GDP Management to Meet or Beat Growth Targets

Changjiang Lv
School of Management, Fudan University

Kemin Wang
School of Management, Fudan University

Frank Zhang*
Yale School of Management

&

Xin Zhang
School of Management, Fudan University

September 2014
(preliminary)

Abstract

We apply the discontinuity methodology in the earnings management literature to the political economy setting of GDP reporting and examine whether Chinese local governments manage GDP numbers. Using actual and target GDP growth data at the prefecture and province levels, we find strong evidence of discontinuities around zero in the distribution of actual minus target GDP growth rates. The frequencies of just meeting/beating GDP growth targets are about ten (four) times the frequencies of just missing targets at the prefecture (province) level. In addition to undertaking paper management, local governments appear to engage in real management, such as increasing public expenditures and influencing bank lending activities. Finally, we explore cross-sectional and time-series variations in governors' incentives to manage GDP numbers and find that the results are stronger for governors without political connections to the central government and with longer tenure. Collectively, the empirical evidence supports the notion that local governments manage GDP numbers to meet/beat growth targets.

JEL classification: E23, M41, M48, O11, R11

Keywords: GDP growth, earnings management, political economy, discontinuity, forecast error

---

* Corresponding author, Email: frank.zhang@yale.edu. Tel: 1-203-432-7938. We thank ***, and seminar participants at *** University for their valuable feedback. We also thank Chenchen Li and Jing Liu for their excellent research assistance.

1. Introduction

An extensive literature in accounting examines discontinuities around thresholds in earnings distribution to investigate corporate earnings management behavior (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Hayn, 1995).[1] We apply this innovative methodology to the political economy setting of Chinese regional GDP reporting. The Chinese political economy setting is unique in two ways. First, China has extensive panel data of well specified GDP growth targets and actual GDP growth rates at the prefecture and province levels. Second, under China's economy-first policy and its one-party political system, local government officials are evaluated on the basis of their ability to deliver economic growth (Li and Zhou, 2005; Whiting, 2001). For the past three decades, economic decentralization and yardstick competition across regions have not only fueled the unprecedented pace of China's economic transformation but also created strong incentives for local governments to meet or beat GDP growth targets. Analogous to corporate behavior in the U.S., we posit that, if local Chinese governments have strong incentives and ways to meet or beat GDP growth targets, GDP management is likely to be manifested in the cross-sectional distribution in the form of unusually high frequencies of just meeting or beating targets and unusually low frequencies of just missing targets.

Using province- and prefecture-level data from 2002 to 2012, we find strong evidence of discontinuities around zero in the distribution of the GDP growth forecast error, where the forecast error is defined as actual GDP growth rate minus target GDP growth rate. Consistent with our expectation, we find unusually high frequencies of just meeting/beating targets and unusually low frequencies of just missing targets. The discrepancy is both statistically significant and economically important. At the prefecture level, the frequency of just meeting/beating

[1] See the literature review in Dechow et al. (2010).

targets is almost ten times the frequency of just missing targets (118 vs. 12 observations). Even at the province level, the frequency of just meeting/beating targets is more than four times that of just missing targets (17 vs. 4 observations). These results suggest that local governments manage GDP to avoid missing target growth rates. We also find some evidence of local governments' exercise of discretion over intervals other than zero. The frequency of observations tends to be higher at the positive integrals (e.g., 1%) than their immediate left histograms (e.g., 0.9%), consistent with the idea that local governments manage up the GDP growth rates to have better-looking target beats.

We next examine potential channels for local governments to manage GDP numbers—paper versus real GDP management. We find strong evidence of paper GDP management. Using Keqiang economic indicators to proxy for real activities, we show that discontinuities around zero in the distribution of GDP growth forecast errors are primarily driven by the paper-managed component of GDP growth rate. We also find some evidence of real GDP management, as discontinuities tend to be significant in the subsamples of large increases in public expenditures and local bank loans, evidence consistent with the notion that local governments use public expenditures and influence banks' lending activities to help meet or beat GDP growth targets. In addition, discontinuities are evident in provinces with low marketization levels, where governments have more influence on the local economy. Collectively, these results suggest that real activities also play a role in local governments' management of GDP numbers.

Finally, we explore cross-sectional and time-series variations in incentives and flexibilities of government officials to meet/beat GDP growth targets. We find substantial effects of governors' political background and tenure on the probability of meeting/beating targets. Discontinuities in the distribution of the GDP growth forecast errors are substantial for provinces where governors have no political connections to the central government and thus have stronger incentives to deliver economic performance. Discontinuities are also stronger when governors have longer tenures.

We conduct a number of robustness checks. We break our sample period into two sub-periods and find substantial discontinuities in both sub-periods. Discontinuities are stronger in the 2008–2012 sub-period, when China's economy decelerated, than in the 2002–2007 sub-period, when China' economy accelerated. We also show that reported GDP growth rates are always lower than weighted-average GDP growth rates across lower-level regions, evidence consistent with the idea that higher-level governments are aware of lower-level governments' GDP management and make downward adjustments accordingly.[2] Finally, we find some evidence that local governments' GDP management is habitual. Discontinuities in the distribution of the GDP growth forecast errors are positively related to a region's history of meeting/beating GDP growth targets.

Our paper contributes to the literature in two important ways. First, we are the first to apply the methodology on distribution discontinuities to a political economy setting and thus expand the boundary of the earnings management literature from firm-level analysis to macro-level investigation. Macro-level accounting is an important area but has been little examined in the literature.[3] Second, our evidence of GDP management not only serves as an indicator of a violation of trustworthy reporting, but has broad implications for macro-level policies and firm-level decisions. Misreported GDP numbers may distort national fiscal and monetary policies,

---

[2] The disparity between the national-level GDP and the sum of provincial-level GDPs has been a persistent phenomenon in the past decade in China. Anecdotal evidence suggests that double-counting across provinces and GDP management are two primary reasons for this disparity. For example, a recent Reuters article shows that the sum of provincial-level GDPs is 12.56% higher than the national-level GDP in the first half of 2014. http://cn.reuters.com/article/chinaNews/idCNKBS0G703I20140807. The article cites the panel discussion during the national parliament meeting by Ma Jiantang, the director of the National Bureau of Statistics, suggesting that China needs to improve the accounting system to solve this disparity issue.

[3] Kido, Petacchi, and Weber (2012) examine state governments' accounting choices upon gubernatorial elections.

potentially hurting the national economy. Public spending and bank lending induced by GDP management are likely to be suboptimal and represent a waste of resources. A recent example is the Chinese stimulation package during the 2008 financial crisis. Worrying that the crisis would drag it away from its growth track, China announced a four trillion yuan ($586 billion) stimulus package in November 2008. As a result, China's annualized GDP growth rate reached 6.2%, 7.9%, 9.1% and 10.7% in the four quarters of 2009 respectively, largely shrugged off the crisis. The stimulus package helped China to beat its GDP growth target of 8% in 2009. However, much of the growth is achieved by leveraged purchases of real estate and hence drives up the residential land auction prices, creating a real estate bubble yet to be solved (Deng et al., 2011). Managed GDP numbers may also misguide individual and corporate decisions, causing suboptimal behavior. Chinese firms are, for example, found to pour their investments into misguided industries and hence exhibit lower investment efficiency (Chen et al., 2013; Pan and Tian, 2014). We hope our results will spur future work to develop a better understanding of macro-level financial misreporting.

The paper proceeds as follows. Section 2 discusses prior research and develops our prediction. Section 3 discusses the data and provides descriptive statistics. Section 4 presents empirical results and Section 5 contains robustness checks. Section 6 concludes.

2. Literature review and prediction development

This paper is related to three lines of research. The first line of research is the accounting literature on earnings management, which examines discontinuities in the distribution of earnings, earnings changes, and analyst forecast errors around zero. The literature documents the existence and prevalence of such discontinuities, and often attributes this phenomenon to earnings management (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Hayn, 1995). For example, in a seminal paper, Burgstahler and Dichev (1997) show that both the level and the change in earnings exhibit discontinuities around zero with an unusually high frequency of small positives and an unusually low frequency of small negatives. Burgstahler and Dichev conclude that firms manage earnings to avoid losses and earnings declines. Subsequent studies find that discontinuity in earnings distribution can be attributed to unusual accounting treatments in accounts that are likely related to earnings management, such as bad debt allowance, discontinued operations, loan loss provisions, marketing and advertising expenses, restructuring costs, taxes, and warranty reserves (An et al., 2014; Barua et al., 2010; Chapman and Steenburgh, 2011; Cohen et al., 2011; Cohen et al., 2010; Dhaliwal et al., 2004; Fan et al., 2010; Jackson and Liu, 2010; Kanagaretnam et al., 2004; Krull, 2004; Moehrle, 2002; Roychowdhury, 2006). While debate continues as to whether discontinuity in the frequency distributions of earnings metrics around zero is consistent with earnings management, recent research provides strong support for this link. [4] As an example, Donelson et al. (2013) compare the distribution of managed and unmanaged (restated) earnings of the same group of firms and show that discontinuity exists only in the distribution of managed earnings.

The examination of discontinuities in earnings distribution is an innovative methodology that has been used widely (e.g., Beatty et al. (2002); Dichev and Skinner (2002); Leuz et al. (2003); Beaver et al. (2003); Phillips et al. (2003)). Further, discontinuity in earnings distribution is found around management forecasts (Herrmann et al., 2003). The methodology has also been applied to distribution other than that of earnings. Gaver and Paterson (2004) find discontinuity in the distribution of solvency-related financial ratios around regulatory boundaries in a group of

[4] See, for example, Dechow et al. (2003), Durtschi and Easton (2005), Jacob and Jorgensen (2007), and Jorgensen et al. (2014). Two main issues in the debate are deflation (e.g., using stock price or market capitalization as the deflator) and sample selection bias (e.g., more likely to exclude observations with small losses than to exclude observations with small profits). Our paper does not suffer from these two issues as we use the GDP growth rate as our main measure of interest and we include all provinces in our sample.

insurance companies.[5] Bollen and Pool (2009) apply the methodology to hedge funds returns to detect abnormal (fraudulent) hedge-fund return reporting. We apply the discontinuity methodology to a political economy setting of GDP reporting and thus examine accounting issues at the macro level.

The second line of research relates to the quality of GDP statistics, and researchers find mixed empirical evidence. The GDP statistics of developed countries have typically been deemed reliable. Dichev (2013) argues that the National Income and Product Accounts (NIPA), a systematic approach to calculate GDP, produces higher quality earnings than the U.S. GAAP because the NIPA earnings are not subject to manager manipulation and political meddling. However, the literature reflects no consensus regarding the quality of GDP statistics in less developed countries, such as China.[6] On the one hand, Meng and Wang (2000) compare China's reported GDP numbers with physical outputs of 168 industries and overall economic indicators, such as freight transportation volume and electricity and energy consumption. They estimate that China's GDP growth was overstated by 0.5% and 2.2% for 1978–1991 and 1992–1997, respectively. Keidel (2001) uses the expenditure approach rather than the official production approach to measure China's GDP and finds that the expenditure-based GDP growth rate was lower in 1997–1999 but higher in 2000. On the other hand, Young (2003) argues that productivity growth estimated from reported GDP numbers looks reasonable after taking into account rising labor force participation, the transfer of labor out of agriculture, and improvements in educational attainment. Mehrotra and Paakkonen (2011) use factor analysis to

[5] These financial ratios, known as IRIS ratios, are used by regulators for solvency assessment.

[6] Not surprisingly, anecdotal evidence points to the quality of GDP data to some degree. The China National Bureau of Statistics routinely uncovers and publicizes GDP misreporting cases, in which local governments or enterprises have artificially inflated GDP numbers. Media have also questioned the quality of reported China GDP numbers, such as the *New York Times* article titled "A Chinese century? Maybe it's the next one" by Lester Thurow (http://www.nytimes.com/2007/08/19/business/yourmoney/19view.html?pagewanted=print). However, whether misreporting is systematic and widespread is unclear.

summarize information from various macroeconomic indicators and find that the estimated factors match the GDP dynamics well and that discrepancies are very small. Relative to mixed evidence in the literature, this paper provides salient evidence that points to the quality of GDP statistics.

Finally, this paper is related to the political economy literature that examines political incentives and career concerns of government officials.[7] The literature finds that economic performance affects the career of government officials in general and particularly in China. For example, Besley and Case (1995) show that strong economic performance of a state relative to neighboring states has a positive impact on the re-election prospects of U.S. governors. In China, the readiness of the Chinese central government to reward and punish local officials on the basis of their economic performance creates a similar motivation for the local officials (Blanchard and Shleifer, 2001). The reward and punishment mechanisms are made possible by the multi-divisional structure of the Chinese political system, which allows yardstick competition among local officials (Maskin et al., 2000; Qian and Xu, 1993).

The Chinese economic reform, which began in December 1978, has substantially changed the role of provincial (as well as prefecture) officials in the economy, along with the criteria for their promotion.[8] The reform granted the subnational officials substantial autonomous power and made them the ultimate authority in allocating economic resources in their provinces (prefectures). Correspondingly, they are also accountable for local economic performance.

[7] A parallel literature studies the incentive of corporate managers. Prior studies find that managers' compensation and promotion opportunities are positively linked to beating targets such as analyst forecasts (Cheng and Warfield, 2005; McVay et al., 2006). Kasznik and McNichols (2002) find that firms meeting or beating analyst earnings expectations tend to have higher valuations. Similarly, strings of earnings increases relative to the prior year or relative to the same quarter of the prior year receive a price premium (Barth et al., 1999; Myers et al., 2007).

[8] Prior to the reform, the ministries at the central government were in charge of economic planning and coordination. Meanwhile, political conformity is the first and only important factor in evaluating local officials. See Huang (1999) for more details.

Importantly, economic performance and other competence-related indicators replace political conformity as the crucial factors in performance evaluation of local officials.[9] This evaluation system provides local officials with both monetary and political incentives to make economic performance an important objective (Besley and Ghatak, 2008).

Consistent with this view, Maskin et al. (2000) find that the political status of a Chinese province (measured by its number of members in the Communist Party's Central Committee) is correlated with the provincial economic ranking. Moreover, provincial officials are more often reappointed to the Committee if their province's relative performance increases. Similarly, the likelihood of promotion of provincial leaders increases with good economic performance, while the likelihood of termination decreases with good economic performance (Li and Zhou (2005). Indeed, local economic performance has become one of the most important criteria for assessing governmental officials. As an illustration of the importance of local economic performance, government reports or provincial yearbooks often contain detailed information on the relative rankings of provinces' performance, ranging from overall GDP growth to specific items, such as steel production and miles of highways constructed.

