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EVENT STUDY EVIDENCE FROM CHINA

Chen Lin
Randall Morck
Bernard Yeung
Xiaofeng Zhao

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ABSTRACT

Consistent with reduced expected corruption adding value overall, Chinese shares rise sharply on the December 4th 2012 launch of major anti-corruption reforms starting with curtailing extravagant spending by or for Party cadres. SOEs gain broadly, consistent with the reform cutting their top managers' (all Party cadres) spending on private benefits. NonSOEs gain in more liberalized provinces, consistent with reduced expected bribes to officials (also Party cadres) for getting business done. NonSOEs lose in provinces where market institutions remain weak, consistent with bribes for "greasing bureaucratic gears" still being a key resource allocation mechanism there. Firm level regressions reveal more productive nonSOEs in more growth potential and external finance-dependent industries gaining more in more liberalized provinces, consistent with investors expecting reduced corruption to improve resource allocation more where market institutions are more developed.

Chen Lin
Faculty of Business and Economics
The University of Hong Kong
Hong Kong
chenlin1@hku.hk

Randall Morck
Faculty of Business
University of Alberta
Edmonton, AB T6G 2R6
CANADA
and NBER
randall.morck@ualberta.ca

Bernard Yeung
National University of Singapore
Mochtar Riady Building
15 Kent Ridge Drive
BIZ 1, Level 6, #6-19
Singapore 119245
bizdean@nus.edu.sg

Xiaofeng Zhao
Chinese University of Hong Kong
xiaofeng@baf.cuhk.edu.hk

1. Introduction

In China, as in many other middle-income countries, official corruption is increasingly considered a major impediment to increased overall economic prosperity. Official corruption impairs public goods provision as officials divert state resources into funding *private benefits*, either in cash or in kind (e.g. lavish entertainment or travel); hampers business with proliferating *tolls* as officials erect ever more regulations designed to be waived for bribes (often paid as private benefits); and *distorts resource allocation* away from productivity-boosting investment and towards political rent-seeking as firms adapt (Krueger, 1974; Shleifer and Vishny, 1993; Mauro, 1995; Fisman and Svensson, 2007; Ayyagari et al., 2014). Consequently, anti-corruption reforms are a public policy priority in more and more countries (World Bank 2015).

Firms adapt to pervasive corruption by investing in political rent-seeking: building official “connections” that “grease the gears” of the bureaucracy to “get things done” (Fisman, 2001; Wei, 2001; McMillan and Woodruff, 2002; Li et al., 2008; and Calomiris et al., 2010; Agarwal et al., 2015; Zeume, 2016). Connected firms earn *political rents* in being able to “get things done” that unconnected firms cannot. Pervasive corruption can thus emerge as a second-best suboptimal equilibrium, stabilized by connected firms protecting the values of their connections and officials protecting their streams of private benefits. This second best can be profoundly suboptimal (Murphy et al., 1991, 1993).

Anti-corruption reforms, albeit potentially efficiency improving on net, are resisted by parties with vested interests on the losing side of the ledger. Corrupt officials obviously have much to lose; but so do firms with extensive investment in official “connections”. Reducing corruption, by depreciating the value of such connections, could “seize up bureaucratic gears” and reduce investors’ valuations of highly connection-dependent firms.

Recent events in China help identify expected losers and winners and the empirical findings below help illuminate the economics of anti-corruption reforms. In 2012, the Hu Jintao and Wen Jiabao administration's preset term ended, and the Xi Jinping administration formally assumed power on the last day of the 18th National Congress (November 8th to 14th, 2012). On December 4th 2012, twenty days after taking office, Xi Jinping's Politburo announced a new "Eight-point Policy", a Communist Party policy directive ordering cadres to forego conspicuous perks and other obtrusive behavior. Narrowly and literally, the Eight-Point Policy stops government officials and state-owned enterprise (SOE) top executives, both of which are Party cadres, from demanding or accepting extravagant perks. Almost immediately after the announcement, the Communist Party official website, however, offered a broader interpretation, lauding the policy as initiating a major anti-corruption campaign. Regardless, the new policy was unexpected: its announcement only twenty days after the National Congress, rather than a year later, during the Third Plenum of the Central Committee, when new policies are normally unveiled, was unprecedented. The unexpected and sudden rollout of a potentially sweeping anticorruption policy presents an opportunity to explore how shareholders expect reduced corruption to affect the future prospects of listed firms using an event study.

Consistent with investors viewing corruption as value-destroying at the economy-level, 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 +2.77% or +3.86% over 3-day or 5-day windows, respectively, centered on Dec. 4th 2012. These represent economically significant additions of ¥533 billion or ¥742 billion, respectively, to total market capitalization.

Disaggregating this finding provides new insights into how the literatures summarized above interact. The main patterns we find across provinces and firms in stocks' reactions to the prospect of reduced corruption, and their possible implications, are as follows:

First, the National Economic Research Institute's (NERI) *Marketization Index* tracks Chinese provinces' very different progress towards market liberalization (Fan *et al.*, 2011).¹ The portfolio of firms located in high-*Marketization* (top tercile) provinces gains significantly: 3.20% and 4.46% in three and five-day windows, respectively, around the announcement date; while the portfolio of firms in low-*Marketization* (bottom tercile) provinces posts insignificant gains in both windows (0.54% and 0.98%, respectively). These findings are consistent with investors expecting reduced corruption to be more value-creating where market machinery is more “up and running” and less value-creating where bureaucrats, not markets, allocate resources and “connections” remain essential for “getting anything done.”

Second, portfolios of state-owned enterprises (SOEs) gain in both sorts of provinces in both event windows. Portfolios of SOEs gain more than portfolios of other firms (nonSOEs) but the gap diminishes in more liberalized (higher-*Marketization*) provinces, where both gain substantially. This gap is consistent with investors expecting the Eight-point Policy to cut private benefits to SOE top managers, but leave nonSOEs top managers private benefits little affected. The pattern in nonSOE gains is consistent with investors expecting the reforms to interfere with powerful government officials “charging tolls” – that is, demanding extravagant gifts for waiving regulations that obstruct nonSOEs' responses to market forces – and with nonSOEs from investing in “connections” – that is, giving extravagant perks to the government officials who

¹ We use the term *province* in referring to all province-level governments. These include 23 provinces, 4 province-level cities (Beijing, Chongqing, Shanghai and Tianjin) and 5 autonomous regions (Inner Mongolia, Guangxi, Ningxia, Tibet and Xinjiang).

still allocate key resources in less liberalized provinces, where markets are not yet up and running. Indeed, nonSOEs in the least liberalized provinces lose 2.72% and the gap between SOEs and nonSOEs widens to 5.99% (both figures are for the three-day window). These considerations do not affect SOEs, which are innately politically-connected.²

Third, firm-level regressions explaining stock price changes around the reforms with interactions of the province-level *Marketization* index and firm- and industry-level measures of competitiveness – total factor productivity (*TFP*) and growth opportunities (*Q*) – reveal generally significantly higher gains for nonSOEs that are more competitive or in more competitive sectors and in more liberalized provinces. This is again consistent with reduced corruption disproportionately benefiting more competitive private sector firms where market machinery stands readier to allocate resources.

Fourth, firm-level regressions exploring the interaction of province *Marketization* with a measure of external financing-dependence reveal higher gains for more external-finance dependent nonSOEs in more liberalized provinces. This is consistent with investors expecting reduced corruption to improve nonSOEs' access to external capital more in more liberalized provinces. The opposite result holds for SOEs, consistent with investors expecting the reforms to expose SOEs to better financed nonSOE competitors or entrants in more liberalized provinces.

Fifth, listed firms disclose their entertainment and travel costs (*ETC*). Morck and Nakamura (1999) interpret the analogous item in Japanese annual reports as top corporate insiders' private benefits. *ETC* might also reflect firms' "tolls" paid to officials for lifting obstructive regulatory roadblocks. Cai *et al.* (2011) view *ETC* as firms' investment in

² The careers of both government officials regulating SOEs and SOE top executives are directly subject to the Organization Department of the Communist Party. SOEs also have access to SOE bank loans (Cull and Xu, 2003, Allen et al., 2005) and government concessions (Xu, 2011), which nonSOEs generally lack.

“connections” necessary to “get anything done”. We take a firm’s *ETC* as an unknown mix of all three. Non-SOEs’ higher prior-year *ETC* is associated with larger share price declines in the least liberalized provinces, but with larger gains elsewhere. This is consistent with non-SOEs’ *ETC* being more predominantly “grease” for bureaucratic wheels to “get anything done” in less liberalized provinces where officials allocate resources, but more predominantly tollbooth payments in more liberalized provinces. *ETC* correlates more negatively with SOEs’ share gains in more liberalized provinces, perhaps consistent with higher *ETC* in SOEs reflecting top managers who extract greater private benefits also being less able managers, and this mattering more in a more competitive business environment.

Obviously, investors can be wrong, and subsequent events may reveal more complete information about the Xi administration’s resolve and objectives. However, this does not invalidate the analysis. Investors’ expectations, even if ultimately unfulfilled, are useful information for both economists and policy-makers about the likely implications of public policy alternatives. Overall, our results suggest that investors expect anti-corruption reforms to boost share valuations more where prior market liberalization reforms have better readied markets for allocating resources efficiently. That is, the impact of anticorruption reforms appears to depend on the extent of prior market liberalization.

These findings survive a battery of robustness checks. Additional tests exploring alternative explanations of these findings all weigh towards the interpretation above. Of course, a province’s progress on market reforms might correlate with other characteristics (culture, history, education, foreign influence, government quality and the like) that help shape its resource allocation efficiency. If so, a friendly amendment to our conclusions might be that reducing corruption, by limiting connections-driven state intervention, improves resource allocation more

where either market machinery or these capabilities (or both) is better developed.

This paper is organized as follows. Section 2 introduces the background and the Eight-point Policy. Section 3 describes our methodology and data. Section 4 presents the empirical results and Section 5 concludes.

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 and Guthrie, 2002). The term does not connote venality; developing connections is a normal and respectable part of doing business, indeed of life – and not just in China but in many parts of Asia and the world. However, *guanxi* can become excessive and turn into socially corrosive corruption, which is an increasing concern in China in recent years (Wedeman, 2012).

Official corruption is of special importance in China because its Market Socialism with Chinese Characteristics 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 direct judicial verdicts and regulatory decisions (Chen, 2003; Jones, 2003). The vast discretionary powers officials wield can easily make establishing ties of *guanxi* with them a very high return investment to any nonSOE (McGregor, 2010).

In this environment, the innocuous building of interpersonal connections 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 boosting productivity, economy-level growth lags even as corporate profits soar (Murphy et al., 1991, 1993; Shleifer and Vishny, 1993; Mauro, 1995; Svensson, 2005; Prichett and Summers, 2013). 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). The avoidance of this trap is an increasingly salient policy concern in China (Woo, 2012).

Chinese political rent-seeking uses *guanxi* to implant a sense of obligation by providing a government official with extravagantly expensive wining and dining, entertainment, travel, gifts, or other *de facto* bribes. Official corruption takes various forms: (1) NonSOE firms seeking official permissions, regulatory forbearances, or influence over other government decisions can invest in “connections” by lavishly “entertaining” pivotal officials, or those to whom pivotal officials are obliged. Wilson (1989) finds that bureaucrats are blame-averse and prefer quiet lives of inaction. Consequently, *guanxi* that instills in pivotal officials an obligation to act can be essential “grease” to move “bureaucratic “gears” in relatively unreformed provinces, where bureaucracies still allocate key resources. (2) Officials can also devise economically pointless regulations, obstructive regulatory “tolls”, to waive in order to create or repay obligations. (3) Government officials running SOEs can use their firms’ resources to oblige other officials to provide them with “private benefits” – career advancements, advantages for their relatives, or favors to bestow on members of their patronage networks. In Chinese society, these exchanges are often initiated in the form of lavish entertainment or extravagant formal gestures. All these practices threaten the legitimacy of the Communist Party of China (CPC) because the lifestyles

and advantages such officials consequently enjoy jar with socialist egalitarianism and because the resultant resource misallocation threatens the rapid economic growth that sustains the Party's popularity.

Widespread corruption can form a stable suboptimal political-economy equilibrium. If favor-trading between politicians and firms has been extensive,³ officials do not support anti-corruption reforms. Corrupt officials owed favors rationally oppose reforms that would prevent them from collecting what they deem is owed them. Corrupt officials owing favors rationally oppose reforms that would force them to find other ways of repaying their debts or risk the consequences of failing to do so. Both are concerned that anti-corruption reforms expose them to whistle-blowing and punishment. This builds in inertia: powerful officials find anti-corruption reforms threatening to their personal interests, even if they recognize the public good in such reforms. A political shock to destabilize this equilibrium then becomes a necessary precursor to effective reform.

2.2 Political Background Developments in 2012

The Hu Jintao – Wen Jaibao administration's predetermined term ended in 2012, and the new administration of Xi Jinping assumed office amid an ongoing struggle between multiple Party factions for political power and economic gain. This struggle appeared increasingly fierce throughout that year. One faction was allegedly led by Zhou Yongkong, then in the Standing Committee, the highest and most powerful CPC committee, though he might also have had backing from other established and powerful political grandees. Bo Xilai, like Xi Jinping, a politically ambitious princeling (son of a Mao-era revolutionary leader), and despite being

³ Transparency International ranked China as a "highly corrupt country" in 2012.

backed by Zhou Yongkang, was dismissed as Chongqing's Party Secretary on March 15th, suspended from the CPC's Central Committee and its Politburo a month later, and expelled from the Party on Sept. 28th 2012. The Washington Post wrote that Xi Jinping "disappeared mysteriously for two weeks. He went unseen, unheard, and undiscussed by official Chinese media," purportedly after being "hit in the back with a chair hurled during a contentious meeting of the 'red second generation'."⁴ Regardless of the veracity of this particular report (the Post's writer expressed doubts), the period leading up to the succession was one of escalating tension.

The Party's 18th National Congress, on Nov. 8th to 14th 2012, marked the official transfer of power. On Nov. 14th, Xi assumed the title General Secretary of the Communist Party and Chairman of the Party Central Military Commission.⁵ However, signs of an ongoing power struggle continued. At the beginning of the National Congress, "former President Jiang Zemin and other party veterans returned to centre stage ... demonstrating their continued power to shape the country's future" (South China Morning Post, Nov. 8th 2012). By its end, Nov. 14th, Hu Jintao, the departing President of China and General Secretary of the Party, unexpectedly relinquished all his titles and positions (Telegraph, Nov. 14th 2012). This unprecedented act was thought to be setting an example for other departed and departing leaders. On Nov. 17th, 2012, Hu and Xi jointly urged "the Chinese army to be absolutely loyal and to accomplish historic missions" (Xinhua News, Nov. 17th 2012). In his final speech to the 18th National Congress, Hu Jintao spoke of his administration's achievement in building a moderately prosperous society with deepening reforms that maintained Socialism with Chinese Characteristics. On Nov. 19th, in

⁴ See "The secret story behind Xi Jinping's disappearance" by Max Fisher, Washington Post Nov. 1st 2012. <https://www.washingtonpost.com/news/worldviews/wp/2012/11/01/the-secret-story-behind-xi-jinpings-disappearance-finally-revealed/>

⁵ Xi assumed the title of President later, in March of 2013.

a meeting with the Politburo, Xi made a speech themed "firmly uphold and develop Socialism with Chinese Characteristics" and urged the Politburo to "promote and implement the spirit of the 18th CPC National Congress," (Xinhua News, Nov. 20th 2012). Political tension was still clearly on display, and no clear policy direction was yet evident.

