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ABSTRACT

Chinese share prices rose sharply on the Politburo's Dec. 4th 2012 announcement of its Eight-point Regulation, an uncharacteristically detailed and concrete Party policy, initiating an extensive anti-corruption campaign and announced surprisingly soon after a change in leadership. The reaction is uniformly positive for state-owned enterprises (SOEs), but heterogeneous across non-SOEs. The reaction is more positive for non-SOEs in provinces with more developed market institutions and with higher prior productivity, greater external financing dependence, and greater growth potential. A non-SOE's prior spending on entertainment and travel costs (ETC), a proxy for investment in "connections", correlates negatively with the share price changes of firms based in provinces with weak market institutions. We posit that limiting corruption cuts the valuations of these non-SOEs by limiting their ability to utilize "connections" where these are more important. SOEs are well-connected in any case, and their ETC may reflect their top insiders' perks consumption or self-dealing. Reforms that limit this boost SOEs' valuations. Overall, these results are consistent with investors expecting the reforms to be meaningful and limiting corruption to be more valuable if prior reforms have strengthened market forces.

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1. Introduction

China, like many other middle-income countries, has problems with corruption. Corruption is thought to hamper economic growth by diverting capital, effort, and talent away from productivity-boosting activities and towards political rent-seeking activities (Murphy et al. 1991, 1993; Shleifer & Vishny 1993; Fisman & Svensson 2007, Agarwal et al 2015). However, in an economy plagued by bureaucratic hold-up problems, bribing officials can emerge as a second-best suboptimal response: an investment in official "connections" that "greases the gears" of the bureaucracy and lets the firm "get things done" (Wei 2001; McMillan & Woodruff 2002; Li et al. 2008). Such anti-corruption reforms might thus hurt firms by reducing the value of their past investment in "connections" (Fisman 2001; Calomiris et al. 2010).

On December fourth, 2012, less than three weeks after assuming power, the Politburo, led by President Xi Jinping, announced a set of major Communist Party policy reforms, called the Eight-point Regulation. This explicitly directed cadres to forego conspicuous perks and obtrusive behavior, and was widely perceived as the launch of China's anti-corruption reform. A market portfolio of all firms listed on China's two mainland 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 country's total market capitalization. These findings are consistent with equity investors viewing the reforms as meaningful and beneficial on net to firm valuations.

That limiting corruption would increase Chinese firm valuations is not a priori obvious. On the one hand, limiting corruption might increase firm valuations by making firms more meritocratic and corporate resource allocation more market-driven. For example, Agarwal et al

(2015) show that post anti-corruption connected bureaucrats in China lost their credit line premium related to unconnected citizens. On the other, limiting corruption might make "greasing" bureaucratic wheels and "getting things done" more difficult. We expect the positive effects to be more prevalent in provinces with more developed market economy institutions, greater growth potential, and more human capital.

China's National Economic Research Institute (NERI) provides a province-level marketization index that gauges the extent of pro-market reforms and measures the quality of market institutions. Using top and bottom terciles to distinguish relatively complete and incomplete marketization, we indeed find the portfolio of firms located in high marketization provinces to have high significantly positive returns of 4.1% or 4.8% in three or five-day windows, respectively, around the announcement date. In contrast, the portfolio of firms in low marketization provinces has insignificant (albeit positive) returns in both windows. Furthermore, 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. These results are consistent with investors expecting the reforms to better boost the prospects of firms located in provinces whose market reforms and modernization are more advanced.

To explore the negative impact of the reforms on some firms' valuations, we partition firms along two more dimensions. First, a firm's past entertainment and travel costs as a fraction of sales (ETC) (see, Cai *et al.* 2011) might proxy for either past investment in "connections" or insiders' private benefits. We therefore flag firms in the top versus bottom terciles of the ETC distribution. 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 the lowest tercile by ETC and the highest tercile by province marketization. These results are consistent with stronger market institutions and less past investment in "connections" contributing to the reforms boosting firm valuations. Other portfolios of non-SOE stocks do not react significantly to the reforms announcement. This non-reaction might reflect a negative impact from a reduced value of existing "connections" where such connections remain important negating any positive impact from reduced corruption.

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 prior-ETC spending mainly benefiting their insiders, not their public shareholders. This is plausible because SOEs enjoy relatively free access to key officials regardless of their ETC spending, and because officials are assigned to run a specific SOE for only limited terms.[1] McGregor (2010) finds that the cadres running important SOEs are rotated to new positions every three to four years, and argues that this leads them to use their SOEs' budgets primarily as tools for advancing their political careers and pursuing their private interests, rather than the financial prospects of the SOEs the manage. If SOEs' ETC spending is largely designed to augment SOE managers' careers and facilitate political rent seeking, the Eight-Point Regulation curtailing ETC would presumably boost SOE share valuations across the board.

Firm-level regressions affirm higher valuation gains for non-SOEs located in more marketized provinces and with greater past productivity growth, growth potential, and external

[1] Senior SOE managers have official civil service ranks.

financing dependence. 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 boost the valuations of more competitive non-SOEs located in provinces where market institutions are more developed, but to hurt non-SOEs located in provinces where "connections" are more valuable because they help grease bureaucratic wheels.

The signs of the regression point estimates for the SOE subsample parallel those for non-SOEs across these tests, but most are insignificant. Still, event window returns for SOEs are significantly positively related to ETC in high marketization provinces. This is consistent with the reforms boosting SOEs' valuations relatively uniformly, regardless of their access to financing, growth opportunities, and the like – perhaps by reducing SOE insiders' perks consumption.

Changes in real firm performance around the introduction of the Eight-point Regulation largely parallel the event window stock returns. Firms located in more marketized provinces show larger increases in valuation (measured by Tobin's Q), return on assets, and sales growth from the year before to the year after the enactment of the regulation. These increases are larger for firms with higher prior total factor productivity, external finance dependence, and growth potentials. Non-SOEs show decreased firm valuation, returns on assets, and sales growth across the same intervals if they have larger prior ETC spending, but this is mitigated if they are located in provinces with more complete market reforms.

Our paper is organized as follows. Section 2 introduces the background and the Eight-point Regulation. Section 3 describes our methodology and data. Section 4 presents the empirical results. We conclude in section 5.

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 & Guthrie 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 (Wedeman 2012).

Official corruption is of special importance in China because its market socialism system relies critically on virtuous government officials. The constitution of the People’s Republic of China enshrines the Leading Role of the Communist Party of China. This gives Party policies constitutional precedence over all laws and regulations, and empowers Party officials to intervene in 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 (McGregor 2010).

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; Svensson 2005). Equilibria in which political rent-seeking crowds out investment in productivity plausibly explain the middle-income traps in which many partially developed economies stagnate for decades (Morck et al. 2005). Avoiding this trap is an increasingly salient policy concern in China (Woo 2012).

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 lifestyles such officials consequently enjoy jar 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 reinforces such concerns (Mauro 1995).

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 after (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). 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 Kai-shek'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

President Xi Jinping assumed power in the18th People's Congress (Nov 8th to 14th 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). Each of its points is an explicit instruction about how officials are to behave going forward. The eight points are:[2]

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

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

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 an internal power struggle (Broadhurst & Wang 2014) or simply an attempt to make cadres' behavior less invidious; 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 free of slogans. While it does contain some expected refrains, the document mainly specifies detailed rules. Moreover, almost immediately after the initial announcement, official clarifications made the anti-corruption objective clear. That Eight-point reform announcement was the first news of this sustained agenda was made clear at the time.[3] Individual provinces and province-level jurisdictions quickly rolled out more detailed rules. For example, Tibet autonomous province

[3] For example, Professor Wang Yukai, a prominent member of the State Council directed Chinese Academy of Governance, explained "The Politburo took the lead to change work style, it will play a critical role in fighting corruption at the root." See "Wang Yukai: Central Government Leads Drive to Root Out Corruption" *Communist Party of China News Web*, Dec. 7th 2012 (http://theory.people.com.cn/n/2012/1207/c40531-19818605.html).

released its own Ten Rules on December 5th 2012, itemizing 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." That is, the Eight-Point Regulation's purpose was explicitly spelled out: it signaled a general condemnation of government officials trading favors.

The Eight-point Regulation was the only major national 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 Party cadres were punished specifically for violating the Eight-point Regulation; with at

least 227 being province-level 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. 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.

In these years, the information environment in China's stock markets improved substantially relative to the 1990s. Using 1995 to 2012 data, 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." Our observation window also precedes China's high market-volatility episodes of 2015 and 2016. These years of relative market calm are thus favorable times to search for information-driven share price movements in China's markets.

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 its differential impact across the economy.

3. Methodology and Data

3.1 Modified 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 (1981) 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 consider each firm's likely past investment in official 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. This variable includes executives spending on their own entertainment and travel, 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 across terciles of Non-SOEs and SOEs after the Eight-point Regulation announcement of Dec. 2012. The terciles are constructed based on ETC in 2011. The figure shows firms in the top ETC tercile cutting ETC more sharply than firms in the bottom ETC tercile do after the reforms.

