A model of political connections and credit [1]

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Abstract

To model the influence of political connections on credit, I extend the fixed investment model with stochastic contract enforcement of Tirole (2006, pages 535-540). The model provides several insights including: i) political influence over the lender's future compensation leads to loans with an expected rate of return less than 100%, ii) political influence over the borrowers pursuit of social objectives tightens the financial constraints of the politically connected, and iii) the co-existence of political connected and non-connected borrowers in the same economy can be interpreted as borrowers choosing to be politically unconnected to pursue high return projects and overcome credit rationing.

Keywords: Political Connection, Lending Decisions, Social Objectives

JEL Classification Codes: G21–Banks, G32–Financing Policy, D72–Economic models of political processes

1 Introduction

In the fixed investment model with stochastic contract enforcement of Tirole (2006, pages 535-540), the lender *ex-ante* adjusts the allocation of return between the lender and borrower to account for possible expropriation. Due to this *ex-ante* adjustment of the contracts with weak enforcement (possible expropriation), the interest rate increases, but the expected rate of return on the loan is unchanged. Empirical results suggest this adjustment for possible expropriation does not fully capture the lender's incentives. For example, using loan level data of borrowers in Pakistan, Khwaja and Mian (2005) find the rate of return on loans to politically connected borrowers is six percent below the rate of return on loans to politically unconnected borrowers and further the average rate of return across the entire sample is 93.46%.[2] In addition, they find the interest rate charged for politically connected and unconnected loans is almost identical. To explain these empirical findings, I extend Tirole's model by adding features that account for i) the influence of a politically connected borrower on lender compensation, and ii) the possible requirement of the politically connected borrower to pursue social objectives that reduce project return.

To model the political influence on the lender, I add additional lender compensation due to political connections. The mechanics by which a politically connected borrower influences the compensation of a lender is discussed by Khwaja and Mian (2005, p. 1373) who write,

> Politically powerful firms obtain rents from government banks by exercising their political influence on bank employees. The more powerful and successful a politician is, the greater is his ability to influence government banks. This influence stems from the organizational design of government banks that enables politicians to threaten bank officers with transfers and removals, or reward them with appointments and promotions.

Consistent with the empirical findings of Khwaja and Mian (2005) the model shows the expected rate of return on a loan is less than 100% when lenders receive additional compensation for lending to politically connected borrowers.

[2]The rate of return used by Khwaja and Mian (2005) is equal to (1 - Default Rate)*(1+ Interest Rate)+ Default Rate * Recovery Rate.

Tirole (2006) assumes that the enforcement probability of a contract is an institutional feature of the economy. I follow Tirole in modeling the enforcement probability, but interpret the probability of contract enforcement as borrower specific, where a loan to a politically connected borrower has a smaller probability of being enforced. The interpretation that the enforcement probability is not only an institutional feature but is also a firm characteristic is consistent with the empirical results of Berkman, Cole, and Fu (2009), who find the probability of expropriation is related to firm characteristics. This interpretation is consistent with Bliss and Gul (2012), who find that firms that are politically connected to the Malaysian Government are charged higher interest rates. By interpreting the enforcement probabilities as being firm specific and negatively influenced by political connections, the model provides one explanation for higher interest rates in politically connected firms.

In contrast to the Malaysian evidence, Khwaja and Mian (2005) find that the interest rates of the politically connected and unconnected borrowers are approximately equal in Pakistan, where the political connection is through seats on the boards of state banks. Through their influence as board members, borrowers influence lender compensation, which decreases the interest rate. More precisely, the model shows that the interest rate of the loan *increases* with expropriation risk (the probability of contract enforcement decreases), but *decreases* with political influence over lender compensation. Thus, the effects of expropriation risk and political influence over lender compensation counteract each other; implying a plausible zero net effect of political connections on loan interest rates.

A politically connected borrower not only may influence the compensation of the lender, but also may be expected to contribute to social objectives. Relative to importance of social objectives in China Chen, Jiang, Ljungqvist, Lu, and Zhou (2015, page 3) write,

> ... the objective function of the Chinese Communist Party (CCP), which ultimately controls most functions of state, is not exclusively the maximization of profits or shareholder value but also the maintenance of a "harmonious society." Consistent with this, we document that the chairmen of state groups in our sample are rewarded with promotions to higher political office not only for raising productivity but also for avoiding

> large scale job losses. Clearly, these aims can be in conflict (maintaining overstaffing may make raising productivity difficult) and over time may be incompatible (subsidizing unproductive jobs may divert resources away from creating productive ones).

In other words, a politically connected borrower may be expected to divert resources to meet social objectives. However, the diversion of resources to social objectives is not free, but is implicitly paid for through future compensation (e.g. promotions). Consistent with the diversion of resources to social objectives, Chen, Sun, Tang, and Wu (2011) show that political influence reduces investment efficiency.

Social objectives influence credit constraints. The cost of social objectives increases the required minimum project return and cash holdings required to obtain financing. First, a lender understands that a politically connected borrower diverts a portion of the project return to social objectives, which decreases the return available to pay off the loan. Second, the cost of social objectives decreases the motivation of the borrower to work hard, which increases the cash required to remain incentive compatible. Thus, the loss in return due to the borrower fulfilling social objectives increases both the return required and the cash required to obtain financing. In contrast, politically influenced lender compensation decreases the minimum required return and cash required for a borrower to obtain financing. All in all, the effect of political connections on access to financing depends on the relative magnitudes of the social objectives and influence over lender compensation.

The cost of social objectives also influences the decision of the borrower about whether to be politically connected or unconnected. The model shows that a borrower with relatively high probability of success is more likely to choose to be politically unconnected. Intuitively, in the case of a relatively high probability of success, the borrower prefers to fully capture the economic rents of the project in lieu of the gains from political connections. Finally, in the case of relatively high social cost with a high probability of project success, a politically unconnected borrower is less financially constrained than a politically connected borrower. Thus, the co-existence of political connected and non-connected borrowers in the same economy can be interpreted as borrowers choosing to be politically unconnected to pursue high return projects and overcome credit rationing.