Local GDP growth targets are the most important mechanism for motivating local government officials.[10] Each December, the Central Economic Working Conference, jointly held by the Communist Party's Central Committee and State Council, summarizes economic performance in the current year and sets the national GDP growth target for the subsequent year. On the basis of the national GDP growth target, provincial and prefecture governments specify their GDP growth targets in their government work reports presented in the local congress

[9] Officials have also to be young, have a good education, and demonstrate expertise in administrative management.

[10] This is not to be confused with Nominal Income Growth Targeting, a monetary policy in which the central bank sets an optimal GDP growth target and attempts to maintain the growth. The GDP growth targets are what governments mean to meet or beat.

meetings, which typically take place in March. While setting such clear targets helps improve economic performance (Boyne and Chen, 2007), local officials may fail to fully appreciate that these targets merely represent strategic constructs, and as a result they may act as though the measures are the construct of interest and become "rational cheaters" (Jacob and Levitt, 2003; Nagin et al., 2002).

In sum, Chinese local government officials exercise broad responsibilities in economic management and stand little chance of further promotion if they cannot deliver economic growth. If local governments have strong incentives and ways to manage GDP numbers to meet or beat growth targets, we expect GDP management to be manifested in cross-sectional distribution in the form of unusually high frequencies of just meeting/beating targets and unusually low frequencies of just missing targets. The above discussion leads to our formal prediction:

Prediction: The distribution of GDP growth rates has unusually high frequencies of just meeting/beating targets and unusually low frequencies of just missing targets.

3. Sample and descriptive statistics

The Chinese political system can be viewed as a multi-divisional system, as it is broadly composed of five layers of state administration: the central government, provinces, prefectures, counties, and townships (Lieberthal, 1995). At the central government level, the Premier is the head of government, presiding over the State Council composed of a variable number of vice premiers and the heads of ministries and commissions. The General Secretary of the Communist Party of China (CPC) holds ultimate power and authority over state and government.[11] The Central Committee of the CPC acts as the headquarters of this multi-divisional system and

[11] The leadership of the Communist Party is stated in the Constitution of the People's Republic of China.

ultimately controls the mobility of government officials within the system. Provinces are the second level of China's political hierarchy. Mainland China has 31 provincial units, which include four centrally administrated cities (Beijing, Chongqing, Shanghai, and Tianjin), 22 provinces, and five autonomous regions. The top two positions at the provincial level are the party secretary and the governor. While the party secretary holds political power, the governor is in charge of economic affairs. Prefecture is one level below province, with each province having a number of prefectures.

Each province or prefecture typically holds its annual congress meeting in March, during which the local government specifies its GDP growth target. For our study, we hand-collected GDP growth targets from published local government work reports.[12] Actual GDP data are reported about a year later and are published in China's statistical yearbooks.[13] We collected actual province-level GDP data from China's statistical yearbooks and prefecture-level actual GDP data from China's regional economic statistical yearbooks, which are typically published in September of the subsequent year.[14] Our sample period runs from 2002 to 2012. We start from 2002 because in that year, China's regional economic statistical yearbooks began to cover prefecture-level GDP data extensively. Our final sample has a full panel of 341 province-year observations at the province level (31 provinces multiplied by 11 years) and a panel of 2,442

[12] All 31 provinces and the majority of prefectures give point estimates of GDP growth target. Less than 1% of prefectures give range estimates, such as "7%-8%" or "target 7% and aim for 8%," in which cases we use the higher end as the GDP growth target (8% in the examples above).

[13] China used "national income" from the Material Product System to measure economic output until China started to calculate and report GDP at both the national and subnational levels in 1985. In 1993, national income estimates were officially abandoned and GDP became the key indicator of Chinese economic activity. Preliminary estimates occur early in the following year, followed by a primary revision usually in the second quarter and a final revision in the fourth quarter. The National Bureau of Statistics of China releases the primary and final readings in the China Statistical Yearbook in the second half of the following year. We use the primary numbers in the paper.

[14] The 2013 statistical yearbook includes GDP data from all previous ten years, but these GDP data could be revised numbers when China's National Bureau of Statistics changed its methodology and revised the GDP data retrospectively. We collected as-reported GDP published in the subsequent year, as opposed to restated data published in the most recent statistical yearbook.

prefecture-year observations with non-missing actual and target GDP growth rates at the prefecture level.

Table 1 reports descriptive statistics of GDP growth data at both the prefecture and the province levels. At the prefecture level, the average GDP growth target and actual growth rate are 13.12% and 13.74%, respectively, leading to a positive forecast error of 0.62% on average. Most prefectures have small growth forecast errors, ranging from -0.40% in Q1 to 2.3% in Q3.[15] Not surprisingly, the majority of prefectures (approximately 72%, untabulated) are able to meet or beat GDP growth targets. The average size of GDP is 104 billion Chinese dollars at the prefecture level. At the province level, the average GDP growth target is 10.2%, whereas the actual GDP growth rate has a mean of 12.37%, resulting in an average forecast error of 2.17%. About 92% of provinces are able to meet or beat GDP growth targets (untabulated). Provinces have an average size of GDP of 982 billion Chinese dollars. The GDP growth rate is higher at the prefecture level than at the province level because of double-counting (the same output is included in the GDP measure by multiple prefectures) and potential overstatement of GDP at the lower level.

4. Results

4.1. Main Results

We first present graphical evidence in the form of histograms of the pooled cross-sectional distribution of GDP growth forecast errors. Following Burgstahler and Dichev (1997), we perform formal statistical tests on the frequencies of forecast errors for each histogram on the assumption, under the null hypothesis of no GDP management, that the cross-sectional

[15] Extreme forecast errors are typically associated with unexpected natural disasters and/or policy changes. For example, the largest forecast error of -40.6% is related to the Great Sichuan earthquake in Aba, Zang, and Qiang prefectures in 2008 that killed 69,195 people.

distributions of forecast errors are relatively smooth. Specifically, the expected number of observations in any given histogram of the distribution is the average of the number of observations in the two immediately adjacent histograms. Then, the unexpected number of observations is the difference between the actual number of observations and the expected number of observations in the histogram. Finally, we calculate t-statistics as the unexpected number of observations divided by its cross-sectional standard deviation. Under the null hypothesis, these standardized differences, called t-statistics in the last step, should follow a normal distribution with a mean of 0 and a standard deviation of 1.

Figure 1 presents the distribution of GDP growth forecast errors at the prefecture level while Table 2 reports the distribution from -6% to 6% with interval widths of 0.1%. In line with the mean and median forecast error of 0.62% and 0.9% in Panel A of Table 1, prefecture-year observations are clustered in intervals around the mean and median values, with the number of observations ranging from 54 at 0.5% to 47 at 1.2%. Consistent with our prediction, both Figure 1 and Table 2 show a strong discontinuity of the forecast error distribution around zero. The frequency of just missing the GDP growth target is unusually low, with 12 observations, whereas the frequency of just meeting the GDP growth target is unusually high, with 118 observations. In both histograms, the differences between reported and expected frequencies are highly significant, with t-statistics of -5.24 and 5.37, respectively. In fact, two histograms immediately right to zero have the highest frequencies in the entire distribution of GDP forecast errors, much higher than those of the mean and median histograms. Taken together, the evidence is consistent with the idea that local governments manage GDP numbers in order to meet target growth rates.

Another interesting finding is that the frequency of observations tends to be higher at the positive integrals than their immediately left histograms (and to a lesser degree at the half-point histograms). For example, the frequencies of prefecture-year observations are unusually high at the 1% histogram (t = 2.18) and unusually low at the 0.9% histogram (t = -2.43). This evidence is consistent with the notion that local governments round up GDP growth rates to have a better-looking target beat.

Figure 2 and Table 3 report the distribution of GDP growth forecast errors at the province level. As the sample is much smaller at the province level, we use an interval width of 0.2%, as opposed to 0.1% at the prefecture level. Figure 2 shows a single-peaked, bell-shaped distribution with more observations around the mean and median values of 2.17 and 2.1, respectively. As with the results at the prefecture level, both Figure 2 and Table 3 show a clear discontinuity in the forecast error distribution around zero. The frequencies of province-year observations are unusually high at the 0% histogram (t = 2.73) and unusually low at the -0.2% histogram (t = -2.39). We also find that the frequencies tend to be higher at the 1% histogram (t = 2.39) and lower at immediate left histogram (t = -1.53), evidence consistent with GDP management to achieve a better-looking target beat. A comparison between Figures 1 and 2 also suggests that discontinuity is more prevalent at the prefecture level than at the provincial level. This result is expected because provinces aggregate GDP data across prefectures and thus are more likely to beat the target by a wide margin, as evidenced by the average forecast errors of 2.17% and 0.62% at the province and prefecture levels, respectively. Discontinuity tends to be stronger when the percentage of observations missing target growth rates is higher. The odds to meet/beat GDP growth targets are 72% and 92% at the prefecture and province levels, respectively.[16]

Overall, the results show strong discontinuities around zero in the distribution of GDP growth forecast errors at both the prefecture and province levels. We observe unusually high

[16] Not surprisingly, the odd to meet/beat GDP growth targets is 100% at the national level, leaving no room for discontinuity.

frequencies of just meeting/beating GDP growth targets and unusually low frequencies of just missing targets, a result consistent with local governments' GDP management to avoid missing target growth rates. We also find some evidence that the frequency tends to be higher at the positive integrals than their immediate left histograms (e.g., 1% vs. 0.9%), consistent with the idea that local governments round up the GDP growth rate to have a better-looking growth beat.

4.2. Possible channels to manage GDP growth

Broadly speaking, local governments have two possible channels to manage GDP growth. The first approach is to cook the books, a practice we term "paper management." China's National Bureau of Statistics has uncovered a series of cases in which local governments falsified GDP numbers, some of which were widely publicized by the media. Over time, the National Bureau of Statistics has improved the data quality significantly through its routine inspections and by adopting a direct reporting system in which enterprises bypass local governments and report GDP data directly to the bureau headquarters.[17] The second approach to managing GDP numbers is through real activities, such as public expenditure, infrastructure investment, and bank loans, a method we call "real management."

To test the channel of paper management, we adopt the following model to decompose actual GDP growth rate into two components: real-activity-based and residual components.

$$Agrowth_t = \beta_0 + \beta_1 \Delta Electricity_t + \beta_2 \Delta Freight_t + \beta_3 \Delta BankLoan_t + e_t \qquad (1)$$

Where *Agrowth* is actual GDP growth rate, measured as the change in inflation-adjusted GDP from years t-1 to t scaled by GDP in year t-1; *ΔElectricity* is the change in electricity consumption from years t-1 to t scaled by GDP in year t-1; *ΔFreight* is the change in freight volume from years t-1 to t scaled by GDP in year t-1; *ΔBankLoan* is the change in inflation-

[17] For example, http://blogs.wsj.com/chinarealtime/2013/09/06/naming-and-shaming-chinas-stats-bureau-finds-its-voice/

adjusted bank loans from years t-1 to t scaled by GDP in year t-1. As we use the same deflator for both the dependent and independent variables, the coefficient estimates can be interpreted as the elasticity of GDP to three economic drivers. We run Equation (1) annually using cross-sectional provincial data, as the data are not available at the prefecture level.

In Equation (1), we use three economic drivers to proxy for real activities, where these three economic indicators were famously termed by the Economist as Keqiang Index to measure China's economy.[18] We use the fitted value from Equation (1) to proxy for real GDP growth rate and use the residual to proxy for the paper managed portion (paper-managed FE). Finally, we define real-activity-based FE as the fitted value from Equation (1) minus target GDP growth rate. In this way, we decompose GDP growth forecast error (FE) into two components: real-activity-based FE and paper-managed FE.

Panel A of Table 3 reports the regression results of Equation (1). As expected, actual GDP growth rate is positively related to three economic indicators, although only the coefficient on *ΔElectricity* is statistically significant. Average R^2 is 9.4% across all years. Panels B and C report the distribution of pooled real-activity-based FE and paper-managed FE. Real-activity-based FE does not show a clear discontinuity around zero in the forecast error distribution, with observed frequencies of province-year observations indistinguishable from expected values at the 0% (t = 0.86) and -0.2% (t = -1.72) histograms. In contrast, paper-managed FE shows a clear discontinuity around zero in the forecast error distribution. The frequencies of observations are

[18] http://www.economist.com/node/17681868. Keqiang Li is the current premier of China. According to a State Department memo (released by WikiLeaks), Keqiang Li (then the party chief of Liaoning) told a US ambassador in 2007 that the GDP figures were unreliable and that he himself used three other indicators: the railway cargo volume, electricity consumption and loans disbursed by banks. Keqiang index thus combines these three preferred indicators.

unusually high at the 0% histogram (t = 3.48) and unusually low at the -0.2% histogram (t = -2.82). Overall, the results indicate strong evidence of paper GDP management.

To test the channel of real GDP management, we examine local governments' public consumption expenditures and local bank lending activities. We hand-collected public expenditure and bank loan data at the province level from China's statistical yearbooks, because these data are not available at the prefecture level.

Local governments' consumption expenditures weigh heavily on GDP, with the contribution on average around 15% across provinces and years in our sample.[19] More importantly, local governments have direct control of public consumption expenditures (Chen et al., 2013; Chen et al., 2011). The fiscal expenditure system in China is much more decentralized than most developing and transition countries. In 2005, more than 70 percent of the entire public expenditure was made at the sub-national levels, in contrast to the average 19.6 percent in developing countries and 22.3 percent in transition economies (Shen et al., 2012). If local governments want to manipulate GDP numbers to meet or beat their targets, a convenient approach might be to increase expenditures under their direct control, such as local governments' consumption expenditures. To test this idea, for each year we partition our province-level observations into two subsamples on the basis of the change in local governments' consumption expenditures from years t-1 to t scaled by year t-1's GDP ($\Delta CONS$).[20] We expect provinces with higher $\Delta CONS$ to be more likely to meet/beat GDP growth targets. Figure 3 shows the distributions of GDP growth forecast errors for two $\Delta CONS$ subsamples. Consistent with our

[19] Government spending in China generally includes expenditure on infrastructure, innovation, geological exploration, science and technology, working capital, rural production, rural area development, industrial transportation, circulation, culture and broadcasting, education, science, primary health, welfare, pension, subsidy, national defense, administration, foreign affairs, police, legal enforcement, urban maintenance. Many items are discretionary.

