Anti-Corruption Reforms and Shareholder Valuations: Evidence from China

Chen Lin, Randall Morck, Bernard Yeung, Xiaofeng Zhao[1]

1st draft: July 2nd 2015

Current draft: Sept 23rd 2015

Abstract

Chinese share prices rose sharply on the Politburo's Dec. 4th 2012 announcement of its new Eight-point Regulation, outlining new Party policy against corruption. The announcement came surprisingly soon after a change in leadership and was surprisingly detailed and concrete. The positive reaction is significantly larger in provinces with more advanced market reforms. The reaction is uniformly positive for state-owned enterprises, but heterogeneous across non-SOEs. Among the latter, the reaction is more positive in regions with more complete market reforms and for firms with lower reported entertainment and travel costs (ETC), higher prior productivity, greater external financing needs, and greater growth potential. Negative price reactions are evident for non-SOE firms with substantial entertainment and travel costs located in regions with less complete market reforms. We posit that limiting corruption cuts the valuations of such non-SOEs by limiting their ability to "grease" bureaucratic gears. SOEs are well-connected in any case, and their ETC may be pure perks consumption or signs of self-dealing by the officials running them at the time. Reforms that limit this boost the SOEs' valuations and presumably increase state revenues from any subsequent sales of their shares. Overall, these results are consistent with investors believing the reforms to be meaningful, and to work to more the advantage of more productive firms with less past investment in connections located in more market-friendly regions.

JEL Classification: G34, G38, D7

Keywords: Anti-Corruption, Marketization, Bribery Intensity, Firm Value

[1] Chen Lin is at Hong Kong University, chenlin1@hku.hk chenlin1@hku.hk. Randall Morck is at the University of Alberta, rmorck@ualberta.ca, Bernard Yeung is at the National University of Singapore, byeung@nus.edu.sg, and Xiaofeng Zhao is at the Chinese University of Hong Kong, xiaofeng@baf.cuhk.edu.hk

1. Introduction

China, like many other middle income countries, has problems with corruption (Quah 2011). Corruption is thought to hamper economic growth by diverting capital, effort, and talent way from productivity boosting activities and towards political rent-seeking activities (Murphy *et al.* 1991, 1993; Shleifer & Vishny 1993; Fisman & Svensson 2007). However, in an economy plagued by bureaucratic hold-up problems, bribing officials can emerge as a second-best suboptimal response that "greases the gears" and 'gets things done" (McMillan & Woodruff 2002; Li *et al.* 2008; Harstad & Svensson 2011). Reforms that reduce corruption might thus hurt established firms with substantial investment in "connections" in economies where those connections were valuable (Fisman 2001).

On Dec 4th 2012, less than three weeks after assuming power, President Xi Jinping's administration announced a set of major Communist Party policy reforms, called the Eight-point Regulation, explicitly designed to cut back on corruption. A market portfolio of all firms listed on China's two stock exchanges, the Shanghai and Shenzhen Stock Exchanges, has positive significant cumulative returns of +2.6% or +3.3% over 3-day or 5-day windows, respectively, centered on Dec 4th 2012. These represent economically significant additions of ¥600 billion or ¥760 billion, respectively, to the theoretical total market capitalizations of all listed firms. These findings are consistent with equity investors viewing the anti-corruption reforms as both meaningful and beneficial on net to firm valuations.

The National Economic Research Institute (NERI) provides a province-level *marketization* index gauging the extent of pro-market reforms (Fan *et al.* 2011). Using top and bottom terciles to distinguish relatively complete and incomplete marketization, we find the portfolio of firms located in high marketization provinces to have positive and significant returns

of 4.1% or 4.8% in three or five day windows, respectively, around the Eight-point Regulation announcement date. In contrast, the portfolio of firms in low marketization provinces has insignificant (albeit positive) returns in both windows. These results are consistent with investors expecting the anti-corruption reforms to boost the prospects of firms in more marketized regions, but not those of firms in less marketized regions.

Three and five-day event window cumulative returns of portfolios of the stocks of firms based in each province are statistically and economically significantly positively correlated with past provincial GDP growth, education expenditure, and measures of the extent of market reforms in that province.

We partition firms along two other dimensions. First, a firm's past entertainment and travel costs as a fraction of sales (ETC) being in the top versus bottom tercile of its distribution across all firms; ETC might be a proxy for either past investment in relations or its insiders' on-the-job consumption. Second, a firm's status as a state-owned enterprise (SOE) or non-SOE provides information about its likely political connections. The only portfolio of non-SOE firms with a positive significant event window return is non-SOE firms in lowest tercile by *ETC* and the highest tercile by province marketization. Other non-SOE stocks do not react significantly to the reforms announcement. These results are consistent with prior market reforms and limited past investment in connections being necessary conditions for the anti-corruption reforms to boost firm valuations. The lack of significance for other non-SOE firms might reflect a negative impact from the reduced value of their existing connections in business environments where such connections remain important cancelling out any a positive impact associated with a general easing of corruption costs.

The cumulative returns of all portfolios of SOE firms are significantly positive, including

the portfolios of SOEs in high and low marketization provinces and the portfolios of SOEs with high and low past *ETC* spending. This uniformity is consistent with their *ETC* spending mainly benefiting the officials running them, not the SOE or its public shareholders. This is plausible because SOEs enjoy relatively free access to pivotal regulators or other officials regardless of their ETC spending, and because officials are assigned to run a specific SOE for only limited terms; McGregor (2012) finds that the officials running important SOEs are rotated to new positions every three to four years. Such officials may well view their SOEs' *ETC* budgets primarily as means for advancing their subsequent careers, rather than the prospects of whatever SOE they happen to be running at the time.

Firm-level regressions affirm higher cumulative returns for non-SOE firms with higher past productivity, growth potential, and external financing needs and located in more marketized regions. Also, cumulative returns are significantly negatively correlated with past ETC spending only for non-SOEs in low marketization provinces. These results are consistent with investors expecting the anti-corruption reforms to hurt non-SOEs located in regions where corruption helps grease bureaucratic wheels, but to boost the valuations of non-SOEs located in regions where market forces are a more important in determining success.

The signs of the regression point estimates for the SOE subsample mimic those for non-SOEs, but most are insignificant. Event window returns for SOEs are significantly positively related to *ETC* only in high marketization provinces. Event window returns for SOEs are higher if the divergence between their controlling shareholders' voting and ownership rights is larger; whereas no such link is evident for non-SOEs. The positive mean event window return for SOEs combined with the general absence of significant coefficients in these regressions is consistent with the reforms boosting SOEs' valuations relatively uniformly, without regard for their access

to financing, growth opportunities, etc. The link between SOE event window returns and the controlling shareholder's voting power-to-ownership ratio is consistent with corruption in SOEs primarily benefiting the officials that run them, rather than benefiting the SOE. Expectedly, the beneficial effect of anti-corruption for general shareholders in mitigating managerial self-serving behavior is more pronounced among state owned firms with greater dispersion in controlling shareholders' control and equity rights.

2. Background and Event Description

2.1 Corruption in China

Dense networks of interpersonal obligations or *guanxi* (关系, lit. "connections") are a historically and culturally deep-rooted part of business in China (Gold et al. 2002). The term does not connote venality; developing connections is a normal and respectable part of doing business, indeed of life. However, Chinese recognize that *guanxi* can become excessive, and refer to this as *guanxixue* (关系学, lit. "artful connections"). That *guanxi* has passed this point, and become socially corrosive corruption, is an increasing concern in China in recent years.

Official corruption is of special importance in China because its ***market socialism system*** depends critically on virtuous government officials. The constitution of the People's Republic of China enshrines a Leading Role for the Communist Party of China. This gives Party policies constitutional precedence over all laws and regulations, and empowers Party officials to intervene in any judicial and regulatory decisions (Chen 2003; Jones 2003). The vast discretionary powers officials wield can easily make establishing ties of *guanxixue* with them a very high return investment to any non-SOE business enterprises (Macgregor 2002).

In this environment, an innocuous or even laudatory part of Chinese culture becomes an avenue for political rent-seeking, which Krueger (1974) models as firms investing in influencing government officials with the expectation of profiting from regulatory favors, tax breaks, subsidies, and the like. When political rent-seeking becomes more profitable than investing in research and development, new plant and equipment, worker training, or other more conventional forms of capital spending, economy-level growth lags even as corporate profits soar (Murphy *et al.* 1991, 1993; Shleifer & Vishny 1993). Equilibria in which political rent-seeking crowds out investment in productivity plausibly explains the middle income trap in which many partially developed economies stagnate for decades (Morck, Wolfenzon and Yeung 2005). Avoiding this trap is an increasingly salient concern in China (Hui 2014).

A sense of obligation can be implanted by providing a government official with extravagantly expensive wining and dining, entertainment, travel, gifts, or other *de facto* bribes. Business leaders seeking official permissions, regulatory forbearances, or influence over other government decisions therefore invest in lavishly "entertaining" pivotal government or party officials. These practices threaten the legitimacy of the Communist Party of China (CPC) because the lifestyle such officials consequently enjoy jars with socialist egalitarianism and because the resultant resource misallocation threatens to slow the rapid growth that sustains the regime's genuine popularity. Cross-country evidence linking perceptions of corruption to slow economic growth (Mauro (1995) reinforces such concerns.

Previous anti-corruption drives in China have been cast as disguised inter-factional purges, in which loyalty to the wrong faction is a necessary condition for corruption leading to prosecution and disgrace. An often-cited example is Bo Xilai, scion of a prominent Communist family, who was expelled from the National Legislature by the Standing Committee of the 11th

National People's Congress on Oct 26th 2012 for (among other things) being accused by his disgraced Police Chief, Wang Lijun, of corruption in early Feb 2012 in the foreign media (Voice of America, 9 Feb 2012).[2] Bo belonged to a faction associated with the now disgraced Zhou Yongkang, who sat on the 17th Politburo Standing Committee (PSC), China's highest decision-making body, and served as Secretary of the Central Political and Legal Affairs Commission (政法委, *zhengfawei*) between 2007 and 2012. Bo may well have been guilty of corruption, but skeptics saw ambition and disloyalty as his real crimes.

Despite these uncertainties, China's current high-profile policy reforms may well be genuine. First, official corruption has become a genuinely serious public concern. Figure 1 summarizes a 2013 PEW Research Center National Survey of Chinese respondents' top concerns: Corrupt officials come in second, behind only inflation, and are ahead of inequality, pollution, food safety, and old age security. Second, all mainland Chinese school children learn how corruption weakened Chiang Kaishek's Kuomintang regime and created popular support for Mao's communist movement. Third, China's increasingly well-educated and cosmopolitan population appears to accept limitations on individual freedoms in return for rapid growth. If corruption threatens to slow that growth, the Party risks being perceived as failing to uphold its half of the bargain.

2.2 The Eight-point Regulation on Dec 4 2012

On Dec 4th 2012, the Political Bureau of the Central Committee of the Communist Party of China issued a new policy document entitled the Eight-point Regulation (八项规定). Its eight

[2] Bo Xilai scandal: Timeline, BBC News, Nov 11, 2013, Available at: http://www.bbc.com/news/world-asia-china-17673505

points are each an explicit instruction about how officials are expected to behave going forward. The eight points are:[3]

1. Leaders must keep in close contact with the grassroots, but without inspection tours or formality.
2. Meetings and major events are to be strictly regulated and efficiently arranged; empty grand gestures are to be avoided.
3. The issuance of official documents must be reduced
4. Overseas official visits and related formalities are to be restricted
5. Leaders traveling by car must avoid disrupting traffic
6. Media stories about official events are to be limited to events with real news value.
7. Government leaders should not publish self-authored works or congratulatory letters.
8. Leaders must practice thrift and strictly obey regulations regarding accommodation and cars.

Although skeptics saw the Eight-point Regulation as cover for internal power struggles (Broadhurst & Wang 2014), others saw a genuine anti-corruption campaign unfolding (Yuen 2014). This is because the Eight-point Regulation announcement was surprising in several ways.

First, the announcement came only 19 days into the administration of president Xi Jinping. This timing was unusual because it preceded the Third Plenum, the traditional forum for announcing policy changes. Second, the new policies were unusually concretely detailed and bereft of the usual sloganeering. While it does contain some of the expected slogans, the document sets forth specific behavior guidelines. Moreover, almost immediately after the initial announcement, individual provinces and province-level municipalities rolled out even more

[3] For details, see http://cpcchina.chinadaily.com.cn/2012-12/05/content_15991171.htm.

detailed rules.[4] For example, Tibet autonomous region released its own Ten Rules on December 5, detailing how officials should reduce waste and extravagance and simplify official functions. Third, the announcement came amid official warnings of unusual clarity. For example, Premier Li Keqiang promised "*zero tolerance to corrupt officials"* and *"to seriously punish any breach of the eight-point anti-bureaucracy and extravagance-busting guidelines as announced by the central authorities*".

