Excess Economic Growth and Firm Investment: Evidence from China

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Highlights

- The extent of excess economic growth reflects local government opportunism.
- Excess economic growth is positively associated with local firm investment.
- The effect is stronger when government officials face greater promotion pressure.
- Firms make less efficient investment to help local governments beat growth targets.
- In return, firms are awarded with more government subsidies.

Abstract

Local governments in China frequently report economic growth rates that exceed their targets. Prior studies suggest that this phenomenon is attributable to governmental influence over local firms, particularly through coercing these firms into escalating investments to maximize economic expansion. Using a sample of 18,376 Chinese listed firms from 2001 to 2017, we find that firms located in regions that exceed economic growth targets tend to invest more heavily. This effect is more pronounced in years when local government officials face stronger promotion pressure; furthermore, excess economic growth is associated with diminished investment efficiency within firms and increased government subsidies. These findings suggest that excess economic growth proxies for local government opportunism and plays an important role in local firms' investment decisions.

1. Introduction

Economic growth plays a pivotal role in shaping firm conduct (Erel et al., 2012; Jeon and Nishihara, 2014; Ochoa et al., 2015; Giordano et al., 2019). Concurrently, political dynamics, which may not align with shareholder interests, also significantly influence critical corporate decisions (Ramanna and Roychowdhury, 2010; Bertrand et al., 2018). The focus has increasingly turned towards China in recent years, a country where the central government has played a crucial role in propelling the nation's remarkable economic advancement over the past three decades. This economic success, however, raises concerns regarding the susceptibility of China's growth-centric approach to opportunistic behaviors by government officials (Li and Zhou, 2005; Zhou and Zeng, 2018), the potential for data manipulation (Holz, 2014; Owyang and Shell, 2017; Lyu et al., 2018), and the extent of governmental interference (Chen et al., 2011; Chen et al., 2013; Hao and Lu, 2018; Liu et al., 2020).

We explore and model a phenomenon that is intricately linked to such government opportunism: the remarkable observation that a vast number of local governments in China have reported economic growth rates significantly exceeding their growth targets. We argue that this excess economic growth has an important impact on firm investment. During our sample period from 2001 to 2017, Chinese local governments reported economic growth rates exceeding the set targets by more than 18% on average. Such great magnitudes of excess economic growth suggest that previous studies which usually model whether government officials meet certain growth targets (e.g., Lyu et al., 2018; Liu et al., 2020; and Chen et al., 2019) may lack precision; instead of just achieving the set targets, local government officials have incentives to maximize the extent of excess economic growth, which plays a key role in their evaluation and helps them stand out in a competitive, tournament-like promotion framework (Li and Zhou, 2005). Hence, as pointed out in a 2018 report by Securities Times,[1] quite a number of local governments in China coerce local firms to increase their investment above optimal levels to to help maximize the region's economic expansion (Hao and Lu, 2018; Liu et al., 2020).

[1] Source: https://news.sina.cn/gn/2018-01-23/detail-ifyquptv8790098.d.html?vt=4

Using a sample of 18,376 Chinese listed firms from 2001 to 2017, we show that the excess growth in gross domestic product (GDP) is positively associated with the investment levels of local firms, after accounting for other determinants of investment identified in previous studies. An increase of one standard deviation in GDP excess growth corresponds to an increase of about 10% in firm investment, relative to firms' average investment levels. Our results are robust to various measures of excess economic growth and instrument variable regressions, and are mainly driven by the excess growth component rather than the growth target component.

For identification purposes, we further investigate how the association varies in the "five-year plans" political cycles, starting after Central Communist Party Congress meetings. These political cycles are closely related to key economic indicators in China, as government officials strategically align investment and public spending along their tenure (Guo, 2009; Tsai, 2016; Xie et al., 2021). Consistent with the studies showing that government officials face stronger incentives to boost excess economic growth at the beginning of each cycle (Li, 2011; An et al., 2016; Fang et al., 2018b), we find stronger results in the first two years in each political cycle. We also perform a difference-in-difference test using a setting of governor reappointments; consistent with the view that governors serving their second term have significant obstacles to promotion and diminished motivations for pursuing excess economic growth (Li and Zhou, 2005), excess economic growth following governor reappointments exhibits a substantial decrease which is significantly associated with the change in firm investment. Finally, we show that firms located in provinces with greater excess economic growth rates are more likely to overinvest and receive more government subsidies.

This study contributes to the literature in the following ways. First, we introduce a novel measure of local government opportunism – specifically, the excess economic growth surpassing the set targets. Our study develops an economic model framework that differentiates the impacts of excess growth from those of achieving targets; by showing that firm investment is associated with only the excess growth component, the study contributes to the debate over the pros and cons of exceeding economic growth targets (Iyoda, 2010; Chen et al., 2013; and Deng et al., 2020) and addresses the nature of excess

economic growth: Is the excess growth driven by good economic policies and economic development? Or is it attributable to manipulative activities (such as inefficient overinvestment) suggested by Lyu et al. (2018)? Our findings favor the latter, underscoring the risk that excess economic growth may compromise the quality of economic development.

Second, our study adds to the literature on how government intervention influences firm behavior (Liu et al., 2019; Chang et al., 2021; Zhou et al., 2023) and particularly firm investment decisions. Previous studies have shown that firms with political connections tend to overinvest (Chen et al., 2013; Hao and Lu, 2018; Deng et al., 2020); however, it remains unclear how government behavior can interplay with time-varying political connections and incentives. We show that the impact of excess economic growth is not constant over time; it is particularly conducive to firm investment in the first two years of a political cycle, and decreases substantially after governor reappointment. Our findings also speak to the economic benefits and costs of political connections in China. Although political connections lead to certain advantages such as better access to finance (e.g. Fan et al, 2007; Claessens et al., 2008; Infante and Piazza, 2014), they could also lead to inefficient firm investment in the presence of government opportunism.

The rest of this paper is organized as follows. Section 2 reviews the policy background of this study and develops testable hypotheses. Section 3 reports the data and variable definitions. Section 4 presents the empirical results. Section 5 discusses endogeneity issues and policy implications. Section 6 concludes the study.

2. Research Background and Hypothesis Development

2.1. Promotion Tournament and Excess Economic Growth

The Chinese economy was dominated by state ownership and central planning until the reform and opening-up policy of 1978. Since then, the Chinese central government has set economic development (GDP growth) as the most important goal for itself and for local governments. As noted by Li and Zhou (2005), the policy has played an important role in motivating local governments to develop their local economies, either by fostering local

businesses or by attracting foreign investment, rather than engage in rent-seeking activities as is often the case in other developing countries (Krueger, 1974; Frye and Shleifer, 1997). Blanchard and Shleifer (2001) argue that the key to ensuring that local government officials pursue economic growth rather than economic rents is to bind their economic performance to their promotion or demotion decisions.

Zhou (2007) formalizes the idea with a promotion tournament model: under the economy-first policy, government officials compete on economic performance and the winner is promoted; this differs from Western countries where the goal of government officials is to win votes and increase trust in government (Keele, 2007). In practice, the Chinese central government establishes five-year plans, its top-level policy initiatives, during meetings of the National Congress every five years. These plans provide guidance to local government officials to set their growth targets accordingly. At the beginning of each year, governments at all levels clarify their annual GDP growth targets in their Report on the Work of the Government, and accordingly make economic plans and policies to achieve these targets. Achieving growth targets may signal the ability of government officials to develop their economies, while achieving growth exceeding the set targets puts government officials in advantageous positions in the promotion tournament (Li and Zhou, 2005; Zhou, 2007; Piotroski and Zhang, 2014; Lyu et al., 2018). In contrast, failure to meet growth targets may generate criticism and put great pressure on government officials. In 2015, the Mayor of Taiyuan publicly apologized for failing to meet the city's GDP growth target and described this failure as "embarrassing," although the city still achieved an annual GDP growth of 3%.[2]

While the promotion tournament framework has been effective in motivating local government officials, it could also lead to local government opportunism. Studies by Holz (2014) and Owyang and Shell (2017) suggest that China's GDP figures for some years may be unreliable. It is an open secret that government officials use various means to increase their GDP figures at the provincial level, including inefficient investment or even fraud. This is illustrated by the fact that the sum of provincial GDPs is substantially higher than

[2] Source: Xinhua News, January 15, 2015. http://www.xinhuanet.com//politics/2015-01/15/c_127387820.htm

the GDP reported by the National Bureau of Statistics of China (NBS), indicating that the NBS has to calibrate the numbers down (Chen et al., 2019). Using a discontinuity approach, Lyu et al. (2018) argue that provincial-level GDP figures are managed because the frequency of just meeting or beating GDP growth targets is approximately four times that of just missing the targets. In 2018, at least three provinces or direct-administered municipalities (Liaoning, Tianjin, and Inner Mongolia) admitted to falsifying their economic data.[3] Jizhe Ning, former Director of the NBS, wrote in a column for China's state-run newspaper *People's Daily* that "some local statistics are falsified, and fraud and deception happen from time to time, in violation of statistics laws and regulations."[4]

A related issue is the possible manipulation of GDP growth targets. In the accounting literature, managers and analysts may engage in an "earnings guidance game" and manage down their earnings forecasts (Richardson et al., 2004; Berger et al., 2019). Under the promotion tournament framework, government officials may instead set local growth targets at higher levels than those set by the central government (Zhou, 2007). For instance, the Chinese central government set an average annual growth target of 7.5% in 2006, but the average growth target set by local governments was 10.1%. Excess economic growth is therefore unlikely driven by the potential downward management of growth targets (Lyu et al., 2018).