[20] We use the same deflator in the GDP growth rate. In this way, the response to GDP growth rate to $\Delta CONS$ can be interpreted as the elasticity of GDP to consumption expenditures.

expectation, the high-*ΔCONS* subsample exhibits a strong discontinuity around zero in the forecast error distribution. Reported GDP growth rates slightly higher than the targets occur more frequently than expected given the relative smoothness of the remainder of the distribution (t = 2.76 at the 0% histogram). In comparison, reported GDP growth rates just below the targets occur less frequently than expected (t = -1.84 at the -0.2% histogram) for the high-*ΔCONS* subsample. In contrast, we do not detect a significant discontinuity around zero in the distribution for the low-*ΔCONS* subsample, with t-statistics of -1.13 and 0.85 for the -0.2% and 0% histograms, respectively.

Local governments can also manage GDP upward by fueling the local economy with extra funds to boost corporate investments and output. This goal can be achieved by influencing banks' lending activities. In China, the most important external financing source for firms is bank loans, which account for nearly 90% of funds to Chinese firms (Allen et al., 2005). Moreover, virtually all commercial banks are state-owned, and local governments have considerable influence on banks' lending behavior (Bailey et al., 2011; Dinc, 2005). Therefore, we expect regions with large increases in bank loans to be more likely to manage GDP upward to meet/beat the targets. To test this prediction, we partition our observations for each year into two groups on the basis of the change in bank loans from years t-1 to t scaled by the prior year's GDP (*ΔLOAN*). Figure 4 reports the distributions of GDP growth forecast errors for two *ΔLOAN* subsamples. In line with our prediction, we observe a strong discontinuity around zero in the forecast error distribution for the high-*ΔLOAN* subsample. The frequencies of observations are unusually high at the 0% histogram (t = 2.49) and unusually low at the -0.2% histogram (t = -1.93). In contrast, the discontinuity is statistically insignificant for the low-*ΔLOAN* subsample, with t-statistics of -1.37 and 1.37 for the -0.2% and 0% histograms, respectively.

Government expenditure and bank lending are only two of many possible ways local officials can manage their GDP numbers through real activities. While we cannot enumerate all possible ways of manipulation, we provide a third test on the basis of a comprehensive measure of local officials' intention or ability to intervene in the local economy: the National Economic Research Institution index of marketization (NERIIM). [21] The NERIIM index includes five sub-indexes: government decentralization, development of non-state sectors, development of product markets, production factor markets, and market intermediaries and the legal environment. If the economy is largely market-driven, government officials may have difficulty managing GDP numbers through real activities. Therefore, we expect provinces with lower NERIIM to be more likely to manage GDP upward to meet/beat the targets.

To test this prediction, we partition our observations for each year into two groups on the basis of the NERIIM index. [22] Figure 5 reports the distributions of GDP growth forecast errors for two NERIIM subsamples. In line with our prediction, we observe a strong discontinuity around zero in the forecast error distribution for the low-NERIIM index subsample. The frequencies of observations are unusually high at the 0% histogram (t = 1.67) and unusually low at the -0.2% histogram (t = -2.23). In contrast, the discontinuity is statistically insignificant for the high-NERIIM index subsample, with t-statistics of -1.21 and 1.85 for the -0.2% and 0% histograms, respectively.

Overall, we find strong evidence of paper GDP management. Using Keqiang economic indicators to proxy for real activities, we show that discontinuities around zero in the distribution of GDP growth forecast errors are primarily driven by the paper-managed component of GDP growth rate. We also find some evidence consistent with the notion that local governments

[21] The index is available only at the province level.
[22] The most updated version of NERIIM data we have is that of 2009. Hence, for the year of 2010 to 2012, we use the NERIIM index from 2009.

manage GDP growth rates partially through real activities, such as public expenditures and local bank lending activities.

4.3. Variations in local government officials' incentives to management GDP

We exploit variations in local government officials' incentives to manage GDP growth rates. We focus on the effect of government officials' characteristics at the provincial level because the list of local officials and their characteristics is typically not available below the provincial level.

We first consider provincial governors' political background.[23] The sensitivity of a Chinese provincial governor's career to economic performance may hinge on his/her connection to the central government (Jia et al., 2013). Politically connected officials are more likely to be promoted because of their association to the central government, leaving less weight to be placed on provincial economic performance. As a result, politically connected officials may be less concerned about local economic performance and less likely to manage GDP numbers to meet the targets. To test this idea, we partition the sample into two subsamples: one for governors with political connection to the central government and one for those without. We define political connection as being based on family ties and work experience. Specifically, we define a governor as being politically connected if she/he has relatives (parents, parents-in-law, or siblings) or former colleagues (superiors or co-workers) who hold higher-level positions in the central government. In our sample, about 37% of the governors are classified as being politically connected.[24] Figure 6 shows a stronger discontinuity in the distribution of GDP growth forecast error in the subsample of observations with politically unconnected governors. The frequencies

[23] We find overall similar results if we consider the provincial party secretary's political background. We prefer governor to the party secretary because the governor is in charge of economic affairs.

[24] Untabulated analysis shows similar GDP growth targets for politically connected and unconnected governors, with the mean (median) target growth rate of 10.28% and 10.17% (10% and 10%), respectively.

of observations are unusually high at the 0% histogram (t = 2.47) and unusually low at the -0.2% histogram (t = -2.72). In contrast, the discontinuity is statistically insignificant for the subsample of observations with centrally connected governors, with t-statistics of -0.94 and 1.89 for the -0.2% and 0% histograms, respectively.

We then consider the effect of governor tenure on the premise that governors have less flexibility and fewer incentives to manage GDP numbers in their first two years of tenure. In later years, after governors have become more familiar with their jobs and have established their own network of bureaucrats, they have more freedom to manage GDP numbers. Moreover, longer tenure typically means that the governor has a greater incentive to move up the ladder of the hierarchy. Such career concerns of provincial leaders create incentives to avoid missing targets in advance of potential promotion. Therefore, we expect governors with longer tenure to be more likely to manage GDP statistics. To test this idea, we partition our sample into two subsamples on the basis of governor tenure: one with governor tenure of two years or less and the other with governor tenure of more than two years. We expect the results to be stronger for the subsample of governor tenure of more than two years. Consistent with our expectation, Figure 7 shows a strong discontinuity in the distribution of GDP growth forecast errors when governor tenure is more than two years. GDP growth rates just meeting/beating the targets occur more frequently than would be expected (t = 3.03 at the 0% histogram) and GDP growth rates just missing the targets occur less frequently than would be expected (t = -2.02 at the -0.2% histogram). The discontinuity is statistically insignificant for the subsample with governor tenure of two years or less, with t-statistics of -1.72 and 0.86 for the -0.2% and 0% histograms, respectively.

In sum, we find some evidence that governor characteristics and political incentives affect the likelihood of just meeting/beating GDP growth targets. The evidence of GDP management is stronger when governors are not politically connected and when governors have been in their positions for more than two years.

5. Additional analysis and robustness checks

5.1. Time-series variations in GDP management

To examine the robustness of our results, we consider time-series variations in GDP management for two reasons. First, we are concerned that our results may be driven by a few years' observations. Second and more importantly, we are interested in whether the time-series results exhibit a predictable pattern depending on China's overall economic performance. We posit that local governments are more likely to manage GDP to meet/beat the targets when the national economy is decelerating. When the economy is accelerating, ex post GDP growth rates tend to be above target growth rates, creating less demand to manage GDP numbers. When the economy is decelerating, missing target growth rates becomes more likely, increasing the demand for local governments to manage GDP numbers upward. In our sample period, 2007 serves as an inflection point. China's GDP growth rate increased from 9.3% in 2002 to 11.9% in 2007 and then declined to 7.7% in 2012. Therefore, we partition our sample into two sub-periods: 2002–2007 and 2008–2012, and we conduct empirical tests at both the prefecture and the province levels. For the sake of brevity, we discuss the results at the prefecture level, while we notice similar results if we use province-level observations.

Figure 8 shows that both sub-periods exhibit strong evidence of a discontinuity around zero in the distribution of GDP growth forecast errors. In line with our prediction, the discontinuity is stronger in the 2008–2012 sub-period, during which China's economy decelerated. In the 2008–2012 sub-period, the frequencies of observations are unusually high at the 0% histogram (t = 5.57) and unusually low at the -0.1% histogram (t = -5.43). In comparison, t-statistics are 4.41 and -4.31 for the 0% and -0.1% histograms, respectively, in the 2002–2007 sub-period. Overall, we find that our results are robust to different sample periods and that the results are slightly stronger in later periods when China's economy decelerated.

5.2. Are government officials aware of GDP management?

If our evidence of GDP management withstands further scrutiny, it raises the serious question of whether government officials are aware of GDP management. We conjecture that higher-level government officials are aware of GDP management by lower-level governments and make adjustments to some degree. To shed light on this issue, we plot reported GDP growth rates at the country, province, and prefecture levels in Figure 9. Panel A shows that weighted-average GDP growth rates across provinces are always higher than reported national GDP growth rates in our sample period. This evidence is consistent with the idea that provinces overstate their GDP growth rates and that the National Bureau of Statistics makes downward adjustments accordingly. Similarly, Panel B shows that weighted-average GDP growth rates across prefectures are always higher than reported provincial GDP growth rates in our sample period. As a caveat, the results in Figure 9 are suggestive rather than conclusive, as we do not control for inter-region transactions and other factors, which we are unable to quantify and which might explain the discrepancy in reported GDP growth rates at different levels.

5.3. Is GDP management habitual?

If local governments have incentives and ways to manage GDP numbers, we expect GDP management to be habitual. Therefore, local governments are more likely to meet or beat GDP growth targets if they have a history of doing so. To test this idea, for each province-year or prefecture-year, we calculate the percentage of meeting/beating targets in the previous three years (*PCTMEET*) and then partition the sample into two groups on the basis of this variable. In the untabulated analysis, we find that, at the province level, the discontinuity around zero in the distribution of GDP growth forecast error exists only in the high-*PCTMEET* subsample. At the prefecture level, the discontinuity exists in both high- and low-*PCTMEET* subsamples, but the results are stronger for the high-*PCTMEET* subsample. Collectively, the results lend some support to the idea that local governments tend to meet/beat GDP growth targets if they have a history of doing so.

6. Conclusion

Applying the discontinuity methodology in the accounting literature to a political economy setting, we investigate whether evidence shows a discontinuity in the region immediately around zero in the distribution of GDP growth forecast errors. We find strong evidence that reported GDP growth rates just meeting or beating the targets occur more frequently than expected given the relatively smooth distribution of GDP growth forecast errors at both the prefecture and the province levels. At the prefecture (province) level, the number of observations of just meeting/beating targets is almost ten (four) times the number of observations of just missing targets. The results support the hypothesis that local Chinese governments manage GDP numbers to meet or beat growth targets.

We also investigate whether local governments manage GDP numbers via paper vs. real activities. We find strong evidence of paper GDP management. Using Keqiang economic indicators to proxy for real activities, we show that discontinuities around zero in the distribution of GDP growth forecast errors are primarily driven by the paper-managed component of GDP growth rate. We also find some evidence of real GDP management. The discontinuity is significant in subsamples of large increases in local government’s public consumption expenditures, of large increases in bank loans, and in areas where governments tend to intervene, evidence consistent with the idea that local governments increase public spending and influence banks' lending activities to achieve GDP growth targets. Finally, we explore the time-series and cross-sectional variations in the incentives of government officials to meet/beat GDP growth targets and find that empirical results exhibit a predictable pattern. The discontinuity is more evident when governors are not politically connected and when governors have been in their position for more than two years.

One weakness of the paper is that all tests on time-series and cross-sectional variations in sections 4.2 and 4.3 are based on the province-level data. Ideally, we would like to conduct these tests using the prefecture-level data, because variations tend to be much bigger and because the prefecture sample is substantially larger. At the province level, 92% of observations meet or beat GDP growth targets, compared to 72% at the prefecture level. Small variations in meeting/beating targets at the province level impose a big challenge when we conduct tests on time-series and cross-sectional variations. In addition, our prefecture sample is more than seven times that of the province sample (2442 vs. 341 observations), substantially reducing our statistical power in tests using the province-level data. Unfortunately, detailed data are typically not available at the prefecture level for these tests.

If our conclusion of GDP management withstands further scrutiny, it raises a number of questions for policy makers, corporations, and individuals that call for future research. At the macro level, our evidence not only suggests a violation of truthful reporting for one of the most important economic data, but also indicates that macro-level economic policies may be misguided. For example, the central bank might inappropriately tighten its monetary policy in response to potentially overstated GDP growth rates. The Chinese currency might be trading at an elevated level because of potentially inflated GDP numbers. At both the national and the regional levels, public spending and bank lending induced by GDP management are likely to be suboptimal and represent a waste of resources. At the corporate level, firms could be misguided by false growth opportunities and thus make suboptimal operating and investing decisions. To make things worse, such policy biases and suboptimal behavior are systematic, making it almost impossible for individuals, consumers and investors alike, to hedge or diversify the risks. In that sense, macro-level GDP management has more serious consequences than firm-level earnings management, which is the focus of the prior literature.

References

Allen, F., Qian, J., Qian, M.J., 2005. Law, finance, and economic growth in China. Journal of Financial Economics 77, 57-116.

An, H., Lee, Y.W., Zhang, T., 2014. Do corporations manage earnings to meet/exceed analyst forecasts? Evidence from pension plan assumption changes. Review of Accounting Studies 19, 698-735.

Bailey, W., Huang, W., Yang, Z., 2011. Bank Loans with Chinese Characteristics: Some Evidence on Inside Debt in a State-Controlled Banking System. Journal of Financial and Quantitative Analysis 46, 1795-1830.

Barth, M.E., Elliott, J.A., Finn, M.W., 1999. Market rewards associated with patterns of increasing earnings. Journal of Accounting Research 37, 387-413.

Barua, A., Lin, S., Sbaraglia, A.M., 2010. Earnings Management Using Discontinued Operations. The Accounting Review 85, 1485-1509.

Beatty, A.L., Ke, B., Petroni, K.R., 2002. Earnings management to avoid earnings declines across publicly and privately held banks. The Accounting Review 77, 547-570.

Beaver, W.H., McNichols, M.F., Nelson, K.K., 2003. Management of the loss reserve accrual and the distribution of earnings in the property-casualty insurance industry. Journal of Accounting & Economics 35, 347-376.