An implication of the model is that borrowers with relatively high success probabilities (i.e. lower default rates) may choose to be politically unconnected and seek out financing from banks that are relatively independent of political influence. Consistent with the idea that politically unconnected borrowers have higher success probabilities Khwaja and Mian (2005, p. 1392) write,

> Comparing average default rates for firms that (i) borrow only from government banks, (ii) borrow from both bank types, and (iii) borrow only from private banks, shows that the first have the highest average default rates (25.7 percent), followed by the second (16.9 percent), and then the last category has the lowest default rates (5.4 percent).

In addition, Wei and Zhu (2015) report that state owned firms (relative to private firms) have lower returns on equity and suffer more frequent losses.

The model is broadly related to theoretical papers about rent seeking through government influence. For example, Krueger (1974) analyzes rent seeking through restraints on trade. Shleifer and Vishny (1993) and Shleifer and Vishny (1994) explore the influence of corruption. Kornai, Maskin, and Roland (2003) review the related topic of soft budget constraints. To my knowledge, this is the first paper to model the combined effects on financing from politically influenced lender compensation and social objectives.

The paper proceeds as follows. Section 2 sets up a simple model of investment with moral hazard, stochastic contract enforcement, politically influenced lender compensation, social objectives that decrease project return, and implicit payments to the borrower for meeting those social objectives. Section 3 explores the implications of political connections on the contracts, interest rates, expected payoffs, and access to credit. Section 4 derives the conditions under which it is beneficial for the borrower to be politically unconnected. Section 5 provides an illustrative example. Section 6 concludes.

2 Model set-up

To model the influence of political connections on credit, I extend the fixed investment model with stochastic enforcement of Tirole (2006, pp. 535-540). In Tirole's model, the entrepreneur needs to

invest I at $t = 0$ with returns at $t = 1$ of R in the case of success and zero in the case of failure. The entrepreneur has an endowment at $t = 0$ of cash A and seeks to borrow $I - A$. Cash is restricted to $0 < A < I$. The risk free rate is assumed to be zero. Both the entrepreneur and lender share the same beliefs relative to all exogenous parameters in the model. The borrower and lender are risk neutral.

At $t = 0$ the entrepreneur chooses whether to work hard or shirk. If she works hard, the probability of project success is p_H. If she shirks, the probability of success drops from p_H to p_L so that $\Delta p = p_H - p_L > 0$. If she shirks she enjoys a private benefit of B where $B > 0$. The entrepreneur can not pledge the private benefit B to the lender. In addition, institutions enforce contracts with probability e. Thus, there are three future states: success with enforcement, success with expropriation, and failure. For example, if the entrepreneur works hard the probability of success with enforcement is ep_H. Also, there is a competitive market for loans so that the lender enters into a contract with zero expected utility, implying a risk neutral lender earns zero NPV in expectation. Lastly, the model's use of a single entrepreneur (the borrower) and a single lender (the bank) eliminates several layers of agency issues. For example, to the extent a lending officer doesn't exactly internalize the zero net present value bank lending objective, a lending officer's decision may diverge from the model.

I model the effect of political connections on financing in three ways. First, I assume the politically connected entrepreneur has costly social objectives. For example, the politically connected entrepreneur might have firm employment objectives. These social objectives reduce the overall return of the project. I define the loss from implementing these social objectives in the case of project success as L where $0 \leq L < R$.[3] In the case of project failure, where the return of the project is zero, the loss due to meeting social objectives is also zero. As a member of a political network, the entrepreneur gains future earnings by meeting social objectives. I define the present value of the increase in future earnings from meeting these social objectives as $S \geq 0$. To evaluate the relationship between L and S, I appeal to the notion of a political central planner. To the political central planner, L represents a social benefit and S a cost. Because the central planner

[3]For the project to have a positive NPV it is necessary that $L < R$.

can either spend S directly or spend S to achieve a social benefit of L, the central planner will only choose to work through the entrepreneur if $S \leq L$. I further assume, that the borrower can't pledge the present value S of future compensation to the lender.

Lastly, a political connected borrower may influence the future compensation of the lender. I define $C \geq 0$ as the increase in compensation to the lender due to a borrower being politically connected. I further restrict the additional compensation due to political influence to be less than the loan or $0 \leq C < (I - A)$. Due to the competitive market for loans, the lender enters into a contract with a zero expected NPV that includes the compensation due to political connections.[4] If the project is a success and the contract is enforced, the lender receives a payoff of R_l and the borrower R_b where $R_l = R - R_b$. If the project is a success and the contract is not enforced, the borrower expropriates the entire project return R.

Based on the assumptions noted above, Table 1 shows the investments and payoffs associated with the total project, the borrower and the lender. Panel A shows the total, borrower, and lender investments at $t = 0$. Panels B and C show payoffs for the total project, the borrower, and the lender. Panel B assumes the entrepreneur works hard and Panel C the entrepreneur shirks.

insert Table 1

Using the payoffs from Table 1, I estimate the expected total project NPVs conditional on whether the entrepreneur works hard or shirks. If the entrepreneur works hard then the expected total project NPV is

$$\begin{aligned} E[NPV|Hard]_{Total} &= ep_H(R - L + S) + (1 - e)p_H(R - L + S) + C - I. \\ &= p_H(R - L + S) + C - I. \end{aligned} \tag{1}$$

[4]The effect of C is to add a payment to the lender that makes the loan budget constraint soft, which implies that rate of return of the loan less than 100%. Over time this leads to the need for bail-outs. Please see Kornai et al. (2003) for a review of the economic effects of soft budget constraints.

Because of the assumption that the borrower can't pledge future earnings S due to political connections to the lender, the expected total NPV including only pledgeable income is

$$E[NPV|Hard, Pledgeable]_{Total} = p_H(R - L) + C - I \geq 0. \tag{2}$$

I assume that if the entrepreneur works hard the $E[NPV|Hard, Pledgeable]_{Total} \geq 0$. If the entrepreneur shirks, the expected total project NPV is

$$E[NPV|Shirk]_{Total} = p_L(R - L + S) + B + C - I < 0. \tag{3}$$

Eq. (3) insures that the lender must design a contract that incentivizes the borrower to exert high effort.