2.2. Hypotheses Development

We are interested in how the excess economic growth may be associated with firm investment. Although a large portion of manipulation is paper-based, there is growing evidence that real-activity-based manipulation is also prevalent (Lyu et al., 2018). In addition to direct government investment (Qin and Song, 2009), government officials may use connections or political power to ask local firms to "cooperate" by increasing their investment. In 2015, two counties in Yunnan Province, southwest China, were reported to have interfered with local firms' fixed asset investment. A 2012 NBS report revealed that

[3] Source: Reuters, January 17, 2018. https://www.reuters.com/article/us-china-economy-data/another-chinese-city-admits-fake-economic-data-idUSKBN1F60I1

[4] Source: Financial Times, December 8, 2016. https://www.ft.com/content/0361c1a4-bcfe-11e6-8b45-b8b81dd5d080

many local governments had suggested, advised, or even coerced firms to increase their economic output.[5]

Government intervention in firm decisions is a global phenomenon (Cohen et al., 2011; Lin and Wong, 2013); nevertheless, firms in China may be particularly sensitive to government intervention due to the dominance of state-owned enterprises (SOEs) and the prevalence of political connections (An et al., 2016). According to a 2019 report from the China Center for Public Sector Economy Research, SOEs make up approximately one third of the total output of the manufacturing industry and two thirds of that of the service industry in China. Liu and Siu (2011) report that more than 50% of China's fixed asset investment is concentrated in the state or quasi-state sectors.

Given the prevalence of data manipulation and growth exceeding the set targets, it is worthwhile to investigate whether the excess growth is associated with firm investment. Note that here we are not simply investigating how GDP growth is correlated with firm investment; rather, we recognize the importance of achieving the economic growth targets, but focus more on the excess growth part. If firm investment is entirely determined by investment opportunities available to firms, there is no obvious reason to expect a significant association between firm investment (relative to assets) and the extent of excess economic growth. On the contrary, if governments actively seek all means to maximize GDP growth exceeding growth targets, they likely will ask local firms to cooperate by pushing investment to the limits. There are several ways of doing that: providing incentives for firms to invest more (such as providing subsidies and tax benefits), or simply force local firms to invest more at the cost of lower efficiency (Chen et al., 2011; Lyu et al., 2018). Hence, we hypothesize that firms would invest more (relative to their firm size) in provinces where economic growth rates exceeded targets (rather than just achieved).

H1: Excess GDP growth is positively associated with the investment levels of local firms.

What are the benefits of exceeding growth targets? One benefit is increased funding from the central government, although this does not directly benefit government officials (Qian and Roland, 1998). The other benefit—potential promotion to a higher level of

[5] Source: Sina Finance, February 20, 2012. http://finance.sina.com.cn/roll/20120220/081011410463.shtml

government—is far more attractive to local government officials (Zhou, 2007). In the promotion tournament framework, it is assumed that all government officials in the tournament have strong incentives to be promoted. However, government officials' incentives could vary in the "five-year plan" cycles, defined as the five-year period between two Central Communist Party Congress meetings. These political cycles have been used in previous studies and shown to be powerful predictors of several economic indicators in China such as capital formation, government expenditure and firm investment (Li, 2011; Tsai, 2016; Fang et al., 2018b; Xie et al., 2021). For example, Guo (2009) argues that local government officials can strategically align their investment and public spending along their five-year tenure to optimize economic output. Given that many government officials get promoted in less than 4 years (An et al., 2016; Fang et al., 2018b), it is plausible that local government officials face greater incentives to make a good first impression at the beginning of the cycle by trying to exceed economic growth targets (Li, 2011):

H2: The (positive) association between excess economic growth and firm investment is more pronounced for the first two years in each five-year political cycle.

In addition, excess economic growth may be related to less efficient firm investment or overinvestment, as well as political benefits firms can receive such as government subsidies. Despite some positive effects on firm financing, product market access, and litigation risk control (Cull et al., 2017), political pressure and government intervention are often criticized because they lead to suboptimal investment levels. In some cases, firms may find the benefits they receive, many of which non-peculiar (such as rights to get loans, get land leases, tax benefits, etc.), attractive enough so that they can sacrifice investment efficiency. In other cases, agency problems arise as many firms are managed and/or owned by the government. It is also possible that in some regions, government officials can be so powerful that firms have to cooperate or risk losing government support to survive. For instance, Hao and Lu (2018) show that the government tends to intervene to promote corporate investment in fixed assets, equity in other SOEs, and natural resources, and that the effect is more pronounced for local SOEs, which are more vulnerable to government intervention. Liu et al. (2020) report that firms invest more in regions with greater GDP competition. To further disentangle the causality between government

intervention and firm investment, Pan and Tian (2020) investigate the ousting of corrupt government officials and find that firm investment levels decline substantially following corruption scandals. Hence, we hypothesize that firms are more likely to overinvest due to government opportunism as reflected by excess economic growth, and that in return, firms receive more government subsidies:

H3: Excess economic growth is positively associated with the likelihood of overinvestment.

H4: Excess economic growth is positively associated with the amount of government subsidies that firms receive.

3. Data and Variables

Our initial sample consists of all Chinese firms listed on the A-share stock market (Shanghai and Shenzhen stock exchanges) from 2001 to 2017.[6] We then exclude all state-owned enterprises (SOEs) owned by the central government. We do this because they are owned by the State-owned Assets Supervision and Administration Commission and are relatively impervious to local government influences (Hao and Lu, 2018). We include non-SOE firms because the majority of these firms in China have political connections or have strong incentives to build political connections (Liu et al., 2016). In a study by Fan et al. (2007), more than a quarter of the sample firms have politically connected CEOs who are former or current government bureaucrats; Li and Xu (2013) estimate that the ratio of firms with such politically connected CEOs in their sample can be up to 70%. We further exclude financial firms, firms with incomplete controlling shareholder information, financially distressed firms (firms that are flagged as special treatment (ST) or Particular Transfer (PT), and firms with missing financial information. Our final sample consists of 18,376 firm-year observations from 31 provinces.

[6] Our sample starts in 2001 because it is the earliest year for which we can collect data on GDP growth targets at the provincial level. Our sample ends in 2017 when the Chinese central government changed the evaluation and promotion criteria for local government officials; specifically, starting from 2017 non-economic criteria such as environmental protection and resource consumption became important and government officials faced significantly less incentives to maximize excess economic growth.

The key variable in our study is *Excess Economic Growth*, our measure of local government opportunism. We define excess growth as the difference between realized annual GDP growth and the corresponding annual growth target. For robustness, we also scale the extent of excess growth by the growth target to obtain a percentage-based measure. We argue that a greater value of excess growth indicates a greater likelihood of government intervention and should predict more investment for local firms. To estimate excess growth, we manually collect all annual GDP growth targets and realized GDP growth rates at the provincial level during our sample period from Reports on the Work of the Government. For some provinces in our sample, annual growth targets are not reported for the first years of China's Five-Year Plans, so we use annualized growth targets derived from five-year growth targets as annual growth targets.

We measure investment using a firm's total acquisition of fixed assets, intangible assets, and other long-term assets, scaled by its total assets at the beginning of the year. To estimate investment efficiency, we follow Chen et al. (2011) and regress firm investment on *Tobin's q*. To estimate overinvestment, we follow Richardson (2006) and use the residual of investment not explained by the following variables: past investment, Tobin's q, cash flow, age, cumulative return, size, leverage, and ROA.