Besley, T., Case, A., 1995. INCUMBENT BEHAVIOR - VOTE-SEEKING, TAX-SETTING, AND YARDSTICK COMPETITION. American Economic Review 85, 25-45.

Besley, T., Ghatak, M., 2008. Status incentives. American Economic Review 98, 206-211.

Blanchard, O., Shleifer, A., 2001. Federalism with and without political centralization: China versus Russia. IMF Staff Papers 48, 171-179.

Bollen, N.P.B., Pool, V.K., 2009. Do Hedge Fund Managers Misreport Returns? Evidence from the Pooled Distribution. Journal of Finance 64, 2257-2288.

Bollen, N.P.B., Pool, V.K., 2012. Suspicious Patterns in Hedge Fund Returns and the Risk of Fraud. Review of Financial Studies 25, 2673-2702.

Boyne, G.A., Chen, A.A., 2007. Performance targets and public service improvement. Journal of Public Administration Research and Theory 17, 455-477.

Burgstahler, D., Dichev, I., 1997. Earnings management to avoid earnings decreases and losses. Journal of Accounting & Economics 24, 99-126.

Chapman, C.J., Steenburgh, T.J., 2011. An Investigation of Earnings Management Through Marketing Actions. Management Science 57, 72-92.

Chen, D., Li, O.Z., Xin, F., 2013. Five-Year Plans, China finance and their consequences. Working paper, National University of Singapore.

Chen, S., Sun, Z., Tang, S., Wu, D., 2011. Government intervention and investment efficiency: Evidence from China. Journal of Corporate Finance 17, 259-271.

Cheng, Q., Warfield, T.D., 2005. Equity incentives and earnings management. The Accounting Review 80, 441-476.

Cohen, D., Darrough, M.N., Huang, R., Zach, T., 2011. Warranty Reserve: Contingent Liability, Information Signal, or Earnings Management Tool? The Accounting Review 86, 569-604.

Cohen, D., Mashruwala, R., Zach, T., 2010. The use of advertising activities to meet earnings benchmarks: evidence from monthly data. Review of Accounting Studies 15, 808-832.

Dechow, P., Ge, W.L., Schrand, C., 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. Journal of Accounting & Economics 50, 344-401.

Dechow, P.M., Richardson, S.A., Tuna, I., 2003. Why are earnings kinky? An examination of the earnings management explanation. Review of Accounting Studies 8, 355-384.

Degeorge, F., Patel, J., Zeckhauser, R., 1999. Earnings management to exceed thresholds. Journal of Business 72, 1-33.

Deng, Y., Morck, R., Wu, J., Yeung, B., 2011. Monetary and Fiscal Stimuli, Ownership Structure, and China's Housing Market. Working paper, NBER.

Dhaliwal, D.S., Gleason, C.A., Mills, L.F., 2004. Last-chance earnings management: Using the tax expense to meet analysts' forecasts. Contemporary Accounting Research 21, 431-459.

Dichev, I.D., 2013. Quality Earnings: Insights from Comparing GAAP to NIPA Earnings. Working paper, Emory University.

Dichev, I.D., Skinner, D.J., 2002. Large-sample evidence on the debt covenant hypothesis. Journal of Accounting Research 40, 1091-1123.

Dinc, I.S., 2005. Politicians and banks: Political influences on government-owned banks in emerging markets. Journal of Financial Economics 77, 453-479.

Donelson, D.C., McInnis, J.M., Mergenthaler, R.D., 2013. Discontinuities and Earnings Management: Evidence from Restatements Related to Securities Litigation. Contemporary Accounting Research 30, 242-268.

Durtschi, C., Easton, P., 2005. Earnings management? The shapes of the frequency distributions of earnings metrics are not evidence ipso facto. Journal of Accounting Research 43, 557-592.

Durtschi, C., Easton, P., 2009. Earnings Management ? Erroneous Inferences Based on Earnings Frequency Distributions. Journal of Accounting Research 47, 1249-1281.

Fan, Y., Barua, A., Cready, W.M., Thomas, W.B., 2010. Managing Earnings Using Classification Shifting: Evidence from Quarterly Special Items. The Accounting Review 85, 1303-1323.

Gaver, J.J., Paterson, J.S., 2004. Do insurers manipulate loss reserves to mask solvency problems? Journal of Accounting & Economics 37, 393-416.

Hayn, C., 1995. THE INFORMATION-CONTENT OF LOSSES. Journal of Accounting & Economics 20, 125-153.

Herrmann, D., Inoue, T., Thomas, W.B., 2003. The sale of assets to manage earnings in Japan. Journal of Accounting Research 41, 89-108.

Huang, Y., 1999. Inflation and Investment Controls in China: The Political Economy of Central-Local Relations during the Reform Era. New York: Cambridge Uniersity Press.

Jackson, S.B., Liu, X.T., 2010. The Allowance for Uncollectible Accounts, Conservatism, and Earnings Management. Journal of Accounting Research 48, 565-601.

Jacob, B.A., Levitt, S.D., 2003. Rotten apples: An investigation of the prevalence and predictors of teacher cheating. Quarterly Journal of Economics 118, 843-877.

Jacob, J., Jorgensen, B.N., 2007. Earnings management and accounting income aggregation. Journal of Accounting & Economics 43, 369-390.

Jia, R., Kudamatsu, M., Seim, D., 2013. Complementary Roles of Connections and Performance in Political Selection in China. Working paper, Stockhom University.

Jorgensen, B., Lee, Y., Rock, S., 2014. The shape of scaled earnings histograms are not due to scaling and sample selection: Evidence from distributions of reported earnings per share. Contemporary Accounting Research Forthcoming.

Kanagaretnam, K., Lobo, G.J., Yang, D.H., 2004. Joint tests of signaling and income smoothing through bank loan loss provisions. Contemporary Accounting Research 21, 843-884.

Kasznik, R., McNichols, M.F., 2002. Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices. Journal of Accounting Research 40, 727-759.

Keidel, A., 2001. China's GDP expenditure accounts. China Economic Review 12, 355-367.

Kido, N., R. Petacchi, and J. Weber. 2012. The influence of elections on the accounting choices of governmental entities. Journal of Accounting Research 50, 443-476.

Krull, L.K., 2004. Permanently reinvested foreign earnings, taxes, and earnings management. The Accounting Review 79, 745-767.

Leuz, C., Nanda, D., Wysocki, P.D., 2003. Earnings management and investor protection: an international comparison. Journal of Financial Economics 69, 505-527.

Li, H.B., Zhou, L.A., 2005. Political turnover and economic performance: the incentive role of personnel control in China. Journal of Public Economics 89, 1743-1762.

Lieberthal, K., 1995. Governing China: From revolution through reform. New York: W.W. Norton.

Maskin, E., Qian, Y.Y., Xu, C.G., 2000. Incentives, information, and organizational form. Review of Economic Studies 67, 359-378.

McVay, S., Nagar, V., Tang, V.W., 2006. Trading incentives to meet the analyst forecast. Review of Accounting Studies 11, 575-598.

Mehrotra, A., Paakkonen, J., 2011. Comparing China's GDP statistics with coincident indicators. Journal of Comparative Economics 39, 406-411.

Meng, L., Wang, X., 2000. An evaluation of the reliability of China's statistics on economic growth. Economic Review 10, 3-13.

Moehrle, S.R., 2002. Do firms use restructuring charge reversals to meet earnings targets? The Accounting Review 77, 397-413.

Myers, J.N., Myers, L.A., Skinner, D.J., 2007. Earnings momentum and earnings management. Journal of Accounting, Auditing and Finance 22, 249-284.

Nagin, D.S., Rebitzer, J.B., Sanders, S., Taylor, L.J., 2002. Monitoring, motivation, and management: The determinants of opportunistic behavior in a field experiment. American Economic Review 92, 850-873.

Pan, X., Tian, G., 2014. Monetary policy, bank loan supply and investment efficiency: Evidence from Chinese economic stimulus. Working paper, Xiamen University.

Phillips, J., Pincus, M., Rego, S.O., 2003. Earnings management: New evidence based on deferred tax expense. The Accounting Review 78, 491-521.

Qian, Y., Xu, C., 1993. Why China's Economic Reforms Differ: The M-Form Hierarchy and Entry/Expansion of the Non-State Sector. Economics of Transition 1, 135-170.

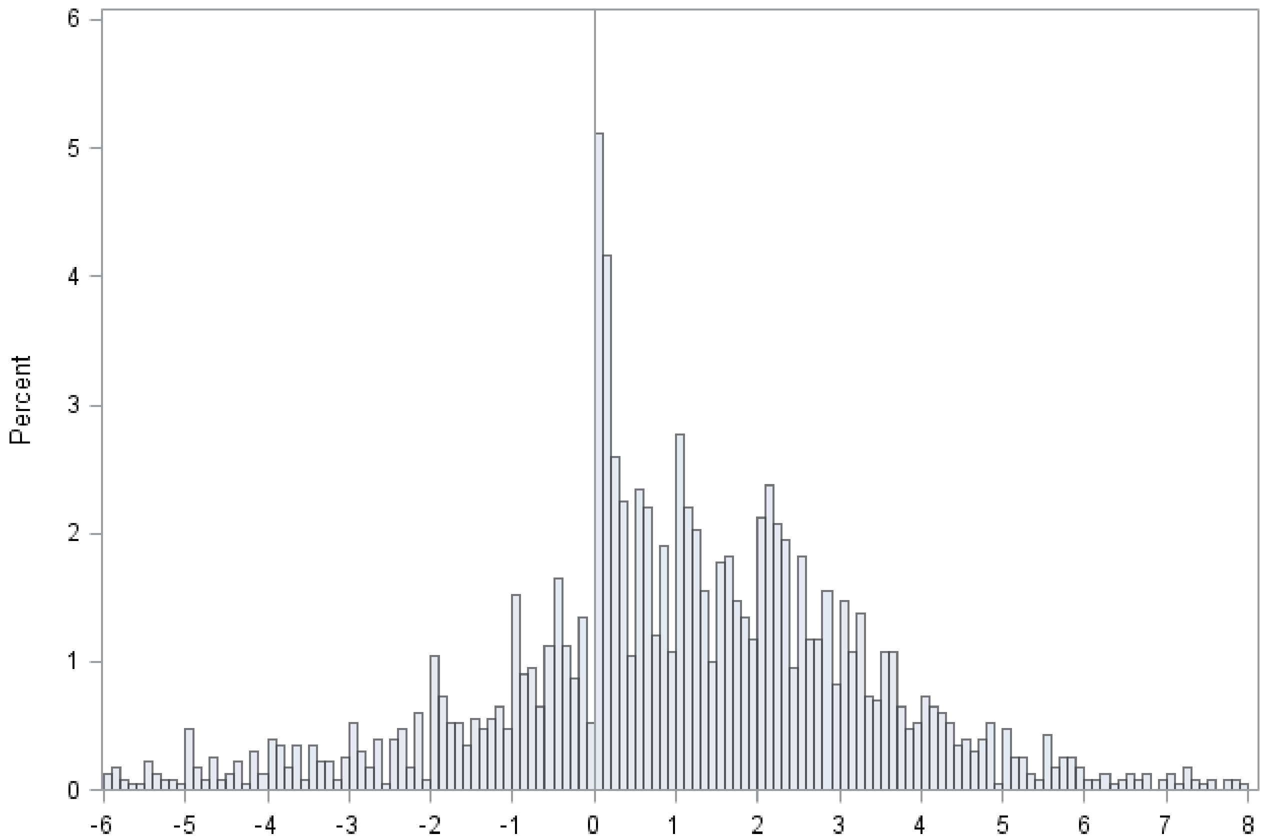
Roychowdhury, S., 2006. Earnings management through real activities manipulation. Journal of Accounting & Economics 42, 335-370.

Shen, C., Jin, J., Zou, H.-f., 2012. Fiscal Decentralization in China: History, Impact, Challenges and Next Steps. Annals of Economics and Finance 13, 1-51.

Whiting, S., 2001. Power and wealth in rural china: The political economy of institutional change. . Cambridge: Cambridge University Press.

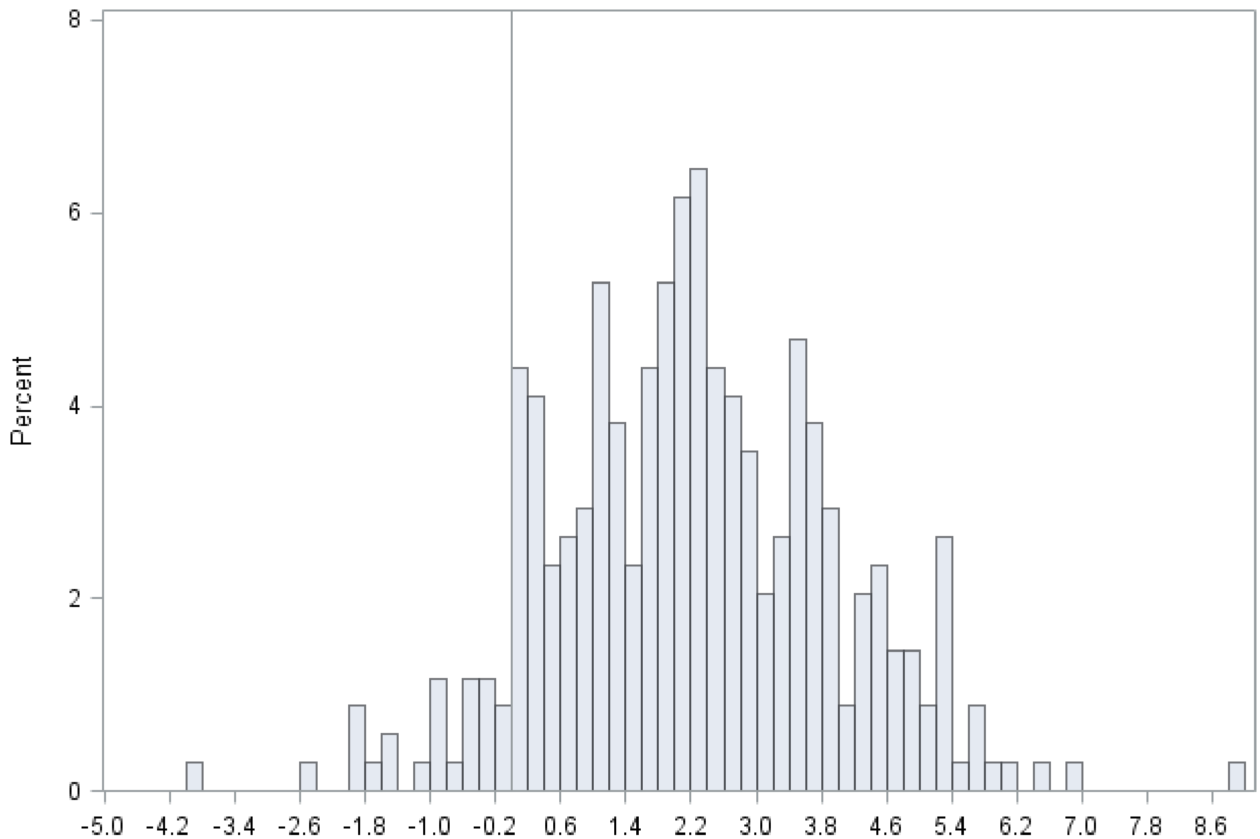
Young, A., 2003. Gold into base metals: Productivity growth in the People's Republic of China during the reform period. Journal of Political Economy 111, 1220-1261.

