Informal Financing via University Alumni: the Substitution of Political Connections

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Abstract:

Utilizing an event that suddenly breaks political connections of a firm, this paper documents the substitution effects of social connections in facilitating firm financing. A year after the issuance of Regulation No. 18 in 2014, which prohibits Chinese government officials from taking part-time positions, close to a thousand of independent directors resigned. We find such event has negative impacts on a firm's obtaining bank loan and consequently on its new investment. But more importantly, we find university alumni connections of the firm's CEO or chairman play a strong role in mitigating such negative effects, facilitating a firm obtaining finance both from banks and from its suppliers in forms of other payables. The effects on other payables are larger if more connections are with upstream firms, and for firms with less collateral or located in areas of lower marketization level. The effects on bank loans are larger for smaller firms and firms with already high leverage. As the effects of alumni connections are found to be much smaller in normal periods, our result indicate different orders that firms put on using different connections in obtaining external finance.

Key Words: political connection, social connections, informal finance

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1. Introduction

It has been well documented that firms with stronger ties to the government have easier access to external finance via formal financial system (Faccio, 2006; Li et al., 2008). Inter-personal connections with the commercial banks can also help facilitate better loan terms, e.g., a reduction of loan interest rates (Engelberg et al., 2012). More generally, the borrowing firms' connections with the bank community enable them to get favourable loan terms in order to economize on cost of capital. However, do different types of connections have hierarchical order in terms of financing? Our study empirically investigate the effect of political connection on corporate external finance in China, and more importantly, its interplay with another kind of social connections, university alumni connection.

Firms in developing countries like China face more stringent financial constraint since Chinese government has been characterized with strong intervention while allocating financial resources towards state-owned enterprises or companies having stronger political connections.[4] In order to enhance their chances of tapping political capital, firms might strategically appoint or hire government officials or directors with political connections. And therefore one major challenge of the endogeneity arises. Recent Chinese anti-corruption campaign offers a good natural experiment to alleviate the endogeneity issue to some extent. The new leadership under President Xi Jinping has strengthened its efforts on curbing corruption since early 2013. In order to regulate government officials' behaviour and provide a better market environment, Organization Department of the CPC Central Committee issued a new regulation known as Regulation No.18 in October 19, 2013. [5] The regulation prohibits government officials, both current and former ones resigned or retired within three years, from taking part-time positions in firms and getting any kind of payment from firms. The

[4] See Brandt and Li (2003), Bai et al. (2006), Li et al. (2008), Cull et al. (2009), Cull et al., (2015).

[5] See Organization Department of the CPC Central Committee, Guanyu jinyibu guifan dangzheng lingdao ganbu zai qiye jianzhi (renzhi) wenti de yijian [Guidance Opinion on the Regulation of Party and Government Leaders Taking Office in Corporation], sec. 1, issued Oct 19, 2013.

Xi's anti-corruption campaign is believed to be "more severe, far-reaching and persistent than any other" (Economist, 2014), as demonstrated by the strong enforcement power of the Regulation No.18. From October 19, 2013, the issuance of Regulation No. 18, to the end of 2014, 2549 independent directors resigned from the listed companies, 960 of whom were politically-connected. For comparison, only about 10 independent directors resigned every month before the issuance. This restrictive and unforeseeable Regulation No. 18 could be viewed as an exogenous shock to the political relationship. Specifically, the personal relationships with bureaucrats become significantly weakened after the politically-connected directors are forced to leave the company after this aggressive anti-corruption activity. We find that compared to firms without politically-connected independent directors resigning, firms with at least one politically-connected independent directors leaving have 1.0% lower bank loan to total asset ratio in the subsequent quarter, equivalent to 6.25% quarter-to-quarter decline. The short run loans and net investment also decreases after the break of political connection.

The Xi's anti-corruption campaign not only provide an ideal nature experiment for the endogeneity issue, but offer an opportunity for us to explore the interplay of different connections. Interestingly, we find that the decline in bank loan recovers three to four quarters after the issuance of Regulation No. 18, suggesting that there are alternative financing channels for corporations to make up the loss brought by the break of political connections. It is well documented that social connections via university alumni can provide the affiliated company easy access to greater pool of resources and catalyse the information flow, as documented by studies on sell-side analyst (Cohen, 2010), bank loan (Engelberg et al., 2012) and M&A contexts (El-Khatib et al., 2015). Specifically, Engelberg et al. (2012) find that inter-personal connections between borrowers and lending banks (directors in borrowing firms have personal relationships with directors in lending banks) would reduce

the loan interest rates. It seems that the alumni connection can serve as an external source of firm's credit worthiness, motivating us to make a conjecture that university alumni connection might play a substitutive role after the break of political connections. Following Cohen et al. (2008)[6], we construct educational ties and view two companies as connected if one CEO or chairman of one company is graduated from the same university as the other one. Our results indicate that university alumni connection do not have first order effects on firm's formal finance from banks, but can strongly reduce the negative impact from the break of political ties. Compared to firms without any university alumni connections, firms that have one university alumni connection suffer a 22.2% decrease in the bank loan ratio from the resigning politically-connected directors.

More emphasis has been put on the research of the connections with the formal financial institutions, however, informal financing also works and play a non-ignorable role to the formal system (Ayyagari et al., 2010). The social connection provides an opportunity for the entrepreneurs to communicate with each other, and moreover, the university alumni offer a certification for the potential cooperation. We therefore consider inter-corporation lending to reflect one respect of informal financing. Specifically, we follow Jiang et al. (2010) and utilize the other payable to capture the inter-corporation loans based on personal trust. Except for formal loans via commercial banks, our results indicate that university alumni connections facilitate corporate borrowing in obtaining informal loans form their connected partners. We also explore some important nonlinearities in the impact of the university alumni connection. Our results show that the influence is more pronounced on other payables for smaller firms, upstream firms, firms with lower collateral assets, and firms located in provinces with less developed legal system and contract enforcement.