Second, market reforms have proceeded to very different stages in different parts of China. Where market institutions are better developed, reducing corruption plausibly improves resource allocation efficiency. Where market institutions are less developed, official intervention might be essential to "grease" bureaucratic wheels, so reducing corruption might have more

ambiguous implications. We therefore note each firm's location, and the extent of market reforms there.

To measure the stage of market reforms, we use the province-level marketization index produced by the National Economic Research Institute (NERI). 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. This index is widely regarded as a meaningful measure of the progress of pro-market reforms in China (Wang et al. 2008; Fan et al. 2011).

We also make use several 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, with smaller 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' 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 province (including province-level cities) in 2011. The five most "marketized" provinces 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. Non-SOE executives lavishly entertaining officials are not violating the Eight-point Regulation. However, officials so entertained are violating it. SOE executives, as government employees, are also violating the Eight-point Regulation if they spend their firms' money lavishly entertaining anyone – government officials, themselves, their families, or others.

State control over Chinese firms is sometimes exercised through control chains of intermediate firms. To classify firms as SOEs or not, we use 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 control chains. We make an indicator variable that flags state-owned enterprises (SOEs), by which we mean firms controlled by the state or state organs at or above the 30% threshold, either directly or indirectly via equity control chains. We designate all other firms as non-SOEs. In most cases, the state organ is a State-owned Assets Supervision and Administration Commissions (SASACs), the Ministry of Finance and its provincial branches, or an 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).

4. Empirical Findings

4.1. Reaction of the Market

Table II summarizes movement in the market in two windows: a three-day window [-1, +1] from the trading day before the Dec. 4th 2012 announcement date to the trading day after it and a five-day window [-2, +2] 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, with both figures statistically significantly different from the baseline.[4] Also, both are economically significant, representing 600 and 760 billion RMB increases, respectively. Table II also shows the fraction of firms gaining versus losing value in each window. Only 25.9% drop in the 3-day window and only 23.9% drop in the 5-days window. Table II is thus consistent with investors viewing the Eight-point Regulation as important and, on the net, positive economic news.

Table II also examines the returns of portfolio of firms domiciled in provinces at different stages of market reforms. The three-day window cumulative return on the portfolio of firms domiciled in the highest-tercile marketization provinces is +4.1% and statistically significant,

[4] In this, and the other portfolio significance tests to follow, the portfolio's mean return and standard deviation, estimated using data from 210 to 11 trading days before the event date (-211 to -11), are used to assess statistical significance.

and only 22% of those firms 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 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 market institutions are more developed to gain from anti-corruption, but expecting no net gains for firms in provinces where market institutions are less developed.

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 captures human capital stock; and Marketization and Log(GDP/capita) capture the development of market institutions 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 the 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 positive and statistically significant.

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 firms' market values as weights. Table IV reports regressions of these provincial portfolios' cumulative abnormal returns on province 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, larger stocks of human capital, and more developed market institutions. These characteristics plausibly identify provinces where firms can take advantage of productivity-enhancing growth opportunities more readily after currying favor with officials is less necessary. In contrast, restricting corruption appears less helpful to firms located in provinces where market forces are weak and the most lucrative growth opportunities lie in political rent-seeking, or where "connections" serve to "grease" bureaucratic gears and "get things done".

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

To delve deeper, we form 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 provinces 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 provinces. 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 provinces has the highest event window returns; the portfolio of high-ETC SOEs located in low-marketization provinces has the lowest; and those of low-ETC SOEs in low-marketization provinces and of high-ETC SOEs in high-marketization provinces have intermediate positive returns.

Figure 6 plots the cumulative abnormal returns of portfolios of firms partitioned in all three dimensions – SOEs versus non-SOEs, high versus low-ETC, and developed versus less developed market institutions – beginning 20 days before the announcement. The patterns in these abnormal returns change abruptly after the regulation announcement. The abnormal returns of three of the four SOE portfolios are highly positive, the exception being SOEs having high

prior investment in connections (high-ETC) in low-marketization provinces. The portfolio of SOEs with low past investment in connections located in high-marketization provinces has the highest abnormal return. In contrast, the four non-SOEs portfolios' abnormal returns diverge: both high-marketization non-SOE portfolios rise; both low-marketization non-SOEs portfolios lose value. That is, the strength of the market institutions surrounding a non-SOE appears to affect its stock price reaction to the reform more than does its past investment in "connections". Overall, these patterns suggest that limiting corruption is more beneficial to the valuations of SOEs in general, to SOEs and non-SOEs with less past investment in "connections", and to non-SOEs and SOEs headquartered in provinces with more developed market institutions.

4.4 Firm-level Regressions

Our final tests are OLS regressions explaining firm level cumulative returns. The explanatory variables include 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, the log(total assets), leverage (liabilities over total assets), and research and development spending (R&D/total sales. These 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 two sets of results are virtually identical, so we focus on Panel A of Table VI.

First, the panel reaffirms that development of market institutions in a firm's home province correlates positively with both SOE and non-SOE stock price reactions to the Eight-point Regulation. In contrast, the other business environment factors – education spending/GDP 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, reducing corruption is perceived to boost non-SOEs' valuations more where market institutions are more developed. In other words, corruption hurts non-SOEs more where market forces would have better guided firm decision-making.

To explore this further, 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 6 reveal significant positive 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 6 to 10

and 12 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 dependence, and better growth opportunities have higher cumulative returns around the announcement date, particularly in more marketized provinces. In other words, investors expect curtailed corruption to help more competitive non-SOEs in provinces with stronger market institutions. In contrast, SOEs announcement window returns exhibit none of this heterogeneity; suggesting that the reforms benefit SOE shareholders in ways not captured by these variables.

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. In provinces with more developed market institutions, non-SOEs' past entertainment spending is more likely for self-interest and

harmful to shareholders.

For SOEs, the cross term between marketization and ETC (Cols. 11 and 12) is also positive and significant. One interpretation is that ETC of SOEs domiciled in more marketized provinces might mainly be managerial on-the-job consumption, with scant value to shareholders in terms of greased gears; or worse, ETC in such case might primarily proxy for SOE manager self-dealing. Under this interpretation, the findings suggest that the Eight-point Regulation unreservedly boosted SOE share valuations by checking managerial on-the-job consumption and self-dealing; but reduced the valuations of non-SOE whose ETC spending is more likely to be bureaucracy gear greasing while boosting the valuations of non-SOE whose ETC spending is more likely to be managerial private benefits.

To graphically summarize these patterns, albeit sacrificing statistical efficiency, we re-estimate the regressions in Table VI separately – twice for each province, once using all non-SOEs based in the province, then using all SOEs based in the province. The graphs in Figure 7 plot the coefficients of ETC, TFP, EFD and GROWTH in each province's regression against that provinces' marketization index. The plots show non-SOE firms' productivity, external finance dependence and growth opportunities becoming positively associated with cumulative returns only in provinces with better than median market institutions development. The province-level regression coefficients estimated using SOEs are generally not significantly different from zero, and distributed more evenly across marketization levels.

Consistent with ETC proxying for past investment in connections by non-SOEs more than by SOEs, the figure shows most provinces with negative ETC coefficients in non-SOE regressions, but over half positive in SOE regressions. The non-SOE regression ETC coefficients also rise from negative to positive territory as marketization rises to higher levels; the SOE

regression ETC coefficients do not. The SOE coefficients' pattern is consistent with their ETC reflecting waste or for executives pursuing self-interests.

4.5. Change in Firm Performance

We supplement 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 (2013) minus its average daily M/B over the year before the enactment of the regulation (2012). 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' valuation ratios rise more if they are based in provinces with more developed market institutions, higher education expenditure and higher past growth. Valuation ratios rise

even more for firms based in more marketized provinces that also have high prior productivity and greater external financial dependence. Valuation ratios drop with ETC spending only in low-marketization provinces.

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 provinces 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 provinces 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.

4.6 Robustness Discussion

Our findings survive a battery of robustness checks. Where a robustness check generates a pattern of signs and statistical significance identical to that in the tables, and point estimates roughly concordant to those in the tables, we say qualitatively similar results ensue. Where qualitatively similar results do not ensue, we explain the discrepancies in detail.

To ensure that our results are not driven by outliers, we repeat our cumulative return regressions excluding observations whose estimated residuals exceed ±2.5 time the standard deviations of the residuals. We find the same pattern of signs and significance.

To ensure that our results are not driven by unusual provinces, we first exclude firms based in Tibet, whose cultural, social, political, and economic characteristics differ substantially from other provinces. This generates qualitatively similar results. We next exclude firms based in Beijing and Shanghai, as these are China's most developed province-level jurisdictions and because firms with nationwide operations tend to be headquartered in them. This also generates qualitatively similar results. Finally, we drop firms based in Beijing, Shanghai, and Tibet to ensure that the results do not depend on the contrast between China's most and least developed provinces. This too generates qualitatively similar results.