Figure 1
The distribution of GDP growth forecast errors at the prefecture level



This figure presents the distribution of GDP growth forecast errors at the prefecture level, where GDP growth forecast errors are measured as actual GDP growth rate minus target GDP growth rate. The distribution interval widths are 0.1% and the location of zero on the horizontal axis is marked by the vertical line. The first interval to the right of zero contains observations in the interval (0.0, 0.1), the second interval contains (0.1, 0.2), and so forth. The vertical axis labeled percent represents the percentage of the number of observations in each interval from -6% to 8% in the distribution.

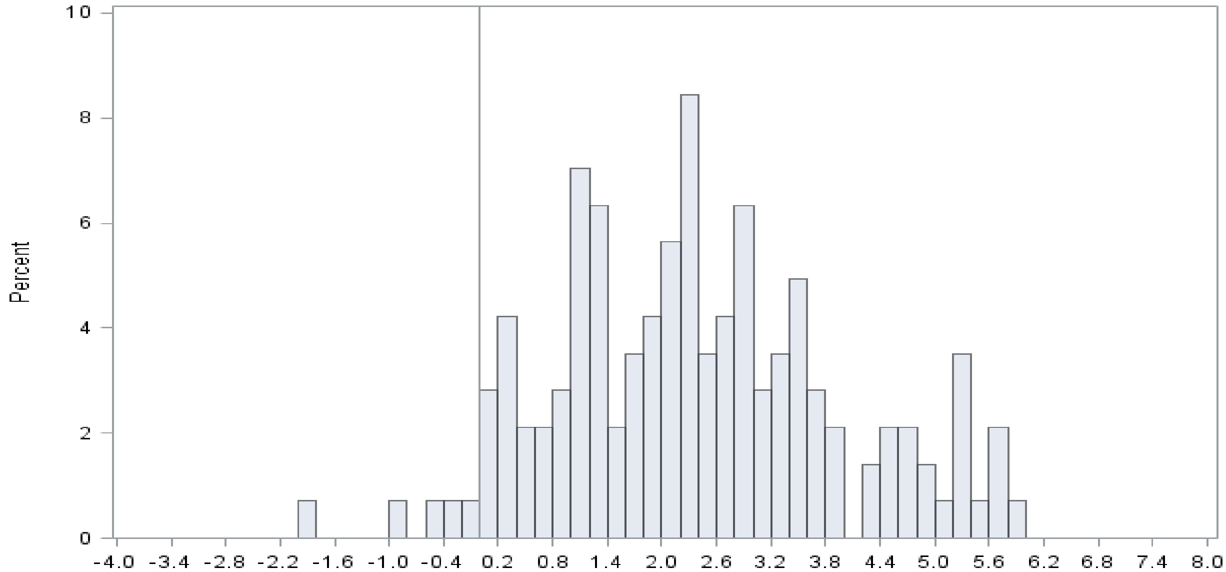
Figure 2
The distribution of GDP growth forecast errors at the province level



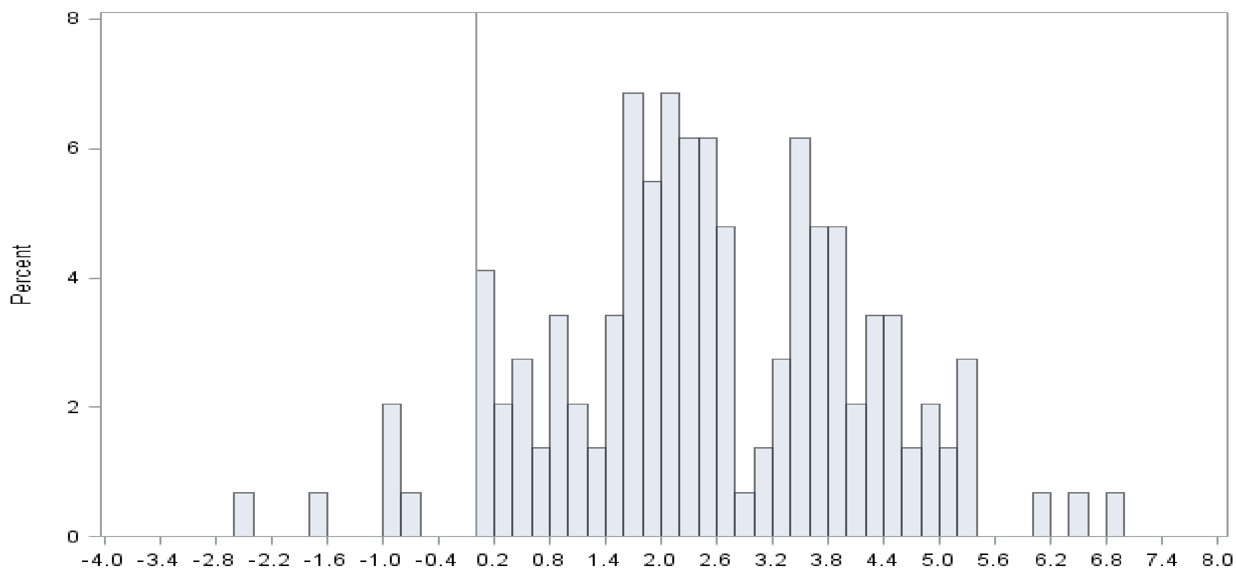
This figure presents the distribution of GDP growth forecast errors at the province level, where GDP growth forecast errors are measured as actual GDP growth rate minus target GDP growth rate. The distribution interval widths are 0.2% and the location of zero on the horizontal axis is marked by the vertical line. The first interval to the right of zero contains observations in the interval [0.0, 0.2), the second interval contains [0.2, 0.4), and so forth. The vertical axis labeled percent represents the percentage of the number of observations in each interval from -5% to 9% in the distribution.

Figure 3
The distribution of GDP growth forecast errors at the province level by the change in local public consumption expenditure

Panel A: The bottom half of the change in local public consumption expenditures



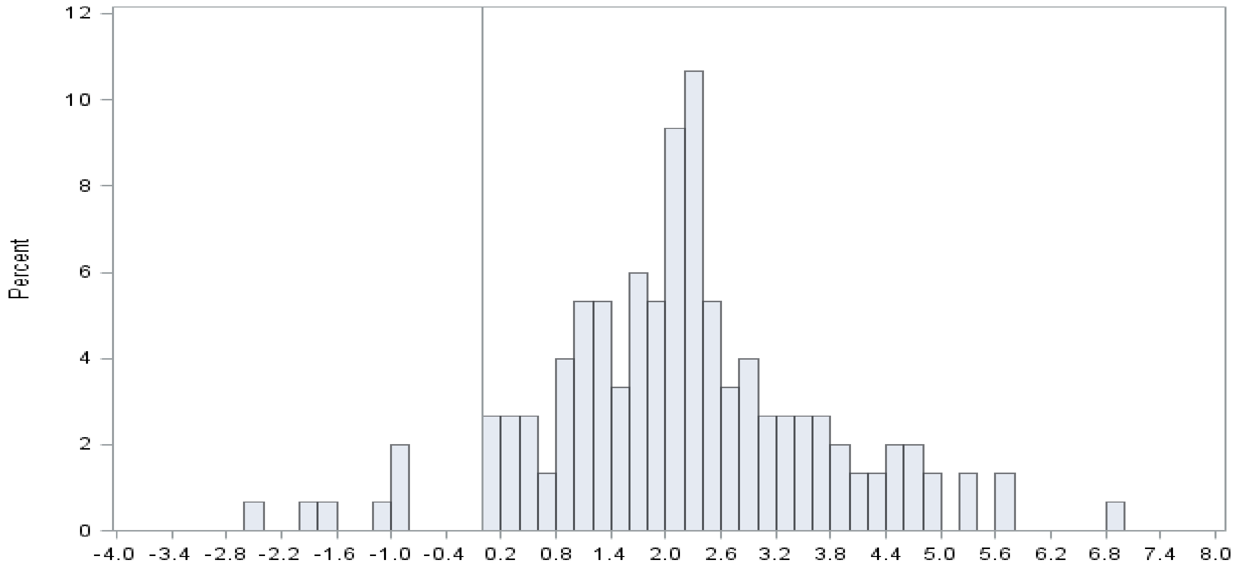
Panel B: The top half of the change in local public consumption expenditures



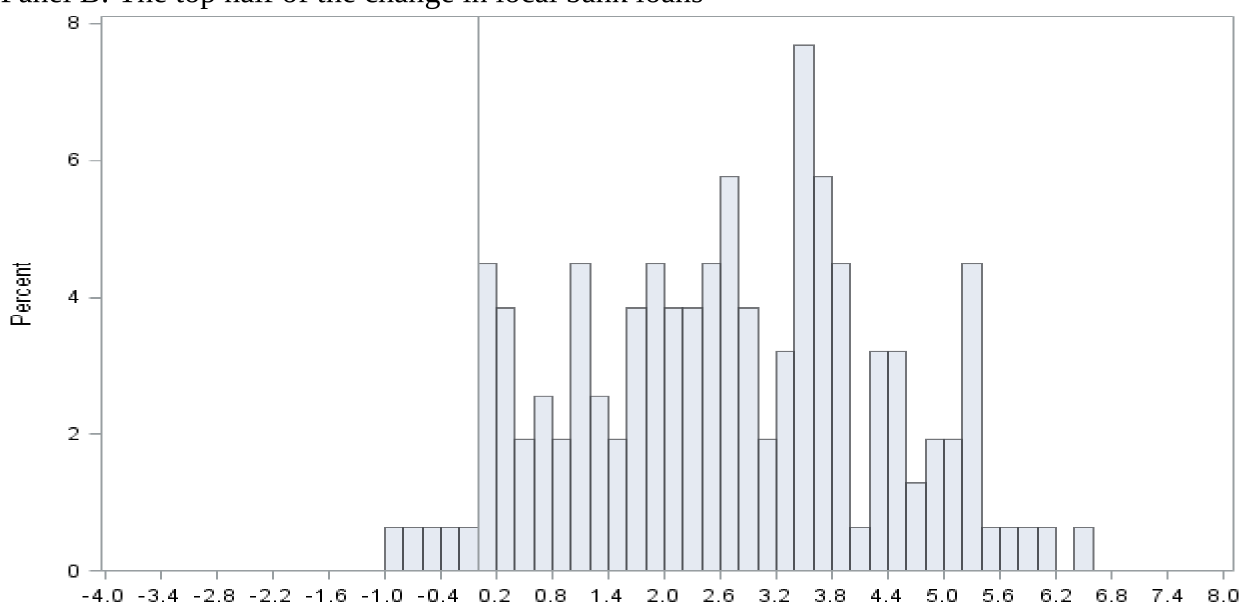
This figure presents the distribution of GDP growth forecast errors (Actual – Target GDP growth rate) at the province level when we partition the sample into two groups on the basis of the change in local public consumption expenditures from year t-1 to year t scaled by GDP in year t-1. The distribution interval widths are 0.2% and the location of zero on the horizontal axis is marked by the vertical line. The first interval to the right of zero contains observations in the interval [0.0, 0.2), the second interval contains [0.2, 0.4), and so forth. The vertical axis labeled percent represents the percentage of the number of observations in each interval from -4% to 8% in the distribution.

Figure 4
The distribution of GDP growth forecast errors at the province level by the change in local bank loans

Panel A: The bottom half of the change in local bank loans



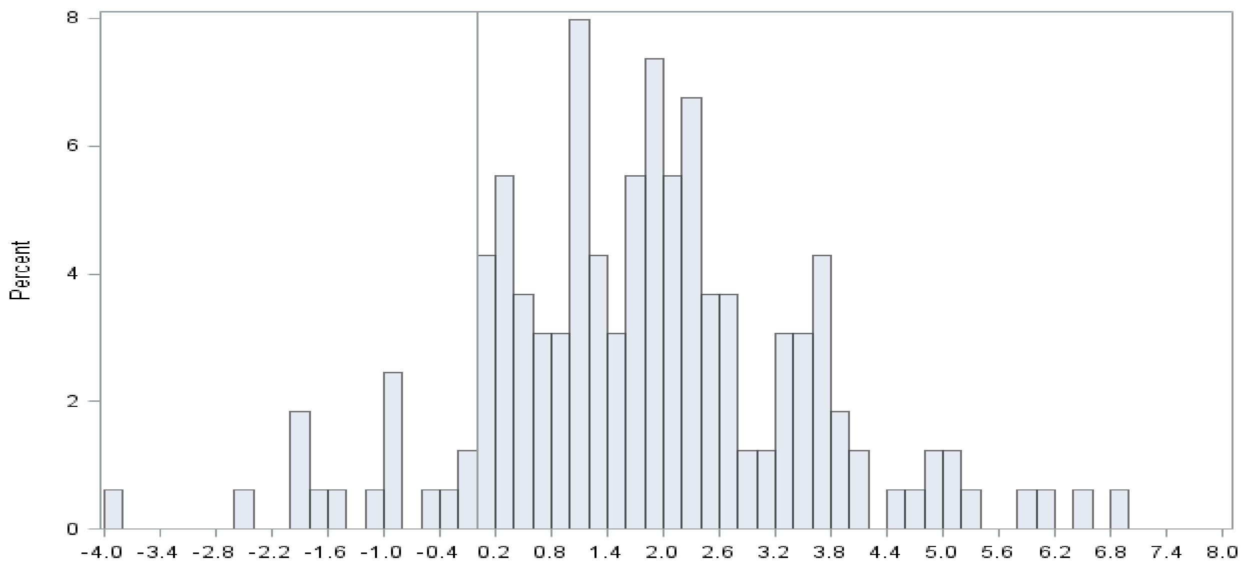
Panel B: The top half of the change in local bank loans