3 The influence of political connections on financing

3.1 The loan contract

Using the payoffs from Table 1, I find the expected NPV to the lender when the borrower works hard is

$$E[NPV|Hard]_l = ep_H(R - R_b) + C - (I - A). \tag{4}$$

Using the assumption that the expected profit to the lender is zero, I set Eq. (4) to zero. To find the payoff to borrower, I then rearrange terms to find

$$R_b = R - \frac{(I - A) - C}{ep_H}. \tag{5}$$

Eq. (5) shows the relationship between political connections and the borrower's payoff. First, R_b is indepedent of both L and S. Intuitively, conditional on sufficent return R the lender is indifferent to the size of either L or S. To understand the influence of the other political connection parameters

on the borrower's payoff, I take the derivative of Eq. (5) with respect to e and C to find

$$\frac{\partial R_b}{\partial e} = \frac{1}{e^2 p_H}\left[(I - A) - C\right] > 0, \tag{6}$$

$$\frac{\partial R_b}{\partial C} = \frac{1}{e p_H} > 0. \tag{7}$$

Eq. (6) shows that as the enforcement probability e increases, the payment to the borrower in the case of success R_b increases. Eq. (7) shows that if the political influence over the compensation to the lender C increases, then the payment to the borrower in the case of success with enforcement R_b also increases.

To find the payoff to lender, I substitute $R_l = R - R_b$ into Eq. (4), set the equation to zero, and rearrange to find

$$R_l = \frac{(I - A) - C}{e p_H}. \tag{8}$$

Eq. (8) shows the relationship between political connections and the lender's payoff. As with the borrower's payoff, the lender's payoff is independent of both L and S. To understand the influence of political connections on the lender's payoff, I take the derivative of Eq. (8) with respect to e and C to find

$$\frac{\partial R_l}{\partial e} = \frac{C - (I - A)}{e^2 p_H} < 0, \tag{9}$$

$$\frac{\partial R_l}{\partial C} = \frac{-1}{e p_H} < 0. \tag{10}$$

As expected, the signs on the derivatives are opposite to the signs for the borrower's payoff. Specifically, Eq. (9) shows that as enforcement e increases (decreases) the payment to the lender in the case of success with enforcement decreases (increases). In response to a decrease in contract enforcement (i.e. $e \downarrow$), the lender *ex-ante* increases R_l due to an increased probability of expropriation $(1 - e)$. Lastly, Eq. (10) shows C is a substitute for project return so an increase in C implies a decrease in R_l.

3.2 Interest rates and expected rate of return

Do political connections influence the interest rate of a loan? The contractual payment to the lender in the case of success with enforcement is R_l and the loan amount is $I - A$, which implies an interest rate of $i = \frac{R_l}{(I-A)} - 1$. In Appendix A.1, I solve for i to find

$$i = \frac{1}{ep_H}\left(1 - \frac{C}{I-A}\right) - 1. \tag{11}$$

Because I assume both risk neutrality and the risk free rate of interest equals zero, i represents the rate of interest that exactly compensates the lender for the probability a state evenutuates where the lender is not paid.

Eq. (11) shows the interest rate is unaffected by either L or S. To understand the influence of political connections on interest rates, I take the derivative of Eq. (11) with respect to e and C to find

$$\frac{\partial i}{\partial e} = \frac{-1}{e^2 p_H}\left(1 - \frac{C}{I-A}\right) < 0, \tag{12}$$

$$\frac{\partial i}{\partial C} = \frac{-1}{ep_H}\left(\frac{1}{I-A}\right) < 0. \tag{13}$$

Eq. (12) shows that the rate of interest i decreases as the enforcement probability e increases.[5] If a politically connected borrower has a relatively small enforcement probability e, then Eq. (12) shows the lender charges a politically connected borrower a relatively high interest rate. In contrast, Eq. (13) shows that an increase in political influence, which is manifested through an increase in the lender's compensation C, results in a decrease in the rate of interest i. Thus, an increase in political influence both positively and negatively influences the rate of interest on the loan.

To see this more clearly, suppose a borrower that is not politically connected is subject to full enforcement $e = 1$ and can't influence the compensation of the lender $C = 0$. Thus, the condition where a politically connected borrower has a higher rate of interest i^p than the non-politically

[5]Note this relationship holds due to the restriction $C < (I - A)$.

connected borrower i^n is

$$i^p > i^n$$
$$\frac{1}{ep_H}\left(1 - \frac{C}{I-A}\right) - 1 > \frac{1}{p_H} - 1,$$

which I simplify to

$$e < 1 - \frac{C}{I-A}. \tag{14}$$

Eq. (14) shows that a politically connected borrower (relative to a non-politically connected borrower) pays a higher interest rate when the enforcement probability e is low relative to the political influence of compensation scaled by the loan $\frac{C}{I-A}$.

Do political connections influence the expected rate of return of the loan? To distinguish between the return R, I define the expected rate of return as $E[r]$. To match the model to the empirical literature, I follow Khwaja and Mian (2005) and define the expected rate of return as

$$E[r] = (1-d)(1+i) + dc, \tag{15}$$

where d is the default rate and c the recovery rate. The model default rate d is

$$d = (1-e)p_H + (1-p_H),$$
$$d = 1 - ep_H. \tag{16}$$

The model recovery rate is $c = 0$. I substitute $c = 0$, Eq. (16) and Eq. (11) into Eq. (15) to find

$$E[r] = (1 - 1 + ep_H)\left[1 + \frac{1}{ep_H}\left(1 - \frac{C}{I-A}\right) - 1\right],$$
$$= 1 - \frac{C}{I-A}. \tag{17}$$

In Appendix A.2, I derive Eq. (17) in an alternative manner by taking the expected return to the lender divided the loan.[6]

Eq. (17) provides insight into the relationship between political connections and the expected rate of return of the loan. First, the expected rate of return $E[r]$ is independent of both e, L, and S. This is because *ex-ante* the lender writes a contract that accounts for possible expropriation. In addition, due to the zero NPV assumption the division of the surplus (ie. relative magnitudes of L and S) is not relevant to the lender's payoff. Second, when $C = 0$ the expected rate of return is equal to one, which is consistent with risk neutrality. Also, when the lender's compensation C is influenced by political connections, the expected rate of return on the loan is less than one and further $E[r]$ drops linearly based upon the ratio $\frac{C}{(I-A)}$. In other words, the higher the compensation C relative to the loan amount $(I - A)$ the lower the expected rate of return. Lastly, when $C > 0$ the negative expected rate of return equivalently implies a loan recovery rate that is less than the loan amount.