The Eight-point Regulation was the only major news story on or around Dec. 4th 2012. To verify this, we use the news function in the WIND Information Database, which contains a comprehensive collection of news from different sources, such as major financial media in China, the CSRC, People's Bank of China, Ministry of Finance, and other government organizations, and in different areas, such as finance, business, government policy, law and regulations. We supplement this by searching major news media and internet records. These exercises confirm that this is the only major event in the window period. The policy gained immediate and widespread media prominence, as evident in Figure 2, which graphs internet searches using the terms "Eight-Point Regulation (八项规定)" and "anti-corruption (反腐)" via Baidu, the Chinese analog of Google. The figure also shows that interest in anti-corruption surged shortly after the event date. These patterns suggest that the announcement was a major news story with lasting impact.

The Party's subsequent actions also suggest that the new policy had teeth. According to the Central Commission for Discipline and Inspection, the Party's internal watchdog, in 2013 some 182,000 officials were punished for corruption and abuse of power nationwide and some 30,420 CPC members were punished specifically for violating the Eight-point Regulation; with

[4] See, for example, "Xi's plan to cut extravagance put into effect," South China Morning Post, Jan 4 2013.

at least 227 of these being provincial-level cadres or higher. Other statistics reinforce the veracity of the Party's commitment. Sales of cigarettes, alcohol, shark fins, edible swallows, Gucci bags and Ferraris all dropped abruptly in 2013.[5] By 2014, a series of heavyweight cadres stood convicted of corruption. These included former politburo member Zhou Yongkang, former Central Military Commission Vice-Chairman General Xu Caihou, People's Liberation Army General Logistics Department Deputy Leader Gu Junshan, and even retired President Hu Jintao's personal secretary Ling Jihua.[6]

At about the same time, the information environment in China's stock markets improved substantially relative to the 1990s. Carpenter *et al.* (2014) report that: "*since the reforms of the last decade, China's stock market has become as informative about future corporate profits as in the US.*" In the period following the reforms, the bubble-prone Chinese equity markets were relatively calm compared to both prior years and the high volatility episodes of 2015.[7]

The above discussion validates the feasibility of an event study of the Dec. 4th 2012 announcement. The event date corresponds to the release of potentially economically important and substantially unexpected news confounded by no other major news. Stock returns around the event therefore plausibly reflect investors' initial judgments as to whether the anti-corruption policy disguised a power struggle or constituted a substantive reform and, if it is genuine, as to

[5] "The ripple effects have reached all corners of the economy. First-class airline ticket sales have dropped by a tenth in recent months, and luxury goods dealers have reported a 20 percent to 30 percent decrease in sales..... Shen Danyang, a Ministry of Commerce spokesman …… he noted that sales of shark fins had dropped more than 70 percent, and sales of edible swallow nests, the main ingredient of a $100-a-bowl delicacy, were down 40 percent." – Elite in China Face Austerity Under Xi's Rule, New York Times, Mar 27, 2013 (by Andrew Jacobs) , Available at: http://www.nytimes.com/2013/03/28/world/asia/xi-jinping-imposes-austerity-measures-on-chinas-elite.html?_r=0

[6] Shannon Tiezzi, Fomer Hu Jintao Aide Falls to President Xi's Anti-Corruption Drive, Dec 23, 2014, Available at: http://thediplomat.com/2014/12/fomer-hu-jintao-aide-falls-to-president-xis-anti-corruption-drive / and Keith Zhai, Is Ling Jihua target of graft probe? Brother-in-law of the ex-Hu Jintao aide detained, South China Morning Post, Jul 22, 2014, Available at: http://www.scmp.com/news/china/article/1557124/ling-jihua-target-graft-probe-brother-law-ex-hu-jintao-aide-detained

[7] See, e.g., "China's stock market: A crazy casino," Economist, May 26th 2015

its differential impact across the economy.

3. Methodology and Data

3.1 Event Study Methodology

Traditional event studies look for common patterns in the reactions of many stocks, each to its own news event on its own event date. Cross-sectional analysis focuses on abnormal returns to remove the influence of news with market-wide implications because the focus is on identifying common patterns in the reactions of the individual stocks to new firm-specific information – CEO sudden deaths, merger bids, equity issue announcements, or other such news.

The current exercise is somewhat different. The Eight-point Regulation was designed to affect the entire economy, not specific firms, and to affect them all at once. This motivates our first examining the market portfolio's raw return on and around the event date, instead of subtracting it to form abnormal returns.

Second, we expect different sorts of firms in different parts of the country to be differently affected by the Eight-point Regulation. We investigate this by comparing the returns of portfolios of firms based in different provinces or with different characteristics. These exercises use the tests Schwert (1982) recommends for event studies of regulatory changes.

Finally, we explore heterogeneity in the reactions of different sorts of firms to the announcement by running regressions explaining either firm-level cumulative raw returns or firm-level cumulative abnormal returns with firm characteristics. These regressions assume a meaningful degree of independence in the idiosyncratic components of individual firms' reactions to the Eight-point Regulation. To mitigate overstating statistical significance, we

cluster standard errors both by industry and by province.

3.2 Data and Variables

Our sample is all firms listed on China's two stock exchanges – Shanghai Stock Exchange and Shenzhen Stock Exchange. Stock returns and financial data are from the CSMAR database. We drop all firms with material corporate events, such as stock or cash dividends, stock splits or reverse-splits, new share issuances, or M&A announcements, in the five-day event window surrounding the Dec. 4th 2012 event date.

In looking at how different stocks might react differently to the Eight Point Regulation announcement, we need to be conscious of each firm's likely past investment in political connections, the institutional environment in which it operates, and whether or not it is classified as a state-owned enterprise.

First, different firms may have invested different amounts in connections. A binding anti-corruption reform that reduces the importance of such connections might adversely affect firms with substantial such investments, even as it lifts the burden of corruption from the economy as a whole. To gauge a firm's investment in connections, we follow Cai *et al.* (2011) and use firm-level "*entertainment & travel costs*" from the WIND database.[8] We hasten to point out that the variable includes executives spending on their own entertainment, not just building connections. Figure 3 graphs mean entertainment and travel costs, scaled by total sales, (*ETC*) in 2011 for listed firms located in each province. Figure 4 shows how ETC dropped abruptly for both Non-

[8] Cai et al. argue that *ETC* is an accounting category covering reimbursements for wining, dining, gifts, karaoke, and travel, all of which firms often use as means of doing favors for government officials, who then feel obliged to return the favors. While *ETC* might serve as an effective proxy for bribery, other forms are obviously possible. Morck and Nakamura (1999) use Japanese firms' *entertainment spending* analogously, though their focus is connections with bankers rather than government officials.

SOEs and SOEs after the Eight-point Regulation announcement of Dec. 2012.

Second, market reforms have proceeded to very different stages in different parts of China, and where market forces matter less, officials in command and control hierarchies plausibly matter more. Where officials matter more, investing in connections with them is likely more profitable. We therefore keep track of each firm's location, and the extent of market reforms in that location.

To measure the stage of market reforms, we use the province-level *marketization index* produced by the National Economic Research Institute (NERI).[9] Province-level municipalities – Beijing, Shanghai, Tianjin and Chongqing – are counted as provinces in these data. (Fan *et al.* 2011). The marketization index, based on official statistics and enterprise and household surveys, ranges from zero to ten in the base year 2001, with higher scores indicating more progress towards a market economy, and can exceed ten or fall below zero in subsequent years to reflect a province's progress or retrogression over time.

We also make use various NERI subindexes, each based on a subset of the data used in generating the overall marketization index. The *resource allocation* subindex measures the extent to which officials, rather than markets, allocate resources and the government's budget as a fraction of GDP, withsmaller values indicating a smaller role for market forces. The *financial sector marketization* subindex gauges non-state-owned enterprises' access to capital using deposits in non-state-owned enterprise financial institutions and bank lending to non-state-owned enterprises. The *legal environment* subindex uses survey data to assess the legal environment each province provides for businesses. This considers factors such as provincial courts'

[9] National Economic Research Institute (NERI), as one of the first non-government and non-profit research organizations in China, was founded in 1996 and located in Beijing. NERI focuses on the study about economic theory and empirical policy, and its "Marketization Index" has been widely used in existing studies (see, Du *et al.* 2008; Wang *et al.* 2008; Firth *et al.* 2009; Li *et al.* 2009; Fan *et al.* 2013).

efficiency in resolving legal disputes or protecting intellectual property rights. As documented by Fisman and Miguel (2007), the legal environment is an important determinant of corruption.

Table I reports the overall marketization index and sub-indexes for each region (province or province-level municipality in 2011. The five most "marketized" regions are Zhejiang, Jiangsu, Shanghai, Guangdong, and Beijing; the least are Tibet, Qinghai, Gansu, Xinjiang and Guizhou.

Third, corruption may well play out differently in state-owned enterprises (SOEs) and non-SOEs. Unless they are Party members, non-SOE executives lavishly entertaining government officials are not violating the Eight-point Regulation. However, government officials so entertained are violating it. SOE executives are also violating the Eight-point Regulation if they spend their firms' money lavishly entertaining anyone – government officials, themselves, their families, or others.

Ownership data are from the *China Listed Firm's Shareholders Research Database* (GTA_HLD), which provides details about the large shareholders of all firms listed in Shanghai and Shenzhen from 2003 on. These include information about each firm's large direct shareholders, their ultimate controlling shareholders, and the equity control chains that connect them to the firm. Following CSMAR (China Stock Market and Accounting Research) and guidelines from the CSRC (China Securities Regulatory Commission) issued on Dec 16 1997, we adopt a 30% threshold to trace though the ownership chain.[10] We make an indicator variable that flags state-owned enterprises (SOEs), by which we mean control of a firm by the state or state organs at the 30% threshold, either directly or indirectly via equity control chains. We

[10] The guidelines state that a controlling owner is one who can exercise or control more than 30% of voting rights independently or by acting in concert with others, or who holds over 30% of shares independently or in concert with others.

designate all other firms as non-SOEs. In most cases, the state organ is a State-owned Assets Supervision and Administration Commissions (SASACs) or analogous body.

Our approach likely understates state control, as many non-SOEs are indirectly state-controlled through ostensibly non-SOE holding companies run by government officials. Moreover, all firms of any note have Party Committees and Party Secretaries to assist their boards and CEOs. Nonetheless, the SOE designation plausibly reflects both a more direct state role in governance and preferential treatment by governments and major banks, all of which are SOEs. These advantages can let SOEs crowd out other firms in competitions for resources and opportunities (Park & Luo 2001; Lin *et al.* 2003), despite the general perception that SOEs are less efficient (Sun & Tong 2003; Wei *et al.* 2005). [11]

To assess controlling shareholders' incentives, we take from the GTA_HLD database the ratio of the ultimate controlling shareholder's voting rights over its cash-flow rights (*C/O divergence*) to measure possible divergence of interest between controlling shareholder and public shareholders. The larger this ratio, the less costly the controlling shareholder finds on-the-job perks consumption, self-dealing, or other expenditures of the firm's money on herself, her family, or her friends and associates (Shleifer & Vishny 1997; Lin *et al.* 2011).

4. Empirical Findings

4.1. Reaction of the Market

[11] SOEs reportedly have advantages in gaining lucrative government projects and regulatory permission to operate in certain sectors – notably natural resources, civil aviation, real estate, and finance (Chen *et al.* 2011) and in accessing capital via public equity offerings and bank loans (Firth *et al.* 2008; Hung *et al.* 2012; Chen *et al.* 2013; Piotroski & Zhang 2014). Park and Luo (2001) conclude that "It is not surprising to find that private firms were often left out of business opportunities due to a lack of materials even if their products were popular in the market."

Table II summarizes movement in the market in two windows: a three-day window from the trading day before the Dec. 4th 2012 announcement date to the trading day after and a five-day window beginning two trading days before the announcement date and ending two trading days after it. The all-China market portfolio gains 2.6% in the three-day window and 3.3% in the five-day window. In this, and the other portfolio significance tests to follow, the portfolio's mean return and its standard deviation, estimated using data from 210 to 11 trading days before the event date (-211 to -11), are used to assess statistical significance. The market gains in both windows are highly significantly different from the baseline. Also, both are economically significant, representing 600 and 760 billion RMB increases, respectively. Table II is thus consistent with investors viewing the Eight-point Regulation as important and, on the net, positive economic news.

