Appendix

This appendix provides complementary information that is not shown in my research note. The information includes descriptive statistics on the measures of personal connections and the demographic characteristics of provincial leaders, models addressing potential endogeneity problems, and additional analyses on provincial reform performance. I also test the association between informal politics and prospects for future GDP growth. Finally, a firm-level analysis is provided to strengthen the empirical evidence.

**A.** **Descriptive Statistics**

I manually collected demographic characteristics of provincial leaders from the Chinese political elite database. As this dataset ends in 2015, I supplement missing demographic information for 2016 and 2017 through other websites, including China Vitae, Wikipedia, and Baidu Baike. I build a panel of data on provincial leadership. It takes the province-year as the unit of analysis, incorporating the provincial party secretaries and governors from 1993 to 2017. The panel is composed of 771 valid observations, including 166 provincial party secretaries and 212 governors. The observations of Chongqing before 1997 are excluded, because it was not until 1997 that Chongqing became a provincial unit. The descriptive statistics are in Table 1. Panel A reports the sample means. It shows that about 9% of all observations have at least one provincial leader who has working ties with the CCP’s incumbent general secretary. About 26% of observations have at least one provincial leader who has broad ties with the CCP’s incumbent general secretary. Panel B reports sample distributions by year. Panel C reports sample distributions by province.