The following control variables are used in this study. Cash flow (*CF*) is cash flow from operating activities divided by total assets at the beginning of the year. *ROA* is return on assets defined as net income divided by total assets in year *t*-1. *Size* is the logarithm of a firm's total assets in year *t*-1. These three variables have been shown to significantly explain firm investment (Richardson, 2006). *Lev* is measured as total liabilities divided by total assets at the beginning of the year, and should be negatively associated with investment (Hennessy, 2004). *Tobin's q* is the ratio of the market value of equity plus the book value of debt divided by total assets. *PerCapGDP* is measured as the per capita GDP for a firm's province of incorporation. In addition, corporate governance variables may affect a firm's investment level (Jiang et al., 2009). Specifically, we control for assets occupied by the largest shareholder (*Occupy*), the ownership percentage of the largest shareholder (*Top 1*), total ownership of executives (*Executive Ownership*), administrative expenses scaled by total assets (*Admin Expenses*), and top executives' compensation levels

(*Pay*). We also control for industry fixed effects (the industry classification used follows the industry codes issued by the China Securities Regulatory Commission) and year fixed effects. The definitions of the variables are provided in Table 1.

[Insert Table 1 about here]

Note that we are interested in the association between the relative investment level (scaled by a firm's total assets) and the percentage difference between realized GDP growth and target GDP growth. For a small firm, even a small dollar amount of investment can correspond to a large value of *Investment* in our study because of the scaling. Hence, our scaled measure of firm investment should not be mechanically related to the excess economic growth. We also discuss the reverse causality or simultaneity issues in Section 5.1.

In Table 2, we report the extent of excess growth over time. In Panel A, we report average GDP growth targets at the provincial level and at the central level, as well as the percentage of provinces with provincial growth targets above the central growth targets. We see that the excess economic growth is not caused by provinces setting lower growth targets to meet, because almost all provinces set growth targets higher than the central government's growth targets. In Panel B, we report average realized GDP growth and average provincial-level growth targets, as well as the percentage of provinces with realized growth rates above growth targets. A stunning 72.9% of province-years see realized GDP growth exceeding provincial growth targets.

[Insert Table 2 about here]

In Table 3, we report the descriptive statistics of the key variables. All continuous variables are winsorized at the 1% and 99% levels. The excess economic growth (*Excess Economic Growth*) and the scaled excess growth as a percentage of the growth target (*Excess Economic Growth%*) are reported at the firm-year level. During our sample period, all firm-year observations are associated with economic growth rates exceeding their annual growth targets by an average of 1.2%, or about 13.7% above the growth targets. The average investment level of our sample firm is about 2.9% of the total assets.

[Insert Table 3 about here]

We plot the comparison between growth targets and realized growth rates by year in Figure 1. Figure 1 shows that excess economic growth is very prevalent during our sample period. From 2001 to 2007, the extent of excess growth shows an upward trend, until after 2008 when the global financial crisis made it more difficult for most provinces to exceed their growth targets during a period of economic downturn.

[Insert Figure 1 about here]

4. Empirical Findings

4.1. Excess Economic Growth and Investment

We first report a univariate analysis in Table 4. In the first two rows, we sort firms into groups based on whether the provinces where they are located achieved their annual growth targets during the sample period. We also report the average firm investment levels. The difference in investment between the two groups is statistically significant at the 1% level. In provinces that achieve or exceed their growth targets, firms on average invest more than 50% more (0.0322 vs. 0.0199). In the last two rows, we sort firms into groups based on the extent of excess growth of the provinces where the firms are located. Firms located in provinces with above-median excess growth invest significantly more (approximately 10%) than firms located in provinces with below-median excess growth (0.0307 vs. 0.0269). Excess economic growth appears to have a strong and positive association with local firm investment.

[Insert Table 4 about here]

We next include the control variables defined in Section 3 and regress firm investment on excess economic growth. Specifically, the dependent variable is *Investment*, and the variable of interest is the degree of excess growth in the province where the firm is headquartered. We include firm fixed effects (μ) to account for unobservable time-invariant firm characteristics that may affect firms' investment choices; we also include industry-by-year fixed effects (λ) to control for contemporaneous changes of macroeconomic conditions at the industry level. Standard errors are clustered at the firm

level, following Petersen (2009). Our methodology is similar to recent studies such as Chen et al. (2020) and Deng et al. (2020) and our regression model is as follows:

$$Investment = \alpha_0 + \alpha_1 Excess\ Economic\ Growth + \alpha_2 Controls + \mu + \lambda + \varepsilon \quad (1)$$

All regression coefficients are reported in Table 5. In columns 1 and 2, we only include excess economic growth measures as well as fixed effects. In columns 3 and 4, we include all control variables. The coefficients of the excess economic growth measures are statistically significant at the 5% level. In terms of economic significance, a one standard deviation increase in GDP excess growth corresponds to an increase of about 0.0027 in scaled investment, which is approximately 10% of the average investment level of firms.

[Insert Table 5 about here]

Overall, the findings in Table 5 support Hypothesis 1 that firms invest substantially more when they are located in provinces that report greater excess economic growth. This is consistent with the notion that GDP growth targets serve as political promises and benchmarks for economic performance, and that the extent of excess growth is at least partially attributable to inflated firm investment levels.

4.2. Robustness Tests

In this subsection, we report additional tests to check the robustness of our results. First, we instrument excess growth using the governor's tenure (the number of years since the governor assumes office), which in theory should not be associated with firm investment but can be closely associated with government officials' motivations to exceed growth targets. While the impact of tenure on a government official's promotion can be complicated, older governors with longer tenures are put to a disadvantage in promotion (Li and Zhou, 2005; Chen et al., 2019). A rule established in 1982 explicitly states that "central government and province-level leaders should be younger than 65 years, and vice leaders should be younger than 60 years, preferably." In 1992, the central government of China further clarified that "provincial leaders should have an average age of about 55."

We report the results of two-stage instrumental variable (IV) regressions in Table 6, following similar studies by Xu (2019) and Liang et al. (2024). Columns 1 and 2 report the first stage results, and columns 3 and 4 the second stage results. The IV regression results remain statistically significant.[7] In columns 1 and 2, the K-P Wald F test and Cragg-Donald Wald F test both suggest that the instrumental variable is appropriately identified. Overall, the IV regression results are largely consistent with our baseline results. We conclude that our findings are unlikely driven by shocks that simultaneously affect excess economic growth and firm investment, and robust to instrumented regressions.

[Insert Table 6 about here]

Table 7 reports further robustness tests. First, our results so far are only about listed firms, and we investigate if our results hold when we analyze private firms as well. In Panel A of Table 7, we obtain data from the Annual Survey of Industrial Firms data (ASIF, also known as the Chinese Industrial Enterprise Database) published by the NBS. Note that when we use the ASIF data, the sample size is increased substantially to 769,440 observations but we have to include fewer variables because not all variables are available in the ASIF database. Overall, results reported in Panel A are quite consistent with the baseline results in Table 5. This is consistent with earlier studies which suggest that private firms with political connections share many similarities with politically connected public firms (Preuss and Konigsgruber, 2021).

We consider two other robustness tests in Panel B of Table 7. First, we use the 3-year moving average of excess economic growth (both the absolute moving average and the percentage moving average) as an alternative excess growth measure.[8] Second, we use the difference between GDP estimated using satellite night lights data and target GDP growth as another alternative measure of excess growth. GDP growth figures estimated

[7] Table 6 suggests that due to endogeneity, the coefficient estimates and economic significance may be biased in Table 5, but the association between GDP excess growth and firm investment should remain valid.

[8] Specifically, for any year t we calculate the moving average of *Excess Economic Growth* and *Excess Economic Growth %* by taking the average value for each variable over years t-3, t-2, and t-1. Moving average methods can effectively dampen short-term volatilities and are widely used to smooth variables with large short-term volatility (Hutton et al., 2009; Wang et al., 2018). Using the moving average measures helps to remove short-term volatility in GDP growth and accounts for the possible lag in firm investment, because the moving average includes information from up to year t-3.

using satellite night lights data are based on satellite data, following Henderson et al. (2011); specifically, we regress regional GDP growth on changes of regional light intensity, and estimate the "true" GDP growth suggested by satellite night light data. The advantage of using the GDP estimated using satellite night light data to measure excess economic growth is that the GDP growth figures are much less likely affected by measurement errors such as overreporting or data falsification. Both of the alternative measures are positively associated with firm investment.