Financial and real estate firms are regulated differently from other firms, so we next repeat our tests dropping firms in those sectors.[5] Dropping firms in finance, real estate, and in both sectors all yield qualitatively similar results.

We use total assets to measure firm size and scale R&D and ETC by total sales. Rerunning our tests using total assets to scale R&D and ETC yields qualitatively similar results.

The firm-level tests cluster separately by industry and province (two-way clustering). Redoing the tests clustering by industry only, by province only, or by industry-province cell all generate identical signs and point estimates to those in the tables, but uniformly higher t-ratios than those in the tables. We therefore present the two-way clustering results as the most

[5] A separate reason is that financial firms, e.g., state run banks, may be very national. Their economic fortune may be affected not just by the development of their home provinces but by many provinces. These banks are all headquartered in Beijing or Shanghai, and dropping firms headquartered in Beijing and Shanghai generates qualitatively similar results.

conservative.

Our tests use Chinese stocks trading in the two mainland stock exchanges – Shenzhen and Shanghai. We re-estimate Table II using H-shares, Chinese mainland firms listed in Hong Kong. Precisely the same pattern ensures. The 3-day cumulative return of the portfolio of H-shares is a significantly positive 1.89% ($p < 1\%$), with only 22% of H-shares dropping. The 5-day H-shares cumulative return is also significantly positive: 2.83% ($p <5\%$) and only 21% of H shares drop in this window. This contrasts with the insignificant +0.40% and +0.57 three and five-day cumulative returns, respectively, for the portfolio of all other Hong Kong stocks (i.e. not H-shares). Of these, 57% and 52% decline in the three and five day windows, respectively.

Because foreign investors have unrestricted access to the Hong Kong market, H shares' prices can be interpreted as gauging Hong Kong and international investors' expectations about the reforms. These results are consistent with Hong Kong and international investors also viewing the Eight-point Regulation announced on Dec 4th 2012 as positive economic news. Unfortunately, most H shares are not cross-listed on mainland exchanges, and Hong Kong accounting rules do not mandate the disclosure of entertainment and travel costs. The 81 cross-listed H-shares constitute a sample only 3.6% the size of the full sample of mainland stocks, and this is insufficient to allow meaningful statistical comparisons. [6]

Finally, marketization is unquestionably correlated with many unobservable variables related to a province's business environment. For example, provinces with more entrepreneur-friendly cultures or histories as trade or business centers might have implemented market reforms more enthusiastically. Such factors might also correlate with provincial officials' bribe

[6] They also may not be representative of mainland-listed stocks (Hung et al 2012).

solicitation and firms' willingness to bribe. These sorts of factors are intrinsically difficult to measure fully satisfactorily, so we cannot preclude marketization reflecting deeper unobserved provincial characteristics.

5. Conclusion

Chinese markets rose significantly and broadly on the Politburo's Dec. 4th 2012 announcement of its Eight-point Reform. This announcement came unusually soon after the Nov. 8th to 14th People's Congress, at which the new Politburo leadership assumed power, and contained unusually detailed directives instructing party members in government, public institutions and SOEs to avoid conspicuous, extravagant or otherwise invidious behavior. At the time, this new policy was heralded as the beginning of a serious anti-corruption campaign.

Chinese markets rose significantly and broadly on the announcement, consistent with shareholders expecting the reforms to be meaningful, rather than propaganda, as well as beneficial on net to public investors. The positive reaction is evident across many different sorts of firms, suggesting that shareholders viewed these benefits as widely distributed. Furthermore, the positive reaction is larger, more significant, and more prevalent in provinces with more human capital and higher past growth.

Firm level regressions reveal that the stocks on SOEs and non-SOEs react differently to the reform announcement. Non-SOEs' shares rise more on news of the reform if they are based in provinces with more developed market institutions, more human capital, and higher past growth. The valuations of non-SOE located in provinces with more developed market institutions rise even more on the reform announcement if those firms have higher past

productivity growth, more growth opportunities, and more need for external financing. This heterogeneity in stock price reactions across firms and provinces is consistent with investors expecting measures to reduce corruption to be more valuable to more competitive firms if prior reforms have strengthened market forces.

A positive stock price reaction is not a priori obvious. In corruption-ridden economies, firms can earn high returns by investing in "connections" with officials who can clear bureaucratic obstructions, open paths around regulatory barriers, or "grease the wheels" of an otherwise obstructive institutional environment. In such an environment, reforms that block firms' investment in "connections" can compromise firms' economic prospects and reduce valuations. Consistent with this, the reforms are significantly less value-enhancing in provinces with less progress towards market development. Indeed, the stock price reaction of non-SOE firms located in provinces where market reforms lag badly is negatively correlated with those firms' past investment in "connections". This is consistent with connections being value-enhancing prior to the reform, and with the reforms making connections less value-enhancing. If successful political rent-seeking buttressed shareholder valuations in corruption-prone environments, shareholder valuation becomes a potentially problematic measure of a firm's contribution to economy-level prosperity in such environments.

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 and travel. This is consistent with SOEs, run by career Communist Party cadres, being intrinsically well-connected with Party and government officials. Perhaps, rather than building valuable connections, their ETC spending might predominantly proxy for perks consumption, self-dealing, or other private benefits extracted by their top cadres. If these all erode public shareholders' valuations, a reform that

curtailed them would unambiguously lift valuations. This suggests that reducing corruption might bolster SOE firms' valuations, enhancing revenues to the government from their subsequent privatizations.

More speculatively, these findings suggest that curtailing corruption might better let non-SOEs utilize growth opportunities and human capital, and might clear the way for higher productivity non-SOES with better investment opportunities and greater external financing dependence to prosper. They suggest an interaction between pro-market and anti-corruption reforms: prior pro-market reforms may be a necessarily condition for anti-corruption reforms to be shareholder value-enhancing. Absent sufficiently developed market institutions, reforms that meaningfully reduce corruption might impair "connections" firms need to cope with otherwise obstructive bureaucracies. More generally, our findings are consistent with anti-corruption reforms unfettering market mechanisms.

Our findings weigh against the contention that the anti-corruption reforms impaired China's overall economic growth. First, the rapid growth associated with rapid catch-up development inevitably slows as the economy actually catches up (Barro and Sala-i-Martin 1992). Our findings of a broad-based boost to shareholder valuations and of changes in Q ratios, return on assets and sales growth auger that, absent the reforms, China's slowdown might well have been more pronounced. Second, a country's investment rate can be inefficiently high - especially if it funds grandiose megaprojects, ghost cities, and the like. Such inefficient investments can boost economic growth in the short term, but retard long-term growth. If the anti-corruption reforms impede economically inefficient investment decisions, any ensuing short-term slowdown might augment longer-term growth. Third, where the reforms reduced economic activity by impairing connections between business leaders and officials, provincial

governments might consider further market reforms that make such connections less consequential. Finally, while our findings do not totally eliminate the possibility that China's Eight-point anti-corruption Reform conceals a political power struggle, they suggest that the Reform (or perhaps the struggle itself) is a net plus for public shareholders and perhaps for the economy as a whole.