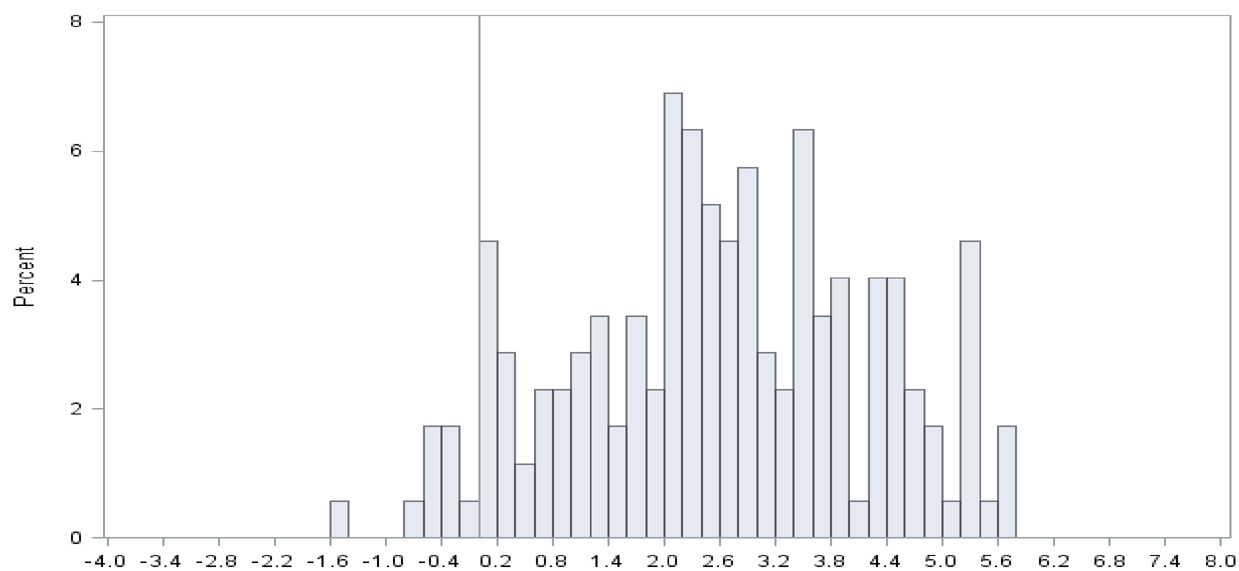
This figure presents the distribution of GDP growth forecast errors (Actual – Target GDP growth rate) at the province level when we partition the sample into two groups on the basis of the change in local bank loans from year t-1 to year t scaled by GDP in year t-1. The distribution interval widths are 0.2% and the location of zero on the horizontal axis is marked by the vertical line. The first interval to the right of zero contains observations in the interval [0.0, 0.2), the second interval contains [0.2, 0.4), and so forth. The vertical axis labeled percent represents the percentage of the number of observations in each interval from -4% to 8% in the distribution.

Figure 5
The distribution of GDP growth forecast errors at the province level by NERIIM index

Panel A: The bottom half of NERIIM



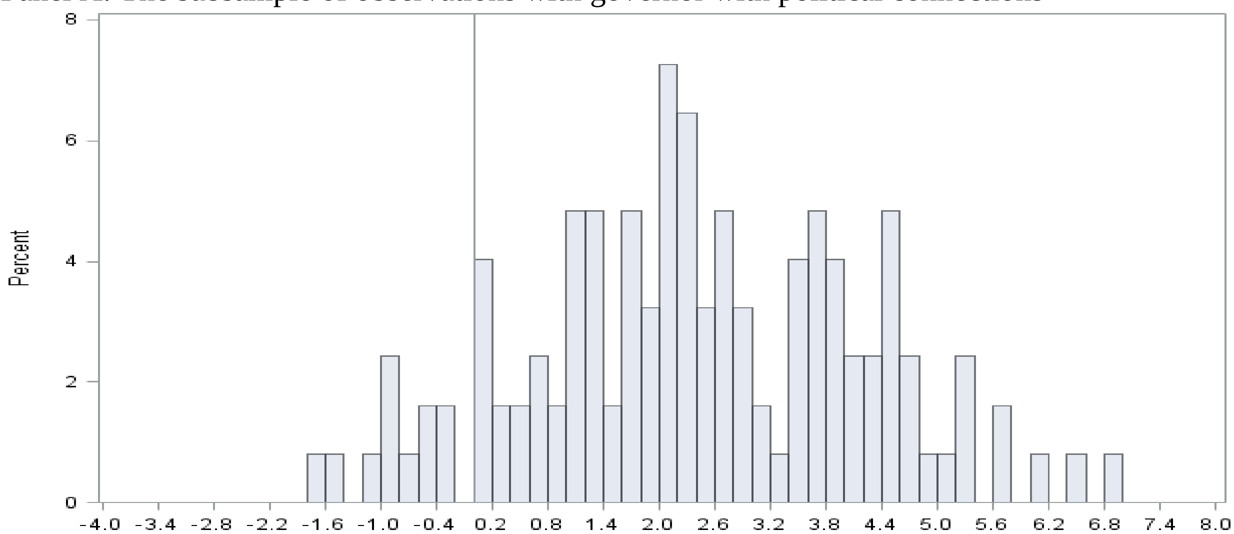
Panel B: The top half of NERIIM



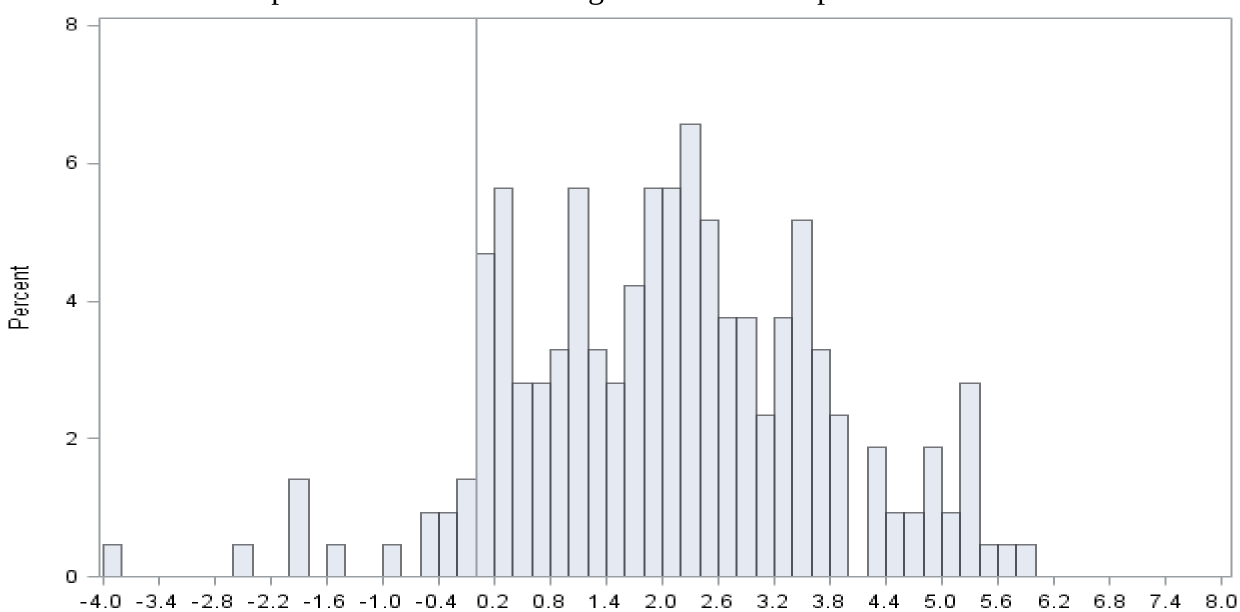
This figure presents the distribution of GDP growth forecast errors (Actual – Target GDP growth rate) at the province level when we partition the sample into two groups on the basis of the NERIIM index, a measure of the degree of local government intervention. Panel A (B) is for the subsample of observations with NERIIM index below (above) median in each year. The distribution interval widths are 0.2% and the location of zero on the horizontal axis is marked by the vertical line. The first interval to the right of zero contains observations in the interval [0.0, 0.2), the second interval contains [0.2, 0.4), and so forth. The vertical axis labeled percent represents the percentage of the number of observations in each interval from -4% to 8% in the distribution.

Figure 6
The distribution of GDP growth forecast errors at the province level by political connections

Panel A: The subsample of observations with governor with political connections



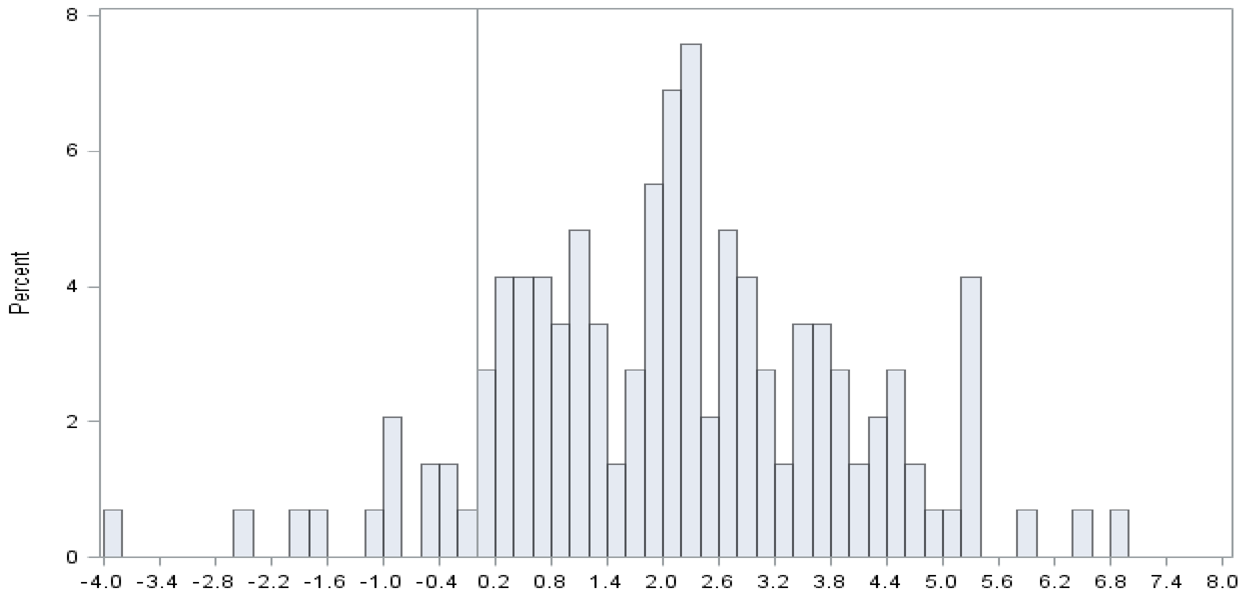
Panel B: The subsample of observations with governor without political connections



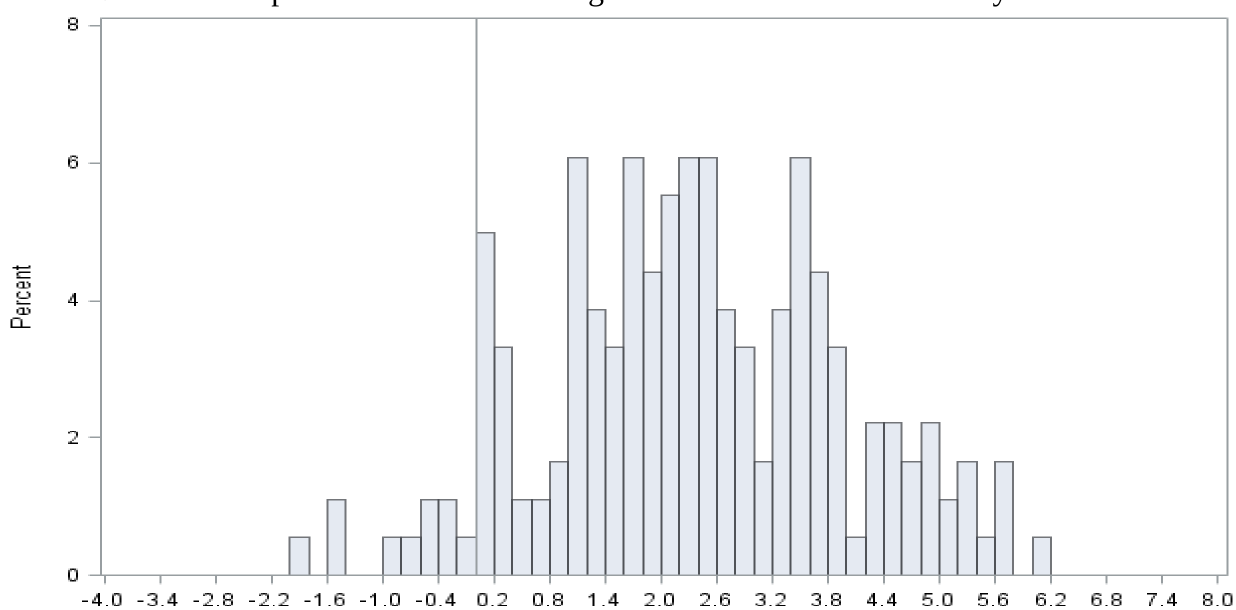
This figure presents the distribution of GDP growth forecast errors (Actual – Target GDP growth rate) at the province level when we partition the sample into two groups on the basis of whether they are connected with the central government. Panel A (B) is for the subsample of observations with governor that are with (without) such connections. The distribution interval widths are 0.2% and the location of zero on the horizontal axis is marked by the vertical line. The first interval to the right of zero contains observations in the interval [0.0, 0.2), the second interval contains [0.2, 0.4), and so forth. The vertical axis labeled percent represents the percentage of the number of observations in each interval from -4% to 8% in the distribution.