In Panel C of Table 7, we include the provincial level GDP growth target as an additional control. Note that the excess growth and the growth target components add up to a province's GDP growth and are correlated. Still, we show in Panel C that both excess growth measures are significantly associated with firm investment, while the growth target is not. This result confirms our view that only the excess growth component captures local government opportunism and is hence associated with increased levels of firm investment. In Appendix A, we also show that replacing the continuous growth target variable with a dummy variable indicating whether the province achieved its growth target yields similar results.

[Insert Table 7 about here]

5. Further Discussion

5.1. Endogeneity

We further discuss endogeneity and identification issues in this subsection. First, we acknowledge that if firm investment is correlated with regional investment, it could mechanically be correlated with excess GDP growth. In addition, excess growth may reflect positive shocks to regional economies that are not reflected in the control variables, which may further lead to increased firm investment as firms respond to better investment opportunities. One could be concerned that such reverse causality or simultaneity could drive our results. We argue that in practice, a publicly listed firm accounts for a very small, and often times negligible, portion of the province's economic activities. The correlation between firm investment and province-level total investment is virtually zero. Further, if

our results stem from reverse causality or simultaneity, we would expect much weaker results if we use excess economic growth in the previous year as the variable of interest in regressions. In Appendix B, we show that this is not the case as lag excess growth measures still explain firm investment in a significant way.

For identification purposes, we proceed to examine how the association documented in Table 5 varies in a five-year political cycle. We divide our sample into two subsamples and analyze them separately: the first two years of a political cycle, and the rest three years. We then employ an interaction term between excess economic growth and the political cycle indicator, *Cycle*, which equals one for the first and second year in each political cycle and zero otherwise. If the increase in firm investment in some provinces is indeed caused by excess growth through government intervention, then this association should be more pronounced in the first two years of each political cycle. By contrast, the reverse causality or simultaneity story does not lead to disproportionately stronger results for the first two years of a political cycle.

In Table 8, we show in columns 1-4 that excess economic growth measures strongly explain firm investment when *Cycle* equals 1, i.e., during the first two years of a political cycle. By contrast, the coefficient estimates of excess economic growth measures are both statistically insignificant when *Cycle* equals 0. In columns 5 and 6, we report the results of the regressions with interaction terms between *Excess Economic Growth* and *Cycle*. In both columns the interaction terms are statistically significant. These results support H2 and suggest that excess economic growth affects firm investment more when local government officials face greater motivations to exceed growth targets in the first two years of each five-year political cycle.

[Insert Table 8 about here]

Li and Zhou (2005) suggest that many governors get promoted in their first term; they also conclude that governors serving their second term (suggesting that they did not do well enough to win promotion in their first term) face a substantial disadvantage in promotion. Inspire by their study, we examine the difference in excess growth and the difference in firm investment in years before and after governor reappointments.

Specifically, we first identify governors who do not get promoted and instead were reappointed to serve their second term. Next, we analyze the years immediately after the reappointment of incumbent governors or the appointment of new governors to analyze the difference in excess growth. We then analyze if changes in excess growth can explain changes in firm investment, in years immediately after the reappointment of incumbent governors vs. in years immediately after the appointment of new governors. We report our findings in Table 9.

[Insert Table 9 about here]

We first show that the reappointment of governors indeed lowers their incentives to achieve excess economic growth, a necessary step before the difference-in-difference test. In Panel A of Table 9, we regress both excess economic growth measures on *Reappoint*. We find that for provinces whose governors get reappointed, they experience significantly lower excess growth compared to provinces whose incumbent governors are replaced by new governors, consistent with Li and Zhou (2005). Our data suggest that excess economic growth declines by an average of 0.012% after the reappointment of incumbent governors; by contrast, the decrease is close to zero (0.002%) after new governors are appointed to replace the incumbent ones. In Panel B, we analyze if such decreases in excess economic growth correspond to changes in firm investment. We find that the decline in excess economic growth after governor reappointment is associated with a decline in firm investment. By contrast, for the subsample with newly appointed governors, we do not observe such association. We argue that the reappointment of governors is largely exogenous to economic growth and firm investment decisions, and should only influence the extent of excess economic growth. We also argue that for firms located in the treatment provinces with governor reappointments, the drop in firm investment proportional to the decrease in excess economic growth cannot be explained by alternative explanations, such as firm investment causing regional economic growth or omitted variables (unrelated to reappointments of governors) causing both excess economic growth and firm investment.

We further address a related question: does excess GDP growth affect the *quality* of firm investment? In a frictionless market, firms invest up to the point where the marginal

benefit of the additional investment equals the marginal cost of such investment. If government intervention pushes firms beyond their optimal investment level, investment efficiency may decline. This concern is supported by a rich literature on the implications of government intervention on corporate investment. For instance, Liu and Siu (2011) and Chen et al. (2011) report lower investment efficiency for SOEs and politically connected firms. This effect, which is unlikely to be driven by firm characteristics unrelated to government intervention, holds after certain exogenous shocks; specifically, Deng et al. (2020) find that politically connected firms overinvested after the grand economic stimulus in 2008. Pan and Tian (2020) document improved investment efficiency for SOEs after the ousting of corrupt politicians connected to these firms. Liu and Siu (2011) report increased investment efficiency after partial privatization of SOEs. Studies such as Qin and Song (2009), Chen et al. (2013), Hao and Lu (2018) and Liu et al. (2020), suggest that lower investment efficiency could be driven by government intervention, which often cause firms to overinvest rather than underinvest.

We investigate the association between overinvestment and excess economic growth to test the idea that increased investment levels reflect inefficient investment in response to pressure from local governments. Alternatively, more investment may signal investment opportunities with equal or greater efficiency, which represents an endogeneity issue, as improved investment opportunities usually are linked to economic growth (Erel et al., 2012; Jeon and Nishihara, 2014). We shall argue that a reverse causality story does not predict *lower* firm investment efficiency or greater likelihood of firm overinvestment.

We follow Richardson (2006) and use the following model to estimate the amount of "expected" investment based on factors listed in Richardson (2006), and test how the investment residual from the model (overinvestment) is associated with excess economic growth. The model to estimate investment level is as follows:

$$Investment_{i,t} = \beta_0 + \beta_1 Investment_{i,t-1} + \beta_2 Tobin'sq_{i,t-1} + \beta_3 CF_{i,t-1} + \beta_4 Age_{i,t-1} + \beta_5 Ret_{i,t-1} + \beta_6 ROA + \beta_7 Lev_{i,t-1} + \beta_8 Size_{i,t-1} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (2)$$

We then construct our measure of overinvestment (*Over_Inv*) based on the residual from Equation (2) and regress it on the excess economic growth measures and the control variables. We present the results in Table 10. The estimated coefficients for the excess economic growth measures are statistically significant at the 5% and the 1% level, respectively. The results in Table 10 support Hypothesis 3 that firms located in provinces reporting greater excess economic growth tend to overinvest. In untabulated results, we obtain similar results when we define overinvestment using a dummy variable and run Logit regressions.

[Insert Table 10 about here]

Finally, we perform a direct test on the association between excess economic growth and the amount of government subsidies firms receive. Firms, despite their political connections, are subject to long-term costs when they overinvest. In exchange, they may demand government subsidies or other forms of political benefits. Due to data availability, we only test government subsidies in this study.

[Insert Table 11 about here]

In Table 11, we regress government subsidies scaled by total assets on our measures of excess economic growth. The coefficient estimates of both excess economic growth measures are positive and statistically significant at the 1% and the 5% levels, respectively, supporting Hypothesis 4 that government may have to provide firms with more subsidies to compensate for their inefficient investment.

5.2. Policy Implications

Investment is one of the most important decisions for firms. Economic theories assume that investment decisions are based on factors such as the marginal efficiency of capital, economic outlook, and risk. Recent studies, mostly drawing on the agency theory, suggest that investment decisions can depend on the incentives of owners and managers (Grenadier and Wang, 2005; DeMarzo and Fishman, 2007; DeMarzo et al., 2012). We show that in a country like China, where many firms are heavily influenced or even directly

owned by local governments, the incentives of local government officials can be an important determinant of firm investment decisions.

The findings of our study suggest that regional economic growth in excess of growth targets may be fueled by suboptimal firm investment decisions. Such inefficient firm investment could be costly in the long run and calls for policies curbing government intervention, especially when local government officials have promotion pressure and incentives to push the limits of economic growth. We note that although we only analyze publicly listed firms in this study, the phenomenon could well exist for firms that are not publicly listed and hence can be more prevalent. Our study highlights the inefficiencies brought by the economy-first policy in China before 2017, and lends support to the 2017 policy which included non-economic factors in the evaluation and promotion of government officials.

