Can Political Connections Help Nation Building in Emerging Markets? Evidence from Public-Private Partnerships in China and India

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1. Abstract

Using 169 and 215 Public Private Partnerships (PPP) projects from China (1986-2012) and India (1991-2013), respectively, we find that politically connected PPP firms, on average have higher access to bank loans compared to competing and matched non-PPP firms. Our further analysis revealed that Chinese PPP projects with political connections, receive significantly higher bank loans for more productive firms (compared to non-PPP politically connected firms). On the contrary, in the case of Indian PPP projects, PPP firms that have political connections overinvest. We further test our results for robustness by running regression discontinuity design around political election events to show that, firms that are politically connected, benefit more through higher bank loans when the incumbent party or leaders regain their seats in the Government. Further, we find that the probability of default significantly increases for Indian PPPs that overinvest. Our results suggest that, political connections help in nation building in China and the same political connections deter nation building in India.

2. Introduction

Among several challenges that emerging markets face, sustaining their high economic growth rates is crucial. On one hand Governments are under-resourced to build and maintain nation building infrastructure projects, whereas, on the other hand, private sector firms face underinvestment problem due to lack of access to external finance. It is estimated that infrastructure demand will rise to US$ 19.2 trillion by 2030, with Asia needing the lion's share of US$ 15.8 trillion. Such a huge requirement highlights the possible issues related to unmet demand for capital in emerging economies. Projections from China and India's 12th Five-Year Plan indicate that US$1.03 trillion and US$1.025 trillion should be invested to

bridge the infrastructure gaps in the respective countries (Hongyan, 2010; India's Planning Commission, 2012). Given the failure of privatization programs and the limited capacity of both the private and the public sectors, Public–Private Partnerships (PPPs) are gaining popularity in these markets (Engel et al., 2008).

In this paper, we investigate whether politicians, by joining the boards of PPP firms, help in gaining better access to external financing and thereby play a mediating role in these nation building projects. Political connections, especially in emerging markets, allow firms to have better access to external finances from banks and financial institutions (Cole, 2009; Dinç, 2005; Mian and Khwaja, 2004; Sapienza, 2004).

However, existing empirical evidence on political connections and external financing do not support such altruistic Social lending Hypothesis (SLH). Most of the evidence support Political Corruption Hypothesis (PCH). Mian and Khwaja (2004) present direct evidence against the social lending view as they found that politically connected firms gain preferential access in only those banks that have profit motive compared to banks that have social motive. The most supported view on the role of political connections in the empirical literature is the misuse of such connections for private benefits of private sector firms. Cole (2009); Dinç (2005); Sapienza (2004) illustrate some mechanisms, such as increasing lending in election years or lending at lower cost in politically preferred areas, to highlight the negative side of political connections.

We revise this debate in the context of public private partnerships that offer more direct test for SLH. Political connections might work better in nation building private sector projects as there is a clear alignment and incentives for the ruling party to complete PPPs and enable government to reach targeted economic growth rates. Existing evidence tests SLH by using general corporate lending by banks, (Mian and Khwaja (2004)) that are not directly aligned with national building objectives. Hence, there is a higher likelihood to reject SLH.

We use China and India based PPP contracts, that provide an ideal setting to test the SLH. Both economies command a lion's share in social infrastructure projects with active private sector participation. PPP investments in China and India account for about

30% of total number of PPP projects and 21% of the total PPP investments in developing countries in 2012 (The World Bank Group, 2012). In China, considerable development has occurred since 1988, when the market matured and privatization expanded massively (Urio, 2010). Moreover, highlighted by the Government issued guidelines on commercial banks' due diligence performances in 2005, both state and commercial banks significantly increased their commercial lending (Chen et al., 2013). Indian economy also witnessed significant investments in infrastructure projects after liberalization in the year 1991.

Given the complexity of PPPs, in terms of managing such large and high-risk projects, closer connection with the Government, in the form of having politicians in firms' boards, would smoothen the project execution related issues. Hence, we argue that PPP undertaking private sector firms, relative to non-PPP matched private sector firms, provide a better sample for testing SLH. As per SLH, politically connected PPP private sector firms should have better access to bank lending compared to comparable firms, that are politically connected, however, do not engage in PPP projects. In addition to that, such higher bank lending access should alleviate their underinvestment problem. On the contrary, if political corruption dominates the economy, as established by existing studies, bank loans should favor politically connected PPP private firms that overinvest due to excessive bank lending to poor PPP projects.

Using 169 and 215 PPP projects from China (1986-2012) and India (1991-2013), respectively, we find that politically connected PPP firms, on average have higher access to bank loans compared to competing and matched non-PPP firms. However, when we investigate whether such higher lending to PPP projects is welfare maximizing, we find that Chinese PPP projects with political connections, receive significantly higher bank loans for more productive firms(compared to non-PPP politically connected firms). In the case of Indian PPPs, we do not find a marked difference based on firm level productivity. When we decompose further to investigate whether political connections lead to firm level overinvestment problem, we find that PPP firms that have political connections, overinvest mainly in the Indian market and not in the Chinese market. We further test our results for robustness by running regression discontinuity design around political election events. We find that, firms

that are politically connected, benefit more through higher bank loans when the incumbent party or leaders regain their seats in the Government. Further, we find that the probability of default significantly increases for Indian PPPs that overinvest. Our results suggest that, political connections help nation building in China and the same political connections deter nation building in India.

The rest of the paper is organized in five sections. This section is followed by methodology section. Data and preliminary results are presented in Section three. Section four presents our main empirical results. Section five concludes.

3. Methodology

3.1. Methodology for Endogeneity Issues

3.1.1. The Heckman Two-Stage Model

One issue while testing the relationship between political connections and firm characteristics is the potential endogenous ties associated between successful firms and politicians. PPP projects in infrastructure are implemented to fulfill not only the economic goals, but also the social, political goals of the government; hence they may tend to choose the winners to ensure that they can easily establish more control and intervention on projects. Following Heckman (1976), the Heckman two-stage model lets us to circumvent the endogeneity problem arising from unobservable firm-level characteristics and corresponding success to secure PPP projects. In the first stage, a probit model is used to estimate the determinants of private sector firms' participation in PPP projects.

$$\begin{aligned} PPP = \alpha + \beta_1 Size + \beta_2 Age + \beta_3 Leverage + \beta_4 Tobin's\, q \\ + \beta_5 Political\, connection + \epsilon \end{aligned} \tag{1}$$

where PPP is a dummy variable that takes value 1 for PPP investment firms, and 0 for non-PPP matched private sector firms. $Political\, Connection$ (Pol) is a dummy variable that takes value 1 for firms whose chairman and executive directors are politicians (India) or

officers (China) in the Government, parliament, or military. $Political\,Connection$ captures how political ties influence the chance of private sector firms award PPP projects. Firm-level variables that may determine the nature of private sector firms that opt for PPPs, including $Size$,Age, $Leverage$, and $Tobin's\,q$ are included in the first-stage model.

Later, Mills' ratio from Equation 1 is obtained and included in the second-stage model (Equation 2). The purpose of the second-stage model is to estimate the effects of PPP investments on private sector firms' capability to access to bank loans after controlling for the endogeneity and the selection bias of PPP firms. Following Chen et al. (2013) the following regression model is run to obtained unbiased estimates.

$$\begin{aligned} Bank\,loans/sales &= \alpha + \beta_1 Size + \beta_2 Age + \beta_3 Tobin's\,q + \beta_4 Insider\,ownership + \beta_5 PPP \\ &+ \beta_6 Political\,connection + \beta_7 PPP * Political\,connection + \beta_8 Mills'\,ratio + \epsilon \end{aligned} \tag{2}$$

where $Bankloans/sales$ is the dependent variable. Following Chen et al. (2013), we include $Size$,Age, $Insider\,ownership$, $Political\,connection$ as control variables that may influence banking financing. Chen et al. (2013) use the lagged return on sales (ROS) to capture the endogeneity issue arising from the relationship between firm performance and bank financing. For our regression, we include $Tobin's\,q$ (with one year lag) rather than the lagged ROS to capture the additional effects of investment opportunities while still controlling the endogeneity between firm value and bank financing. The interaction term between PPP and $Political\,connection$ will determine the ease at which politically connected PPP firms can access bank loans. It should be noted that, in both models (Equations 1 and 2), we also control for the industry effects by including industry dummy variables to account for Government's preferential allocation to strategic industries. For example, the 12th Five-Year Plan in China indicates strategic emerging industries, some of them are new energy, new materials, new generation information technology (Ruibo, 2010). Likewise, in India, Ghosh (2013) indicate five emerging and enabling technologies as wide ranging application for economic growth, including biotechnology, nanotechnology, micro and nanoelectronics,

photonics, and advanced materials.

3.1.2. Regression Discontinuity Design as an Identification Strategy

In order to draw causal inference on whether political connections cause excess bank loans for the politically connected PPP firms, we use Regression Discontinuity Design (RDD). Given that election result is a random exogenous shock, we exploit whether bank loans significantly increase for those politically connected PPPs where the same political party secures power in consecutive elections. This analysis provides more direct attribution of political connections to excess bank loans. RDD is a quasi-experimental design to estimate treatment effects where the treatment is assigned by an observed variable (also call a forcing or running variable) above a known cutoff point (Lee and Lemieux, 2009).

RDD is conducted based on the hypothesis that Government allows preferential bank financing to pursue their current political, social purposes, to attract voting or to award politically connected firms owing to their support for sustaining the incumbent government power. Therefore, in our RDD, the benefits of the election event (the treatment) are assigned if firms have projects in or after the election event when the incumbent government continues to win. Lee and Lemieux (2009) indicate the crucial assumption for the validity of RDD is that individuals cannot "precisely" manipulate the assignment variable. Since receiving the treatment may benefit for individuals, they may make more efforts to obtain the benefits. If this happens, we cannot isolate the treatment effects from other individual effects on the outcome. However, in our scenario, this assumption can be supported because the election event and even the PPP project awarding time are scheduled and determined ex ante by the government; hence, there is very less likelihood that private sector firms can manipulate this fixed schedule. In absolutely rare cases, when private sector firms try to adjust the project awarding time to fit in the election event, there is no guarantee for their behavior being beneficial if their supported party cannot win. Moreover, even if this happens, RDD allows us to estimate the treatment effects near the threshold; therefore, the variation of treatment is randomized even when few individuals still imprecisely manipulate the running variable (Lee and Lemieux, 2009).

We choose the Indian election event in 2009 and the Chinese election event in 2008 for this study. In the case of India, the last two decades witnessed interchange of political power between the United Progressive Alliance (UPA–the coalition of center-left political party) and the National Democratic Alliance (NDA–the coalition of center-right political party). NDA won 1999 general elections and the UPA won two subsequent consecutive general elections, in 2004 and 2009. In China, although the political power is in hands of Communist Party, there is transfer of power from president Jiang Zemin to president Hu Jintao in 2003. Hu Jintao maintained his position in the 2008 election before passing on the new leader Xi Jinping in 2013.

We consider 5 year post and pre consecutive election win events in China and India for ensuring dominance of the current government in two consecutive cycles. We also conduct RDD separately into four groups: PPP politically connected firms, PPP non-politically connected firms, non-PPP politically connected firms and non-PPP non-politically connected firms. This classification helps to explore whether the effects of the election event varies among different types of private sector firms.

The most basic model of RDD is

$$Bank\,loans/sales = \alpha + \beta_1 Election\,dummy + \beta_2 PPP\,investment\,year + \epsilon \qquad (3)$$

where the receipt of the election event effect is denoted by the dummy variable, $Election\,dummy$. $Election\,dummy$ takes the value of 1 if the $PPP\,investment\,year$ is equal to or more than 2008(or 2009) for Chinese (or Indian) private sector firms respectively. [1]

3.1.3. Slope Differences to Explore Overinvestment Problems

Our last analysis tries to explore whether excess bank lending, due to political connections, lead to overinvestment problem. As discussed earlier, the contrary view for SLH is the possibility that political connections can lead to overinvestment problem.

We develop a regression model to see whether private sector firms with political connec-

[1] See Appendix for more details on the basic RDD setting

tions overinvest. First, we divide our sample into two groups of firms, namely, firms with high Tobin's q (above the median) and firms with low Tobin's q (below the median). These two group represent high productivity and low productivity firms, respectively. The objective of this division is to see whether excessive bank lending goes to high or low productivity firms and thereby establish connection between bank lending and overinvestment problem. In this context, higher bank lending to low Tobin's q firms (compared to high Tobin's q firms) supports overinvestment problemJensen (1986). We run the main regression (Equation 2) separately on two groups.

Second, we use a three-way interaction $PPP*Political\,connection*Tobin's\,q$ term to understand the influence of politically connected PPP firms (compared to politically connected non-PPP firms) on firm level productivity.