As a robustness check, the table also presents the fraction of firms gaining versus losing value in each window. Only 25.9% decline in the 3-days window and only 23.9% do so in the 5-days window. As yet another robustness check, we repeat the exercise in Table II using H-shares, Chinese mainland stocks listed in Hong Kong. Precisely the same pattern (not shown) ensures.

We also examine the returns of portfolio of firms domiciled in provinces at different stages of market reforms. Table II shows that the three-day window cumulative return on the portfolio of firms domiciled in the highest-tercile marketization provinces is +4.1% and statistically significant, and that only 22% of its component stocks register negative cumulative returns. In the 5-days window, the same portfolio rises by a statistically significant 4.8%, with only 21% of its component stocks declining. In stark contrast, the cumulative three-day window return on the portfolio of firms domiciled in the lowest-tercile marketization provinces is a statistically insignificant +0.9%, and 36% of its component stocks show a negative cumulative

return. In the five-day window, this portfolio registers an insignificant +1.6% rise, and 35% of its component stocks fall in value. These results are consistent with investors expecting firms located in provinces where marketization is more complete to gain from anti-corruption, but expecting no net gains for firms in provinces where market forces are weak.

As a robustness check, we repeat the above exercises using the median marketization as a breakpoint. The results are similar: the portfolio of firms domiciled in above-median marketization provinces rises in value, the counter-part in below-median marketization provinces does not. The difference between them is smaller than that between the top and bottom terciles.

4.2 Province-Level Portfolio Cumulative Returns

To explore the relationship between stock price reaction and location development in greater details, we form portfolios of firms domiciled in each province and regress their event window cumulative returns on province characteristics including *GDP growth*, *Education expenditure/GDP*, *Marketization* and *Log(GDP/capita)*. *GDP growth* proxies for growth trajectory; *Education expenditure/GDP* capture human capital stock; and *Marketization* and *Log(GDP/capita)* capture the stage of market reforms and economic development. Appendix Table I reports summary statistics for those province-level variables. Figure 5 tabulates three-day cumulative returns of each province portfolio. These range from the lowest, 0.85% for Ningxia, to the highest, 2.95% for Tianjin, and align roughly inversely with common perception of the provinces' levels of development.

Table III reports the regression results. In column 1, where the dependent variable is the three-day cumulative returns, *GDP growth* and *education expenditure/GDP* attract positive

coefficients significant at 5%. The coefficient on *marketization* is 0.193, and significant at 1%. Column 2 replaces the overall marketization index with three sub-indices, *resource allocation, financial sector marketization*, and *legal environment*. The coefficients on all three subindexes are significantly positive.

The coefficients are also economically significant. *GDP growth, education expenditure/GDP, resource allocation, financial sector marketization* and *legal environment* all being one standard deviation above their means explains about 2.5% of the 3-day cumulative return. This is 96% of the all-China market return of 2.6% in the same window. Columns 3 and 4 repeat these exercises using each province-level portfolio's five-day cumulative return as the dependent variable. Virtually identical results ensue.

We also construct cumulative abnormal returns for each provincial portfolio. We first compute firm-level abnormal returns using the market model, with parameters estimated over the period from day -210 to -11 (day 0 is the event day) using the value-weighted mean return across all stocks as the market return. We then obtain a provincial portfolio's abnormal return by averaging its component firms' abnormal returns using firm-market values as weights. Table IV reports regressions of these provincial portfolios' cumulative abnormal returns on provincial characteristics as in Table III. The results are almost identical to those using raw cumulative returns: the coefficients on *GDP growth* and *Education/GDP* are significantly positive in both event windows; the coefficients of marketization and the three sub-indices are all positive and insignificant, save that the coefficient for financial sector marketization becomes insignificant in the five day window.

Overall, these findings are consistent with reductions in corruption being more advantageous to firms in provinces with faster GDP growth, more educated people, and more

complete market reforms. These characteristics plausibly identify provinces where firms can take advantage of productivity-enhancing growth opportunities more readily once currying favor with officials is less necessary. In contrast, restricting corruption appears less helpful to firms located in regions where market forces are weak and the most lucrative growth opportunities lie in political rent-seeking, or where corrupt politicians serve to "grease" bureaucratic gears to help get things done.

4.3 Market Development, State Control, and Prior Investment in Connections

Table V forms portfolios by partitioning firms along three dimensions: whether the firm is an SOE or a non-SOE, whether it is located in a top or bottom tercile marketization province, and whether its past investment in connections is high or low. The last is captured by whether its entertainment and travel cost over total sales (*ETC*) is in the top or bottom tercile of the full sample of firms.

Table V shows the portfolio of all non-SOE firms with positive but insignificant three- and five-day cumulative returns. In contrast, the portfolio of all SOEs gains +4.1% and +4.7% in the three- and five-day windows, respectively; and both gains are highly significant. The two columns of returns in the table further show uniformly higher stock price reactions to the Eight-point Policy announcement for sub-portfolios of SOEs than for analogous sub-portfolios of non-SOEs across all the other dimensions of comparison in the event windows. The portfolios of SOEs domiciled in low and high marketization provinces, the portfolios of SOEs with top and bottom tercile prior ETC spending, and the portfolios of SOEs in all combinations of high and low marketization provinces and past ETC spending all react more positively than their analogous portfolios of non-SOEs.

In contrast, the portfolios of non-SOE firms in low marketization provinces are insignificant: -0.08% in the 3-days window and +1.35% in a 5-days window. However, portfolios of non-SOE firms in high marketization regions show significant valuation gains: +1.83% in the 3-days window and +2.92% in the 5-days window.

The table further shows that this gain is primarily due to large gains in the prices of non-SOEs with low past *ETC* located in high marketization regions. In contrast, the highest proportion of declines in any portfolios is in that containing high past ETC non-SOEs located in low marketization provinces. The returns of SOE portfolios, though all positive and significant, echo this ordering. The portfolio of SOEs with low past ETC located in high marketization regions has the highest event window returns; the portfolio of high past ETC SOEs located in low marketization provinces has the lowest; and those of low past ETC SOEs in low marketization provinces and of high past ETC SOEs in high marketization provinces have intermediate positive returns.

4.4 Firm-level Regressions

Our final tests are OLS regressions explaining firm level cumulative returns with firm-level ETC and *C/O divergence,* the ultimate controlling shareholder's voting rights over cash-flow rights. These regressions also include the province-level business environment variables used above – provincial *GDP growth*, *log(GPD/capita)*, *education expenditure/GDP*, and the *marketization* index or select subindexes – and control for firm size, *Log(total assets)*, leverage, *Liabilities/total assets*, and research and development spending, *R&D/total sales*. The regressions also include industry fixed effects to remove common reactions across industries and cluster residuals both by industry and by province. All variables are 2011 data. Appendix II reports their means and

standard deviations in the full sample and in sub-samples of SOEs and non-SOEs.

Given the very different patterns of results for portfolios of SOEs and non-SOEs revealed in Table V, and the well-known intrinsic differences between these two types of firms, we run separate regressions for each category of firm. Table VI reports the results, with the left-hand side variables in Panels A and B, respectively, the 3-days and 5-days firm-level raw returns. Table VII repeats this exercise with cumulative abnormal returns on the left hand side. The results are very similar, so we focus on Panel A of Table VI.

First, the panel reveals that the marketization of a firm's province correlates with a more positive stock reaction to the Eight-point Regulation for both SOEs and non-SOEs although not in the SOE regression which includes all variable (Col 14). In contrast, the other business environment factors – education spending/GPP and GDP growth – matter only for non-SOEs. The coefficient on marketization is also larger for non-SOEs. Pooling the data and running a regression containing an SOE dummy and interactions reveals the difference in magnitude to be statistically significant. Thus, if anti-corruption gives firms more open access to opportunities, the improvement matters much more for non-SOEs.

The extent of marketization reforms in a firm's business environment might matter more if the firm has higher productivity, greater growth potential, or more need for external financing. Thus, we introduce as explanatory variables interactions of province-level marketization with firm-level total factor productivity, external financing dependence and growth potential. Total factor productivity is estimated as in Levinsohn and Petrin (2003). External finance dependence is the industry-median of capital expenditures minus cash flow from operations over capital expenditures (Rajan & Zingales 1998). Growth opportunities are measured by industry-median Tobin's Q. The regressions include the main effect of total factor productivity; those of external

finance dependence and growth opportunity are subsumed by the industry fixed-effects.

Here too, the panel reveals a more complex pattern for non-SOE stocks than for SOEs. Using the non-SOE subsample, regressions 2 to 4 and 7 reveal positive significant coefficients on the interactions of marketization with productivity, external finance dependence and growth potential. The main-effect for productivity is also positive and significant. Regressions 9 to 11 and 14 present analogous regressions using the SOE subsample, in which the interactions of marketization with productivity and external financing and the main-effects of both productivity and the marketization index are all insignificant. Thus, non-SOEs with higher productivity, greater external financing needs, and better growth opportunities have higher cumulative returns around the announcement date, particularly in more marketized regions. In contrast, SOEs announcement window returns exhibit none of this heterogeneity.

Second, the panel shows that higher past ETC spending presages a more negative event window return for non-SOEs, but not for SOEs. This is consistent with non-SOEs' ETC being grease for bureaucratic gears, but SOEs' ETC proxies for something different, perhaps perks consumption or self-dealing.

We can use Regressions 5 and 7, where *Marketization*ETC* attracts a significantly positive coefficient in the non-SOE subsample, to find inflection points in the data. Using the province-level marketization index in Table I (Col. 1), the coefficients in Regression 5 of Panel A in Table VI imply that higher *ETC* heralds a negative event window return for non-SOEs in provinces at or below the marketization stage of Hebei, ranked 17th among the 31 provinces. The coefficients in Column 7 put the threshold at the marketization stage of Hainan, ranked 19th of 31. These calculations affirm that corruption might indeed help grease bureaucratic gears, and that reducing corruption can reduce the valuations of non-SOEs with substantial investment in

connections if they operate in less developed provinces. Yet, in more developed regions, non-SOEs' past entertainment spending is more likely for self-interest and harmful to shareholders.

In addition, Regressions 6 and 7, also based on the non-SOE subsample, attach positive significant coefficients to *ETC*C/O divergence*. If a firm's controlling shareholders wields voting power more disproportionate to its actual equity ownership, restrictions on wining and dining boost the share price more. One interpretation of this is that such controlling shareholders might use their ETC budgets mainly to increase their personal utility; another is that they use the ETC budget of a firm they control, but do not substantially own, to pay for connections that benefit other firms they control and do substantially own (Morck and Yeung 2004).

For SOEs, the cross term between marketization and *ETC* (Cols. 12 and 14) is also positive and significant. One plausible interpretation is that *ETC* of SOEs domiciled in more marketized provinces is mainly managerial on-the-job consumption, with scant value to shareholders in terms of greased gears; or worse, *ETC* in such case proxies for self-dealing which harms shareholder wealth. In the same vein, higher *C/O divergence* might indicate more tunneling out of the SOE by the officials controlling it, so that *C/O divergence* likewise attracts a positive and significant coefficient in the SOE sample. These observations are consistent with the Eight-point Regulation unreservedly boosting share valuations of SOEs by mitigating managerial on-the-job consumption and self-dealing; but either raising or lowering the valuations of non-SOEs depending on whether their ETC spending is primarily manager utility enhancing or bureaucratic gear greasing.

4.5. Change in Firm Performance

Finally, we verify our results by examining how various firm-performance measures change around the introduction of the Eight-point Regulation. One such measure is the change in firm valuation, measured as its average daily M/B over the year after the passage of the regulation minus its average daily M/B over the year before the passage of the regulation. This is essentially the change in its Tobin's Q, and we denote this ΔQ. We also use the firm's return on assets in 2013 minus its return on assets in 2012, ΔROA, and its sales growth in 2013 minus its sales growth in 2012, ΔSG, to measure change in operating performance. The variables used to construct ΔROA and ΔSG are adjusted for inflation using the provincial level CPI index with 2010 as the base year and collected from the PRC National Bureau of statistics. We then run regressions with ΔQ, ΔROA, and ΔSG as left-hand side variables and with the same list of right-hand variables used in the previous two tables.

We interpret these regressions cautiously. Many economic implications of an effective anti-corruption policy may well not appear the next year, but might nonetheless become evident over the longer term. Furthermore, while the "Eight-point Regulation" event was the only news event of importance in its surrounding five-day window, it was obviously not the only important event in the two surrounding years. Other developments doubtless add noise to the year-on-year changes. These caveats in place, we turn to the results in Table VIII.