In addition, if firm investment decisions are driven by agency considerations rather than firm value maximization, it can be considered as a governance issue. In this regard, our study calls for better corporate governance and the protection of minority shareholders in China. Note that corporate governance and minority shareholder protection are multi-faceted, and the effectiveness of different corporate governance mechanisms on inefficient firm investment driven by government intervention could be an interesting direction for future research.

Finally, we offer some discussion on the type of firm investment. It would be interesting to decompose firm investment to investigate where the increased investment goes to. While our measure of firm investment is based on cash flows, we use the balance sheet data to roughly decompose firm investment into the fixed assets component vs. other (the non-fixed-assets component). In Appendix C, we report that excess economic growth is only significantly associated with the fixed assets component (Invest_fixed), the preferred way for local governments to boost GDP growth (Hao and Lu, 2018). For investors and policy makers who wish to identify firm overinvestment, abnormally high fixed assets investment figures could serve as a warning sign of inefficient investment aiming to help government officials boost growth figures.

6. Conclusion

Setting growth targets and achieving these targets are important aspects of the Chinese economic system. The background of our research is the rapid growth of China's economy and the investment activities of Chinese firms. At the same time, a growing number of researchers are concerned about the economic costs of achieving, and often exceeding, economic growth targets. Empirical evidence is direly needed to fully assess the benefits and costs of the Chinese economic model. An assessment of the effects of this economic model on firm investment is an important part of this research agenda.

As noted above, we are the first to report the implications of excess economic growth to firm investment. Our model differs from those used in previous studies on the achievement of certain growth thresholds such as local economic growth targets or national/regional average economic growth targets. Instead, we show that the *extent of excess economic growth* better explains the level of government intervention in firm decisions. When we disentangle the excess economic growth from growth targets, we show that only the former is positively associated with firm investment. Our results suggest that the amount of excess economic growth serves as a measure of government opportunism and may be attributable to inflated, low-quality firm investment. In addition, government officials may have to compensate firms with government subsidies. In this regard, our findings suggest the economic costs of excess economic growth. SOEs (especially those controlled by local governments) and non-SOEs both bear the costs associated with overinvestment.

We also provide evidence that excess economic growth is a particularly serious concern when government officials have greater motivations for opportunism, such as in the first two years of a political cycle. In contrast, governors in their second term appear to be much less motivated to exceed growth targets. Some implications can be drawn from these results. First, the quality of economic data at the provincial level during China's period of rapid growth is questionable. Second, promoting government officials solely on the basis of their economic performance can be problematic; thus, the 2013 decision to

consider factors other than economic performance in the promotion decisions of government officials may have mitigated firm investment distortion. This leads to a further question: do government officials try to maximize the excess growth in non-economic goals and intervene in firm decisions in other ways? Obviously, this question is beyond the scope of this study, but we hope that our findings will inspire further research on how government opportunism affects firm behavior.

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Table 1. Variable Definitions

Category	Variable	Definition
Dependent Variable	Investment	Firm investment is defined as the net acquisition of tangible assets, intangible assets and other long-term assets, scaled by total assets at the beginning of the year.
Explanatory Variables	Excess Economic Growth	Excess GDP growth at the provincial level; defined as GDP growth minus the GDP growth target for a firm's province of incorporation.
	Excess Economic Growth %	Excess GDP growth at the provincial level as a percentage of the GDP growth target; defined as GDP growth minus the GDP growth target then divided by the GDP growth target, for a firm's province of incorporation.
Control Variables	CF	Cash flow from operating activities divided by total assets at the beginning of the year.
	Tobin's q	Tobin's q ratio; defined as the market value of equity plus the book value of debt divided by total assets in year t-1.
	ROA	Return on assets; defined as net income divided by total assets in year t-1.
	Ret	Stock returns; defined as the change in market value of the firm over that prior year.
	Age	The log of the number of years the firm has been listed.
	Top 1	Ownership percentage of the largest shareholder in year t-1.
	Lev	Total liabilities divided by total assets in year t-1.
	Executive Ownership	Total ownership of executives in year *t*-1.
	Pay	Logarithm of the top three executives' total compensation in year *t*-1.
	Occupy	Amount of assets occupied by the largest shareholder; defined as the net receivables of the largest shareholder scaled by total assets in year *t*-1.
	Admin Expenses	Administrative expenses scaled by total assets in year t-1.
	Size	Logarithm of a firm's total assets in year t-1.
	PerCapGDP	GDP per capita for a firm's province of incorporation in year t-1.
	Tenure	The number of years since a governor assumes office.

Table 2. Growth Targets vs. Realized Economic Growth

Panel A. Average GDP Growth Targets: Provincial vs. Central

	Avg. GDP Growth Targets			Provincial Compared with Central:		
Year	Provincial	Central	Provincial - Central	Above	Equal	Below
2001	8.80%	7.00%	1.80%	100.00%	0.00%	0.00%
2002	8.70%	7.00%	1.70%	100.00%	0.00%	0.00%
2003	8.80%	7.00%	1.80%	100.00%	0.00%	0.00%
2004	8.90%	7.00%	1.90%	100.00%	0.00%	0.00%
2005	9.40%	8.00%	1.40%	93.50%	0.00%	6.50%
2006	9.80%	8.00%	1.80%	93.30%	0.00%	6.70%
2007	10.30%	8.00%	2.30%	100.00%	0.00%	0.00%
2008	10.40%	8.00%	2.40%	100.00%	0.00%	0.00%
2009	10.40%	8.00%	2.40%	100.00%	0.00%	0.00%
2010	11.10%	8.00%	3.10%	100.00%	0.00%	0.00%
2011	10.10%	8.00%	2.10%	93.50%	0.00%	6.50%
2012	10.30%	7.50%	2.80%	100.00%	0.00%	0.00%
2013	10.60%	7.50%	3.10%	100.00%	0.00%	0.00%
2014	9.60%	7.50%	2.10%	100.00%	0.00%	0.00%
2015	8.10%	7.00%	1.10%	86.20%	0.00%	13.80%
2016	7.60%	6.50%	1.10%	80.00%	0.00%	20.00%
2017	7.60%	6.50%	1.10%	83.30%	0.00%	16.70%
Total	9.50%	7.30%	2.20%	90.80%	0.00%	9.20%

Panel B. Realized GDP Growth vs. Provincial GDP Growth Targets

	GDP Growth			Realized Growth Compared with Target:		
Year	Realized	Target	Realized - Target	Above	Equal	Below
2001	9.60%	8.80%	0.80%	67.70%	0.00%	12.90%
2002	10.70%	8.70%	2.00%	90.30%	0.00%	9.70%
2003	11.80%	8.80%	3.00%	96.80%	0.00%	3.20%
2004	13.10%	8.90%	4.20%	96.80%	0.00%	3.20%
2005	12.80%	9.40%	3.40%	96.80%	0.00%	3.20%
2006	13.50%	9.80%	3.70%	93.50%	0.00%	3.20%
2007	14.50%	10.30%	4.20%	100.00%	0.00%	0.00%
2008	12.30%	10.40%	1.90%	83.90%	0.00%	16.10%
2009	11.90%	10.40%	1.50%	77.40%	3.20%	19.40%
2010	13.50%	11.10%	2.40%	87.10%	0.00%	12.90%
2011	12.50%	10.10%	2.40%	87.10%	0.00%	12.90%
2012	11.00%	10.30%	0.70%	61.30%	3.20%	35.50%
2013	9.90%	10.60%	-0.70%	38.70%	6.50%	54.80%
2014	8.50%	9.60%	-1.10%	3.20%	0.00%	96.80%
2015	7.90%	8.10%	-0.20%	48.40%	3.20%	41.90%
2016	7.50%	7.60%	-0.10%	67.70%	0.00%	29.00%
2017	7.20%	7.60%	-0.40%	41.90%	9.70%	45.20%
Total	11.10%	9.40%	1.70%	72.90%	1.50%	23.50%

Table 3. Descriptive Statistics

Variable	N	Mean	Std. Dev.	Median	Min	Max
Excess Economic Growth	18376	0.012	0.025	-0.085	0.005	0.012
Excess Economic Growth %	18376	0.137	0.273	-1.417	0.067	0.137
Investment	18376	0.029	0.077	0.007	-0.193	0.543
CF	18376	-0.011	0.352	-0.012	-13.636	24.600
Size	18376	21.714	1.210	21.626	17.799	25.735
ROA	18376	0.031	0.074	0.029	-0.772	0.579
Lev	18376	0.469	0.280	0.464	0.001	3.899
Tobin's q	18376	1.938	2.037	1.348	0.141	23.274
Top 1	18376	0.379	0.170	0.351	0.081	0.864
Executive Ownership	18376	13.729	0.987	13.814	9.038	17.352
Pay	18376	0.038	0.113	0.000	0.000	0.830
Occupy	18376	0.065	0.104	0.031	0.000	1.623
Admin Expenses	18376	0.000	0.003	0.000	0.000	0.144
PerCapGDP	18376	10.574	0.720	10.678	8.056	11.768