**Table 1: Descriptive Statistics**

|  |  |  |  |
| --- | --- | --- | --- |
| Panel A: Overall statistics | | | |
|  | (1) | (2) | (3) |
|  | Secretary or Governor | Secretary | Governor |
| *Measures of personal connections* |  |  |  |
| Working Ties | 0.09 | 0.06 | 0.05 |
| Birth Province | 0.15 | 0.10 | 0.06 |
| Alumni | 0.03 | 0.02 | 0.02 |
| Broad Ties | 0.26 | 0.16 | 0.13 |
| *Demographic Characteristics* |  |  |  |
| Age |  | 59.70 | 57.87 |
| Tenure Length |  | 3.35 | 3.09 |
| College Education |  | 0.83 | 0.88 |
| Served in CLY |  | 0.20 | 0.23 |
| Served in Prosperous Provinces |  | 0.30 | 0.37 |
| Observations | 771 | 771 | 771 |
|  | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Panel B: connection variables by year | | | | | | |
|  | Secretary or Governor | | Secretary | | Governor | |
| Year | working ties | broad ties | working ties | broad ties | working ties | broad ties |
| 1993 | 0.03 | 0.27 | 0.03 | 0.20 | 0.03 | 0.13 |
| 1994 | 0.03 | 0.27 | 0.03 | 0.20 | 0.03 | 0.13 |
| 1995 | 0.03 | 0.30 | 0.03 | 0.17 | 0.03 | 0.20 |
| 1996 | 0.03 | 0.30 | 0.03 | 0.17 | 0.03 | 0.20 |
| 1997 | 0.03 | 0.26 | 0.03 | 0.19 | 0.03 | 0.13 |
| 1998 | 0.03 | 0.29 | 0.03 | 0.19 | 0.03 | 0.16 |
| 1999 | 0.03 | 0.29 | 0.03 | 0.16 | 0.03 | 0.19 |
| 2000 | 0.03 | 0.39 | 0.03 | 0.19 | 0.03 | 0.23 |
| 2001 | 0.06 | 0.42 | 0.06 | 0.26 | 0.03 | 0.19 |
| 2002 | 0.06 | 0.35 | 0.06 | 0.19 | 0.03 | 0.19 |
| 2003 | 0.13 | 0.29 | 0.10 | 0.19 | 0.03 | 0.10 |
| 2004 | 0.13 | 0.29 | 0.10 | 0.19 | 0.03 | 0.10 |
| 2005 | 0.13 | 0.29 | 0.10 | 0.19 | 0.03 | 0.10 |
| 2006 | 0.13 | 0.32 | 0.10 | 0.23 | 0.03 | 0.10 |
| 2007 | 0.10 | 0.26 | 0.06 | 0.23 | 0.03 | 0.03 |
| 2008 | 0.10 | 0.23 | 0.00 | 0.13 | 0.10 | 0.10 |
| 2009 | 0.10 | 0.23 | 0.00 | 0.13 | 0.10 | 0.10 |
| 2010 | 0.06 | 0.19 | 0.03 | 0.13 | 0.03 | 0.06 |
| 2011 | 0.06 | 0.19 | 0.03 | 0.13 | 0.03 | 0.06 |
| 2012 | 0.06 | 0.19 | 0.06 | 0.16 | 0.00 | 0.03 |
| 2013 | 0.10 | 0.13 | 0.03 | 0.03 | 0.10 | 0.13 |
| 2014 | 0.10 | 0.13 | 0.03 | 0.03 | 0.10 | 0.13 |
| 2015 | 0.13 | 0.16 | 0.10 | 0.10 | 0.10 | 0.13 |
| 2016 | 0.19 | 0.26 | 0.13 | 0.13 | 0.13 | 0.19 |
| 2017 | 0.23 | 0.32 | 0.13 | 0.13 | 0.10 | 0.19 |
|  | | | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Panel C: Connection variables by province | | | | | | |
|  | Secretary or Governor | | Secretary | | Governor | |
| province | working ties | broad ties | working ties | broad ties | working ties | broad ties |
| Beijing | 0.04 | 0.20 | 0.04 | 0.04 | 0.00 | 0.16 |
| Tianjin | 0.16 | 0.40 | 0.08 | 0.08 | 0.16 | 0.40 |
| Hebei | 0.08 | 0.44 | 0.00 | 0.36 | 0.08 | 0.08 |
| Shanxi | 0.04 | 0.20 | 0.00 | 0.16 | 0.04 | 0.04 |
| Inner Mongoria | 0.12 | 0.40 | 0.12 | 0.40 | 0.00 | 0.00 |
| Liaoning | 0.12 | 0.24 | 0.12 | 0.24 | 0.00 | 0.00 |
| Jilin | 0.20 | 0.88 | 0.12 | 0.48 | 0.08 | 0.40 |
| Heilongjiang | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.04 |
| Shanghai | 0.44 | 0.48 | 0.40 | 0.44 | 0.44 | 0.44 |
| Jiangsu | 0.28 | 0.68 | 0.28 | 0.56 | 0.00 | 0.40 |
| Zhejiang | 0.16 | 0.48 | 0.16 | 0.32 | 0.16 | 0.32 |
| Anhui | 0.16 | 0.28 | 0.00 | 0.00 | 0.16 | 0.28 |
| Fujian | 0.08 | 0.36 | 0.00 | 0.16 | 0.08 | 0.20 |
| Jiangxi | 0.12 | 0.12 | 0.08 | 0.08 | 0.04 | 0.04 |
| Shandong | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Henan | 0.08 | 0.08 | 0.08 | 0.08 | 0.00 | 0.00 |
| Hubei | 0.00 | 0.28 | 0.00 | 0.04 | 0.00 | 0.24 |
| Hunan | 0.00 | 0.20 | 0.00 | 0.20 | 0.00 | 0.00 |
| Guangdong | 0.00 | 0.20 | 0.00 | 0.20 | 0.00 | 0.00 |
| Guangxi | 0.00 | 0.08 | 0.00 | 0.08 | 0.00 | 0.00 |
| Hainan | 0.12 | 0.12 | 0.04 | 0.04 | 0.08 | 0.08 |
| Chongqing | 0.00 | 0.29 | 0.00 | 0.10 | 0.00 | 0.19 |
| Sichuan | 0.16 | 0.48 | 0.16 | 0.48 | 0.00 | 0.00 |
| Guizhou | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Yunnan | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.16 |
| Tibet | 0.28 | 0.36 | 0.00 | 0.08 | 0.28 | 0.28 |
| Shaanxi | 0.00 | 0.20 | 0.00 | 0.00 | 0.00 | 0.20 |
| Gansu | 0.04 | 0.04 | 0.04 | 0.04 | 0.00 | 0.00 |
| Qinghai | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.16 |
| Ningxia | 0.00 | 0.36 | 0.00 | 0.36 | 0.00 | 0.00 |
| Xinjiang | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|  | | | | | | |