3.3 Access to credit

The conditions for the borrower to have access credit are: i) the project has sufficient pledgeable return to generate an expected positive NPV, ii) there must be sufficient return in the success with enforcement state to fund R_l, and iii) the entrepreneur must possess sufficient cash A to be incentive compatible. To clearly define the first condition, I re-arrange Eq. (2)

$$R \geq \frac{I - C}{p_H} + L = \bar{R_1}, \tag{18}$$

where $\bar{R_1}$ represents the minimum project return to receive financing.

To meet the second condition the borrower's project must have sufficient return in the case of success with enforcement to meet the claim R_l. For example, in the extreme case of zero enforcement there would not be return available for the lender to receive R_l. Based on the zero profit condition

[6]Note that Eq (17) defines the expected return of the loan and not the expected return of the lender, which is always equal to one. To see this, note that the lender's rate of return from the politically influenced lender compensation is $\frac{C}{I-A}$.

to the lender,

$$ep_H R_l = (I - A) - C. \tag{19}$$

Also, for there to be sufficient total project return to pay R_l

$$\begin{aligned} R - L &\geq R_l \\ ep_H(R - L) &\geq ep_H R_l \end{aligned} \tag{20}$$

I subsitute the RHS of Eq. (19) into the RHS of Eq. (20) and simplify to find

$$\begin{aligned} ep_H(R - L) &\geq (I - A) - C, \\ R - L &\geq \frac{(I - A) - C}{ep_H}, \\ R &\geq \frac{(I - A) - C}{ep_H} + L = \bar{R_2}, \end{aligned} \tag{21}$$

where $\bar{R_2}$ represents the minimum return required for the borrower to obtain funding.

Third, the borrower must hold sufficient cash A to be incentive compatible. Thus, the lender designs a contract so that

$$\begin{aligned} E[NPV|Hard]_b &\geq E[NPV|Shirk]_b, \\ p_H\left[e(R_b - L + S) + (1 - e)(R - L + S)\right] - A &\geq p_L\left[e(R_b - L + S) + (1 - e)(R - L + S),\right] + B - A \\ p_H\left[eR_b + (1 - e)R - L + S\right] &\geq p_L\left[eR_b + (1 - e)R - L + S\right] + B, \\ \Delta p\left[eR_b + (1 - e)R - L + S\right] &\geq B. \end{aligned} \tag{22}$$

In Appendix A.3, I show that Eq. (22) implies

$$A \geq I - p_H\left[R - \frac{B}{\Delta p} - L + S\right] - C = \bar{A} \tag{23}$$

where $\bar{A}$ represents the minimum amount of cash required to secure a loan.

Thus, for a borrower to obtain funding, she must have sufficient return so that $R \geq \bar{R}_1$ and $R \geq \bar{R}_2$ and sufficient cash so that $A \geq \bar{A}$ as defined in Eqs. (18), (21), and (23), respectively. Both Eqs. (18) and (21) must hold to satisfy the participation (individual rationality) constraint of the lender. Eq. (23) must hold for the borrower to be incentive compatible. To understand the influence of political connections on access to credit, I evaluate each expression with respect to the parameters e, L, S, and C.

What is the influence of the enforcement probability e on obtaining financing? First, the enforcement probability does not influence the minimum cash required or the return required for a positive NPV.[7] However, a lower enforcement probability implies the project must have a higher return due to the potential expropriation in the success but not enforce state. To clarify the relationship, I take the derivative of $\bar{R}_2$ with respect to e to find

$$\frac{\partial \bar{R}_2}{\partial e} = \frac{-1}{e^2 p_H} \left[(I - A) - C \right] < 0, \tag{24}$$

which shows that the return required decreases (increases) with the enforcement (expropriation) probability.

What is the influence of the social objectives on financing? Because the borrower can not pledge to lender the present value of future earnings from meeting social objectives, the return required to obtain financing is not affected by S.[8] However, compensation due to meeting social objectives S increases the incentive of the borrower to work hard. To show this relationship, I take the derivative of $\bar{A}$ with respect to S to find

$$\frac{\partial \bar{A}}{\partial S} = -p_H < 0, \tag{25}$$

which shows that increasing S implies a decrease in the cash required to secure financing.

In contrast, higher spending L on social objectives tighten financial constraints in all three dimensions. To more clearly see this relationship, I take derivatives of Eqs. (18), (21), and (23)

[7] Note that $\frac{\partial \bar{R}_1}{\partial e} = 0$ and $\frac{\partial \bar{A}}{\partial e} = 0$.
[8] Note that $\frac{\partial \bar{R}_1}{\partial S} = 0$ and $\frac{\partial \bar{R}_2}{\partial S} = 0$.

with respect to L to find

$$\frac{\partial \bar{R}_1}{\partial L} = 1 > 0, \tag{26}$$

$$\frac{\partial \bar{R}_2}{\partial L} = 1 > 0, \tag{27}$$

$$\frac{\partial \bar{A}}{\partial L} = p_H > 0. \tag{28}$$

The signs of the derivatives show that an increase in L tightens financial constraints both in terms of the minimum returns and minimum cash required to obtain financing.

What is the effect of political influence on the compensation C of the lender on access to finance? To clarify the relationship, I take derivatives of Eqs. (18), (21), and (23) with respect to C to find

$$\frac{\partial \bar{R}_1}{\partial C} = \frac{-1}{p_H} < 0, \tag{29}$$

$$\frac{\partial \bar{R}_2}{\partial C} = \frac{-1}{ep_H} < 0, \tag{30}$$

$$\frac{\partial \bar{A}}{\partial C} = -1 < 0. \tag{31}$$

The signs of the derivatives show that an increase in C loosens financial constraints both in terms of the minimum returns and minimum cash required to obtain financing.

The model provides insight into the effect of political influence on access to finance. First, a decrease in enforcement probability increases the minimum return R required to obtain financing. Second, an increase in the loss L due to meeting social objectives both increases the minimum return R and the minimum cash A required to obtain financing. Thus, at the margin a decrease in e and an increase in L both tighten access to credit. In contrast, an increase in political influence over the compensation C of the lender decreases the minimum cash A and return R required to obtain credit. Overall, the influence of political connections on access to credit is dependent on relative magnitudes of e, S, L, and C.