[6] Cohen, Frazzini and Malloy (2008) examine the common education background between fund managers and corporate board members and find such relationship enhance information flow into asset prices.

Our paper contributes to three strands of literature. First, our study is related to vast research on political connections and various aspects of firm performance, albeit with mixed evidence. On one hand, firms with political connections may increase value and performance (Claessens et al., 2008; Goldman et al., 2009; Wu et al., 2012) since they enjoy preferential treatment in obtaining bank loans (Sapienza, 2004; Khwaja et al., 2005; Claessens et al., 2008; Li et al., 2008; Leuz and Oberholzer-Gee, 2006; Firth et al., 2009; Boubakri et al., 2012; Houston et al., 2014; Piotroski and Zhang, 2014; Cull et al., 2015), enjoy tax benefits (Adhikari et al., 2006; Faccio, 2006; Wu et al., 2012), facilitate exports (Ding et al., 2018a) and gaining financial assistance from the government (Johnson et al. 2003; Faccio et al. 2006). On the other hand, these politically-connected firms are associated with lower performance because of lower managerial efficiency, investment efficiency and worse accounting practice (e.g., Fan et al., 2007; Chaney, Faccio, and Parsley, 2011; Ding et al., 2018b). Our paper provides a clear identification using the Regulation No.18 as a nature experiment. We identify a positive political connection effect on firm's finance through commercial banks.

Moreover, we contribute to a fast growing literature on social networks. One stream of the study explores the role of social networks in the diffusion of information and investment strategy. Cohen et al. (2008) use past educational connections between mutual fund managers and corporate board members to build social networks, and identify its impact on facilitating information transmission from managers to security analysts. Similarly, Kuhnen (2009), Cohen et al. (2010) and Pool et al. (2015) all relate mutual fund networks to trading strategy and fund performance. Their work indicate that social networks can provide useful information for capital allocation decisions (Larcker et al., 2013). Ozsoylev and Walden (2011) provide a theoretical framework and draw a rich set of novel asset pricing implications of information networks for price, volatility, profitability and trading volume.

More recently, a body of research emerges to examine the influence of social networks on corporate governance and strategy, including the enhancement of advising ability and diminished efficacy of monitoring function (Schmidt, 2008, Hwang and Kim, 2009, Fracassi and Tate, 2012), corporate innovation (Faleye et al., 2014), CEO payments and compensation (Hwang and Kim, 2009, Engelberg et al., 2013), facilitation of better loan terms (Engelberg et al., 2012), corporate acquisition behavior and merger performance (Stuart and Yim, 2010, Huang et al., 2014, El-Khatib et al., 2015). The most related paper is Engelberg et al. (2012). In their paper, they argue that director-based personal connections (social network as friendship) between banks and firms facilitate information exchanges in bank-firm loan relationship. Our paper is a complement to theirs by studying the interplay between two kinds of social connections. We find alumni connection serves as a replacement of the political connections in helping firms' financing. Other than the formal finance through bank loans discussed in Engelberg et al (2012), we provide solid evidence that the social network also works in the form of informal financing, especially for the case China. (Allen, Qian & Qian, 2005; Lin and Sun, 2005; Robert and Xu, 2005; Jiang, Lee and Yue, 2010; Ayyagari Demirguc-Kunt and Maksimovic, 2010)

Finally, relatively few studies have documented the corruption effect in China, especially at firm level. Cai, Fang, and Xu (2011) find Chinese firms often use entertainment and travel expenditures to bribe government officials. Fisman and Wang (2015) identify corruption behavior in sales of state assets in China. Ding et al. (2018c) use China's recent anti-corruption campaign as a natural experiment to examine the (market expected) equilibrium consequences. They find that SOEs, large firms, or politically connected firms earn lower returns than private, small, or non-connected firms. Our study adds to an expanding literature on the real effects of Chinese anti-corruption regulations.

The remainder of this paper proceeds as follows. Section 2 describes our data and variables. Empirical results are put in Section 3 and we conclude in Section 4.

2. Data and Variable

2.1 Data sources and sample coverage

We conduct the empirical tests using data on Chinese listed firms for the period of 2012 to 2014, one year prior to and one year after the announcement of No. 18 File. The data used are drawn from several sources. We first collect firm's financial data from China Stock Market and Accounting Research (CSMAR) database. CSMAR provides comprehensive accounting and financial statements of China's listed companies as well as detailed board and top management team's biographical information. CSMAR also documents the leaving announcements of board directors, but the leaving reason may not be disclosed accurately. Therefore, we supplement our data by hand collecting the curriculum vitae of CEOs and board members.[7] We trace their working experience to identify whether the leaving independent directors have political connections. Their education background obtained from the curriculum vitae also enables us to form the university alumni connections.

We assemble a balanced firm-quarter panel dataset with 1391 firms from the first quarter in 2012 to the fourth quarter in 2014. In this dataset, we have excluded firms in financial service industry, those under special treatment and firms issuing B shares, because special regulations will affect firm's financing policy choice. We also exclude firms not having any independent directors resigning during this period, for the purpose of comparing the effects brought by independent directors leaving a firm due to the No. 18 regulation with normal resigns of independent directors. The effects of normal independent directors resign are not of interests of this paper. However, if we include firms not having any independent directors leaving, our results do not qualitatively change.

[7] Curriculum vitae of TMT/board members are obtained from the "Profile of Directors and Senior Managers" in the CSMAR database, similar as in Ding et al. (2018a).

2.2 Variables

We use two variables to measure a firm's financing behaviours. Bank loan, measured as the short term loan plus long term loan over the total asset, is a major component of a firm's liability. In our sample, the average of bank loan over asset ratio is 16.7%. We use bank loan to measure the magnitude of formal finance from commercial banks. For the informal finance measurement, the definition is still under debate and highly subjective. We follow Jiang et al. (2010), and use other payables as the informal finance measurement. It mainly captures inter-corporate loans and other informal ways of financing based on personal trust. The other payables on average amounts to 3.6% of the total asset.