In Panel A, the dependent variable is ΔQ. In the non-SOE sample, regressions explaining ΔQ mimic those explaining event window returns and abnormal returns in Table VI and VII. Specifically, firms domiciled in more marketized regions with higher education expenditure and past growth have more positive changes in *Q*. As well, positive ΔQs are most evident among firms with high prior productivity, more external financial needs and domiciled in more marketized region. In addition, *ETC* spending is significantly negatively related with ΔQ only in low marketization regions. Moreover, the interaction term between *ETC* and the divergence between the dominant owner's control and ownership rights is positive and significant, again suggesting that prior to the reforms, *ETC* spending did not augment the market valuations of

firms whose dominant owner's interest are not well-aligned with their public shareholders' interests.

In the SOE sample, the coefficient on *ETC* is significantly positive in Col. 3, and marketization interacted with ETC is also positive and significant. These results echo the previous finding that *ETC* in SOEs might proxy for managerial perks consumption, or self-dealing, so that the crackdown on such activities boosts shareholder valuations. Moreover, and in contrast to the corresponding regression above, more productive SOEs in more marketized regions exhibits positive ΔQs. Possibly, as the anti-corruption campaign gained force, more market-based resource allocation even boosted SOE valuations over this somewhat longer horizon.

Panels B and C, whose dependent variables are *ΔROA* and *ΔSG*, respectively, exhibit a similar pattern of results. However, these regressions for the SOE and non-SOE samples show notably more similar patterns. In particular, SOEs with higher productivity, in industries with faster growth, and domiciled in regions with greater market development exhibit accelerated sales growth and, to a lesser extent, increased ROA. Overall, the results are consistent with the intensifying anti-corruption campaign inducing more market-based resource allocation, even among SOEs.

5. Conclusion

Chinese markets rose significantly and broadly on the Communist Party's announcement of its Eight-point Reforms, a package of new party policies explicitly designed to reduce corruption. The positive market reaction suggests that shareholders viewed the reforms as genuine, and not merely propaganda or cover for inter-factional purges, and as beneficial to public investors on net. The positive reaction was evident across many different sorts of firms, suggesting that

shareholders viewed these benefits as widely distributed, rather than concentrated on specific sorts of firms.

A positive stock price reaction is not a priori obvious. In corruption-ridden economies, firms can earn high returns by judiciously investing in "connections" with officials who can remove bureaucratic obstructions, open paths around regulatory barriers, and otherwise "grease the wheels" of an otherwise seized-up institutional environment. In such an environment, reforms that block firms' investment in "connections" can compromise their economic prospects and reduce their valuations. Consistent with this view, the reforms are significantly less value enhancing in regions with less progress towards market development, less human capital and slower growth.

Still, the stocks on non-SOEs located in regions where market forces are relatively unfettered or with less past investment in connections rise on news of the reforms. In particular, the share value increase is strongly linked to these firms' productivity, growth opportunity and external finance dependence as well as to the regions' human capital and past growth. This heterogeneity across regions and across firms suggests that anti-corruption reforms are apt to be more popular with investors if preceded by market reforms, which link firms' prospects to meritorious management rather than official favor.

On the contrary, the stocks of non-SOE firms located in regions where market reforms lag badly fall on news of the reforms. This drop is consistent with non-SOE firms lacking the solid political connections SOEs enjoy by dint of their top managers being career Party cadres, and having to wine and dine officials to acquire the connections they need if located in these regions. This difference suggests that successful political rent-seeking can boost shareholder valuations in corruption-prone environments, making shareholder valuation a potentially

problematic measure of a firm's contribution to economy-level prosperity. This heterogeneity also reinforces the argument that anti-corruption reforms are bolstered by prior reforms that unleash market forces.

The stocks of SOEs rise on news of the Eight-point Reform regardless of where they are located or how much they have spent on entertainment. One interpretation of this is that SOEs, already inextricably bound to the Party hierarchy, gain less from building additional connections by wining and dining officials. Indeed, rather than building valuable connections, their ETC spending may well predominantly be perks consumption, self-dealing, or other on-the-job consumption by their top cadres. These are all net destroyers of value from public shareholders' perspective, so their elimination by the reform was unambiguously good news to markets. This suggests that restrictions on corruption can be a useful way of boosting listed SOE firms' valuations, so that the state can receive more money per share from incremental equity sales to public investors.

Figure 1: Fraction of Respondents Views Issues as a "Big Problem"

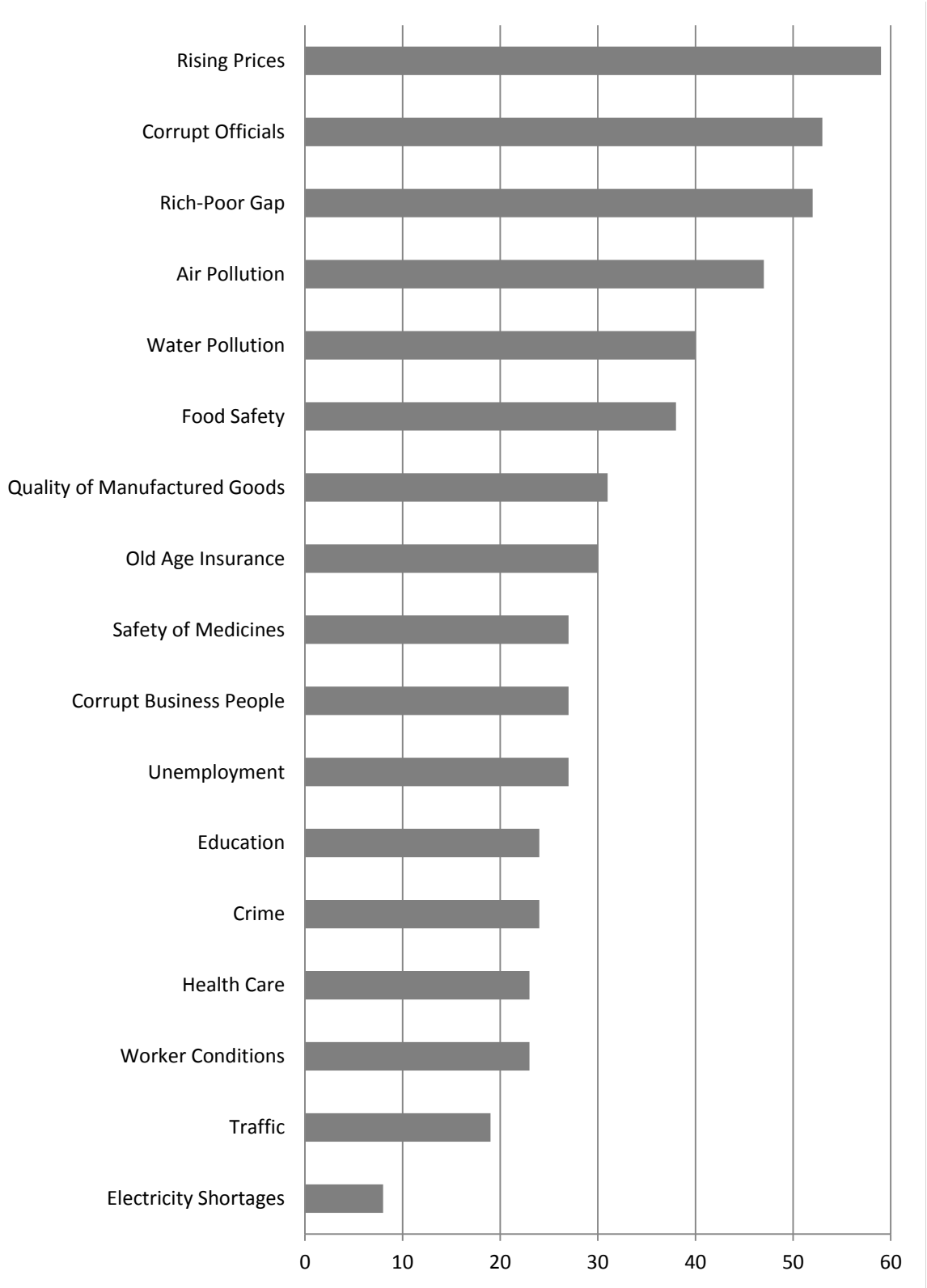


Figure 2: Online Attention to the Eight-point Regulation

Daily Baidu internet search volume for the keywords EIGHT-POINT REGULATION in Chinese (八项规定). Search volume is normalized by its all-time historical maximum, which occurred the day after the announcement date of December 4 2012, indicated by the short-dashed line. Search volume indexed by the keyword 'anti-corruption' (反腐) is indicated by the long-dashed line, similarly scaled.