4 Why choose to be politically unconnected?

In practice, we observe networks of politically connected and unconnected borrowers.[9] To explain why there is heterogeneity in political connections, one might argue that heterogeneity is due to the impossibility of everyone being politically connected, but social network theory suggests that if belonging to a network is optimal, then everyone eventually joins the network.[10] To evaluate if heterogeneity is the result of each borrower pursuing an optimal strategy, I evaluate the conditions when a borrower chooses to become politically connected or unconnected.

How do I define a politically unconnected borrower? First, a politically unconnected entrepreneur has no influence on the compensation of the lender; hence $C = 0$ for a politically unconnected borrower.[11] Second, the politically unconnected borrower's future compensation is not tied to social obligations and so both $L = 0$ and $S = 0$. Lastly, I assume that contract for a politically unconnected borrower is strictly enforced so that $e = 1$. This assumption only affects access to finance. I next explore from the conduct perspective of the borrower when it is beneficial to be politically unconnected either to obtain a higher expected NPV or improve access to credit.

Might a borrower choose to be politically unconnected to obtain a higher expected project NPV? Because the borrower earns all the economic rents the expected NPV to the borrower is equal to the total project NPV.[12] The expected NPV to the politically connected borrower is $E[NPV|Hard]^p = p_H(R - L + S) + C - I$ and to the politically unconnected borrower is $E[NPV|Hard]^n = p_H R - I$. Thus, a borrower chooses to be politically unconnected when

$$\begin{aligned} E[NPV|Hard]_b^n &\geq E[NPV|Hard]_b^p, \\ p_H R - I &\geq p_H(R - L + S) + C - I, \\ p_H &\geq \frac{C}{L - S}. \end{aligned} \tag{32}$$

[9] In the Allen, Qian, and Qian (2005) sample, 77%(63%) of the firms(lending) are politically unconnected.

[10] For an overview of how information diffusion may result in the adoption of a common behavior see Easley and Kleinberg (2010, Chap. 19).

[11] As noted by Lu, Zhu, and Zhang (2012) an alternative mechanism to gain influence is through an ownership stake of over 5% in the bank. This ownership stake likely leads to a seat on the board of directors and better lending terms.

[12] See Appendix A.4 for a derivation.

Eq. (32) shows that a borrower chooses to be politically unconnected when the probability of success is high relative to the ratio $\frac{C}{L-S}$. In the extreme case, when political influence over lender compensation is so high that $C > (L-S)$ the borrower always chooses to be politically connected.[13] Likewise, for $C < (L-S)$, a relatively high C implies a borrower may choose to be politically connected for even a high p_H. In contrast, for a very low C a borrower may choose to be politically unconnected even for a relatively low p_H. Likewise, as $L-S$ increases a borrower may choose to be politically unconnected even for a relatively low p_H. Importantly, except in the case of $C > (L-S)$ the model suggests that a network of politically connected and unconnected borrowers co-exist.

Might a borrower choose to be politically unconnected to gain greater access to finance? More specifically, under what conditions does a politically unconnected borrower need either less project return or cash to obtain financing? The conditions where a politically unconnected borrower has lower financial constraints are $\bar{R}_1^n < \bar{R}_1^p$, $\bar{R}_2^n < \bar{R}_2^p$, and $\bar{A}^n < \bar{A}^p$. In Appendix A.5, I substitute the relevant expression into each condition to find

$$p_H L > C, \tag{33}$$

$$e p_H L + (1-e)(I-A) > C, \tag{34}$$

$$p_H (L-S) > C. \tag{35}$$

When Eqs. (33) and (34) hold, a politically unconnected borrower requires less return than a politically connected borrower to obtain financing. Likewise, when Eq. (35) holds, a politically unconnected borrower requires less cash than a politically connected borrower to obtain financing.

Eq. (33), which holds when $\bar{R}_1^n < \bar{R}_1^p$, shows that a politically unconnected borrower (relative to a politically connected borrower) needs access to a project with a lower return to obtain financing when the expected loss from social objectives $p_H L$ is greater than the compensation to the lender C. Alternatively, a politically unconnected borrower has easier access to finance when the compensation to the lender C is greater than the expected loss due to social objectives.

[13] Note that $0 < p_H < 1 < \frac{C}{L-S}$ for $C > (L-S)$.

Eq. (34), which holds when $\bar{R}_2^n < \bar{R}_2^p$, requires that the sum of the two RHS terms is greater than C. The first term ep_HL represents the expected loss in return in the success with enforcement state. The second term $(1-e)(I-A)$ represents the expected value of the expropriation of the loan. When the sum of these effects are greater than C a politically unconnected borrower (relative to a politically connected borrower) requires less return R to obtain financing.

Lastly, Eq. (35), which holds when $\bar{A}^n < \bar{A}^p$, shows that a politically unconnected borrower (relative to a politically connected borrower) needs less cash to obtain financing when the expected loss from social objectives p_HL minus the expected gain from social objectives p_HS is greater than the compensation to the lender C. This condition is important for two reasons. First, it is exactly the same condition as in Eq. (32). Second, if if Eq. (35) holds, then Eq. (33) automatically holds.[14]

Thus, the model shows that a borrower with a relatively high probability of success may choose not to be politically connected either to fully capture the return of the project or secure financing. Because the model assumes symmetric information, the borrower is able to secure their preferred contract without a costly signal. The symmetric assumption is based on the idea the lender can observe if the borrower is (or is not) politically connected.[15]

5 Illustrative Example

To provide intuition regarding the effect of political connection parameters e, S, L, and C on lending terms, Table 2 shows different scenarios in Columns (1) through (6). A common set of assumptions is used for all scenarios. The borrower has access to a project with a return of $R = \$125$ in the case of success and zero in the case of failure. The project requires an investment of $I = \$100$. The borrower holds cash of $A = \$30$ and thus requires a loan of $I - A = \$70$. If the borrower works hard the probability of success is $p_H = 87\%$. If the borrower shirks, the probability of success declines to $p_L = 60\%$, but she gains a private benefit of $B = \$12$. Panel A shows various scenarios

[14] If $(p_HL - S) > C$ then $p_HL > (C + S)$, which implies $p_HL > C$ for $S > 0$.