Following Dawson and Richter (2006), we measure the slope differences for interpreting the three way interaction term. We compute simple slopes of the variable $Bank\,loans/sales$ on the variable PPP, by holding the moderator variables $Political\,connection$ and $Tobin's\,q$ constant at different combinations of high and low values. The simple slopes are computed and tested to know whether their differences are significant from zero in predicting the $Bank\,loans/sales$ variable. Consequently, there are six pairs of slopes.

(1) (Political connections and high Tobin's q) - (Political connections and low Tobin's q)

(2) (Political connections and high Tobin's q) - (Nonpolitical connections and high Tobin's q)

(3) (Political connections and low Tobin's q) - (Nonpolitical connections and low Tobin's q)

(4) (Nonpolitical connections and high Tobin's q)-(Nonpolitical connections and low Tobin's q)

(5) (Political connections and high Tobin's q) - (Nonpolitical connections and low Tobin's q)

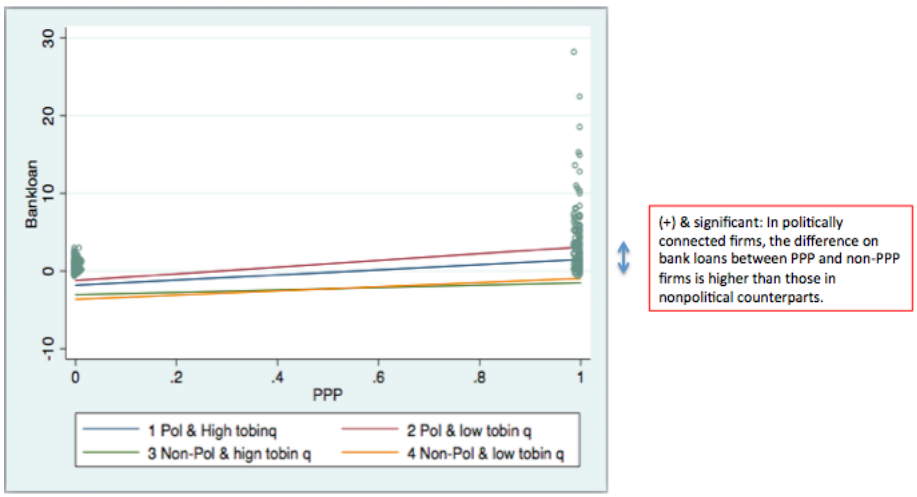
(6) (Political connections and low Tobin's q) - (Nonpolitical connections and high Tobin's q)

According to Jensen (1986), firms with low growth opportunities (low Tobin's q) are more

$$Bank\,loans/sales = \alpha + \beta_1 Size + \beta_2 Age + \beta_3 Tobin's\,q + \beta_4 Insider\,ownership + \beta_5 PPP + \beta_6 Political\,connection + \beta_7 PPP * Political\,connection + \beta_8 Mills'\,ratio + \beta_9 PPP * Tobin's\,q + \beta_{10} Tobin's\,q * Political\,connection + \beta_{11} Tobin's\,q * Political\,connection * PPP + \epsilon \quad (4)$$

Figure 1: The Graph of Slopes to Disentangling Overinvestment

This figure helps to visualize the simple slopes of the variable *Bank loans/sales* on the variable *PPP*, where the moderator variables *Political connection* and *Tobin's q* are held constant at different combinations of the high and low levels.



susceptible to overinvestment problem due to lack of postitive NPV projects. Hence, such firms overuse additional cash flow for excess investment spending on value-destroying projects (Vogt, 1994; Pawlina and Renneboog, 2005). Therefore, to examine the overinvestment problem, we focus on the third pair *(Political connections and low Tobin's q) - (Non-political connections and low Tobin's q)* where the moderator variable, $Tobin's\,q$ is kept at low and the moderator variable *Political connections* changes from the high level of value 1 to the low level of value 0. Figure 1 depicts the slope differences between the red regression line (Political connections and low Tobin's q) and the orange regression line (Non-political connections and low Tobin's q). In this case, if the significant and positive difference on slope only occurs

in the sub-group of firms with low $Tobin's\, q$ or low growth opportunities, then it implies that, among the politically connected firms, the bank lending differences between PPP and non-PPP firms is higher compared to non-political counterparts. However, the higher bank financing of politically connected firms only happens in low-investment-opportunity group. Therefore, political connections can exacerbate the overinvestment problem in PPP firms.

4. Data Sources

The data is sourced from multiple avenues. Information on PPP projects is sourced from the World Bank's PPI Project database. Information related to financial data of partnering private firms is obtained from Datastream. The final sample includes 169 and 215 firm-year observations for China (1986-2012) and India (1991-2013), respectively. Political connection data is obtained from the board of directors information reported in the annual reports of partnering private sector firms. For Indian firms, in addition to the annual reports, we use India's bicameral Parliament online public data of both from the Upper House (Rajya Sabha) and the Lower House (Lok Sabha).

Data on insider ownership and bank loans are mainly collected from private sector firms' annual reports. These annual reports are available on firms' from Morningstar database. Data on bank loans, include both short-term and long-term bank loans, are obtained from the liabilities section on the balance sheets and notes to financial statements. Insider ownership is the percentage of shares held by CEO, chairman, executive directors, non-executive directors and all including their family (Pawlina and Renneboog, 2005). For the Chinese firms, we can obtained insider ownership data from the *Directors' interest* section of the annual reports. For the Indian firms, insider ownership data is obtained from the corporate governance reports and the shareholding patterns provided in the annual reports. We also use the Thomson Reuters Eikon database for time series credit risk measures of the sample firms. In order to reduce the potential identification problem, we created a control group of competing non-PPP firms. Applying the propensity-score matching method, we obtained one-to-one matched firms (for the firms investing in PPPs), matched by firm size and industry (based

on the sector level of the FTSE/Dow Jones Industrial Classification Benchmark (ICB) in Datastream). We use nearest-neighbor matching method to capture the bias in the estimated treatment effects when matching PPP firms and non-PPP firms by size and industry.

4.1. Data Description

Tables I and II report descriptive statistics of firm-level data. We run mean difference test to explore the varying characteristics between PPP private sector firms and their competing non-PPP counterparts (the control group) in PPP investment years. The total PPP firms sample includes 169 and 215 firm year observations of Chinese and Indian PPP private sector firms, respectively, due to unavailability of bank loans data, the final sample drops to 149 and 203 firm year observations for China and India, respectively.

Panel A of Tables I and II reports that, both the Chinese and the Indian PPP firms have higher bank loans/sales compared to their competing non-PPP firms. The relative difference in bank loans is more than two times to their corresponding sales. Higher access to bank loans by an average PPP firm, compared to a similar firm in the same sector supports that idea that PPP firms, with Government assets as collateral, have better access to external finances. While Chinese PPP firms have higher ability to meet their interest payments compared to their non-PPP counter parts, the result is exactly opposite in India. This indicates that the nature of firm that engages in PPP ventures varies between the countries.Thus, Indian PPP firms face relatively higher liquidity risk.

Panels B, C and D of Tables I and II classify private sector firms into politically connected and non-politically connected firms. For the Chinese firms, as shown in the Table I, on average, politically connected firms have higher bank loans/sales in all three groups. This result holds even for the Indian firms, as seen in II; This is consistent with the existing studies on political connections and bank lending.

Panel E of Tables I and II compare, politically connected PPP and non-PPP firms. This allows us to gain initial insights on political connections and nation building projects. Consistent with our idea, politically connected PPP firms have around 5 times more bank lending compared to politically connected matched non-PPP firms. The Indian politically

Table I: Descriptive Statistics for the Analysis on Bank Loans: Chinese Private Sector Firms

This table provides the mean of firm-level variables, the difference of means between PPP and non-PPP firms, between politically connected and non-politically connected firms along with t-test. The mean value reported is for the years when firms secured PPP projects. $Bank\,loans/sales$ is measured by total long term and short term bank loans divided by sales. $Interest\,coverage$ denotes earnings before interest and taxes divided by interest expenses on debts. $Size$ is measured by the natural logarithm of total assets. $Leverage$ is calculated by total debt divided by total assets. Age is measured from the year of a firm's incorporation. $Tobin's\,q$ (with one year lag) is to capture investment opportunities. $Insider\,ownership$ is the percentage of shares held by CEO, chairman directors and all including their family. ***,**,* indicate significant at 1%, 5% and 10% level.

Panel A: All sample (n=265)	PPP (n=149)	Non-PPP (n=116)	Difference	t-test
Bank loans/sales	3.319275	0.717876	2.601399	6.5***
Interest coverage	9.690994	3.712715	5.978279	1.64
Size	7.055777	6.907813	0.147964	1.29
Age	12.812080	9.146552	3.665528	3.87***
Leverage	0.266189	0.285920	-0.019731	-0.8
Tobin's q	2.214056	1.381466	0.832590	3.39***
Insider ownership	32.240540	19.634990	12.605550	4.04***
Panel B: All sample (n=265)	Polically connected firms (n=158)	Non-polically connected firms (n=107)	Difference	t-test
Bank loans/sales	3.135216	0.7708545	2.364362	5.76***
Interest coverage	6.079169	8.532391	-2.453222	-0.66
Size	7.103279	6.825225	0.278054	2.43**
Age	11.51266	10.75701	0.755650	0.76
Leverage	0.298623	0.239686	0.058937	2.39**
Tobin's q	1.880051	1.804639	0.075412	0.29
Insider ownership	24.88875	30.01381	-5.125060	-1.58
Panel C: PPP (n=149)	Polically connected firms (n=94)	Non-polically connected firms (n=55)	Difference	t-test
Bank loans/sales	4.608995	1.115027	3.493968	5.24***
Interest coverage	7.66761	13.21318	-5.54557	-1.29
Size	7.052857	7.060768	-0.00791	-0.04
Age	12.47872	13.38182	-0.9031	-0.59
Leverage	0.294054	0.218564	0.07549	2.73***
Tobin's q	2.235936	2.176661	0.059275	0.15
Insider ownership	32.99877	30.94465	2.05412	0.53
Panel D: Non-PPP (n=116)	Polically connected firms (n=64)	Non-polically connected firms (n=52)	Difference	t-test
Bank loans/sales	0.9706041	0.4068258	0.5638	4.85***
Interest coverage	3.746147	3.671569	0.0746	0.01
Size	7.177336	6.576093	0.6012	4.03***
Age	10.09375	7.980769	2.1130	2.1**
Leverage	0.305333	0.262026	0.0433	0.99
Tobin's q	1.357344	1.411154	-0.0538	-0.19
Insider ownership	12.59291	28.92453	-16.3316	-3.23***
Panel E: Political ly connected PPP & non-PPP firms	Polically connected firms (n=94)	Polically connected firms (n=64)	Difference	t-test
Bank loans/sales	4.608995	0.9706041	3.638391	6.02***
Interest coverage	7.66761	3.746147	3.921463	0.92
Size	7.052857	7.177336	-0.12448	-0.86
Age	12.47872	10.09375	2.38497	1.97*
Leverage	0.294054	0.305333	-0.01128	-0.41
Tobin's q	2.235936	1.357344	0.878592	3.16***
Insider ownership	32.99877	12.59291	20.40586	5.67***

Table II: Descriptive Statistics for the Analysis on Bank Loans: India Private Sector Firms

This table provides the mean of firm-level variables, the difference of means between PPP and non-PPP firms, between politically connected and non-politically connected firms along with t-test. The mean value is reported in the years when firms have PPP projects. $Bank\,loans/sales$ is measured by total long term and short term bank loans divided by sales. $Interest\,coverage$ denotes earnings before interest and taxes divided by interest expenses on debts. $Size$ is measured by the natural logarithm of total assets. $Leverage$ is calculated by total debt divided by total assets. Age is measured from the year of a firm's incorporation. $Tobin's\,q$ (with one year lag) is to capture investment opportunities. $Insider\,ownership$ is the percentage of shares held by CEO, chairman directors and all including their family. ***,**,* indicate significant at 1%, 5% and 10% level.