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

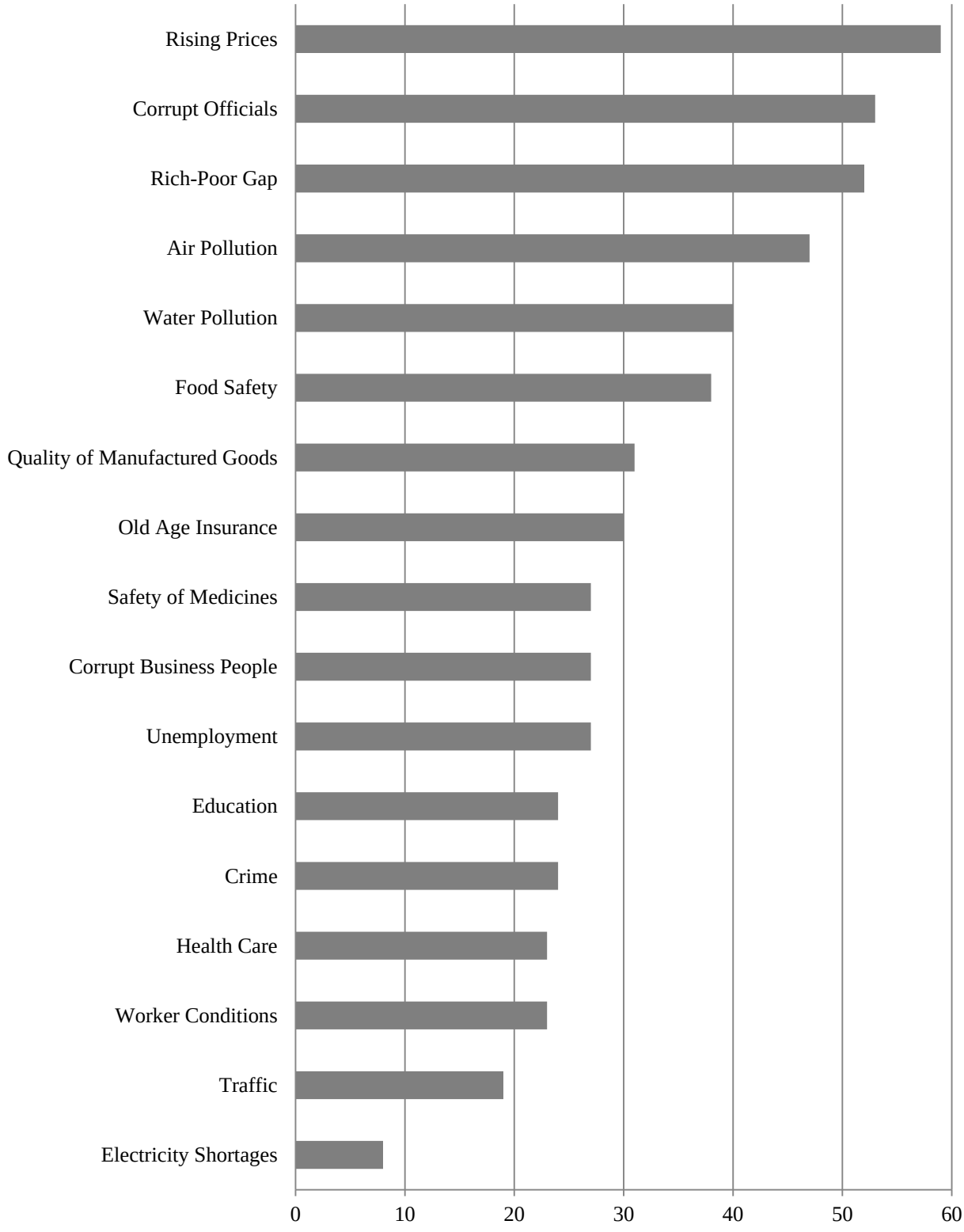

Figure 2: Online Attention to the Eight-point Regulation

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

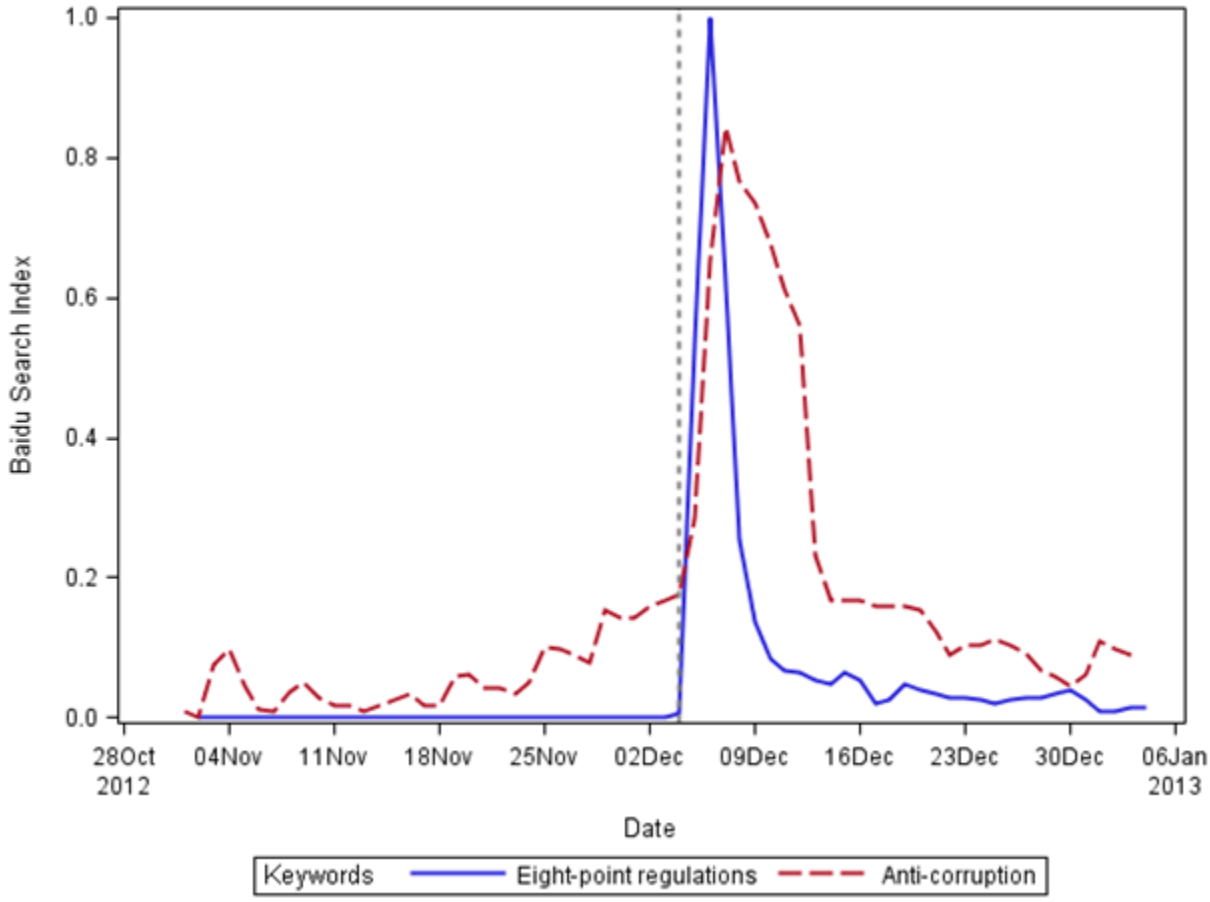

Figure 3: Average ETC Ratio by Provinces in 2011

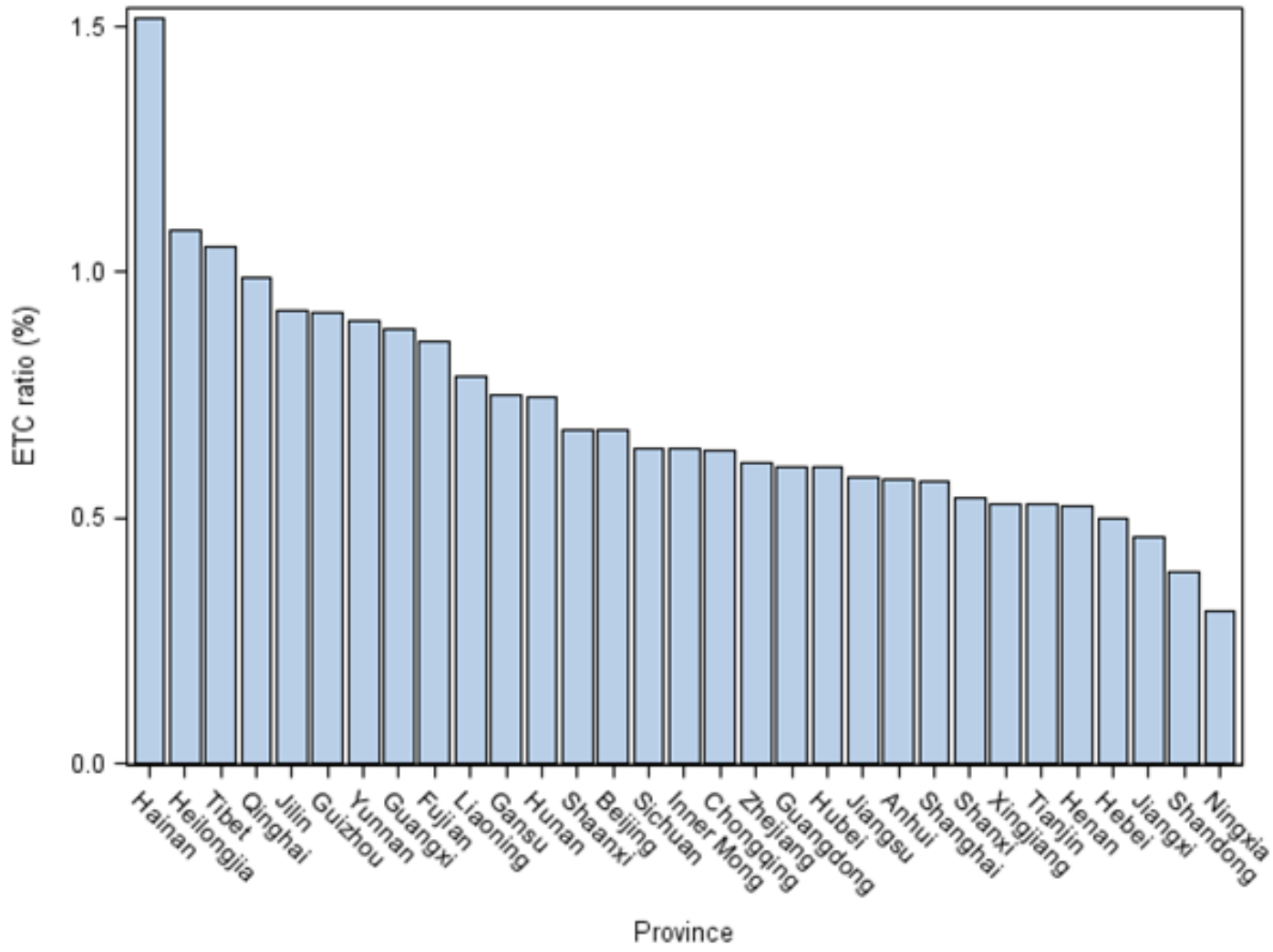

Figure 4: Entertainment and Travel Costs (ETC) Ratio Before vs. After Eight-point Regulation Announcement