Our key independent variables are the measures of resigning independent directors with political connection, as well as number of university alumni connections of CEOs and chairmen. As for the political connection measurement, we create a variable, *LeavingPoli*, defined as the ratio of resigning political-connected independent directors over the number of total independent directors, to capture the break of a firm's political connection. We define the resigning directors with political connections as directors who are currently holding or has held a position in the government equal to or higher than the division head (chuji ganbu), and left the firm after the issuance of No. 18 File (October 19, 2013). We view these resigning directors as politically-connected ones leaving due to exogenous shocks. We also create a dummy variable, *LeavingPoli_dummy*, as an alternative measure indicating whether the resigning independent directors have political connection.

Figure 1 plots the number of resigning independent directors before and after the No. 18 File. In one year after the issuance of No. 18 File, a total number of 2479 independent directors resigned from the listed firms. Around 40% of them are politically connected. For comparison, much fewer independent directors resigned in earlier 2013, or 2015, with around

300 directors in either year. This shows that the No. 18 File is quite restrictive for the government officials.

[[FIGURE 1]]

University connection, *UnivCon*, is measured as the logarithm of number of listed firms that the focal firm connects to. Two firms are viewed as connected if one CEO or chairman of one company is graduated from the same university as another CEO or chairman from the other company. We find 1246 universities as their alma mater. On average, close to 4 alumni worked as CEO or chairmen in listed companies in China for each university. But the distribution of alumni is highly skewed, as plotted in Figure 2. For most of the universities, there are less than 3 alumni serving as CEO or chairman. Only a very limited number of universities have dozens of alumni in top management teams. Tsinghua university tops this list with 235 graduates, followed by Peking University and Zhejiang University. In our firm-quarter dataset, 5964 observations (37.82%) are firms with university connection to at least one another firm. In the rest 62.18% of the firms, CEOs or chairmen do not hold any university degree, or graduated from a university that no other alumni works as CEOs or chairmen of listed firms.

[[FIGURE 2]]

We control several other firm level variables that could potentially influence corporate financing structure in the analysis below. All variable definition is presented in Table 1. To minimize the effect of outliers, we winsorize our sample at 1% on each variable in both tails. Table 2 reports the summary statistics. On each variable, we compare the mean value of firms with university connections to other listed companies, and those firms without university connections to other listed companies. The political connection variable does not differ significantly between two groups. It means that political connection and university connection are not highly correlated. In fact, the correlation coefficient between these two

variables is around 0.01. The political connection and university connection capture two different kinds of social connections of the firm. This paves the way for us to explain why they facilitate the corporate borrowing through two different ways.

[[TABLE 1 and 2]]

3. Empirical Results

3.1 Political connection

We first empirically measure the effect of political connections on corporate borrowing. We estimate the following regression in the firm-quarter panel:

$$FirmFinance_{it} = \beta * LeavingPoli_{it-1} + \gamma * FirmControl_{it-1} + \theta_i + \varphi_t + \varepsilon_{it} \quad (1)$$

where the dependent variables, $FirmFinance_{it}$, are firm's formal and informal financing measurements. All independent variables are one quarter lagged to the dependent variable. The inclusion of firm fixed effects θ_i and year-quarter fixed effects φ_t aims to capture all time-invariant firm characteristics and firm-invariant time trend that potentially affect firm's financing structure. *LeavingPoli* is the key variable of interest, defined as the ratio (or dummy) of resigning independent directors with political connections to the total number of independent directors. We also restrict that these directors left the firm after the issuance of No. 18 File (October 19, 2013). Hence, this variable is equivalent to the interaction between political connection and time dummy of after No. 18 File, making Equation (1) the same function as difference-in-differences specification. Therefore, β captures the effect of resigning directors on firm's finance performance of firms with politically-connected directors resigning relative to firms with non-politically-connected directors leaving.

Table 3 presents the estimation results of Equation (1). From columns (1) and (4), we observe that the resigning independent directors with political connection indeed lowers firm's borrowing from bank. Compared to firms with non-politically-connected independent directors resigning, firms with at least one politically-connected independent directors

leaving will have 1.0% smaller bank loan ratio in the next quarter. We find similar patterns for firm's short loan and net investment. The effects on net investment indicates real negative influence this sudden break of political connections carries for firms.

[[TABLE 3]]

In Table 4, we replace the dependent variable with informal finance measurement, or other payables. Resigning independent directors with political connections do not exert significant influence on a firm's other payables. It indicates that political connections mainly help firms finance through formal ways. In columns (2) and (4), we regress firm's leverage on the leaving politically-connected directors measures. Results show that the break of political connection leads to the decrease of firm's leverage, but the effect is not statistically significant. It suggests that firm may have other ways of financing to tackle the decline in the finance from banks.

[[TABLE 4]]

3.2 University alumni connection

We explore the effects of university alumni connection and its interaction with the severing of political connection. In columns (1) and (2) of Table 5, we re-estimate Equation (1) with number of university alumni connections as the key explanatory variable. We find that university alumni connection has no significant impact on firm's financing through formal finance. But the university connection probably works through informal mechanisms. If the CEO and chairman of the firm has more university alumni that also works as CEOs and chairmen in other listed firms, this firm would have larger other payables, indicating larger inter-corporate loans and other informal ways of financing based on personal trust.

Moreover, we would like to explore the university alumni connection effect when the firm is in difficulty. Evidence in Table 3 shows that firm faces difficulty in obtaining loans from banks after politically-connected directors leave the firm. Could university alumni

connection help in this time? We estimate the following regression, paying attentions on the interactions between the break of political connection and university alumni:

$$FirmFinance_{it} = \beta_1 * LeavingPoli_{it-1} + \beta_2 * UnivCon_{it-1} + \beta_3 * UnivCon_{it-1} * LeavingPoli_{it-1} + \gamma * FirmControl_{it-1} + \theta_i + \varphi_t + \varepsilon_{it} \quad (2)$$

where β_3 captures the change in marginal effect of university alumni connection when the political connection status changes. Columns (3) through (6) in Table 5 reports the regression results of Equation (2). β_3 is significantly positive under all four specifications. To give a quantitative explanation for column (5), compared to firms with non-politically-connected independent directors resigning, firms with at least one political-connected independent directors leaving will have 4.5% smaller bank loan ratio in the next quarter, but such negative effect drops to 3.5% if a firm links to one other listed firms. As the number of university alumni connection increases, the negative effect further decreases. When the firm connects to 10 other listed firms, such negative effect further drops to 1.14%.