Panel A: All sample (n=349)	PPP (n=203)	Non-PPP (n=146)	Difference	t-test
Bank loans/sales	2.208365	0.9165287	1.291836	1.97*
Interest coverage	4.490053	26.16461	-21.674557	-3.35***
Size	7.692321	7.545767	0.146554	1.99**
Age	7.917073	9.458904	-1.541831	-2.78***
Leverage	0.408932	0.311471	0.097461	5.05***
Tobin's q	2.523122	2.086503	0.436619	0.84
Insider ownership	12.988430	7.067889	5.920541	3.19***
Panel B: All sample (n=349)	Polically connected firms (n=76)	Non-polically connected firms (n=273)	Difference	t-test
Bank loans/sales	3.857264	1.048169	2.809095	3.64***
Interest coverage	17.66409	12.39478	5.269310	0.67
Size	7.996568	7.528131	0.468437	5.57***
Age	8.298701	8.631387	-0.332686	-0.5
Leverage	0.3146369	0.383406	-0.068769	-2.92***
Tobin's q	1.872	2.473297	-0.601297	-0.96
Insider ownership	6.56337	11.57545	-5.012080	-2.29**
Panel C: PPP (n=203)	Polically connected firms (n=45)	Non-polically connected firms (n=158)	Difference	t-test
Bank loans/sales	5.815237	1.121679	4.693558	4.07***
Interest coverage	3.564979	4.768761	-1.203782	-0.85
Size	7.913836	7.626007	0.287829	2.53**
Age	8.617021	7.708861	0.908160	1.13
Leverage	0.389472	0.414758	-0.025286	-0.86
Tobin's q	2.054468	2.662532	-0.608064	-0.61
Insider ownership	10.57753	13.60493	-3.027400	-0.96
Panel D: Non-PPP (n=146)	Polically connected firms (n=31)	Non-polically connected firms (n=115)	Difference	t-test
Bank loans/sales	0.789773	0.94931	-0.1595	-0.2
Interest coverage	39.75269	22.65045	17.1022	0.91
Size	8.12618	7.39566	0.730520	6.08***
Age	7.8	9.887931	-2.087931	-1.87*
Leverage	0.197395	0.340973	-0.143578	-4.04***
Tobin's q	1.565714	2.213304	-0.647590	-1.56
Insider ownership	0.274519	8.840073	-8.565554	-3.21***
Panel E: Political ly connected PPP & non-PPP firms	Polically connected firms (n=45)	Polically connected firms (n=31)	Difference	t-test
Bank loans/sales	5.815237	0.789773	5.025464	1.93*
Interest coverage	3.564979	39.75269	-36.18771	-1.81*
Size	7.913836	8.12618	-0.212344	-1.33
Age	8.617021	7.8	0.817021	0.74
Leverage	0.389472	0.197395	0.192077	4.44***
Tobin's q	2.054468	1.565714	0.488754	1.5
Insider ownership	10.57753	0.274519	10.303011	3.14***

connected PPP firms have lower interest coverage compared to politically connected non-PPP firms. This result again points out higher liquidity risk faced by politically connected Indian PPP firms.

5. Empirical Results

5.1. Political Connections and Bank Loans

Our first test is aimed at understanding the relationship between political connections and bank loans. We report cross sectional regression results in Table III. After controlling for firm level productivity, firm size, firm age, ownership structure and industry fixed effects, we find that, consistent with the existing studies, political connections have positive and significant effect on firm level bank loans. When we isolate PPP private sector firms from the total sample, the positive and significant results hold mainly for PPP firms. Interestingly, the higher banks loans for politically connected firms is more significant for PPP firms in the Indian economy. This implies that political connections matter more for PPP private sector firms in India.

5.2. The effects of PPPs and Political Connections on Private Sector Firms' Banking Financing: The Heckman Two-Stage Model

Tables IV and V report the effect of PPPs and Political connections on private sector firms' bank financing. Panel A present the results of the first stage of the Heckman model where we conduct a probit model by using a binary variable of PPP. For the Chinese firms, as indicated in Panel A of Table IV, private sector firms with lower *Leverage*, higher *Age* and higher $Tobins'q$ prefer PPP projects. This is consistent with the descriptive statistics that, in China, firms with less debt burden, older and more value prefer PPP projects. Private sector firms with political connections are more likely to opt for PPPs. This is evident from the positive and significant of the coefficient of the variable *Political connection*. This is consistent with Chen et al. (2011) that politically connected firms in China may receive better investment opportunities from the Government to enhance their value.

Table III: Chinese and Indian Firms: Role of Political Connection on Bank Lending

This table present the effects of Political connections on access to bank loans. *Political Connection* (Pol) is a dummy variable that takes 1 for firms whose chairman and executive directors are former or current officers in the government, parliament, or military (Chen et al., 2011). *Bank loans/sales* is measured by total long term and short term bank loans divided by sales. *Size* is measured by the natural logarithm of total assets. *Age* is measured from the year of a firm's incorporation. *Tobin's q* (with one year lag) is to capture investment opportunities. *Insider ownership* is the percentage of shares held by CEO, chairman directors and all including their family. ***,**,* indicate significant at 1%, 5% and 10% level.

	China			India		
	All sample Coef./t	PPP firms Coef./t	non-PPP firms Coef./t	All sample Coef./t	PPP firms Coef./t	non-PPP firms Coef./t
Tobin's q	-0.01987	-0.1374	-0.0562421	-0.013523	0.0322959	-0.027865
	-0.17152	-0.8325	-1.311393	-0.546281	0.3730858	-0.711107
Size	0.094557	0.22362	0.0525523	.7338207***	1.138144***	.4720278**
	0.266528	0.35249	0.5480363	4.108892	3.967371	2.794299
Age	0.022807	-0.0765	0.0157595	-.1113268***	-.1925202***	-.0644472***
	0.634157	-1.2712	1.062228	-4.936194	-4.947262	-3.454747
Insider ownership	0.001616	-0.0255	0.000788	0.0045042	0.0015711	-0.004012
	0.173816	-1.5011	0.2227739	0.7432502	0.1825361	-0.613015
Political connection	2.58398***	2.673903***	.5424247***	.4285416*	1.502219***	-.7118214**
	5.868352	3.57818	3.406932	1.662467	3.928355	-2.693827
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.532148	2.40177	-0.316656	-4.086291**	-6.8892**	-2.610932*
	0.446511	0.46233	-0.3689549	-2.664773	-2.975051	-1.769679
R-squared	20.1528	32.72	42.77707	18.64791	26.62386	26.85549
N	258	149	109	343	201	142

For the Indian firms, as indicated in Panel A of Table V, higher debt burden and younger firms opt for PPPs. This indicates that Indian firms opt for PPPs to circumvent the under-investment problems. However, unlike Chinese firms, there is no significance in the effect of *Political connection* on the probit estimate of PPP.

Panel B of Tables IV and V report the second stage of the Heckman two-stage model to test the effect of PPPs and political connection on private sector firms' access to bank loans. For the Chinese firms, as indicated in Column 1 of Panel B of Table IV, PPP firms have better access to bank financing compared to their non-PPP counterparts. This is evident from the positive and significant of the coefficient of the variable PPP. Especially, politically connected PPP firms exhibit higher bank loans. This is evident from the positive and significant coefficient of the interaction term between PPP and *Political connection*. The results are similar to the Indian PPP firms, as indicated by the positive and significant

coefficient of the interaction term between PPP and *Political connection*, in the Column 1 of Panel B of Table V. Overall, the results provide a strong support that political connections in PPP firms is positively correlated with higher bank lending.

5.3. The Effects of Election Events on Bank Lending - Regression Discontinuity Design

Tables VI and VII (visualized by Figures 2 and 3) report the RDD results to estimate the effects of the election events on the Chinese and the Indian PPP firms. Panel A reports the results in which standard errors are estimated by Huber-White sandwich estimators to capture heteroscedasticity. Panel B reports the estimators with the cluster-consistent standard errors. The observations are clustered into years to capture the correlation of private sector firms' bank financing within years. For Chinese firms, as reported in Table VI, there is no significant increase in the bank loans for the PPP firms connected to incumbent political party. This is evident from the insignificant coefficient of the variable *Election dummy* on the variable $Bank\,loans/sales$ after controlling for the PPP investment years and their quadratic poly-nominal.

In contrast, in the case of Indian PPPs, as reported in Table VII, for the data in all sample, the coefficient of the variable *Election dummy* is positive and significant, indicating that after the election event, PPP firms have higher access to bank loans compared to those in the pre-election year. The coefficient of the quadratic term $Yr * Yr$ is negative and significant, implying that firms' banking financing in the years around the election event are higher than those far away from this event. However, when considering different groups, politically connected PPP firms have positive and significant coefficient for *Election dummy* variable. The other three groups experience insignificant results, except for the PPP and non-politically connected firms in the regression with cluster-consistent standard errors. The treatment effect of PPP politically connected firms is much higher than those of non-politically PPP connected firms. This suggests that politically connected PPP firms in India benefit by securing excess bank loans.

One plausible explanation for the different effects of the election event between China

Table IV: Chinese Firms: Heckman Two-Stage Model and Slope Differences to Estimate the Effects of PPPs and Politcal Connections on Banking Financing

This table present the effects of PPPs and Political connections on access to bank loans. Panel A reports the first stage probit model to estimate what determines private sector firms to participate in PPP projects. Panel B reports the second-stage model to estimate the effects of PPP investments on private sector firms' capability to access to bank loans after controlling for the endogeneity and the selection bias of PPP firms. Panel C reports Slope Differences Test by computing simple slopes of $Bank\,loans/sales$ on PPP when $Political\,connection$ and $Tobin's\,q$ are held constant at different combinations of high and low values. This is to explore whether changes in bank loans relate to overinvestment problems. $Bank\,loans/sales$ is measured by total long term and short term bank loans divided by sales. $Size$ is measured by the natural logarithm of total assets. Age is measured from the year of a firm's incorporation. $Tobin's\,q$ (with one year lag) is to capture investment opportunities. $Insider\,ownership$ is the percentage of shares held by CEO, chairman directors and all including their family. ***,**,* indicate significant at 1%, 5% and 10% level.

Panel A. Heckman two-stage model: Stage 1-The probit estimate of PPPs					
Variables	Coef/t				
Leverage	-1.153963				
	-2.24**				
Size	0.0247641				
	0.19				
Age	0.061363***				
	4.25				
Tobin q	0.0787309*				
	1.93				
Political connections	0.3036054*				
	1.77				
Industry effects	Yes				
Constant	-1.731861				
	-1.66				
N	288				
Pseudo R-squared	9.51				
Panel B. Heckman two-stage model: Stage 2-The effects of PPPs and Political connections on Bank loans					
Total bank loans/sales	All sample	High q	Low q		
	(1)	(2)	(3)		
Tobinq	-0.0616855	-0.0397587	0.9127029		
	-0.6163515	-0.480241	0.9808857		
Size	-0.0459755	-0.0360295	0.7304118		
	-0.1495373	-0.1105234	1.386559		
Age	0.0708794	0.0807557	0.0449411		
	1.333728	1.373017	0.4844071		
Insider ownership	-.019987**	-.0239229**	-0.0014733		
	-2.302023	-2.215135	-0.101412		
Mills' ratio	2.596307**	3.775145**	3.608633**		
	2.160078	2.429575	2.105372		
PPP=1	1.999397**	0.9021315	3.744918***		
	2.983364	1.098262	3.426554		
Political connection=1	1.637009**	0.2499005	2.914742**		
	2.416787	0.2977161	2.743612		
PPP* Political connection	1.807159**	2.643265**	0.9491972		
	2.051258	2.397597	0.669673		
Industry effects	Yes	Yes	Yes		
Constant	-4.791902	-2.854757	-14.6328**		
	-1.248374	-1.014014	-2.507062		
R-squared	37.53077	52.91406	45.16988		
N	258	124	134		
Panel C: Slope Difference to explore Overinvestment problems					
Y=Total loan/sales (X=PPP)	Coef	Std.Err	t-test	p-value	Adjusted-p
(pol & high q) - (pol & low q)	-1.00379	2.03052	-0.49	0.622	3.732
(pol & high q) - (non-pol & high q)	1.799055	0.64252	2.8	0.005	0.03
(pol & low q) - (non-pol & low q)	1.668721	1.403154	1.19	0.236	1.416
(non-pol & high q) - (non-pol & low q)	-1.134124	1.413774	-0.8	0.423	2.538
(pol & high q) - (non-pol & low q)	0.6649308	1.680254	0.4	0.693	4.158
(pol & low q) - (non-pol & high q)	2.802845	1.343138	2.09	0.038	0.228

Table V: Indian Firms: Heckman Two-Stage Model and Slope Differences to Estimate the Effects of PPPs and Political Connections on Banking Financing

This table present the effects of PPPs and Political connections on access to bank loans. Panel A reports the first stage probit model to estimate what determines private sector firms to participate in PPP projects. Panel B reports the second-stage model to estimate the effects of PPP investments on private sector firms' capability to access to bank loans after controlling for the endogeneity and the selection bias of PPP firms. Panel C reports Slope Differences Test by computing simple slopes of $Bank\,loans/sales$ on PPP when $Political\,connection$ and $Tobin's\,q$ are held constant ar different combinations of high and low values. This is to explore whether changes in bank loans relate to overinvestment problems. $Bank\,loans/sales$ is measured by total long term and short term bank loans divided by sales. $Size$ is measured by the natural logarithm of total assets. Age is measured from the year of a firm's incorporation. $Tobin's\,q$ (with one year lag) is to capture investment opportunities. $Insider\,ownership$ is the percentage of shares held by CEO, chairman directors and all including their family. ***,**,* indicate significant at 1%, 5% and 10% level.