[15] If a borrower decides on a project by project basis to exercise or not exercise their political connection, then modeling the contract of a high expected return good type borrower from a lower expected return bad type borrower becomes an adverse selection problem. For example, Chen, Liu, and Su (2013) suggest that better performing (good type borrowers) separate from poorer performing (bad type borrowers) by entertaining bankers.

with different values of e, S, L, and C. Panel B provides model outputs for each scenario. Panel C shows the minimum return and cash required to obtain credit.

insert Table 2

The first scenario in Column (1) establishes a politically unconnected base case. Column (1) in Panel A shows the political connection parameters are $e = 100\%$, $S = \$0$, $L = \$0$, and $C = \$0$. Panel B shows the total project expected NPV is \$8.75 if the borrower works hard and -\$13 if the borrower shirks. Thus, the lender needs to design a contract that incentivizes the borrower to work hard. Panel C shows that the minimum cash required for the borrower to remain incentive compatible is \$29.92, which is slightly less than the cash held of \$30. Consistent with the borrower holding sufficient cash to secure the loan, the expected NPV of working hard is \$8.75 versus the expected NPV of shirking is \$8.72.[16] The lender charges an interest rate of 14.94%, which results in an expected rate of return from the loan of 100%. Because contracts are fully enforced, the expected default rate is 13% or $1 - p_H$. This first scenario illustrates the fixed investment model of Tirole (2006, pages 115-119).

In the second scenario, the enforcement probability changes from $e = 100\%$ in Column (1) to $e = 95\%$ in Column (2). The other political connection parameters are unchanged. The decrease in enforcement probability increases the expected default rate from 13% to 17.35%. The lender recognizes the increase in the default rate and *ex-ante* adjusts the contract. Thus, the payment to the lender in the case of success increases from \$80.46 to \$84.69. Likewise, the interest rate increases from 14.94% to 20.99%. Due to the *ex-ante* adjustment the rate of return of the loan remains at 100%. This second scenario illustrates the fixed investment model with stochastic contract enforcement of Tirole (2006, pages 535-540). Importantly, the decrease in enforcement probability results in an increased interest rate, but a constant expected rate of return. In contrast, Khwaja and Mian (2005) find loans to politically connected borrowers (relative to unconnected) have similar interest rates but lower rates of returns.

The third scenario in Column (3) changes politically influenced lender compensation from $C =$ \$0 to $C = \$3.5$. Column (3) in Panel A shows the political connection parameters are $e = 95\%$,

[16]Note the expected total project NPV and the borrower's expected NPV when working hard are equal.

$S = \$0$, $L = \$0$, and $C = \$3.5$. As shown in Eqs. (9) and (10), an increase in lender compensation C has the opposite effect of a decrease in the enforcement probability. Column (3) shows how politically influenced lender compensation counteracts decreased enforcement in the loan terms. Specifically, the loan interest rate in Columns (1) and (3) are identical, which matches what is empirically observed by Khwaja and Mian (2005). In addition, the politically connected lender compensation results in a 95% rate of return with a default rate of 17.35%.[17] Lastly, in every case the minimum return and cash required to obtain financing in Column (3) of Panel C is less than in Column (2). Likewise, the borrower requires less cash as the minimum cash decreases from \$29.92 in Column (2) to \$26.42 in Column (3), which shows that politically influence lender compensation increases access to credit.

The fourth scenario in Column (4) shows the effect of social objectives on financing. Columns (1) through (3) set $S = \$0$ and $L = \$0$. Column (4) sets $S = \$5$ and $L = \$6$. The requirement for the borrower to fulfill social objectives reduces the expected NPV of the borrower from \$12.25 in Column (3) to \$11.38 in Column (4). Social objectives also affect access to credit. Relative to Column (3) in Panel C, the required minimum return and cash holdings all increase due to social objectives. Eq. (32) shows that a borrower chooses to be politically unconnected when $p_H > \frac{C}{L-S}$. Clearly, this condition does not hold. Thus, the borrower chooses to be politically connected and earn the expected NPV of \$11.38 in Column (4), rather than to be politically unconnected and earn the expected NPV of \$8.75 in Column (1). All in all, the benefits of politically connected lender compensation outweigh the cost of social objectives and the borrower chooses to be politically connected.

In the fifth scenario in Column (5), I markedly increase the loss L from \$6 to \$12. Relative to Column (4), the minimum returns $\bar{R}_1$ and $\bar{R}_2$ and the minimum cash $\bar{A}_1$ all increase. Importantly, in Column (5) $\bar{A}_1$ is equal to \$32.51, which exceeds the \$30.00 cash holdings of the borrower. As a result, the borrower is credit rationed. Also, even if the borrower had access to credit, because Eq.(32) holds; she chooses to be politically unconnected with expected NPV of \$8.75 as shown in

[17] In the Khwaja and Mian (2005) sample, the mean interest, return, and default rates are 14.05%, 93.46%, and 17.61%, respectively.

Column (1) rather than to be politically connected with an expected NPV of \$6.16 as shown in Column (5).[18]

The sixth scenario in Column (6) decreases the loss L back from \$12 to \$6 and lowers the enforcement probability from 95% to 60%. Column (6) in Panel A shows the political connection parameters are $e = 60\%$, $S = \$5$, $L = \$6$, and $C = \$3.5$. This scenario illustrates two points. First, the expected NPV of the project is \$11.38, which matches the NPV in Column (4) and satisfies the participation constraint of the borrower. Second, the lower enforcement probability increases $\bar{R}_2$ from \$92.46 in Column (5) to \$133.39 in Column (6). Because $R < \bar{R}_2$, the borrower is credit rationed. In this scenario, despite the lower expected NPV associated with being politically connected, the borrower chooses to be politically unconnected to gain access to finance.

6 Conclusion

In summary, I extend the fixed investment model with stochastic contract enforcement of Tirole (2006, pages 535-540) by adding politically influenced lender compensation, decreased project return due to social costs, and implicit borrower compensation from meeting social objectives. In addition, I interpret the probability of contract enforcement as being negatively related to political connections. These additional features provide several insights. First, consistent with the empirical findings of Khwaja and Mian (2005) the model shows the expected rate of return on a loan is less than 100% when lenders receive politically influenced compensation. Second, the interest rate of the loan *increases* as expropriation risk increases (the probability of contract enforcement decreases), but *decreases* as political influence over lender compensation increases. Third, the costs of political influence through social objectives counteract the gains from political influence over lender compensation. Thus, social objectives increase the required minimum project return and cash holdings required to obtain financing. Lastly, the model shows that a borrower with relatively high probability of project success is more likely to choose to be politically unconnected. In total, the model explains a number of empirical regularities.