Table 4. Univariate Test

		No. Obs.	Investment	T value	Z value
Achieved Growth Targets	Yes	13,093	0.0322	9.80***	11.34***
	No	5,238	0.0199		
Excess Economic Growth	Above Median	8667	0.0307	3.34***	3.52***
	Below Median	9709	0.0269		

Table 5. Firm Investment and Excess Economic Growth

This table reports baseline regression results. The dependent variable is investment. Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Dep. Var.	Investment	Investment	Investment	Investment
Excess Economic Growth	0.106**		0.104**	
	(0.045)		(0.043)	
Excess Economic Growth %		0.008**		0.008**
		(0.004)		(0.004)
CF			0.009**	0.009**
			(0.004)	(0.004)
Size			-0.008***	-0.008***
			(0.002)	(0.002)
ROA			0.105***	0.105***
			(0.013)	(0.013)
Lev			-0.017***	-0.017***
			(0.004)	(0.004)
Tobin's q			0.003***	0.003***
			(0.001)	(0.001)
Top1			0.010	0.010
			(0.009)	(0.009)
Pay			0.008***	0.008***
			(0.002)	(0.002)
Executive Ownership			0.008	0.008
			(0.017)	(0.017)
Occupy			0.024**	0.024**
			(0.012)	(0.012)
Admin Expenses			0.000**	0.000**
			(0.000)	(0.000)
PerCapGDP			-0.000	-0.000
			(0.007)	(0.007)
Constant	0.028***	0.028***	0.076	0.074
	(0.001)	(0.001)	(0.078)	(0.078)
Year*Industry_FE	Yes	Yes	Yes	Yes
Firm_FE	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes
N	18245	18245	18245	18245
R2	0.299	0.299	0.319	0.319

Table 6. Instrument Variable Regression

This table reports the second-stage instrument variable regressions in columns 1 & 2 and the first-stage regressions in columns 3 & 4. The instrument variable, *Governor Tenure*, is the number of years of the governor's tenure. The endogenous variables are *Excess Economic Growth* and *Excess Economic Growth %.* Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	First-stage regression		Second-stage regression	
Dep. Var.	(1) Excess Economic Growth	(2) Excess Economic Growth %	(3) Investment	(4) Investment
Excess Economic Growth			0.3658**	
			(0.16)	
Excess Economic Growth %				0.0442**
				(0.02)
Governor Tenure	-0.0022***	-0.0180***		
	(0.00)	(0.00)		
CF	0.0001	-0.0013	0.0093***	0.0094***
	(0.00)	(0.00)	(0.00)	(0.00)
Size	0.0009***	0.0104***	-0.0074***	-0.0075***
	(0.00)	(0.00)	(0.00)	(0.00)
ROA	0.0038*	0.0411*	0.1002***	0.0998***
	(0.00)	(0.02)	(0.01)	(0.01)
Lev	-0.0014*	-0.0177**	-0.0182***	-0.0179***
	(0.00)	(0.01)	(0.00)	(0.00)
Top 1	-0.0003	0.0093	0.0132*	0.0126*
	(0.00)	(0.02)	(0.01)	(0.01)
Pay	-0.0004	-0.0055	0.0086***	0.0087***
	(0.00)	(0.00)	(0.00)	(0.00)
Executive Ownership	-0.0100***	-0.1277***	0.0136	0.0156
	(0.00)	(0.04)	(0.02)	(0.02)
Occupy	0.0033*	0.0467**	0.0219***	0.0210**
	(0.00)	(0.02)	(0.01)	(0.01)
Admin Expenses	0.0390	0.3418	0.4838**	0.4830**
	(0.04)	(0.51)	(0.20)	(0.20)
PerCapGDP	0.0128***	0.1606***	-0.0032	-0.0056
	(0.00)	(0.01)	(0.00)	(0.01)
Tobin's q	0.0000	0.0001	0.0027***	0.0027***
	(0.00)	(0.00)	(0.00)	(0.00)
Year*Industry_FE	Yes	Yes	Yes	Yes
Firm_FE	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes
N	18191	18191	18191	18191
R2	0.253	0.243	0.026	0.020
F(1,2018)	272.81	170.19		
KP rk LM statistic	207.286	143.760		

CD F statistic	972.63	508.56

Table 7. Robustness Tests

This table reports robustness results. The dependent variable is investment. Panel A reports regressions results using the ASIF data. Panel B reports results when two alternative excess economic growth measures are used. *MA Excess Economic Growth* is the 3-year moving average of excess economic growth; *Est Excess Economic Growth* is the excess economic growth measure estimated using the night lights satellite data. *Lag_investment* is the one-year lagged firm investment. *Sales_Growth* is the annual growth rate in sales. Panel C reports regression results with an additional control of local GDP growth target. Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A. Robustness with ASIF data (2000-2008 & 2011-2013)

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var.	Investment	Investment	Investment	Investment	Investment	Investment
Excess Economic Growth	0.541***		0.649***		0.585***	
	(0.175)		(0.167)		(0.171)	
Excess Economic Growth %		0.068***		0.074***		0.065***
		(0.020)		(0.021)		(0.022)
Lag_investment			-0.355***	-0.355***	-0.307***	-0.307***
			(-0.015)	(-0.015)	(-0.016)	(-0.016)
Sales_Growth			0.059***	0.059***	0.054***	0.053***
			(0.003)	(0.003)	(0.003)	(0.003)
CF			0.091***	0.091***	0.115***	0.114***
			(0.009)	(0.009)	(0.008)	(0.008)
Size					-0.175***	-0.175***
					(-0.006)	(-0.006)
Constant	0.077***	0.076***	0.071***	0.071***	1.823***	1.822***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.060)	(0.060)
Year*Industry_FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm_FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes	Yes	Yes
N	769440	769440	769440	769440	769440	769440
R2	0.120	0.120	0.244	0.244	0.275	0.275

Panel B. Alternative Measures of Excess Economic Growth

	(1)	(2)
Dep. Var.	Investment	Investment
MA Excess Economic Growth	0.154**	
	(0.075)	
Est Excess Economic Growth		0.122*
		(0.070)
CF	0.010***	0.009**
	(0.004)	(0.004)
Size	-0.008***	-0.009***
	(0.002)	(0.002)
ROA	0.100***	0.095***
	(0.013)	(0.014)
Lev	-0.019***	-0.018***
	(0.005)	(0.005)
Tobin' q	0.003***	0.003***
	(0.001)	(0.001)
Top 1	0.012	0.012
	(0.009)	(0.011)
Pay	0.008***	0.010***
	(0.002)	(0.002)
Executive Ownership	0.005	0.010
	(0.017)	(0.017)
Occupy	0.026**	0.022*
	(0.012)	(0.013)
Admin Expenses	0.000**	0.000**
	(0.000)	(0.000)
PerCapGDP	-0.004	0.002
	(0.007)	(0.009)
Constant	0.094	0.062
	(0.081)	(0.101)
Year*Industry_FE	Yes	Yes
Firm_FE	Yes	Yes
Cluster	Yes	Yes
N	18504	16365
R2	0.318	0.328

Panel C. Controlling for GDP Growth Targets

Dep. Var.	(1) Investment	(2) Investment
Excess Economic Growth	0.122**	
	(0.054)	
Excess Economic Growth %		0.009*
		(0.005)
GDP Growth Target	0.042	0.010
	(0.094)	(0.090)
CF	0.009**	0.009**
	(0.004)	(0.004)
Size	-0.008***	-0.008***
	(0.002)	(0.002)
ROA	0.102***	0.102***
	(0.013)	(0.013)
Lev	-0.018***	-0.018***
	(0.004)	(0.004)
Tobin's q	0.003***	0.003***
	(0.001)	(0.001)
Top1	0.013	0.012
	(0.009)	(0.009)
Pay	0.008***	0.008***
	(0.002)	(0.002)
Executive Ownership	0.009	0.009
	(0.017)	(0.017)
Occupy	0.024**	0.024**
	(0.012)	(0.012)
Admin Expenses	0.000**	0.000**
	(0.000)	(0.000)
PerCapGDP	-0.000	0.000
	(0.007)	(0.007)
Constant	0.068	0.065
	(0.078)	(0.078)
Year*Industry_FE	Yes	Yes
Firm_FE	Yes	Yes
Cluster	Yes	Yes
N	18349	18349
R2	0.318	0.318