India: Heckman two-stage analysis					
Panel A: Heckman two-stage model: Stage 1-The probit estimate of PPPs					
Variables					
Leverage	1.923538***				
	4.15				
Size	0.3458521**				
	2.33				
Age	-0.0496941***				
	-2.66				
Tobin q	0.0499002				
	1.37				
Political connections	0.0862767				
	0.4				
Industry effects	Yes				
Constant	-2.814218**				
	-2.47				
N	348				
Pseudo R-squared	9.76				
Panel B: Heckman two-stage mode- Stage 2- The effects of PPPs and Political connections on Bank loan					
Total bank loans/sales	All sample	High q	Low q		
	(1)	(2)	(3)		
Tobin's q	-0.0404952	-0.0196446	-3.137581**		
	-0.2647362	-0.075411	-2.24429		
Size	2.086769**	3.048457**	1.729102		
	2.221233	2.159274	1.265002		
Age	-.3845794**	-.398686**	-.4704522**		
	-3.166364	-2.261052	-2.557231		
Insider ownership	-0.02026	-0.0157772	-0.0177471		
	-0.8902543	-0.4899644	-0.5225821		
Mills' ratio	2.752426	4.332452	3.172801		
	1.343926	1.440001	1.003995		
PPP=1	-0.8127066	-0.7708	-1.599547		
	-0.9858684	-0.6482484	-1.283332		
Political connection=1	-3.191349**	-1.966477	-4.773689**		
	-2.138953	-0.8221959	-2.292571		
PPP* Political connection	7.911394***	8.645829**	8.228415**		
	4.529782	3.142891	3.282654		
Industry effects	Yes	Yes	Yes		
Constant	-14.67945*	-21.14944*	-9.02624		
	-1.81921	-1.671315	-0.7989419		
R-squared	15.09755	20.32895	17.2949		
N	333	167	166		
Panel C: Slope Difference to explore Overinvestment problems					
Y=Total loan/sales (X=PPP)					
(pol & high q) - (pol & low q)	-5.11836	7.314015	-0.7	0.485	2.91
(pol & high q) - (non-pol & high q)	4.945669	4.723775	1.05	0.296	1.776
(pol & low q) - (non-pol & low q)	9.978085	3.580716	2.79	0.006	0.036
(non-pol & high q) - (non-pol & low q)	-0.0859448	1.82477	-0.05	0.962	5.772
(pol & high q) - (non-pol & low q)	4.859725	4.769307	1.02	0.309	1.854
(pol & low q) - (non-pol & high q)	10.06403	3.621354	2.78	0.006	0.036

and India could be their respective political systems. While in China, although there may be change in the individual leaders, the Communist Party of China always maintains its power and dominance. Hence, the preference with their political ties may not change much during election events. However, India is more democratic with multiple parties and alliances competing for power. As a result, the failure of the incumbent government may sweep out the previous preference of their politically connected firms. In contrast, the incumbency advantage of the current government may enhance the preferential banking financing for politically connected firms during the election event.

The sign and significance of the treatment effects for the regression with heteroskedasticity consistent standard errors (as indicated in Panel A of Tables VI and VII) are nearly the same as those with cluster-consistent errors (as indicated in Panel B of Tables VI and VII). According to Lee and Card (2008), with the assumption of the two identical standard errors from the two estimators of the data from the right (the treatment) and the left (the control) of the threshold (the election event), the results from the cluster-consistent errors will be used for inference. The case of two identical standard errors happens in our study if the source of the estimated standard errors is independent of the election event. There is every chance that private sector firms' bank financing is also influenced by the seasonality. Haggard and Huang (2008) study the political economy of private sector development and explore the Soviet-style seasonality of investment in which the investments are low at the first quarter, reaching mini peaks in June and September, and dramatically increase in the last quarter. Likewise in India, Bhole (2004) indicate the seasonal variations in bank credit with the increased bank financing in the busy season (October to March) and the decreased bank financing in the slack season (April to December). Consequently, the seasonality of bank financing, which is independent of the election event may lead to identical standard errors of two estimators before and after the election event. This idea is consistent with the idea of Card and Shore-Sheppard (2004) when indicating that the Medicare coverage may be influenced by the quarter of birth due to health differences in season of birth.

It is also assumed that there are few chances where these two standard errors are independent due to some unobservable effects before and after the election event. This results

in biased estimators of the treatment effects. Accordingly, Lee and Card (2008) propose the procedure to inflate the standard errors. The idea of this method applied to our study is that the firm observation data is collapsed into the year-cells to calculate the mean square error of the cell size-weighted regression and average cell variance. The difference between these two terms can be added to the sampling variance to re estimate the significant of the treatment effects. Tables B2 and B3 (In the Appendix) report the results of the adjusted variance, standard errors and t-test of the main treatment effects (the effects of *Election dummy* on *Bank loans/sales*). For Chinese firms, as indicated in Table B2, all the results of adjusted t-test experience the insignificant effects of the election event. However, for Indian firms, the results of adjusted t-test still witness the positive and significant treatment effects in PPP firms, especially for those with political connections, as seen in Panel B and C of Table B3. Therefore, the robustness tests for Indian firms still confirm my finding that PPP-partnering private firms with political connection can have opportunities to achieve more banking financing in the election event when their supported government maintain their power.

5.4. Testing for Potential Overinvestment Problems: Slope Difference Test

To investigate possible overinvestment problems associated with politically connected PPPs, we run regression models for two subsamples, namely, high-q group of firms and low-q group of firms, as indicated in Columns 2 and 3 of Panel B of Tables IV and V. For robustness tests, we compute the slope difference test to investigate the effects of PPP on firms' banking financing when the moderator, *Political connection* and $Tobin's\, q$ are held constant at different combinations of high and low values. The aim of firm classification into high-q group and low-q group is to link firms' financing with overinvestment problems. Firms with low investment opportunities (low q), that receive higher bank loans, may suffer more from overinvestment problems (Jensen, 1986; Pawlina and Renneboog, 2005; Vogt, 1994).

For the Chinese firms, as indicated in Columns 2 and 3 of Panel B of Table IV, when private sector firms are classified into high-q and low-q group, the coefficient of the interaction term between PPP and *Political connection* is only significant at the high-q group. More importantly, for the slope difference test, as indicated in Panel C of Table IV, only the second

Table VI: Chinese firms: Regression Discontinuity Design for Testing Private Sector Firms' Bank Financing

This table reports the main regression to test the effect of the election event on firm's access to bank loans. The dependent variable $Bank\,loans/sales$ is measured by total long term and short term bank loans divided by sales. The receipt of the election event effect is denoted by the dummy variable $Election\,dummy$. $Election\,dummy$ takes the value of 1 if the $PPP\,investment\,year$ is equal to or more than 2008 for Chinese private sector firms. Yr is calculated by normalizing $PPP\,investment\,year$ by the value 2008 to ensure the threshold is at 0. $Yr*Yr$ to capture the effects of quadratic polynomials. Panel A reports the regression result with the standard error being estimated using the Huber-White sandwich estimators to capture heteroscedasticity. Panel B reports the regression result with the standard error being estimated using cluster option. The observations are clustered into years.

Panel A: Regression with heteroskedasticity standard errors					
	All sample Coef./t	PPP and politically connected firms Coef./t	PPP and nonpolitically connected firms Coef./t	non-PPP and politically connected firms Coef./t	non-PPP and nonpolitically connected firms Coef./t
Election dummy	0.1166473	-0.9160695	2.380409	-0.0214809	.4256544
	0.1665761	-0.6159155	1.094013	-0.0559775	1.070006
Yr	-0.12523	-0.0991745	-0.5829134	-0.0444209	-.0699795*
	-0.869334	-0.3186248	-1.561464	-0.6323445	-2.009742
Yr*Yr	0.0288628	0.0833698	-0.0078155	-0.0156786	-0.0095468
	0.724981	0.9435034	-0.1101542	-0.940429	-1.423585
Constant	1.676653**	3.768365**	-0.0301527	1.00947**	0.163233
	2.869422	2.806508	-0.0377523	3.268549	1.49622
R-squared	1.70173	5.75261	19.84448	3.25313	16.10672
N	187	70	32	45	40
Panel B: Regression with cluster-consistent standard errors					
	All sample Coef./t	PPP and politically connected firms Coef./t	PPP and nonpolitically connected firms Coef./t	non-PPP and politically connected firms Coef./t	non-PPP and nonpolitically connected firms Coef./t
Election dummy	0.1166473	-0.9160695	2.380409	-0.0214809	.4256544
	0.3101956	-0.951487	1.681254	-0.0878671	1.349533
Yr	-0.12523	-0.0991745	-.5829134**	-0.0444209	-.0699795**
	-1.440359	-0.4854343	-2.526207	-1.158145	-2.436191
Yr*Yr	0.0288628	0.0833698	-0.0078155	-.0156786*	-.0095468*
	1.22959	1.720166	-0.1542027	-1.833632	-2.044178
Constant	1.676653**	3.768365**	-0.0301527	1.00947***	0.163233
	4.647396	4.616172	-0.0552492	4.915849	1.588457
R-squared	1.70173	5.75261	19.84448	3.25313	16.10672
N	187	70	32	45	40

Table VII: Indian firms: Regression Discontinuity Design for Testing Private Sector Firms' Bank Financing

This table reports the main regression to test the effect of the election event on firm's access to bank loans. The dependent variable $Bank\,loans/sales$ is measured by total long term and short term bank loans divided by sales. The receipt of the election event effect is denoted by the dummy variable $Election\,dummy$. $Election\,dummy$ takes the value of 1 if the $PPP\,investment\,year$ is equal to or more than 2009 for Indian private sector firms. Yr is calculated by normalizing $PPP\,investment\,year$ by the value 2008 to ensure the threshold is at 0. $Yr*Yr$ to capture the effects of quadratic polynomials. Panel A reports the regression result with the standard error being estimated using the Huber-White sandwich estimators to capture heteroscedasticity. Panel B reports the regression result with the standard error being estimated using cluster option. The observations are clustered into years.

Panel A: Regression with heteroskedasticity standard errors					
	All sample	PPP and politically connected firms	PPP and nonpolitically connected firms	non-PPP and politically connected firms	non-PPP and nonpolitically connected firms
	Coef./t	Coef./t	Coef./t	Coef./t	Coef./t
Election dummy	.7252707*	3.014134*	0.4879737	-0.86149	0.30179
	1.757545	1.736953	0.8864563	-0.96131	0.79457
Yr	-0.0342924	-0.0006693	-0.0388595	0.145736	-0.0093
	-0.433802	-0.0018823	-0.3824429	1.095629	-0.123
Yr*Yr	-.0279025**	-0.0342039	-0.0227433	-.0553396**	-0.0088
	-2.172833	-0.6634739	-1.206331	-2.25148	-0.6043
Constant	.831617***	0.804428	1.007695***	1.725771**	.4315278**
	4.571026	1.20005	4.154073	2.353084	2.85073
R-squared	3.87132	25.23226	1.76418	23.1329	2.044
N	322	41	147	28	106
Panel B: Regression with cluster-consistent standard errors					
	All sample	PPP and politically connected firms	PPP and nonpolitically connected firms	non-PPP and politically connected firms	non-PPP and nonpolitically connected firms
	Coef./t	Coef./t	Coef./t	Coef./t	Coef./t
Election dummy	.7252707***	3.014134**	0.4879737	-0.86149	0.30179
	5.143734	2.762282	1.716141	-0.99403	0.93205
Yr	-0.0342924	-0.0006693	-0.0388595	0.145736	-0.0093
	-1.159177	-0.0029105	-0.7085749	1.250224	-0.143
Yr*Yr	-.0279025**	-0.0342039	-0.0227433	-.0553396*	-0.0088
	-4.398662	-0.7332583	-1.690926	-2.14754	-0.8236
Constant	.831617***	.804428*	1.007695***	1.725771*	.4315278**
	7.217444	2.253372	5.274188	2.175221	3.57104
R-squared	3.87132	25.23226	1.76418	23.1329	2.044
N	322	41	147	28	106

