of large investments financed through Project Finance in the French legal origin countries while this percentage was 26% in the English legal origin countries? In other words, how does the legal and institutional environment in a country shape this choice of Project Finance vis-à-vis Corporate Finance?

This paper attempts to fill some of these gaps in our knowledge. We make two important contributions. First, to our knowledge, our paper is the first to formally analyze and empirically document the benefits of Project Finance vis-à-vis Corporate Finance. Second, we augment the law and finance literature (see references below) by showing a micro channel through which legal origin could affect economic outcomes – through the provision of investor protection to reduce managerial agency costs.

Esty (2003b) argues informally that Project Finance reduces the agency costs of free cash flow encountered in Corporate Finance:

“The first motivation to use Project Finance, the agency cost motivation, recognizes that certain assets, namely large, tangible assets with high free cash flows, are susceptible to costly agency conflicts. The creation of a project company provides an opportunity to create a new, asset-specific governance system to address the conflicts between ownership and control. . . Project companies utilize joint ownership and high leverage to discourage costly agency conflicts among participants.”

From the above argument, it is clear that Project Finance mitigates the agency costs stemming

¹In our sample, 19% of large investments by US corporations were Project Financed while this percentage was 53% for the international firms.

²Esty (2003b) and Esty and Megginson (2003) are the only notable exceptions.

³Anecdotal evidence shows that this choice indeed exists. After the merger of British Petroleum with Amoco, the CFO of BP-Amoco, David Watson, asked the Head of the Specialized Finance group, Bill Young, to “prepare a recommendation on when and in what circumstances the firm should use *external project finance* instead of its own internal, corporate funds to finance new investments.”

⁴First, creating a stand-alone project company may take from six months to more than a year; the contracting and other transaction costs may consume from 5% to 10% of the project’s total cost (Esty, 2005). Second, the interest rates and up-front fees are considerably higher for project debt than for corporate debt. Finally, lenders to project companies charge advisory fees of up to 50 to 100 basis points for advice on the financial structure of the transaction (Esty, 2003b).

from separation of ownership from control. However, it is unclear exactly *how* Project Finance operates to mitigate these agency costs while other forms of financing cannot. For example, why cannot corporations effect governance systems specialized to the nature of their assets, or utilize joint ownership and leverage to mitigate these agency costs? What is it about Project Finance – as opposed to Corporate Finance – that reduces agency conflicts?

We develop a simple model to shed light on this question. We highlight two distinguishing characteristics of Project Finance vis-à-vis Corporate Finance: (a) enhanced verifiability of cash flows, and (b) lack of recourse to sponsors' cash flows and assets. We argue that the verifiability of cash flows in Project Finance stems from contractual arrangements made possible *because* of a single, discrete project that is legally separated from the sponsor, and the resulting absence of future growth opportunities in the Project Financed company. Since Corporate Finance involves multiple current and future projects, the same contractual arrangements cannot be effected in Corporate Finance. Therefore, cash flows are less verifiable in Corporate Finance than in Project Finance, particularly in countries where the protection against managerial self-dealing is weaker. Project Debt is also non-recourse: the lender does not have recourse to the sponsor's assets or cash flows. Thus, in Corporate Finance, the lender has a potentially larger pool of cash flows from which to get paid.

Since Project Finance companies are primarily debt financed (Esty, 2005), we embed the choice of Project Finance versus Corporate Finance in a model of debt financing similar to that in Hart (1995). Since the pool of assets and cash flows is larger, but less verifiable, in Corporate Finance, creditors' rights play a more significant role in Corporate Finance. Specifically, the lender's credible threat to seize collateral matters more with Corporate Finance, where cash flows are less verifiable and borrower opportunism is therefore more likely. The threat of liquidation serves to deter this opportunism. Furthermore, project companies invest in single, discrete assets. Therefore, trade-offs between inefficient continuation versus inefficient liquidation that arise from the presence of future growth opportunities and characterize bankruptcy in Corporate Finance (see Gertner and Scharfstein, 1991) are absent in Project Finance. Thus, ex-post inefficiencies created in bankruptcy affect Corporate Finance more than Project Finance. Given these two reasons, i.e., the higher likelihood of opportunistic default and the attendant inefficiencies from bankruptcy, we model default in Corporate Finance but abstract from the same in Project Finance. Of course, the lenders' threat to liquidate assets is credible only if the bankruptcy laws in the country allow the lender to seize the collateral assets. Therefore, we assume that the lender can seize assets with a higher probability if the bankruptcy laws provides creditors stronger rights. Further, we assume that liquidation values in bankruptcy are lower if the deadweight costs in bankruptcy are higher.

Given this setup, we obtain the following result. In countries where insiders can expropriate minority investors more easily, Project Finance is more likely than Corporate Finance. In particular, in such countries, Project Finance is *disproportionately* more likely than Corporate Finance in industries where Free Cash Flow is higher. To understand better this difference-in-difference prediction, consider two industries: Drugs and Cement. Given the lack of significant investment

opportunities in Cement when compared to Drugs, the agency cost of free cash flows would be higher in Cement than in Drugs (Jensen and Meckling, 1976, Jensen, 1986 and Blanchard, Lopez-de-Silanes and Shleifer, 1994). Since Project Finance mitigates these agency costs by making cash flows verifiable, *ceteris paribus*, the difference in the use of Project Finance in Cement versus that in Drugs would be greater in Venezuela than this difference in the United States since the laws protecting managerial self-dealing are stronger in the United States than in Venezuela.

We provide empirical evidence supporting this prediction by comparing, across forty countries, Project Finance loans against Corporate Finance loans from the Loan Pricing Corporation's *DealScan* database. To restrict our analysis to those Corporate Finance investments where Project Finance is a viable option, we include loans to corporations under the categories of equipment purchases, capital expenditures, acquisition of assets or companies, and takeovers. To capture differences across countries in the protection provided to investors against managerial self-dealing, we employ the index of private control of self-dealing constructed by Djankov, LaPorta, Lopez-de-Silanes and Shleifer (2006) (hereafter, DLLS). This index measures the hurdles that the controlling shareholder in a firm must jump in order to indulge in a self-dealing transaction. In the spirit of our model where *ex-ante* financing outcomes are affected by the *ex-post* likelihood of a sponsor/manager being caught self-dealing, we focus on DLLS's measure of *ex-post private control of self-dealing*.⁵ We follow Opler and Titman (1993) and Lang, Stulz, and Walking (1999) in proxying agency costs of free cash flow using the ratio of Free Cash Flow to Assets. Since our most comprehensive disaggregated data is at the 4-digit SIC industry level, we construct this measure for the median firm in a 4-digit SIC industry in a country. We employ several empirical specifications: controls for the legal origin of a country, fixed effects at the country, industry, and year levels, and random effects at the level of each industry in each country. We find that in countries that provide weak protection to minority investors against expropriation by insiders, Project Finance is *relatively* more likely than Corporate Finance in industries where the ratio of Free Cash Flow to Assets is higher. If we compare two industries for which the ratio of Free Cash Flow to Assets is one standard deviation apart, then a one standard deviation decrease in the *ex-post* private control of self-dealing increases the likelihood of Project Finance in the industry with higher free cash flow by 5% more than in the industry with lower free cash flow. Since Project Finance is 25% likely on average in our sample, this 5% increase in the difference in likelihood of Project Finance represents a 20% change over the sample average. We also find that Project Finance is more likely in countries with weak protection against managerial self-dealing; a one standard deviation decrease in the *ex-post* private control of self-dealing increases the likelihood of Project Finance in a country by 14.5%, which represents more than a 50% increase over the sample average of 25%.

To examine the robustness of our above result to various sources of endogeneity at the industry level, we follow Rajan and Zingales (1998) in employing the median Free Cash Flow to Assets for US firms at the 4-digit SIC industry level as an *instrument* for our cross-country measure.

⁵This measure captures the extent of *ex post* disclosure that the controlling shareholder in a firm must provide and the ease of proving wrongdoing once investors detect managerial self-dealing; a higher value indicates more hurdles.

The profitability of an industry and the resultant level of free cash flow is partly a function of the technological aspects of the industry as well as the life-cycle stage of the industry. Therefore, we expect the free cash flow for US industries to be correlated with the cross-country measure.⁶ Furthermore, the usage of Project Finance is 19% in the US in contrast to 53% for the rest of the world. Therefore, the US industry level measure of Free Cash Flow to Assets satisfies the two requirements necessary to serve as an instrumental variable. As *strong evidence* of our theory's predictions, we obtain identical results to the above using this instrumental variable.

A second prediction of our model is that the creditor's ability to seize the firm's assets upon default, including those placed with him as collateral, mitigates the effect of weak protection against managerial self-dealing, since the lender can resort to the assets ex-post in the face of self-dealing. Therefore, when stronger protection is provided to creditors, the effect of weaker protection against managerial self-dealing in encouraging Project Finance is *disproportionately* lower. To proxy the legal rights of creditors across the world, we use the creditor rights index (a score between 0 and 4) constructed in Djankov, McLiesh and Shleifer (2005) (hereafter, DMS). A higher value for the DMS creditor rights index indicates stronger rights to creditors. Across all our specifications, which include random effects at the country level, and fixed effects at the year level, we find that the coefficient of interaction between protection against self-dealing and creditor rights to be positive. The effect is economically significant too: A one point increase in the strength of creditor rights decreases the marginal effect of weaker protection against self-dealing by 32%. We investigate further as to which component of the creditor rights index affects this choice between Corporate Finance and Project Finance. In line with our model, we find that in countries with no "automatic stay" imposed on the collateral assets in bankruptcy, the effect of managerial self-dealing is mitigated. The other components of the DMS creditor rights index do not matter here.

In the *strongest piece of evidence* supporting our theory, we consider this interaction effect between creditor rights and managerial self-dealing for the "treatment" sample of countries where creditor rights underwent a change during our sample period, and the "control" sample of other countries. As predicted by our model, we find that the *decrease* in the rights provided to creditors in our "treatment" sample enhanced the marginal effect of ex-post private control of self-dealing on the choice of Project Finance. Thus, we infer from our cross-country evidence and from the within country changes in creditor rights that laws protecting minority equityholders from managerial self-dealing and rights provided to creditors in bankruptcy are marginal substitutes in mitigating agency conflicts.

Finally, our model predicts that larger deadweight costs incurred in bankruptcy increase the likelihood of Project Finance. As argued above, bankruptcy costs are lower in Project Finance than in Corporate Finance since project companies invest in single, discrete assets. We employ a measure of the efficiency of bankruptcy process as developed in Djankov, Hart, McLiesh and

⁶The correlation in the Free Cash Flow/ Assets measure among the countries in our sample, both in the cross-section and the time-series, is quite high. The correlation is 0.73 over all industries and all years. The minimum correlation across time for an industry is 0.59 while the maximum is 0.94; similarly, the minimum correlation across industries for a particular year is 0.65 while the maximum is 0.88.

Shleifer (2006) (hereafter, DHMS), and find that across all our empirical specifications, Project Finance is less likely when the bankruptcy process is more efficient. A one standard deviation increase in the efficiency of the bankruptcy process increases the likelihood of Project Finance in a country by 16.4%, which represents more than a 50% increase over the sample average of 25%.

Can our empirical results at the industry level be generalized to the level of a firm? We examine this question by testing our predictions using a less comprehensive, but more disaggregated firm level sample. For our firm level analysis, in addition to controlling for variables that closely parallel those at the industry level, we add other variables that we were unable to control for in our industry level analysis. We control for the scale of the project compared to that of the firm. We include the logarithm of the market value of the firm to proxy for firm size since larger firms may find it easier to bear the large transaction costs associated with Project Finance. We also control for the S&P debt rating for the borrower to account for the risk of the investment. We find results that are very similar to our industry level results.

Should we be concerned that our results are mechanically driven by greater infrastructure investments in developing countries, or by our country level variables proxying for the level of financial development in a country? No, for several reasons. First, we find identical results for subsamples of developing and developed countries, and when we exclude all Project Finance loans that are made for infrastructure purposes. Second, our time-series test exploiting changes in creditor rights alleviates the concern that any omitted variables at the country level is driving our results. Despite these pieces of evidence, we explicitly consider the role of overall financial development in our cross-country tests. We include measures of financial development such as Accounting Standards, Total (stock market) Capitalization to GDP, Domestic Private Credit to GDP, and Private Credit to GDP per capita (from LLSV, 1998 and Rajan and Zingales, 1998) and interact these measures of financial development with our industry level Free Cash Flow to Assets measure. We find that this has no effect on our existing results.

This paper is organized as follows. The next section describes the related literature. Section 3 provides the relevant background information on Project Finance. Section 4 develops a simple model to capture the trade-offs of Project Finance versus Corporate Finance. Section 5 details our empirical analysis while Section 6 describes our empirical results. Section 7 examines the robustness of our results to alternative specifications of the dependent variable and to the effect of financial development. Section 8 concludes the paper.

2 Review of Literature

As a broad research inquiry, our paper is closely related to the law and finance literature (see LaPorta, Lopez-de-Silanes, Shleifer and Vishny, 1997; LaPorta, Lopez-de-Silanes, Shleifer and Vishny, 1998; Djankov, LaPorta, Lopez-de-Silanes and Shleifer, 2003; Djankov et al., 2005; Djankov, LaPorta, Lopez-de-Silanes and Shleifer, 2006; and Djankov, Hart, McLiesh and Shleifer, 2006 and the references therein) which highlights the role of the legal institutions in shaping the pattern of

financial organization and economic growth in a country. Specifically, our paper relates to how legal protection provided to investors affects the nature of financial organization in a country (see for example La Porta, Lopez-de-Silanes and Shleifer, 1999). Our paper highlights that corporations and their lenders would choose Project Finance over Corporate Finance to *unwind* the effects of, on the one hand, weak protection provided by the law against managerial self-dealing, and, on the other hand, inefficiencies in the bankruptcy procedures. This finding is in line with the view of Coasians (as against Coase; see Glaeser et. al., 2001) that private parties can utilize a vast array of contracting mechanisms to organize transactions between themselves, and therefore, most laws and regulations are unnecessary.