The first hint of these developing policies may have been a report submitted to the 18th National Congress by the *Central Commission for Discipline Inspection* (CCDI), the Party's top anti-graft body, arguing that the Party must fight corruption and treat this as a major political task, initially reported by Xinhua News on Nov. 20th 2012. However, in China (and elsewhere), attacks on corruption after an important political transition are often mere rhetoric, or even smokescreens for purging political opponents.

2.3 The Eight-point Policy

The CCDI was right: corruption had 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 Party. 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. Thus, a CCDI official warned that "*the public's trust in the Party and the government has fallen to a critical level*" (Xinhua News, Nov. 20th 2012).

Xi made cutting corruption his signature policy. Wang Qishan, who performed manual

labor with Xi in Shaanxi during the Cultural Revolution, played a central role in the campaign. Wang an experienced senior party leader with a stellar vitae – Governor of China Construction Bank (1994-7), Vice-Governor of Guangdong (1997-2002), Party Secretary of Hainan (2002-3), Mayor of Beijing (2003-7), appointed to the 17th Politburo in 2007, Vice-Premier of the State Council in charge of finance and economics in 2008, and a member of the CPC Standing Committee – became CCDI Secretary.

Xi began his anti-corruption campaign on Dec. 4th 2012 with a policy document by the *Politburo of the Central Committee of the CPC* entitled the Eight-point Policy (八项规定). Each of its points is an explicit instruction about how leading cadres are to behave going forward. The eight points are:⁶

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.

⁶ For details, see http://cpcchina.chinadaily.com.cn/2012-12/05/content_15991171.htm.

Given the background, skeptics saw the Eight-point Policy as cover for an internal power struggle (Broadhurst and Wang, 2014) or simply an attempt to make cadres' behavior less invidious; but others saw a genuine anti-corruption campaign unfolding (Yuen, 2014).

The Eight-point Policy 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 a new Politburo's policy directions, by roughly a year. Second, the statement was unusually concretely detailed and free of slogans. While it does contain some expected refrains, the document mainly specifies detailed rules. Third, almost immediately after the initial announcement, official elaborations made the anti-corruption objective crystal clear and explained that the Eight-point Policy was the first official policy of this sustained agenda. Professor Wang Yukai, a prominent member of the State Council directed Chinese Academy of Governance, spelled out the intent of the Policy on Dec. 7th 2012, explaining "The Politburo took the lead to change work style, it will play a critical role in fighting corruption at the root."⁷ 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." Individual provinces quickly rolled out more detailed rules. For example, Tibet Autonomous Region released its own Ten Rules on December 5th 2012, itemizing how officials should reduce waste and extravagance and simplify official functions.

To verify that the Eight-point Policy was the only major national news story on or around Dec. 4th 2012, we use the news function in the WIND Information Database to search through a

⁷ 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>).

comprehensive collection of news from different sources, including the major financial media in China, the CSRC, People’s Bank of China, Ministry of Finance, and other government organizations, and covering different areas, such as finance, business, government policy, law and regulations. We augment this by searching major news media and internet records. These exercises reveal no other major policy announcements, and confirm that the Eight Point Policy was the only major news event in the window period.

The policy gained immediate and widespread attention. Figure 2A graphs internet searches using Baidu, the Chinese analog of Google, using the terms “Eight-Point Policy” (八项规定) and “anti-corruption” (反腐). Each search volume is normalized by its own maximum within the window. The figure shows both search volumes rising sharply on Tuesday, December 4th, the event date, with “Eight-point Policy” searches peaking two days later (Thursday December 6th) and “anti-corruption searches” peaking three days later (Friday December 7th).

The figure shows a much smaller increase in searches for “anti-corruption” prior to the event date. This corresponds with a Nov. 20th 2012 Xinhua (official news agency) report on a CCDI submission to the 18th National Congress about the need to eliminate corruption, mentioning that one of Xi’s close allies now headed the CCDI. The increase in searches for “anti-corruption” is relatively very small, as Figure 2B shows by scaling both search volumes with the same denominator, the maximum number of searches for “Eight-point Policy”. Search volumes for terms relating to possible confounding news – ‘Economic Development’ (经济发展), ‘Economic Growth’ (经济增长), and ‘Economic Reform’ (经济改革), graphed in Figure 2C, affirm the absence of other news related economic policy changes in or near the event windows. These graphs show that the Eight Point Policy was the major standout event in this period. We return to these issues in section 4, which presents additional robustness checks.

The Party's subsequent actions also suggest that the policy had teeth. Xi Jinping remarked at a plenary meeting of CCDI in Jan 2013 (Xinhua, Jan 22 2013) that the administration should crack down on 'tigers' and 'flies' in rooting out corrupt politicians, eliminating illegal activities, and curbing gift giving and conspicuous consumption to change the general behavior of officials and renew the Party. The CCDI subsequently launched a website on which whistleblowers could report cadres' violations of the policy. In 2013 alone, the CCDI reported disciplining 182,000 officials for corruption or abuse of power and 30,420 cadres specifically for violating the Eight-point Policy. Of the latter, 227 were 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 (Ke et al 2016). 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 and 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 had 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. This period of relative market calm is thus favorable to searching 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 no other confounding major news release of potentially economically important news. Stock returns around the event therefore plausibly

reflect investors' initial expectations as to whether the policy announcement signaled the new administration firmly in charge and launching a substantive reform (with 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 uses abnormal returns, removing the influence of news with market-wide implications, because the focus is on identifying common patterns in the reactions of the individual stocks on firm-specific event dates – CEO sudden deaths, merger bids, equity issue announcements, or other such news.

The current exercise is somewhat different. The Eight-point Policy was designed to affect the entire economy, not specific firms, and to affect all firms 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 nonetheless expect different sorts of firms in different parts of the country to be differently affected by the Eight-point Policy. We investigate this by comparing the returns of portfolios of firms based in different provinces or with different ownership types. 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 firm-level cumulative returns relative to industry means. These regressions assume meaningful independence in the idiosyncratic

components of individual firms' reactions to the Eight-point Policy. We cluster standard errors bidirectionally: both by industry and by province.

3.2 Sample and Description of Key Variables

3.2.1 *Sample*

We begin with all firms listed on China's two mainland stock exchanges – the Shanghai Stock Exchange and the Shenzhen Stock Exchange. Stock returns and financial data are from the CSMAR database. We manually check whether there are corporate events in the five-day event window surrounding the Dec. 4th 2012 event date. We drop all firms with material corporate events, such as stock or cash dividends, stock splits or reverse-splits, new share or debt issuances, and announcements regarding mergers, restructuring, related party transactions, or CEO turnovers. This leaves 2,262 useable firms. Due to missing data, our final sample for regressions has 2,024 firms.

In looking at how different stocks might react differently to the Eight Point Policy announcement, we consider firm types – SOEs versus nonSOEs, their likely past spending on official connections, and the institutional environment in which they reside.

3.2.2 *Firm Type: SOEs and nonSOEs*

China has two broadly defined classes of listed firms, state-owned enterprises (SOEs) and non-state-owned firms (nonSOEs). SOEs enjoy favorable official treatment, e.g., preferential access to bank loans, the dominant form of financing in China (Cull and Xu, 2003; Allen et al., 2005). Some SOEs have state-enforced monopolies in key sectors including natural resources, civil

aviation, communications, and finance (Chen et al., 2011) or other government concessions (Xu, 2011). Because SOE top managers have formal and typically high ranks as both Party cadres and civil servants, their careers are decided by the Organization Department, the Chinese Communist Party's human resource arm. Their career paths typically move them from one SOE to another and in and out of government every three or four years, with moves to better positions depending on faithfully implementing Party directives and on the performance of the SOE or other state organ they currently manage (Wu et al., 2014; Deng et al., 2015). This has three implications. First, because of their cadre and civil servant status, the Eight-Point Policy directly applies to SOE top managers. Second, SOEs depend less than do nonSOEs on "connections" to "get things done" and are less vulnerable to "toll" extraction because SOE top executives and the officials who regulate SOEs are all ultimately under the common control of the Party. Third, SOEs might well still spend money building connections, but these are more apt to be designed to advance their top managers' careers than to benefit their shareholders, and that also fall under the heading of private benefits.

NonSOE top executives, in contrast to those of SOEs, often have substantial equity ownership stakes in their firms, and their careers are more tied to their firms' prospects (Conyon and Lerong, 2011). NonSOEs are not intrinsically connected to the civil service, and cannot rely on the Party's command and control mechanisms to align government officials' interests with theirs. Indeed, government officials may even erect artificial regulatory barriers in the paths of nonSOEs as toll booths, with which to extract bribes. Moreover, non-SOEs have less access to state-owned bank loans, capital markets (e.g. IPOs) (Cull and Xu, 2003; Allen et al., 2005; Firth et al., 2008; Piotroski and Zhang, 2014), and official licenses to enter new lines of business than SOEs have. Park and Luo (2001) note, "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.” Thus, nonSOEs must contend with more (and more severe) bureaucratic obstacles, many of which may exist primarily for bribe extraction, than SOEs confront.

These differences suggest that genuinely reducing corruption would affect SOEs and nonSOEs differently. If anti-corruption reforms mitigated officials’ discretionary powers, more competitive firms would obtain more financing and business opportunities and be subject to less bribery extraction; and this could help nonSOEs more than SOEs. In contrast, if such reforms led to bureaucratic paralysis and increased the cost of doing business, nonSOEs could be worse affected than SOEs. Furthermore, if anti-corruption reforms curtailed SOE managers’ private benefits extraction, SOE performance might improve.

To classify firms as SOEs or nonSOEs, we begin with all firms with 2011 data in the China Listed Private Enterprise Research Database (CLPERD), which contains firms that China Stock Market and Accounting Research (CSMAR) classifies as ”private enterprises”. This list includes all firms so classified in any year between 2003 (the beginning year of the database) and 2011. We therefore crosscheck this list against 2011 data on controlling shareholders from the China Listed Firm’s Shareholders Research Database (GTA_HLD), which identifies major equity blockholders and their control and cash flow rights following La Porta et al. (1999). We double check these data by manually collecting 2011 ownership structure data for all listed firms from the Sina Finance database (<http://finance.sina.com.cn>), paying special attention to cases where the two prior approaches disagree. This gives us a tentative roster of nonSOEs in 2011 and information about all listed firm’s major direct shareholders that year.

To identify ultimate controlling shareholders, we construct control chains as follows. First, we identify other listed firms’ stakes in each listed firm. This allows us to build control

chains from each listed firm to an ultimate controlling entity that is unlisted. We say an ultimate controlling shareholder controls a firm if the minimum control block, what La Porta et al. (1999) call the weakest link, in the control chain connecting them is at least 30%. This threshold accords with CSRC (China Securities Regulatory Commission) guidelines, issued on Dec. 16 1997, for inferring control and also aligns with the definition in CSMAR data. We then use company website and use Baidu searches to classify these ultimate controlling shareholder as either state (governments or government or Party organs) or non-state (all others) entities. In many cases, this requires identifying ultimate controlling shareholders of unlisted holding companies or other investment vehicles. State entities include central, provincial, city, or municipal level governments, state-controlled institutions, and state-controlled investment vehicles, such as State-owned Assets Supervision and Administration Commissions (SASACs). We say a firm is an SOE if it is ultimately controlled by state entity, so defined, and as a nonSOE otherwise. These manual searches lead us to reclassify 87 firms as SOEs.

Our approach likely understates state control, as many nonSOEs are indirectly state-controlled through ostensibly nonSOE 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 a more direct Party role in governance, a closer alignment of top executives' interests with those of cadres in the civil service, and preferential treatment by government officials and the major banks, all of which are SOEs.

3.2.3 Development of Market Institutions

Market reforms have progressed to very different stages in different provinces. Where market

institutions are better developed, mitigating corruption plausibly improves resource allocation efficiency more. Officials in more reformed provinces might also erect more and higher artificial tolls, charging more where the freedom to do business is more valuable; so reforms to mitigate bribery extraction might especially boost shareholder valuations. Where market institutions are less developed, official connections might be essential to “grease” bureaucratic gears, and reducing corruption might have ambiguous implications. Indeed, if cutting corruption leads utility-maximizing officials to pursue a “quiet life”, bureaucratic gears could slow, raising the cost of doing business where market reforms are limited. We therefore note the province in which each firm is located, and the extent of market reforms there.

To measure the extent of market reforms, we use the province-level *Marketization* Index produced by the National Economic Research Institute (NERI) (Fan *et al.*, 2011). The *Marketization* Index is based on official statistics and enterprise and household surveys. The index rises as the private sector shares of output, investment and employment rise, price controls and trade barriers fall, factor markets (labor, finance and investment) are liberalized, and the legal environment improves. The index is scaled to range 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 meaningfully measuring the progress of pro-market reforms (Wang et al., 2008; Fan et al., 2011).

Table I reports the *Marketization* Index in 2011 for each province. The five most economically liberalized provinces are Zhejiang, Jiangsu, Shanghai, Guangdong, and Beijing; the least are Tibet, Qinghai, Gansu, Xinjiang and Guizhou.

3.2.4 Investment in Connections

Prior work suggests that reducing corruption diminishes the value of a firm's political connections (Fisman, 2001). 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. Cai *et al.* (2011) show that firm-level "entertainment & travel costs" (*ETC*) can proxy for firms' investment in connections. Analogously, firms' *ETC* might proxy for government officials' bribery extraction. However, *ETC* also includes executives' spending on their own entertainment and travel; and Morck and Nakamura (1999) interpret the analogous item in Japanese firms' annual reports as measuring insiders' private benefits. Thus, *ETC* might also proxy for self-serving management's spending on private benefits.

We therefore allow that a firm's *ETC* reflects some mixture of all three: investment in connections essential to "getting anything done", the cost of passing through proliferating bureaucratic toll barriers designed solely to extract artificial bribes, and spending on private benefits for its top insiders. The traction of the Eight-Point Policy in different firms plausibly depends on this mixture, which plays out differently for SOEs and nonSOEs.

NonSOE top executives diverting their firms' money to fund their private benefits are not violating the Eight-point Policy. However, government officials accepting lavish perks from nonSOEs are violating it. If the reform interferes with nonSOEs bribing officials to "grease bureaucratic wheels", nonSOEs may find doing business abruptly more difficult. This presumes that, in the absence of bribes, officials prefer inaction to action (Wilson 1989). However, if the anti-corruption reform stops officials from deploying arbitrary bureaucratic barriers as bribe extracting toll booths, nonSOEs might benefit. We posit that these two offsetting considerations are likely to be more prominent in the *ETC* of nonSOE than of SOEs, which are intrinsically

connected to the state.

SOE top executives, all top Party cadres, are violating the Eight-point Policy if they spend their firms' money lavishly entertaining, themselves, their families, each other, or anyone else. SOEs are charged with contributing to GDP growth and carrying out Party policies. Government officials who try to extract tolls from SOEs risk accusations of obstructing Party policy, something career-minded cadres aspiring for promotion within the Party hierarchy would want to avoid. If SOE *ETC* is aimed at building connections, their purpose is more likely to be advancing the career prospects of the SOEs' top executives than the prospects of the SOE. From public shareholders' perspective, such *ETC* – which might include wining and dining superiors or potential superiors – is merely another insider perk akin to SOE executives spending on lavish living or other private benefits. We thus posit that the insider private benefits component of *ETC* is likely higher in SOEs than in nonSOEs.