[[TABLE 5]]

Other than mitigating the negative impact on the formal finance from bank loans, university alumni connection also helps firm obtain more inter-corporate loans. Columns (4) and (6) shows that alumni connection can facilitate acquiring other payables in normal periods, and the effects become larger when political connection breaks. Compared to firms with non-politically-connected independent directors resigning, firms with at least one politically-connected independent directors leaving have 0.5% smaller bank loan ratio in the next quarter. In the group of firms linking to 1 other listed firms, such negative effect brought by the leaving politically-connected independent director reverses to the positive 0.26%. When the firm could connect to 10 other listed firms, such negative effect disappears. It turns to positive 2.14%, even larger than the drop in the bank loan (1.14%), filling up the loss from

the formal finance. Therefore, university alumni connection could help mitigate the negative impact on formal finance brought by the break of political connections. It could also help obtain more informal finance, as revealed in the other payables accounting item, with larger marginal improvement in the group of firms facing larger financial distress.

3.3 Channel

Table 5 provides the evidence that the university alumni connection could help firm obtain both formal and informal finance when the political connection breaks. In this section, we explore the two potential mechanisms of how university alumni connection works. First, if the university alumni connection partly works through the informal finance channel, a connection to the upstream firms would have larger facilitation role. The underlying idea is that, when firm faces stringent cash flows, it could ask its suppliers to let it delay paying back . This is equivalent to obtain short-term loans to relieve its financial distress. Such negotiation would be easier with suppliers if the firm have more personal connection with its upstream firms. Second, equity investment is another way to resolve the stringent cash flow when the firm seeks help from friends. We expect alumni connection would lead to the increase in paid-in capital when the political connection is broken. We test these two hypotheses below.

First, we create a new variable to count the university alumni connections to upstream firms. In order to identify the upstream firm, we use the input-output table for China in 2012 from the Department of National Economy Accounting of State Statistical Bureau. It contains the sale and purchase relationship data on 42 industries. For each firm, we calculate the number of firms to which the CEO and chairman have university alumni connections. The firm's university alumni connection to upstream firms is then calculated as the weighted average of number of connected firms in each industry. The weight given to each industry is its percentage contribution to the total purchases of the industry where the firm belongs to.

The average number of connections to upstream firms is 0.86, much smaller than the number of total university alumni connections (7.43). When conducting regressions using the number of upstream connections as reported in Table 6, we observe that its interaction effect with *LeavingPoli* is still significantly positive. Connecting to upstream firms is useful for firms to obtain informal finance when the independent directors with political connection resign. As we do not have detailed information on the informal finance items, results here suggest that extending payment circles to the suppliers might be a potential solution for firms' resolving short term financial distress. The upstream connection effect of mitigating the negative impact on formal finance also remains.

[[TABLE 6]]

A second potential mechanism of university alumni connection is working through equity investment. We re-estimate Equations (1) and (2) using increment in paid-in capital as dependent variable, and report the results in Table 7. In columns (1), (2), (3) and (6), we find that neither political connection nor alumni connection alone leads to the increment of paid-in capital. Nonetheless, the interaction term between political connection and university alumni connection is significantly positive. It shows that when the political connection breaks, university alumni connection may work through attracting equity investment.

[[TABLE 7]]

3.4 Endogeneity

The endogeneity issue for our research is not severe, since we explore the consequences of an exogenous political event. However, our regression results still face the reverse causality and omitted variable concern that might generate biased estimates. We address the endogeneity issue below.

The potential reverse causality comes from the selective appointment of top management team members. Firm with good quality may selectively appoint CEO or chairman with large

number of university connections. To tackle this potential channel, we use the number of university connections two years prior to the observation time period (Huang et al, 2014). The argument behind is that it is difficult for firms to foresee such political shocks. And since our sample period ends in the fourth quarter of 2014, all university connections are measured before the political shock. Furthermore, the university connections of top management teams are usually not easy to be known well, and education connections are established long before the hired person assumes CEO or chairman position. The regression results remain in most cases when considering connections two years ago, as shown in Table 8.

[[TABLE 8]]

One important omitted variable in our baseline regression is the CEO ability. Graduating from a university with many alumni serving as top managers in Chinese listed firms is a signal for the CEO's ability. Such personal advantage may help firm manage the financing better. Therefore, the university connections may not capture the degree of information transmission or external credit, but rather the ability of CEO and chairman. We try to provide some evidence against this explanation by introducing a dummy variable called *top 10*. It indicates whether the CEO graduated from the top 10 universities. The top 10 list is obtained from the QS ranking list. We use this dummy variable as the proxy for the CEO ability. After adding this top 10 dummy alongside its interaction term with university connections, we find that neither of them is significant. It shows that graduating from top 10 universities would not help firm obtain more finance, nor will it amplify the university connection effect on corporate finance (Table 9). Moreover, our baseline results on alumni connections and on the break of political connections have almost no changes with the addition of these measures. Our results are thus not driven by CEO ability.

[[TABLE 9]]

Another challenge in interpreting our baseline results causally is the possibility that university alumni connections may capture the effect of firm size. Normally, large firm may have more resource and therefore more likely to hire a CEO with more social connections. But this is not necessarily the case. The correlation coefficient between firm size and number of university connections is only 0.140, not highly correlated. Moreover, we split the sample by the median of firm asset recorded in 2013Q4. When implementing the regressions, we find larger marginal effect in the small firm group, especially for the informal finance mechanism (Table 10). This provides the evidence that social connections bring resources to the firm, because small firms get access to limited resources, therefore benefiting more from the social connections.