However, we find evidence supporting the view in Glaeser et. al. (2001) that regulations providing stronger protection to investors can reduce inefficiencies due to agency conflicts. First, we find that stronger legal protection against managerial self-dealing obviates the need to undertake Project Finance in order to reduce agency costs of free cash flow, and thus leads to more Corporate Finance. Second, we find that stronger creditor rights can reduce the impact of poor protection against managerial self-dealing in enhancing agency costs, and thus lead to more Corporate Finance. These two findings taken together are potentially more important than the one that private parties can use Project Finance to unwind the effect of the legal and institutional environment. This is because, unlike Corporate Finance, Project Finance is a specialized form of finance which involves significant transaction costs and is possible only if the project's assets and cashflows can be successfully isolated from the other current and future investments of the Corporation. In this regard, our paper complements the work of Durnev and Kim (2005), who show both that legal origins matter, and that private ordering may be useful in addressing deficiencies in legal protection provided to investors. They find that across twenty-four countries, firms adapt efficient governance practices in the face of weak legal regimes. Governance quality and disclosure practices are positively correlated with firm value, and this positive effect is stronger in weak legal regimes.

The paper is also related to the literature on “tunneling” (Johnson et. al, 2000; Glaeser et. al., 2001; Bae et. al., 2002; Bertrand and Mulainathan, 2003a) which is a word coined by Johnson et. al. to describe “the transfer of assets and profits out of firms for the benefit of those who control them.” In this paper, we show that Project Finance can limit tunneling by contractually enhancing the verifiability of cash flows from the project. As mentioned in the introduction, Esty (2003b) develops a framework for analyzing the choice of Project Finance versus Corporate Finance. Our paper develops stronger micro foundations for the agency cost and reduction in bankruptcy cost motivations for Project Finance in Esty (2003b) and provides empirical evidence supporting them. To our knowledge, this paper is the first to formally analyze and empirically document these benefits that Project Finance provides vis-à-vis Corporate Finance. Esty and Megginson (2003) analyze syndicated Project Finance loans to examine the effect of creditor rights and reliable legal enforcement on the pattern of debt ownership. Esty (2004) examines syndicated loans to firms in different countries with a focus on how legal and financial systems affect syndicated loan composition.

Finally, while the law and finance literature (LaPorta, Lopez-de-Silanes, Shleifer and Vishny, 1997 and LaPorta, Lopez-de-Silanes, Shleifer and Vishny, 1998) has unearthed evidence that the origin of laws in a country has important implications for economic growth and development, the exact mechanism through which this effect of legal origin manifests itself has been unclear. This literature has shown that legal origin is correlated with the protection provided to investors against managerial self-dealing, and with the rights provided to creditors. In this paper, we show that legal origins matter through the effect of protection provided to investors. We find in our univariate results that Project Finance is used a lot more often in French legal origin countries than in English legal origin countries. However, the legal origin variables do not matter when we include proxies for the protection provided to minority investors against managerial self-dealing, and for the protection provided to creditors. This lends credence to our argument that legal origin matters through the protection provided to investors. In unearthing a micro channel for the effect of legal origins on real outcomes, this paper resembles Qian and Strahan (2006). They analyze various price and non-price features of debt contracts in countries similar to ours and find evidence that country level legal and institutional variables affect these features of debt contracts.

3 Background Information on Project Finance

Esty (2003b) defines Project Finance as the following:

Project finance involves the creation of a legally independent project company financed with non-recourse debt (and equity from one or more sponsoring firms) for the purpose of financing a single purpose capital asset, usually with a limited life.

This definition highlights the following features of Project Finance: First, Project Finance involves creating a legally independent project company to invest in the project; the assets and liabilities of the project company do not appear on the sponsors' balance sheet. As a result, the project company does not have access to internally-generated cash flows of the sponsoring firm. Similarly, the sponsoring firm does not have access to the cash flows of the project company. In contrast, in Corporate Finance, the same investment is financed as part of the company's existing balance sheet.

Second, the purpose for Project Finance is to invest in a single purpose capital asset, usually a long-term illiquid asset. In contrast to a company which may be investing in many projects simultaneously, a project financed company invests only in the particular project for which it is created. The project company is dissolved once the project gets completed.

Third, in Project Finance, the investment is financed with non-recourse debt. Since the project company is a standalone, legally independent company, the debt is structured without recourse to the sponsors. As a result, all the interest and loan repayments come from the cash flows generated from the project. This is in contrast to Corporate Finance where the lenders can rely on the cash flows and assets of the sponsor company apart from those of the project itself.

Fourth, project companies have very high leverage ratios compared to public companies. Esty (2003b) points out that the average project company has a leverage ratio of 70% compared to 33.1% for similar sized firms listed in the Compustat database. The majority of project debt comes from bank loans. Esty (2005) shows that bank loans comprise around 80% of project debt.

4 A simple model

To guide our empirical analysis, we develop a simple model which focuses on a firm's decision to finance its investment K in a positive NPV project through Project Finance or Corporate Finance. We embed this choice in a model of debt financing to examine how the choice of Corporate finance versus Project Finance varies with the legal and institutional environment in a country.

All agents are risk-neutral and the risk-free rate of interest is zero. We now describe the model in detail.

4.1 Timing and Events

Figure 1 summarizes the time line and events in the model. There are three dates, $t = 0, 1, 2$. At date 0, the firm decides to finance its project through either Project Finance or Corporate Finance. Since debt constitutes the bulk of Project Financing, we embed this choice of the firm in a model of debt financing. The debt matures at date 1. The investment in the project produces two streams of cash flows, one in the short term (date 1) and one in the far horizon (date 2). The date 1 cash flow is used to repay the debt. If the debt is not repaid in full at date 1, then the firm is in default. In this case, the creditor may be able to seize the assets that are placed as debt collateral and threaten to liquidate them in order to recoup his investment. If the project is not liquidated, then it produces additional cash flows at date 2.

4.2 Project Finance versus Corporate Finance

Based on the discussion in Section 3, the two essential features that distinguish Project Finance from Corporate Finance are: (a) Cash Flow separation and (b) Non-recourse financing. We now describe both these features in detail.

4.2.1 Cash Flow Separation and Verifiability

In Project Finance, the project company is created to be standalone and legally independent. The purpose of Project Finance is to invest in a single purpose capital asset, usually a long-term illiquid asset. The project company is dissolved once the project gets completed. Thus, the project company does not possess any future growth opportunities. In contrast in Corporate Finance, a company invests in many projects simultaneously and possesses growth opportunities. The legally independent incorporation, along with the absence of multiple current and future projects, enables

the Project company to easily separate project cash flows from the cash flows produced by the assets of the sponsor. Such cash flow separation is difficult to accomplish in Corporate Finance.

Furthermore, the presence of a single discrete project in a legally separate entity enables the lender to easily monitor project cash flows. In contrast in Corporate Finance, project cash flows become co-mingled with the cash flows from other assets making the monitoring of such cash flows relatively more difficult. The ability to separate project cash flows, along with the decreased cost of monitoring such cash flows, enables the project company to enter into detailed contracts with its lenders.

A salient contract in Project Finance is the *cashflow waterfall contract* which specifies precisely how project cash flows may be used. Typically, the borrower will be required to use project cash flows first in satisfaction of project operating expenses, and then to pay interests and loan principals. In addition, capital providers also have control over the distribution of cash flows in excess of these amounts. A commonly used mechanism to control the distribution of cash flows is the set-up of a variety of project accounts, such as disbursement account, proceeds account, debt service reserve account, etc. These project accounts, which are generally under the control of the lenders, provide lenders a means of control over the borrower's day-to-day business activities.

The ability to write such contracts in Project Finance essentially stems from presence of a single, discrete project and the resulting absence of future growth opportunities in the project financed company. While separate legal incorporation is necessary to enable the separation of project cash flows from that of the sponsor, it is not sufficient to make such contracting feasible.⁷ For example, in a subsidiary company which is a separate legal entity from its parent, multiple projects and future growth opportunities would make meaningful cashflow separation and monitoring as difficult as in parent. With Project Finance, by contrast, the one discrete project housed in the project company enables this transparent cash flow separation.

The presence of contracts such as the cashflow waterfall contract between the project company and the lender *enhances the verifiability of cash flows* in Project Finance when compared to Corporate Finance.

4.2.2 Non-recourse Financing

Apart from cash flow separation, project assets are legally separated from those of the sponsoring firm in Project Finance. This separation of project cash flows and assets enables the project company to be financed with non-recourse debt. Thus, the project company's debtholders do not have recourse to either the cash flows or the assets of the sponsoring firm. In contrast, in Corporate Finance the lenders can rely on the cash flows and assets of the sponsor company apart from those

⁷It can be argued that separating project cash flows and rendering them verifiable to the lender could be accomplished in Corporate Finance by contract. However, separate incorporation of the solitary project economizes on contracting, monitoring, and enforcement costs. For example, transferring free cash to the sponsor from the separately incorporated project company would require corporate formalities such as formal declaration of dividends by the project company board of directors. No similar formalities would be required to transfer free cash with the firm under Corporate Finance.

of the project itself.

4.3 Cash Flows

We denote the date 1 cash flow by γy_1 and the date 2 cash flow by γy_2 , where $\gamma \geq 1$. To reflect the fact pointed out by La Porta, Lopez-de-Silanes, and Shleifer (1999) that “the central agency problem in large corporations around the world is the expropriation of minority shareholders by controlling shareholders,” we assume that the insiders (project sponsors/ equityholders) can expropriate a portion $1 - \lambda$ of the cashflows from the project. Thus λ is the proportion of cash flows that is verifiable. A low value of λ implies greater expropriation of minority shareholders, where expropriation is broadly defined and includes a wide range of value-decreasing activities such as excessive shirking, corporate perk consumption, or investment in pet projects as in Jensen and Meckling (1976), or outright diversion through transfer pricing, subsidized personal loans, non-arms-length transactions, and, possibly, outright theft. To capture La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) (hereafter LLSV)’s assertion that the absence of strong legal protection increases the severity of such agency problems, we assume that λ is lower in countries where protection provided to minority investors against expropriation is weak.

As argued above in Section 4.2, cash flows are more verifiable in Project Finance. To capture this difference between Project Finance and Corporate Finance, we make the following assumption:

ASSUMPTION 1: Cash flows are fully verifiable ($\lambda = 1$) in Project Finance and partially verifiable ($\lambda < 1$) in Corporate Finance.

Thus, we assume that irrespective of the level of protection provided to minority investors against expropriation by insiders, Project Finance makes cash flows contractually verifiable.

We model the non-recourse nature of financing in Project Finance vis-à-vis the full-recourse financing in Corporate Finance through a difference in the cash flows and liquidation values (which are described below) that the lender can lay claim to. In Corporate Finance, the lender can lay claim to cash flows from all the assets and projects of the corporation while in Project Finance the lender has access to only the project cash flows. Thus, the lender has potential access to cash flows γy_1 and γy_2 (where $\gamma > 1$) in Corporate Finance and y_1 and y_2 in Project Finance.

Combining the greater verifiability of cash flows in Project Finance with its non-recourse financing, the verifiable cash flows that the lender can lay claim to are $\lambda \gamma y_1$ and $\lambda \gamma y_2$ in Corporate Finance, and y_1 and y_2 in Project Finance. Thus, the lender has access to a smaller pool of fully verifiable cash flows in Project Finance. In contrast, he has access to a larger pool of partially verifiable cash flows in Corporate Finance.

4.4 Creditor Rights and Efficiency of Bankruptcy Procedure

After the insiders expropriate the non-verifiable portion of cash flows, the lender gets paid the verifiable portion. If the verifiable cash flow at date 1 is insufficient to repay the debt, the firm is in default. To focus our attention on the case where the firm defaults due to expropriation of cash

flows by insiders, and thus the legal rights provided to creditors could limit such expropriation, we make our second assumption:

ASSUMPTION 2: $\lambda\gamma y_1 < K < y_1$. In words, verifiable cash flows are (not) enough in (Corporate Finance) Project Finance to repay the lender in full. Thus, there is (certain default) no default in (Corporate Finance) Project Finance.

Since this is an important assumption in our model, we now provide additional motivation for the same. When the firm defaults, the creditor can threaten to seize the collateral assets. The right to repossess collateral gives lenders an essential threat to ensure that borrowers do not behave opportunistically since such behavior makes borrower's default and repossession of collateral assets more likely. This raises the cost of such value-reducing deviant behavior and, reduces the incentives to take such actions. Given the greater verifiability of cash flows in Project Finance, such opportunistic behavior is more likely in Corporate Finance than in Project Finance. This motivates us to examine default in Corporate Finance and abstract from the same in Project Finance. Furthermore, since project companies invest in single, discrete assets, trade-offs between inefficient continuation versus inefficient liquidation that arise from the presence of future growth opportunities and characterize the process of corporate bankruptcy (see Gertner and Scharfstein, 1991) are absent in Project Finance. Thus, ex-post inefficiencies created in bankruptcy and the rights provided to creditors play a smaller role in Project Finance than in Corporate Finance. The above assumption, though made extreme to simplify our analysis, reflects these differences.

Once the borrower defaults, there are two possible courses of action: either the assets comprising the project are sold and the liquidation value is used to repay the creditors or else the lender does not liquidate the assets and the firm is continued as a going concern. However, if the bankruptcy code imposes an automatic stay on the firm's assets upon reorganization, the lender's threat to liquidate the collateral assets is not credible.

To capture these rights provided to creditors in bankruptcy, we assume that the lender can seize the collateral assets with probability θ . If the creditor is able to seize the collateral assets, then he may decide to liquidate these assets. Given the non-recourse nature of Project Finance vis-à-vis the full-recourse financing in Corporate Finance, we model the value from liquidation as L in Project Finance and γL in Corporate Finance. A lower value for the liquidation value L indicates that the deadweight costs involved in bankruptcy are higher.

To focus on the inefficiencies created by the bankruptcy process, we assume that liquidation is ex-post inefficient.

ASSUMPTION 3: The date 2 cash flows are greater than the value from liquidation. In other words,

$$y_2 > L \tag{1}$$

Renegotiation between the lender and the borrower may be able to eliminate some of the above inefficiency. We follow Acharya, Sundaram and John (2004) and Acharya and Subramanian (2007) in not modeling some of these inefficiencies. The result in Proposition 5 remains valid as long as there are frictions or costs that result in some remaining inefficiency. Dewatripont and Tirole

(1994) provide a theoretical model of such frictions. Gertner and Scharfstein (1991) examine how coordination problems among public creditors result in inefficiencies in the workout process. The existence of such inefficiencies is consistent with the empirical findings in Andrade and Kaplan (1998).