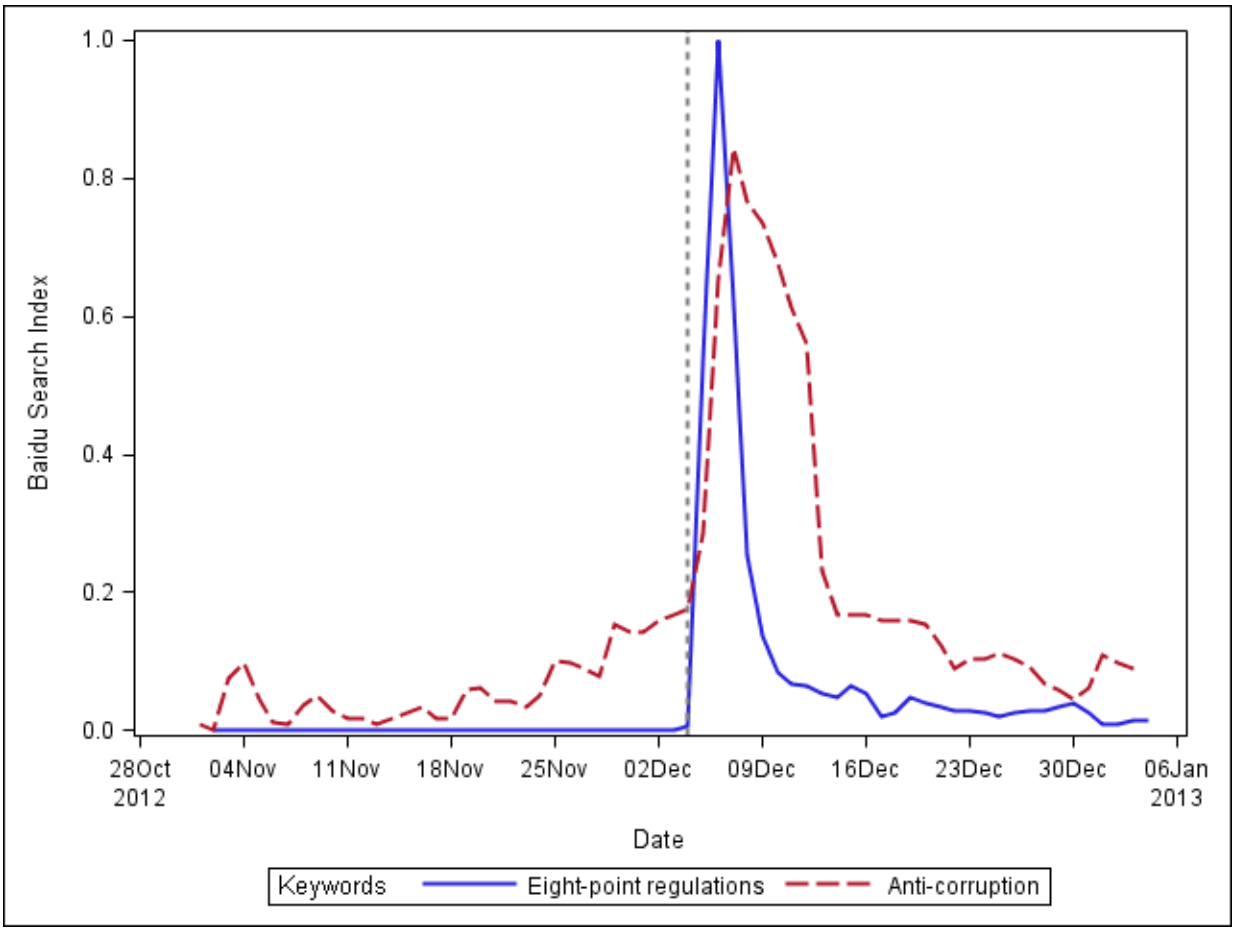


Figure 3: Average ETC Ratio by Provinces in 2011

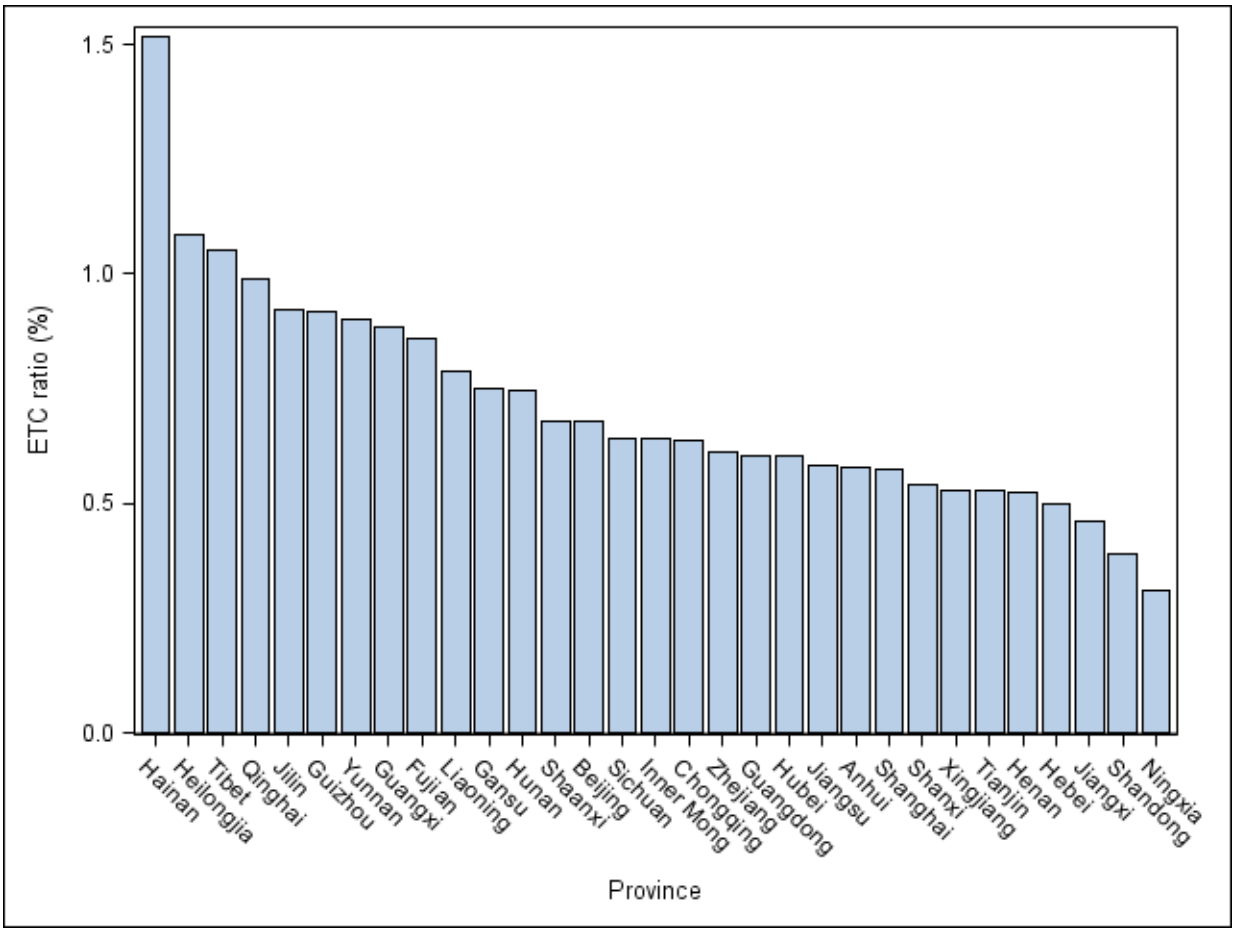


Figure 4: Entertainment and Travel Costs Before v. After Eight-point Regulation Announcement

This figure graphs mean ETC ratios for terciles of non-SOEs and for SOEs, based on 2011 ETCs.

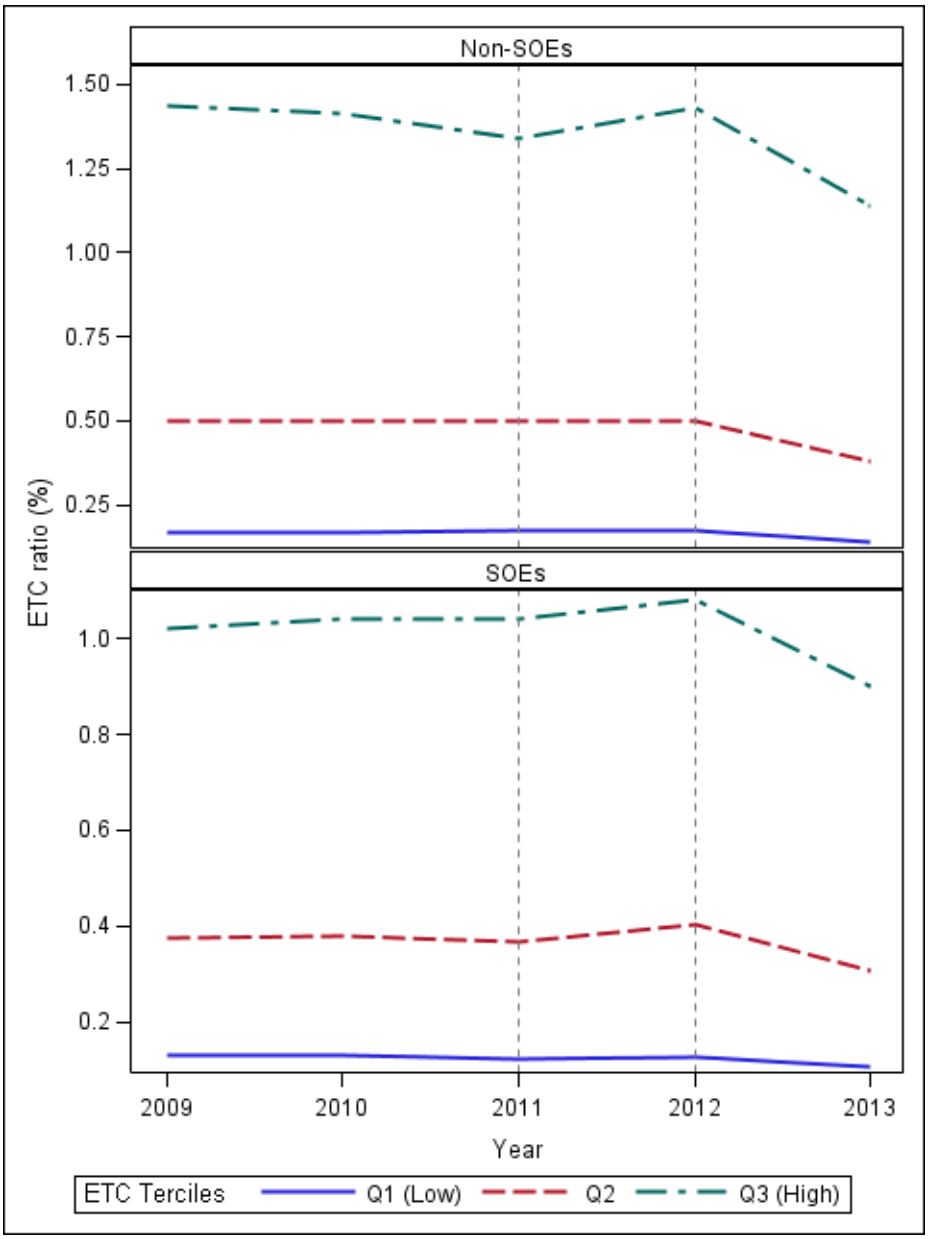


Figure 5: Cumulative Returns of Province Portfolios

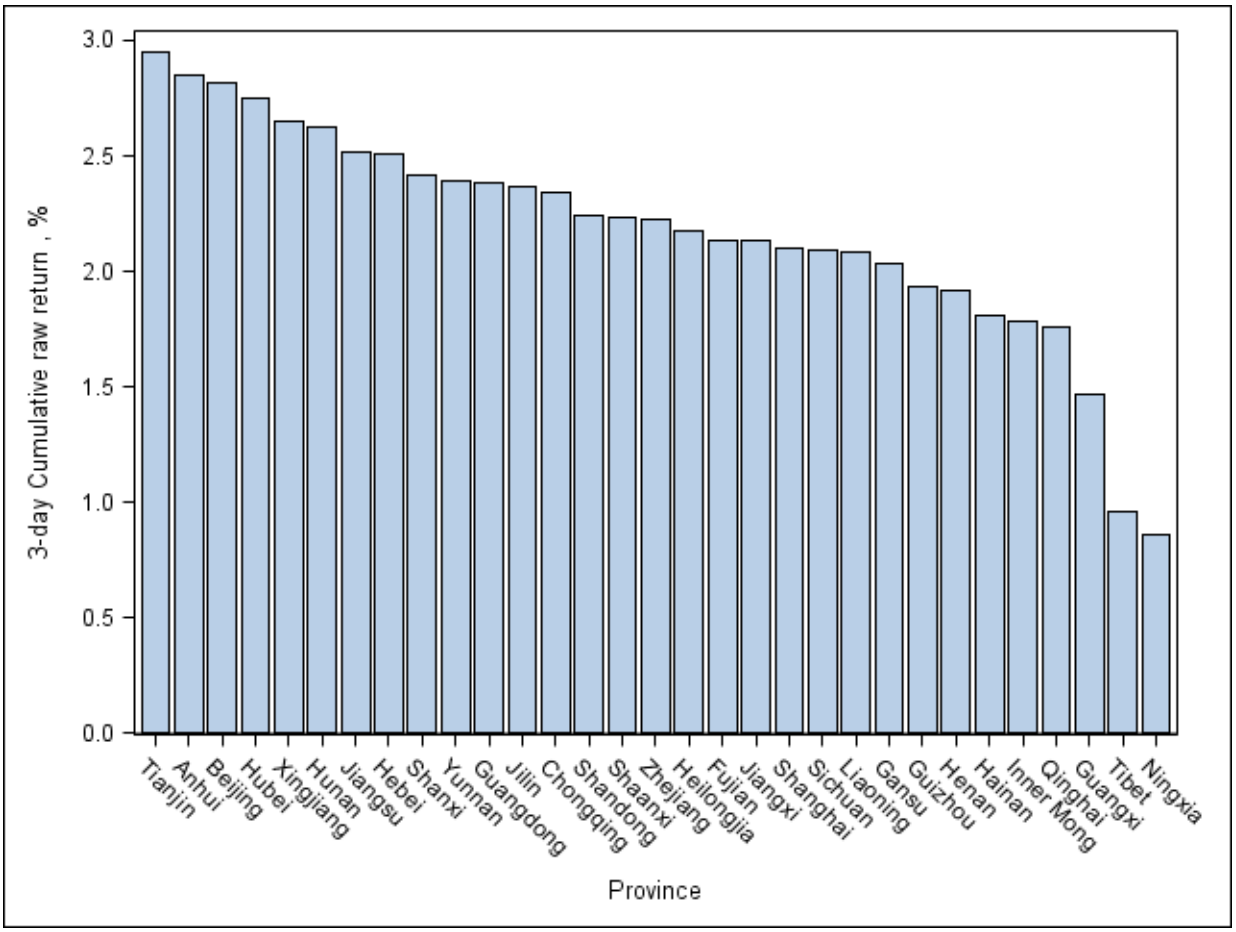


Figure 6: Cumulative Abnormal Returns around the Passage of the Eight Point Regulation

This figure displays the value-weighted average of cumulative abnormal returns of four portfolios, high ETC and high marketization, high ETC and low marketization, low ETC and high marketization, and low ETC and low marketization. Portfolios on the top panel are formed based on private enterprises. Portfolios on the bottom panel are formed based on SOEs.