Table 8. Political Cycle and Investment

This table reports regression results with interaction terms of excess economic growth and political cycle. The dependent variable is investment. *Cycle* is a dummy variable which equals 1 for the first two years in a five-year plan cycle, ad 0 otherwise. Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Cycle=1	Cycle=0	Cycle=1	Cycle=0	Full Sample	
Dep. Var.	Investment	Investment	Investment	Investment	Investment	Investment
Excess Economic Growth	0.105***	0.041			0.021	
	(0.039)	(0.043)			(0.037)	
Excess Economic Growth %			0.009**	0.003		0.001
			(0.004)	(0.004)		(0.003)
Cycle Excess Economic Growth*					0.109**	
					(0.044)	
Cycle Excess Economic Growth %*						0.010**
						(0.004)
CF	0.008**	0.002	0.008**	0.002	0.005***	0.005***
	(0.004)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Size	0.000	-0.003*	0.000	-0.003*	-0.003*	-0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
ROA	0.141***	0.113***	0.141***	0.113***	0.143***	0.143***
	(0.016)	(0.018)	(0.016)	(0.018)	(0.012)	(0.012)
Lev	-0.025***	-0.008	-0.025***	-0.008	-0.015***	-0.015***
	(0.007)	(0.006)	(0.007)	(0.006)	(0.005)	(0.005)
Tobinq	0.005***	0.002**	0.005***	0.002**	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Top1	0.018*	0.004	0.018*	0.004	0.011	0.011
	(0.011)	(0.011)	(0.011)	(0.011)	(0.007)	(0.007)
Pay	0.006***	0.004**	0.006***	0.004**	0.006***	0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Manstk	0.046	0.000	0.046	0.000	0.015	0.015
	(0.030)	(0.017)	(0.030)	(0.017)	(0.012)	(0.012)
Occupy	0.042***	0.044***	0.042***	0.044***	0.035***	0.035***
	(0.015)	(0.014)	(0.015)	(0.014)	(0.011)	(0.011)
Mfee	1.106	-0.112	1.123	-0.101	0.726	0.728
	(1.849)	(1.850)	(1.850)	(1.850)	(1.306)	(1.305)
PerCapGDP	0.006	-0.006	0.006	-0.006	-0.001	-0.001
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)
Constant	-0.130*	0.095	-0.136*	0.094	-0.004	-0.007
	(0.073)	(0.077)	(0.073)	(0.077)	(0.054)	(0.054)
Year_Industry_FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm_FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes	Yes	Yes
N	9163	8497	9163	8497	18349	18349
R2	0.436	0.459	0.436	0.458	0.364	0.363

Table 9. Reappointment of Governors

In this table, we analyze the effect of governor reappointments (i.e., when a governor is reappointed after serving the first term of five years without getting promoted). In Panel A, we regress excess economic growth on a dummy *Reappoint*, which equals 1 if the governor is reappointed after his/her first term, and 0 if the governor is replaced by a new governor. In Panel B, the dependent variable is the change in excess economic growth *(*Δ*Excess Economic Growth*, Δ*Excess Economic Growth %*) in the year immediately following the reappointment of the incumbent governor or the appointment of a new governor. ΔInvestment is the change in firm investment in the year immediately following the reappointment of the incumbent governor or the appointment of a new governor. Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A. Governor Reappointment and Excess Economic Growth

	(1)	(2)
Dep. Var.	Excess Economic Growth	Excess Economic Growth %
Reappoint	-0.009***	-0.104***
	(-0.001)	(-0.006)
CF	0.006***	0.057***
	(0.002)	(0.022)
Size	-0.002	-0.023
	(-0.001)	(-0.017)
ROA	0.049***	0.560***
	(0.013)	(0.142)
Lev	0.020***	0.208***
	(0.005)	(0.050)
Tobin's q	-0.001***	-0.014***
	(-0.000)	(-0.005)
Top 1	-0.030***	-0.312***
	(-0.009)	(-0.100)
Pay	-0.003**	-0.032**
	(-0.001)	(-0.015)
Executive Ownership	-0.004	-0.040
	(-0.013)	(-0.125)
Occupy	-0.030***	-0.320***
	(-0.010)	(-0.109)
Admin Expenses	3.148***	28.288**
	(1.192)	(12.742)
PerCapGDP	-0.016***	-0.154***
	(-0.002)	(-0.026)
Constant	0.268***	2.670***
	(0.028)	(0.317)
Controls	Yes	Yes
Firm FE	Yes	Yes
Cluster	Yes	Yes
N	3,003	3,003
R2	0.364	0.349

Panel B. Reappointed vs. New Governors

	(1)	(2)	(3)	(4)
Subsample	New Governors		Reappointed Governors	
Dep. Var.	ΔInvestment		ΔInvestment	
Δ*Excess Economic Growth*	0.193		0.559***	
	(0.147)		(0.020)	
Δ*Excess Economic Growth %*		0.017		0.050***
		(0.012)		(0.019)
CF	0.008	0.008	-0.002	-0.001
	(0.018)	(0.019)	(-0.020)	(-0.013)
Size	-0.015**	-0.015**	-0.002	-0.001
	(-0.007)	(-0.007)	(-0.010)	(-0.06)
ROA	0.184**	0.185**	-0.094	-0.098
	(0.072)	(0.072)	(-0.083)	(-0.084)
Lev	0.004	0.004	0.021	0.020
	(0.027)	(0.027)	(0.026)	(0.026)
Tobin's q	-0.002	-0.002	-0.000	-0.001
	(-0.002)	(-0.002)	(-0.000)	(-0.006)
Top 1	0.011	0.011	0.017	0.018
	(0.037)	(0.037)	(0.037)	(0.038)
Pay	0.002	0.002	-0.005	-0.005
	(0.005)	(0.005)	(-0.007)	(-0.007)
Executive Ownership	-0.093	-0.092	0.086	0.084
	(-0.060)	(-0.059)	(0.102)	(0.102)
Occupy	0.102*	0.102*	0.033	0.034
	(0.061)	(0.061)	(0.059)	(0.061)
Admin Expenses	20.856***	20.761***	4.143	4.830
	(4.919)	(4.931)	(10.105)	(10.063)
PerCapGDP	0.012	0.012	0.005	0.004
	(0.010)	(0.010)	(0.009)	(0.009)
Constant	0.165	0.164	0.025	0.028
	(0.114)	(0.114)	(0.114)	(0.112)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes
N	1,629	1,629	1,374	1,374
R2	0.157	0.157	0.208	0.205

Table 10. Overinvestment and Excess Economic Growth

This table reports the association between overinvestment and excess economic growth. The dependent variable is overinvestment estimated following Richardson (2006). Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
Dep. Var.	Overinv	Overinv
Excess Economic Growth	0.105**	
	(0.043)	
Excess Economic Growth %		0.008**
		(0.004)
CF	0.011***	0.011***
	(0.004)	(0.004)
Size	0.014***	0.014***
	(0.002)	(0.002)
ROA	0.072***	0.073***
	(0.013)	(0.013)
Lev	-0.018***	-0.018***
	(0.005)	(0.005)
Tobin's q	0.003***	0.003***
	(0.001)	(0.001)
Top 1	0.011	0.011
	(0.010)	(0.010)
Pay	0.010***	0.010***
	(0.002)	(0.002)
Executive Ownership	-0.003	-0.003
	(0.017)	(0.017)
Occupy	0.024*	0.024*
	(0.013)	(0.013)
Admin Expenses	0.000**	0.000**
	(0.000)	(0.000)
PerCapGDP	0.002	0.002
	(0.007)	(0.007)
Constant	-0.468***	-0.470***
	(0.083)	(0.083)
Controls	Yes	Yes
Year*Industry_FE	Yes	Yes
Firm_FE	Yes	Yes
Cluster	Yes	Yes
N	18349	18349
R2	0.458	0.458