In our setup, lenders need to liquidate their collateral assets to recoup their investment only when the expropriation by insiders is above a certain threshold. If the agency costs from expropriation is not very high, then liquidation is not necessary. In this case, neither the rights of creditors nor the deadweight costs of bankruptcy have any role to play since the first-best is achieved ex-post. As Andrade and Kaplan (1998) point out, there are considerable deadweight costs associated with bankruptcy. Further, the law and finance literature (referenced earlier) has highlighted the role of creditor rights in a country's financial organization and economic growth. Therefore, we make the assumption that the level of expropriation is such that the rights of creditors and the inefficiencies in bankruptcy have a role to play in deciding the choice between Project Finance and Corporate Finance.

ASSUMPTION 4:

$$\lambda < \frac{L}{y_2} \quad (2)$$

4.5 Contracts

Following Hart and Moore (1994) and Hart (1995), we assume that the liquidate/ continue decision at date 1 cannot be contracted at date 0 since the decision is difficult to describe precisely and therefore difficult to code into a contract. Furthermore, the cash flows in Corporate Finance are fully observable but only partially verifiable. Thus, it is not possible in Corporate Finance to contractually mitigate the problem of expropriation by the insiders. This is a natural assumption given the significant agency costs, and the weak protection provided to investors against managerial self-dealing in most countries (as highlighted by the law and finance literature).

Since the sponsor/ equityholder is financially constrained at date 0, he cannot make a compensating transfer to the creditor at date 0. Therefore, the Coase theorem (Coase (1960)) does not hold at date 0. Furthermore, we assume the sponsor/ equityholder's reservation wage to be zero. Therefore, the sponsor/ equityholder's Individual Rationality constraint is always slack. Therefore, it turns out that the creditor's Individual Rationality constraint decides the choice between Corporate Finance and Project Finance.

4.6 Further Assumptions

We assume that the project has a positive NPV even after netting the fixed costs C associated with Project Finance, such as setting up the independent Project company, negotiating and entering into the large menu of contracts that are a characteristic of Project Finance, etc.

ASSUMPTION 5:

$$y_1 + y_2 > K + C \quad (3)$$

Given the concavity of the lenders' payoff, he recuperates his investment in both Project Finance and Corporate Finance if the proportion of cashflows expropriated by the insiders is too low (i.e. λ is too high). To ensure that the creditor is not indifferent to the choice of Project Finance versus Corporate Finance, we assume

ASSUMPTION 6:

$$\lambda \leq \frac{K}{\gamma(y_1 + y_2)} \quad (4)$$

4.7 Debtholder Payoffs

4.7.1 Project Finance

First consider the case when the creditor cannot seize the collateral assets. In this case, the creditor's payoff is

$$\min [y_1 + y_2 - C, K] = K \quad \because y_1 + y_2 > K + C \text{ using (3)} \quad (5)$$

since $\lambda = 1$ in Project Finance.

Now consider the case when the creditor can seize the collateral assets and threaten to liquidate them. In the case of Project Finance, the verifiable cash flow accruing to the creditor is $y_2 > L$. Therefore, in Project Finance, the creditor does not liquidate inefficiently and the first-best is implemented ex-post.⁸ Thus, the creditor's payoff using Project Finance is again $\min (y_1 + y_2 - C, K) = K$ using (3). Therefore, the debtholders' payoff in Project Finance is

$$D_{PF} = K \quad (6)$$

4.7.2 Corporate Finance

First, consider the case when the creditor cannot seize the collateral assets. In this case, the creditor's payoff is

$$\min [\lambda(\gamma y_1 + \gamma y_2), K] = K \quad (7)$$

using (4).

Now consider the case when the creditor can seize the collateral assets and threaten to liquidate them. The creditor gets $\min \{\lambda(\gamma y_1 + \gamma y_2), K\}$ if he does not liquidate while he gets $\min [\lambda\gamma y_1 + \gamma L, K]$ if he liquidates. Since $\lambda < \frac{L}{y_2}$ from (2), the creditor prefers liquidating to continuing the project. Therefore, the creditor's total payoff is

$$\min [\lambda\gamma y_1 + \gamma L, K] \quad (8)$$

The creditor's expected payoff is

$$D_{CF} = \theta \min [\lambda\gamma y_1 + \gamma L, K] + (1 - \theta) \lambda(\gamma y_1 + \gamma y_2) \quad (9)$$

⁸Since, in our model, the first-best is implemented ex-post in Project Finance, there is no role for renegotiation in the same.

4.8 Model Predictions

PROPOSITION 1: In countries where the sponsor/ equityholder can divert project cashflows more easily ($\lambda \downarrow$), Project Finance is more likely than Corporate Finance. Formally,

$$\frac{\partial D_{PF}}{\partial \lambda} < \frac{\partial D_{CF}}{\partial \lambda} \quad (\text{P1})$$

Given the cashflow separation that is accomplished through cashflow waterfall contracts, cash flows are completely verifiable in Project Finance. Therefore, as the sponsor/ equityholder finds it easier to divert project cashflows, Project Finance becomes more likely.

PROPOSITION 2: In countries where the sponsor/ equityholder can divert project cashflows more easily ($\lambda \downarrow$), Project Finance is *relatively* more likely than Corporate Finance in industries where Free Cash Flow is higher ($\gamma \uparrow$). Formally,

$$\frac{\partial^2 D_{PF}}{\partial \lambda \partial \gamma} < \frac{\partial^2 D_{CF}}{\partial \lambda \partial \gamma} \quad (\text{P2})$$

A higher free flow accentuates the problem of diversion of project cash flows by the sponsor/ equityholder. The result follows from the fact that Project Finance limits diversion of project cash flows by enhancing their verifiability, and such verifiability matters more in industries where the agency costs of free cash flow is higher.

PROPOSITION 3: Stronger creditor rights in a country ($\theta \uparrow$) mitigates the effect of ease of diverting project cashflows (λ) on the choice of Project Finance versus Corporate Finance. Formally,

$$\frac{\partial^2 D_{PF}}{\partial \lambda \partial \theta} > \frac{\partial^2 D_{CF}}{\partial \lambda \partial \theta} \quad (\text{P3})$$

When the rights provided to creditors are stronger, they are more likely to get possession of the assets that are placed as collateral. They can then liquidate these assets and pay themselves. Therefore, stronger creditor rights mitigate the effect of the sponsor/ equityholder's ability to divert project cash flows. It follows that stronger creditor rights mitigate the effect of the sponsor's ability to divert project cash flows on Project Finance.

PROPOSITION 4: Stronger creditor rights lead to more Corporate Finance than Project Finance. Formally,

$$\frac{\partial D_{PF}}{\partial \theta} < \frac{\partial D_{CF}}{\partial \theta} \quad (\text{P4})$$

Stronger creditor rights make it more likely for the creditor to recoup his investment by liquidating the collateral and therefore increase the likelihood of Corporate Finance vis-a-vis Project Finance.

PROPOSITION 5: Project Finance is more likely than Corporate Finance in countries where the deadweight costs of bankruptcy are higher ($L \downarrow$). Formally,

$$\frac{\partial D_{PF}}{\partial L} > \frac{\partial D_{CF}}{\partial L} \quad (\text{P5})$$

Larger deadweight costs of bankruptcy reduce the value available to the creditor on liquidation of the firm. Given the verifiability of cashflows in Project Finance, there is a lower likelihood of the creditor needing to liquidate inefficiently ex-post. Therefore, larger deadweight costs of bankruptcy increase the likelihood of Project Finance vis-a-vis Corporate Finance.

The Proofs for all the Propositions are provided in the Appendix A.

5 Empirical Analysis

We test the above predictions using data on Project Finance and Corporate Finance from Dealscan.

5.1 Data and Sample

Our sample of loans is obtained from Loan Pricing corporation’s *Dealscan* database. *Dealscan* appears to be a good data source for our empirical analysis due to the following reasons. First, *Dealscan*’s coverage of international loans is comprehensive and accurate relative to other alternative sources. Qian and Strahan (2006) point out that using *Dealscan* information from the mid 1990s provides a comprehensive source of international loans.⁹

Second, *Dealscan*’s coverage of project loans appears well suited for our purpose. *Dealscan* describes Project Finance as a “non-recourse financing provided to an independently set up project company.” This definition closely matches the characteristics of Project Finance that we model.

To restrict our analysis to those Corporate Finance investments where Project Finance is a viable option, we include loans to firms under the categories of equipment purchases, capital expenditures, and credit lines for funding acquisition of assets or companies.¹⁰ This selection of categories ensures a meaningful like-for-like comparison between Project Finance and Corporate Finance.

We begin our sample with loans that originated in 1993 and include loans originated till 2003.¹¹ *Dealscan* provides information on loans at facility level where a loan deal may contain multiple facilities such as a credit revolver, a term loan, a line of credit, etc. Given our objective of comparing investments made at the corporate level versus those made at the project company level, our unit of

⁹Carey and Nini (2004) compare the Dealogic’s *Loanware* database to the *Dealscan* database. They find that *Dealscan* focuses primarily on the U.S. loan market until the late 1990s, whereas entries in *Loanware* are largely from non-U.S. markets until the early 1990s. They compare *Loanware* and *Dealscan*’s coverage of loans by drawing small random samples of loans from each and searching for match loans. They find that, while *Dealscan* has no or incomplete information for about 80 percent of European-market loans found in *Loanware* from 1992 to 1997, the overlap between the two data sources is about 90 percent from 1998 onwards. They also note: (1) *Loanware* appears more likely to make errors in recording lender identities and their roles; (2) *Loanware*’s coverage of US loans is not as comprehensive as that of *Dealscan*.

To account for the fact that the Dealscan’s international loan data may be less than comprehensive for the period before 1998, we verify whether our results hold for the limited 1998-2003 period. We find that our results are as strong over this period too.

¹⁰We thus exclude loans under the following categories: “corporate purpose”, “CP backup”, “credit enhancement”, “debt repayment”, “debtor in possession”, “ESOP”, “exit financing”, “lease financing”, “stock buyback”, “recapitalization”, “trade finance”, and “working capital” loans. Given the nature of these loans, the choice to undertake project finance does not exist with these loans.

¹¹We end our sample at 2003 since many of our country level explanatory variables do not extend beyond this year.

observation is a deal.¹² Our initial sample contains 6,257 deals from 110 countries. We then merge the country level and industry level data to generate our final sample. After adding the country level information, we lose 212 deals from 70 countries. The final sample contains 6,045 deals from 40 countries. This collection of countries is similar to that in Qian and Strahan (2006). We aggregate these deals at the 4-digit SIC level for our industry level analysis. For our firm level analysis, we have a much smaller sample comprising between about 1000 deals for twenty-two countries.

5.2 Descriptive Statistics

The most salient finding when examining the summary statistics is that *Project Finance is much less likely in the US than in the rest of the world, and in English and Scandinavian legal origin countries than in French or German legal origins*. Panel A of Table 1 shows that 53% of the non-US loans in our sample are project financed while this percentage for the loans in the US is only 19%. Similarly, Panel B shows that the likelihoods are 25.9% and 35.7% for the English and Scandinavian legal origin countries, and 63.9% and 42.9% for the French and German legal origin countries. This finding that the likelihood of Project Finance is much lower in countries with the most developed legal systems and institutions is the heart of our analysis.

5.3 Explanatory Variables

Our primary explanatory variables are constructed at the country and industry level. The variables are explained in detail below. Appendix B presents a summary of the explanatory variables used in this study and their sources.

5.3.1 Legal and Institutional Variables at the Country Level

Our first set of explanatory variables are constructed at the country level.

First, we employ the index of private control of self-dealing constructed by Djankov, LaPorta, Lopez-de-Silanes and Shleifer (2006) (DLLS) to capture differences across countries in the protection provided to investors against managerial self-dealing. This index measures the hurdles that the controlling shareholder in a firm must jump in order to indulge in a self-dealing transaction. DLLS construct this measure by describing a hypothetical self-dealing transaction between two firms controlled by the same person, which can in principle be used to improperly enrich this person. They then ask attorneys from *Lex Mundi* law firms in 102 countries to describe in detail how each country's legal system regulates this transaction. In the spirit of our model where the *ex-ante* financing outcomes is affected by the *ex-post* likelihood of a sponsor/manager being caught self-dealing (also see Shleifer and Wolfenzon, 2002), we focus on DLLS's measure of *ex-post private*

¹²We carefully eyeballed the data and found that multiple facilities in a deal can be identified by (a) the borrower name and the deal active date are identical; (b) the primary purpose is the same across the facilities, and (c) the tranche amounts on each of the facilities sum up equal to the deal amount. Hence, we used these three criteria to aggregate the data from the facility to the deal level. Performing analysis at the facility level would introduce spurious correlation since facilities in a deal are expected to be very highly correlated with each other.

control of self-dealing. This measure captures the extent of ex-post disclosure that the controlling shareholder in a firm must provide and the ease of proving wrongdoing once investors detect managerial self-dealing; a higher value indicates more hurdles. Therefore, the ex-post private control of self-dealing proxies λ in the model.

Second, we use the creditor rights index constructed in Djankov et al. (2005) to proxy the rights that creditors possess. A higher value for the DMS creditor rights index indicates stronger rights to creditors. The DMS creditor rights index measures four powers of secured lenders in bankruptcy. First, whether there are restrictions, such as creditor consent, when a debtor files for reorganization. Second, whether secured creditors are able to seize their collateral after the petition for reorganization is approved, in other words, whether there is no “automatic stay” or “asset freeze” imposed by the court. Third, whether secured creditors are paid first out of the proceeds of liquidating a bankrupt firm. Finally, whether an administrator rather than the management, is responsible for running the business during the reorganization. A value of one is added to the index when a country’s law and regulation provide each of these powers to secured lenders. The DMS creditor rights index aggregates the scores on these components; a value of zero indicates poor creditor rights while four indicates strong creditor rights. Thus, the DMS creditor rights index proxies θ in the model.