We construct our *ETC* variable using data manually collected from Chinese listed firms' annual reports. Under Chinese accounting principles, entertainment costs (EC) and travel costs (TC) are secondary accounting items reported for each fiscal year in notes to the Income Statement lines for Management Expenses or Sales Costs (or both). An annual report can include up to four such notes. Chinese accounting principles allow substantial leeway about where any given *ETC* cost goes. Moreover, different firms sometimes use different Chinese names for these costs (e.g. accommodation costs, business trip costs) and disclose them in different formats. Finally, some firms report neither EC nor TC.

Inspection of annual reports shows firms reporting *EC* or *TC* or both and doing so under Management Expenses, Sales Costs or both. In some cases, one firm reports under different headings in different years, with none at all reported in some years. To allow for variation in

reporting practices, we construct our primary *ETC* measure as follows: We first take *ETC* as the sum of all (i.e. under either Management Expenses or Sales Costs) *EC* and *TC* in 2011. In 28 cases, the firm reports neither *EC* nor *TC* in 2011, but reports one or both in 2010, and we take its *ETC* to be the sum of all *EC* and *TC* in 2010. *ETC* for remaining firms is treated as missing.

This approach is necessarily *ad hoc*, so we construct alternative measures of *ETC* in a range of ways. One alternative does not fill in the 28 cases with missing 2011 data using 2010 data, but also treats as missing. Another presumes that firms reporting neither *EC* nor *TC* in 2011 actually do have zero *ETC* in 2011. Still another sets *ETC* to zero if a firm reporting neither *EC* nor *TC* in 2011 and the three prior years, but treats *ETC* as missing if the firm reports either in any of those prior years. The results in the tables are preserved using these alternative *ETC* measures, and are occasionally significant in places where our primary *ETC* measure is not.

4. Empirical Findings

4.1. The Reaction of the Market

The first column in Table II summarizes movement by 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 and a five-day window $[-2, +2]$ beginning two trading days before the announcement date and ending two trading days after. The market gains 2.77% in the three-day window and 3.86% in the five-day window, with both figures statistically significant.⁸ Also, both are economically significant, representing ¥533 and ¥742 billion increases in investors' valuations of

⁸ In this, and the other portfolio significance tests to follow, the portfolio's mean event window return and historical standard deviation, the latter estimated using data from 210 to 11 trading days before the event date (-211 to -11), are used to assess statistical significance.

corporate assets, respectively. These findings are thus consistent with investors viewing the Eight-point Policy as important and, on net, positive economic news.

Nor are these returns reversed. Rather, the event date emerges as an inflection point for the market return – the end of a sustained down market and the onset of a sustained up market. This is evident in Figure 3, which presents an equal-weighted cumulative total (adjusted to include dividends and account for splits) market return. A value-weighted cumulative total market return similarly shows that the event date portfolio value changes persist.

If reducing corruption improves resource allocation by unfettering market forces (Shleifer and Vishny, 1993; Mauro, 1995), firms in more liberalized provinces would gain more. The second and third rows of Table II show the returns of portfolios of firms in provinces at different stages of liberalization. The three-day window cumulative return on the portfolio of firms in the highest-tercile *Marketization* provinces is 3.20% and statistically significant. In the 5-day window, the same portfolio rises by a statistically significant 4.46%. In contrast, the cumulative three-day window return on the portfolio of firms in the lowest-tercile *Marketization* provinces is a statistically insignificant +0.54%. In the five-day window, this portfolio registers an insignificant +0.98% rise. The differences between the portfolio of firms in the highest-tercile *Marketization* vs the lowest-tercile *Marketization* in both the 3-days and 5-days windows are 2.66% and 3.49%, respectively, and are both highly statistically significant.

The divergence in valuations of the portfolio of firms in high versus low *Marketization* provinces is not ephemeral. Figure 4A shows that the cumulative return from a hedge position, long high-*Marketization* province stocks and short low-*Marketization* province stocks, is substantial and not quickly reversed, as it might were temporary price pressure magnifying the divergence. Depending on when the position is closed, the gain ranges from just below zero to

just above three percent. Closing the positions on an average day in the two trading weeks (ten event days) after the end of the five-day event window nets a statistically and economically significant 1.55% ($p = 0.06$). Closing the positions on an average day between the end of the five-day event window and thirty trading days after the event date again nets 1.55% ($t = 0.04$).

4.2 Province-Level Portfolio Cumulative Returns

The above observations suggest that investors expect firms located in provinces where markets are more liberalized to gain from reduced corruption, but expect negligible net gains for firms in provinces where markets are less liberalized. To explore this further, we construct portfolios of firms located in each province. Figure 4B plots their three day event window cumulative returns against their provinces' *Marketization* indexes. The graph shows a pattern, captured by the simple regression line, of higher provincial portfolio cumulative returns in more liberalized provinces. Tibet (31) and Qinghai (30) have exceptionally low *Marketization* indexes. Tibet has unique political and cultural challenges; Qinghai is ethnically diverse and sparsely populated. Dropping either or both leaves the regression line essentially unchanged, as does dropping Guizhou (27), also ethnically diverse, and also visibly an outlier. Dropping all three again leaves the regression line with a significant positive slope.⁹

4.3 Market Development, SOEs and nonSOEs

Section 3.2.2 argues that the anti-corruption reform might affect SOEs and nonSOEs differently. Panels A and B of Table II therefore compares the cumulative returns over three and five day event windows, respectively, centered on Dec. 4th, 2012, of portfolios of SOEs versus nonSOEs,

⁹ Of course, we acknowledge that development of market institutions may be correlated with GDP per capita, and larger stocks of human capital, either of which or both may play a role in affecting firm value under anti-corruption reforms.

as well as of sub-portfolios of SOEs and nonSOEs in the highest versus the lowest tercile *Marketization* provinces. Several patterns emerge.

First, the portfolio of all SOEs and the sub-portfolios of SOEs in provinces with high and low *Marketization* indexes all have positive and statistically significant returns. The sub-portfolios of nonSOEs in bottom tercile marketization provinces have cumulative losses, with the loss in the 3-days window significant; while the subportfolios of non-SOEs in high-*Marketization* provinces gain significantly.

Second, sub-portfolios of nonSOEs in top tercile *Marketization* provinces significantly out-perform sub-portfolios of nonSOEs in bottom tercile *Marketization* provinces. A similar but insignificant and much smaller difference is evident in the point estimates for the analogous SOE sub-portfolios.

Third, the sub-portfolio of SOEs outpaces that of nonSOEs by a wider margin in low-*Marketization* provinces than in high-*Marketization* provinces. Specifically, within the 3-days window, in low-*Marketization* provinces the subportfolio of SOEs gains a statistically significantly 5.99% more than does the sub-portfolio of nonSOEs; in high-*Marketization* provinces the SOE and nonSOE sub-portfolios have statistically indistinguishable returns with point estimates putting the SOE portfolio gain only 0.25% above that of the nonSOE portfolio. In the 5-day window, the corresponding numbers are a statistically significant 7.3% and an insignificant 0.13%, respectively.

Figure 5 plots the 3-day cumulative returns for province-level portfolios of SOEs and nonSOE against province *Marketization* indexes. The SOE regression line slopes down and is above that for nonSOEs, which is upward sloping. Repeating the plot without Tibet and Qinghai produces the same pattern, except that the SOE regression line becomes flatter. These graphs

thus reinforce the findings in Table II.

Figures 3, 4, and 5 alongside Table II suggest that shareholders expect most firms to be worth more because of the anti-corruption reforms. Shareholders' valuations of SOEs rise more relative to nonSOEs in lower-*Marketization* provinces, but SOE and nonSOE gains are more comparable in high-*Marketization* provinces. Indeed, in less liberalized provinces, Table II and Figures 4 and 5 show valuation losses in some cases.

These patterns point to several possibilities. First, the reform may indeed have directly restrained SOEs top managers, all Party cadres, from orchestrating wasteful diversions of corporate resources to fund their private benefits, including doing favors in hopes of advancing their careers or enriching themselves, their relatives, or their friends. Second, the anti-corruption reform made "greasing bureaucratic gears" harder and this may have impeded nonSOEs, more than SOEs, from getting things done, especially where market institutions are weak. Third, where market institutions are better developed, nonSOEs might function better after the reforms clear away bureaucratic toll booths. To investigate these possibilities, we turn to firm level regression analyses.

4.4 Firm-level Regressions

Table IV presents regressions explaining individual SOE and nonSOE stock price reactions to the anti-corruption reform with firm and industry characteristics and their interactions with the level of the *Marketization* index of the firm's province. These characteristics include firm-level *Total Factor Productivity (TFP)*, estimated as in Levinsohn and Petrin (2003), *Growth Potential (Q)*, defined as industry-average Tobin's q (market-to-book ratio), and *External Finance Dependence (EFD)*, defined as industry-average capital expenditures minus cash flow from

operations over capital expenditures (Rajan and Zingales, 1998)¹⁰. If investors expected the anti-corruption reform to raise allocative efficiency more in more liberalized provinces, larger gains should be evident in the stocks of more competitive firms, firms in industries with more growth opportunities, and firms in industries needing more external financing in those provinces. Thus, the regressions include interactions of the *Marketization* index with each of these variables.

The regressions also include firm-level *ETC*, which we take to reflect some combination of a firm's past spending on connections useful for "getting things done", tolls extracted by obstructive officials, and private benefits for corporate insiders. How a firm's past *ETC* might relate to its stock price reaction to the anti-corruption reform depends on which of these three purposes weighs more heavily in its *ETC*. We posit that nonSOE *ETC* is more about building connections for "getting things done" in less marketized provinces and more about paying tolls to obstructive officials in more marketized provinces. *ETC* is plausibly partly spending on private benefits for insiders, but the reforms should reduce this sort of *ETC* primarily in SOEs, whose top insiders are also career Party cadres. High *ETC* SOEs thus might have more scope for waste reduction as the reforms take hold. But high *ETC* might also be a sign of an SOE having lower quality management. Whether higher *ETC* SOEs' stocks would gain more is thus a priori unclear. To explore this, the regressions also include cross-terms between *ETC* and *Marketization*. The regressions also include as explanatory variables *Marketization*, *ETC* and *TFP* main effects; those of *EFD* and *Growth Potential* are subsumed by industry fixed-effects.

The regressions also control for measures of the province-level business environments: provincial *GDP Growth*, $\text{Log}(\text{GDP per capita})$, and *Education Spending* as a fraction of GDP.

¹⁰ Both *Growth Potential* and *External Finance Dependence* are defined as the industry simple average. We also do a robustness check using value-weighted industry average, and find the results are similar.

These controls capture a location's generic economic development. The regressions also control for *Firm Leverage* (total liabilities over total assets), which mechanically amplifies equity valuation changes associated with changes to asset valuations, as well as *Firm Size* (log of total assets) and *Research and Development Spending* (R&D/ sales) to allow for shares of small firms and firms with more intangible assets moving systematically differently. The industry fixed-effects remove common reactions across industries. Clustering is bidirectional, by both industry and province. All explanatory variables are lagged one year – that is, use 2011 data. Table III reports their means and standard deviations in the full sample and in the sub-samples of SOEs and nonSOEs used for the regressions.

Given the very different patterns of results for portfolios of SOEs and nonSOEs revealed in Figures 5A, 5B and Table II, we run separate regressions for the two categories of firms. Table IV reports the results, with the regressions in Panels A and B, respectively, explaining 3-day and 5-day firm-level cumulative returns. Industry fixed-effects essentially leave the Table IV regressions explaining cumulative abnormal returns, defined as raw returns minus industry mean returns.

4.4.1 Market Institutions, Firm Characteristics and Stock Price Reactions

In both panels of Table IV, the *Marketization* index attracts highly statistically significant positive coefficients in regressions (1). The analogous coefficients in (3) are negative and that in panel A is statistically significant ($p = 10\%$). NonSOEs in more liberalized provinces thus gain more in reaction to the Eight-point policy; while SOEs' in more liberalized provinces gain less (or lose more). Like patterns emerge for *Education Spending*, another indicator of provincial development, although this variable is insignificant in the SOE regressions.

Focusing on *Marketization* and using regressions (1) and (3) in Panel A to illustrate, a

one standard deviation increase in *Marketization* is associated with a 0.37% three-day gain for nonSOEs, but a 0.35% three-day decline for SOEs. Pooling the data and running a regression containing an SOE dummy and interactions reveals the differences to be statistically significant. Thus, investors expect reduced corruption to be more beneficial for nonSOEs' where market reforms are further along; that is, where more completely liberalized leaves market forces better able to guide resource allocation. In contrast, investors expect reduced corruption to be less helpful (or more harmful) to SOEs where market reforms are more advanced, perhaps because they expect the reform to unfetter market forces for which previously cossetted SOEs are ill prepared.

Regressions (2) and (4) elaborate on these findings by including interactions of *Marketization* with the firm and industry characteristics described above: the industry-level variables *Growth Potential (Q)* and *External Finance Dependence (EFD)* and the firm-level variables *Total Factor Productivity (TFP)* and *Entertainment and Travel Costs (ETC)*. The highly significant joint F-tests of the *Marketization* main effect and its interactions with these variables, shown near the bottom of each panel, justify exploring the economic significance of the individual interaction terms.

In regression (2) of Panel A, where the dependent variable is nonSOEs' 3-days window cumulative returns, the province-level *Marketization* main effect becomes insignificant ($p = 0.58$); however, its interactions with firm-level *TFP*, industry-level *Growth Potential*, and industry-level *External Finance Dependence (EFD)* are all positive and significant, both individually and jointly. The same pattern emerges in the 5-days window regression (2) in Panel B. These results are consistent with investors expecting nonSOEs in more liberalized provinces to gain more from reduced corruption, particularly if they are also more productive or in sectors

with more growth opportunities or more need for external capital. If investors expect reduced corruption to unleash stronger market forces where the *Marketization* index is higher, these results are also consistent with investors expecting unleashed market forces to disproportionately benefit more competitive non-SOEs in more dynamic sectors.

Regressions (4), explaining SOE cumulative returns, show intermittent significance in the cross terms of *Marketization* with *Growth Potential* (positive and insignificant in Panel A, but significant in Panel B), *External Finance Dependence* (negative and insignificant in Panel A, but significant in Panel B) and *Total Factor Productivity* (negative and significant in Panel A, but insignificant in Panel B). This instability in the interaction coefficients leaves us reluctant to draw economic inferences.

Table IV also links past *ETC* to event window returns after controlling for firm, industry and macro characteristics. Regression (1) in Panel A shows nonSOEs with higher past *ETC* spending gaining less. Regression (2) in Panel A elaborates, showing *ETC*'s main effect term to be a negatively significant -0.136 and its interaction with *Marketization* to be a positively significant 0.029. These coefficients imply that, where *Marketization* is above 4.69 (all provinces except Qinghai and Tibet), a nonSOE's *ETC* correlates positively with its stock price gain. Using the corresponding regression results in Panel B yields the same conclusion. Thus, the regressions imply that *ETC* is negatively related to non-SOEs' cumulative returns only in the two least liberalized provinces. Elsewhere, the relation is positive, and larger in more liberalized provinces.

SOEs' *ETC* shows a starkly different pattern. In both panels, SOEs with higher *ETC* gain insignificantly in regression (3), though the coefficient is significant at 10% in a one-tail test in Panel B. In both panels, regressions (4) show the *ETC* main effect to be positive and significant; while *ETC*'s interaction with *Marketization* is negative and significant. Repeating the arithmetic

above for SOEs shows that *ETC* correlates positively with SOEs' stock price gains only in Tibet, the least economically liberalized province. Elsewhere the correlation is negative, and more negative in more marketized provinces.