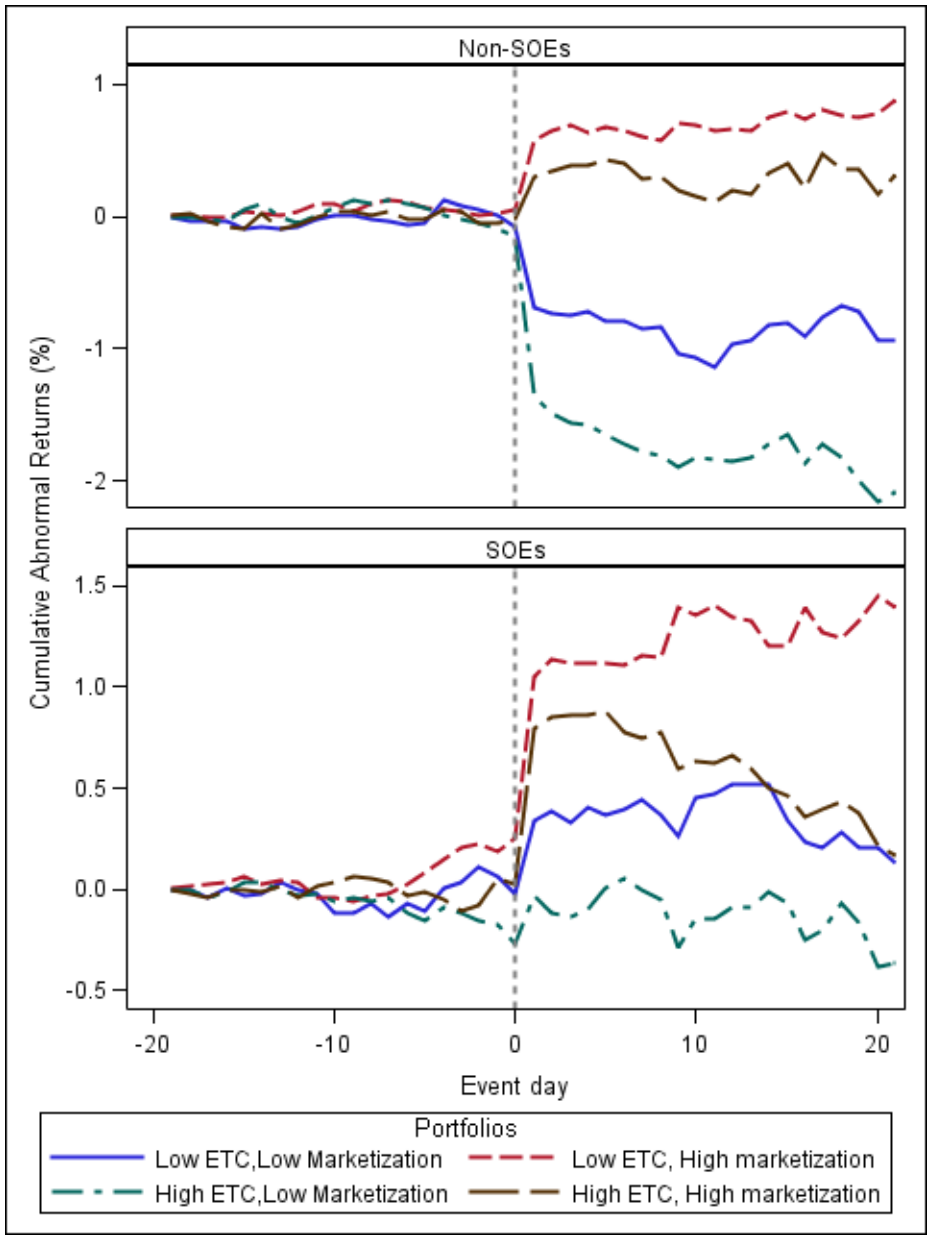


Table I

The NERI Index of marketization for China's Provinces published by the National Economic Research Institute (NERI) (Fan et al, 2011).

Province	Marketization index	Resource allocation	Financial sector marketization	Legal environment
Zhejiang	11.8	9.1	12.7	6.9
Jiangsu	11.5	9.3	11.3	7.2
Shanghai	11.0	6.4	12.6	8.9
Guangdong	10.4	9.6	11.4	5.3
Beijing	9.9	6.9	10.3	6.5
Tianjin	9.4	8.7	10.5	6.8
Fujian	9.0	9.4	10.5	5.4
Shandong	8.9	10.3	11.3	4.4
Liaoning	8.8	7.2	12.1	5.1
Chongqing	8.1	6.9	10.7	5.7
Henan	8.0	8.5	11.0	3.9
Anhui	7.9	6.3	10.4	5.9
Jiangxi	7.7	6.5	9.9	5.0
Hubei	7.7	7.9	10.7	4.8
Sichuan	7.6	5.1	10.5	5.4
Hunan	7.4	7.4	9.9	4.1
Hebei	7.3	9.0	9.6	3.9
Jilin	7.1	6.6	9.4	5.4
Hainan	6.4	4.3	7.7	2.3
Inner Mongolia	6.3	6.9	9.9	2.9
Guangxi	6.2	6.0	9.7	4.0
Shanxi	6.1	6.0	10.4	4.0
Heilongjiang	6.1	6.2	8.4	4.0
Yunnan	6.1	3.2	10.8	5.7
Ningxia	5.9	2.2	10.2	3.0
Shaanxi	5.7	5.4	10.0	3.2
Guizhou	5.6	1.4	9.8	4.0
Xinjiang	5.1	3.2	8.3	3.8
Gansu	5.0	1.2	9.2	3.0
Qinghai	3.3	-1.4	7.3	4.1
Tibet	0.4	-23.3	5.9	-1.9

Table II
Stock Market Reaction and Differentiate by Marketization

This table reports the value-weighted cumulative stock returns of market portfolios around the announcement of the eight point regulation. Low (High) marketization indicates that the portfolio is formed based on firms domiciled in provinces having marketization level at the bottom (top) tercile. We report both the cumulative stock raw returns (CRR) and the percentage of firm having negative CRR (% Negative). In Panel A, a 3-day window is used. the standard deviation that we use to form the test of whether CRR(-1, 1) is different from zero is: square root (3) * the standard deviation of daily stock return from day -211 to day -11 (day 0 is the event day). In Panel B, a 5-day window is used. The standard deviation that we use to form the test of whether CRR(-2, 2) is different from zero is: square root (5) * the standard deviation of daily stock return from day -211 to day -11 (day 0 is the event day). Statistics are obtained in the same way. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: 3-day cumulative raw return

	All firms	
	CRR(-1, 1)	% Negative
All China	2.613**	25.9%
Low marketization provinces	0.927	36.0%
High marketization provinces	4.101***	21.9%

Panel B: 5-day cumulative raw return

	All firms	
	CRR(-2, 2)	% Negative
All China	3.323**	23.9%
Low marketization provinces	1.641	35.0%
High marketization provinces	4.824***	20.9%

Table III
Province Level Portfolio Cumulative Returns

This table reports the results of regression analysis on the cumulative raw returns (CRR) of portfolios formed by provinces around the passage of the eight point regulation. For each province, we form a portfolio and calculate the portfolio CRR by aggregating the CRR of all firms in that province. We then regress the portfolio CRR with a set of province characteristics, including, GDP growth rate, GDP per capita, education expenditures, and regional market development and three marketization sub-indices from Fan and Wang (2011). Res. allocation is an index measuring the extent to which resource allocation is effected by governments using the share of government budgetary expenses in GDP; the higher the value the more significant market's roles in resource allocation. Fin. sector m. is an index measuring non-SOEs' access to capital. It combines two indicators, the level of deposit in non-state financial institutions and the share of bank loans credited to non-state enterprises; the higher the value the better non-SOE's access to capital. Inter. and legal is an index measuring the development of market intermediaries and the degree to which producers' and consumers' interests are protected; it combines an indicator measuring the court's efficiency in resolving legal cases and an indicator measuring the strength of property rights; the higher the value the better market intermediaries and the stronger legal protection. All variables are defined in the Appendix A. In columns 1 and 2, the dependent variable is a 3-day CRR. In columns 3 and 4, the dependent variable a 5-day window CRR. Statistics are obtained in the same way. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Dep. variable	CRR (-1, 1)		CRR (-2, 2)	
	(1)	(2)	(3)	(4)
GDP growth	11.221**	12.122**	9.463*	9.494*
	(2.35)	(2.43)	(1.86)	(1.94)
Log(GDP/capita)	0.007	-0.066	-0.023	0.125
	(0.02)	(-0.23)	(-0.06)	(0.31)
Education expenditures/GDP	30.306**	28.997**	42.038**	41.652**
	(2.44)	(2.24)	(2.37)	(2.32)
Marketization	0.193***		0.206***	
	(2.67)		(2.74)	
Resource allocation		0.146***		0.197***
		(3.55)		(3.47)
Financial sector marketization		0.194**		0.194*
		(2.13)		(1.74)
Legal environment		0.084***		0.065**
		(2.61)		(2.45)
Intercept	0.898	0.524	0.965	0.105
	(0.24)	(0.16)	(0.54)	(0.02)
Sample size	31	31	31	31
Adj. R-squared	33.83%	43.82%	24.95%	32.87%

Table IV
Province Level Portfolio Cumulative Abnormal Returns

This table reports the results of regression analysis on the cumulative abnormal returns (CAR) of portfolios formed by provinces around the passage of the eight point regulation. For each province, we form a portfolio and calculate the portfolio CRR by aggregating the CAR of all firms in that province. We then regress the portfolio CAR with a set of province characteristics, including, GDP growth rate, GDP per capital, education expenditures, and regional market development and three marketization sub-indices from Fan and Wang (2011). Res. allocation is an index measuring the extent to which resource allocation is effected by governments using the share of government budgetary expenses in GDP; the higher the value the more significant market's roles in resource allocation. Fin. sector m. is an index measuring non-SOEs' access to capital. It combines two indicators, the level of deposit in non-state financial institutions and the share of bank loans credited to non-state enterprises; the higher the value the better non-SOE's access to capital. Inter. and legal is an index measuring the development of market intermediaries and the degree to which producers' and consumers' interests are protected; it combines an indicator measuring the court's efficiency in resolving legal cases and an indicator measuring the strength of property rights; the higher the value the better market intermediaries and the stronger legal protection. All variables are defined in the Appendix A. In columns 1 and 2, the dependent variable is a 3-day CAR. In columns 3 and 4, the dependent variable a 5-day window CAR. Statistics are obtained in the same way. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Dep. variable	CAR (-1, 1)		CAR (-2, 2)	
	(1)	(2)	(3)	(4)
GDP growth	9.556*	11.342**	8.579*	10.408*
	(1.83)	(2.19)	(1.71)	(1.89)
Log(GDP/capital)	0.232	0.297	0.281	0.454
	(0.69)	(0.98)	(0.61)	(1.11)
Education expenditures/GDP	33.013**	44.328***	45.983**	63.012***
	(2.34)	(3.29)	(2.16)	(3.48)
Marketization	0.147**		0.152**	
	(2.03)		(2.22)	
Res. allocation		0.190***		0.267***
		(4.45)		(4.66)
Fin.sector m.		0.174*		0.151
		(1.84)		(1.43)
Inter. and legal		0.050**		0.057*
		(1.99)		(1.76)
Intercept	-3.329	-6.071	-3.659	-6.865
	(-0.96)	(-1.21)	(-0.70)	(-1.47)
N	31	31	31	31
Adj. R-squared	34.72%	45.21%	20.32%	35.46%

Table V
Returns, Market Development and ETC Spending

This table reports the value-weighted cumulative stock returns of ETC/marketization portfolios around the announcement of the eight point regulation. Low (High) marketization indicates that the portfolio is formed based on firms domiciled in provinces having marketization level at the bottom (top) tercile. Low (High) ETC indicates that the portfolio is formed based on firms having ETC ration at the bottom (top) tercile. We report both the cumulative stock raw returns (CRR) and the percentage of firm having negative CRR (% Negative). We divide the full sample into non-SOEs and SOEs subsamples. In Panel A, a 3-day window is used. the standard deviation that we use to form the test of whether CRR(-1, 1) is different from zero is: square root (3) * the standard deviation of daily stock return in from day -211 to day -11 (day 0 is the event day). In Panel B, a 5-day window is used. The standard deviation that we use to form the test of whether CRR(-2, 2) is different from zero is: square root (5) * the standard deviation of daily stock return from day -211 to day -11 (day 0 is the event day). Statistics are obtained in the same way. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: 3-day cumulative raw return

	Non-SOEs		SOEs	
	CRR(-1, 1)	% Negative	CRR(-1, 1)	% Negative
Full	1.144	31.1%	4.141***	20.0%
Low marketization	-0.077	41.3%	2.331**	22.1%
High marketization	1.825*	25.0%	5.118***	18.0%
Low ETC	1.731	26.3%	4.923***	18.9%
High ETC	-0.332	43.5%	2.231**	22.3%
Low marketization, Low ETC	0.671	37.7%	2.917**	21.6%
Low marketization, High ETC	-0.660	46.6%	1.524*	22.9%
High marketization, Low ETC	2.534**	22.1%	5.741***	16.1%
High marketization, High ETC	0.443	38.3%	3.012**	21.9%