Finally, Djankov, Hart, McLiesh and Shleifer (2006) (hereafter DHMS) construct a measure of the extent of deadweight costs related to bankruptcy for 88 countries. They construct this measure by describing a hypothetical bankrupt firm and then asking attorneys from *Lex Mundi* law firms in 88 countries to describe in detail how debt enforcement for this hypothetical firm would proceed in each of these countries. They calculate a measure of efficiency, defined as the present value of the terminal value of the firm after bankruptcy costs. Therefore, a higher value for their measure in a particular country indicates that the deadweight costs associated with bankruptcy are lower in this country. Thus, the DHMS measure of bankruptcy efficiency proxies the liquidation value L in our model. However, it has a negative correlation since the liquidation value is lower if bankruptcy is more inefficient.

We also include other country-level institutional variables, such as information sharing mechanisms capturing either a public registry or a private bureau operates in the borrower’s country (Djankov et al., 2005), survey-based measures of legal enforcement costs and a measure for the level of contract enforceability as in Djankov et al. (2003), the legal origin and accounting standards variables from LaPorta et al. (1998) and the real GDP per capita from the Center for International Comparisons at the University of Pennsylvania.

5.3.2 Industry Level Variables

Our second set of explanatory variables are constructed at the industry level (4-digit SIC codes). Since firm level information is available (from Worldscope) for only 10% of our sample, we are concerned about results being specific to the sample of firms that we would get in the firm level sample. The most comprehensive disaggregated data that we have is at the 4-digit SIC code level

and we therefore construct our industry level variables at this level.

Firms in industries which produce significant free cash flows may waste such cash flows through inefficient investment. Free cash flows could also be plainly stolen through managerial self-dealing transactions (Jensen and Meckling, 1976; Jensen, 1986; and Blanchard et al., 1994). In such industries, the agency costs of free cash flows are expected to be substantial. We normalize the free cash flow measure by the book value of assets and calculate the median Free Cash Flow to Assets as the measure for a specific 4-digit SIC industry. Opler and Titman (1993) and Lang, Stulz, and Walking (1999) also use the ratio of Free Cash Flow to Assets to proxy agency costs of free cash flows. The ratio of Free Cash Flow to Assets proxies for γ in our model.

We measure the extent of tangible assets used by firms as the tangible assets normalized by the book value of assets. We also measure the TobinsQ as the ratio of the Market Value of Assets to their Book Value. The Market Value of Assets is constructed as the Total book value of assets minus the book value of common equity minus the book value of deferred taxes plus the market value of equity.

6 Empirical Results

In this section, we present the results of our regression analyses. First, we investigate the effect of agency costs of free cash flows on firms' financing choice between Project Finance and Corporate Finance. Second, we consider the effect of creditor rights and efficiency of bankruptcy procedures on firms' financing choice. Finally, we present results from robustness tests.

Figures 1 and 2 show the univariate results that Project Finance is less likely when the hurdles to managerial self-dealing are higher, and when the bankruptcy procedure in a country is more efficient.

6.1 Effects of Agency Costs of Free Cash Flows

6.1.1 Basic Test

To test Proposition P2, we perform difference-in-difference tests using the model described below:

$$y_{ict} = \beta_0 + \beta_1 \cdot \lambda_c + \beta_2 \cdot \gamma_{ict} + \beta_3 \cdot (\lambda_c * \gamma_{ict}) + \beta X + \varepsilon_{ict}$$

where y is number of Project Finance deals divided by the number of Project Finance, Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeover Finance deals in 4-digit SIC industry (i), country (c), and year (t). The principal coefficient of interest is β_3 since this captures the difference-in-difference that we are trying to measure. Proposition P2 suggests that $\beta_3 < 0$. The coefficient of ex-post private control of self-dealing β_1 also is a coefficient which we are interested in. Proposition P1 suggests that $\beta_1 < 0$.

As described in Section 5.3, our proxy for λ_c is DLLS measure of ex-post private control of self-dealing while our proxy for γ_{ict} is the ratio of Free Cash Flow to Assets for each 4-digit SIC

industry in a country in a year.

Table 2 shows the results of our tests. Across specifications (1) - (9), we estimate the standard errors by accounting for clustering of the residuals by the country of the borrower. In specification (10), we cluster the standard errors by industry since in this specification we employ country fixed effects.¹³

To examine the unconditional effect of Free Cash Flow/ Assets at the industry level on the choice of Project Finance, we test for the effect of Free Cash Flow/ Assets without its interaction with the measure for ex-post private control of self-dealing. Column (1) shows the results of this specification. We find that the coefficient of ex-post private control of self-dealing is strongly negative but the coefficient of the ratio of Free Cash Flow to Assets is not statistically significant. In Column (2), we add the interaction of Free Cash Flow/ Assets with the measure for ex-post private control of self-dealing. We find that the coefficient of ex-post private control of self-dealing stays strongly negative and the coefficient of its interaction with Free Cash Flow/ Assets is strongly negative too. We also find in Column (2) that the coefficient of Free Cash Flow/ Assets becomes positive and statistically significant. Thus, we infer from Columns (1) and (2) that Project Finance is chosen more in countries where the protection provided against managerial self-dealing is weaker. However, industries where the Free Cash Flow/ Assets variable is higher do not necessarily choose to more Project Finance than Corporate Finance. Instead, industries where the Free Cash Flow/ Assets variable is higher choose Project Finance *disproportionately* more in countries where the ex-post private control of self-dealing is weaker. Since the unconditional effect of Free Cash Flow/ Assets is non-existent but its interaction with ex-post private control of self-dealing is negative and significant, this suggests that Free Cash Flow/ Assets matters mainly when protection against self-dealing is weak.

To examine whether the results are driven only by less developed countries where protection against managerial self-dealing is expected to be weaker, we test this basic specification for only the sample of developed countries in Column (3). Similarly, in Column (4) we exclude those industry years where Project Financing was employed for Infrastructure projects since the option to use Corporate Finance may not exist in these cases. However, our basic conclusions from Columns (1) and (2) remain altered.

In Column (5), we include the TobinsQ and the ratio of Tangible Assets / Total Assets for the industry (i) in country (c) in year (t). Consistent with our theory, we find that Project Finance is employed in industries where the investment opportunities are limited as reflected in the negative coefficient on the TobinsQ and in industries with substantial tangible assets. Adding these industry level variables, however, does not alter our basic results. Column (6) controls for the effect of creditor rights, the efficiency of the bankruptcy process, and dummies for the French, German and

¹³We also estimated the standard errors separately in two other ways: (a) by clustering the residuals by the 4-digit SIC codes instead of clustering by the country of the borrower, and (b) by clustering the residuals by the loan year. Except in the specifications where we include country fixed effects, we find that the standard errors are largest when they are clustered by country. When country fixed effects are included in the specifications, the standard errors are largest when the residuals are clustered by the 4-digit SIC codes. In all the Tables, we report the t-statistics calculated using the most conservative estimate of the standard errors.

Scandinavian legal origins to see if these variables substitute for our primary explanatory variables. First, we note that our results on our primary variables still hold strong. Second, we note in Column (6) that the French and German legal origins have no effect on Project Finance while countries with Scandinavian legal origin are less likely to employ Project Finance. This result is in sharp contrast to our univariate results in Panel B of Table 1 where we found that French legal origin countries employ Project Finance substantially more likely than English legal origin countries. These results, along with all our other results where the legal origin does not matter, suggest that when we control for the effect of legal protection against managerial self-dealing, the effect of legal origin on the choice of Project Finance disappears. Since the law and finance literature (LaPorta, Lopez-de-Silanes, Shleifer and Vishny, 1997; LaPorta, Lopez-de-Silanes, Shleifer and Vishny, 1998; Djankov, LaPorta, Lopez-de-Silanes and Shleifer, 2003; Djankov et al., 2005; Djankov, LaPorta, Lopez-de-Silanes and Shleifer, 2006; and Djankov, Hart, McLiesh and Shleifer, 2006) has highlighted that investor protection is generally weaker in French legal origin countries than in English legal origin countries, this result suggests that legal origin accentuates or mitigates agency conflicts through its effect on protection provided to investors against managerial self-dealing and that Project Finance offers parties to contractually mitigate these agency conflicts. Third, as expected in Column (6), we find that firms are more likely to use Project Finance in countries with less efficient bankruptcy enforcement. The coefficient of Creditor Rights is positive in this specification – an effect that we examine in greater detail later.

In Column (7), we add other country level control variables such as logarithm of GDP per capita, the level of private credit to GDP, a measure of rule of law, the level of corruption, accounting standards (LaPorta et al., 1998), an index of check-based legal formalism (Djankov et al., 2003), a proxy for contract enforceability (Djankov et al., 2003), and a dummy for information sharing (Djankov et al., 2005). In Column (8), we include the industry level averages for the various characteristics of the deal such as the number of lenders, the average loan spread over LIBOR, log of the deal amount, the maturity of the loan and whether the loan was rated or not. Our results on our main variables of interest, however, are not tainted by either of these controls. Columns (9) and (10) include year and industry fixed effects respectively. In Columns (9) and (10), the coefficient of ex-post private control of self-dealing is not statistically significant though it continues to be negative as expected while the coefficient of the interaction variable continues to be strongly negative. We then control for unobserved heterogeneity at the level of each industry in a country by including random effects at the Country * 4-digit SIC industry level. Column (11) shows the results of this specification: we find that the coefficients of variables of interest are of the desired signs and statistically significant.

6.1.2 Test using US industry measures as Instrumental Variable

A potential source of bias in our cross-country results stems from the nature of firms for which information is likely to be found in Dealscan. Qian and Strahan (2006) acknowledge that *Dealscan* is likely to cover loans from large domestic and foreign banks to large borrowers. Since Project

Finance entails significant transaction costs, large borrowers are more likely to undertake Project Finance. Though we normalize the Free Cash Flow measure to account for firm size, it is still possible that large firms have a higher ratio of Free Cash Flow / Assets, particularly in countries where protection provided against managerial self-dealing is weak. This potential feature, combined with the higher propensity for large firms to undertake Project Finance, could mechanically deliver the difference-in-difference result that we obtained above.

To test whether our results above may be affected by such biases, or omitted variables, or other potential sources of endogeneity at the industry level, we follow Rajan and Zingales (1998) and employ the median industry measure of Free Cash Flow/ Assets for US firms as an instrument for our cross-country measure above. The US industry measure serves as a useful instrument for the following three reasons.

First, the profitability of an industry and the resultant level of free cash flow is partly a function of the technological aspects of the industry as well as the stage that the industry is in its life cycle. Therefore, we expect the industry level measures computed using the US firms to be correlated with the industry level measures for each country. Infact, we find that the correlation in the Free Cash Flow/ Assets measure among the countries in our sample, both in the cross-section and the time-series, is quite high. The correlation is 0.73 over all industries and all years. The minimum correlation across time for an industry is 0.59 while the maximum is 0.94; similarly, the minimum correlation across industries for a particular year is 0.65 while the maximum is 0.88.

Second, as Carey and Nini (2004) acknowledge, Dealscan’s coverage of US borrowers is comprehensive. Therefore, the US industry measure of Free Cash Flow/ Assets is unlikely to have biases of the kind that are likely in the cross-country measure.

Third, as we can see in Panel A of Table 1, the usage of Project Finance is 19% in the US while this same percentage is 53% for the rest of the world, which indicates that the industry level measures for the US are not expected to be systematically correlated with the choice of Project Finance across the world.

Therefore, the US industry level measure satisfies both the requirements of an instrumental variable, i.e., correlation with the potentially endogenous explanatory variable and lack of correlation with the dependent variable. Furthermore, it is unlikely to suffer from sample selection biases.

Table 3 shows the results of these instrumental variable regressions. Across the various specifications, we find that the coefficients of ex-post private control of self-dealing and its interaction with Free Cash Flow/ Assets is negative.

Thus, across Tables 2 and 3, we find strong evidence supporting the predictions in Proposition P1 and P2 that Project Finance mitigates the agency costs of free cash flows found in Corporate Finance.

6.2 Effect of Creditor Rights

Next we test Proposition P3 on the effect of creditor rights on the choice of Project Finance versus Corporate Finance. We, therefore, include time varying creditor rights (Djankov et al., 2005) in

the multiple regressions. We exploit the cross-sectional variation in the level of creditor rights as well as the time-series of exogenous changes in the level of creditor rights in different countries in our sample.

6.2.1 Cross Sectional Tests

To test Proposition P3, we perform tests using the model described below:

$$y_{ict} = \beta_0 + \beta_1 \cdot \theta_c + \beta_2 \cdot (\lambda_c * \theta_c) + \beta X + \varepsilon_{ict}$$

where y is number of Project Finance deals divided by the number of Project Finance, Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeover Finance deals in 4-digit SIC industry (i), country (c) and year (t). The principal coefficient of interest is β_2 since this captures the interaction of creditor rights with ex-post private control of self-dealing. The coefficient of creditor rights β_1 also is a coefficient which we are interested in since it corresponds to the prediction in Proposition P4.

Table 4 shows the results on the aggregate level of Creditor rights while Table 5 shows the results on the components of Creditor rights. Column (1) in Table 4 shows the specification without the interaction of Creditor rights with the ex-post Control of Self-dealing. In this specification, the coefficient of Creditor rights is positive and statistically significant. However, after we add the interaction of Creditor rights with the ex-post Control of Self-dealing, along with their levels, we find that the coefficient of Creditor rights becomes negative but it is not statistically significant. Thus, the unconditional effect of an increase in creditor rights is to lead to more Project Finance. However, once the interaction term is added, the unconditional effect of creditor rights is non-existent with the interaction term absorbing all the explanatory power of creditor rights. This lends credence to our claim that the effect of Creditor rights operates through the ability of managers to self-deal. We also note in Column (2) that the coefficient of ex-post private control of self-dealing stays negative while its interaction with Creditor rights is positive. This provides support for the prediction in Propositions P3 that stronger creditor rights mitigate the effect of managerial self-dealing on Project Finance.