Our interpretation of the *ETC* results follows from our assumption that the component of non-SOE *ETC* most directly affected by the anti-corruption reforms is their spending on private benefits for top Party cadres in government who can help or hinder them. In less liberalized provinces, such as Qinghai and Tibet, where government officials retain more sweeping power to allocate real resources, nonSOEs' *ETC* spending builds "connections" essential to "getting things done." In these provinces, limiting officials' scope for accepting private benefits "seizes up bureaucratic gears" and paralyzes nonSOEs as well as reducing the value of their past investment in connection. In more liberalized provinces, where better functioning market institutions can allocate resources, corrupt officials can still obstruct nonSOEs unless they pay "tolls" by providing the officials with private benefits. In these provinces, limiting officials' scope for accepting private benefits clears the tolls away, letting nonSOEs respond to market forces.

NonSOE *ETC* doubtlessly also includes the costs of self-serving insiders' private benefits. If nonSOE managers who consume more private benefits are also lower quality managers, investors might also expect reduced corruption that unleashes market forces to be more problematic for non-SOEs with higher *ETC*, and their stocks would thus gain less. Our regression results suggest that the positive impact of limiting nonSOEs' toll-booth payments predominates in general: it exceeds the negative impact of nonSOEs being less able to "grease bureaucratic gears" plus that of nonSOEs with lower quality managers faltering under heightened competition. Specifically, the stocks of nonSOEs with higher past *ETC* decline only in the least liberalized provinces, but gain elsewhere, and gain more the higher their past *ETC*.

In contrast, SOEs have hardwired connections because their top managers and the officials regulating them are career Party cadres serving the same Party leadership. Because SOEs have less need to bribe officials, either to “get things done” or to remove artificial toll barriers, SOE *ETC* is more likely to be spending on private benefits for top SOE insiders. Investors thus view the anti-corruption reform as primarily cutting more waste by SOEs with higher *ETC*, consistent with SOE stocks gaining broadly on news of such reforms, and gaining more if their prior *ETC* was higher.

Furthermore, if higher *ETC* also proxies for lower quality management and the anti-corruption reform intensifies competition more robustly in more liberalized provinces, the finding that SOEs with higher past *ETC* gain less in more liberalized provinces follows. Combining the two explanations, the stock prices of SOEs with higher past *ETC* increase in less liberalized provinces, but drop in more liberalized provinces, and drop by more the greater their past *ETC*.

In summary, our regression results are consistent with the following investor expectations. First, investors expected the anti-corruption reform to unleash market forces to allocate resources and heighten market competition. Thus, more productive nonSOEs in industries with greater growth potential and more need for external financing gain more where market institutions are more developed. In contrast, previously more cosseted SOEs with more self-serving managers gain less where market institutions are more developed.

Second, investors expected the anti-corruption reform to deter officials from accepting bribes and handing out favors. This expectation plays out via two effects: (i) a reduction in investors’ valuations of nonSOEs existing “connections”, which can no longer “grease bureaucratic gears” where this is essential to “get things done” and (ii) an increase in investors’

valuations of nonSOEs future cash flows as bribe-seeking officials are deterred from erecting toll booths to expropriate nonSOEs' earnings. The former predominates in the least liberalized provinces while the latter predominates elsewhere.

Third, investors expect the Eight-Point Policy to curtail SOE top managers' wasteful diversions of corporate resources to finance their private benefits, interpreted broadly to encompass actions to advance their careers or enrich their families and friends. This boosts SOE shares.

4.4.2 *Alternative Interpretations*

One of our key results is that the anti-corruption reform boosts nonSOE share prices more in more liberalized provinces. Taking a province's *Marketization* index as an indicator for its progress in implementing market reforms, we posit that our result is consistent with anti-corruption reforms unleashing latent market forces, which help more competitive nonSOEs more in provinces whose market machinery is more fully up and running. This is a very important interpretation as it points to that the benefits of anti-corruption reforms stems from the presence of latent market forces. Thus, we must examine carefully alternative interpretations that merit note.

Market Machinery vs Legal Environment

Provinces with more advanced market reforms might also be better run generally, and investors might expect better run provinces to enforce the anti-corruption reform better. Better enforced reforms could boost share prices more in those provinces. Furthermore, better enforcement might also explain the larger gains by nonSOEs with higher past *ETC* in higher-*Marketization* provinces. If nonSOE's *ETC* is more likely to be tollbooth payments to corrupt officials in more liberalized provinces, and investors expect better enforcement of the anticorruption reform to

more thoroughly eradicate these tollbooths in better run provinces, this result would follow. However, several lines of reasoning weigh against this alternative explanation and in favour of the interpretation outlined in the previous section.

First, if the reform was well-enforced in high-*Marketization* provinces and ill-enforced in low-*Marketization* provinces, Table II would show more positive returns for the high-*Marketization* portfolios and less positive or insignificant returns for low-*Marketization* portfolios. In fact, the low-*Marketization* nonSOE portfolio has large significantly negative returns in the 3-day window. This would not result if the reforms were merely poorly enforced or unenforced in those provinces.

Furthermore, the arithmetic calculations presented above in connection with the Table IV regressions show nonSOEs' share price reactions around news about the Eight-Point Policy to be negatively related to *ETC* for firms in Tibet and Qinghai, the two least marketized provinces. That the *ETC* combined effect is negative in these provinces is inconsistent with the interpretation that enforcement is ineffective in low-*Marketization* provinces. But, it is readily explicable if the anti-corruption policy is well enforced, but market mechanisms work poorly in those jurisdictions so investors assign lower valuations to their nonSOEs, abruptly unable to "get things done" via "connections" because of the reforms.

Third, we posit that SOEs' share price gains upon the anti-corruption reform are related to their top management diverting fewer corporate resources into private benefits. If better enforcement of the anticorruption reform underlay this result, SOEs would gain more in more liberalized (better run) provinces. This is not observed. Table IV shows SOEs gaining less on net in more liberalized provinces.

A fourth approach to differentiating these two interpretations – the *Marketization* index gauging the development of market machinery versus the quality of enforcement – motivates additional regressions. The *Marketization* index provided by the National Economic Research Institute (NERI) is composed of subindexes, each gauging the development of a different type of market institutions. We form a composite index using subindexes that measure the effectiveness of the market forces in guiding resource allocation: *Resource Allocation*, measuring the non-government share of the economy; *Financial Sector Marketization*, gauging nonSOE access to capital; and *Government Intervention*, an inverse index measuring the extent of government intervention in enterprises. We define a *Market Machinery* subindex as the mean of these three subindexes, after standardizing each to range between 0 and 10. A second type of subindex measures the strength of legal enforcement, and is also standardized to range from 0 to 10. The *Legal Enforcement* subindex summarizes business leaders’ opinions about how reliably contracts, rules, and regulations are enforced in the province. We let these two subindexes, *Market Machinery* and *Legal Enforcement*, assume the same main effect and cross-term format as the *Marketization* index in Table IV and run a horse race. Both blocks of main and cross-term effects have insignificant F-statistics in both nonSOE regressions, analogous to (3) and SOE regressions analogous to (4). The *Legal Enforcement* index and its interactions attain sporadic joint significance in regressions using SOEs; specifically, the joint F-tests on *Legal Enforcement* and its interactions are significant ($p = 0.015$) in the regression analogous to (4) in Panel B of Table IV. Other combinations of the sub-indices of *Marketization* index aimed to capture market liberalization vs legal enforcement yield similarly unstable results.¹¹

¹¹ Fan et al (2011) use the following subindexes to measure market liberalization: *the Relationship of government and the Market* – an inverse index measuring the extent of government’s control and direction of resource allocation, *Development of non-state-owned economy* – the non-state sectors’ shares of output, investment and

One possible interpretation of these non-results is that market machinery and legal enforcement are not separable, and that each builds on the other. Indeed, these sub-indexes are all very highly correlated. If so, this weighs against the alternative hypothesis that legal enforcement of the Eight-point Policy alone drives our findings. Another possible interpretation is that the subindexes are noisy and that the noise in individual subindex cancels out to an extent in the overall *Marketization* index. If so, the subindexes might be insufficiently precise to let us distinguish the relative importance of market machinery and legal enforcement. Unfortunately, coefficient estimates for highly correlated variables subject to different or unknown measurement errors problems are econometrically extremely problematic (Leamer 1978). One such variable can better represent another than does the other variable's noisy proxy.

Fifth, if the Eight-point Policy were better enforced in higher-*Marketization* provinces, we might expect larger drops in *ETC* for firms based in those provinces. This is not observed. To explore this, we construct province-level changes in *ETC*. For every firm, we define *ETC Change* as firm-level *ETC* over sales in 2013 minus firm -level *ETC* over sales in 2012, and then take an equal-weighted average of this by province: first for all firms, and then for SOEs and nonSOEs separately. More negative values of *ETC Change* indicate deeper *ETC* cuts by firms based in the province. Table V lists province-level mean *ETC Change* for all firms, nonSOEs, and SOEs alongside each province's *Marketization* index. The correlations of *Marketization* with these are -0.033, -0.121 and 0.134, respectively, and all are insignificant. In province-level regressions explaining the mean *ETC Change* for all firms and controlling for 2012 per capita GDP and 2012 *ETC* over sales, the *Marketization* index is insignificant ($\beta = -0.051$, $p = 0.402$).

employment rise, *Development of Product Market* – an inverse indicator of price controls and trade barriers, and *Development of Factor Market* - labor mobility, private sector's share of bank loans and bank deposit, freedom for inward foreign direct investment.

Repeating this exercise for each province's mean changes in SOE *ETC* and in nonSOE *ETC* yield qualitatively similar results. In yet another exercise, we sum the 2013 firm-level *ETC* of all firms located in the province, subtract the analogous sum in 2012, and scale the difference by the sum of 2012 the sales of all firms in the province. This yields qualitatively similar results. Overall, these findings do not support a systematic relationship between a province's *Marketization* and the reduction in *ETC* by its firms.

Finally, the Party is plausibly stronger, not weaker, in less reformed provinces, so Party policies are likely to be enforced more faithfully in less liberalized provinces. Indeed, China's least liberalized province-level jurisdiction, Tibet, was the first to show support of the Eight-point Policy by releasing its own Ten Rules on December 5th 2012, itemizing how Tibet officials should reduce waste and extravagance and simplify official functions.

Economic Reforms vs Anti-corruption Reforms

Another possible interpretation is that the Policy announcement merely signals a deepening of China's economic reforms, and that expectations of these reforms, rather than reduced corruption, explain our findings. This merits attention because, although news on Dec 4 2012 highlighted the Eight Point Policy, ongoing discussions before and after were about deepening economic reforms. For example, the well-known World Bank's "China 2030" study, which urges continuous reforms in China, was in circulation after Feb. 2012 and formally published on March 23rd 2013.

However, our findings suggest that the Eight Point Policy affected different firms in ways more sensibly explained by their different exposures to corruption costs. For example, nonSOE share prices drop with *ETC* in less liberalized provinces, but rise with *ETC* in more liberalized provinces. This is not obviously explicable if the Eight Point Policy were a merely signal that

deeper economic reform was coming, but is readily explained by reduced corruption impeding nonSOEs from getting things done in less marketized provinces and impeding corrupt officials from charging tolls in more marketized provinces. Indeed, portfolios of non-SOEs losing value in general in less liberalized provinces is difficult to explain as a consequence of faster expected future liberalization, but is readily explained by reduced expected corruption making “greasing gears” to “get things done” harder in these provinces, where resource allocation still heavily depends on bureaucrats.

Other alternative explanations

Still other alternative explanations might have traction. Provinces with stronger market machinery might have more potential top executives whose training and talent lie in boosting productivity. Both SOEs and nonSOEs might react to a less corrupt business environment by replacing old top managers, whose expertise is connection-building, with new ones whose expertise is increasing productivity. If investors expected this shift to be more complete in more liberalized provinces, our results might follow.

Finally, and more generally, the *Marketization* index might reflect other province characteristics such as a culture more supportive of entrepreneurship, a history of commercial activity, greater openness to foreign ideas, or any other latent factor that, when intervention by corrupt officials is blocked, promotes better resource allocation. We accept alternative explanations of this ilk as friendly amendments to the one we posit. Variation in some province characteristic highly correlated with progress on market reforms may well explain the heterogeneous stock price reactions we observe. We welcome further research exploring alternative explanations of our findings.

4.5 Robustness Discussion

The first robustness issue is the newsworthiness of our event. Information leakage is a potential concern in event studies. Figure 2 shows internet searches for ‘anti-corruption’ (反腐) rising slightly somewhat before their much larger spike on and immediately after our event date. Checking news reports reveals a Nov. 20th 2012 Xinhua report describing a Central Commission for Discipline Inspection (CCDI) submission to the 18th National Congress on the need to eliminate corruption immediately. The date was just after the handover of power from the old to the new administration, and thus might be an alternative event date if investors viewed the CCDI submission as marking a genuine crackdown on corruption, rather than a repetition of prior politburos’ rhetoric condemning corruption.

To explore this, we examine stock returns around Nov. 20th 2012. In contrast to the significant positive reactions evident around the Dec. 4th event date, the market return in a three-day window around Nov. 20th is an insignificant 0.82%. The 5-day cumulative return is -0.54%, and is also insignificant. This exercise supports the validity of our using an event framework to explore the economic implications of decreased expected corruption.

Second, we can further validate our market stock price reaction using Hong Kong stock returns. Our tests use Chinese stocks trading in the two mainland stock exchanges – Shenzhen and Shanghai. We re-estimate “portfolio” cumulative returns using all 81 mainland Chinese firms listed in Hong Kong. Figure 6 shows a pattern consistent with our main findings. The portfolio of Hong-Kong listed mainland Chinese stocks rises abruptly, relative to the portfolio of all other Hong Kong listed stocks, around the event date and these gains are not reversed. The 3-

day cumulative return of the portfolio of Hong Kong listed mainland shares is a significantly positive 1.89% ($p < 1\%$); the 5-day cumulative return of the portfolio is also significantly positive: 2.83% ($p < 5\%$). 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. The difference-in-differences of 1.59% and 2.26% for the 3 and 5 day windows respectively, are highly significant, with p-levels of less than 0.001 in both.

Because foreign investors have unrestricted access to the Hong Kong market, listed mainland companies' share prices can be interpreted as gauging Hong Kong and international investors' expectations about the reforms. These results are consistent with these investors also viewing the Eight-point Policy announced on Dec. 4th 2012 as positive economic news. Unfortunately, most of these 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 shares also constitute a sample only 3.6% the size of the full sample of mainland stocks, and too small to allow meaningful cross-sectional comparisons.¹²

Third, our findings survive a battery of standard 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 winsorized firm-level cumulative returns at 1% prior to running the regressions in Table IV. The regression results are qualitatively unchanged if we do not winsorize the returns. A more conservative approach repeats the

¹² They also may not be representative of mainland-listed stocks (Hung et al., 2012).

regressions excluding observations whose estimated residuals exceed ± 2.5 times the standard deviations of the residuals. Qualitatively similar results ensue.

To ensure that our results are not driven by unusual provinces, we first exclude firms located in Tibet, whose cultural, social, political, and economic characteristics differ substantially from those of other provinces. This generates qualitatively similar results. We next exclude firms based in Beijing and Shanghai because 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.¹³ Dropping firms in finance, real estate, and in both sectors all yield qualitatively similar results.