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

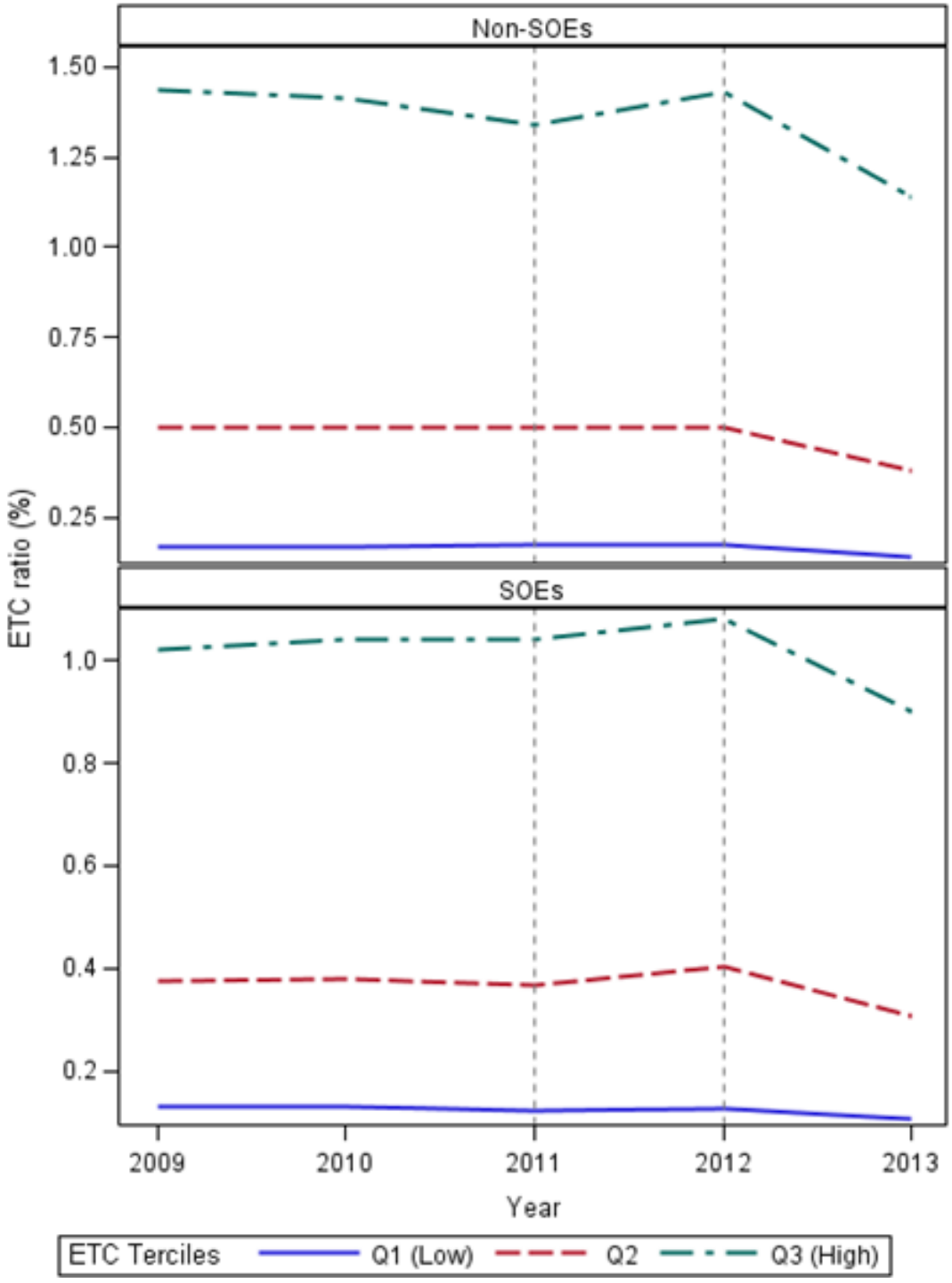

Figure 5: Cumulative Returns of Province Portfolios

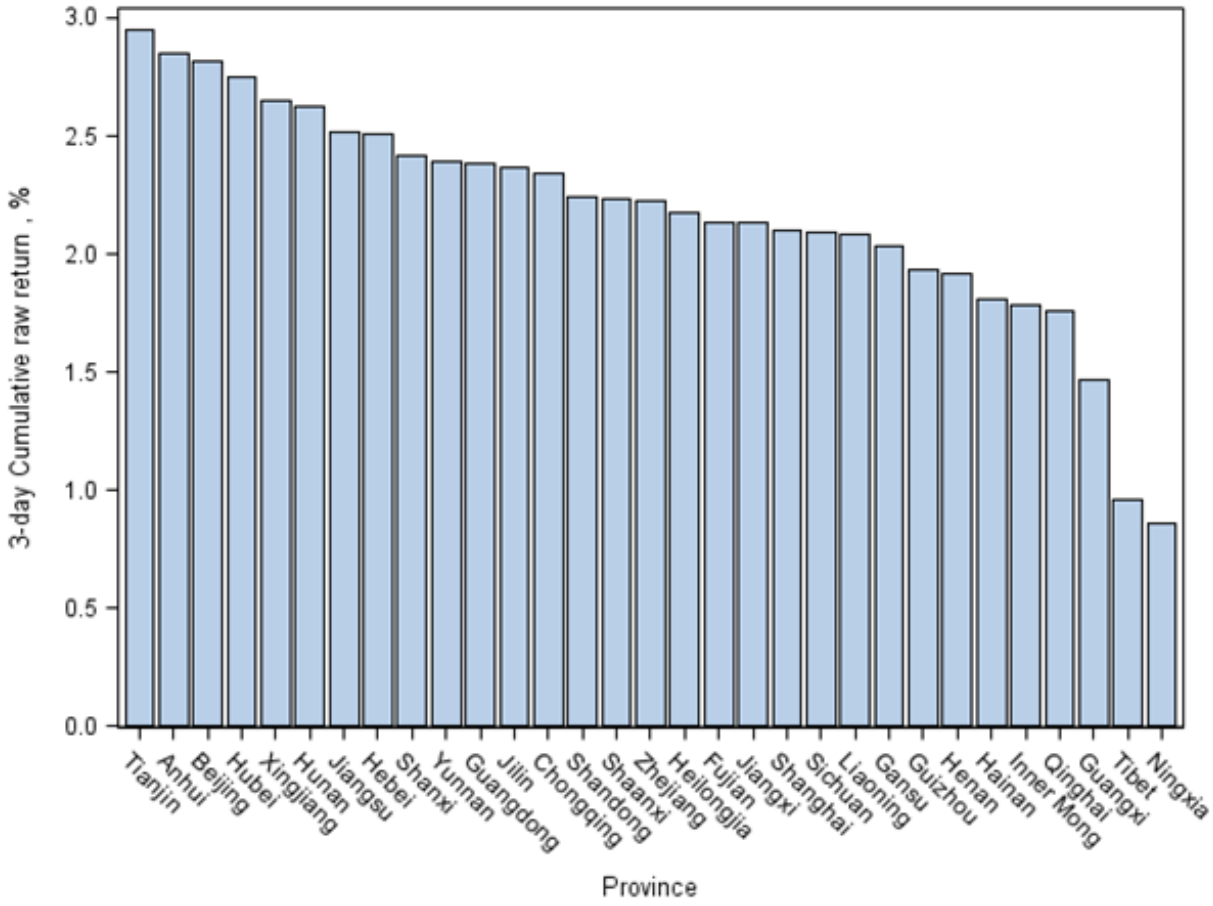

Figure 6: Cumulative Abnormal Returns around the Passage of the Eight Point Regulation

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.