[18] Note that in Column (5) the contract would not be offered as the borrower would choose to shirk.

At face value, the idea that borrowers with high probabilities of project success choose to be politically unconnected may seem contrary to Faccio (2006), who finds a positive CAR (Cumulative Abnormal Return) due to announcements of firm becoming politically connected. However, when evaluated at a deeper level the model and empirical evidence are consistent. First, the model predicts an increase in the borrower's NPV (e.g. a positive CAR) whenever the net loss due to meeting social objectives is less than the gain due to politically influenced lender compensation.[19] Thus, the model predicts a positive CAR whenever the benefit through lender compensation exceeds the costs of social objectives.[20] Second, firms that will not benefit from political connections are unlikely to pursue political connections. Third, the model explains the relationship between political connections and financing, but does not explain the influence of political connections on firm preferential treatment in other areas such as regulation or taxation. All in all, a positive CAR is consistent with agents that gain from political connections choosing to become politically connected.

In addition, the relationship between political connections and other economic measures suggests a negative relationship between political connections and growth.[21] For example, Allen et al. (2005) show that firms in the private sector dominate firms in the state owned and listed sectors in terms of economic growth. Allen et al. (2005, page 59) write,

> Our conclusion for the imbalance among the three sectors is that there exist effective, alternative financing channels and corporate governance mechanisms, such as those based on reputation and relationships, to support the growth of the Private Sector.

The model helps explain their empirical findings. First, the idea that borrowers with high probabilities of success choose politically unconnected financing naturally leads to higher growth in the private sector. Second, the importance of reputation serves as a substitute for the institutional enforcement of contracts.[22]

[19] Tirole (2006, page 119) notes the borrowers contract can be interpreted as an equity contract.

[20] More precisely, a positively CAR is observed when $p_H(L-S) \leq C$

[21] If the probability of success for the not politically connected p_H^n is greater than the probability of success for the politically connected p_H^p, then $p_H^n R > p_H^p R$, implying the politically unconnected grows faster on average than the politically connected.

[22] If reputation is a perfect substitute for legal institutions, then a politically unconnected borrower can credibly commit to $e = 1$ without the legal institutions to enforce contracts.

The model leaves unanswered the related question of whether lenders should naturally separate into politically connected and unconnected banks. The empirical evidence regarding this question is mixed. The evidence in Khwaja and Mian (2005) shows that state banks in Pakistan tend to serve politically connected borrowers and private banks tend to serve unconnected borrowers. In contrast, the survey evidence of Allen et al. (2005) shows that state banks in China are an important early source of financing for private Chinese firms. However, the same survey evidence shows that state banks are uninvolved in financing these same firms during their expansion years. Rather, during these expansion years private firms use many sources of financing including friends, private credit agencies, trade credit, foreign direct investment, etc. In contrast, Firth, Lin, Liu, and Wong (2009) document how banking reforms has led to Chinese state-owned banks financing the rapidly growing private sector. Thus, state owned banks in China appear to be able to juggle serving both state-owned and private enterprises whereas in Pakistan private and state-owned banks appear to have different lending objectives. Follow-on research into why these different structures exist represents an interesting open question.

A Appendix

A.1 Derivation of Eq. (11)

I substitute R_l as defined in Eq. (8) into the expression below and simplify to find

$$\begin{aligned} i &= \frac{R_l}{(I-A)} - 1 \\ &= \left(\frac{1}{I-A}\right) R_l - 1 \\ &= \left(\frac{1}{I-A}\right)\left(\frac{(I-A)-C}{ep_H}\right) - 1, \\ &= \frac{1}{ep_H}\left(1 - \frac{C}{I-A}\right) - 1. \end{aligned}$$

A.2 Derivation of Eq. (17)

Khwaja and Mian (2005) measure return as the percentage of the loan that is collected by the bank. In the model, this is equivalent to the expected return to the lender divided the loan. I substitute R_l as defined in Eq. (8) into the return divided by the loan and simplify to find

$$\begin{aligned} E[r] &= \frac{ep_H R_l + (1-e)p_H 0 + p_L 0}{(I-A)}, \\ &= \frac{ep_H R_l}{(I-A)}, \\ &= \frac{ep_H\left(\frac{(I-A)-C}{ep_H}\right)}{(I-A)}, \\ &= 1 - \frac{C}{(I-A)}, \end{aligned}$$

which matches the derivation Section 3.2.

A.3 Derivation of Eq. (23)

I re-arrange Eq. (22) to

$$\begin{aligned} \Delta p\left[eR_b + (1-e)R - L + S\right] &\geq B, \\ eR_b + (1-e)R - L + S &\geq \frac{B}{\Delta p}. \end{aligned} \tag{36}$$

I then substitute the contract to the borrower $R_b = R - \frac{(I-A)-C}{ep_H}$ into the first term in the LHS of Eq. (36) to find

$$e\left[R - \frac{(I-A)-C}{ep_H}\right] + (1-e)R - L + S \geq \frac{B}{\Delta p}. \tag{37}$$

I then simply the Eq. (37) to

$$
\begin{aligned}
e\left[R-\frac{(I-A)-C}{ep_H}\right]+(1-e)R-L+S &\geq \frac{B}{\Delta p},\\
eR-\frac{(I-A)-C}{p_H}+R-eR-L+S &\geq \frac{B}{\Delta p},\\
-\frac{(I-A)-C}{p_H}+R-L+S &\geq \frac{B}{\Delta p},\\
-\frac{(I-A)-C}{p_H} &\geq -\left[R-\frac{B}{\Delta p}-L+S\right],\\
-I+A+C &\geq -p_H\left[R-\frac{B}{\Delta p}-L+S\right],\\
A &\geq I-p_H\left[R-\frac{B}{\Delta p}-L+S\right]-C=\bar{A}.
\end{aligned}
$$

A.4 Check that borrower receives all economic rents

The expected NPV to the borrower is

$$E[NPV|Hard]_b = ep_H(R_b - L + S) + (1-e)p_H(R - L + S) - A \tag{38}$$

I substitute $R_b = R - \frac{(I-A)-C}{ep_H}$ into Eq. (38) and simplify to show

$$
\begin{aligned}
E[NPV|Hard]_b &= ep_H\left(R-\frac{(I-A)-C}{ep_H}-L+S\right)-ep_H(R-L+S)+p_H(R-L+S)-A,\\
&= ep_H(R-L+S)-(I-A)+C-ep_H(R-L+S)+p_H(R-L+S)-A,\\
&= p_H(R-L+S)+C-I,
\end{aligned}
$$

which equals the total project NPV.