**B. Endogeneity Issues**

The CCP’s supreme leaders have the arbitrary power to appoint their cronies to provinces with distinctive economic features. Therefore, the provinces exhibiting the trends of fast growth in private investment may be systematically assigned a crony from the top, which would create endogeneity. In order to investigate whether this problem exists, I designate a series of dummies showing statuses ranging from two years prior to forming a connection to two years after losing such connection. Figure 1 shows the dynamic effects of personal connections on private investment. There is a rise of private investment precisely after appointment of leaders connected to the top. Then it deteriorates back to the bottom two years after these connected officials leave. It is evident that the growth rate of private investment is significantly stimulated only when the province is connected with the top. As a result, endogeneity does not appear to be a severe problem.

**Figure 1.** **Dynamic Effects of Personal Connection**

**C.** **Additional Analyses on Reform Performance Incentives**

This article assumes that informal political connections may encourage provincial leaders to promote growth by fostering private investment. One way to achieve this is to reduce the political risks of private investors in anti-corruption campaigns. In this section, I provide additional evidence on the effects of informal politics on reform performance, which proves that the provincial leaders who have personal connection with the CCP’s incumbent general secretary perform better in supporting the private economy.

Arguably, the inflow of private investment indicates the investors’ assessment of their policy environment. Under weak institutions, private investors have a low status in the political pecking order of Chinese firms. They are inclined to seek political protection (Huang 2003). One way of doing this is to cooperate with the state-owned sectors through mixed or even ambiguous property ownership. Haggard and Huang (2008) claim that regulatory and other policy barriers lead to the rise of mixed property firms. Namely, private sectors register their firms as red-hat firms to access economic resources that are exclusively reserved for state-controlled sectors. Therefore, the ratio of private investment to state-owned investment should be lower when the policy environment is not good for private sectors. In contrast, if some provincial leaders improve the policy environment by liberalizing business entry and reducing biases against the private sector, this may increase private investment. The public sector, by contrast, may be less sensitive to the provincial leaders’ factions. Also, public sector investment may decline because of privatization policies. I thus assume that the ratio of private investment to public investment should be higher when the policy environment is good for the private sector.

To verify this argument, I create two indicators for the changes of policy environment. One is *PFA/SFA Growth*, the annual growth rate of the ratio of private investment to state-owned investment. The other one is *PFA/SCFA Growth*, the annual growth rate of the ratio of private investment to state-owned and collective investment. I control for the economic attributes of each province and the demographic characteristics of the provincial leaders. From Table 2, we can see that, regardless of which control variables are included, the estimated effects of connected provincial leaders on policy environment are positive and statistically significant at 1%. This implies that provincial leaders who have personal connections with the CCP’s incumbent general secretary may perform better than other leaders in improving the policy environment for the private economy.

**Table 2:** **Reform Performance Incentives**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
| Dependent Variable | PFA/SFA Growth  (t+1) | PFA/SFA Growth  (t+1) | PFA/SCFA Growth  (t+1) | PFA/SCFA Growth  (t+1) |
| Personal Connection | 0.211\*\*\* | 0.185\*\*\* | 0.205\*\*\* | 0.179\*\*\* |
| (0.073) | (0.064) | (0.071) | (0.065) |
| Constant | 0.129 | -0.254 | 0.136 | 0.048 |
|  | (0.083) | (0.455) | (0.082) | (0.459) |
| Economic Attributes | NO | YES | NO | YES |
| Demographic Characteristics | NO | YES | NO | YES |
| Province Fixed-effects | YES | YES | YES | YES |
| Year Fixed-effects | YES | YES | YES | YES |
| Number of Provinces | 31 | 31 | 31 | 31 |
| Number of Observations | 680 | 680 | 679 | 679 |
| R-squared | 0.169 | 0.169 | 0.267 | 0.263 |
|  | | | | |
| Notes: Independent variables are one year lagged. Robust standard errors clustered at province level are reported in parentheses. Economic attributes include GDP, GDP growth, Per Capital GDP, Manufacturing/GDP, and Service/GDP. Demographic characteristics include the provincial party secretaries’ and governors’ age, college education, tenure length, career experiences in the Communist Youth League and in some prosperous provinces.  PFA = private fixed asset investment; SFA = state-owned fixed asset investment; SCFA = state-owned and collective fixed asset investment  *\*\*\* p<0.01, \*\* p<0.05, \* p<0.1* | | | | |