Figure 2: Chinese Firms: Graphs for Regression Discontinuity Design

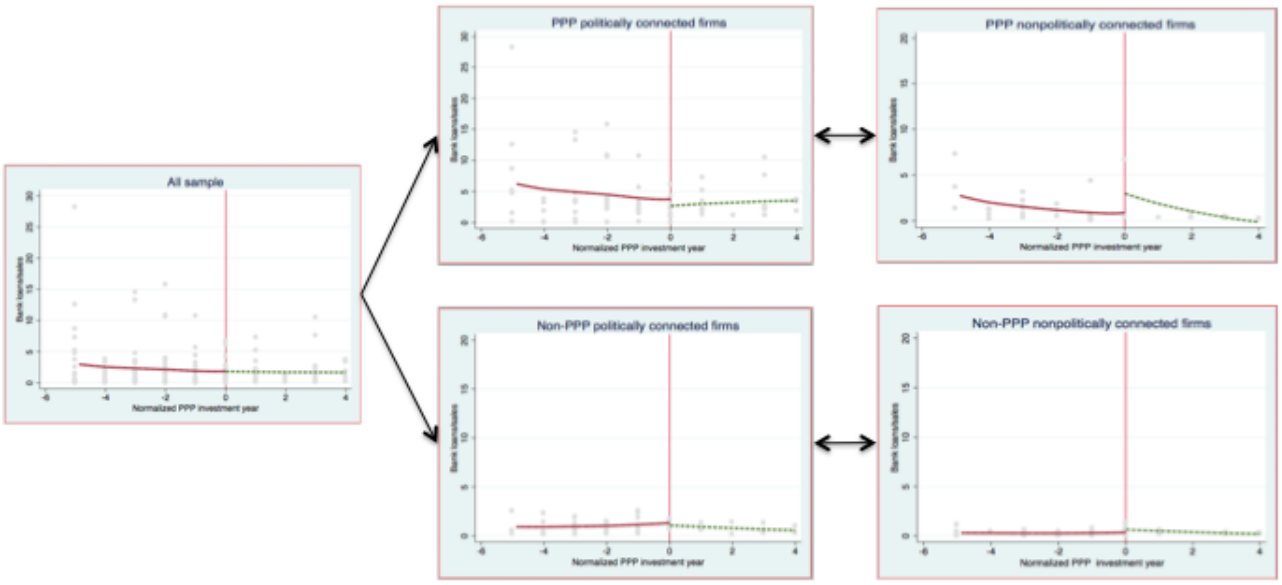
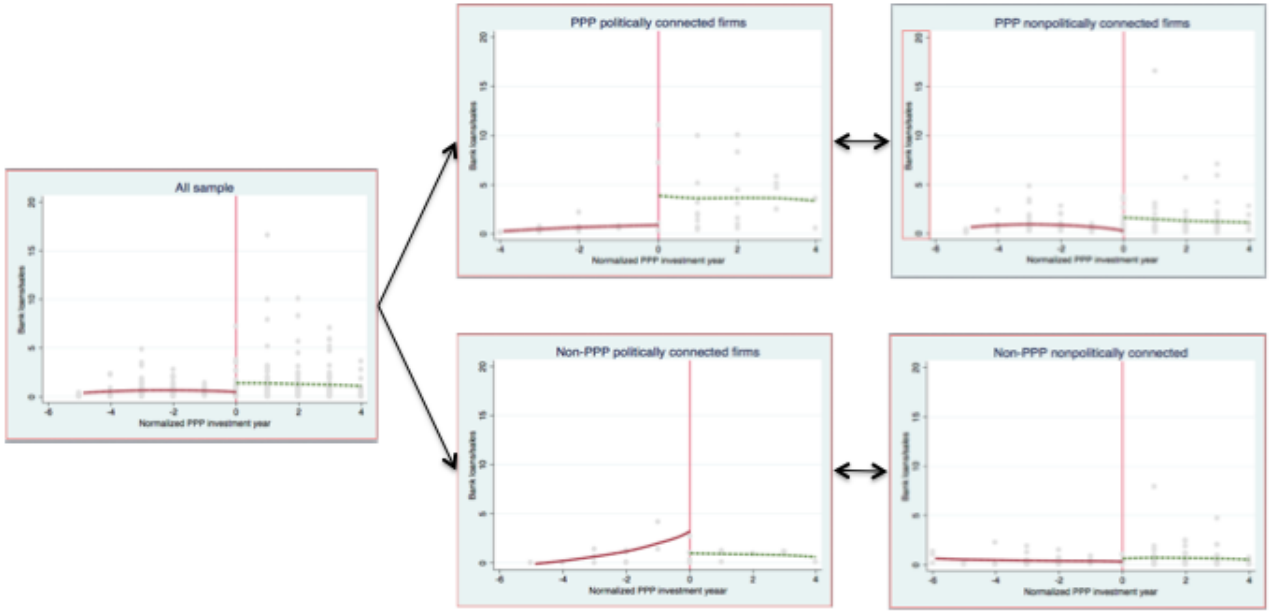


Figure 3: Indian Firms: Graphs for Regression Discontinuity Design



pairs, (Political connection and high q) -(non-political connection and high q), experience positive and significant results. This means that, in the case of Chinese PPP firms, higher

banking financing in politically connected PPP firms occurs to those firms that have higher investment opportunities. This implies that in China, political ties may bring better access banking financing to PPP-partnering private sector firms that have promising investment opportunities.

For Indian firms, as indicated in Columns 2 and 3 of Panel B of Table V, politically connected PPP firms have higher banking financing for both high-q and low-q groups. However, based on the robustness test as indicated in Panel C of Table V, only the third pair, (Political connection and low q) -(non-political connection and low q), experience positive and significant results. This implies that PPP firms with political ties may have better access to banking financing despite the fact that they have fewer investment opportunities. Therefore, owing to their political connections, these low growth opportunity firms have higher chance to overuse their abundant bank financing, supporting the overinvestment problem.

In summary, our overinvestment problem analysis finds that political connections can lead to adverse effects in India as politically connected, low productivity PPP firms receive higher bank lending compared to high productivity firms. On the other hand, the same political connections favor high productivity firms to secure more bank lending in China.

6. The Robustness Tests

Our main findings suggest that the SLH is supported in China whereas PCH is supported in India. We further investigate the validity of these findings through a series of robustness tests.

First, we test how higher bank lending, which results from engaging in PPP projects and political connections, as indicated in the previous analysis, influence firm level credit risk. We regress the probability of default (as a measurement of credit risk) on firms' bank lending ($Bankloans/sales$), political-connected status ($Politicalconnection$), PPP engagement (PPP) and their interactions. The results are reported in Table VIII. As reported in Panel A of Table VIII, in the case of Chinese PPP firms, there is no significant relationship between bank lending and the probability of default. However, in the case of Indian PPPs, as shown

in the Panel B of the table, for all sample in the Column 1, higher bank lending is more sensitive to default probability. This is evident from the positive and significant coefficient of the 3-way interaction $PPP^{*}Political\,Connection^{*}Bank\,loans/sales$. More importantly, when we divided the sample firms into high-q and low-q group, the significant result of this 3-way interaction is only seen in the low-q group firms. This lends further support that, the Indian PPP firms with political connections allocate higher bank lending to low-growth firms that have higher probability of default. This lends support to PCH in India.

Second, we use the election event as the exogenous shock to re examine the effect of political connection on firms' credit risk. We initially conduct the Regression Discontinuity Design (RDD) to investigate whether the election event (the treatment effect) leads to the significant change in firms' credit risk. The results are reported in Table IX and Table X. As indicated in these tables, while the Chinese firms experience insignificant results, in the case of Indian firms, the probability of default (as a proxy of credit risk) increase significantly under the impact of the election event. When we divide the sample into four groups at different combinations of PPP engagement (PPP or non-PPP firms) and political ties (politically connected or not),significant results are only witnessed in politically connected PPP firms. Then, to confirm the dark side of the election event, we link the bank lending with the credit risk. We use RDD with the election event as the treatment effect to explore whether there is any relationship between increase in the bank lending and credit risk. The results are reported in Table XI for the Chinese firms and XII for the Indian firms. As indicated in Table XI and Table XII, politically connected PPP firms' bank lending in the Indian market has a positive effect on their probability of default in the post election event period. This is evident from the positive and significant interaction term between $Election\,dummy$ and $Bank\,loans/sales$ in the subgroup of Indian firms which engage in PPP projects and political connections. The other subgroups witness insignificant results. This further supports the negative effect of bank lending in the Indian market.

Table VIII: The Effects of PPPs and Political Connections on the Sensitivity of Bank Financing on Credit Risk

This table present the effects of PPPs and Political connections on the sensitivity of bank financing on credit risk. Panel A reports the results of Chinese firms, Panel B for Indian firms. *The probability of default* is estimated by the combined credit risk model in the Thomson Eikon database, *Bank loans/sales* is measured by total long term and short term bank loans divided by sales. *PPP* is a dummy variable, which takes value 1 for firms invested in PPP projects, else zero for firms which are matched by industry and firm size. *Political connection* (Pol) is a dummy variable that takes value 1 for firms that have chairman and executive directors being former or current officers in the governments, the parliament and the military ***,**,* indicate significant at 1%, 5% and 10% level.

Panel A: Chinese firms			
The probability of default	All sample	High-q group	Low-q group
	(1)	(2)	(3)
Bank loans/ sales	0.0921296	-0.6052577	0.2144655
	0.8184033	-1.023291	1.136519
PPP	-0.053123	-0.427666	0.0768034
	-0.6591094	-1.116279	0.6078395
PPP* Bank loans/sales	-0.0735662	0.540884	-0.2045494
	-0.6429775	0.8599045	-1.077525
Political connnection	-0.0528668	-0.5428631	0.0449431
	-0.6101864	-1.43132	0.37101
Political connection* Bank loans/sales	-0.0134718	0.8006615	-0.1990614
	-0.1086939	1.340162	-0.9850792
PPP*Political connection	0.1645354	.7366592*	0.0070505
	1.482227	1.829801	0.0445208
PPP*Political connection*Bank loans/sales	-0.0038106	-0.7821313	0.1882499
	-0.0303957	-1.232041	0.9297722
Industry effects	Yes	Yes	Yes
Constant	0.1898912	0.7145404*	0.0264452
	1.469424	1.854928	0.2498857
R-squared	13.95477	38.07468	23.36275
N	124	54	54
Panel B: Indian firms			
The probability of default	All sample	High-q group	Low-q group
	(1)	(2)	(3)
Bank loans/ sales	.2420731***	0.027449	.6998081***
	7.333475	1.525483	10.59888
PPP	.174139**	0.0475698	.4933029***
	3.28174	1.264181	5.662236
PPP* Bank loans/sales	-.2345349***	0.0214252	-.7147187***
	-6.384393	0.781494	-10.41648
Political connnection	-0.0281662	-0.0168559	0.1592688
	-0.2475366	-0.1995199	0.5603831
Political connection* Bank loans/sales	-.2589006**	-0.0022752	-.8194023**
	-3.057415	-0.022066	-2.441172
PPP*Political connection	-0.1777014	-0.1293983	-0.4516941
	-1.331702	-1.357753	-1.406692
PPP*Political connection*Bank loans/sales	.3725559***	0.0974018	.9308692**
	4.257676	0.9216224	2.742516
Industry effects	Yes	Yes	Yes
Constant	-0.0314605	0.1301869***	-0.2471162
	-0.135056	4.890215	-0.9856438
R-squared	32.48654	72.44784	58.53517
N	297	132	127

Table IX: Chinese Firms: Regression Discontinuity Design for Testing Private Sector Firms' Credit Risk under the Effect of the Election Event.

This table reports the regression to test the effect of the election event on firm's credit risk. The dependent variable *The probability of default* is estimated by the combined credit risk model in the Thomson Eikon database. The receipt of the election event effect is denoted by the dummy variable *Election dummy*. *Election dummy* takes the value of 1 if the *PPP investment year* is equal to or more than 2008 for Chinese private sector firms. Yr is calculated by normalizing *PPP investment year* by the value 2008 to ensure the threshold is at 0. $Yr * Yr$ to capture the effects of quadratic polynomials. Panel A reports the regression result with the standard error being estimated using the Huber-White sandwich estimators to capture heteroscedasticity. Panel B reports the regression result with the standard error being estimated using cluster option. The observations are clustered into years.

Panel A: Regression with heteroskedasticity standard errors					
The probability of default	All sample Coef./t	PPP and politically connected firms Coef./t	PPP and nonpolitically connected firms Coef./t	Non-PPP and politically connected firms Coef./t	Non-PPP and nonpolitically connected firms Coef./t
Election dummy	0.0183734	-0.026166	-0.126573	0.0219603	0.0805064
	0.2562983	-0.1561741	-1.357608	0.184213	0.5857115
Yr	0.0106285	0.0250691	0.0332308	0.0086552	0.0102066
	0.5314358	0.5239459	1.065531	0.2613789	0.2823405
Yr*Yr	-0.0065851	-0.0143568	-0.0121696	-0.0056473	-0.014218**
	-1.16285	-1.179538	-1.438416	-0.6875624	-2.089239
Constant	0.170545**	0.239265	0.2069249**	0.1650146	0.1457249*
	3.00283	1.661082	2.662943	1.619411	1.829173
R-squared	2.72647	6.18833	23.16336	5.22456	20.30774
N	142	48	18	33	30
Panel B: Regression with cluster-consistent standard errors					
The probability of default	All sample Coef./t	PPP and politically connected firms Coef./t	PPP and nonpolitically connected firms Coef./t	Non-PPP and politically connected firms Coef./t	Non-PPP and nonpolitically connected firms Coef./t
Election dummy	0.0183734	-0.026166	-0.126573	0.0219603	0.0805064
	0.3319786	-0.1969159	-1.33366	0.1836248	0.9373947
Yr	0.0106285	0.0250691	0.0332308	0.0086552	0.0102066
	0.8513994	0.8023812	1.147686	0.3201148	0.3793947
Yr*Yr	-0.0065851	-0.0143568*	-0.0121696	-0.0056473	-0.014218*
	-1.485901	-2.137926	-1.553481	-0.8334035	-1.810375
Constant	0.170545**	0.239265**	0.2069249**	0.1650146	0.1457249*
	3.847914	2.39725	2.561169	1.803385	2.02333
R-squared	2.72647	6.18833	2.316336	5.22456	20.30774
N	142	48	18	33	30

Table X: Indian Firms: Regression Discontinuity Design for Testing Private Sector Firms' Credit Risk under the Effect of the Election Event.