Columns (3) and (4) test this basic specification for the sample of developed countries and by excluding Project Finance for Infrastructure projects and find that our conclusion in Column (2) is unaltered. Column (5) controls for the effect of Free Cash Flow to Assets, its interaction with ex-post private control of self-dealing, and the efficiency of the bankruptcy process to see if these variables drive away the effect of creditor rights. We first note that our results on our primary variables still hold strong. Second, the signs on these control variables are as expected. In Column (6), we include the TobinsQ and the ratio of Tangible Assets / Total Assets and find that the coefficients of our variables of interest are unaltered while the coefficients on the control variables are of the desired sign. In Column (7), we include the ratio of long-term debt to book value of assets and the ratio of interest expense to net income to examine if these measures of leverage substitute

for our proxy for the efficiency of the bankruptcy process. While the results on our variables of interest are unaltered, the coefficients on the measures of leverage are positive which indicates that leverage is higher in industries which undertake Project Finance. Column (8) controls for the legal origin of the country and finds that our basic results are unaltered. We also note in Column (8) that the Scandinavian and German legal origins have no effect on Project Finance while countries with French legal origin are more likely to employ Project Finance. In column (9), we control for unobserved heterogeneity at the year level and find that our basic results are unaltered. In Column (10), we include random effects at the country level and find the results to be unaltered.¹⁴

The economic effect of creditor rights is quite significant too. For example, let us consider the specification employed in Column (8) which includes year fixed effects and legal origin dummies. If creditor rights score is zero, the coefficient of ex-post private control of self-dealing is -0.6, while this coefficient becomes -0.42 if creditor rights score increases by one point. Thus, a one point increase in the strength of creditor rights reduces the marginal effect of ex-post private control of self-dealing by about 32%.

Having found evidence consistent with our prediction on the aggregate level of creditor rights, we now turn to the 4 individual components of the creditor rights, and examine what components drive our results. The four components of the creditor rights are from LaPorta et al. (1998), and they are “no automatic stay on secured assets”, “secured creditors first paid”, “restrictions for going into reorganization” and “management does not stay in reorganization”. Table 5 reports the results, and the eight columns in this table parallel those in Table 3. The only difference is that we use the component “no automatic stay on secured assets” and its interaction with ex-post private control of self-dealing as our primary explanatory variables instead of the aggregate Creditors rights index and its interaction with ex-post private control of self-dealing. We employ only this component since we find in Column (1) of Table 5 that none of the other components matter. We find that all the action in the aggregate creditor rights index comes from the “no automatic stay on secured assets” component since the results on this component mirror the result on the aggregate index.

6.2.2 Time Series Tests exploiting Exogenous Changes in Creditor Rights

We use the exogenous changes in creditor rights in various countries to perform a third-difference test. The model we test is described below:

$$y_{ict} = \beta_0 + [\beta_1 + \beta_2\delta_{ct} + \beta_3\delta_c + \beta_4\delta_t] * \lambda_c + \beta_5 \cdot \delta_{ct} + \beta X + \varepsilon_{ict} \quad (10)$$

where y is the number of Project Finance deals divided by the number of Project Finance, Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeover Finance deals in 4-digit SIC industry i , country c and year t . δ_{ct} is an indicator variable which equals one for country c and years $t \leq m$ if a creditor rights reform initiated in year m decreased the rights provided to

¹⁴Since fixed effects at the country level absorbs all the variation in our country level measures for Creditor Rights and Ex-post private control of self-dealing, we employ random effects instead.

creditors.¹⁵

This model is equivalent to

$$\frac{\partial y_{ict}}{\partial \lambda_c} = \beta_1 + \beta_2 \delta_{ct} + \beta_3 \delta_c + \beta_4 \delta_t \quad (11)$$

$$\Leftrightarrow \beta_2 = \left[\frac{\partial y_{ict}}{\partial \lambda_c} \Big|_{after} - \frac{\partial y_{ict}}{\partial \lambda_c} \Big|_{before} \right]_{treated} - \left[\frac{\partial y_{ict}}{\partial \lambda_c} \Big|_{after} - \frac{\partial y_{ict}}{\partial \lambda_c} \Big|_{before} \right]_{control} \quad (12)$$

Therefore, the coefficient β_2 captures the triple difference that we are looking to measure.

Table 6 shows the countries that underwent a change in creditor rights during our sample period, and the number of Corporate Finance and Project Finance deals before and after the change in the creditor rights. Interestingly, all the countries that underwent a change in creditor rights change decreased the level of creditor rights. Therefore, for the “treatment” countries, we expect an increase in the marginal effect of managerial self-dealing in encouraging Project Finance when compared to the “control” sample of countries that did not undertake a change in creditor rights.

Table 7 presents the results of the time series test described above. We adapt Bertrand and Mulainathan (2003b) to estimate the difference-in-difference in our interaction variable. We include dummies for the treatment period and the treatment country, and interact these dummies with ex-post private control of self-dealing. We also include industry dummies to control for unobserved heterogeneity at the industry level. Across all our specifications, we find that the coefficient of Creditor Rights Change is negative and statistically significant while the coefficient of the interaction of the Creditor Rights Change with the ex-post private control of self-dealing is strongly positive. Thus, in line with Proposition P4, we find that a decrease in the creditor rights leads firms in countries with stronger creditor rights to choose more Corporate Finance. Similarly, consistent with Proposition P3, we find that the decrease in creditor rights increases the marginal effect of ex-post private control of self-dealing.

6.3 Effect of Bankruptcy costs

Finally, we test Proposition P5 for the effect of the efficiency of bankruptcy procedure on Project Finance. We employ the following empirical specification:

$$y_{ict} = \beta_0 + \beta_1 \cdot L_c + \beta X + \varepsilon_{ict}$$

where y is number of Project Finance deals divided by the number of Project Finance, Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeover Finance deals in 4-digit SIC industry (i), country (c) and year (t). The principal coefficient of interest is β_1 since it corresponds to the prediction in Proposition P5.

We employ the bankruptcy enforcement efficiency index (DHMS, 2006) in our multiple regressions. The efficiency index varies from 0 to 1, where a score of 1 indicates no deadweight losses.

¹⁵Our sample of creditors right changes over the period 1993-2003 includes only decreases in creditors rights.

We employ several specifications in Table 8. Across specifications (1) - (9), we cluster the standard errors by the country of the borrower to account for correlation in the OLS residuals. In specification (10), we cluster the standard errors by industry since in this specification we employ country fixed effects.

We note that the coefficient on the efficiency of bankruptcy procedure variable is negative and significant, supporting our prediction that less efficient bankruptcy procedures are associated with more project financing. Similar to Table 2, we now revisit this result for other sub-samples: the developed countries sub-sample (Column (2)) and a sub-sample eliminating infrastructure deals (Column (3)). Our results stay the same for these sub-samples. In each of these sub-samples, we also include the Industry median measure for the level of tangible assets and find that Project Finance is more likely in industries where tangible assets are higher. However, our coefficient of interest remains negative in each case.

We next add the legal origin variables in Column (4) and the battery of controls for country level characteristics in Column (5). Our inferences regarding the main variables are not affected by the inclusion of these controls. In Column (6), we add our other explanatory variables, i.e., ex-post private control of self-dealing, its interaction with free cash flows/ assets, the level of Free Cash Flow/ Assets, creditor rights and the interaction of creditor rights with the measure of ex-post private control of self-dealing. We include these variables to test if any of these variables are substitutes for our proxies for the efficiency of the bankruptcy procedure. We find that the coefficient on the Efficiency of Bankruptcy procedure stays negative and statistically significant in Column (6). In Column (7), we include the ratio of long-term debt to book value of assets and the ratio of interest expense to net income to examine if these measures of leverage drive away the effect the efficiency of the bankruptcy process. We find that this does not change our results.

Finally, in columns (8), (9) and (10), we add fixed effects at the year, industry and country level and find that the coefficient of the efficiency of bankruptcy procedure remains negative and statistically significant.

The economic magnitude of the effect of bankruptcy costs is significant. To infer this economic effect, take Column (10). Since the standard deviation of the efficiency score is 0.18, a one standard deviation increase in the efficiency of the bankruptcy process increases the likelihood of Project Finance in a country by 16.4%, which represents more than a 50% increase over the sample average of 25%.

6.4 Firm Level Analysis

Finally, we examine if our results are generalizable to the firm level. Matching *Dealscan* borrower information with the *WorldScope* database dramatically reduces the sample to only around 800 observations depending on data availability. While the firm level data enables us to examine the generality of our results at the disaggregated level of the firm, it does have a potential disadvantage. This reduced sample presents issues of sample selection bias since it is quite likely that large firms are more dominant in the *Worldscope* data. The bias could result because large firms are more likely

to choose Project Finance given its large transaction costs. If Free Cash Flow to Assets is relatively large in large firms, particularly in countries where weak protection is provided against managerial self-dealing, then this bias would work in favor of us finding the desired result. While we try to control for this bias by including a proxy for firm size, this bias may still remain. Nevertheless, we present the firm level results as a complement to our industry level analysis.

For the firm level analysis, we add variables that we are unable to control at the industry level analysis. First, we control for the scale of the project compared to that of the firm, since relatively larger projects may be project financed to avoid potential bankruptcy costs for the sponsor. We define this variable as the total amount lent to the project divided by the market value of the sponsor's equity. Second, we include the logarithm of the market value of the firm to proxy for firm size since larger firms may find it easier to bear the large transaction costs associated with Project Finance. Finally, we also control for project risk by including the S&P debt rating for the borrower, whenever available, and a dummy to capture those deals that are not rated.

Table 9 presents the results at firm level. The dependent variable for all the regressions in this table is a binary variable that equals 1 if the deal corresponds to Project Finance, and 0 if the deal corresponds to either of Acquisition Line, Equipment Purchase, Capital Expenditures or Takeover Finance. We estimate the regressions using logit model. As in the industry level analysis, we estimate robust standard errors by clustering the residuals at the country level. Columns (1) through (3) show the effects of agency costs of free cash flows on firms' choice between Project Finance and Corporate Finance. In Column (1), we employ our basic specification which includes our set of control variables. In Columns (2) and (3), we add fixed effects at the country level and the industry level, respectively, along with fixed effects at the year level.¹⁶ We find that the coefficient on ex-post private control of self-dealing and its interaction with Free Cash Flow/ Assets to be negative. In Column (4), we test for the interaction of creditor rights with ex-post private control of self-dealing and find the coefficient to be strongly positive as in the industry analysis.¹⁷ Columns (5) through (7) present the effects of bankruptcy costs on firms' financing choice. Here, we implement the basic specification in Column (5), industry and year fixed effects in Column (6), and country and year fixed effects in Column (7). We find that the coefficient on the efficiency of bankruptcy procedure variable to be uniformly negative, though not statistically significant in Columns (5) and (6).

Therefore, using our firm level analysis, we find similar results to what we got using our industry level analysis.

¹⁶In Column (3), when we add country fixed effects, the effect of ex-post private control of self-dealing gets subsumed in the country fixed effects.

¹⁷In this test, we are unable to add the scale of deal and the logarithm of market value of equity as controls due to the problem of multi-collinearity. Furthermore, given the smaller number of countries in this firm-level sample, and our test for an interaction effect, we are unable to add country level dummies when testing for the effect of creditor rights.

7 Robustness

We now conduct robustness tests on the main results. We examine alternative specifications of our dependent variable and also examine if including a country's financial development in our analysis alters our results.

7.1 Alternative Specifications of the Dependent Variable

While we intentionally include only those Corporate Finance deals where Project Finance is a viable option, we now test the robustness of our results by varying the dependent variable. All the regressions are again estimated using OLS, and the standard errors are robust and clustered at the country level.

In Table 10, we change our dependent variable and check whether our basic results are robust to the definition of the dependent variable. Panel A reproduces the results using the main explanatory variables as comparison. Panel B uses the number of Project Finance deals divided by the number of Project Finance, Acquisition Lines and Takeover Finance deals while Panel C uses the number of Project Finance deals divided by the number of Project Finance, Equipment Purchase, and Capital Expenditures deals. All the variables emerge with the expected signs with most of them being statistically significant.

7.2 Role of Financial Development

Should we be concerned that weak protection against managerial self-dealing may be capturing the effect of other relevant cross-country differences, for example, in the level of financial development? In other words, is protection against managerial self-dealing weaker in countries that are financially under-developed? If this is so, our proxy for the level of protection against managerial self-dealing would lose its explanatory power once we include measures of financial development and their interaction with the industry level measure of Free Cash Flow/ Assets.

To address this issue, we employ four measures of financial development: Accounting Standards, Total (stock market) Capitalization to GDP, Domestic Private Credit to GDP, and Private Credit to GDP per capita (from LLSV, 1998 and Rajan and Zingales, 1998). Table 11 shows the univariate correlation between the ex-post Private Control of Self-Dealing measure and these measures of financial development. The correlation is uniformly positive and as between 0.47 and 0.79, confirming that protection against managerial self-dealing and financial development are highly positively correlated. These correlations also illustrate that between 25% to 65% of the total variability of protection against managerial self-dealing can be explained by financial development. There is still sufficient *exogenous* variation in protection against managerial self-dealing of its own. This is not surprising, for example, given the substantial variation in investor protection among the developed countries of North America and Europe based on the legal origin of the country as highlighted by the law and finance literature.

In Table 12, we add our measures of financial development and their interaction with Free Cash Flow/ Assets in the cross-country tests of Table 2 and find that coefficient of the interaction of Free Cash Flow/ Assets with ex-post private control of Self-dealing continues to be strongly negative. We find that conditioning on Financial Development and its interaction with Free Cash Flow/ Assets leads to ex-post private control of self-dealing losing its explanatory power. This is expected given the high positive correlation between Financial Development and ex-post private control of Self-dealing.

We thus find that our difference-in-difference result obtained in Table 2 is unaffected by including proxies for Financial Development and their interactions with Free Cash Flow/ Assets.

8 Conclusion

While the costs of Project Finance vis-à-vis Corporate Finance are known, the benefits are not. In this paper, we model the ‘Cash Flow Separation’ and ‘Non-recourse Financing’ features of Project Finance to show that Project Finance is more likely than Corporate Finance when the agency costs of free cash flow are larger. Consistent with this prediction, we find that industries with larger free cash flows employ Project Finance disproportionately more in countries where investor protection against managerial self-dealing is weaker. Using time-series changes in creditor rights, and using cross-sectional tests, we also find that stronger creditor rights mitigates the effect of managerial self-dealing on the choice of Project Finance. We also find support for the model’s prediction that Project Finance is employed more in countries where the Bankruptcy procedure results in greater deadweight losses.