Panel B: 5-day cumulative raw return

	Non-SOEs		SOEs	
	CRR(-2, 2)	% Negative	CRR(-2, 2)	% Negative
Full	2.231	27.6%	4.721***	19.5%
Low marketization	1.346	38.6%	2.914**	21.9%
High marketization	2.919*	24.6%	5.613***	18.8%
Low ETC	2.708*	24.5%	4.537***	17.2%
High ETC	1.117	40.9%	3.621**	21.0%
Low marketization, Low ETC	1.734	36.5%	3.309**	21.3%
Low marketization, High ETC	0.435	44.4%	2.424*	22.6%
High marketization, Low ETC	4.331***	19.7%	6.012***	16.1%
High marketization, High ETC	1.907	34.4%	4.112***	20.5%

Table VI

Regression Analyses on Firm Level Cumulative Returns

Regression of firm level cumulative returns on initial level of productivity, external finance dependence, and growth opportunity. Total factor productivity is the Levinsohn-Petrin (2003) estimate of the total factor productivity. External finance dependence is the industry median of capital expenditures minus cash flow from operations divided by capital expenditures (Rajan and Zingales, 1998). Growth opportunity is measured by the industry median of Tobin's Q. In Panel A, the dependent variable is the 3-day cumulative raw returns. In Panel B, the dependent variable is the 5-day cumulative raw returns. All variables are defined in the Appendix A. Explainable variables are observed in the year 2011. Errors are clustered by industries and by provinces. The t statistics are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: 3-day cumulative raw returns

Dep. Variables	CRR(-1, 1)													
Sample	Non-SOEs							SOEs						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Marketization	0.617***	0.386***	0.373**	0.161*	0.095	0.614***	0.034	0.212**	0.169*	0.160*	0.055	0.047	0.213**	-0.065
	(4.58)	(2.35)	(2.12)	(1.71)	(0.71)	(4.54)	(0.27)	(2.05)	(1.90)	(1.83)	(0.84)	(0.77)	(2.06)	(-0.29)
ETC	-1.673***	-1.675***	-1.765***	-1.515**	-8.210***	-2.371**	-9.102***	0.049	0.046	0.051	0.062	-0.645	-0.067	-0.687
	(-2.62)	(-2.63)	(-2.85)	(-2.47)	(-3.32)	(-2.37)	(-3.39)	(0.42)	(0.41)	(0.52)	(0.65)	(-1.08)	(-0.41)	(-0.85)
Marketization* Total factor productivity		0.036**					0.031*		0.013					0.012
		(2.19)					(1.83)		(1.12)					(1.07)
Marketization* External finance dependence (SIC)			0.039**				0.032**			0.011				0.015
			(2.31)				(2.12)			(1.27)				(1.37)
Marketization*Growth (SIC)				0.271**			0.146**				0.168**			0.162**
				(2.51)			(2.31)				(2.16)			(2.12)
Marketization*ETC					1.117***		1.291***					0.486**		0.480**
					(3.51)		(3.16)					(2.33)		(2.22)
ETC*C/O divergence						0.558*	1.086**						0.080	0.084
						(1.89)	(2.03)						(0.86)	(0.86)
Total factor productivity	0.046**	0.012	0.046**	0.046**	0.046**	0.047**	0.009	0.019	0.001	0.017	0.016	0.021	0.019	-0.003
	(2.16)	(1.05)	(2.16)	(2.15)	(2.12)	(2.17)	(0.92)	(0.67)	(0.06)	(0.60)	(0.55)	(0.84)	(0.65)	(-0.11)
C/O divergence	0.189	0.189	0.189	0.193	0.167	-0.026	-0.056	0.374***	0.374***	0.374***	0.376***	0.368***	0.297**	0.291**
	(1.48)	(1.48)	(1.49)	(1.52)	(1.39)	(-0.58)	(-0.43)	(4.02)	(4.01)	(4.02)	(4.04)	(3.92)	(2.07)	(1.99)
GDP growth	8.831**	8.823**	8.581*	8.705*	8.531*	8.826**	7.262*	6.163	7.174*	5.020	6.671	6.136	6.347	5.162
	(2.30)	(2.02)	(1.90)	(1.94)	(1.86)	(2.32)	(1.89)	(1.41)	(1.71)	(1.10)	(1.37)	(1.21)	(1.30)	(1.07)
Log(GDP/capital)	0.155	0.154	0.454	0.121	0.177	0.179	0.539	0.215	0.216	0.010	0.279	0.277	0.276	0.101
	(0.32)	(0.31)	(0.81)	(0.25)	(0.30)	(0.57)	(0.91)	(0.56)	(0.58)	(0.02)	(0.75)	(0.74)	(0.73)	(0.23)
Education expenditures/GDP	17.195	17.198	29.611*	18.617	21.685	16.743	33.211*	1.275	1.149	28.653	2.378	12.072	2.077	29.641
	(0.87)	(0.88)	(1.81)	(0.98)	(1.10)	(0.87)	(1.88)	(0.13)	(0.08)	(1.22)	(0.16)	(0.84)	(0.17)	(1.39)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
N	1228	1228	1228	1228	1228	1228	1228	1015	1015	1015	1015	1015	1015	1015
Adj. R-squared	24.78%	27.79%	28.34%	27.67%	26.09%	25.15%	33.71%	19.90%	19.91%	19.97%	20.05%	20.34%	19.54%	21.89%

Panel B: 5-day cumulative raw returns

Dep. variables	CRR(-2, 2)													
Sample	Non-SOEs							SOEs						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Marketization	0.519***	0.314***	0.199*	0.163	0.125	0.518***	0.075	0.291**	0.193**	0.179*	0.103	0.045	0.294**	-0.159
	(3.51)	(2.17)	(1.74)	(1.42)	(0.84)	(3.50)	(0.16)	(2.16)	(2.02)	(1.91)	(0.95)	(0.68)	(2.22)	(-1.22)
ETC	-1.751***	-1.759***	-1.721***	-1.416**	-8.473***	-2.415**	-10.028***	0.034	0.038	0.041	0.060	-0.723	-0.081	-0.872
	(-2.83)	(-2.84)	(-2.73)	(-2.37)	(-3.43)	(-2.08)	(-3.51)	(0.25)	(0.37)	(0.43)	(0.81)	(-1.27)	(-0.58)	(-1.16)
Marketization* Total factor productivity		0.030*					0.024		0.009					0.008
		(1.83)					(1.45)		(0.99)					(0.89)
Marketization* External finance dependence (SIC)			0.041**				0.037**			0.013				0.012
			(2.41)				(2.11)			(1.42)				(1.17)
Marketization*Growth (SIC)				0.282**			0.195**				0.184**			0.123**
				(2.51)			(2.14)				(2.23)			(1.98)
Marketization*ETC					1.193***		1.332***					0.547**		0.523**
					(3.57)		(3.38)					(2.57)		(2.38)
ETC*C/O divergence						0.591*	1.133**						0.096	0.093
						(1.84)	(2.01)						(1.09)	(1.12)
Total factor productivity	0.046	0.017	0.046	0.046	0.045	0.048	0.011	0.012	-0.013	0.012	0.011	0.012	0.012	-0.020
	(1.50)	(0.68)	(1.51)	(1.49)	(1.46)	(1.55)	(0.61)	(0.26)	(-0.33)	(0.24)	(0.23)	(0.26)	(0.25)	(-0.44
C/O divergence	0.253*	0.253*	0.253*	0.257*	0.245*	-0.014	-0.023	0.519***	0.519***	0.518***	0.524***	0.509***	0.418**	0.411**
	(1.82)	(1.83)	(1.82)	(1.86)	(1.79)	(-0.18)	(-0.30)	(3.40)	(3.40)	(3.39)	(3.46)	(3.34)	(2.15)	(2.01)
GDP growth	7.223*	7.379*	7.582*	7.573*	8.048*	7.306*	7.279*	5.561	5.953	4.882	5.257	5.518	5.391	4.910
	(1.74)	(1.86)	(1.91)	(1.84)	(1.94)	(1.75)	(1.69)	(1.34)	(1.35)	(1.11)	(1.31)	(1.43)	(1.31)	(1.19)
Log(GDP/capital)	0.585	0.586	0.748	0.903	0.496	0.596	0.839	-0.629	0.443	0.229	0.646	0.193	0.285	0.741
	(1.09)	(1.10)	(1.29)	(1.64)	(0.99)	(1.11)	(1.63)	(-1.04)	(0.96)	(0.85)	(1.10)	(0.36)	(0.53)	(1.19)
Education expenditures/GDP	14.582	14.777	23.140*	17.362	25.286*	14.746	28.382*	-1.045	2.375	22.351	3.728	6.250	3.131	25.130
	(0.77)	(0.78)	(1.70)	(0.84)	(1.72)	(0.78)	(1.77)	(-0.05)	(0.18)	(1.15)	(0.23)	(0.36)	(0.19)	(1.19)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
N	1228	1228	1228	1228	1228	1228	1228	1015	1015	1015	1015	1015	1015	1015
Adj. R-squared	22.29%	23.32%	24.11%	24.08%	24.37%	23.56%	30.54%	18.43%	18.47%	18.82%	19.60%	19.66%	18.67%	20.84%

Table VII

Regression Analyses on Firm Level Cumulative Abnormal Returns

Regression of firm level cumulative abnormal returns on initial level of productivity, external finance dependence, and growth opportunity. Total factor productivity is the Levinsohn-Petrin (2003) estimate of the total factor productivity. External finance dependence is the industry median of capital expenditures minus cash flow from operations divided by capital expenditures (Rajan and Zingales, 1998). Growth opportunity is measured by the industry median of Tobin's Q. The dependent variable is the 3-day (5-day) cumulative abnormal returns. All variables are defined in the Appendix A. Explainable variables are observed in the year 2011. Errors are clustered by industries and by provinces. The t statistics are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Dep. Variables	CAR(-1,1)				CAR(-2,2)			
Sample	Non-SOEs		SOEs		Non-SOEs		SOEs	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Marketization	0.587***	0.025	0.168**	-0.017	0.484***	0.037	0.261**	-0.431
	(3.46)	(0.66)	(1.97)	(-0.16)	(3.21)	(0.08)	(1.99)	(-0.97)
ETC	-2.090***	-11.331***	0.041	-0.512	-2.159***	-11.605***	0.147	-0.647
	(-3.13)	(-3.49)	(0.33)	(-1.01)	(-3.44)	(-3.23)	(0.96)	(-1.08)
Marketization*Total factor productivity		0.021*		0.008		0.023**		0.009
		(1.94)		(0.80)		(2.26)		(0.93)
Marketization*External finance dependence (SIC)		0.025**		-0.007		0.022*		-0.019
		(1.99)		(-0.56)		(1.86)		(-0.98)
Marketization*Growth (SIC)		0.253*		0.190*		0.126		0.204*
		(1.71)		(1.86)		(1.62)		(1.93)
Marketization*ETC		1.558**		0.461*		1.489**		0.496**
		(2.10)		(1.84)		(2.03)		(1.98)
ETC*C/O divergence		1.789***		0.103		1.160**		0.115
		(2.69)		(1.37)		(2.17)		(1.12)
Total factor productivity	0.034*	0.002	0.026	0.020	0.032*	0.004	0.031	0.028
	(1.81)	(0.33)	(1.15)	(0.59)	(1.67)	(0.61)	(0.98)	(0.38)
C/O divergence	0.075	-0.307	0.433***	0.321**	0.232	-0.018	0.564***	0.450**
	(0.45)	(-1.49)	(4.35)	(2.48)	(1.34)	(-0.07)	(3.59)	(2.07)
GDP growth	5.421	5.582*	3.254	3.325	7.376*	8.447*	5.032	5.577
	(1.56)	(1.66)	(0.93)	(0.95)	(1.65)	(1.77)	(1.43)	(1.48)
Log(GDP/capital)	0.151	0.161	0.010	0.059	0.819	0.800	0.094	0.189
	(0.36)	(0.33)	(0.05)	(0.18)	(1.50)	(1.56)	(0.20)	(0.38)
Education expenditures/GDP	18.851	21.144	5.367	6.629	19.124	31.985*	6.346	7.316
	(0.87)	(1.06)	(0.38)	(0.26)	(0.96)	(1.72)	(0.40)	(0.50)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
N	1228	1228	1015	1015	1228	1228	1015	1015
Adj. R-squared	23.07%	31.59%	19.05%	21.36%	21.95%	28.42%	15.34%	17.80%