This table reports the regression to test the effect of the election event on firm's credit risk. The dependent variable *The probability of default* is estimated by the combined credit risk model in the Thomson Eikon database. The receipt of the election event effect is denoted by the dummy variable *Election dummy*. *Election dummy* takes the value of 1 if the *PPP investment year* is equal to or more than 2009 for Indian private sector firms. Yr is calculated by normalizing *PPP investment year* by the value 2009 to ensure the threshold is at 0. $Yr * Yr$ to capture the effects of quadratic polynomials. Panel A reports the regression result with the standard error being estimated using the Huber-White sandwich estimators to capture heteroscedasticity. Panel B reports the regression result with the standard error being estimated using cluster option. The observations are clustered into years.

Panel A: Regression with heteroskedasticity standard errors					
The probability of default	All sample Coef./t	PPP and politically connected firms Coef./t	PPP and nonpolitically connected firms Coef./t	non-PPP and politically connected firms Coef./t	non-PPP and nonpolitically connected firms Coef./t
Election dummy	0.1104503*	0.2284994*	0.1186332	0.00549	0.0714252
	1.908933	1.749792	1.405497	0.087095	0.5946883
Yr	0.0031275	0.0108876	0.001281	-0.0020427	0.0039363
	0.1764186	0.331475	0.0586612	-0.1548806	0.0961897
Yr*Yr	0.0097679**	0.00906	0.0074483*	-0.0053003*	0.0155088*
	2.444813	1.089174	1.665879	-1.861845	1.687629
Constant	0.1493258***	0.1024056	0.1862647***	0.1185226**	0.1331986*
	4.118456	1.352152	3.672422	2.925872	1.777882
R-squared	3.65585	22.76196	5.86371	10.87411	2.24076
N	301	39	135	25	102
Panel B: Regression with cluster-consistent standard errors					
The probability of default	All sample Coef./t	PPP and politically connected firms Coef./t	PPP and nonpolitically connected firms Coef./t	non-PPP and politically connected firms Coef./t	non-PPP and nonpolitically connected firms Coef./t
Election dummy	0.1104503	0.2284994**	0.1186332	0.00549	0.0714252
	1.578882	4.780706	1.305954	0.0884625	0.5716753
Yr	0.0031275	0.0108876	0.001281	-0.0020427	0.0039363
	0.1342578	0.8588621	0.0578849	-0.1749613	0.0777028
Yr*Yr	0.0097679**	0.00906	0.0074483	-0.0053003	0.0155088**
	3.023007	1.311232	1.598585	-1.853222	2.798421
Constant	0.1493258***	0.1024056**	0.1862647**	0.1185226**	0.1331986
	5.264668	2.962849	4.749582	3.799811	1.694953
R-squared	3.65585	22.76196	5.86371	10.87411	2.24076
N	301	39	135	25	102

Table XI: Chinese Firms: Regression Discontinuity Design for Testing the Sensitivity of Bank Financing on Credit Risk under the Effect of the Election Event.

This table indicate the sensitivity of private sector firms' bank lending on credit risk(measured by the probability of defaults). The dependent variable $The\,probability\,of\,default$ is estimated by the combined credit risk model in the Thomson Eikon database. The receipt of the election event effect is denoted by the dummy variable $Election\,dummy$. $Election\,dummy$ takes the value of 1 if the $PPP\,investment\,year$ is equal to or more than 2008 for Chinese private sector firms. Yr is calculated by normalizing $PPP\,investment\,year$ by the value 2008 to ensure the threshold is at 0. $Yr * Yr$ to capture the effects of quadratic polynomials. $Bank\,loans/sales$ is measured by total long term and short term bank loans divided by sales. Panel A reports the regression result with the standard error being estimated using the Huber-White sandwich estimators to capture heteroscedasticity. Panel B reports the regression result with the standard error being estimated using cluster option. The observations are clustered into years.

Panel A: Regression with heteroskedasticity standard errors					
The probability of default	All sample Coef./t	PPP and politically connected firms Coef./t	PPP and nonpolitically connected firms Coef./t	Non-PPP and politically connected firms Coef./t	Non-PPP and nonpolitically connected firms Coef./t
Election dummy	0.0697229	0.008143	-0.147065	0.1336238	0.0363201
	1.326516	0.0668717	-1.518667	1.645127	0.216951
Bank loans/ sales	-0.000683	-0.0109689	0.036793**	0.0982065	0.071864
	-0.1676351	-0.9558634	2.92454	1.279155	0.8280429
Election dummy* Bank loans/sales	0.0142343	0.0280527	-0.0220957	-0.0818405	0.0199573
	1.500595	1.681088	-1.556777	-0.9911955	0.1354648
Yr	-0.023853**	-0.0280418*	0.046416	-0.0036502	0.0098208
	-2.37718	-1.897145	1.371491	-0.1589378	0.2640498
Yr*Yr	0.0010745	0.0008665	-0.0128403	-0.0018968	-0.0096613
	0.5575431	0.402692	-1.46662	-0.3610723	-1.325704
Constant	0.1036201**	0.1633748	0.188177**	0.0417257	0.1163236
	3.042615	1.606808	2.45263	0.9134097	1.310935
R-squared	12.67832	17.57508	41.79996	26.85218	18.18349
N	124	50	18	30	26
Panel B: Regression with cluster-consistent standard errors					
The probability of default	All sample Coef./t	PPP and politically connected firms Coef./t	PPP and nonpolitically connected firms Coef./t	non-PPP and politically connected firms Coef./t	non-PPP and nonpolitically connected firms Coef./t
Election dummy	0.0697229	0.008143	-0.147065	0.1336238	0.0363201
	1.363133	0.0663779	-1.551051	1.544007	0.3297647
Bank loans/ sales	-0.000683	-0.0109689	0.036793**	0.0982065	0.071864
	-0.1688163	-1.119313	2.868819	1.34637	0.9147706
Election dummy* Bank loans/sales	0.0142343	0.0280527	-0.0220957	-0.0818405	0.0199573
	1.358957	1.66137	-1.661572	-1.298344	0.1530822
Yr	-0.023853**	-0.0280418**	0.046416	-0.0036502	0.0098208
	-4.18596	-3.070684	1.453663	-0.1850307	0.4742831
Yr*Yr	0.0010745	0.0008665	-0.0128403	-0.0018968	-0.0096613
	1.573017	1.235075	-1.545834	-0.4485219	-1.41193
Constant	0.1036201**	0.1633748*	0.188177*	0.0417257	0.1163236*
	3.661948	1.880222	2.393419	1.159571	2.188522
R-squared	12.67832	17.57508	41.79996	26.85218	18.18349
N	124	50	18	30	26

Table XII: Indian Firms: Regression Discontinuity Design for Testing the Sensitivity of Bank Financing on Credit Risk under the Effect of the Election Event.

This table indicate the sensitivity of private sector firms' bank lending on credit risk(measured by the probability of defaults). The dependent variable $The\,probability\,of\,default$ is estimated by the combined credit risk model in the Thomson Eikon database. The receipt of the election event effect is denoted by the dummy variable $Election\,dummy$. $Election\,dummy$ takes the value of 1 if the $PPP\,investment\,year$ is equal to or more than 2009 for Indian private sector firms. Yr is calculated by normalizing $PPP\,investment\,year$ by the value 2009 to ensure the threshold is at 0. $Yr * Yr$ to capture the effects of quadratic polynomials. $Bank\,loans/sales$ is measured by total long term and short term bank loans divided by sales. Panel A reports the regression result with the standard error being estimated using the Huber-White sandwich estimators to capture heteroscedasticity. Panel B reports the regression result with the standard error being estimated using cluster option. The observations are clustered into years.

Panel A: Regression with heteroskedasticity standard errors					
The probability of default	All sample	PPP and politically connected firms	PPP and nonpolitically connected firms	non-PPP and politically connected firms	non-PPP and nonpolitically connected firms
	Coef./t	Coef./t	Coef./t	Coef./t	Coef./t
Election dummy	0.069311	0.2384513*	0.1320183	0.0187944	-0.0280181
	0.8612115	1.704336	1.390072	0.1805156	-0.1439893
Bank loans/ sales	0.0338755*	-0.0246142	0.0357749*	-0.0154414	0.1518964
	1.844804	-0.5248987	1.817852	-1.447067	1.088423
Election dummy* Bank loans/sales	0.0469965	0.1418041**	-0.0294068	-0.0396006	0.0888765
	1.315589	2.798593	-1.176566	-0.8653858	0.3598388
Yr	-0.002017	-0.0673943**	0.0034286	0.002048	0.0048915
	-0.108623	-2.325136	0.1577075	0.1281707	0.1312223
Yr*Yr	0.0088208**	-0.0028815	0.0070726	-0.0078236**	0.0179466*
	2.200505	-0.5075068	1.648493	-2.312601	1.906453
Constant	0.1162061**	0.0121848	0.1623086**	0.1565131**	0.0569811
	2.707285	0.1272888	2.843198	2.808354	0.5927308
R-squared	17.41054	82.19982	6.18467	26.58682	24.17835
N	297	39	133	25	100
Panel B: Regression with cluster-consistent standard errors					
The probability of default	All sample	PPP and politically connected firms	PPP and nonpolitically connected firms	non-PPP and politically connected firms	non-PPP and nonpolitically connected firms
	Coef./t	Coef./t	Coef./t	Coef./t	Coef./t
Election dummy	0.069311	0.2384513**	0.1320183	0.0187944	-0.0280181
	0.6486859	2.538127	1.291514	0.1562	-0.111058
Bank loans/ sales	0.0338755**	-0.0246142	0.0357749**	-0.0154414	0.1518964
	3.870138	-0.765044	4.152602	-1.304422	0.864885
Election dummy* Bank loans/sales	0.0469965	0.1418041**	-0.0294068	-0.0396006	0.0888765
	0.9956069	3.39441	-1.53689	-0.7872248	0.2267941
Yr	-0.002017	-0.0673943**	0.0034286	0.002048	0.0048915
	-0.1124163	-4.280688	0.1502199	0.1198406	0.1274826
Yr*Yr	0.0088208**	-0.0028815	0.0070726	-0.0078236*	0.0179466**
	2.694095	-0.47176	1.469547	-2.124726	3.319915
Constant	0.1162061***	0.0121848	0.1623086**	0.1565131**	0.0569811
	4.123221	0.1889562	5.025592	2.668558	0.6644179
R-squared	17.41054	82.19982	6.18467	26.58682	24.17835
N	297	39	133	25	100

7. Conclusion

We test whether political connections increase private sector firms' access to bank loans in those projects that can potentially enhance emerging markets to sustain their high economic growth rates. In addition to that, we test whether such preferential access associated with political connections improves welfare by encouraging high growth opportunities firms, that face underinvestment problem (Social Lending Hypothesis -SLH). Or, whether the same preferential access through political connections, encourage political corruption by allocating bank funds to low growth opportunities firms, that suffer from overinvestment problem (Political Corruption Hypothesis -PCH).

We argue that, although existing literature on political connections and bank lending do not lend any support for SLH, none of the studies use social projects like Public Private Partnerships (PPPs) for testing SLH. PPPs have clear alignment and incentives for the ruling political parties to encourage social lending through bank finances. Hence, our study uses a sample of PPP projects, along with matched non-PPP projects to re-examine SLH. Using a sample of 169 and 215 PPP projects for China (1986-2012) and India (1991-2013), respectively, we find that politically connected PPP firms, on average have higher access to bank loans compared to competing and matched non-PPP firms. However, SLH is supported mainly in the Chinese economy. We find that Chinese PPP projects with political connections, receive significantly higher bank loans mainly for more productive firms (compared to non-PPP politically connected firms). In the case of Indian PPPs, we find strong support to PCH. We find that PPP firms that have political connections, overinvest by lending mainly to low growth and less productive firms that have higher default risk. We further test our results for robustness by running regression discontinuity design around political election events. We find that firms that are politically connected benefit more through higher bank loans when the incumbent party or leaders regain their seats in the Government. Overall, our results hint that political connections can help nation building when long term political stability is assured. Competing political parties with changing power base can deter nation building exercise using PPP route.