The *ETC* variable is missing for 12% (264 of 2,260) of all firms for which all other data are available and with no confounding news during the event window. We substitute 2010 ETC for missing 2011 data to fill in 11% (28 of 264) of these to obtain our sample for the ETC regressions in Table IV. Thus, 88% of firms reporting no ETC in 2011 also reported none in 2010, raising the possibilities that these firms might either genuinely have insubstantial ETC in some years or systematically manipulate their reporting to avoid disclosing ETC. Our results

¹³ 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 their home provinces' development but many other provinces' too. These banks are all headquartered in Beijing or Shanghai, so the abovementioned robustness check dropping firms headquartered in Beijing and Shanghai excludes them.

are robust to setting *ETC* to zero where it is missing in 2011, to setting *ETC* to zero where it is missing in both 2010 and 2011, and to dropping observations with missing *ETC* in 2011.

Likewise, our results in Table II, where we tabulate comparisons of returns on the market portfolio, SOE and nonSOE portfolios as well as their sub-portfolios grouped by top and bottom terciles of provinces by *Marketization*, are obtained using the full sample including firms with missing *ETC* observations. The patterns in terms of magnitude and statistical significance are qualitatively identical if we drop observations with missing *ETC*, and regardless of whether or not we winsorize the returns at 1%.

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 explained variable in the Table IV regressions is the event window cumulative raw total return of each stock. However, because the regressions include industry fixed-effects, the operational explained variable is the firm's cumulative abnormal return, defined as the raw stock return minus the mean return of all stocks in its industry, a widely-used event study methodology. Using simulations, Thompson (1988) shows that cumulative abnormal returns calculated in this way generate results imperceptibly different from cumulative abnormal returns generated from asset pricing models. Furthermore, a serious campaign against corruption may well change the risk environment, and therefore firms' market model betas. Putting these issues aside, we repeat the Table IV regressions using three and five-day event window cumulative abnormal returns, calculated as cumulative raw returns minus cumulative estimated market model returns using the contemporaneous market return and market model parameters estimated using stock returns from trading day -210 to day -11, where day 0 is the event date of Dec. 4th 2012. The coefficients of primary interest, those of the *Marketization* index, *ETC*, and the interactions of the *Marketization*

index with industry *Growth Potential* and *External Finance Dependence* and with firm-level *Total Factor Productivity* and *ETC*, are qualitatively similar in Table VI, save that the *Growth Potential* cross with *Marketization* variable loses significance in the SOE regression (4) in Panel B of Table VI.

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 higher t-ratios than those in the tables in many cases. We therefore present two-way clustering results as the most conservative.

5. Conclusions

China's per capita GDP, among the lowest in the world in 1978, when Deng Xiaoping began market reforms, has reached global middle-income levels. Those reforms created a hybrid system, accurately called Market Socialism with Chinese Characteristics, in which the Communist Party of China exercises a constitutionally entrenched Leading Role. In practice, this grants officials sweeping discretionary powers to reinterpret, waive, or enforce laws and regulations. The money at stake in swaying these officials' decisions has grown in step with the economy to the point where widespread corruption may well be locking into power a stable network of political rent-seeking-based cronyism that risks undermining the Party's legitimacy.

Such problems are not unique to China. Corruption is associated with slow growth (Shleifer and Vishny, 2002) and exacerbated inequality (Alesina and Angeletos, 2005), symptomatic of the so-called Middle Income Trap, a stable low-level equilibrium characterized

by pervasive political rent-seeking thought to have ensnared many economies (Rajan and Zingales, 2003, 2004). Entrapped middle-income economies' resources flow into connection-building, which has negative economy-level spillovers, rather than increasing productivity, which has positive economy-level spillovers (Murphy et al., 1991, 1993). The equilibrium is stabilized by connected firms' increasing returns to scale from learning-by-doing in political rent-seeking (Morck et al., 2001) and commensurately increasing vested interests in preserving their political rents (which let them “get things done” that unconnected firms cannot), officials' vested interests in firms' continued spending on connections, and the vested interests of both in concealing their past behavior.

Our findings show that the initiation of the Eight-point Policy, an initially unexpectedly genuine anti-corruption reform, threatened to destabilize this situation. The key findings are:

1. Listed firms' market valuations rose broadly and significantly around this event.
2. SOE shares gained more than nonSOE shares, and by larger margins in less economically liberalized provinces. Non-SOE shares gained more in more liberalized provinces, and actually declined on average in the least liberalized provinces.
3. NonSOEs that are more productive or in more external finance-dependent or higher growth industries gained more if located in more liberalized provinces.
4. SOEs with higher past entertainment and travel costs gained more in the least liberalized provinces, but less elsewhere. NonSOEs with higher past ETC gained less in the least liberalized provinces, but more elsewhere.

The first key finding, that shares gained broadly on expectations of reduce corruption, is consistent with markets expecting the reforms to be meaningful, rather than propaganda, and beneficial on net to public shareholders. This supports prior work arguing that curtailing

corruption has economy-level benefits (Krueger, 1974; Murphy et al., 1991, 1993; Shleifer and Vishny, 1993; Mauro, 1995; and others).

The other key findings, that some stocks gained markedly more than others around this event, illuminate the economics of corruption. Perhaps more importantly, our findings further extend this line of work by suggesting that prior market liberalization reforms might help open a path out of this low-level equilibrium.

The second key finding reveals the different effects of reduced expected corruption on SEOs and nonSOEs. That SOEs gain more than nonSOEs is consistent with investors having viewed SOE top managers' spending on private benefits as wasteful and upping their valuations of SOE shares anticipating that anti-corruption reforms would mitigate the waste. SOEs top managers, all high level Party cadres and directly subject to the Eight-point Policy, had to curtail their private benefits. In contrast, nonSOE top managers' private benefits extraction is not directly affected by the policy. This finding argues that the reforms reducing corruption hurt nonSOE more in less liberalized provinces where bureaucracies, not markets, allocate resources – most likely, by impeding nonSOEs' ability to “grease the gears” of unreformed provinces' otherwise immovable bureaucracies. In contrast, nonSOEs in more economically liberalized provinces gaining more on expectations of reduced corruption is consistent with reduced corruption removing obstacles to market forces, and this being more beneficial to nonSOEs where market institutions are more fully up-and-running because of prior economic liberalization reforms.

The third key finding: nonSOEs that are more productive or in more external finance-dependent or in higher growth industries gain even more in more liberalized provinces argues that investors expect reduced corruption to strengthen market forces. That is, curtailing

corruption removes obstacles to market forces directing more resources and capital to nonSOEs that are more competitive, in more dynamic sectors, or needing more external capital, so the shares of those sorts of nonSOEs rise more.

The fourth key finding, that prior entertainment and travel costs has different implications for the stock price reactions of SOEs and nonSOEs in more and less liberalized provinces, is consistent with ETC having three components: “toll” payments to obstructive officials in liberalized provinces, “gear greasing” payments to energize officials still empowered to allocate resources in the least liberalized provinces, and “private benefits” for corporate insiders, and this trichotomy playing out as follows: “Tolls” and “gear greasing” loom larger for nonSOE because SOEs and the officials regulating them have a common ultimate controlling entity: the Party. Investors thus expect reduced corruption to harm nonSOEs where weak market machinery makes “gear greasing” essential for energizing officials in charge of resource allocation, but to bolster nonSOEs elsewhere by limiting obstructive bureaucrats’ “tolls”. In contrast, the anti-corruption reform cuts “private benefits” *ETC* in SOEs, whose insiders are high level Party cadres directly subject to the policy, but not in nonSOEs whose top insiders are not senior Party cadres. Investors thus expect reduced corruption to cut SOEs’ wasteful private benefits to insiders and therefore to boost their shares, but less for SOEs in more liberalized provinces where higher ETC might reflect less able and/or more self-serving top management.

Taken together, the above findings highlight three qualitatively different components of the firm-level costs of official corruption. One is firms’ investment in connections with government officials that are essential to “grease bureaucratic gears” to “get anything done” in economic environments where bureaucracies, not markets, allocate resources. A second is firms’ payment of “tolls” to officials who then waive regulations designed to obstruct firms that have

not paid. A third is top managers, especially in a corrupt environment, diverting corporate resources to finance their private benefits, broadly interpreted to include perks for themselves, their friends, and their families; connections to advance their careers; and their favor-trading with other members of their patronage networks.

The above findings also illuminate the economy-level costs of corruption and of curtailing corruption. Our findings that expected reductions in corruption favor more competitive nonSOEs more in more economically liberalized provinces support the views that corruption renders resource allocation sub-optimal (Murphy *et al.* 1993) and that reducing corruption can improve allocative efficiency more where market institutions are stronger.

Market liberalizing reforms and corruption-cutting reforms thus appear mutually reinforcing. Our results suggest that extensive market liberalization followed by reforms aimed at curtailing corruption may offer a path out of a corruption ridden low-level equilibrium. One factor stabilizing this equilibrium is connected firms' vested interest in preserving the value of their past investment in connections. Prior market reforms, by eroding the value of these connections, weaken those vested interests. A second stabilizing factor is officials' vested interests in the benefits they glean from bribery extraction. Prior market reforms leave officials taking bribes more for removing regulatory obstructions and less for allocating resources markets cannot deliver, and such bribes may be less politically defensible. This may well have been a factor in Xi's decision to attack corruption when he did. Finally, prior market reforms let anti-corruption measures unleash market forces that bolster economic growth, increasing governments' scope for tax collection and for paying higher salaries to honest officials. Public policy makers contemplating anticorruption reforms might thus consider prior market liberalization reforms to shift the political economy balance towards greater support for

curtailing corruption.

Some caveats merit note. First, the extent of market reforms in Chinese provinces may well correlate with other dimensions of economic, social, or political development. Our main results all survive controlling for lagged education spending, lagged per capita GDP, and lagged GDP growth. We cannot preclude all possible alternative development measures. Moreover, distinguishing highly correlated variables subject to different or unknown measurement error problems is econometrically extremely problematic, especially if interaction coefficients are of critical interest (Leamer 1978, pp. 170-81).

Second, an event study measures changes in shareholders' expectations, but shareholders' expectations can sometimes be incorrect. This paper uses changes in investor expectations to explore the economics of corruption. If unfolding developments ultimately reveal the Eight-point Policy to be something other than a broad attack on corruption, the event study results remain economically useful as evidence about what investors expected to happen upon a general drop in corruption is surely helpful information.

Figure 1: Fraction of Chinese Respondents Viewing Issues as a “Big Problem”

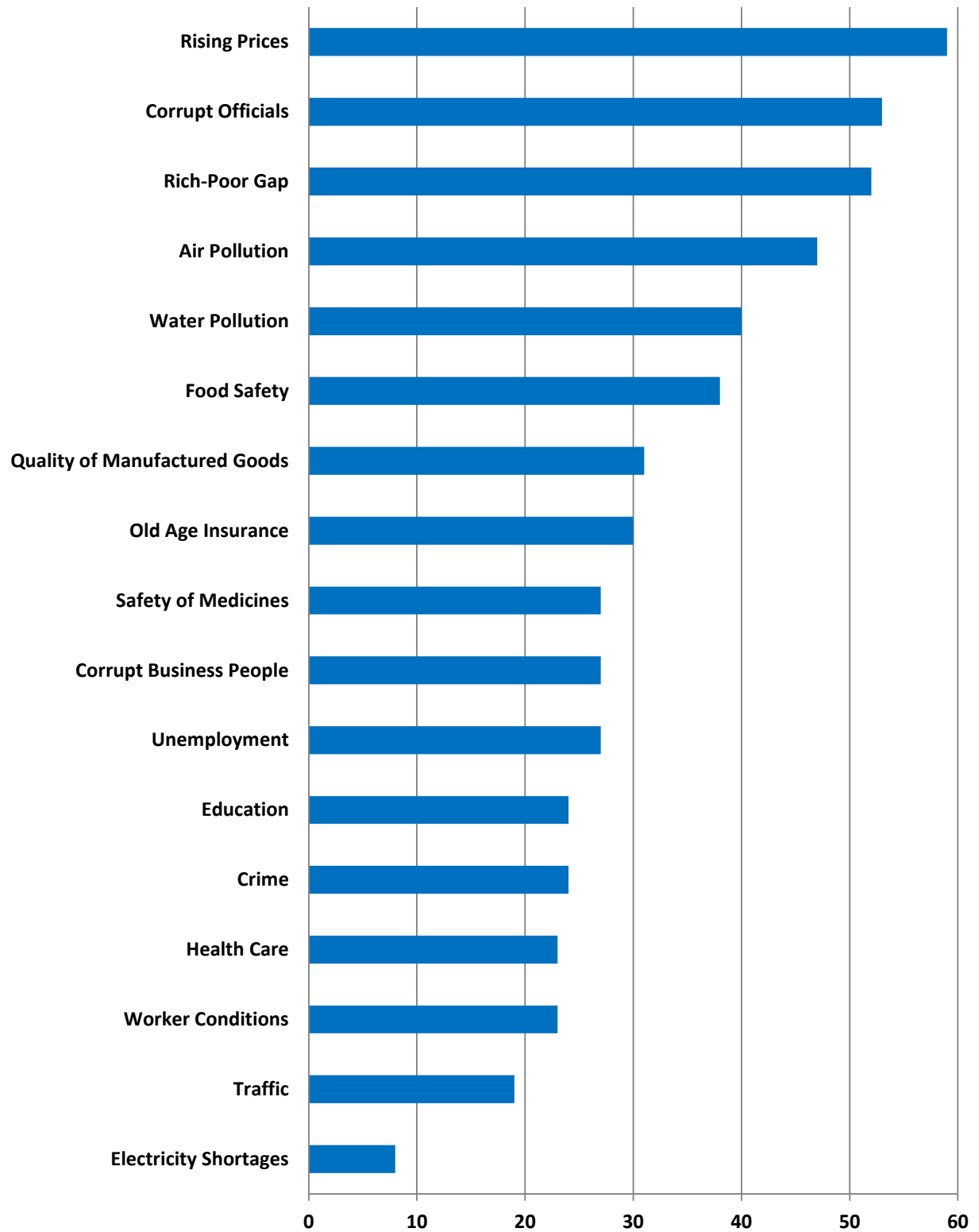


Figure 2: Online Attention to the Eight-point Policy

Panel A. Daily Baidu internet search volume for ‘Eight-point Policy’ (in Chinese, 八项规定), indicated by the solid line, and for ‘anti-corruption’ (反腐), indicated by the dashed line. The event date, Tuesday, December 4th 2012, is indicated by the dark gray band. The three-trading-day window, also includes the darker grey bands around the event date, and the five-trading-day window (which spans the weekend), also includes the light gray bands. Searches are scaled by their maximums, which occur on Thursday Dec. 6th for ‘Eight-point Policy’ searches and on Friday Dec. 7th for ‘anti-corruption’ searches.