[[TABLE 10]]

3.5 Firm heterogeneity

To clearly identify the effect brought by university alumni connections, we focus on a subsample of firms with zero state ownership. Firms with state ownership may have political connection to the local or central government through mechanisms other than the directors that are also government officials. Their resigning may not completely cut off the political connection of these firms with state ownership. On the other hand, resigning political-connected directors in the firms with zero state ownership could leave these firms facing greater financial troubles. We re-estimate the Equation (2) using firms without any state ownership, and present the regression result in Table 11. As compared with our baseline results in Table 5, the negative effects of the break of political connections is larger in this subsample, while the sign and magnitude of university alumni connections remain similar.

[[TABLE 11]]

We hypothesize that university alumni connection works through information transmission mechanism and certification mechanism. Therefore, social connection is

expected to work better in firms that need more resources and more certifications for loans. In Table 12, we present subsample results divided by firm's leverage and tangibility, and by firm's location, in order to provide some evidence supporting this hypothesis.

[[TABLE 12]]

In the Panel A of Table 12, we split the sample based on the median firm leverage recorded in 2013Q4. High leverage firms are more difficult in acquiring bank loans. We find the effect magnitude of university alumni connection in the high leverage firms are 1.7 time the magnitude in the low leverage firms for bank loans. Their effect for informal finance channel is similar between the two groups.

Panel B splits the sample based on a firm's tangibility. If a firm has relatively low collaterals for loans, they may need external certification to strengthen their credibility. Or they may need better information transmission to pass their fundamental conditions and needs for money to banks or upstream firms. We expect university alumni connections could serve as such external credibility certification, or as an intermediation to transfer such information. As a result, we expect larger effects in the low tangibility firms. Results reported in Panel B of Table 12 show that university alumni connection indeed has larger marginal effects in the low tangibility firms for acquiring informal finance, but its effects on bank loan are quite similar in the two groups.

Finally, we divide firms based on the market development conditions in the provinces where they locate. Fan, Wang and Zhu (2011) designs a province-level marketization index to measure the extent of market reforms. The marketization index is based on official statistics, and enterprise and household surveys. The index rises as the private sector shares of output, investment and employment rises, price controls and trade barriers fall, factor markets (labor, finance and investment) are more liberalized, and the legal environment improves. A high index indicates a province has made more progresses towards a market

economy. Therefore, we expect in a province with high market index, informal finance based on personal trust is less prevalent. The results in Panel C of Table 12 support this hypothesis, as we find that university alumni connection has five times larger effects in the low market index provinces for other payables.

Taking these results together, they are generally consistent with what we expected. Social connections bring in external resources and strengthen a firm's credit worthiness. It thus plays a bigger role in firms that need resources and certification more.

4. Conclusion

It is well known that firms follow certain orders in using different types of finance. They may also have an order when using different types of connections. This is a message we get from our empirical studies on Chinese listed firms after a sudden shock on their political connections. We find that university alumni connections quickly work and mitigate the negative impacts carried by the losses in political connections on firm finance.

But the alumni connections probably work in different ways with political connections. As political connections mainly help firms acquire formal finance such as bank loans, alumni connections helps firms obtain both formal finance and informal finance such as trade credits, with an overall stronger role in informal finance. Typically informal finance is more costly than formal finance, which could be a reason for firms' using political connections in the first order while using social connections more in a trouble time.

We also document heterogeneous effects that social connections play in obtaining finance. If a firm has more social connections with upstream firms, has less collateral, or is located in areas of lower marketization level, social connections play an even larger role in obtaining informal finance. These results suggest social connections facilitate information transmission and strengthen a firm's credits that are essential in obtaining trade credits. For smaller firms and firms with already high leverage, better social connections have larger

effects on obtaining bank loans, which may be due to the mitigated information asymmetry between the firm and banks.

In all of our tests, we find much smaller effects of social connection in firms not affected by the shock on political connections. We also find that, for such firms, social connections almost have no effects on bank loans but have some effects on trade credits. Overall, this paper suggest firms utilize different connections in acquiring different finance in different situations, which is certainly worth further and more detailed studies.