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Appendix A: Proofs

Using (9) and (6) we get

$$D_{PF} - D_{CF} = K - \theta \min[\lambda\gamma y_1 + \gamma L, K] - (1 - \theta) \lambda (\gamma y_1 + \gamma y_2)$$

Case 1: $\lambda\gamma y_1 + \gamma L < K$. Then,

$$D_{PF} - D_{CF} = K - \theta\gamma [\lambda y_1 + L] - (1 - \theta) \lambda\gamma (y_1 + y_2)$$

$$\begin{aligned} \frac{\partial (D_{PF} - D_{CF})}{\partial \lambda} &= -\theta\gamma y_1 - (1 - \theta) \gamma (y_1 + y_2) \\ &= -\gamma y_1 - (1 - \theta) \gamma y_2 \\ &< 0 \end{aligned}$$

$$\begin{aligned} \frac{\partial^2 (D_{PF} - D_{CF})}{\partial \lambda \partial \gamma} &= -y_1 - (1 - \theta) y_2 \\ &< 0 \end{aligned}$$

$$\begin{aligned} \frac{\partial^2 (D_{PF} - D_{CF})}{\partial \lambda \partial \theta} &= \gamma y_2 \\ &> 0 \end{aligned}$$

$$\begin{aligned} \frac{\partial (D_{PF} - D_{CF})}{\partial L} &= -\theta\gamma \\ &< 0 \end{aligned}$$

$$\begin{aligned} \frac{\partial (D_{PF} - D_{CF})}{\partial \theta} &= -\gamma [\lambda y_1 + L] + \lambda\gamma (y_1 + y_2) \\ &= \gamma \{\lambda y_2 - L\} \\ &< 0 \because \lambda < \frac{L}{y_2} \text{ from (2)} \end{aligned}$$

Case 2: $\lambda\gamma y_1 + \gamma L \geq K$. Then,

$$D_{PF} - D_{CF} = (1 - \theta) [K - \lambda\gamma (y_1 + y_2)]$$

$$\begin{aligned} \frac{\partial (D_{PF} - D_{CF})}{\partial \lambda} &= -(1 - \theta) \gamma (y_1 + y_2) \\ &< 0 \end{aligned}$$

$$\begin{aligned} \frac{\partial^2 (D_{PF} - D_{CF})}{\partial \lambda \partial \gamma} &= -(1 - \theta) (y_1 + y_2) \\ &< 0 \end{aligned}$$

$$\begin{aligned} \frac{\partial^2 (D_{PF} - D_{CF})}{\partial \lambda \partial \theta} &= \gamma (y_1 + y_2) \\ &> 0 \end{aligned}$$

$$\frac{\partial (D_{PF} - D_{CF})}{\partial L} = 0$$

Combining the two cases, we get the results. QED.

Appendix B: Variable Description

Variables	Description	Sources
<i>Country Level Data</i>		
Anti-self Dealing Index	Index of ex-post control over self-dealing transactions. Average of disclosure in periodic filings and ease of proving wrongdoing.	DLLS (2006)
Creditor Rights	An index aggregating four different credit rights: restriction for going into organization, no automatic stay on secured assets, secured creditors first and management does not stay	DMS (2005)
Restriction for going into reorganization	Equals 1 if the reorganization procedure imposes restrictions , 0 otherwise	LLSV (1998)
No automatic stay on secured assets	Equals 1 if the reorganization procedure does not impose an automatic stay on the assets of the firm on filing the reorganization petition , 0 otherwise	LLSV (1998)
Secured creditors first	Equals 1 if secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm, 0 otherwise	LLSV (1998)
Management does not stay	Equals 1 if an official appointed by the court, or by the creditors, is responsible for the business operation during reorganization, 0 otherwise	LLSV (1998)
Efficiency of Bankruptcy	The present value of the terminal value of a bankruptcy company at the conclusion of the insolvency proceedings, taking into account insolvency costs.	DHMS (2006)
Enforceability of Contracts	The real degree to which contractual agreements are honored and complications presented by language and mentality differences.	DLLS (2003)
Legal Origin	The legal origin of the company law or commercial code of each country	LLSV (1998)
Information Sharing	Equals 1 if either public registry or a private bureau operates, 0 otherwise	DMS (2005)
Legal Formalism Index (check-based)	Measures substantive and procedural statutory intervention in judicial cases at lower-level civil trial courts	DLLS (2003)
Accounting Standards	Index created by examining and rating companies' 1990 annual reports on their inclusion or omission of 90 items.	LLSV (1998)
GDP per capita	Real gross domestic product per capita	PWT-6.2
<i>Industry Level Data</i>		
Asset Tangibility	The median of "net PP&E / total assets" at 4-digit SIC codes	Global Compustat
Tobins Q	Ratio of the Market Value of Assets to their Book Value. The Market Value of Assets is constructed as the Total book value of assets minus the book value of common equity minus the book value of deferred taxes plus the market value of equity.	Global Compustat
Free Cash Flow to Assets	The median of "Free Cash Flow" computed as Operating Income before Depreciation minus Interest Payments minus Income Taxes minus dividends paid to preferred and common stock holders divided by the book value of assets at 4-digit SIC codes	Global Compustat
Total Debt/ Assets	The median of "total debt over total assets" at 4-digit SIC codes	Global Compustat
Interest Expense/ Net Income	The median of "Interest Expense/ Net Income " at 4-digit SIC codes	Global Compustat

Appendix, continued

Variables	Description	Sources
<i>Deal Level Data</i>		
Project Finance	Equals 1 if it is a non-recourse loan to finance a specific project, 0 if the specific purpose is one of the following: acquisition line, capital expenditures, equipment purchase, takeover finance	DEALSCAN
Acquisition Line	A loan for unspecified asset acquisitions	DEALSCAN
Capital Expenditures	A loan for capital expenditures purpose	DEALSCAN
Equipment Purchase	A loan for equipment purchase purpose	DEALSCAN
Takeover Finance	A loan to support the acquisition of a specified asset or company	DEALSCAN
Deal amount	The commitment amount at the loan origination, in billions of dollars	DEALSCAN
Number of lenders	The number of lenders	DEALSCAN
All-in-spread	The amount the borrower pays in basis points over LIBOR for each dollar drawn down	DEALSCAN
Maturity	Loan maturity, in years	DEALSCAN
Secured	Equals 1 if the bank loan is secured by collateral, 0 otherwise	DEALSCAN
Senior	Equals 1 if the lenders are senior creditors, 0 otherwise	DEALSCAN
S&P's rating	S&P' s senior debt rating at deal close	DEALSCAN

Figure 1: Setup and Timing of Events in the Model

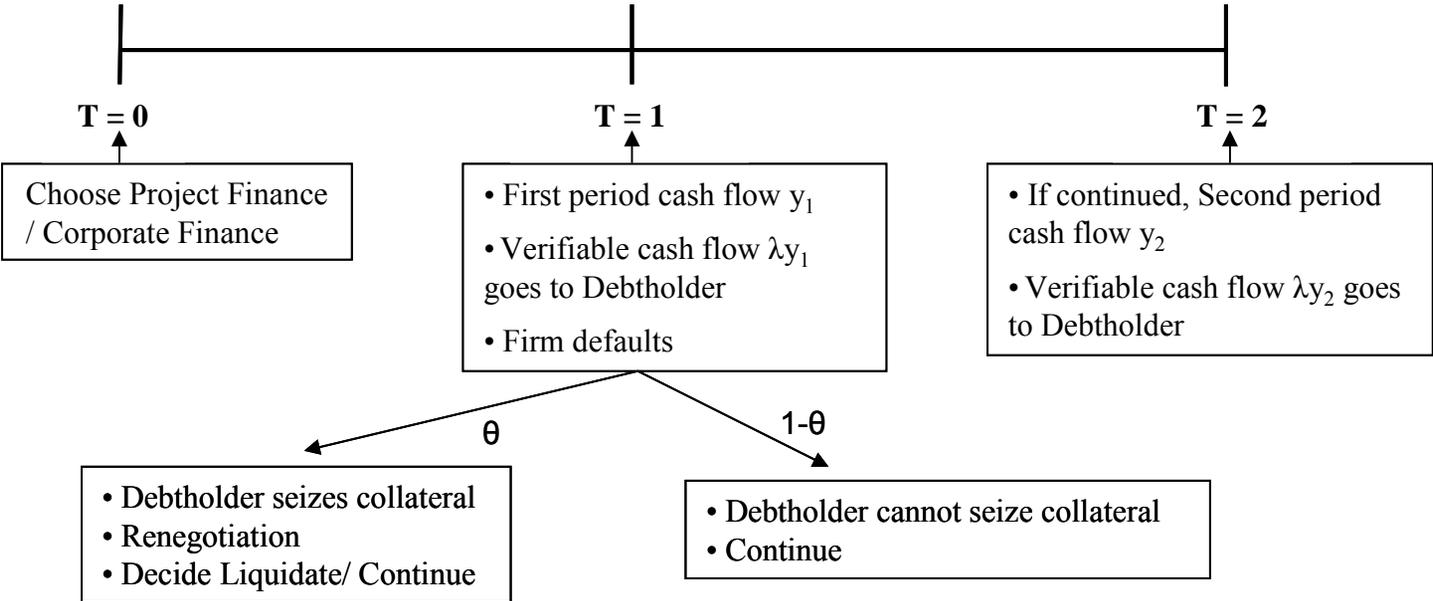


Figure 2

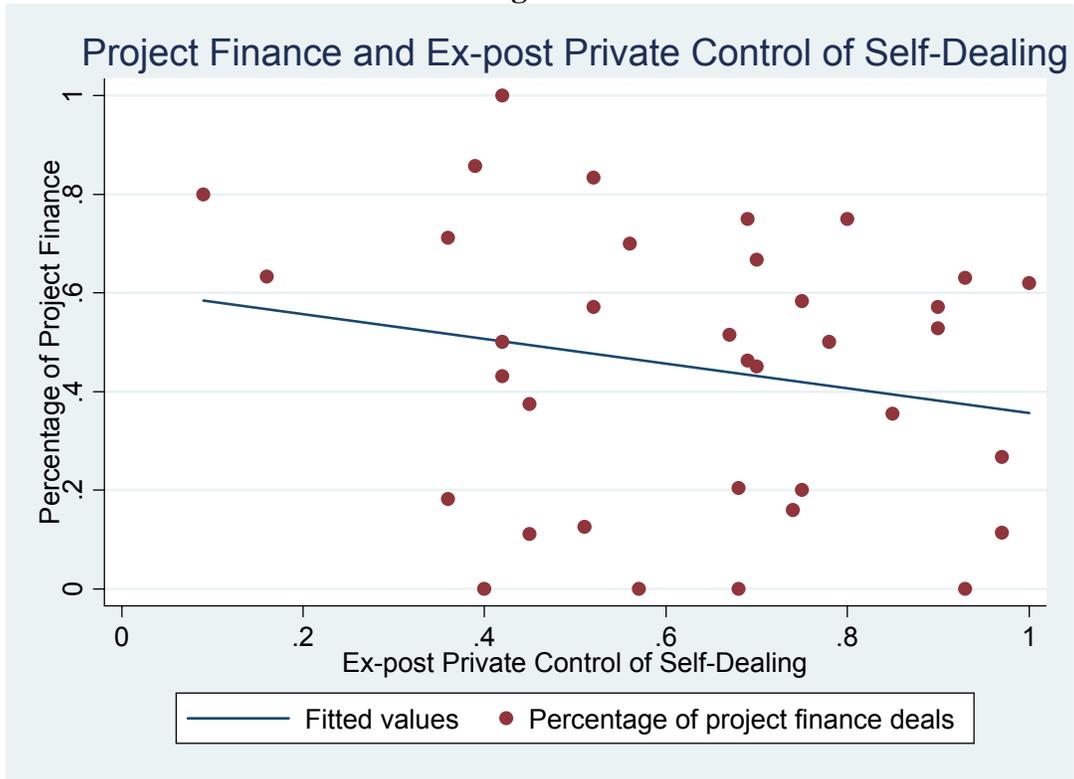


Figure 3

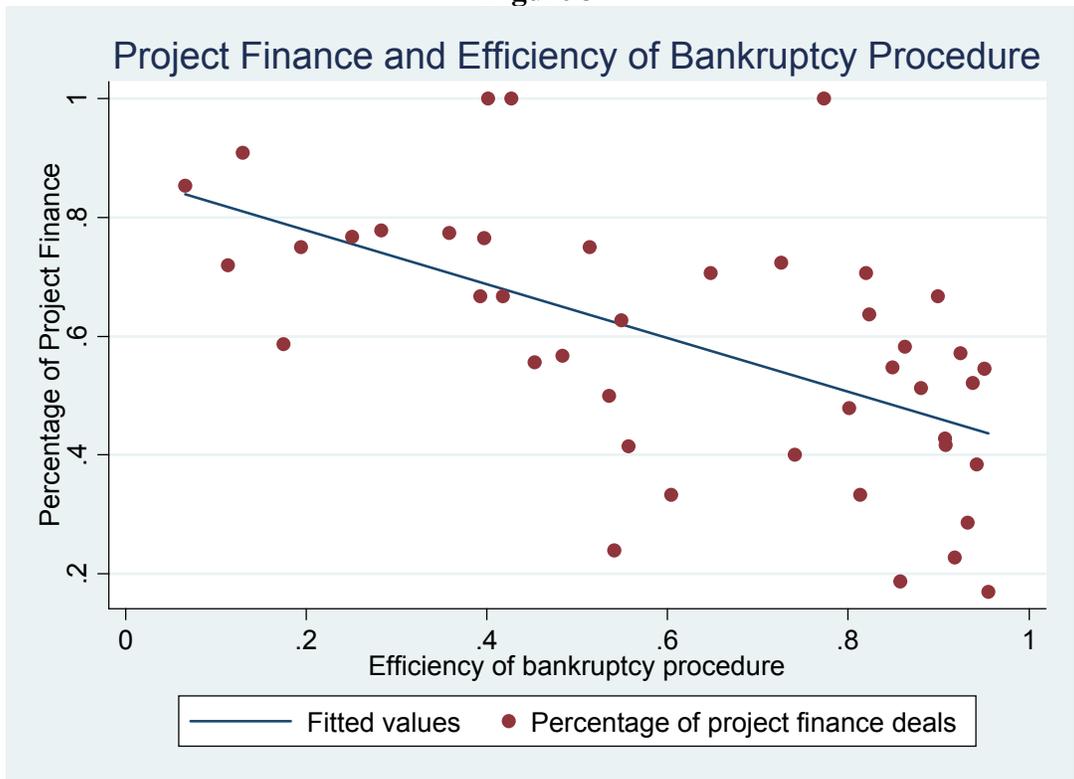


Table 1 – Panel A
Project Finance Deals vs. Corporate Finance Deals in the US and Rest of the World