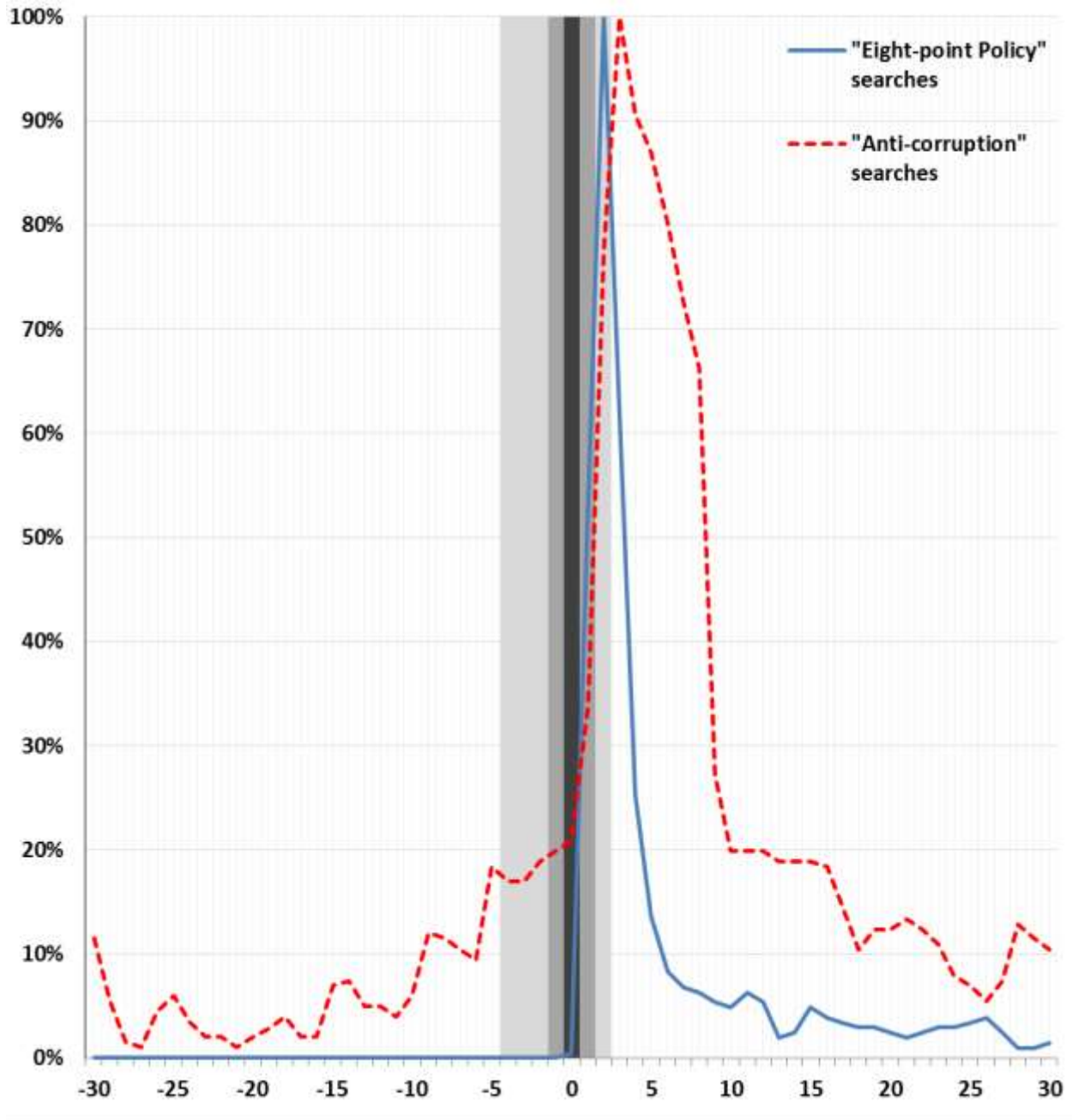


Figure 2 (Continued)

Panel B. Daily Baidu internet search volume for ‘Eight-point Policy’ (in Chinese, 八项规定), indicated by the solid line, and for ‘anti-corruption’ (反腐), indicated by the dashed line. The event date, Tuesday, December 4th 2012, is indicated by the dark gray band. The three-trading-day window, also includes the darker grey bands around the event date, and the five-trading-day window (which spans the weekend), also includes the light gray bands. Search volumes are scaled by the maximum for ‘Eight-point Policy’ searches, which occurs on Thursday Dec. 6th 2012.

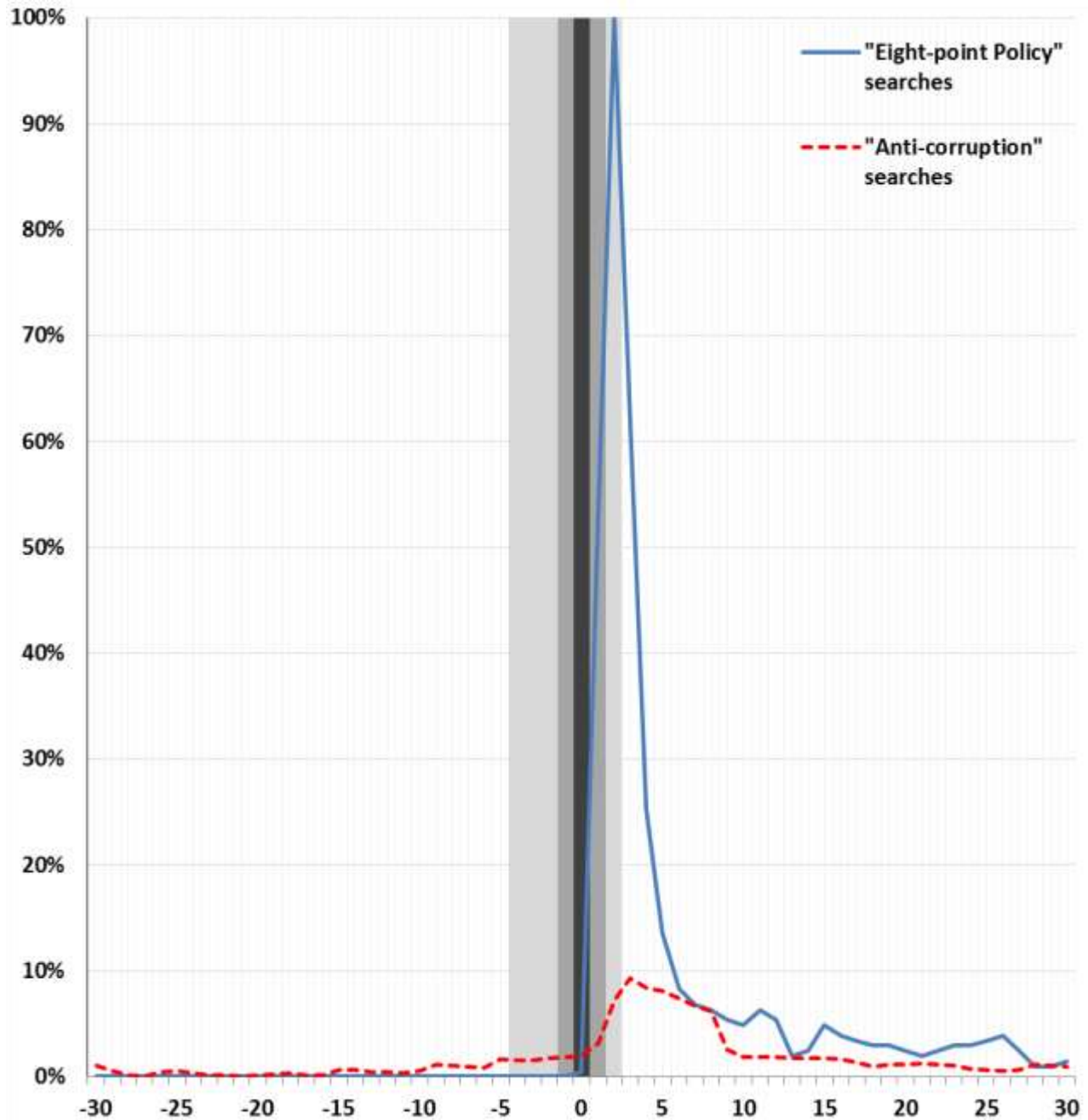


Figure 2 (Continued)

Panel C. Daily Baidu internet search volume for ‘Eight-point Policy’ (in Chinese, 八项规定), indicated by the solid line, and for ‘Economic Development’ (经济发展), ‘Economic Growth’ (经济增长), and ‘Economic Reform’ (经济改革) indicated by successively finer dashed lines. The event date, Tuesday, December 4th 2012, is indicated by the dark gray band. The three-trading-day window, also includes the darker grey bands around the event date, and the five-trading-day window (which spans the weekend), also includes the light gray bands. Searches are scaled by the maximum for ‘Eight-point Policy’ searches, which occurs on Thursday Dec. 6th 2012.

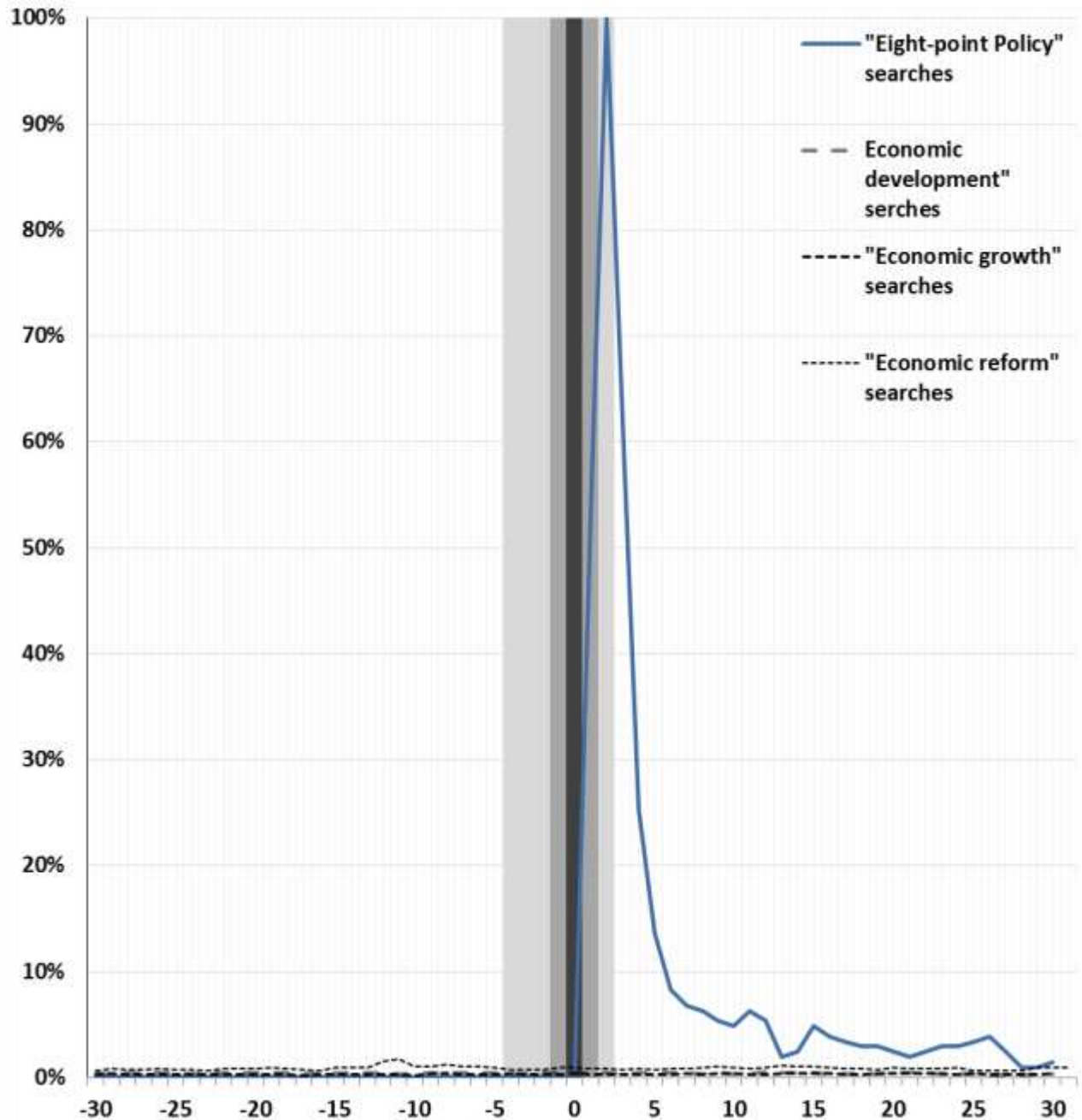


Figure 3: Chinese market index before and after the initiation of the Eight-point Policy

Cumulative return is the cumulative increase in the value of an equal-weighted portfolio of all listed shares on China's two mainland stock exchanges, the Shanghai Stock Exchange and the Shenzhen Stock Exchange. The cumulative return is normalized to zero on trading day -51. The five and three-day event windows around the event date, the Party's December 4th 2012 adoption of the Eight-point Policy to curtail corruption in the Party's ranks of leading cadres.

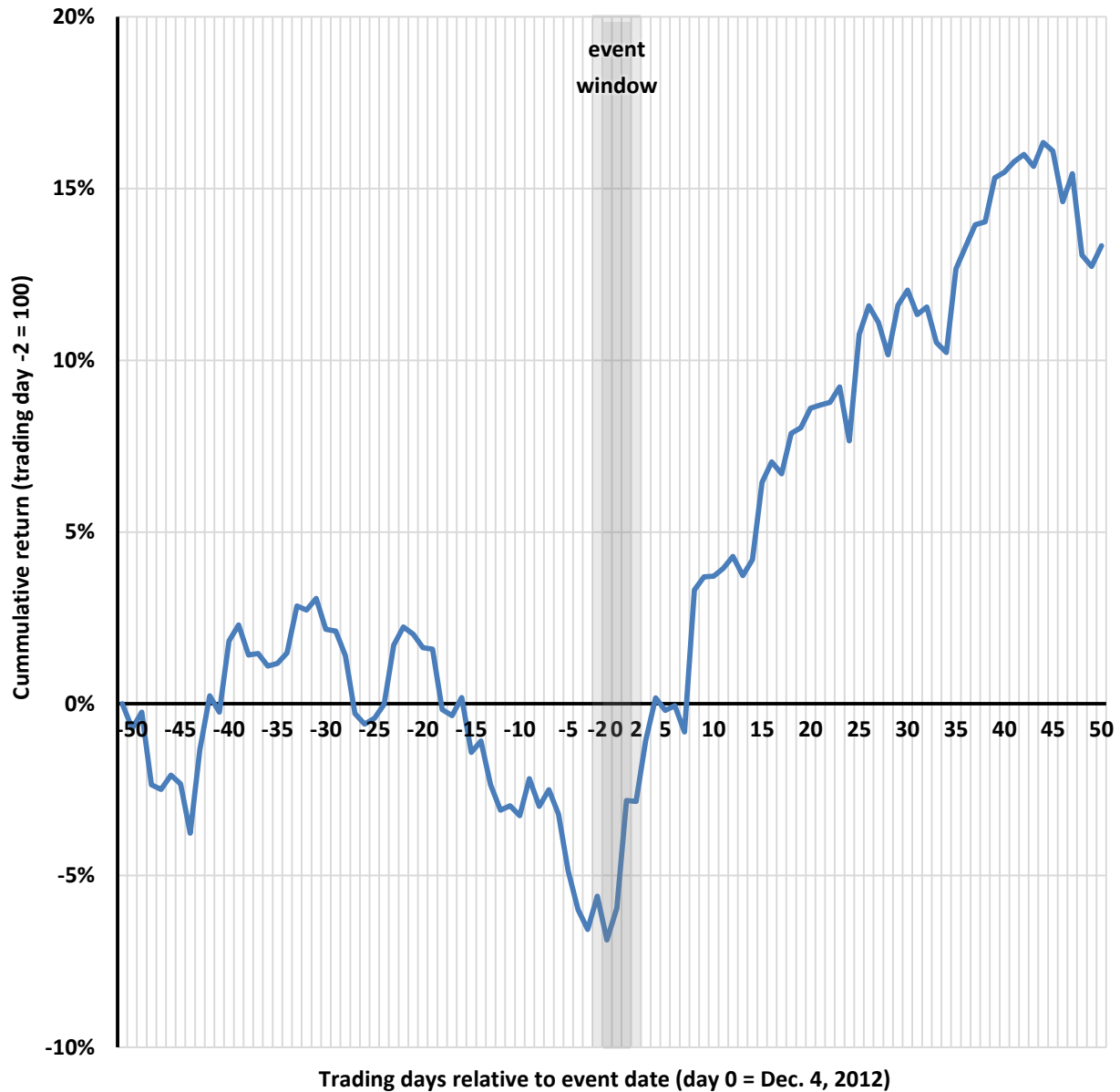


Figure 4: Cumulative returns of portfolios of stocks by province liberalization

Panel A. Cumulative divergence of high and low-*Marketization* province stocks. Vertical axis is cumulative return on a hedge consisting of a portfolio of equal-weighted long positions in all stocks in high-*Marketization* provinces and an offsetting portfolio of equal-weighted short positions in all stocks in low-*Marketization* provinces. The portfolio is set up at zero net cost on Thursday, November 29th 2012, the day prior to the start of the five-trading day window surrounding the event date, the Party's Tuesday, December 4th 2012 adoption of the Eight-point Policy. Gains are percent of the initial value of either side of the portfolio. Stocks are listings on the Shanghai and the Shenzhen stock exchanges. The five and three-day event windows around the event date are indicated by successively darker shading in the background. High and low-*Marketization* provinces are those whose *Marketization* indexes fall into its top and bottom terciles, respectively.