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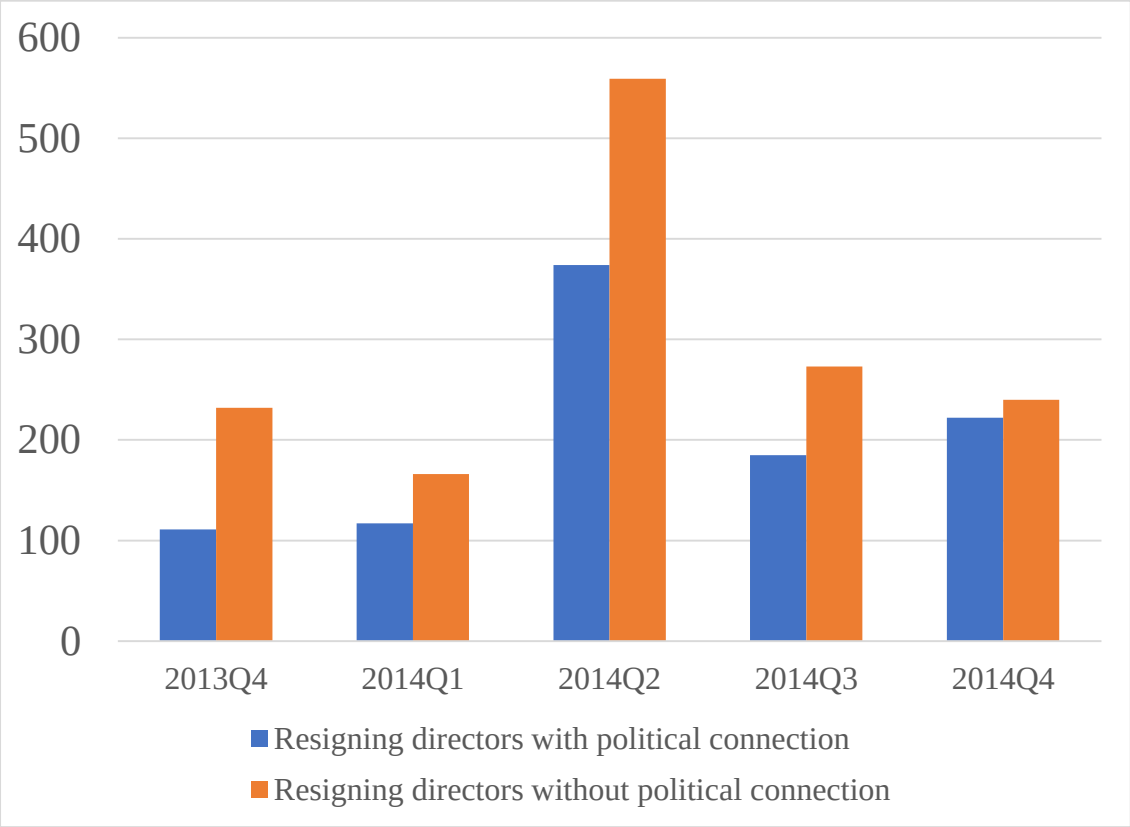
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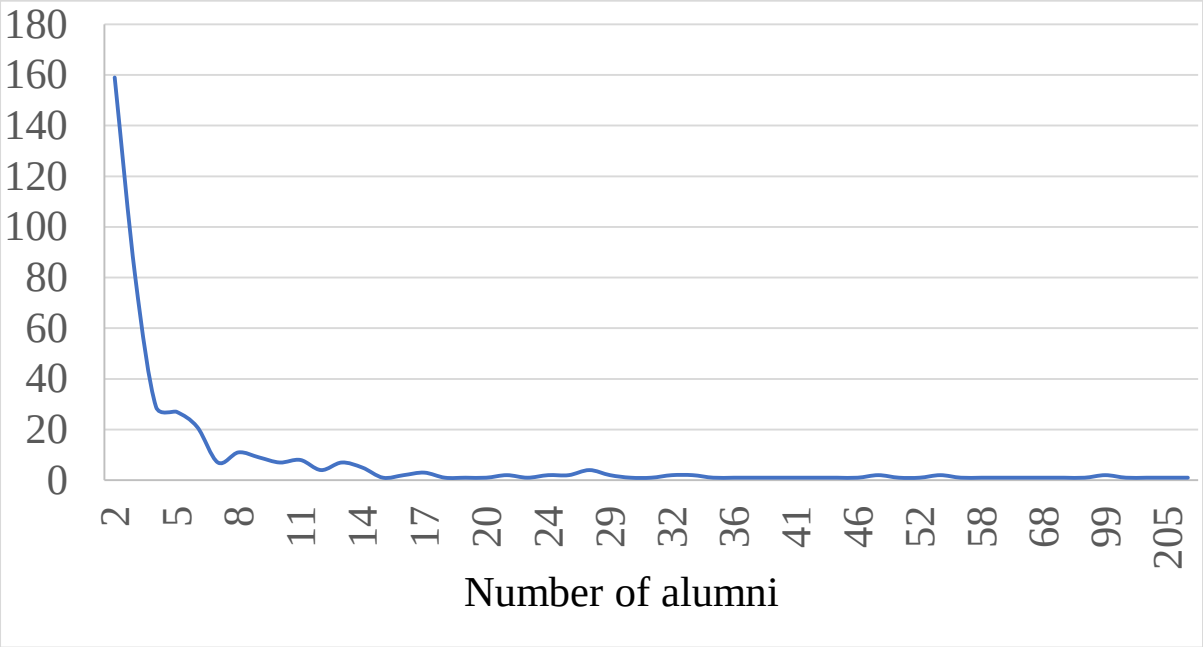
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Figure 1 Resigning independent directors after No. 18 File



Note: This figure plots the number of resigning independent directors in the 5 quarters after the issuance of No. 18 File. Independent directors with and without political connections are plotted separately.

Figure 2 Distribution of number of alumni in each university



Note: This figure plots the distribution of number of alumni in each university. The horizontal axis represents the number of alumni serving as CEO or chairman in Chinese listed companies. The vertical axis represents the number of universities having the exact number of alumni as CEO or chairman.

Table 1 Variable Definition

Variable	Definition
BankLoan	Short term loan plus long term loan scaled by lagged total asset
OtherPayable	Other payables scaled by lagged total asset
NetInvest	Increase in the capital expenditure scaled by lagged total asset
ShortLoan	Short term loan scaled by lagged total asset
AccPay	Account payables scaled by lagged total asset
LeavingPoli_ratio	Number of resigned political-connected independent directors over the number of total independent directors
LeavingPoli_dummy	Dummy indicating whether the resigning independent directors have political connection
UnivCon	Logarithm of number of listed firms that the focal firm connects to
Asset	Logarithm of firm's asset
TangibleAsset	Ratio of firm's tangible asset to total asset
ROA	Return on asset
CapExpense	Capital expenditure
Growth	Percentage change in firm's sales
EffTaxRate	Effective tax rate
TMTNumber	Number of top management teams

Note: This table provides definition of variables used. *LeavingPoli_ratio*, *LeavingPoli_dummy* and *UnivCon* are connected manually. All remaining variables are collected from CSMAR.