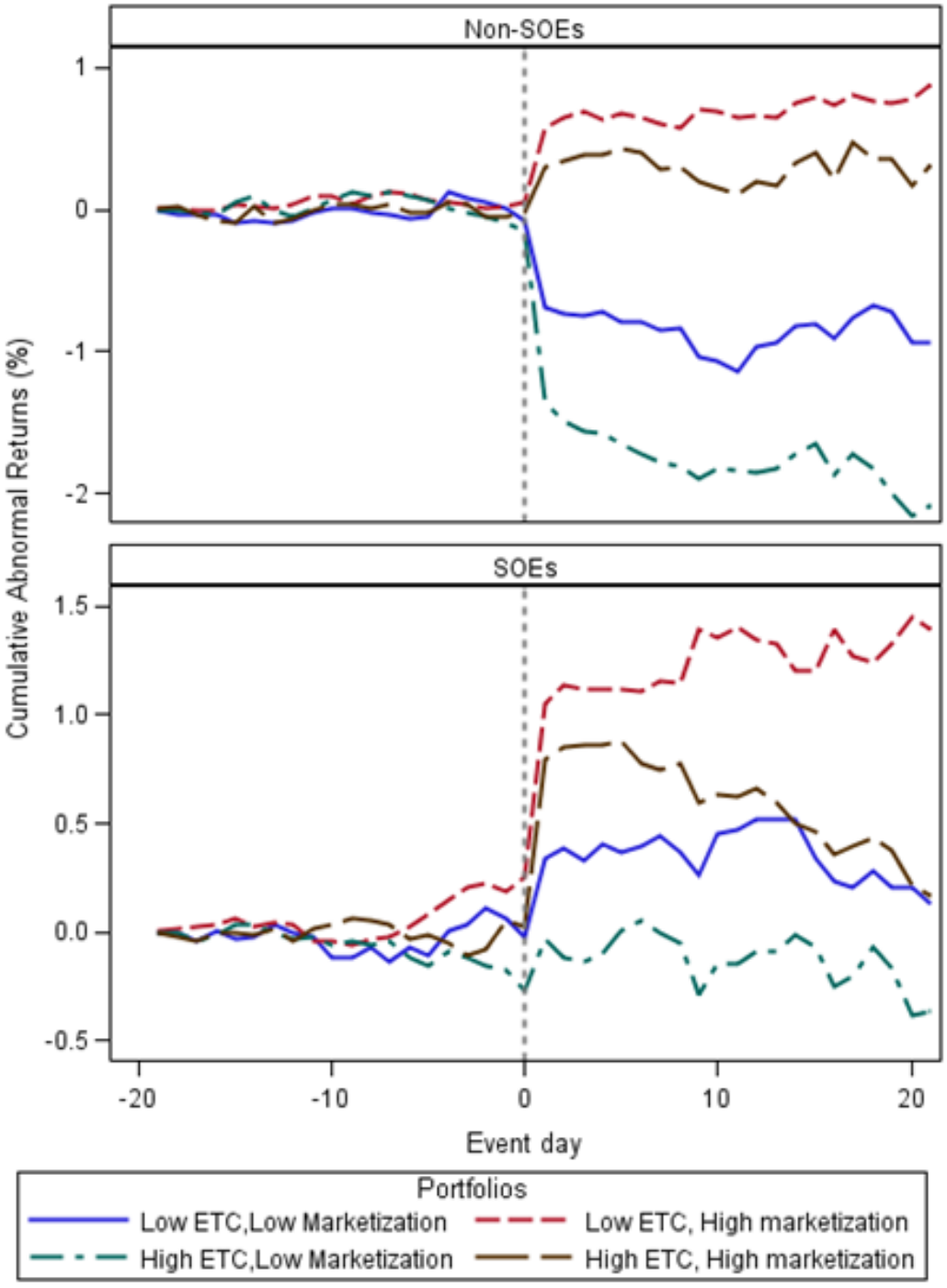

Figure 7: The Coefficients of Province Regressions vs. Marketization

For each province, we run a two firm-level regressions explaining 3-day cumulative stock returns, one using non-SOEs based in that province, the other using its SOEs. The key explanatory variables are entertainment and travel costs (*ETC*), total factor productivity (*TFP*), external finance dependence (*EFD*), and growth potential (*GROWTH*). Each regression also includes the other firm-level control variables included in the baseline regressions. Each graph plots the coefficient of the key independent variable indicated (vertical axis) against the marketization index (horizontal axis) by province. Significant and insignificant coefficients are marked with ✚ and ○ respectively. Solid lines represent regression fits; the adjacent shaded areas indicate 95% confidence limits.

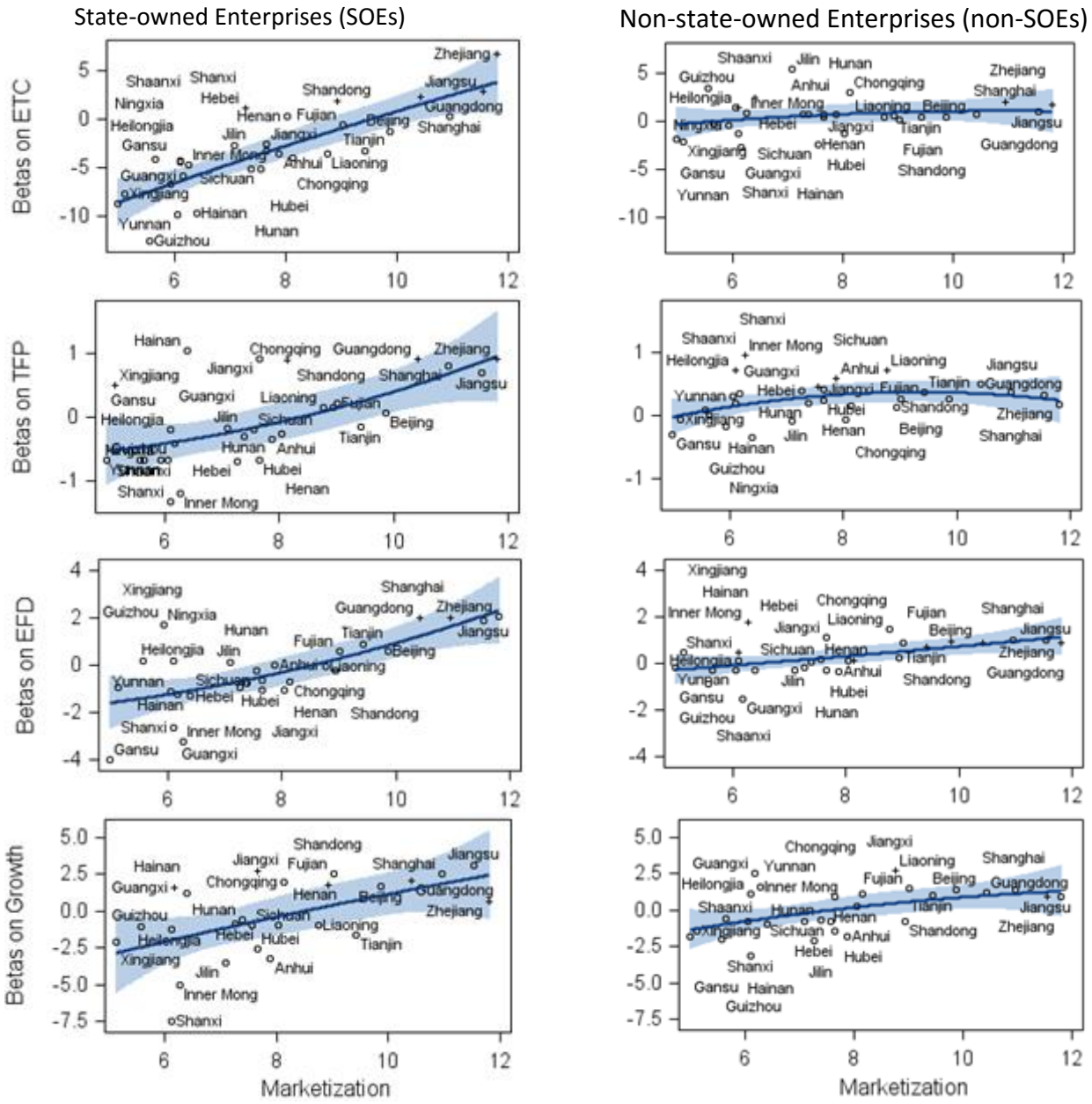

Table I
Marketization Index and subindexes, by province, including province-level cities

Province	Marketization index	Marketization Sub-indexes		
		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

Source: National Economic Research Institute (NERI) data as reported by Fan et al. (2011)

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 on Dec 4 2012. 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 used to test whether CRR(-1, 1) is significantly different from zero is the square root of 3 x the variance of daily stock return from day -211 to day -11. In Panel B, a 5-day window is used. The standard deviation used to test whether CRR(-2, 2) is significantly different from zero is the square root of 5 x the variance of daily stock return from day -211 to day -11. 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 Raw Returns