Figure 7
The distribution of GDP growth forecast errors at the province level by governor tenure

Panel A: The subsample of observations with governor tenure equal or less than two years



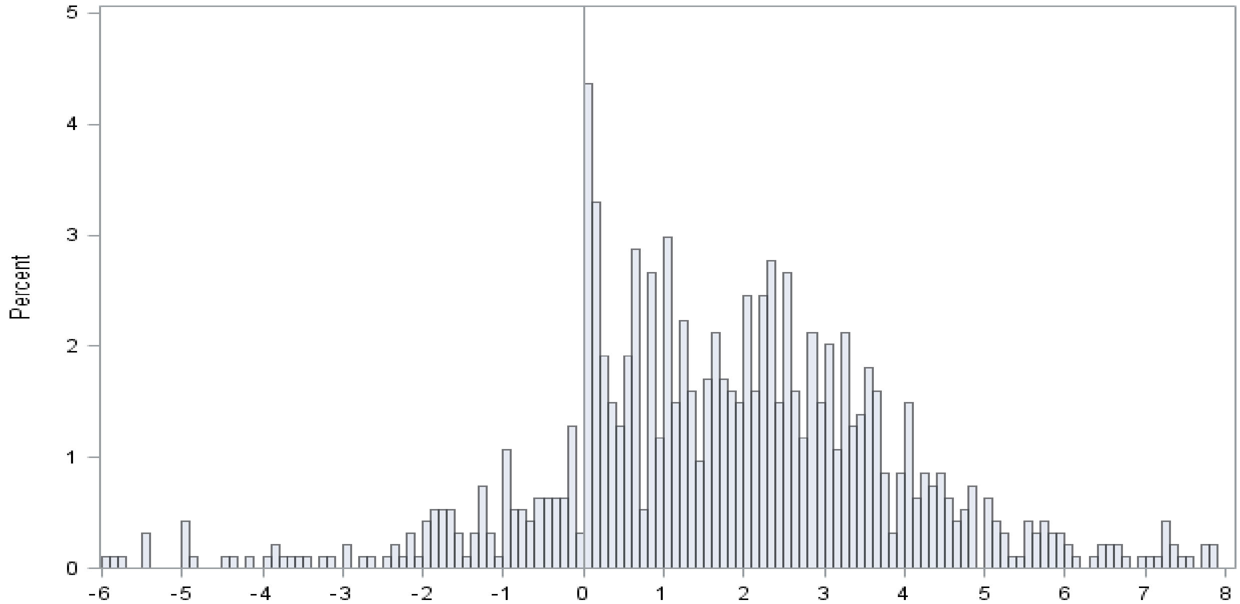
Panel B: The subsample of observations with governor tenure more than two years



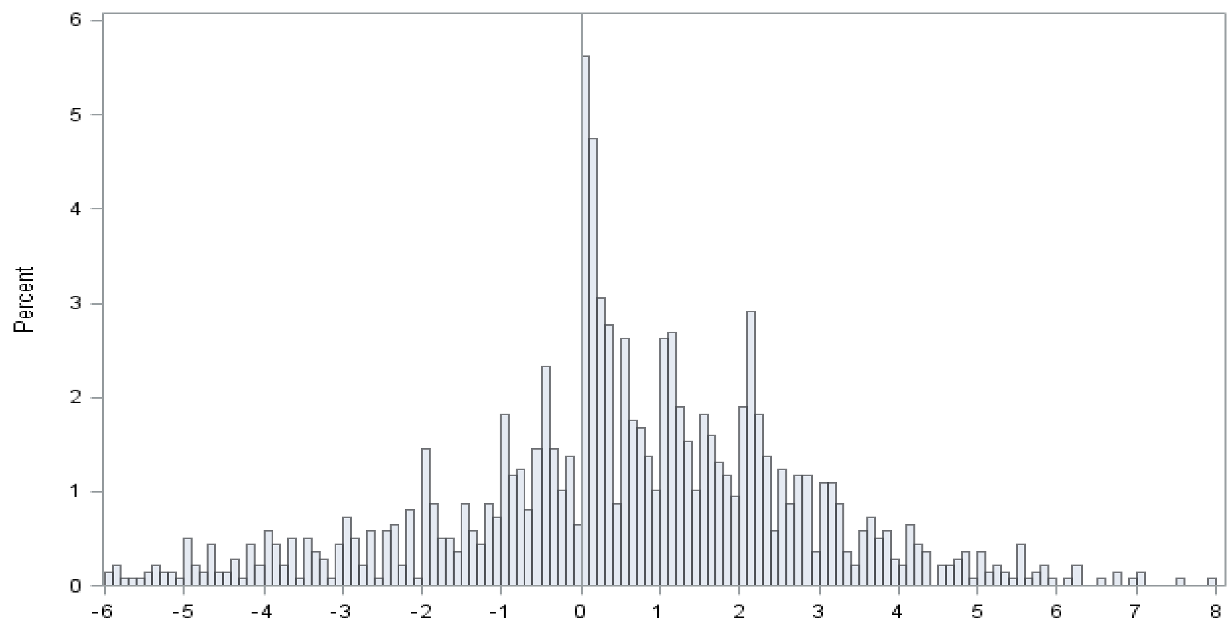
This figure presents the distribution of GDP growth forecast errors (Actual – Target GDP growth rate) at the province level when we partition the sample into two groups on the basis of governor tenure. Panel A (B) is for the subsample of observations with governor tenure equal to or less than (more than) two years. The distribution interval widths are 0.2% and the location of zero on the horizontal axis is marked by the vertical line. The first interval to the right of zero contains observations in the interval [0.0, 0.2), the second interval contains [0.2, 0.4), and so forth. The vertical axis labeled percent represents the percentage of the number of observations in each interval from -4% to 8% in the distribution.

Figure 8
The distribution of GDP growth forecast errors at the prefecture level by time

Panel A: The distribution of GDP growth forecast errors – the 2002-2007 sub-period



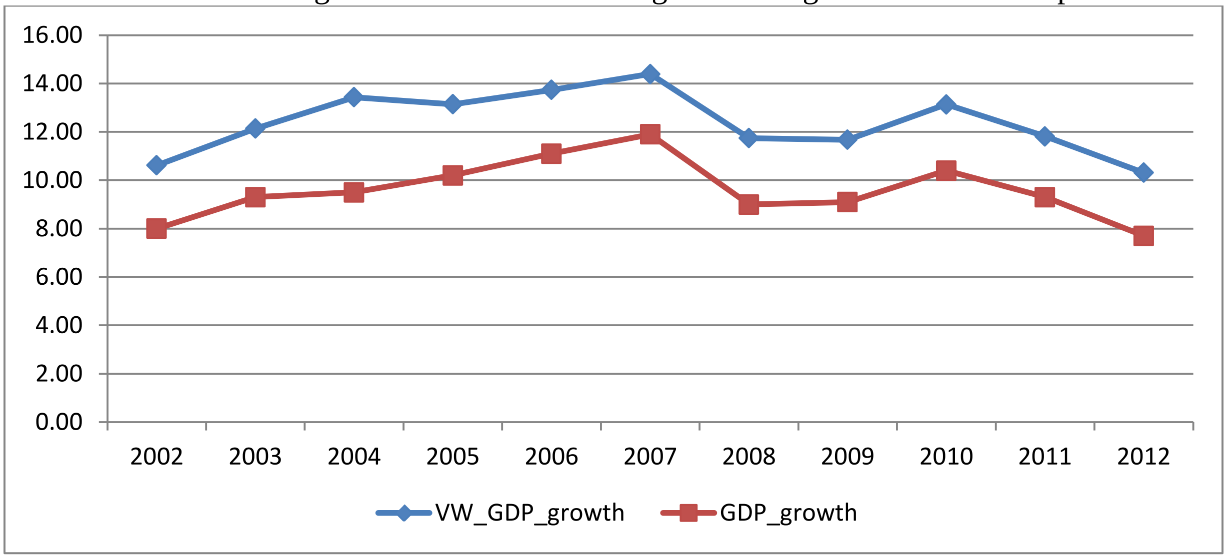
Panel B: The distribution of GDP growth forecast errors – the 2008-2012 sub-period



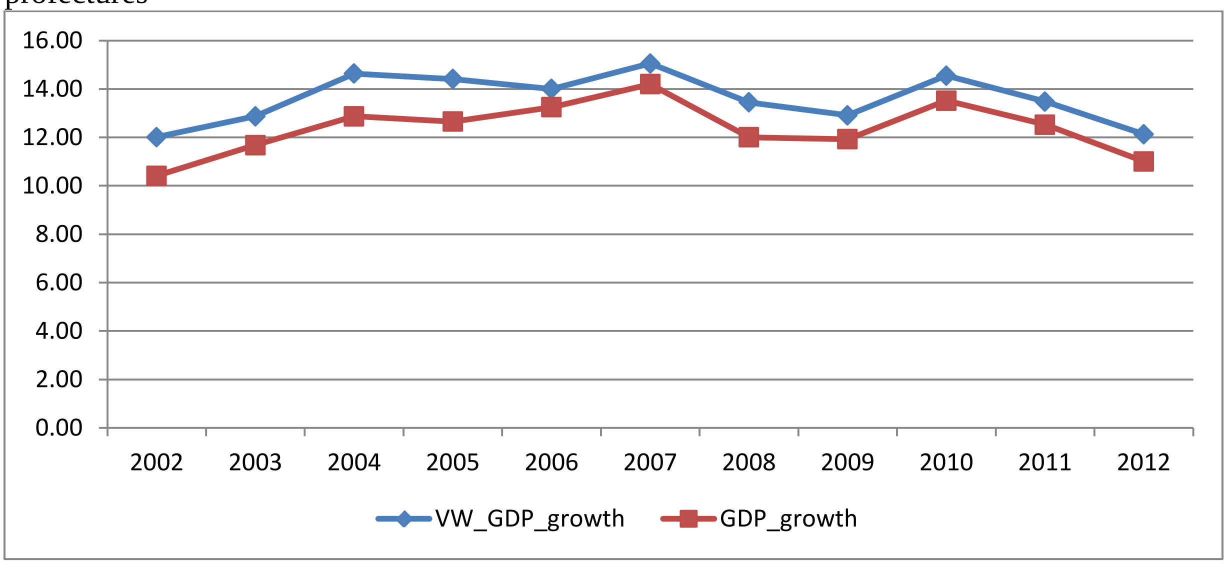
This figure presents the distribution of GDP growth forecast errors (Actual – Target GDP growth rate) at the prefecture level when we partition the sample period into two sub-periods: 2002–2007 vs. 2008–2012. China's economy accelerated from 2002 to 2007 and then decelerated afterwards. The distribution interval widths are 0.1% and the location of zero on the horizontal axis is marked by the vertical line. The first interval to the right of zero contains observations in the interval [0.0, 0.1), the second interval contains [0.1, 0.2), and so forth. The vertical axis labeled percent represents the percentage of the number of observations in each interval from -6% to 8% in the distribution.

Figure 9
Reported GDP growth rates at the country, province, and prefecture levels

Panel A: National GDP growth rates vs. value-weighted GDP growth rates across provinces



Panel A: Average provincial GDP growth rates vs. value-weighted GDP growth rates across prefectures



Panel A shows national GDP growth rates as reported by the National Bureau of Statistics (GDP_growth) vs. value-weighted GDP growth rates across provinces (VW_GDP_growth), where the weighting variable is each province's prior year GDP level. Panel B shows average provincial GDP growth rates (GDP_growth) vs. value-weighted GDP growth rates across prefectures (VW_GDP_growth), where the weighting variable is each prefecture's prior year GDP level. In Panel B, we require non-missing GDP data for both years t-1 and t to calculate value-weighted GDP growth rates. The sample period is from 2002 to 2012.

Table 1
Descriptive statistics

Panel A: The prefecture-level data (2442 prefecture-year observations)

Variable	N	Mean	SD	Min.	Q1	Median	Q3	Max.
GDP	2442	104.0	134.8	0.7	30.4	60.3	120.2	1355.1
Tgrowth	2442	13.12	3.46	3.00	11.00	12.50	14.00	76.60
Agrowth	2442	13.74	3.39	-3.40	12.00	13.60	15.30	47.90
FE	2442	0.62	3.57	-40.60	-0.40	0.90	2.30	36.90

Panel B: The province-level data (341 province-year observations)

Variable	N	Mean	SD	Min.	Q1	Median	Q3	Max.
GDP	341	982.1	992.0	16.1	304.5	685.1	1258.2	5706.8
Tgrowth	341	10.20	1.42	7.00	9.00	10.00	11.00	15.00
Agrowth	341	12.37	2.16	5.40	11.00	12.30	13.70	23.80
FE	341	2.17	1.78	-3.90	1.00	2.10	3.40	8.90

This table reports descriptive statistics of GDP growth data at the prefecture level in Panel A and at the province level at Panel B. GDP is the level of GDP in billion Chinese dollars. Tgrowth is the target GDP growth rate published in local government work report during the annual local congress in March. Agrowth is the actual GDP growth rate published in China’s statistical yearbooks in the subsequent year. FE (=Agrowth – Tgrowth) is actual GDP growth rate minus target GDP growth rate. The sample includes 2,442 prefecture-year observations at the prefecture level and 341 province-year observations at the province level from 2002 to 2012.