	Corporate Finance	Project Finance	% Project Finance
Rest of World	1,095	1,233	53.0%
USA	3,035	712	19.0%

Table 1 – Panel B
Project Finance Deals vs. Corporate Finance Deals by Legal Origin

Legal Origin	Corporate Finance	Project Finance	% Project Finance
English	3,567	1,249	25.9%
French	275	487	63.9%
German	252	189	42.9%
Scandinavian	36	20	35.7%
All legal origins	4,130	1,945	47.1%

Table 2: Effect of Free Cash Flow and Protection against Self-dealing on Project Finance vs. Corporate Finance

The dependent variable in all specifications is the percentage of deals corresponding to project finance in a particular country, year, industry group. The sample is generated by aggregating deals in a particular 4-digit SIC in a particular year in a country. Corporate Finance categories include Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeovers. The Other country level variables include a Dummy for information sharing operating in the country in 1999, Index of Legal Formalism, Accounting Standards, ratio of private credit to GDP, and the Logarithm of the GDP per capita. The Deal characteristics include industry level averages for the number of lenders, the average loan spread over LIBOR, log of the deal amount, the maturity of the loan and whether the loan was rated or not. The sample of bank loans is drawn from the Loan Pricing Corporation's Dealscan database for the period 1993 - 2003. All regressions are estimated using OLS. When country fixed effects are not employed, the robust standard errors are clustered by the country of the borrower. However, with country fixed effects, the robust standard errors are clustered by industry. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ex-post private control of self-dealing	-0.691*** (4.50)	-0.635*** (3.80)	-0.548** (2.67)	-0.631*** (3.93)	-0.466*** (3.21)	-0.112 (0.49)	-0.218 (1.60)	-0.425*** (3.21)	0.484 (1.32)	0.341 (0.37)	-0.345*** (2.71)
Industry median Free Cash Flow/ Assets	-0.066 (0.82)	0.802* (1.69)	1.397*** (3.44)	0.710 (1.58)	0.526 (1.04)	0.919** (2.21)	0.685* (1.79)	1.524*** (3.04)	1.133** (2.48)	0.785* (1.78)	1.569*** (2.78)
Ex-post private control of self-dealing *		-1.018* (1.89)	-1.665*** (3.30)	-0.885* (1.75)	-1.033* (1.74)	-1.045** (2.36)	-0.823* (1.97)	-1.923*** (3.20)	-1.598*** (2.85)	-0.975* (1.74)	-1.910** (2.63)
Creditor rights						0.113*** (4.25)			0.070** (2.50)	0.048 (1.07)	0.031 (0.50)
Efficiency of bankruptcy procedure						-0.323** (2.15)			-0.029 (0.10)	0.088 (0.27)	0.000 (.)
French Legal Origin Dummy						0.116 (1.07)			0.285 (1.35)	0.319 (0.50)	-0.050 (0.22)
German Legal Origin Dummy						0.067 (0.74)			0.227 (1.03)	0.052 (0.10)	0.091 (0.51)
Scandinavian Legal Origin Dummy						-0.076 (0.54)			0.232 (1.11)	0.284 (0.70)	-0.397** (2.14)
Industry median TobinsQ					-0.008*** (6.34)				23.348 (0.75)	19.520 (0.64)	9.932 (0.39)
Industry median Asset Tangibility					0.360*** (9.24)				0.307*** (7.01)	-0.293* (1.92)	0.303*** (4.16)
Sample	All countries	All countries	Developed countries	Excludes infrastructure projects	All countries	All countries	All countries	All countries	All countries	All countries	All countries
Deal Characteristics	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Other Country Level variables	No	No	No	No	No	No	Yes	No	Yes	Yes	Yes
Year Fixed Effects	No	No	No	No	No	No	No	No	Yes	No	No
Industry Fixed Effects	No	No	No	No	No	No	No	No	No	Yes	No
Random Effects (Country * SIC)	No	No	No	No	No	No	No	No	No	No	Yes
Adjusted R-squared	0.10	0.10	0.06	0.10	0.10	0.17	0.11	0.18	0.11	0.25	
Observations	1583	1583	1443	1548	1583	1583	1583	1583	1583	1470	831

Table 3: Effect of Free Cash Flow and Protection against Self-dealing on Project Finance vs. Corporate Finance using US industry measure as an Instrument

The dependent variable in all specifications is the percentage of deals corresponding to project finance in a particular country, year, industry group. The median Free Cash Flow/ Assets of US firms in a particular 4-digit SIC in a particular year is employed as an *instrument* for our cross-country measure. Corporate Finance categories include Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeovers. The Other country level variables include a Dummy for information sharing operating in the country in 1999, Index of Legal Formalism, Accounting Standards, ratio of private credit to GDP, and the Logarithm of the GDP per capita. The Deal characteristics include industry level averages for the number of lenders, the average loan spread over LIBOR, log of the deal amount, the maturity of the loan and whether the loan was rated or not. The sample of bank loans is drawn from the Loan Pricing Corporation's Dealscan database for the period 1993 - 2003. All regressions are estimated using OLS. When country fixed effects are not employed, the robust standard errors are clustered by the country of the borrower. However, with country fixed effects, the robust standard errors are clustered by industry. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ex-post private control of self-dealing	-0.496*** (3.37)	-0.489** (2.64)	-0.486*** (3.33)	-0.171 (0.95)	-0.271** (2.52)	-0.447*** (4.26)	0.418** (2.41)	0.333 (1.39)	-0.015 (0.07)
US Industry median Free Cash Flow/ Assets	1.180 (1.56)	1.452 (1.12)	1.263 (1.55)	1.471** (2.08)	1.044 (1.51)	1.612* (2.01)	1.355* (1.75)	3.749*** (3.03)	0.994 (1.16)
Ex-post private control of self-dealing * Industry median Free Cash Flow/ Assets	-1.755** (2.15)	-2.060 (1.48)	-1.845** (2.07)	-1.951** (2.61)	-1.507** (2.08)	-2.079** (2.52)	-1.798** (2.26)	-3.931*** (3.09)	-1.084 (1.10)
US Industry median TobinsQ	0.003 (0.72)	0.001 (0.25)	0.004 (1.20)	0.000 (0.01)	-0.001 (0.17)	-0.001 (0.42)	0.000 (0.24)	-0.013*** (2.93)	-0.001*** (5.72)
US Industry median Asset Tangibility	0.540*** (7.23)	0.510*** (6.73)	0.527*** (6.79)	0.476*** (7.61)	0.455*** (8.41)	0.454*** (5.52)	0.437*** (6.26)	0.188 (0.98)	0.232*** (2.91)
Creditor rights				0.090*** (5.56)			0.071*** (4.94)	0.065*** (3.93)	0.076*** (3.66)
Efficiency of bankruptcy procedure				-0.207* (1.68)			0.161 (1.23)	0.076 (0.55)	-0.336** (2.10)
French Legal Origin Dummy				0.106 (1.23)			0.336*** (3.27)	0.257** (2.11)	0.100 (0.89)
German Legal Origin Dummy				0.084 (0.89)			0.311** (2.46)	0.132 (0.72)	0.063 (0.73)
Scandinavian Legal Origin Dummy				-0.161 (1.12)			0.204 (1.45)	0.172 (1.01)	-0.054 (0.39)
Sample	All countries	Developed countries	Excludes infrastructure projects	All countries	All countries	All countries	All countries	All countries	All countries
Deal Characteristics	No	No	No	No	No	Yes	Yes	Yes	Yes
Other Country Level variables	No	No	No	No	Yes	No	Yes	Yes	Yes
Year Fixed Effects	No	No	No	No	No	No	Yes	No	No
Industry Fixed Effects	No	No	No	No	No	No	No	Yes	No
Random Effects (Country * SIC)	No	No	No	No	No	No	No	No	Yes
Adjusted R-squared	0.22	0.17	0.22	0.28	0.26	0.33	0.36	0.41	
Observations	1917	1644	1866	1917	1917	1144	1144	1097	924

Table 4: Effect of Free Cash Flow, Protection against Self-Dealing, and Creditor Rights on Project Finance vs. Corporate Finance

The dependent variable in all specifications is the percentage of deals corresponding to project finance in a particular country, year, industry group. The sample is generated by aggregating deals in a particular 4-digit SIC in a particular year in a country. Corporate Finance categories include Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeovers. The country level variables included in the regression include dummies for French, German and Scandinavian law origin, A Dummy for information sharing operating in the country in 1999, Index of Legal Formalism, Accounting Standards and Logarithm of the GDP per capita. The sample of bank loans is drawn from the Loan Pricing Corporation's Dealscan database for the period 1993 - 2003. All regressions are estimated using OLS. When country fixed effects are not employed, the robust standard errors are clustered by the country of the borrower. However, with country fixed effects, the robust standard errors are clustered by industry. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Creditor Rights	0.096*** (3.46)	-0.071 (0.98)	-0.146 (1.27)	-0.051 (0.65)	-0.021 (0.36)	-0.044 (0.64)	-0.047 (0.60)	-0.043 (0.56)	-0.081 (1.12)	0.043 (0.59)
Ex-post private control of self-dealing	-0.582*** (5.42)	-0.881*** (6.96)	-0.885*** (3.24)	-0.833*** (5.95)	-0.498*** (3.41)	-0.651*** (5.06)	-0.801*** (5.72)	-0.602*** (3.12)	-0.933*** (7.30)	-0.673*** (3.30)
Ex-post private control of self-dealing *		0.206* (2.03)	0.286* (2.02)	0.175 (1.63)	0.157* (1.77)	0.164* (1.71)	0.184* (1.69)	0.186* (1.79)	0.222** (2.21)	0.163* (1.80)
Creditor Rights										
Efficiency of bankruptcy procedure					-0.369*** (3.28)					
Free Cash Flow / Assets					0.879** (2.23)					
Free Cash Flow / Assets* Ex-post private control of self-dealing					-0.983** (2.33)					
Interest Expense / Net Income							0.018** (2.20)			
LT Debt / Total Assets							0.159* (1.74)			
French Legal Origin Dummy								0.187* (1.77)		
German Legal Origin Dummy								0.047 (0.52)		
Scandinavian Legal Origin Dummy								-0.148 (1.11)		
Industry median TobinsQ						-0.833*** (7.23)				
Industry median Asset Tangibility						0.311*** (6.91)				
Sample	All countries	All countries	Developed countries	Excludes infrastructure projects	All countries					
Year Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
Random Effects (Country)	No	No	No	No	No	No	No	No	No	Yes
Adjusted R-squared	0.17	0.17	0.13	0.17	0.18	0.18	0.17	0.18	0.19	
Observations	1609	1609	1454	1574	1583	1518	1583	1609	1609	232

Table 5: Effect of Free Cash Flow, Protection against Self-Dealing, and Creditor Rights Components on Project Finance vs. Corporate Finance

The dependent variable in all specifications is the percentage of deals corresponding to project finance in a particular country, year, industry group. The sample is generated by aggregating deals in a particular 4-digit SIC in a particular year in a country. Corporate Finance categories include Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeovers. The country level variables included in the regression include dummies for French, German and Scandinavian law origin, A Dummy for information sharing operating in the country in 1999, Index of Legal Formalism, Accounting Standards and Logarithm of the GDP per capita. The sample of bank loans is drawn from the Loan Pricing Corporation's Dealscan database for the period 1993 - 2003. All regressions are estimated using OLS. When country fixed effects are not employed, the robust standard errors are clustered by the country of the borrower. However, with country fixed effects, the robust standard errors are clustered by industry. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(6)	(7)	(8)
No Automatic Stay on Secured Assets	0.192*** (2.98)	-0.180 (1.03)	-0.096 (0.40)	-0.130 (0.69)	-0.150 (0.96)	-0.141 (0.93)	-0.194 (1.14)	-0.122 (0.80)	-0.101 (0.42)
Ex-post private control of self-dealing	-0.526*** (3.97)	-0.661*** (6.52)	-0.458** (2.28)	-0.642*** (6.12)	-0.388*** (3.38)	-0.500*** (5.14)	-0.624*** (5.54)	-0.570** (2.60)	-0.451** (2.51)
Ex-post private control of self-dealing *		0.545**	0.446	0.466*	0.517**	0.479**	0.574**	0.492**	0.340
No Automatic Stay on Secured Assets		(2.29)	(1.49)	(1.82)	(2.41)	(2.30)	(2.51)	(2.34)	(1.06)
Efficiency of bankruptcy procedure					-0.327*** (2.98)				
Free Cash Flow / Assets					0.659 (1.65)				
Free Cash Flow/ Assets * Ex-post private control of Self-dealing					-0.777* (1.81)				
Interest Expense / Net Income							0.016* (1.91)		
LT Debt / Total Assets							0.177** (2.12)		
Industry median TobinsQ						-0.536*** (3.60)			
Industry median Asset Tangibility						0.310*** (6.81)			
Secured creditors first paid	-0.029 (0.36)								
Restrictions for going into reorganization	0.075 (0.93)								
Mgmt. does not stay in reorganization	0.024 (0.34)								
Sample	All countries	All countries	Developed countries	Excludes infra. projects	All countries	All countries	All countries	All countries	All countries
Legal Origin	No	No	No	No	No	No	No	Yes	No
Year Fixed Effects	No	No	No	No	Yes	Yes	Yes	Yes	No
Random Effects (Country)	No	No	No	No	No	No	No	No	Yes
Adjusted R-squared	0.18	0.18	0.13	0.17	0.18	0.21	0.18	0.19	
Observations	1609	1609	1454	1574	1583	1512	1583	1609	232

Table 6: Summary Statistics on Project Finance and Corporate Finance for “Treatment” Countries that underwent a decrease in Creditor Rights