Table 2 Summary Statistics

	Full Sample		With University Connection		Without University Connection		Diff (*p* value)
	Mean	SD	Mean	SD	Mean	SD	
BankLoan	0.167	0.152	0.158	0.147	0.173	0.154	0.000
OtherPayable	0.036	0.056	0.036	0.054	0.036	0.057	0.514
NetInvest	0.025	0.042	0.025	0.041	0.025	0.043	0.195
ShortLoan	0.117	0.118	0.105	0.112	0.124	0.121	0.000
AccPay	0.095	0.073	0.103	0.078	0.089	0.068	0.000
LeavingPoli_ratio	0.023	0.078	0.023	0.076	0.023	0.078	0.965
LeavingPoli_dummy	0.091	0.288	0.094	0.292	0.090	0.286	0.386
UnivCon	0.953	1.384	2.521	1.053	-	-	-
Asset	21.914	1.269	22.165	1.425	21.762	1.137	0.000
TangibleAsset	0.408	0.176	0.390	0.171	0.419	0.178	0.000
ROA	0.009	0.017	0.010	0.016	0.009	0.018	0.000
CapExpense	0.015	0.018	0.015	0.017	0.016	0.018	0.065
Growth	0.098	0.224	0.107	0.234	0.092	0.218	0.000
EffTaxRate	0.161	0.286	0.167	0.279	0.157	0.289	0.024
TMTNumber	20.397	5.326	20.993	5.634	20.035	5.097	0.000
Observations	15771		5964		9807		

Note: This table reports summary statistics of the variables used in our analysis. We report the mean of standard deviation of each variable in the full sample, firms with university connection and firms without university connection, respectively. The last column provides the *p* value of the *t* test with the null hypothesis that the means in the two subsamples are equal.

Table 3 Political Connection on formal finance

	(1) BankLoan	(2) ShortLoan	(3) NetInvest	(4) BankLoan	(5) ShortLoan	(6) NetInvest
LeavingPoli_ratio	-0.032***	-0.023**	-0.010*			
	(0.012)	(0.011)	(0.006)			
LeavingPoli_dummy				-0.010***	-0.006**	-0.002
				(0.003)	(0.003)	(0.002)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
N	15634	15634	15634	15634	15634	15634
R-sq	0.895	0.876	0.573	0.895	0.876	0.573

Note: This table presents the estimation result of Equation (1). Control variable includes *Asset*, *TangibleAsset*, *ROA*, *CapExpense*, *Growth*, *EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 4 Political Connection on other firm financial measurements

	(1) Other Payables	(2) Leverage	(3) Other Payables	(4) Leverage
LeavingPoli_ratio	0.005	-0.019		
	(0.007)	(0.015)		
LeavingPoli_dummy			0.001	-0.004
			(0.002)	(0.004)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	15634	15634	15634	15634
R-sq	0.803	0.938	0.803	0.938

Note: This table presents the estimation result of Equation (1). Control variable includes *Asset*, *TangibleAsset*, *ROA*, *CapExpense*, *Growth*, *EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 5 University Alumni Connection

	(1)	(2)	(3)	(4)	(5)	(6)
	BankLoan	Other Payable	BankLoan	Other Payable	BankLoan	Other Payable
UnivCon	-0.001	0.003**	-0.002	0.002*	-0.002	0.002*
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
LeavingPoli_ratio			-0.013***	-0.003		
			(0.004)	(0.002)		
UnivCon * LeavingPoli_ratio			0.003*	0.003***		
			(0.002)	(0.001)		
LeavingPoli_dummy					-0.045***	-0.005
					(0.014)	(0.008)
UnivCon * LeavingPoli_dummy					0.014**	0.011***
					(0.006)	(0.004)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
N	15634	15634	15634	15634	15634	15634
R-sq	0.895	0.803	0.895	0.804	0.895	0.804

Note: This table presents the estimation result of Equation (2). Control variable includes *Asset, TangibleAsset, ROA, CapExpense, Growth, EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 6 Channel: Connecting to upstream firms

	(1) BankLoan	(2) Other Payable	(3) BankLoan	(4) Other Payable
UnivCon	-0.002	0.002	-0.002	0.002
	(0.004)	(0.003)	(0.004)	(0.003)
LeavingPoli_ratio	-0.043***	-0.001		
	(0.014)	(0.008)		
UnivCon * LeavingPoli_ratio	0.029**	0.018**		
	(0.013)	(0.008)		
LeavingPoli_dummy			-0.012***	-0.002
			(0.004)	(0.002)
UnivCon * LeavingPoli_dummy			0.007*	0.006***
			(0.004)	(0.002)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	15634	15634	15634	15634
R-sq	0.895	0.803	0.895	0.803

Note: This table presents the estimation result of Equation (2). *UnivCon* is defined as the logarithm of weighted number of alumni connections to the upstream firms. Control variable includes *Asset, TangibleAsset, ROA, CapExpense, Growth, EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 7 Channel: finance through equity

DV = Increase in Paid-in Capital	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Political Connection		Alumni Connection			Upstream Firms		
UnivCon			0.000	0.000	0.000	0.000	-0.000	-0.000
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
LeavingPoli_ratio				-				
	-0.004			0.010**			-0.009*	
	(0.004)			(0.005)			(0.005)	
UnivCon * LeavingPoli_ratio				0.006**			0.013*	
				(0.003)			(0.007)	
LeavingPoli_dummy		-0.001			-0.002			-0.002
		(0.001)			(0.001)			(0.001)
UnivCon * LeavingPoli_dummy					0.002**			0.003*
					(0.001)			(0.002)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	15631	15631	15631	15631	15631	15631	15631	15631
R-sq	0.236	0.236	0.236	0.236	0.236	0.236	0.236	0.236

Note: This table presents the estimation result of Equation (1) and (2). The dependent variable is the increase in the paid-in capital. Control variable includes *Asset, TangibleAsset, ROA, CapExpense, Growth, EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 8 Endogeneity: Connections two years ago

	(1) BankLoan	(2) Other Payable	(3) BankLoan	(4) Other Payable
UnivCon	0.000	0.001	0.000	0.001
	(0.002)	(0.001)	(0.002)	(0.001)
LeavingPoli_ratio	-0.043***	-0.003		
	(0.014)	(0.008)		
UnivCon * LeavingPoli_ratio	0.012*	0.009**		
	(0.007)	(0.004)		
LeavingPoli_dummy			-0.012***	-0.002
			(0.004)	(0.002)
UnivCon * LeavingPoli_dummy			0.003	0.003***
			(0.002)	(0.001)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	15634	15634	15634	15634
R-sq	0.895	0.803	0.895	0.804