A.5 Simplification of conditions in Eqs. (33), (34), and (35)

I simplify the condition in Eq. (33) to

$$
\begin{aligned}
\bar{R}_1^n &< \bar{R}_1^p,\\
\frac{I}{p_H} &< \frac{I-C}{p_H}+L,\\
I &< I-C+p_HL,\\
-p_HL &< -C,\\
p_HL &> C.
\end{aligned}
$$

I simplify the condition in Eq. (34) to

$$\begin{aligned}
\bar{R}_2^n &< \bar{R}_2^p, \\
\frac{(I-A)}{p_H} &< \frac{(I-A)-C}{ep_H} + L, \\
e(I-A) &< (I-A) - C + ep_H L, \\
-ep_H L + e(I-A) - (I-A) &< -C, \\
ep_H L - e(I-A) + (I-A) &> C, \\
ep_H L + (1-e)(I-A) &> C.
\end{aligned}$$

I simplify the condition in Eq. (34) to

$$\begin{aligned}
\bar{A}^n &< \bar{A}^p, \\
I - p_H \left[R - \frac{B}{\Delta p}\right] &< I - p_H \left[R - \frac{B}{\Delta p} - L + S\right] - C, \\
-p_H \left[R - \frac{B}{\Delta p}\right] &< -p_H \left[R - \frac{B}{\Delta p}\right] - p_H(-L+S) - C, \\
0 &< -p_H(-L+S) - C, \\
p_H(-L+S) &< -C, \\
p_H(L-S) &> C.
\end{aligned}$$

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Table 1: Investments and Payoffs

This table shows the investments and payoffs associated with total project, the borrower and the lender. Panel A shows the total, borrower, and lender investments at $t = 0$. Panels B and C show the payoffs and expected NPVs for the total project, the borrower, and lender. Panel B assumes the entrepreneur works hard and Panel C the entrepreneur shirks.

Panel A: Investment at $t = 0$				
		Total	Borrower	Lender
	Investment	I	A	$I - A$
Panel B: Cash Flow at $t = 1$ if entrepreneur works hard				
Probability	Outcome	Total	Borrower	Lender
ep_H	Enforcement & Success	$R - L + S + C$	$R_b - L + S$	$R - R_b + C$
$(1 - e)p_H$	Expropriation & Success	$R - L + S + C$	$R - L + S$	C
$1 - p_H$	Failure	C	0	C
Panel C: Cash Flow at $t = 1$ if entrepreneur shirks				
Probability	Outcome	Total	Borrower	Lender
ep_L	Enforcement & Success	$R - L + S + C + B$	$R_b - L + S + B$	$R - R_b + C$
$(1 - e)p_L$	Expropriation & Success	$R - L + S + C + B$	$R - L + S + B$	C
$1 - p_L$	Failure	$C + B$	B	C

Table 2: Illustrative Example:
This table provides an illustrative example where a borrower has an investment opportunity of $I = 100$ with a return of $R = 125$ in the case of success and zero in the case of failure. If the borrower works hard the probability of success is $p_H = 87\%$. If the borrower shirks the probability of success is $p_L = 0.60$ with a private benefit of $B = 12$. The borrower holds cash of $A = 30$. Columns (1) through (6) of Panel A show various scenarios with different values of e, S, L, and C. Panel B provides model outputs for each scenario. Panel C provides shows the minimum return and cash required to obtain credit.

Panel A: Political Connection Parameters							
Definiton	Parameter	(1)	(2)	(3)	(4)	(5)	(6)
Enforcement Probability	e	1	0.95	0.95	0.95	0.95	0.60
Borrower Social Gain	S	0	0	0	5	5	5
Borrower Social Loss	L	0	0	0	6	12	6
Lender Compensation	C	0	0	3.5	3.5	3.5	3.5
Panel B: Model Outputs							
Output	Equation	(1)	(2)	(3)	(4)	(5)	(6)
$E[NPV\|Hard]_{Total}$	$p_H(R - L + S) + C - I$	8.75	8.75	12.25	11.38	6.16	11.38
$E[NPV\|Shirk]_{Total}$	$p_L(R - L + S) + B + C - I$	-13	-13	-9.5	-10.1	-13.7	-10.1
Δp	$p_H - p_L$	0.27	0.27	0.27	0.27	0.27	0.27
Loan	$I - A$	70	70	70	70	70	70
R_b	$R - \frac{(I-A)-C}{ep_H}$	44.54	40.31	44.54	44.54	44.54	-2.39
R_l	$\frac{(I-A)-C}{ep_H}$	80.46	84.69	80.46	80.46	80.46	127.39
$E[NPV\|Hard]_b$	$p_H\left[eR_b + (1-e)R - L + S\right]$	8.75	8.75	12.25	11.38	6.16	11.38
$E[NPV\|Shirk]_b$	$p_L\left[eR_b + (1-e)R - L + S\right] + B$	8.72	8.72	11.14	10.54	6.94	10.54
$E[r]$	$1 - \frac{C}{I-A}$	100.00%	100.00%	95.00%	95.00%	95.00%	95.00%
d	$1 - ep_H$	13.00%	17.35%	17.35%	17.35%	17.35%	47.80%
i	$\frac{1}{ep_H}\left(1 - \frac{C}{I-A}\right) - 1$	14.94%	20.99%	14.94%	14.94%	14.94%	81.99%
Panel C: Access to Credit							
Minimum	Equation	(1)	(2)	(3)	(4)	(5)	(6)
$\bar{R}_1$	$\frac{I-C}{p_H} + L$	114.94	114.94	110.92	116.92	122.92	116.92
$\bar{R}_2$	$\frac{(I-A)-C}{ep_H} + L$	80.46	84.69	80.46	86.46	92.46	133.39
$\bar{A}$	$I - p_H\left[R - \frac{B}{\Delta p} - L + S\right] - C$	29.92	29.92	26.42	27.29	32.51	27.29
Access to Credit?		Yes	Yes	Yes	Yes	No	No