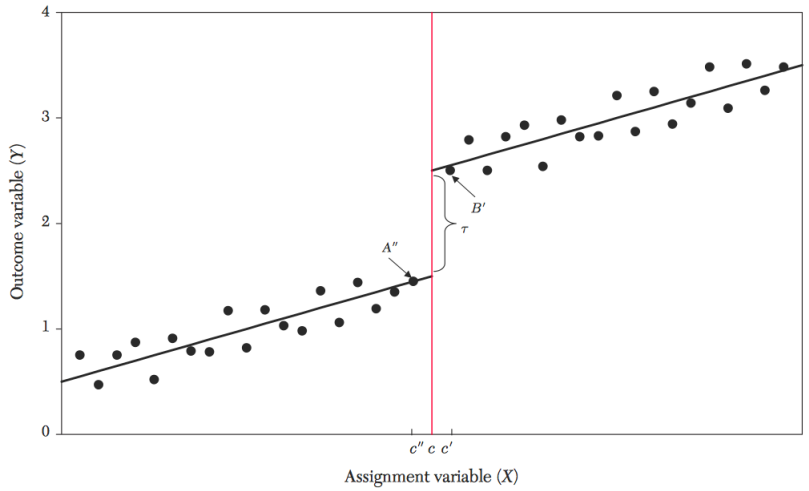
Appendices

A The Basic RDD Setting

We adapt the RDD graph of Lee and Lemieux (2009) in Figure A1 to explain the basic RDD setting. Accordingly, B' is the estimated value of Y (Bank loans/sales) for the firm observation having PPP investment in the year c (c=2008 for Chinese firms and c=2009 for Indian firms); hence this firm receives the treatment (the election event effect). A" is the estimated value of Y (Bank loans/sales) for the same firm in the opposing state of not having the treatment. Therefore, B' - A" is the causal effects of the election event on private sector firms' access to bank loans.

Figure A1: Simple Linear Research Discontinuity Setup

This figure is adapted from Lee and Lemieux (2009) to explain the basic RDD setting



In our RDD, the treatment determining variable $PPP\,investment\,year$ is discrete with PPP year only being recorded in years. According to Lee and Card (2008), if the treatment determining covariate is continuous, no functional form is needed to estimate the effect of the event and we simply compare the outcome "just above" and "just below" the cutoff point with the assumption that the treatment and the control group are identical. However, with the discrete assignment variable, we may not compute the average within the "as small as

possible" neighborhoods of the threshold; hence this may over-estimate the treatment effect at the discontinuity threshold. To solve this problem, Lee and Card (2008) propose inference procedure to conduct RDD with a discrete running variable.

1. The assignment variable X ($PPP\,investment\,year$ in my setting) is normalized to make sure that the cutoff point equals to zero; hence the intercept of the regression is the estimate of $\mathrm{E}(Y_0|X = 0)$. Choose the parametric functional form to estimate the treatment effects by using the goodness-of-fit statistic to decide whether a polynomial form is appropriate. The goodness-of-fit statistic $G = \frac{(ESS_R - ESS_{UR})/(J-K)}{(ESS_{UR})/(N-J)}$

where ESS_R is the restricted error sum of squares from estimating Model 3 with the polynomial form in the assignment variable X, ESS_{UR} is the unrestricted error sum of squares from regressing the outcome variable Y ($Bank\,loans/sales$ in my setting) on a full set of J dummy variables systematically generated from the variable $PPP\,investment\,year$ to capture J different discrete value recorded by years. G follow F(J-K,N-J) with K denotes the number of parameters in Model 3 and N measures total observations. (Lee and Card, 2008);

2. Compute both heteroskedasticity and cluster-consistent standard errors (clustering on the different discrete value of X). Decide whether the counterfactual functional forms can be specified. If yes, then we have two identical specification errors in $\mathrm{E}(Y_1|X = x_k)$ and $\mathrm{E}(Y_0|X = x_k)$. As a result, the cluster-consistent standard error is used for inference. Lee and Card (2008) explain this circumstance by approximating two counterfactual functions

$E(Y_1|X = x_j) = \alpha_0 + X_j\gamma 0 + \beta_0 + a_{1j}$

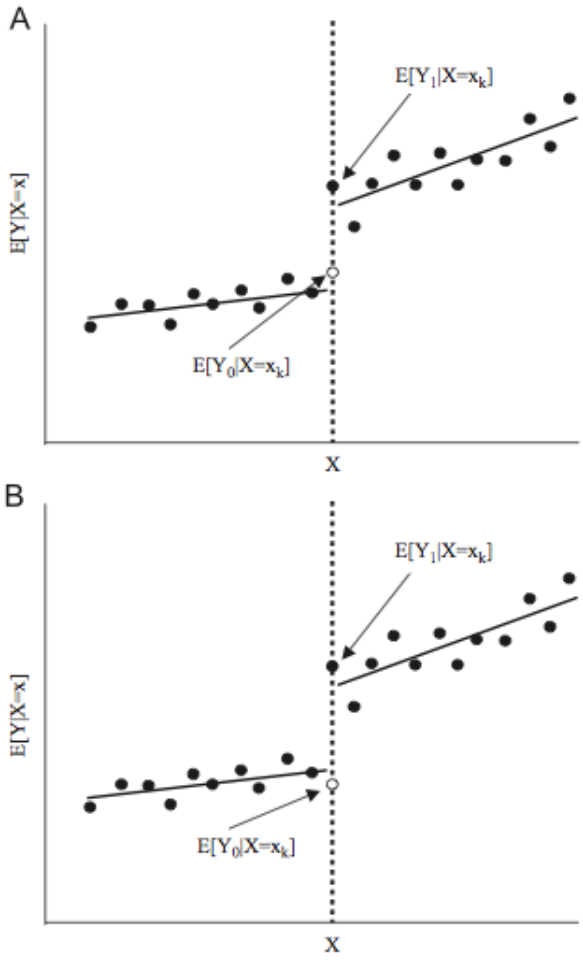
$E(Y_0|X = x_j) = \alpha_0 + X_j\gamma 0 + a_{0j}$

where a_{1j}, a_{0j} are the random specification errors. Part A of Figure A2 indicate the case when two errors are identical. Both the estimate of $E(Y_1|X = x_k)$ and the extrapolation of $E(Y_0|X = x_k)$ underestimate the true effects, but the errors a_{1j}, a_{0j} in these two estimates have the same sign and magnitude. Therefore, the treatment effect at the discontinuity $E(Y_1 - Y_0|X = x_k) = \beta$ (Lee and Card, 2008). Part B of Figure A2 indicates the case when two errors are independent. The estimate of $E(Y_1|X = x_k)$ underestimates while the extrapolation of $E(Y_0|X = x_k)$ overestimates the true effects. Therefore, the estimate of the

treatment effect at the discontinuity maybe biased and the standard error has to be inflated (Lee and Card, 2008).

Figure A2: Counterfactual Specification: Identical Errors and Independent Errors

This figure is adapted from Lee and Card (2008) to explain two cases: identical errors and independent errors. Part A presents the identical errors when the random specification error, generated from the estimate of $E(Y_1|X = x_k)$ (by the data from the right of this threshold), equals to the specification error that is generated from the extrapolation of $E(Y_0|X = x_k)$ (by data from the left). Part B indicate the latter case where these two errors are independent and unequal.



3. The method to inflate the standard error is to collapse data into cells with each cell corresponding to one PPP investment year. Run the cell size-weighted regression, and use the mean square error from this regression and the cell variance to compute $\widehat{\sigma^2}$. The formula for

$\widehat{\sigma^2}=\frac{1}{N}\sum_{j=1}^{J} n_j(\overline{Y_j}-W_j\widehat{\theta})^2-\frac{1}{N}\sum_{j=1}^{J}\frac{1}{n_j-1}\sum_{i=1}^{n_j}(Y_{ij}-\overline{Y_j})^2$ where the first term is the weighted variance of the mean residual from the cell size-weighted regression, the second term is the average cell variance (Lee and Card, 2008). Add this value to the sampling variance to get the robustness results.The new adjusted interval is $(\widehat{\beta}-1.96\sqrt{V(\widehat{\beta})+2\widehat{\sigma^2}});\widehat{\beta}+1.96\sqrt{V(\widehat{\beta})+2\widehat{\sigma^2}}))$ which contains $\mathrm{E}(Y_1-Y_0|X=x_k)$ with $\alpha=5\%$ (Lee and Card, 2008)

B The Goodness-of-Fit Statistics and the Adjusted Sample Variance for Regression Discontinuity Design

Table B1: The Goodness-of-Fit Statistics to Choose the Parametric Functional Form for Regression Discontinuity Design

This table presents the results of the Goodness-of-fit statistic, proposed by Lee and Card (2008), to decide whether a polynomial form is appropriate for the research design discontinuity or not in Chinese and Indian firms. Panel A indicates the goodness-of-fit test for 2nd degree of polynomial. Panel B is for 3rd degree of polynomial. The goodness-of-fit statistic $G = \frac{(ESS_R - ESS_{UR})/(J-K)}{(ESS_{UR})/(N-J)}$ where ESS_R is the restricted error sum of squares from estimating Model 3 with the polynomial form in the assignment variable X, ESS_{UR} is the unrestricted error sum of squares from regressing the outcome variable Y ($Bank\,loans/sales$ in my setting) on a full set of J dummy variables systematically generated from the variable $PPP\,investment\,year$ to capture J different discrete value recorded by years. G follow F(J-K,N-J) with K denotes the number of parameters in Model 3 and N measures total observations. (Lee and Card, 2008)

China	All sample	PPP & politically connected firms	PPP & nonpolitically connected firms	non-PPP & politically connected firms	non-PPP & nonpolitically connected firms
Panel A: Degree of polynomial==2					
ESSr	2074.6072	1399.67377	79.1068196	21.1463042	3.39765457
ESSur	2007.98	1289.82828	58.7089447	20.018315	2.98011386
J	10	10	10	10	10
K	3	3	3	3	3
N	187	70	32	45	40
(J-K,N-J)	(7,177)	(7,60)	(7,22)	(7,35)	(7,30)
G	0.8390105	0.729967536	1.091956382	0.281739297	0.600467053
Critical F-value	2.0616388	2.16654116	2.46377383	2.28523517	2.33434397
Panel B: Degree of polynomial==3					
ESSr	2070.1431	1389.86796	76.61722	20.9951808	3.39682438
ESSur	2007.98	1289.82828	58.7089447	20.018315	2.98011386
J	10	10	10	10	10
K	4	4	4	4	4
N	187	70	32	45	40
(J-K,N-J)	(6,177)	(6,60)	(6,22)	(6,35)	(6,30)
G	0.9132615	0.775604641	1.118461189	0.284658516	0.699152012
Critical F-value	2.1501175	2.25405301	2.54906141	2.3717812	2.42052319
India	All sample	PPP and politically connected firms	PPP and nonpolitically connected firms	non-PPP and politically connected firms	non-PPP and nonpolitically connected firms
Panel A: Degree of polynomial==2					
ESSr	1012.1142	274.112313	433.380887	16.6530849	103.71452
ESSur	1006.3352	251.969136	422.534948	11.0182029	100.363085
J	10	10	10	10	10
K	3	3	3	3	3
N	322	41	147	28	106
(J-K,N-J)	(7,312)	(7,31)	(7,137)	(7,18)	(7,96)
G	0.2559554	0.38918513	0.502373878	1.315068955	0.457962578
Critical F-value	2.0389764	2.32317114	2.07705489	2.57672173	2.10646536
Panel B: Degree of polynomial==3					
ESSr	1011.6092	274.040683	430.051345	15.2304001	103.323869
ESSur	1006.3352	251.969136	422.534948	11.0182029	100.363085
J	10	10	10	10	10
K	4	4	4	4	4
N	322	41	147	28	106
(J-K,N-J)	(6,312)	(6,31)	(6,137)	(6,18)	(6,96)
G	0.2725184	0.452580534	0.406177995	1.146883182	0.472011637
Critical F-value	2.1276806	2.4094323	2.16538382	2.66130452	2.19451621

Table B2: Chinese firms: The Robustness Tests for Regression Discontinuity Design by Adjusting the Sampling Variance to Re-estimate the Significant of the Treatment Effects