Table 2
The distribution of GDP growth forecast error at the prefecture level

FE	# of obs.	Expected # of obs.	Unexpected # of obs.	t-stat	FE	# of obs.	Expected # of obs.	Unexpected # of obs.	t-stat
-6.0	3	3.5	-0.5	-0.04	0.1	96	89	7	0.59
-5.9	4	2.5	1.5	0.13	0.2	60	-74	14	-1.17
-5.8	2	2.5	-0.5	-0.04	0.3	52	42	10	0.84
-5.7	1	1.5	-0.5	-0.04	**0.4**	**24**	**-53**	**29**	**-2.43**
-5.6	1	3	-2	-0.17	**0.5**	**54**	**37.5**	**16.5**	**1.38**
-5.5	5	2	3	0.25	0.6	51	41	10	0.84
-5.4	3	3.5	-0.5	-0.04	0.7	28	-47.5	19.5	-1.64
-5.3	2	2.5	-0.5	-0.04	0.8	44	26.5	17.5	1.47
-5.2	2	1.5	0.5	0.04	**0.9**	**25**	**-54**	**29**	**-2.43**
-5.1	1	6.5	-5.5	-0.46	**1.0**	**64**	**38**	**26**	**2.18**
-5.0	11	2.5	8.5	0.71	1.1	51	55.5	-4.5	-0.38
-4.9	4	6.5	-2.5	-0.21	1.2	47	43.5	3.5	0.29
-4.8	2	5	-3	-0.25	1.3	36	35	1	0.08
-4.7	6	2	4	0.34	1.4	23	-38.5	15.5	-1.30
-4.6	2	4.5	-2.5	-0.21	1.5	41	32.5	8.5	0.71
-4.5	3	3.5	-0.5	-0.04	1.6	42	37.5	4.5	0.38
-4.4	5	2	3	0.25	1.7	34	36.5	-2.5	-0.21
-4.3	1	6	-5	-0.42	1.8	31	30.5	0.5	0.04
-4.2	7	2	5	0.42	**1.9**	**27**	**-40**	**13**	**-1.09**
-4.1	3	8	-5	-0.42	**2.0**	**49**	**41**	**8**	**0.67**
-4.0	9	5.5	3.5	0.29	2.1	55	48.5	6.5	0.55
-3.9	8	6.5	1.5	0.13	2.2	48	50	-2	-0.17
-3.8	4	8	-4	-0.34	2.3	45	35	10	0.84
-3.7	8	3	5	0.42	2.4	22	-43.5	21.5	-1.80
-3.6	2	8	-6	-0.50	2.5	42	24.5	17.5	1.47
-3.5	8	3.5	4.5	0.38	2.6	27	34.5	-7.5	-0.63
-3.4	5	6.5	-1.5	-0.13	2.7	27	31.5	-4.5	-0.38
-3.3	5	3.5	1.5	0.13	2.8	36	23	13	1.09
-3.2	2	5.5	-3.5	-0.29	**2.9**	**19**	**-35**	**16**	**-1.34**
-3.1	6	7	-1	-0.08	**3.0**	**34**	**22**	**12**	**1.01**
-3.0	12	6.5	5.5	0.46	3.1	25	33	-8	-0.67
-2.9	7	8	-1	-0.08	3.2	32	21	11	0.92
-2.8	4	8	-4	-0.34	3.3	17	24	-7	-0.59
-2.7	9	2.5	6.5	0.55	3.4	16	21	-5	-0.42
-2.6	1	9	-8	-0.67	3.5	25	20.5	4.5	0.38
-2.5	9	6	3	0.25	3.6	25	20	5	0.42
-2.4	11	6.5	4.5	0.38	3.7	15	18	-3	-0.25
-2.3	4	12.5	-8.5	-0.71	3.8	11	13.5	-2.5	-0.21
-2.2	14	3	11	0.92	3.9	12	14	-2	-0.17
-2.1	2	-19	17	-1.43	4.0	17	13.5	3.5	0.29

-2.0	24	9.5	14.5	1.22	4.1	15	15.5	-0.5	-0.04
-1.9	17	18	-1	-0.08	4.2	14	13.5	0.5	0.04
-1.8	12	14.5	-2.5	-0.21	4.3	12	11	1	0.08
-1.7	12	10	2	0.17	4.4	8	10.5	-2.5	-0.21
-1.6	8	12.5	-4.5	-0.38	4.5	9	7.5	1.5	0.13
-1.5	13	9.5	3.5	0.29	4.6	7	9	-2	-0.17
-1.4	11	13	-2	-0.17	4.7	9	9.5	-0.5	-0.04
-1.3	13	13	0	0.00	4.8	12	5	7	0.59
-1.2	15	12	3	0.25	4.9	1	-11.5	10.5	-0.88
-1.1	11	-25	14	-1.17	5.0	11	3.5	7.5	0.63
-1.0	35	16	19	1.59	5.1	6	8.5	-2.5	-0.21
-0.9	21	28.5	-7.5	-0.63	5.2	6	4.5	1.5	0.13
-0.8	22	18	4	0.34	5.3	3	4	-1	-0.08
-0.7	15	24	-9	-0.75	5.4	2	6.5	-4.5	-0.38
-0.6	26	26.5	-0.5	-0.04	5.5	10	3	7	0.59
-0.5	38	26	12	1.01	5.6	4	8	-4	-0.34
-0.4	26	29	-3	-0.25	5.7	6	5	1	0.08
-0.3	20	28.5	-8.5	-0.71	5.8	6	5	1	0.08
-0.2	31	16	15	1.26	5.9	4	4	0	0.00
-0.1	**12**	**-74.5**	**62.5**	**-5.24**	6.0	2	3	-1	-0.08
0.0	**118**	**54**	**64**	**5.37**					

This table reports the pooled cross-sectional distribution of GDP growth forecast errors at the prefecture level, where GDP growth forecast errors are measured as actual GDP growth rate minus target GDP growth rate. We tabulate the distribution from -6% to 6% with interval widths of 0.1%. Expected number of observations is the average number of observations in two immediately adjacent intervals. Unexpected number of observations is the difference between reported number of observations minus expected number of observations. T-statistics are calculated as unexpected number of observations divided by its cross-sectional standard deviation. The sample includes 2,442 prefecture-year observations at the prefecture level from 2002 to 2012.

Table 3
The distribution of GDP growth forecast error at the province level

FE	# of obs.	Expected # of obs.	Unexpected # of obs.	t-stat	FE	# of obs.	Expected # of obs.	Unexpected # of obs.	t-stat
-3.8	1	0.5	0.5	0.17	1.6	15	12	3	1.02
-3.6	0	0.5	-0.5	-0.17	**1.8**	**16**	**18**	**-2**	**-0.68**
-3.4	0	0	0	0.00	**2**	**21**	**19**	**2**	**0.68**
-3.2	0	0	0	0.00	2.2	22	18	4	1.36
-3	0	0	0	0.00	2.4	15	18	-3	-1.02
-2.8	0	0.5	-0.5	-0.17	2.6	14	13.5	0.5	0.17
-2.6	1	0	1	0.34	2.8	12	10.5	1.5	0.51
-2.4	0	0.5	-0.5	-0.17	3	7	10.5	-3.5	-1.19
-2.2	0	0.5	-0.5	-0.17	3.2	9	11.5	-2.5	-0.85
-2	1	1	0	0.00	3.4	16	11	5	1.70
-1.8	2	1	1	0.34	3.6	13	13	0	0.00
-1.6	1	2	-1	-0.34	3.8	10	8	2	0.68
-1.4	2	1	1	0.34	4	3	8.5	-5.5	-1.87
-1.2	1	2	-1	-0.34	4.2	7	5.5	1.5	0.51
-1	2	2	0	0.00	4.4	8	6	2	0.68
-0.8	3	1	2	0.68	4.6	5	6.5	-1.5	-0.51
-0.6	0	4	-4	-1.36	4.8	5	4	1	0.34
-0.4	5	2	3	1.02	5	3	7	-4	-1.36
-0.2	**4**	**11**	**-7**	**-2.39**	5.2	9	2	7	2.39
0	**17**	**9**	**8**	**2.73**	5.4	1	6	-5	-1.70
0.2	14	12.5	1.5	0.51	5.6	3	1	2	0.68
0.4	8	11.5	-3.5	-1.19	5.8	1	2	-1	-0.34
0.6	9	8.5	0.5	0.17	6	1	0.5	0.5	0.17
0.8	**9**	**13.5**	**-4.5**	**-1.53**	6.2	0	1	-1	-0.34
1	**18**	**11**	**7**	**2.39**	6.4	1	0	1	0.34
1.2	13	13	0	0.00	6.6	0	1	-1	-0.34
1.4	8	14	-6	-2.04	6.8	1	0	1	0.34

This table reports the pooled cross-sectional distribution of GDP growth forecast errors at the province level, where GDP growth forecast errors are measured as actual GDP growth rate minus target GDP growth rate. We tabulate the distribution from -4% to 7% with interval widths of 0.2%. Expected number of observations is the average number of observations in two adjacent intervals. Unexpected number of observations is the difference between reported number of observations minus expected number of observations. T-statistics are calculated as unexpected number of observations divided by its cross-sectional standard deviation. The sample includes 341 province-year observations at the province level from 2002 to 2012.

Table 4
The decomposition of GDP growth forecast error

Panel A: Decomposing GDP growth rate into real-activity-based and paper-managed portions.

$$Agrowth_t = \beta_0 + \beta_1 \Delta Electricity_t + \beta_2 \Delta Freight_t + \beta_3 \Delta BankLoan_t + e_t \quad (1)$$

	Intercept	ΔElectricity	ΔFreight	ΔBankLoan	Average R^2
Coefficient (t-stat)	0.118 (23.55)	0.042 (2.70)	0.000 (0.09)	0.025 (1.27)	0.094

Panel B: The distribution of real-activity-based GDP growth forecast error

FE	# of obs.	Expected # of obs.	Unexpected # of obs.	t-stat	FE	# of obs.	Expected # of obs.	Unexpected # of obs.	t-stat
-3.8	0	0	0	0.00	1.6	14	17	-3	-1.03
-3.6	0	0	0	0.00	1.8	21	15	6	2.06
-3.4	0	0	0	0.00	2	16	21	-5	-1.72
-3.2	0	0	0	0.00	2.2	21	15.5	5.5	1.89
-3	0	0.5	-0.5	-0.17	2.4	15	13.5	1.5	0.51
-2.8	1	0	1	0.34	2.6	6	13.5	-7.5	-2.57
-2.6	0	0.5	-0.5	-0.17	2.8	12	11	1	0.34
-2.4	0	0	0	0.00	3	16	20	-4	-1.37
-2.2	0	0.5	-0.5	-0.17	3.2	28	16	12	4.12
-2	1	0	1	0.34	3.4	16	19.5	-3.5	-1.20
-1.8	0	1	-1	-0.34	3.6	11	10.5	0.5	0.17
-1.6	1	0	1	0.34	3.8	5	9.5	-4.5	-1.54
-1.4	0	1	-1	-0.34	4	8	7	1	0.34
-1.2	1	1	0	0.00	4.2	9	6.5	2.5	0.86
-1	2	1	1	0.34	4.4	5	8	-3	-1.03
-0.8	1	1.5	-0.5	-0.17	4.6	7	5	2	0.69
-0.6	1	2	-1	-0.34	4.8	5	5	0	0.00
-0.4	3	0.5	2.5	0.86	5	3	4	-1	-0.34
-0.2	**0**	**5**	**-5**	**-1.72**	5.2	3	2	1	0.34
0	**7**	**3.5**	**3.5**	**1.20**	5.4	1	2	-1	-0.34
0.2	7	7.5	-0.5	-0.17	5.6	1	0.5	0.5	0.17
0.4	8	8.5	-0.5	-0.17	5.8	0	0.5	-0.5	-0.17
0.6	10	7	3	1.03	6	0	0	0	0.00
0.8	6	8	-2	-0.69	6.2	0	0	0	0.00
1	6	8.5	-2.5	-0.86	6.4	0	0	0	0.00
1.2	11	9.5	1.5	0.51	6.6	0	0	0	0.00
1.4	13	12.5	0.5	0.17	6.8	0	0	0	0.00

Panel C: The distribution of paper-managed GDP growth forecast error

FE	# of obs.	Expected # of obs.	Unexpected # of obs.	t-stat	FE	# of obs.	Expected # of obs.	Unexpected # of obs.	t-stat
-3.8	1	1	0	0.00	1.6	11	8.5	2.5	0.83
-3.6	1	1	0	0.00	1.8	6	8	-2	-0.66
-3.4	1	1	0	0.00	2	5	4	1	0.33
-3.2	1	2	-1	-0.33	2.2	2	4.5	-2.5	-0.83
-3	3	2	1	0.33	2.4	4	2.5	1.5	0.50
-2.8	3	2	1	0.33	2.6	3	3	0	0.00
-2.6	1	2.5	-1.5	-0.50	2.8	2	1.5	0.5	0.17
-2.4	2	3.5	-1.5	-0.50	3	0	1	-1	-0.33
-2.2	6	4	2	0.66	3.2	0	1	-1	-0.33
-2	6	8.5	-2.5	-0.83	3.4	2	0.5	1.5	0.50
-1.8	11	6	5	1.66	3.6	1	1.5	-0.5	-0.17
-1.6	6	11.5	-5.5	-1.82	3.8	1	1	0	0.00
-1.4	12	9	3	0.99	4	1	0.5	0.5	0.17
-1.2	12	14	-2	-0.66	4.2	0	1.5	-1.5	-0.50
-1	16	12	4	1.33	4.4	2	0.5	1.5	0.50
-0.8	12	17	-5	-1.66	4.6	1	1	0	0.00
-0.6	18	14.5	3.5	1.16	4.8	0	1	-1	-0.33
-0.4	17	15.5	1.5	0.50	5	1	0.5	0.5	0.17
-0.2	**13**	**21.5**	**-8.5**	**-2.82**	5.2	1	1	0	0.00
0	**26**	**15.5**	**10.5**	**3.48**	5.4	1	0.5	0.5	0.17
0.2	18	22	-4	-1.33	5.6	0	0.5	-0.5	-0.17
0.4	18	12.5	5.5	1.82	5.8	0	0	0	0.00
0.6	7	14.5	-7.5	-2.49	6	0	0	0	0.00
0.8	11	7.5	3.5	1.16	6.2	0	0.5	-0.5	-0.17
1	8	11	-3	-0.99	6.4	1	0	1	0.33
1.2	11	9.5	1.5	0.50	6.6	0	0.5	-0.5	-0.17
1.4	11	11	0	0.00	6.8	0	0	0	0.00

In Panel A, we decompose GDP growth rate into real-activity-based and paper-managed portions. *Agrowth* is actual GDP growth rate measured as the change in inflation-adjusted GDP from years t-1 to t scaled by GDP in year t-1; *ΔElectricity* is the change in electricity consumption from years t-1 to t scaled by GDP in year t-1; *ΔFreight* is the change in freight volume from years t-1 to t scaled by GDP in year t-1; *ΔBankLoan* is the change in inflation-adjusted bank loans from years t-1 to t scaled by GDP in year t-1. We run Equation (1) annually using cross-sectional data. The fitted value from Equation (1) is to proxy for real GDP growth rate and the residual is to proxy for the paper managed portion (paper-managed FE). Finally, we define real-activity-based FE as the fitted value from Equation (1) minus target GDP growth rate. In this way, we decompose GDP growth forecast error (FE) into two components: real-activity-based FE and paper-managed FE. Panel B reports the pooled cross-sectional distribution of real-activity-based FE and paper-managed FE. We tabulate the distribution from -4% to 7% with interval widths of 0.2%. Expected number of observations is the average number of observations in two adjacent intervals. Unexpected number of observations is the difference between reported number of observations minus expected number of observations. T-statistics are calculated as unexpected number of observations divided by its cross-sectional standard deviation. The sample includes 341 province-year observations at the province level from 2002 to 2012.