Table 11. Excess Economic Growth and Subsidy

This table reports the association between excess economic growth and government subsidy. The dependent variable is the amount of government subsidy firms receive. Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
Dep. Var.	Subsidy	Subsidy
Excess Economic Growth	0.019***	
	(0.007)	
Excess Economic Growth %		0.001**
		(0.001)
CF	0.001	0.001
	(0.001)	(0.001)
Size	-0.005***	-0.005***
	(0.000)	(0.000)
ROA	-0.004	-0.004
	(0.003)	(0.003)
Lev	0.004***	0.004***
	(0.001)	(0.001)
Tobin's q	0.001***	0.001***
	(0.000)	(0.000)
Top 1	-0.001	-0.001
	(0.002)	(0.002)
Pay	0.000	0.000
	(0.000)	(0.000)
Executive Ownership	-0.007**	-0.007**
	(0.003)	(0.003)
Occupy	0.006*	0.006*
	(0.003)	(0.003)
Admin Expenses	0.000	0.000
	(0.000)	(0.000)
PerCapGDP	0.002*	0.002
	(0.001)	(0.001)
Constant	0.075***	0.076***
	(0.018)	(0.018)
Controls	Yes	Yes
Year*Industry_FE	Yes	Yes
Firm_FE	Yes	Yes
Cluster	Yes	Yes
N	12721	12721
R2	0.536	0.536

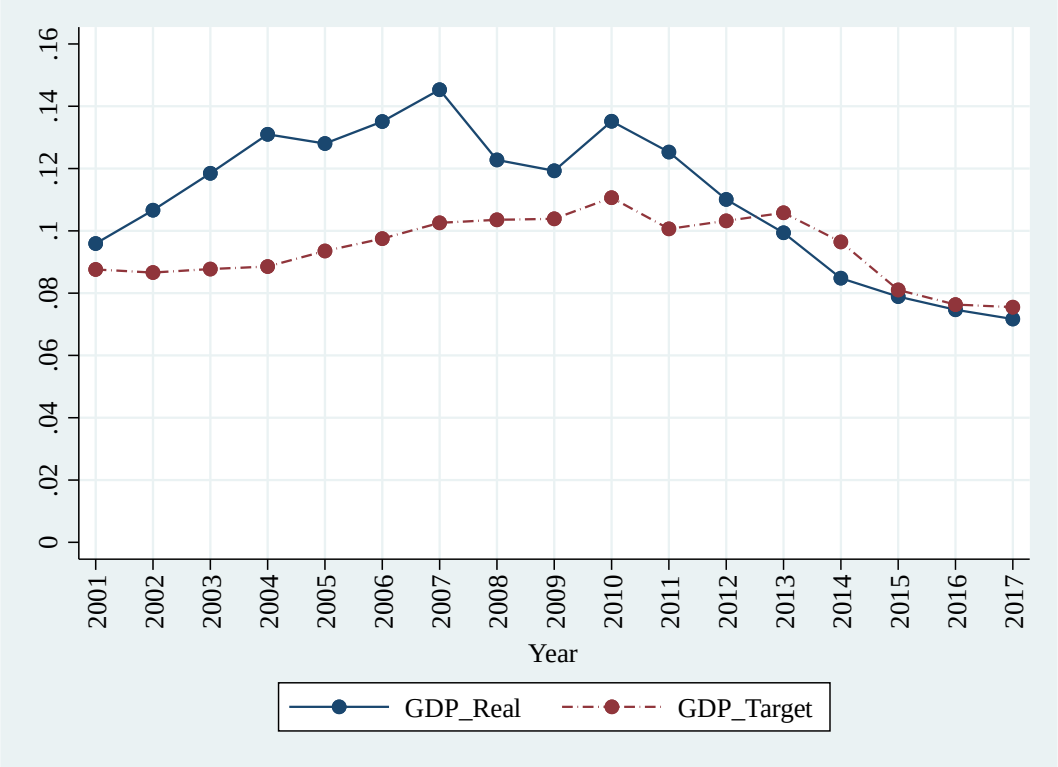

Figure 1. GDP growth targets and real GDP growth, 2001-2017

Appendix A. Controlling for Whether Growth Targets Are Achieved

This table reports regression results with an additional control of *Achieved Target*, which is a dummy that equals 1 if the province achieved its annual growth target and 0 otherwise. The dependent variable is Investment. Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
Dep. Var.	Investment	Investment
Excess Economic Growth	0.097***	
	(0.037)	
Excess Economic Growth %		0.007**
		(0.003)
Achieved Target	-0.002	-0.001
	(0.001)	(0.001)
CF	0.005***	0.005***
	(0.002)	(0.002)
Size	-0.003*	-0.003*
	(0.001)	(0.001)
ROA	0.143***	0.143***
	(0.012)	(0.012)
Lev	-0.015***	-0.015***
	(0.005)	(0.005)
Tobin's q	0.004***	0.004***
	(0.001)	(0.001)
Top1	0.011	0.011
	(0.007)	(0.007)
Pay	0.006***	0.006***
	(0.001)	(0.001)
Executive Ownership	0.015	0.015
	(0.012)	(0.012)
Occupy	0.035***	0.035***
	(0.011)	(0.011)
Admin Expenses	0.756	0.768
	(1.306)	(1.306)
PerCapGDP	-0.011	-0.012
	(0.031)	(0.031)
Year_Industry_FE	Yes	Yes
Firm_FE	Yes	Yes
Cluster	Yes	Yes
N	18349	18349
R2	0.363	0.363

Appendix B. Lag Excess Economic Growth and Firm Investment

This table reports regression results with lag overinvestment measures. The dependent variable is Investment. Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Dep Var	Investment	Investment	Investment	Investment
Lag Excess Economic Growth	0.093***		0.080**	
	(0.034)		(0.034)	
Lag Excess Economic Growth %		0.008***		0.007**
		(0.003)		(0.003)
CF			0.005***	0.005***
			(0.002)	(0.002)
Size			-0.003*	-0.003*
			(0.001)	(0.001)
ROA			0.143***	0.143***
			(0.012)	(0.012)
Lev			-0.015***	-0.015***
			(0.005)	(0.005)
Tobinq			0.004***	0.004***
			(0.001)	(0.001)
Top1			0.011	0.011
			(0.007)	(0.007)
Pay			0.006***	0.006***
			(0.001)	(0.001)
Executive Ownership			0.014	0.014
			(0.012)	(0.012)
Occupy			0.035***	0.035***
			(0.011)	(0.011)
Admin Expenses			0.737	0.746
			(1.310)	(1.310)
PerCapGDP			-0.002	-0.002
			(0.005)	(0.005)
Constant	0.025***	0.026***	0.010	0.008
	(0.001)	(0.001)	(0.055)	(0.055)
Year_Industry_FE	Yes	Yes	Yes	Yes
Firm_FE	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes
N	20715	20715	18349	18349
R2	0.323	0.323	0.363	0.363

Appendix C. Fixed-Asset Investment vs. Other Investment

This table reports regression results with fixed-asset investment (columns 1 & 2) and for other investment (columns 3 & 4) as dependent variables. Standard errors clustered by firm are reported in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Dep. Var.	Invest_fixed	Invest_fixed	Invest_other	Invest_other
Excess Economic Growth	0.548**		0.117	
	(0.278)		(0.135)	
Excess Economic Growth %		0.044*		0.007
		(0.025)		(0.012)
CF	0.084***	0.084***	0.012	0.012
	(0.030)	(0.030)	(0.015)	(0.015)
Size	-0.002	-0.002	-0.064***	-0.064***
	(0.013)	(0.013)	(0.006)	(0.006)
ROA	0.444***	0.444***	0.199***	0.200***
	(0.075)	(0.075)	(0.047)	(0.047)
Lev	-0.051	-0.051	-0.021	-0.021
	(0.032)	(0.032)	(0.019)	(0.019)
Tobinq	0.026***	0.026***	0.030***	0.030***
	(0.005)	(0.005)	(0.003)	(0.003)
Top1	0.013	0.012	0.109***	0.109***
	(0.065)	(0.065)	(0.035)	(0.035)
Pay	0.019*	0.019*	0.014***	0.014***
	(0.011)	(0.011)	(0.005)	(0.005)
Executive Ownership	0.046	0.046	0.094	0.094
	(0.120)	(0.120)	(0.073)	(0.073)
Occupy	0.020	0.020	0.031	0.031
	(0.094)	(0.094)	(0.041)	(0.041)
Admin Expenses	7.775**	7.786**	3.493**	3.496**
	(3.323)	(3.323)	(1.675)	(1.674)
PerCapGDP	-0.022	-0.022	-0.005	-0.005
	(0.042)	(0.042)	(0.021)	(0.021)
Constant	0.113	0.108	1.257***	1.252***
	(0.516)	(0.516)	(0.244)	(0.244)
Year_Industry_FE	Yes	Yes	Yes	Yes
Firm_FE	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes
N	18334	18334	18340	18340
R2	0.174	0.174	0.287	0.287