Table VIII
Change of Performance

Regression analyses on the post event firm level performance when firms have different initial level of productivity, external finance dependence, and growth opportunity. Total factor productivity is the Levinsohn-Petrin (2003) estimate of the total factor productivity. External finance dependence is the industry median of capital expenditures minus cash flow from operations divided by capital expenditures (Rajan and Zingales, 1998). Growth opportunity is measured by the industry median of Tobin's Q. In Panel A, the dependent variable is the change of firm value. Change of firm value (ΔQ) is the average of daily M/B one year after the passage of the eight point regulation (2013) minus the average of daily M/B one year before the passage of the regulation (2012). Daily M/B is: (daily closing price * total shares outstanding)/total book equity in the year. In Panel B, the dependent variable is ΔROA. It is calculated using the return on assets in 2013 minus that in 2012 where return on assets is defined as operating income before depreciation and amortization/total assets. In Panel C, the dependent variable is ΔSG. It is calculated using the sales growth rate in 2013 minus the rate in 2012 where sales growth rate is defined as (total sales in year t - total sales in year t-1)/total sales in year t-1. Errors clustered by provinces and industries. The t statistics are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: The change of firm value

Dep. variable	*ΔQ*			
Sample	Non-SOEs		SOEs	
	(1)	(2)	(3)	(4)
Marketization	0.197***	0.016	0.047	0.011
	(3.57)	(0.10)	(1.04)	(0.48)
ETC	-0.359**	-2.970***	0.094**	0.249
	(-2.05)	(-2.68)	(1.97)	(0.89)
Marketization*Total factor productivity		0.006***		0.009**
		(2.70)		(2.37)
Marketization*External finance dependence (SIC)		0.011*		0.006
		(1.78)		(0.84)
Marketization*Growth (SIC)		0.095		0.006
		(0.95)		(0.06)
Marketization*ETC		0.272**		1.123*
		(2.28)		(1.76)
ETC*C/O divergence		0.185**		0.075
		(2.11)		(1.09)
Total factor productivity	0.012	-0.031	0.013	-0.043
	(1.14)	(-1.52)	(1.03)	(-1.26)
C/O divergence	0.062	-0.039	0.065	0.016
	(1.44)	(-0.83)	(1.52)	(0.38)
GDP growth	8.841*	9.147*	-0.774	-0.884
	(1.67)	(1.77)	(-0.21)	(-0.24)
Log(GDP/capital)	0.452*	0.415	0.005	0.046
	(1.75)	(1.58)	(0.04)	(0.27)
Education expenditures/GDP	17.798*	16.004*	4.446	3.453
	(1.77)	(1.77)	(0.27)	(0.11)
Control	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Cluster	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
N	1228	1228	1015	1015
Adj. R-squared	19.76%	21.83%	10.27%	11.52%

Panel B: The change of return on assets

Dep. variable	*ΔROA*			
Sample	Non-SOEs		SOEs	
	(1)	(2)	(3)	(4)
Marketization	0.325**	0.092	0.248*	0.048
	(2.38)	(0.88)	(1.86)	(0.89)
ETC	-0.245**	-4.745***	0.080	-0.084
	(-2.16)	(-2.80)	(0.66)	(-0.98)
Marketization*Total factor productivity		0.019**		0.033***
		(2.07)		(3.48)
Marketization*External finance dependence (SIC)		0.049***		0.020
		(2.89)		(1.10)

Marketization*Growth (SIC)		0.128		0.411
		(1.43)		(1.40)
Marketization*ETC		0.548***		0.117**
		(2.75)		(2.40)
ETC*C/O divergence		0.314*		0.155
		(1.81)		(0.99)
Total factor productivity	0.055	-0.128	0.103	-0.153
	(1.32)	(-1.60)	(1.49)	(-1.13)
C/O divergence	0.135	-0.041	0.152	0.005
	(1.19)	(-0.49)	(1.25)	(0.16)
GDP growth	16.697	17.603	-4.894	-3.814
	(1.45)	(1.52)	(-0.58)	(-0.48)
Log(GDP/capital)	-0.237	-0.183	-0.802	-0.753
	(-0.46)	(-0.37)	(-1.49)	(-1.41)
Education expenditures/GDP	21.287	13.625	1.205	1.075
	(1.07)	(0.63)	(0.29)	(0.16)
Control	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Cluster	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
N	1228	1228	1015	1015
Adj. R-squared	18.93%	21.46%	20.34%	23.11%

Panel C: The change of sales growth

Dep. variable	*ΔSG*			
Sample	Non-SOEs		SOEs	
	(1)	(2)	(3)	(4)
Marketization	4.598***	1.090	5.825***	1.349
	(2.99)	(1.08)	(3.20)	(1.14)
ETC	-15.007***	-75.863***	1.098	-13.959
	(-4.76)	(-3.02)	(0.64)	(-1.49)
Marketization*Total factor productivity		0.158**		0.196**
		(2.27)		(2.11)
Marketization*External finance dependence (SIC)		0.411*		0.395
		(1.89)		(1.05)
Marketization*Growth (SIC)		4.970*		3.833*
		(1.84)		(1.79)
Marketization*ETC		8.479***		2.011**
		(3.36)		(2.10)
ETC*C/O divergence		2.898		1.096
		(1.35)		(0.85)
Total factor productivity	0.250	-0.779	0.453	-1.193*
	(0.97)	(-1.40)	(1.10)	(-1.68)
C/O divergence	1.223	0.085	2.828	1.731
	(1.35)	(0.10)	(1.76)	(0.70)
GDP growth	7.312	18.558	-3.301	-2.571
	(0.11)	(0.33)	(-0.07)	(-0.06)
Log(GDP/capital)	-4.760	-4.684	-5.731	-4.739
	(-0.72)	(-0.72)	(-0.78)	(-0.65)
Education expenditures/GDP	406.904*	438.203**	337.228	267.283
	(1.89)	(2.15)	(1.23)	(0.98)
Control	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Cluster	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
N	1228	1228	1015	1015
Adj. R-squared	20.13%	22.93%	18.81%	20.66%

Appendix I

Summary Statistics for the Analysis of Province Level Portfolio Cumulative Returns

Variables	N	Mean	Std.	Q1	Q2	Q3
CRR(-1, 1), %	31	2.26	0.50	2.09	2.31	2.62
CRR (-2, 2), %	31	3.43	0.63	2.93	3.51	3.91
CAR(-1, 1), %	31	0.02	0.52	-0.21	0.03	0.23
CAR (-2, 2), %	31	0.03	0.71	-0.39	0.02	0.37
GDP growth	31	0.11	0.02	0.11	0.12	0.13
Log(GDP/capital)	31	10.49	0.44	10.17	10.41	10.83
Education expenditures/GDP	31	0.04	0.02	0.03	0.03	0.05
Marketization	31	7.34	2.39	6.06	7.39	8.93
Resource allocation	31	5.22	5.97	4.28	6.45	8.45
Financial sector marketization	31	10.07	1.45	9.61	10.28	10.75
Legal environment	31	7.91	4.85	5.25	6.00	8.30

Appendix II

Summary Statistics for the Analysis of Firm Level Cumulative Returns

Samples	Full		Private		SOEs	
N	2243		1228		1015	
	Mean	Std.	Mean	Std.	Mean	Std.
CRR(-1, 1), %	2.30	3.37	1.52	3.40	3.17	3.04
CRR(-2, 2), %	3.48	3.87	2.76	3.19	4.23	3.94
CAR(-1, 1), %	0.19	3.00	-0.51	2.98	0.47	3.17
CAR(-2, 2), %	0.32	3.98	-0.70	3.87	0.67	4.08
ETC	0.64	1.17	0.71	1.15	0.54	1.24
Marketization	9.22	2.02	9.50	1.96	8.88	2.05
Resource allocation	7.58	2.81	7.85	2.88	7.26	2.70
Financial sector marketization	10.97	1.16	11.14	1.14	10.78	1.15
Legal environment	12.20	5.68	12.81	5.69	11.46	5.59
C/O divergence	1.27	0.87	1.26	0.89	1.28	0.86
Log(total assets)	21.83	1.49	21.66	1.31	22.03	1.65
Liability/total assets	0.47	0.57	0.45	0.67	0.50	0.42
R&D/total sales	0.01	0.02	0.02	0.03	0.00	0.01
Total factor productivity	4.16	5.71	4.44	5.73	3.82	5.29
GDP growth	0.11	0.03	0.10	0.02	0.11	0.03
Log(GDP/capital)	10.75	0.40	10.79	0.38	10.71	0.43
Education expenditures/GDP	0.03	0.00	0.03	0.01	0.03	-0.01
External finance dependence (SIC)	-0.87	3.79	-0.71	3.61	-1.05	4.00
Growth (SIC)	1.55	0.25	1.55	0.25	1.54	0.26
ΔQ	-0.32	1.51	-0.28	1.39	-0.37	1.66
ΔROA, %	-0.33	5.60	-0.30	5.43	-0.36	5.84
ΔSG, %	3.77	66.30	3.09	57.03	4.73	77.58

Appendix III
Variable Definition

Variables	Definitions/Descriptions
ETC, %	Entertainment and travel costs scaled by annual sales.
CRR(-1,1), %	3-day cumulative stock raw returns around the passage of the anti-extravagance rules.
CRR(-2,2), %	5-day cumulated stock raw returns around the passage of the anti-extravagance rules.
CAR(-1,1), %	3-day cumulative stock abnormal returns around the passage of the anti-extravagance rules using the market model. The market model parameters are estimated over the period from day -210 to -11 (day 0 is the event day) with the value-weighted return as the market return.
CAR(-2,2), %	5-day cumulated stock raw abnormal around the passage of the anti-extravagance rules using the market model. The market model parameters are estimated over the period from day -210 to -11 (day 0 is the event day) with the value-weighted return as the market return.
ΔQ	The average of daily M/B one year after the passage of the anti-extravagance rules minus the average of daily M/B one year before the passage of the rules. Daily M/B is defined as: (daily closing price * total shares outstanding)/total book equity in the year.
ΔSG, %	The change of sales growth rate from year 2012 to 2013. Sales growth rate is defined as: (total sales in year t -total sales in year t-1)/total sales in year t-1.
ΔROA, %	The change of return on assets from year 2012 to year 2013. Return on assets is defined as: operating income before depreciation and amortization/total assets.
SOEs	1 if the firm is ultimately controlled by the state government and 0 otherwise.
Marketization	An aggregated index measuring the relative progress in marketization for China's provinces; the higher the value the higher level of marketization. The data source is the National Economic Research Institute (NERI) index of Marketization of China's Provinces constructed by Fan,Wang and Zhu (2011).
Resource allocation	An index measuring the extent to which resource allocation is effected by governments using the share of government budgetary expenses in GDP; the higher the value the more significant market's roles in resource allocation. It is the sub-field index under the "Government and market relations" in the NERI index of Marketization of China's Provinces.
Financial sector marketization	An index measuring non-SOEs' access to capital. It combines two indicators, the level of deposit in non-state financial institutions and the share of bank loans credited to non-state enterprises; the higher the value the better non-SOE's access to capital. It is the sub-field index under the "Development of factor markets" in the NERI index of Marketization of China's Provinces.
Legal environment	An index measuring the court's efficiency in resolving legal cases, which is based on 4000 company leaders' judgments collected from enterprise surveys; the higher the value the stronger the legal environment. It is the sub-field index under the "Market intermediaries and the legal environment for the market" in the NERI index of Marketization of China's Provinces.
C/O divergence	The ratio of an ultimate controlling shareholder's voting rights over its cash-flow ownership rights. The information of control and cash-flow rights is collected from the annual report. If the information is not disclosed, the control-ownership dispersion is calculated based on the equity chain. That is, cash-flow right is measured by the products of the cash-flow rights along the ownership chain until reaching the ultimate owner of the firms. Control rights are measured by the weakest link alone the ownership chain.
Log(total assets)	The logarithm of total assets.
Liability/total assets	Total debts over total assets.
R&D	R&D expenses scaled total sales.
Total factor productivity	The Levinsohn-Petrin estimate of the total factor productivity, estimated separately for each industry.
GDP growth	The average of GDP growth of a province in the past three years.
Log(GDP/capital)	The average of log(GDP/capital) of a province in the past three years.
Education expenditures/GDP	The average of education expenditures scaled by the GDP of a province in the past three years.
External finance dependence (SIC)	The industry median of capital expenditures minus cash flow from operations divided by capital expenditures.
Growth (SIC)	The industry median of market equity value divided by total book equity.

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