Note: This table presents the estimation result of Equation (2). *UnivCon* is defined as the logarithm of number of alumni connections two years ago. Control variable includes *Asset*, *TangibleAsset*, *ROA*, *CapExpense*, *Growth*, *EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 9 Confounding factor: CEO ability

	(1) BankLoan	(2) Other Payable	(3) BankLoan	(4) Other Payable
UnivCon	-0.002	0.002*	-0.002	0.002*
	(0.002)	(0.001)	(0.002)	(0.001)
LeavingPoli_ratio	-0.013***	-0.002		
	(0.004)	(0.002)		
UnivCon * LeavingPoli_ratio	0.003	0.003***		
	(0.002)	(0.001)		
LeavingPoli_dummy			-0.044***	-0.005
			(0.014)	(0.008)
UnivCon * LeavingPoli_dummy			0.012*	0.011***
			(0.006)	(0.004)
Top 10	-0.078	-0.022	-0.077	-0.023
	(0.051)	(0.032)	(0.051)	(0.032)
Top 10 * UnivCon	0.021	0.006	0.020	0.006
	(0.014)	(0.008)	(0.014)	(0.008)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	15634	15634	15634	15634
R-sq	0.895	0.804	0.895	0.804

Note: This table presents the estimation result of Equation (2). *Top10* is a dummy variable indicating whether the CEO is graduated from the top 10 universities. Control variable includes *Asset, TangibleAsset, ROA, CapExpense, Growth, EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 10 Confounding factor: firm size

	Large Firm		Small Firm	
	(1)	(2)	(3)	(4)
	BankLoan	Other Payable	BankLoan	Other Payable
LeavingPoli_ratio	-0.050***	0.006	-0.042*	-0.012
	(0.017)	(0.007)	(0.022)	(0.013)
UnivCon	-0.002	0.002*	-0.001	0.003
	(0.002)	(0.001)	(0.003)	(0.002)
UnivCon * LeavingPoli_ratio	0.012	0.003	0.017*	0.021***
	(0.008)	(0.003)	(0.010)	(0.007)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	7852	7852	7782	7782
R-sq	0.909	0.812	0.860	0.802

Note: This table presents the subsample estimation result of Equation (2). Subsample are categorized based on the median firm asset recorded in 2013Q4. Control variable includes *Asset, TangibleAsset, ROA, CapExpense, Growth, EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 11 Firms with zero state ownership

	(1) BankLoan	(2) Other Payable	(3) BankLoan	(4) Other Payable
UnivCon	-0.002	0.004***	-0.002	0.004***
	(0.002)	(0.001)	(0.002)	(0.001)
LeavingPoli_ratio	-0.047***	0.003		
	(0.015)	(0.007)		
UnivCon * LeavingPoli_ratio	0.013*	0.009**		
	(0.007)	(0.004)		
LeavingPoli_dummy			-0.012***	-0.000
			(0.004)	(0.002)
UnivCon * LeavingPoli_dummy			0.003*	0.003***
			(0.002)	(0.001)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	12742	12742	12742	12742
R-sq	0.905	0.841	0.905	0.841

Note: This table presents the estimation result of Equation (2) for firms with zero state ownership. Control variable includes *Asset*, *TangibleAsset*, *ROA*, *CapExpense*, *Growth*, *EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 12 Firm Heterogeneity

Panel A: leverage

	High Leverage		Low Leverage	
	(1) BankLoan	(2) Other Payable	(3) BankLoan	(4) Other Payable
LeavingPoli_ratio	-0.058**	0.002	-0.034*	-0.011
	(0.023)	(0.014)	(0.018)	(0.009)
UnivCon	-0.002	0.003	-0.000	0.002
	(0.002)	(0.002)	(0.003)	(0.001)
UnivCon * LeavingPoli_ratio	0.018*	0.011*	0.009	0.010**
	(0.010)	(0.006)	(0.008)	(0.004)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	7869	7869	7765	7765
R-sq	0.866	0.836	0.788	0.689

Panel B: tangibility

	High tangibility		Low tangibility	
	(1) BankLoan	(2) Other Payable	(3) BankLoan	(4) Other Payable
LeavingPoli_ratio	-0.041**	-0.005	-0.048**	-0.006
	(0.019)	(0.009)	(0.021)	(0.013)
UnivCon	-0.004	0.001	0.001	0.004**
	(0.003)	(0.002)	(0.002)	(0.002)
UnivCon * LeavingPoli_ratio	0.014	0.009**	0.014	0.013**
	(0.009)	(0.004)	(0.009)	(0.006)
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
N	7821	7821	7813	7813
R-sq	0.897	0.810	0.893	0.799

Panel C: Market index

	High Market Index		Low Market Index	
	(1) BankLoan	(2) Other Payable	(3) BankLoan	(4) Other Payable
LeavingPoli_ratio	-0.040**	0.003	-0.036	-0.008
	(0.018)	(0.008)	(0.022)	(0.011)
UnivCon	0.002	0.000	-0.005**	0.003*
	(0.003)	(0.001)	(0.002)	(0.002)
UnivCon * LeavingPoli_ratio	0.014	0.003	0.013	0.015**
	(0.009)	(0.003)	(0.009)	(0.006)
Firm FE	Yes	Yes	Yes	Yes

Year-Quarter FE	Yes	Yes	Yes	Yes
N	7185	7185	7593	7593
R-sq	0.907	0.817	0.884	0.806

Note: This table presents the subsample estimation result of Equation (2). Subsample are categorized based on the median firm leverage, tangibility recorded in 2013Q4, as well as median marketization index in the province where the firm locates. Control variable includes *Asset, TangibleAsset, ROA, CapExpense, Growth, EffTaxRate* and *TMTNumber*. Firm fixed effects and year-quarter fixed effects are added in all regression specifications. Robust standard errors clustered by firms are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.