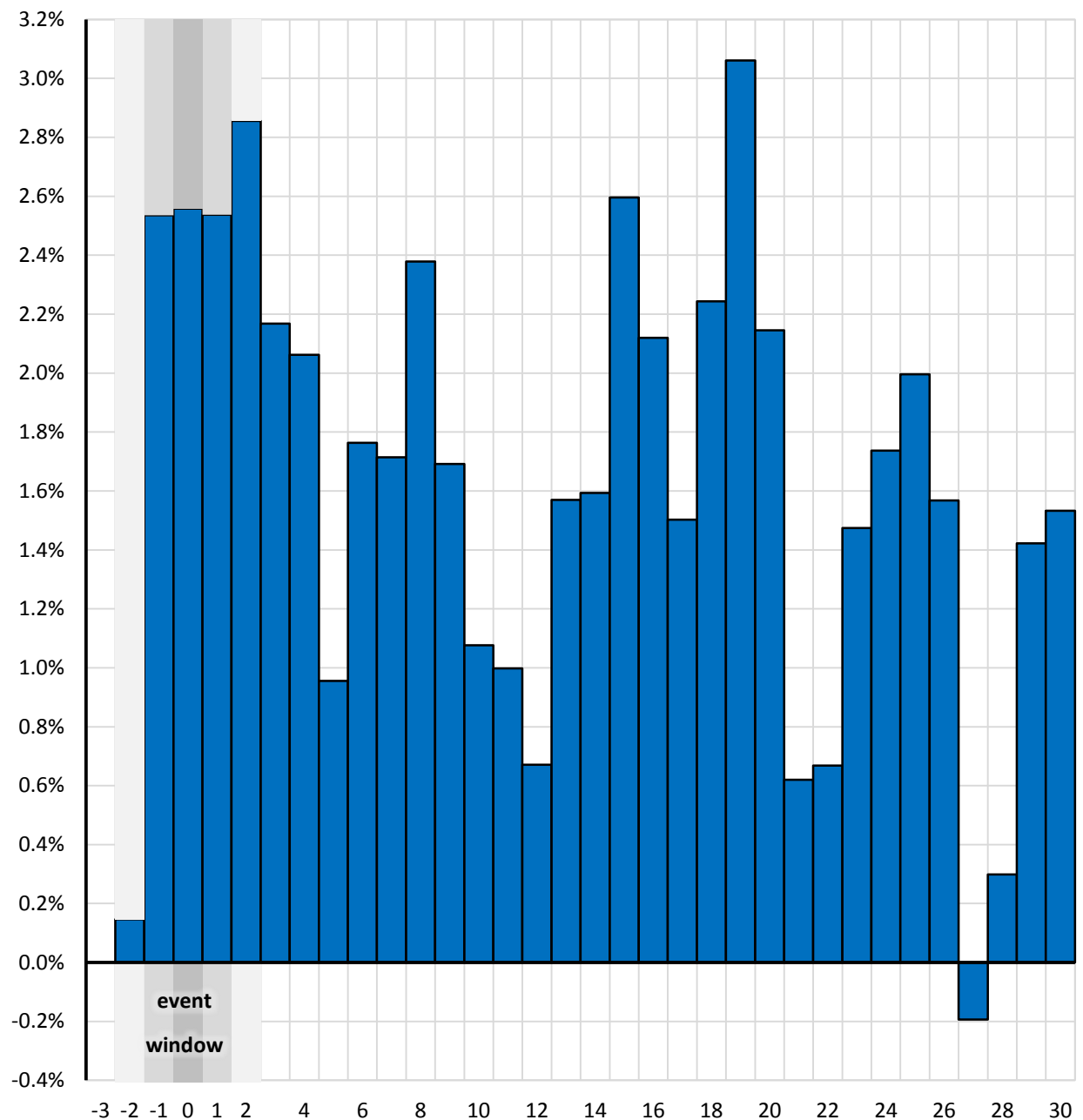


Figure 4. (continued)

Panel B. Cumulative Event Window Returns of Province-level Portfolios. Vertical axis is value -weighted cumulative returns for portfolios of firms in each province-level jurisdiction in the three-day window surrounding the event date, the Dec. 4th 2012 submission of the Eight-point Policy to combat corruption. Horizontal axis is province marketization Index, a measure of its progress in implementing market reforms. Provinces are numbered as in Table I. Lighter regression line uses all data; darker regression line drops Tibet (31) and Qinghai (30)

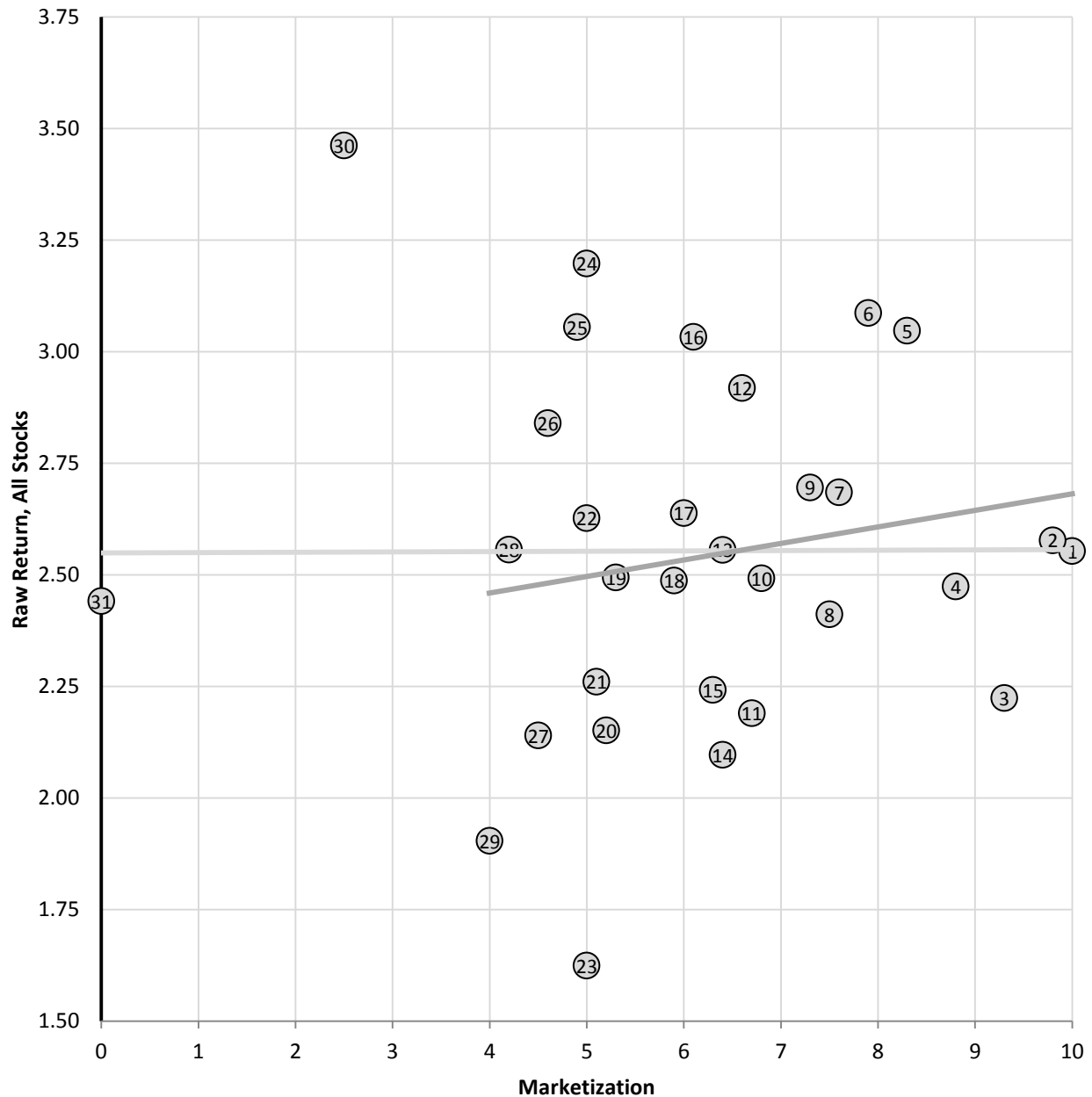


Figure 5. Cumulative returns of SOE and nonSOE portfolios, by province liberalization

Vertical axis is value-weighted cumulative returns for portfolios of firms in each province-level jurisdiction in the three-day window surrounding the event date, the Dec. 4th 2012 submission of the Eight-point Policy to combat corruption. Horizontal axis is province marketization Index, a measure of its progress in implementing market reforms. Provinces are numbered as in Table I. Lighter regression lines use all data; darker regression lines drop Tibet (31) and Qinghai (30).

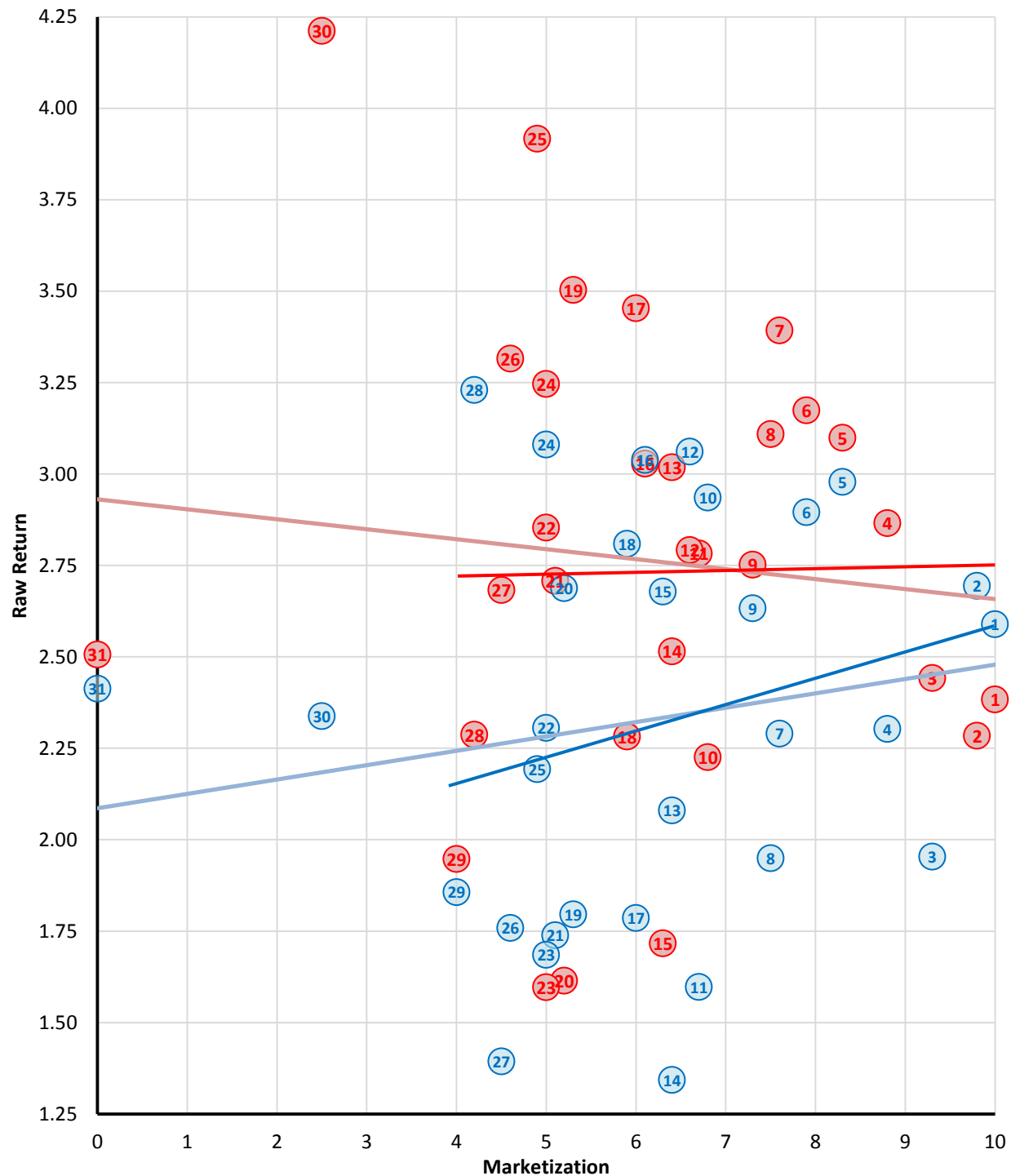


Figure 6. Hong Kong listed mainland Chinese firms versus other Hong Kong firms

Cumulative total return indexes of all mainland firms (H shares) listed on the Hong Kong Stock Exchange and all other stocks listed there before and after the event date, the Party's December 4th 2012 adoption of the Eight-point Policy to curtail corruption in the Party's ranks of leading cadres. Both indexes are normalized to 100% at the beginning of the five-day event window surrounding the event date.