**D****.** **Personal Connection, Private Investment and Prospects for Future GDP Growth**

This article argues that the provincial leaders’ personal connections may assist China’s private economy by partially compensating for the weaknesses of formal rule-of-law institutions. Moreover, the CCP’s factionalism does not necessarily result in increased overall inefficiency. This may be because the CCP makes efforts to select new leaders from the cadres having past experience working in some developed coastal provinces, which enables these prosperous areas to establish closer relations with the party center. This is conducive for the party to control economic resources and makes the economic resources tilt toward these coastal provinces, which in turn may be one of the driving forces to reform the planned distribution of economic resources to some inefficient northeast and western inland provinces. Namely, the party’s factions may be actively reallocating economic resources to some highly efficient eastern coastal areas. In this sense, the CCP’s informal politics seem not to conflict with efficiency of resource allocation. Additionally, the private sector may be more prone to adapt to the party’s factional politics than the state-owned sector, which helps the connected provinces to attract private investment while avoiding crowding-out effects of state investment on private investment. These connected provinces thus become the areas with a stronger private economy.

Nevertheless, empirical evidence with regard to these arguments is still rare. In this case, I design a two-stage regression to test these points. First, I regress the private investment growth at the year t+1 on personal connection at the year t. Column (1) in Table 3 shows that, after including the control variables of provincial *GDP*, *GDP per capita*, *Manufacturing/GDP* and *Service/GDP*, personal connection can significantly promote private investment. Second, I regress the provincial GDP growth at the year t+1 on private investment at the year t. Column (2) in Table 3 shows that private investment growth can significantly promote economic growth. Third, I regress the provincial GDP growth at the year t+1 on personal connection of the provincial leaders at the year t. Column (3) in Table 3 shows that personal connection has no expected effects on GDP growth in the next year. This indicates that the CCP’s factionalism may promote growth through fostering private investment. But factionalism seems to have no direct effects on growth.

**Table 3:** **Connections, Investment and Prospects for Future GDP Growth**

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| Dependent Variable | PFA Growth (t+1) | GDP Growth (t+1) | GDP Growth (t+1) |
| Personal Connection | 0.153\*\*\* |  | -0.067 |
|  | (0.047) |  | (0.408) |
| Private Investment Growth |  | 0.784\* |  |
|  |  | (0.430) |  |
| GDP | 0.014\* | -0.456\*\*\* | -0.603\*\*\* |
|  | (0.007) | (0.164) | (0.172) |
| GDP per capita | -0.046 | -5.285\*\*\* | -4.440\*\*\* |
|  | (0.145) | (1.649) | (1.573) |
| Manufacturing/GDP | 0.701\* | -2.444 | -0.518 |
|  | (0.352) | (3.567) | (3.031) |
| Service/GDP | 0.906 | -7.309 | -3.989 |
|  | (0.648) | (6.518) | (6.004) |
| Constant | -0.331 | 14.918\*\*\* | 14.286\*\*\* |
|  | (0.267) | (2.967) | (2.374) |
| Province FE | YES | YES | YES |
| Year FE | YES | YES | YES |
| N of Province | 31 | 31 | 31 |
| Obs. | 680 | 649 | 740 |
| Adjusted R^2 | 0.584 | 0.648 | 0.614 |
|  | | | |
| Notes: Independent variables are one year lagged. Robust standard errors clustered at province level are reported in parentheses.  PFA = private fixed asset investment  *\*\*\* p<0.01, \*\* p<0.05, \* p<0.1* | | | |

**E.** **Firm-Level Evidence**

This study shows the effects of provincial leaders’ personal connections on overall private investment at the provincial level. Thus it uses the growth rate of provincial level private fixed-asset investment as the dependent variable. In this section, I strengthen the argument by using a firm-level analysis. It examines how personal connections of provincial leaders affect corporate investment for private enterprises. In this analysis, both provincial-level factors and firm-level characteristics can be controlled for.