This table summarizes regressions explaining the cumulative raw returns (*CRR*) of province-level portfolios around the passage of the Eight Point Regulation on Dec 4th 2012. Province-level portfolios are value-weighted portfolios of the stocks of all listed firms headquartered in each province. Explanatory variables are the corresponding province's characteristics: *GDP growth*, *GDP per capita*, *education expenditures*/GDP, and either the province's marketization index or three of its marketization sub-indices (from Fan *et al.* 2011). *Resource allocation* gauges the extent to which market forces, rather than government officials, allocate resources; and is higher if the provincial government budget is a lower fraction of GDP. *Financial sector marketization* gauges non-SOEs' access to capital using deposits in non-state financial institutions and the share of bank loans to non-SOEs. *Legal environment* measures courts' efficiency in resolving legal disputes, and is based on a survey of business leaders. For detailed definitions, see Appendix A. The explained variable is a 3-day *CRR* in regressions 3.1 and 3.2 and a 5-day window *CRR* in 3.3 and 3.4 Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Dependent variable	CRR (-1, 1)		CRR (-2, 2)	
	3.1	3.2	3.3	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)
Observations	31	31	31	31
Adjusted R-squared	33.83%	43.82%	24.95%	32.87%

Table IV
Province Level Portfolio Cumulative Abnormal Returns

This table summarizes regressions explaining the cumulative abnormal returns (*CAR*) of province-level portfolios around the passage of the Eight Point Regulation on Dec 4th 2012. Province-level portfolios are value-weighted portfolios of the stocks of all listed firms headquartered in each province. Explanatory variables are the corresponding province's characteristics: *GDP growth*, *GDP per capita*, *education expenditures*/GDP, and either the province's marketization index or three of its marketization sub-indices (from Fan *et al.* 2011). *Resource allocation* gauges the extent to which market forces, rather than government officials, allocate resources; and is higher if the provincial government budget is a lower fraction of GDP. *Financial sector marketization* gauges non-SOEs' access to capital using deposits in non-state financial institutions and the share of bank loans to non-SOEs. *Legal environment* measures courts' efficiency in resolving legal disputes, and is based on a survey of business leaders. For detailed definitions, see Appendix A. The explained variable is a 3-day *CAR* in regressions 3.1 and 3.2 and a 5-day window *CAR* in 3.3 and 3.4 Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Dependent 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/capita)	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)	
Resource allocation		0.190***		0.267***
		(4.45)		(4.66)
Financial sector marketization		0.174*		0.151
		(1.84)		(1.43)
Legal environment		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)
Observations	31	31	31	31
Adjusted R-squared	34.72%	45.21%	20.32%	35.46%

Table V

Returns, Market Development and Entertainment and Travel Costs (ETC)

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 ratio 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 used to test whether CRR(-1, 1) is significantly different from zero is the square root of 3 x the variance of daily stock return from day -211 to day -11. In Panel B, a 5-day window is used. The standard deviation used to test whether CRR(-2, 2) is significantly different from zero is the square root of 5 x the variance of daily stock return from day -211 to day -11. 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 firm level 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 using 2011 data (Rajan and Zingales, 1998). Growth opportunity is industry median market equity value over total book equity using 2011 data. 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. (Variable definitions are in Appendix A.) Explanatory variables are observed in the year 2011. Industry fixed effects are included. Errors are clustered by industry and province (two-way). The t statistics are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: Dependent variable is 3-day cumulative raw return CRR(-1, 1)

Samples	Non-SOEs						SOEs					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Marketization	0.598***	0.373**	0.372**	0.161*	0.094	0.033	0.204**	0.164*	0.155*	0.053	0.047	-0.064
	(4.60)	(2.34)	(2.06)	(1.74)	(0.74)	(0.17)	(2.06)	(1.84)	(1.76)	(0.82)	(0.77)	(-0.30)
ETC	-1.618***	-1.628***	-1.726***	-1.447**	-8.063***	-8.184***	0.047	0.045	0.051	0.062	-0.626	-0.495
	(-2.63)	(-2.63)	(-2.84)	(-2.42)	(-3.30)	(-3.33)	(0.44)	(0.38)	(0.52)	(0.61)	(-1.08)	(-0.62)
Marketization *Total factor productivity		0.035**				0.029*		0.013				0.012
		(2.07)				(1.77)		(1.11)				(1.16)
Marketization *External finance dependence			0.037**			0.032**			0.011			0.015
			(2.33)			(2.12)			(1.23)			(1.34)
Marketization*Growth				0.262**		0.141**				0.164**		0.159**
				(2.46)		(2.29)				(2.14)		(2.11)
Marketization*ETC					1.092***	1.258***					0.469**	0.465**
					(3.57)	(3.09)					(2.22)	(2.25)
Total factor productivity	0.056**	0.013	0.055**	0.049**	0.048**	0.019	0.023	0.001	0.020	0.019	0.022	0.003
	(2.28)	(1.13)	(2.46)	(2.42)	(2.27)	(0.99)	(0.80)	(0.30)	(0.68)	(0.72)	(1.00)	(0.40)
GDP growth	8.660**	8.380**	8.246*	8.393*	8.257*	6.876*	5.941	6.939	4.818	6.338	5.944	4.985
	(2.27)	(2.06)	(1.85)	(1.94)	(1.91)	(1.82)	(1.49)	(1.63)	(1.17)	(1.33)	(1.17)	(1.08)
Log(GDP/capital)	0.150	0.150	0.446	0.118	0.173	0.524	0.207	0.209	0.010	0.271	0.266	0.098
	(0.36)	(0.32)	(0.71)	(0.23)	(0.28)	(0.91)	(0.57)	(0.58)	(0.00)	(0.69)	(0.69)	(0.23)
Education expenditures / GDP	18.727	17.047	29.766*	19.419	23.534	32.628**	1.330	1.231	28.776	2.515	13.205	29.958
	(0.97)	(1.08)	(1.91)	(1.04)	(1.22)	(2.01)	(0.30)	(0.17)	(1.26)	(0.25)	(1.01)	(1.44)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Two way clustering	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
Observation	1,228	1,228	1,228	1,228	1,228	1,228	1,015	1,015	1,015	1,015	1,015	1,015
Adjusted R-squared	23.38%	23.59%	23.94%	24.97%	25.39%	33.31%	18.6%	18.71%	18.67%	19.15%	19.64%	20.89%

Panel B: Dependent variable is 5-day cumulative raw returns CRR(-2, 2)

Samples	Non-SOEs						SOEs					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Marketization	0.493***	0.303**	0.190*	0.158	0.121	0.054	0.278**	0.187**	0.176*	0.100	0.043	-0.158
	(3.55)	(2.21)	(1.66)	(1.41)	(0.86)	(0.11)	(2.11)	(1.97)	(1.96)	(0.93)	(0.60)	(-1.23)
ETC	-1.733***	-1.734***	-1.691***	-1.353**	-8.345***	-8.453***	0.032	0.036	0.039	0.058	-0.709	-0.747
	(-2.83)	(-2.81)	(-2.67)	(-2.39)	(-3.49)	(-3.43)	(0.28)	(0.26)	(0.45)	(0.86)	(-1.20)	(-1.13)
Marketization *Total factor productivity		0.029*				0.024		0.009				0.008
		(1.86)				(1.41)		(0.98)				(0.91)
Marketization *External finance dependence			0.040**			0.036**			0.013			0.012
			(2.34)			(2.02)			(1.41)			(1.09)
Marketization*Growth				0.276**		0.188**				0.180**		0.121**
				(2.55)		(2.05)				(2.11)		(2.03)
Marketization*ETC					1.162***	1.296***					0.534**	0.507**
					(3.59)	(3.38)					(2.56)	(2.40)
Total factor productivity	0.052	0.020	0.055	0.052*	0.048	0.013	0.013	-0.013	0.014	0.013	0.013	-0.025
	(1.50)	(0.90)	(1.54)	(1.69)	(1.44)	(0.68)	(0.47)	(-0.44)	(0.30)	(0.48)	(0.49)	(-0.54)
GDP growth	7.092*	7.232*	7.498*	7.394*	7.637*	7.112*	5.337	5.788	4.804	5.176	5.364	4.686
	(1.81)	(1.81)	(1.88)	(1.81)	(1.91)	(1.70)	(1.29)	(1.31)	(1.15)	(1.24)	(1.36)	(1.17)
Log(GDP/capital)	0.567	0.570	0.717	0.873*	0.488	0.818	0.605	0.438	0.224	0.642	0.186	0.714
	(1.05)	(1.06)	(1.35)	(1.66)	(0.99)	(1.55)	(1.01)	(0.97)	(0.81)	(1.10)	(0.27)	(1.13)
Education expenditures / GDP	15.838	14.474	24.534*	17.786	27.593*	30.754*	1.165	2.584	23.157	3.967	6.481	25.258
	(0.80)	(0.88)	(1.71)	(0.86)	(1.76)	(1.89)	(0.16)	(0.22)	(1.28)	(0.45)	(0.41)	(1.14)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Two way clustering	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
Observations	1,228	1,228	1,228	1,228	1,228	1,228	1,015	1,015	1,015	1,015	1,015	1,015
Adjusted R-squared	20.99%	21.62%	22.71%	23.08%	23.07%	29.14%	17.03%	17.57%	18.22%	18.5%	18.56%	20.34%