Country Name	Year of change	Number of Corporate Finance Deals		Number of Project Finance Deals	
		Before	After	Before	After
Indonesia	1998	21	85	7	7
Israel	1995	0	0	1	3
Japan	1999	2	3	76	13
Sweden	1995	2	0	8	5
Thailand	1998	12	28	10	9

Table 7: Effect of Protection against Self-Dealing and Changes in Creditor Rights on Project Finance vs. Corporate Finance

The OLS regressions employ the difference in difference specifications where the Treatment group is industries in a country where a Creditor’s rights reform was initiated while the control group includes industries where such reform was not initiated. The dependent variable in all specifications is the percentage of deals corresponding to project finance in a particular country, year, industry group. The Creditor Rights Change Dummy equals 1 for country c and years $t \leq m$ if a creditor rights reform initiated in year m decreased the rights provided to creditors. The regressions also include time dummies which equal 1 for years $t \leq m$ if the creditor rights reform was initiated in year m , and dummies for the treated country. The sample of bank loans is drawn from the Loan Pricing Corporation’s Dealscan database for the period 1993 - 2003. All regressions are estimated using OLS. The robust standard errors are clustered by country. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Creditor Rights Change	0.036 (0.39)	-1.478*** (3.32)	-1.495*** (3.41)	-1.378*** (3.08)	-1.516*** (4.19)	-1.483*** (3.37)	-1.554*** (4.90)	-1.553** (2.30)
Creditor Rights Change * Ex-post control of Self-Dealing		2.255*** (3.57)	2.278*** (3.66)	2.098*** (3.27)	2.308*** (4.49)	2.262*** (3.63)	2.335*** (5.43)	2.462** (2.36)
Ex-post control of self-dealing		-0.114 (0.97)	-0.147 (0.65)	0.033 (0.19)	-0.021 (0.17)	0.023 (0.16)	-0.039 (0.29)	-0.077 (0.52)
Free Cash Flow / Assets					0.693* (1.77)			
Free Cash Flows to Assets * Ex-post control of Self-dealing					-0.858** (2.07)			
Efficiency of bankruptcy procedure						-0.224* (1.70)		
Interest Expense / Net Income							0.015* (1.78)	
LT Debt / Total Assets							0.166** (2.15)	
French legal origin			0.005 (0.04)					
German legal origin			-0.058 (0.82)					
Scandinavian legal origin			-0.245* (1.74)					
Dummies for Treatment period	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies for Treatment country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies for Treatment period * Ex-post private control of self-dealing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummies for Treatment country * Ex-post private control of self-dealing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	No	No	No	No	Yes
Adjusted R-squared	0.23	0.24	0.24	0.25	0.22	0.24	0.23	0.31
Observations	1609	1609	1609	1609	1583	1609	1583	1481

Table 8: Effect of Efficiency of Bankruptcy Procedure on Project Finance vs. Corporate Finance

The dependent variable in all specifications is the percentage of deals corresponding to project finance in a particular country, year, industry group. The sample is generated by aggregating deals in a particular 4-digit SIC in a particular year in a country. Corporate Finance categories include Acquisition Lines, Equipment Purchase, Capital Expenditures and Takeovers. The country level variables included in the regression include dummies for French, German and Scandinavian law origin, A Dummy for information sharing operating in the country in 1999, Index of Legal Formalism, Accounting Standards and Logarithm of the GDP per capita. The sample of bank loans is drawn from the Loan Pricing Corporation's Dealscan database for the period 1993 - 2003. All regressions are estimated using OLS. When country fixed effects are not employed, the robust standard errors are clustered by the country of the borrower. However, with country fixed effects, the robust standard errors are clustered by industry. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Efficiency of Bankruptcy Procedure	-0.552*** (3.80)	-0.217 (0.64)	-0.425*** (3.32)	-0.454** (2.47)	-0.058 (0.27)	-0.369*** (3.28)	-0.585*** (3.63)	-0.628*** (4.06)	-0.241* (1.70)	-0.911*** (4.59)
Ex-post private control of Self-dealing						-0.498*** (3.41)				
Free Cash Flow/ Assets						0.879** (2.23)				
Ex-post private control of self-dealing * Industry median Free Cash Flow/ Assets						-0.983** (2.33)				
Creditor Rights						-0.021 (0.36)				
Ex-post private control of self-dealing * Creditor Rights						0.157* (1.77)				
Industry Median Asset Tangibility	0.373*** (9.81)	0.400*** (9.01)	0.375*** (9.50)							
Interest Expense/ Net Income							0.022** (2.29)			
Long-term Debt/ Assets							0.050 (0.41)			
Sample	All countries	Developed countries	Excludes infrastructure projects	All countries	All countries	All countries	All countries	All countries	All countries	All countries
Legal Origin	No	No	No	Yes	No	No	No	No	No	No
Other Country Level variables	No	No	No	No	Yes	No	No	No	No	No
Year Fixed Effects	No	No	No	No	No	No	No	Yes	No	No
Country Fixed Effects	No	No	No	No	No	No	No	No	No	Yes
Industry Fixed Effects	No	No	No	No	No	No	No	No	Yes	No
Adjusted R-squared	0.12	0.07	0.10	0.10	0.19	0.18	0.07	0.08	0.24	0.20
Observations	1593	1390	1480	1609	1609	1583	1583	1609	1481	1481

Table 9: Firm Level Analysis of Determinants of Project Finance versus Corporate Finance

The dependent variable in all the specifications equals one if the deal corresponds to Project Finance, and equals zero if the deal corresponds to either of Acquisition Lines, Equipment Purchase, Capital Expenditures or Takeovers. The sample of bank loans is drawn from the Loan Pricing Corporation's Dealscan database and includes deals over the period 1993 - 2003. All regressions are estimated using Logit. The control variables include the legal origin variables. When a particular legal origin variable is blank in a particular specification, the same was dropped due to the problem of multi-collinearity. The robust standard errors are clustered by country. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3) ^a	(4)	(5)	(6)	(7)
Ex-post private control of self-dealing	-8.766*	-11.350**		-5.601***			
	(1.85)	(2.35)		(3.34)			
Free Cash Flow / Assets	1.515***	1.652***	4.692***				
	(2.87)	(3.04)	(8.08)				
Free Cash Flows / Assets *	-1.572***	-1.713***	-4.850***				
Ex-post Private control of Self-dealing	(2.88)	(3.06)	(8.11)				
Creditor rights				-1.152***			
				(2.64)			
Ex-post Private control of Self-dealing *				1.597***			
Creditor Rights				(2.81)			
Efficiency of bankruptcy procedure					-0.054	-0.083	-0.034***
					(0.71)	(1.27)	(4.84)
English legal origin dummy	20.070***			0.867	15.476**	-0.214	-0.248*
	(4.32)			(1.27)	(2.31)	(0.10)	(1.67)
French legal origin dummy	9.270***	-10.635***	-17.626***	0.172	14.240***		
	(3.00)	(3.44)	(7.43)	(0.29)	(3.42)		
Scandinavian legal origin dummy	7.876**	-12.265***	-22.646***	0.370	15.467**	1.804	
	(2.13)	(4.09)	(8.12)	(0.54)	(2.17)	(0.72)	
Tangibility	2.433***	2.194***	2.485***	2.015***	2.453***	3.156***	2.874***
	(11.90)	(8.41)	(17.25)	(5.72)	(17.36)	(9.43)	(17.38)
LT Debt / Total Assets	0.949***	0.736***	0.734***	-0.380	1.062***	1.070***	1.083***
	(10.23)	(3.99)	(9.47)	(0.96)	(10.97)	(5.75)	(14.80)
Rating - S&P	-0.091***	-0.042***	-0.071***	-0.025	-0.075***	-0.059***	-0.102***
	(6.91)	(3.29)	(4.68)	(0.47)	(6.51)	(3.18)	(6.15)
One if borrower not rated	-0.013	0.379**	0.090	-0.276	0.069	0.160	-0.262
	(0.09)	(2.46)	(0.49)	(0.59)	(0.59)	(0.81)	(1.36)
Project Scale	-3.170***	-3.165***	-3.202***		-2.934***	-2.938***	-3.477***
	(13.75)	(8.21)	(11.18)		(6.70)	(11.73)	(9.55)
Log of Market Value of Firm	0.310***	0.268***	0.311***		0.301***	0.301***	0.297***
	(15.27)	(7.32)	(33.82)		(17.89)	(7.76)	(21.24)
Country Fixed Effects	No	No	Yes	No	No	No	Yes
Industry Fixed Effects	No	Yes	No	No	No	Yes	No
Year Fixed Effects	No	Yes	Yes	No	No	Yes	Yes
Pseudo R-Square	0.17	0.21	0.20	0.09	0.14	0.23	0.21
Observations	815	630	813	1225	878	643	824

^a "Ex-post private control of self-dealing" gets subsumed in the country fixed effects.

Table 10: Effect of Free Cash Flow, Protection against Self-Dealing, Creditor Rights, and Efficiency of Bankruptcy procedure on Project Finance vs. different modes of Corporate Finance

In each specification the sample is restricted to Project Finance deals and the respective category of Corporate Finance Deals. In each specification, the dependent variable equals the percentage of deals corresponding to project finance in a particular country, year, industry. The sample is generated by aggregating deals in a particular 4-digit SIC in a particular year in a country. The sample of bank loans is drawn from the Loan Pricing Corporation's Dealscan database and includes deals over the period 1993 - 2003. All regressions are estimated using OLS. The robust standard errors are clustered by country of the borrower. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

	Panel A: Main Dependent Variable			Panel B: Project Finance vs. Acquisitions & Takeovers			Panel C: Project Finance vs. Capital Expenditures & Equipment Purchases		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Ex-post private control of self-dealing	-0.881*** (6.96)	-0.635*** (3.80)		-0.477** (2.61)	-0.669*** (2.92)		-1.427*** (3.76)	-1.974*** (5.52)	
Creditor rights					-0.053 (0.66)			-0.160 (0.83)	
Ex-post Private control of Self-dealing *					0.164* (1.80)			0.455 (1.67)	
Creditor Rights	0.206* (2.03)								
Free Cash Flow / Assets		0.802* (1.69)		0.355 (0.52)			2.050* (1.97)		
Free Cash Flows to Assets * Ex-post Private control of Self-dealing		-1.018* (1.89)		-0.311 (0.42)			-2.743** (2.34)		
Efficiency of bankruptcy procedure			-0.552*** (3.80)			-0.461** (2.05)			-1.196*** (3.76)
Tangibility			0.373*** (9.81)			0.408*** (6.31)			0.713*** (11.51)
Adjusted R-squared	0.17	0.10	0.12	0.02	0.05	0.05	0.13	0.22	0.13
Observations	1609	1583	1593	1583	1609	1593	1583	1609	1593

Table 11: Correlations between Protection against Self-Dealing & Financial Development Measures

	Ex-post private control of Self-Dealing	Log of Private Credit to GDP per capita	Accounting Standards	Total Capitalization to GDP
Log of Private Credit to GDP per capita	0.473 (0.000)			
Accounting Standards	0.788 (0.000)	0.294 (0.000)		
Total Capitalization to GDP	0.616 (0.000)	0.052 (0.044)	0.880 (0.000)	
Domestic Credit to GDP	0.766 (0.000)	0.656 (0.000)	0.740 (0.000)	0.656 (0.000)

Table 12: Does Financial Development substitute for the effect of Protection against Self-dealing on Project Finance vs. Corporate Finance?

The OLS regressions below add the interaction of measures of Financial development with Free Cash Flow/ Assets to the basic model examined in Tables 2. The dependent variable in all specifications is the percentage of deals corresponding to project finance in a particular country, year, industry group. We use the following proxies for Financial Development: (1) Accounting Standards is an Index created by Center for International Financial Analysis & Research examining and rating companies' 1990 annual reports on their inclusion or omission of 90 items from LLSV (1998), (2) Total Capitalization to GDP is the ratio of the sum of equity market capitalization (as reported by the IFC) and domestic credit (IFS line 32a-32f but not 32e) to GDP from Rajan and Zingales (1998), (3) Domestic Private credit to GDP is the ratio of domestic credit to the private sector, which is from IFS line 32d, over GDP from Rajan and Zingales (1998), (4) Log Private Credit to GDP per capita is the logarithm of the ratio of Domestic private credit (IFS line 32d) to the GDP per capita from LLSV(1998). The robust standard errors are clustered by the country of the borrower. ***, **, * represent coefficients that are statistically significant at the 1%, 5% and 10% levels respectively.

Which Financial Development measure?	(1) Accounting standards	(2) Total Capitalization to GDP	(3) Domestic Private Credit to GDP	(4) Log Private Credit to GDP per capita
Financial Development Measure * Free Cash Flow / Assets	0.040*** (3.71)	0.282 (1.02)	0.036 (0.09)	0.665*** (4.51)
Financial Development Measure Free Cash Flow / Assets	-0.001 (0.64)	0.038 (0.29)	-0.115 (0.89)	-0.178** (2.65)
Ex-post private control of self-dealing	-1.577** (2.28)	1.048** (2.65)	1.000** (2.68)	1.612*** (3.73)
Free Cash Flows to Assets * Ex-post Private control of Self-dealing	0.004 (0.02)	-0.022 (0.10)	0.072 (0.32)	0.203 (0.93)
	-1.695*** (3.91)	-1.815** (2.78)	-1.390** (2.57)	-2.268*** (4.80)
Creditor rights	0.102*** (4.03)	0.100*** (3.25)	0.076** (2.34)	0.104*** (4.25)
Efficiency of bankruptcy procedure	-0.248* (1.92)	-0.276** (2.12)	-0.260* (1.97)	-0.183 (1.38)
French legal origin dummy	0.131 (1.16)	0.126 (1.02)	0.099 (0.77)	0.071 (0.68)
German legal origin dummy	0.073 (0.81)	0.002 (0.03)	0.038 (0.54)	0.076 (0.91)
Scandinavian legal origin dummy	-0.077 (0.59)	-0.042 (0.28)	-0.073 (0.55)	-0.087 (0.80)
Tobins Q	-0.001*** (8.33)	-0.001*** (6.76)	-0.001*** (6.32)	-0.002*** (6.23)
Tangibility	0.326*** (7.64)	0.351*** (11.97)	0.339*** (9.51)	0.308*** (5.98)
Observations	1504	1394	1394	1504
Adjusted R-squared	0.19	0.18	0.18	0.20