Year	Mean Bank loans sales	Standard errors	Frequency	Variance	Residual from cell-sized weight regression	Weighted variance of the mean residual from the regression	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Panel A: All sample							
2003	3.7381739	6.5513515	21	42.92020648	3.024376	1.027186385	
2004	1.1027918	1.1229733	17	1.261069033	2.63938	0.633302435	
2005	2.2832135	3.5863061	27	12.86159144	2.31211	0.771861078	
2006	2.6737429	3.890848	26	15.13869816	2.042566	0.580074719	
2007	1.670098	2.2648015	28	5.129325834	1.830747	0.501849028	
2008	1.8379151	1.8181565	21	3.305693058	1.793301	0.361147048	
2009	1.8331951	2.1181807	14	4.486689478	1.696933	0.21558365	
2010	0.78773037	0.51768376	5	0.267996475	1.658291	0.073527514	
2011	1.824312	2.7254675	19	7.428173094	1.677375	0.285872465	
2012	1.6115677	1.5337629	9	2.352428633	1.754185	0.148098851	
		Sum	187	95.15187168		4.598503173	Term (1)=sum of (7)
						0.508833538	Term (2)=sum of (5)/sum of (4)
						4.089669634	Added variance= Term(1)-Term(2)
						8.320748584	Adjusted variance= Original variance + 2*Added variance
						2.88457078	Adjusted standard errors= Sqrt(Adjusted variance)
						0.040438356	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE
Panel B: PPP and politically connected firms							
2003	7.6227444	9.3370102	8	87.17975947	6.348483	4.60608416	
2004	1.793546	1.7327706	5	3.002493952	5.49898	2.159912931	
2005	4.9739767	5.2812592	9	27.89169874	4.816216	2.9823347	
2006	5.4162926	4.7969746	11	23.01096531	4.300193	2.90583226	
2007	3.3549243	3.1144338	9	9.699697895	3.950909	2.006959105	
2008	2.4898192	1.8187138	9	3.307719886	2.852295	1.046004013	
2009	3.5503103	2.2993499	6	5.287009963	2.836491	0.689629817	
2010	1.151225	0	1	0	2.987426	0.127495916	
2011	3.7502425	3.4112233	8	11.6364444	3.3051	1.248421258	
2012	3.1031224	0.88830328	4	0.789082717	3.789515	0.820595653	
		Sum	70	171.8048723		18.59326981	Term (1)=sum of (7)

Year	Mean Bank loans sales	Standard errors	Frequency	Variance	Residual from cell-sized weight regression	Weighted variance of the mean residual from the regression	
						2.454355319	Term (2)=sum of (5)/sum of (4)
						16.13891449	Added variance= Term(1)-Term(2)
						33.20476796	Adjusted variance= Original variance + 2*Added variance
						5.762357848	Adjusted standard errors= Sqrt(Adjusted variance)
						-0.158974768	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE
Panel C: PPP and nonpolitically connected firms							
2003	4.0911864	3.0001642	3	9.000985227	2.689027	0.677893707	
2004	0.91785456	0.48982309	5	0.239926659	2.176453	0.740148072	
2005	1.5574233	1.007607	6	1.015271866	1.648248	0.509385276	
2006	1.1592052	0.65820214	3	0.433230057	1.104412	0.1143493	
2007	0.95612558	1.6876943	6	2.84831205	0.5449452	0.055680988	
2008	3.544144	4.4041314	2	19.39637339	2.350256	0.345231454	
2009	0.35147282	0	1	0	1.759527	0.096747977	
2010	0.64089702	0.37860626	2	0.1433427	1.153168	0.083112277	
2011	0.431418	0.1076376	3	0.011585853	0.5311767	0.026451439	
2012	0.23765172	0	1	0	-0.106445	0.000354079	
		Sum	32	33.0890278		2.64935457	Term (1)=sum of (7)
						1.034032119	Term (2)=sum of (5)/sum of (4)
						1.615322451	Added variance= Term(1)-Term(2)
						4.831707441	Adjusted variance= Original variance + 2*Added variance
						2.19811452	Adjusted standard errors= Sqrt(Adjusted variance)
						1.082932203	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE
Panel D: non-PPP and politically connected firms							
2003	1.0893027	1.284462	3	1.649842629	0.8396103	0.046996364	
2004	0.79168405	0.85219156	6	0.726230455	0.9362965	0.116886818	
2005	1.0197904	0.74299317	6	0.552038851	1.001625	0.133767019	
2006	0.81759512	0.5361557	7	0.287462935	1.035597	0.166827289	
2007	1.257587	0.98381625	7	0.967894414	1.038212	0.167670869	
2008	1.0971409	0.46398775	5	0.215284632	0.9879889	0.108458007	
2009	0.86855712	0.39134538	3	0.153151206	0.9278895	0.057398595	
2010	0.75281643	0.86657765	2	0.750956823	0.8364329	0.031094222	

Year	Mean	Standard errors	Frequency	Variance	Residual from cell-sized	Weighted variance of the mean	
	Bank loans sales				weight regression	residual from the regression	
2011	0.61366154	0.46062448	4	0.212174912	0.7136192	0.045266877	
2012	0.65909873	0.49011915	2	0.240216781	0.5594484	0.013910334	
		Sum	45	5.755253638		0.888276394	Term (1)=sum of (7)
						0.127894525	Term (2)=sum of (5)/sum of (4)
						0.760381869	Added variance= Term(1)-Term(2)
						1.580529758	Adjusted variance= Original variance + 2*Added variance
						1.257191218	Adjusted standard errors= Sqrt(Adjusted variance)
						-0.017086422	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE
Panel E: non-PPP and nonpolitically connected firms							
2003	0.28260431	0.43106777	7	0.185819422	0.2744613	0.013182576	
2004	0.44035396	0	1	0	0.2904027	0.002108343	
2005	0.23628187	0.27990696	6	0.078347906	0.2872506	0.012376936	
2006	0.14746333	0.17341504	5	0.030072776	0.265005	0.008778456	
2007	0.33809386	0.28370065	6	0.080486059	0.2236658	0.007503959	
2008	0.72277019	0.4432463	5	0.196467282	0.5888875	0.043348561	
2009	0.35143133	0.2042264	4	0.041708422	0.5093611	0.025944873	
2011	0.227772	0.11507109	4	0.013241356	0.2930278	0.008586529	
2012	0.26788521	0.00423433	2	1.79296E-05	0.1562209	0.001220248	
		Sum	40	0.626161154		0.123050482	Term (1)=sum of (7)
						0.015654029	Term (2)=sum of (5)/sum of (4)
						0.107396453	Added variance= Term(1)-Term(2)
						0.247613844	Adjusted variance= Original variance + 2*Added variance
						0.497608123	Adjusted standard errors= Sqrt(Adjusted variance)
						0.855400828	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE ‘1‘

Table B3: Indian firms: The Robustness Tests for Regression Discontinuity Design by Adjusting the Sampling Variance to Re-estimate the Significant of the Treatment Effects

Year	Mean Bank loans sales	Standard errors	Frequency	Variance	Residual from cell-sized weight regression	Weighted variance of the mean residual from the regression	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Panel A: All sample							
2004	0.11212984	0.12851361	9	0.016515748	0.3055173	0.002608905	
2005	0.57412599	0.88239618	11	0.778623018	0.5223471	0.009320843	
2006	0.80345005	1.0081848	41	1.016436591	0.683372	0.059462388	
2007	0.6489619	0.66005786	36	0.435676379	0.7885919	0.069526642	
2008	0.9017267	1.0074524	20	1.014960338	0.8380069	0.043618358	
2009	1.5797143	2.372108	30	5.626896364	1.556888	0.225829215	
2010	1.5823358	2.8129205	52	7.912521739	1.494693	0.360787492	
2011	1.1732021	1.8477189	58	3.414065133	1.376693	0.34138649	
2012	1.3524371	1.7090181	51	2.920742866	1.202888	0.229173654	
2013	0.89708315	1.1048495	14	1.220692418	0.9732788	0.041185723	
		Sum	322	24.35713059		1.38289971	Term (1)=sum of (7)
						0.075643263	Term (2)=sum of (5)/sum of (4)
						1.307256447	Added variance= Term(1)-Term(2)
						2.63439412	Adjusted variance=Original variance + 2*Added variance
						1.623081674	Adjusted standard errors= Sqrt(Adjusted variance)
						0.446847939	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE
Panel B: PPP and politically connected firms							
2005	0.13009733	0.05174021	2	0.002677049	0.2598438	0.0032936	
2006	0.49389236	0.20705593	5	0.042872158	0.4986014	0.030317482	
2007	0.80786234	0.77559483	5	0.60154734	0.6689512	0.054572647	
2008	0.63372089	0.11944043	3	0.014266016	0.7708934	0.043483656	
2009	4.8808502	5.1406511	4	26.42629373	1.818562	0.322650512	
2010	2.7788897	3.0672836	9	9.408228683	1.783689	0.698388245	
2011	4.1220853	3.7344591	7	13.94618477	1.680408	0.482107252	
2012	4.5288416	1.4491294	4	2.099976018	1.508719	0.222071514	
2013	2.0795262	2.1996592	2	4.838500596	1.268623	0.078507528	
			41	57.38054636		1.935392436	Term (1)=sum of (7)
						1.399525521	Term (2)=sum of (5)/sum of (4)

Year	Mean Bank loans sales	Standard errors	Frequency	Variance	Residual from cell-sized weight regression	Weighted variance of the mean residual from the regression	
						0.535866915	Added variance= Term(1)-Term(2)
						2.262396711	Adjusted variance=Original variance + 2*Added variance
						1.504126561	Adjusted standard errors= Sqrt(Adjusted variance)
						2.003909829**	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE
Panel C: PPP and nonpolitically connected firms							
2004	0.1716554	0.13822768	5	0.019106892	0.6334103	0.013646551	
2005	0.9243474	0.98366765	4	0.967602046	0.7992405	0.017381915	
2006	1.1744943	1.2679328	20	1.607653585	0.9195841	0.11505237	
2007	0.82477383	0.77691811	15	0.60360175	0.994441	0.10090948	
2008	0.94105051	0.89426496	9	0.799709819	1.023811	0.064174835	
2009	1.490299	1.2981485	14	1.685189528	1.495669	0.213050072	
2010	1.7322559	3.4428266	22	11.853055	1.434066	0.307782289	
2011	0.88220031	1.0825385	26	1.171889604	1.326977	0.311446033	
2012	1.3217472	1.6664469	26	2.777045271	1.174401	0.243943268	
2013	1.1843713	0.96095772	6	0.92343974	0.9763384	0.038907619	
			147	22.40829323		1.426294432	Term (1)=sum of (7)
						0.152437369	Term (2)=sum of (5)/sum of (4)
						1.273857063	Added variance= Term(1)-Term(2)
						2.628565466	Adjusted variance=Original variance + 2*Added variance
						1.621285128	Adjusted standard errors= Sqrt(Adjusted variance)
						1.859101739*	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE
Panel D: non-PPP and politically connected firms							
2004	0	0	2	0	-0.3863973	0.002031332	
2005	0.00143111	0	1	0	0.2573949	0.000450695	
2006	0.66094657	0.68200513	3	0.465130997	0.7905079	0.012753117	
2007	0.57082248	0.64009527	4	0.409721955	1.212942	0.040033423	
2008	2.7448612	1.9345618	2	3.742529358	1.524696	0.031628543	
2009	0.98199399	1.0357048	5	1.072684433	0.8642842	0.025407727	
2010	0.80186398	0.51215616	4	0.262303932	0.9546801	0.024800383	
2011	0.9127625	0.01108175	3	0.000122805	0.9343967	0.01781831	

Year	Mean	Standard errors	Frequency	Variance	Residual from cell-sized	Weighted variance of the mean	
	Bank loans sales				weight regression	residual from the regression	
2012	1.0140876	0.13847514	3	0.019175364	0.8034341	0.013173599	
2013	0.01745005	0	1	0	0.5617923	0.002147011	
			28	5.971668845		0.17024414	Term (1)=sum of (7)
						0.213273887	Term (2)=sum of (5)/sum of (4)
						-0.043029747	Added variance= Term(1)-Term(2)
						0.665040009	Adjusted variance=Original variance + 2*Added variance
						0.815499852	Adjusted standard errors= Sqrt(Adjusted variance)
						-1.056391608	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE
Panel E: non-PPP and nonpolitically connected firms							
2004	0.07544581	0.10071901	2	0.010144319	0.25856	0.001261383	
2005	0.58909262	1.1055811	4	1.222309569	0.3282904	0.004066966	
2006	0.38455879	0.53507449	13	0.28630471	0.3804524	0.017751626	
2007	0.38903496	0.39747293	12	0.15798473	0.4150459	0.019501483	
2008	0.36236573	0.26319373	6	0.06927094	0.4320711	0.0105671	
2009	0.29912439	0.35006369	7	0.122544587	0.733317	0.035512045	
2010	0.93849216	1.8659436	17	3.481745518	0.7152053	0.082036005	
2011	0.6143469	0.73935301	22	0.546642873	0.6795251	0.095835811	
2012	0.74729074	1.1620212	18	1.350293269	0.6262766	0.0666038	
2013	0.25528675	0.26855333	5	0.072120891	0.5554595	0.01455355	
			106	7.319361406		0.347689768	Term (1)=sum of (7)
						0.069050579	Term (2)=sum of (5)/sum of (4)
						0.278639189	Added variance= Term(1)-Term(2)
						0.662118278	Adjusted variance=Original variance + 2*Added variance
						0.813706506	Adjusted standard errors= Sqrt(Adjusted variance)
						0.37088225	Adjusted t-test for treatment effects = Original Coefficient/Adjusted SE

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