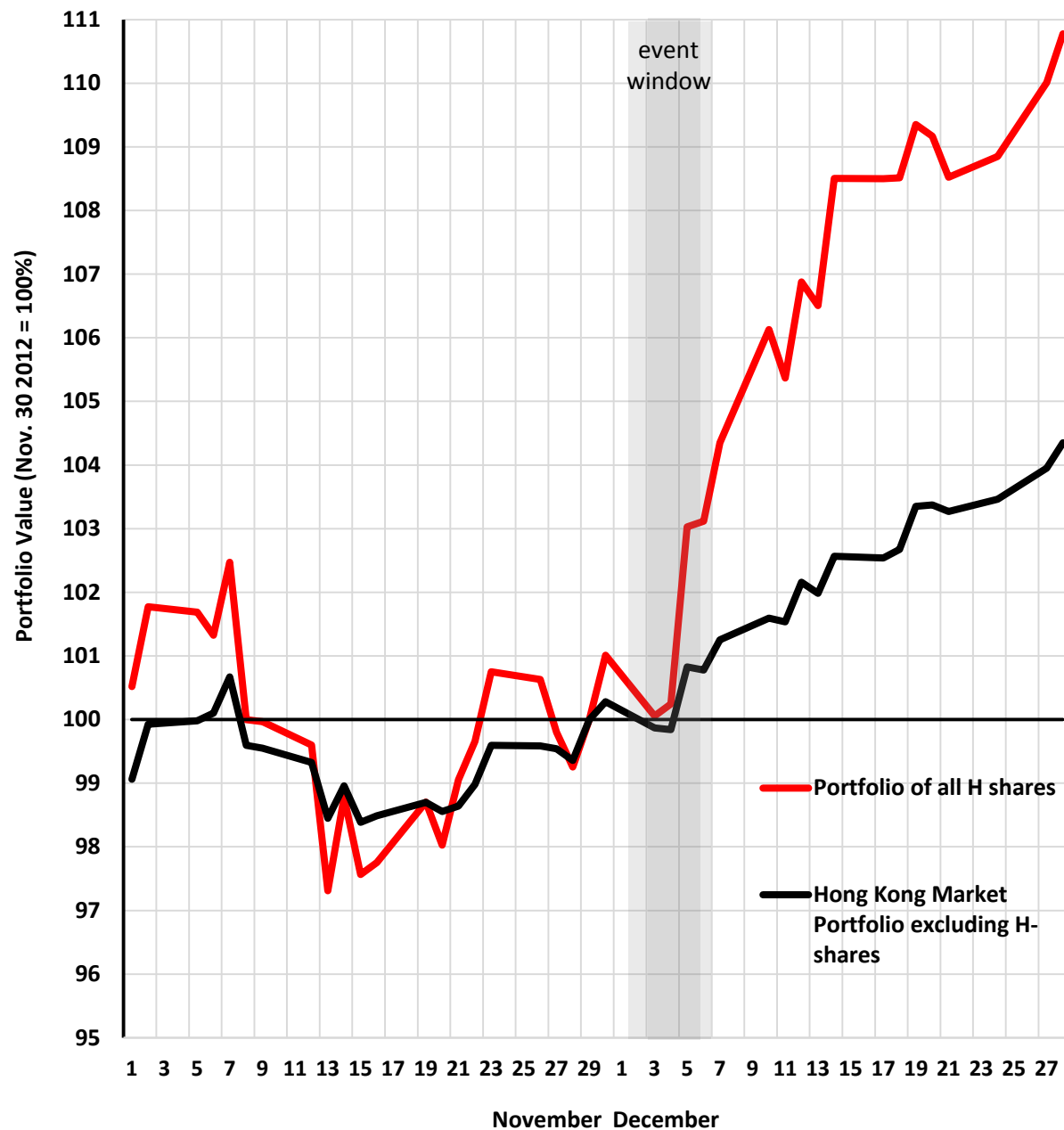


Table I
Marketization Index by province-level Jurisdiction

Province-level jurisdictions include provinces, province-level cities and autonomous regions. Indexes and subindexes are described in detail in Appendix I.

Province	<i>Marketization</i>	Province	<i>Marketization</i>
1. Zhejiang	11.8	17. Hebei	7.3
2. Jiangsu	11.5	18. Jilin	7.1
3. Shanghai	11.0	19. Hainan	6.4
4. Guangdong	10.4	20. Inner Mongolia	6.3
5. Beijing	9.9	21. Guangxi	6.2
6. Tianjin	9.4	22. Shanxi	6.1
7. Fujian	9.0	23. Heilongjiang	6.1
8. Shandong	8.9	24. Yunnan	6.1
9. Liaoning	8.8	25. Ningxia	5.9
10. Chongqing	8.1	26. Shaanxi	5.7
11. Henan	8.0	27. Guizhou	5.6
12. Anhui	7.9	28. Xinjiang	5.1
13. Jiangxi	7.7	29. Gansu	5.0
14. Hubei	7.7	30. Qinghai	3.3
15. Sichuan	7.6	31. Tibet	0.4
16. Hunan	7.4		

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 Policy on Dec. 4th 2012. Portfolios contain all firms, non-state-owned enterprises (nonSOEs) only, or state-owned enterprises (SOEs) only; firms in all provinces, low (bottom tercile) *Marketization* provinces, or high (top tercile) *Marketization* provinces and all combinations thereof. Marketization gauges provinces' progress in implementing market reforms. Differences between nonSOEs and SOEs and between stocks in high versus low-*Marketization* provinces are also computed. Panel A uses a 3-day event window. The standard deviation used to test whether $CRR(-1, 1)$ is significantly different from zero is the square root of 3 times the variance of daily stock returns from day -211 to day -11. Panel B uses a 5-day window. The standard deviation used to test whether $CRR(-2, 2)$ is significantly different from zero is the square root of 5 times the variance of daily stock returns from day -211 to day -11. Significance at the 10%, 5%, and 1% level is indicated by *, **, and ***, respectively.

Panel A: Mean 3-day cumulative returns, $CRR(-1, 1)$

	All firms	nonSOEs	SOEs	nonSOE minus SOE
All provinces	2.77*	2.44	2.94**	-0.51***
Low <i>Marketization</i> provinces	0.54	-2.72*	3.27*	-5.99***
High <i>Marketization</i> provinces	3.20**	3.03*	3.28**	-0.25
High minus low <i>Marketization</i> provinces	2.66***	5.75***	0.01	

Panel B: mean 5-day cumulative raw returns, $CRR(-2, 2)$

	All firms	nonSOEs	SOEs	nonSOE minus SOE
All provinces	3.86**	3.55*	4.01**	-0.46**
Low <i>Marketization</i> provinces	0.98	-3.00	4.30*	-7.30***
High <i>Marketization</i> provinces	4.46**	4.38*	4.50**	-0.13
High minus low <i>Marketization</i> provinces	3.49***	7.38***	0.20	

Table III
Summary Statistics for Main Variables

Samples	All firms		nonSOEs		SOEs	
N	2,024		1,173		851	
	Mean	Std.	Mean	Std.	Mean	Std.
<i>CRR</i> (-1, 1), %	2.54	3.43	2.41	3.25	2.71	3.67
<i>CRR</i> (-2, 2), %	3.77	4.65	3.55	4.43	4.09	4.92
<i>CAR</i> (-1, 1), %	0.05	2.99	-0.11	2.91	0.28	3.09
<i>CAR</i> (-2, 2), %	0.06	4.09	-0.21	3.97	0.43	4.22
<i>ETC</i>	1.46	1.98	1.75	2.18	1.06	1.58
<i>Marketization</i>	9.15	2.07	9.56	2.00	8.59	2.05
<i>Growth Potential (Q)</i>	2.94	2.43	3.18	2.64	2.60	2.06
<i>External Finance Dependence (EFD)</i>	-0.59	2.95	-0.44	2.71	-0.79	3.25
<i>Total Factor Productivity (TFP)</i>	2.84	5.49	3.02	5.49	2.60	5.49
<i>GDP Growth</i> , %	11.75	1.88	11.56	1.75	12.02	2.02
<i>Log(GDP per capita)</i>	10.59	0.45	10.63	0.41	10.52	0.49
<i>Education Spending/GDP</i> , %	2.69	1.16	2.52	1.10	2.92	1.21
<i>Firm Size</i> (log of <i>Total Assets</i>)	21.67	1.31	21.24	1.06	22.26	1.40
<i>Leverage</i> (<i>Liabilities/Total Assets</i>)	0.46	0.62	0.40	0.76	0.55	0.31
<i>Research and Development</i> (R&D/sales)	0.02	0.03	0.02	0.03	0.01	0.02

Table IV
Regression Analyses on Firm-level Cumulative Returns

Regressions explain 3-day (Panel A) and 5-day (Panel B) cumulative returns, relative to industry fixed effects. Explanatory variables include the market reform index (*Marketization*), Entertainment and Travel Costs (*ETC*), and *Total Factor Productivity*, provincial *GDP Growth*, *Log(per capita GDP)*, *Education Spending/GDP*, and firm-level controls (*Firm Size*, *Leverage*, and *R&D*). Regressions also include interactions of *Marketization* with *External Finance Dependence* (industry fixed effects subsume *External Finance Dependence* main effects), *Growth Potential* (industry fixed effects subsume *Growth Potential* main effects), and *ETC* and *Total Factor Productivity*. Appendix I presents detailed definitions of all variables. P-values are in parentheses. Significance at 10%, 5% and 1% levels indicated by *, **, and ***, respectively.

Panel A: Explained variable is 3-day cumulative raw return <i>CRR</i>(-1,1)				
Subsamples	nonSOEs		SOEs	
	(1)	(2)	(3)	(4)
<i>Marketization</i>	0.181*** (0.00)	0.047 (0.58)	-0.169* (0.09)	-0.135 (0.26)
× <i>Growth Potential</i>		0.037*** (0.00)		0.007 (0.60)
× <i>External Finance Dependence</i>		0.019*** (0.00)		-0.011 (0.34)
× <i>Total Factor Productivity</i>		0.029** (0.02)		-0.027* (0.08)
× <i>ETC</i>		0.029** (0.03)		-0.040* (0.05)
<i>Total Factor Productivity</i>	0.040** (0.03)	0.030 (0.12)	0.021 (0.60)	0.030 (0.45)
<i>ETC</i>	-0.111*** (0.00)	-0.136*** (0.00)	0.044 (0.40)	0.099** (0.04)
<i>GDP Growth</i>	0.208*** (0.00)	0.213*** (0.00)	-0.044 (0.35)	-0.041 (0.41)
<i>Log(GDP per capita)</i>	0.208* (0.06)	0.223 (0.29)	-0.073 (0.72)	-0.097 (0.63)
<i>Education Spending/GDP</i>	0.238*** (0.00)	0.227* (0.06)	-0.194 (0.239)	-0.166 (0.31)
P-value of <i>Marketization</i> and its cross terms joint F-test		0.04		0.06
Controls & Industry Fixed Effects	Yes	Yes	Yes	Yes
Clustering by	Prov, Ind	Prov, Ind	Prov, Ind	Prov, Ind
Observations	1,173	1,173	851	851
Adjusted R-squared	0.057	0.062	0.075	0.078

Panel B: Explained variable is 5-day cumulative raw return *CRR*(-2,2)

Subsamples	nonSOEs		SOEs	
	(1)	(2)	(3)	(4)
<i>Marketization</i>	0.266** (0.02)	0.128 (0.35)	-0.138 (0.17)	-0.155 (0.21)
× <i>Growth Potential</i>		0.029*** (0.00)		0.034** (0.02)
× <i>External Finance Dependence</i>		0.035*** (0.00)		-0.016** (0.02)
× <i>Total Factor Productivity</i>		0.026* (0.05)		-0.023 (0.23)
× <i>ETC</i>		0.059*** (0.00)		-0.062** (0.03)
<i>Total Factor Productivity</i>	0.071*** (0.00)	0.060*** (0.00)	0.085 (0.21)	0.092 (0.15)
<i>ETC</i>	-0.199*** (0.00)	-0.249*** (0.000)	0.076 (0.17)	0.158** (0.02)
<i>GDP Growth</i>	0.287*** (0.00)	0.284** (0.01)	-0.098 (0.24)	-0.089 (0.32)
<i>Log(GDP per capita)</i>	0.172 (0.50)	0.223 (0.50)	-0.453** (0.034)	-0.499** (0.02)
<i>Education Spending/GDP</i>	0.375** (0.05)	0.354* (0.09)	-0.176 (0.41)	-0.139 (0.51)
P-value of <i>Marketization</i> and its cross terms joint F-test		0.04		0.03
Controls & Industry Fixed Effects	Yes	Yes	Yes	Yes
Clustering by	Prov, Ind	Prov, Ind	Prov, Ind	Prov, Ind
Observations	1,173	1,173	851	851
Adjusted R-squared	0.099	0.105	0.090	0.093

Table V
Change of ETC

Province-level jurisdictions include provinces, province-level cities and autonomous regions. *Change of ETC* in a province is defined as the average of (ETC/sales in 2013 minus the ETC/sales in 2012) of all firms in that province.

<i>Province</i>	<i>Marketization Index</i>	<i>Change in ETC</i>		
		All firms	nonSOEs	SOEs
1. Zhejiang	11.8	-0.26	-0.24	-0.35
2. Jiangsu	11.5	-0.22	-0.10	-0.57
3. Shanghai	11.0	0.17	0.47	-0.15
4. Guangdong	10.4	-0.22	-0.17	-0.37
5. Beijing	9.9	-0.16	-0.29	-0.04
6. Tianjin	9.4	0.71	2.63	-0.35
7. Fujian	9.0	-0.17	-0.20	-0.11
8. Shandong	8.9	0.04	0.11	-0.09
9. Liaoning	8.8	0.69	1.03	0.36
10. Chongqing	8.1	0.12	0.14	0.11
11. Henan	8.0	-0.11	-0.05	-0.18
12. Anhui	7.9	-0.09	-0.13	-0.05
13. Hubei	7.7	-0.27	-0.30	-0.24
14. Jiangxi	7.7	-0.24	-0.39	-0.13
15. Sichuan	7.6	0.07	0.05	0.09
16. Hunan	7.4	-0.03	-0.29	0.19
17. Hebei	7.3	-0.23	-0.48	0.02
18. Jilin	7.1	-0.38	0.72	-0.96
19. Hainan	6.4	-0.26	0.34	-0.86
20. Inner Mongolia	6.3	-0.63	-0.60	-0.66
21. Guangxi	6.2	-0.60	-0.70	-0.52
22. Heilongjiang	6.1	-0.22	-0.20	-0.24
23. Shanxi	6.1	0.55	1.68	-0.05
24. Yunnan	6.1	-0.09	0.64	-0.41
25. Ningxia	5.9	-1.06	-1.82	-0.31
26. Shaanxi	5.7	-0.02	-0.09	0.01
27. Guizhou	5.6	0.36	0.91	-0.02
28. Xinjiang	5.1	-0.39	-0.21	-0.46
29. Gansu	5.0	-0.61	-1.03	-0.22
30. Qinghai	3.3	1.74	4.61	-0.17
31. Tibet	0.4	-0.26	-0.15	-0.48
Correlation (<i>Marketization, Change of ETC</i>)		-0.033	-0.121	0.134
P-value		(0.85)	(0.52)	(0.47)

Appendix I
Variable Descriptions

Variables	Descriptions
<i>CRR(-1, 1)</i>	Three trading-day cumulative stock return around the initiation of the Eight-point Policy on Dec. 4 th 2102, in percent.
<i>CRR(-2, 2)</i>	Five trading-day cumulative stock returns around the Dec. 4 th 2012 initiation of the Eight-point Policy, in percent.
<i>ETC</i>	Entertainment and travel costs as percent of sales in 2011.
<i>SOEs</i>	Indicator variable set to one if the firm is ultimately controlled by the state or state organs and to zero otherwise, using a 30% “weakest link in the control chain” rule as per CSMAR (China Stock Market and Accounting Research) and CSRC (China Securities Regulatory Commission) guidelines.
<i>Marketization</i>	A summery index measuring progress in implementing market reforms for each of China's province-level jurisdictions (provinces, province-level cities, and autonomous regions). A higher index means more complete market reforms. Source: Fan et al (2011).
<i>Growth Potential</i>	Industry-average market value over book value of equity.
<i>External Finance Dependence (EFD)</i>	Industry average capital expenditures less cash flow from operations, all divided by capital expenditures.
<i>Total Factor Productivity (TFP)</i>	Total factor productivity, estimated for each firm using the methodology developed by Levinsohn-Petrin (2003).
<i>GDP Growth, %</i>	Province real GDP growth, averaged over 2009 to 2011.
<i>Log(GDP per capita)</i>	Log of province real GDP <i>per capita</i> , averaged over 2009 to 2011.
<i>Education Spending/GDP, %</i>	Province education expenditures over GDP, averaged over 2009 to 2011.
<i>Firm Size Log(total assets)</i>	The logarithm of firm total assets.
<i>Leverage Liabilities/total assets</i>	Firm total liabilities over total assets.
<i>Research and Development (R&D/sales)</i>	Firm research & development expenses over total sales, set to zero for firms not reporting research and development spending.

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