I obtained firm-level accounting data from the Chinese Industrial Enterprises Database (CIED). This contains data on all Chinese industrial firms with sales of over RMB 5 million from 1998 to 2013. I only included private firms that met the following criteria: (1) it is not reported as bankrupt, merged, nor closed; (2) total assets, total fixed assets and depreciation expenses are greater than zero; (3) total debt and total sales are greater than zero; and (4) it was established after 1900. The dependent variable is *Corporate Investment* at the year t+1, which is calculated as the firm’s net fixed assets at the year t+1, minus its net fixed assets at the year t, plus depreciation at the year t+1, divided by its total assets at the year t. The independent variable is the provincial leaders’ *Personal Connection* with the CCP’s incumbent general secretary. I control for firm-level corporate investment, industrial output, sales growth rate, gross profits and corporate age at the year t. I also control for provincial *GDP*, provincial *GDP per capita*, provincial *GDP Growth* and the ratio of provincial total fixed asset investment to provincial GDP. Age and tenure of the provincial leaders, as well as firm and year fixed effects, are also included in the regressions. I regress all of the enterprises and the enterprises with total sales greater than RMB 30 million separately.

Table 4 shows that the estimated coefficients of *Personal Connection* are significantly positive at the 1% level, which suggests that the provincial leaders’ connection with the top may positively affect corporate investment of private enterprises. The estimated coefficient of *Personal Connection* for all the enterprises in this database is -0.129, shown in column (1). The estimated coefficient of *Personal Connection* for the enterprises with total sales greater than RMB 30 million is 0.098, shown in column (2). These findings provide further evidence that investment of private enterprises may be driven by the CCP’s informal politics.

**Table 4: Firm-Level Evidence**

|  |  |  |
| --- | --- | --- |
|  | (1)  All sample | (2)  Total sales greater than RMB30 million |
| Dependent Variable | Corporate Investment (t+1) | Corporate Investment (t+1) |
| Personal Connection | 0.129\*\*\* | 0.098\*\*\* |
|  | (0.023) | (0.022) |
| Corporate Investment | -0.005 | 0.001 |
|  | (0.019) | (0.029) |
| Industrial Output | 0.000 | -0.000 |
|  | (0.000) | (0.000) |
| Sales Growth Rate | -0.000\*\*\* | -0.000\*\*\* |
|  | (0.000) | (0.000) |
| Gross Profits | -0.000\*\* | -0.000 |
|  | (0.000) | (0.000) |
| Corporate Age | 0.001 | -0.000 |
|  | (0.001) | (0.001) |
| GDP | 0.000\*\*\* | 0.000\*\*\* |
|  | (0.000) | (0.000) |
| GDP per capita | 0.000\*\* | 0.000 |
|  | (0.000) | (0.000) |
| GDP Growth | 0.035\*\*\* | 0.024\*\* |
|  | (0.012) | (0.010) |
| Total Fixed Asset Investment/GDP | 0.074 | 0.132\* |
|  | (0.075) | (0.072) |
| Constant | -4.407\*\*\* | -3.252\*\*\* |
|  | (1.477) | (1.176) |
| Age and Tenure of the Provincial Leaders | YES | YES |
| Firm Fixed Effects | YES | YES |
| Year Fixed Effects | YES | YES |
| Obs. | 288743 | 190869 |
| Adjusted R^2 | 0.002 | 0.003 |
|  | | |
| Notes: Independent variables are one year lagged. Robust standard errors clustered at province level are reported in parentheses.  *\*\*\* p<0.01, \*\* p<0.05, \* p<0.1* | | |

**References**

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