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 using 2011 data (Rajan and Zingales, 1998). Growth opportunity is measured by the industry median of market equity value over total book equity using 2011 data. The dependent variable is the 3-day (5-day) cumulative abnormal returns. (Variable definitions are in Appendix A.) Explanatory variables are observed in the year 2011. Industry fixed effects are included. Errors are clustered by industry and province (two-way). The t statistics are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Dependent Variables	CAR(-1,1)				CAR(-2,2)			
Samples	Non-SOEs		SOEs		Non-SOEs		SOEs	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Marketization	0.578***	0.023	0.163*	-0.017	0.460***	0.035	0.251**	-0.421
	(3.51)	(0.60)	(1.94)	(-0.21)	(3.15)	(0.11)	(2.07)	(-1.01)
ETC	-2.040***	-9.982***	0.041	-0.456	-2.113***	-9.486***	0.144	-0.532
	(-3.19)	(-3.41)	(0.28)	(-0.96)	(-3.42)	(-3.21)	(0.99)	(-0.98)
Marketization*Total factor productivity		0.021**		0.008		0.023**		0.009
		(1.97)		(0.90)		(2.29)		(0.92)
Marketization*External finance dependence		0.024**		-0.007		0.020*		-0.019
		(2.02)		(-0.58)		(1.81)		(-0.96)
Marketization*Growth		0.248*		0.186*		0.121		0.196*
		(1.69)		(1.90)		(1.53)		(1.92)
Marketization*ETC		1.518**		0.448*		1.449**		0.482**
		(2.13)		(1.82)		(2.07)		(2.03)
Total factor productivity	0.041*	0.002	0.029	0.020	0.035**	0.005	0.031	0.029
	(1.87)	(0.47)	(1.21)	(0.89)	(2.01)	(0.81)	(1.05)	(0.36)
GDP growth	5.307	5.431	3.179	3.296	7.045	8.477*	4.913	5.384
	(1.50)	(1.59)	(0.93)	(0.91)	(1.63)	(1.73)	(1.43)	(1.49)
Log(GDP/capital)	0.146	0.157	0.010	0.058	0.803	0.784	0.093	0.184
	(0.38)	(0.32)	(0.05)	(0.14)	(1.43)	(1.61)	(0.24)	(0.38)
Education expenditures/GDP	20.340	23.241	5.353	6.883	20.315	32.831*	7.019	7.537
	(0.93)	(1.15)	(0.40)	(0.40)	(1.14)	(1.85)	(0.55)	(0.64)
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	1,228	1,228	1,015	1,015	1,228	1,228	1,015	1,015
Adj. R-squared	22.17%	29.29%	18.56%	20.26%	20.66%	25.82%	14.54%	16.81%

Table VIII
Change in Performance

Regressions of firm-level performance (year after the reforms minus year prior to the reforms) explained by provincial market reforms (marketization), entertainment and travel costs over sales (ETC), and interactions of marketization with total factor productivity growth (TFP), external finance dependence (EFD), and growth opportunities (Growth). 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 using 2011 data (Rajan and Zingales, 1998). Growth opportunities are industry median market equity value over total book equity using 2011 data. Industry fixed effects subsume main effects of EFD and Growth. In Panel A, the dependent variable is the change of firm value (ΔQ) defined as 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 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 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 are clustered by industry and province (two-way). The t statistics are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: left-hand side variable is change in firm value (*ΔQ*)

Sample	Non-SOEs		SOEs	
	(1)	(2)	(3)	(4)
Marketization	0.195***	0.016	0.045	0.011
	(3.59)	(0.06)	(1.02)	(0.45)
ETC	-0.348**	-1.831***	0.091**	0.273
	(-2.04)	(-2.58)	(2.01)	(0.91)
Marketization*Total factor productivity		0.006***		0.009**
		(2.73)		(2.36)
Marketization*External finance dependence		0.011*		0.006
		(1.69)		(0.81)
Marketization*Growth		0.091		0.006
		(0.97)		(0.05)
Marketization*ETC		0.266**		1.078*
		(2.29)		(1.72)
Total factor productivity growth (TFP)	0.013	-0.017	0.016	-0.028
	(1.25)	(-1.09)	(1.13)	(-1.18)
GDP growth	8.537*	9.033*	-0.737	-0.863
	(1.71)	(1.69)	(-0.28)	(-0.30)
Log(GDP/capital)	0.450*	0.393	0.005	0.045
	(1.74)	(1.46)	(0.01)	(0.15)
Education expenditures/GDP	18.120*	17.526*	4.768	3.709
	(1.84)	(1.82)	(0.36)	(0.19)
Oher controls	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Clustering	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
Observations	1,228	1,228	1,015	1,015
Adjusted R-squared	18.56%	20.93%	9.57%	11.22%

Panel B: Left-hand side variable is change in return on assets (*ΔROA*)

Samples	Non-SOEs		SOEs	
	(1)	(2)	(3)	(4)
Marketization	0.307**	0.092	0.239*	0.047
	(2.33)	(0.77)	(1.80)	(0.86)
ETC	-0.238**	-4.107***	0.076	-0.075
	(-2.14)	(-2.67)	(0.58)	(-1.00)
Marketization*Total factor productivity		0.019**		0.032***
		(2.01)		(3.43)
Marketization*External finance dependence		0.047***		0.020
		(2.94)		(1.16)
Marketization*Growth		0.122		0.403
		(1.40)		(1.34)
Marketization*ETC		0.537***		0.112**
		(2.73)		(2.34)
Total factor productivity	0.066	-0.106	0.101	-0.119
	(1.51)	(-1.06)	(1.51)	(-1.17)
GDP growth	16.387	17.075	-4.765	-3.703
	(1.48)	(1.45)	(-0.59)	(-0.46)
Log(GDP/capital)	-0.229	-0.177	-0.781	-0.723
	(-0.44)	(-0.39)	(-1.50)	(-1.37)
Education expenditures/GDP	23.095	15.244	1.244	1.143
	(1.05)	(0.70)	(0.34)	(0.34)
Oher controls	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Clustering	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
Observations	1,228	1,228	1,015	1,015
Adjusted R-squared	18.83%	20.46%	19.14%	21.91%

Panel C: Left-hand side variable is change in sales growth (*ΔSG*)

Samples	Non-SOEs		SOEs	
	(1)	(2)	(3)	(4)
Marketization	4.454***	1.052	5.501***	1.309
	(2.95)	(1.00)	(3.18)	(1.09)
ETC	-14.887***	-66.284***	1.067	-10.470
	(-4.64)	(-3.02)	(0.71)	(-1.38)
Marketization*Total factor productivity		0.153**		0.190**
		(2.27)		(2.15)
Marketization*External finance dependence		0.407*		0.384
		(1.88)		(0.98)
Marketization*Growth		4.858*		3.665*
		(1.80)		(1.77)
Marketization*ETC		8.110***		1.961**
		(3.34)		(2.06)
Total factor productivity	0.307	-0.690	0.490	-1.046
	(1.00)	(-1.26)	(1.23)	(-1.34)
GDP growth	7.112	18.193	-3.243	-2.529
	(0.11)	(0.29)	(-0.05)	(-0.07)
Log(GDP/capital)	-4.517	-4.517	-5.513	-4.530
	(-0.66)	(-0.67)	(-0.78)	(-0.69)
Education expenditures/GDP	407.340**	456.056**	350.209	291.797
	(2.07)	(2.29)	(1.31)	(1.00)
Oher controls	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Clustering	Ind, Prov	Ind, Prov	Ind, Prov	Ind, Prov
Observations	1,228	1,228	1,015	1,015
Adjusted R-squared	19.33%	20.93%	17.71%	19.06%

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
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	0.01	0.03	0.02	0.03	0.01	0.03
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	-0.87	3.79	-0.71	3.61	-1.05	4.00
Growth	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 Descriptions

Variables	Description
ETC, %	Entertainment and travel costs scaled by annual sales
CRR(-1,1), %	3-day cumulative stock raw returns around the passage of the Eight-point regulation on Dec 4th 2102.
CRR(-2,2), %	5-day cumulated stock raw returns around the passage of the Eight-point regulation.
CAR(-1,1), %	3-day cumulative stock abnormal returns around the passage of the Eight-point regulation 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 Eight-point regulation 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 Eight-point regulation 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, using a 30% control threshold following CSMAR (China Stock Market and Accounting Research) and guidelines from the CSRC (China Securities Regulatory Commission).
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 et al (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.
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 province's average of real GDP growth from 2009 to 2011.
Log(GDP/capital)	The province's average of log(real GDP/capita) from 2009 to 2011.
Education expenditures / GDP	The province's average of education expenditures over GDP from 2009 to 2011.
External finance dependence (EFD)	The industry median of capital expenditures minus cash flow from operations divided by capital expenditures. 2011 data.
Growth (GROWTH)	The industry median of market equity value divided by total book equity. 2011 data.

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