Purifying the Leviathan:
The Anti-Corruption Campaign and
Changing Governance Models in China

Tianyang Xi, Yang Yao, and Qian Zhang

National School of Development
Peking University

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Abstract

Autocrats face a challenge of how to maintain popular consent and internal harmony simultaneously. Although rent-sharing is conducive to economic performance, it undermines popular consent and poses a threat to a cohesive ruling coalition. Alternatively, autocrats may opt for relying on loyalty to form a ruling coalition. This paper argues that the recent anti-corruption campaign in China spells out an induced institutional change, facilitating transition from a rent-based equilibrium to a loyalty-based one. Consistent with the theoretical argument, the analysis of prefecture-level city leaders finds that: (1) performance was positively correlated with the probability of investigation; (2) connection, a symbol of loyalty, was negatively correlated with investigation; (3) connection granted protections for high-performers; and (4) connection superseded performance as a more significant determinant of promotion during the anti-corruption campaign.

Keywords: Corruption, Performance, Connection, Autocratic governance

1 Introduction

Rulers face competing objectives, from promoting economic growth to maintaining a cohesive ruling coalition. Democracies process conflictual demands from constituents through institutionalized means; by contrast, autocrats often impose personalized rules due to a lack of credible commitments (Boix and Svolik, 2013; Gehlbach and Keefer, 2012; Myerson, 2008). Moreover, rulers opt for different menus of ruling mechanisms when facing different constraints. Studying the transitions between ruling mechanisms is challenging because of the opacity of autocratic governance. The recent anti-corruption campaign in China provides an opportunity to peer behind the heavy curtain of autocratic rules.

In the literature of comparative politics and political economy, corruption is widely viewed as a symptom of institutional failure. That is, corruption arises when ill-suited institutions lead government officials to misappropriate power for private gains. Scholars report that corruption is more prevalent in the presence of decentralization and power-sharing electoral institutions under weak institutional environments (Chang and Golden, 2007; Fan, Lin and Treisman, 2009; Gerring and Thacker, 2004; Kunicova and Rose-Ackerman, 2005; Persson, Tabellini and Trebbi, 2003; Treisman, 2000). However, the institutional arguments may overlook the instrumental role of corruption in autocracies, although the argument speaks to the truth across the board. Eventually, games are controlled by autocratic rulers who are concerned with their own political survival. Holding China in the background, this paper proposes a theoretical argument about autocratic governance, under which institutions that are consistent with the logic of political survival may imply corruption. Departing from the conventional wisdom, we argue that corruption can be a built-in piece of autocratic stability rather than a symptom of a dysfunctional state.

Our theory dictates that political survival of the ruler stands on two pillars:

popular consent and a ruling coalition. Popular consent may further hinge on strong economic performance and the perception of a clean government by the majority of the people. This is true in autocratic as well as democratic systems. However, autocracies suffer from a lack of credible commitment to institutionalized mechanisms to promote performance and responsiveness, say, through the popular vote. On the one hand, to deliver growth outcomes, the autocrat needs to condone rent-sharing as an incentive scheme and delegate significant discretionary power to subnational officials.

On the other hand, the rent-sharing mechanism impedes the ability to maintain the image of a clean government, and it may ultimately undermine popular consent. This self-defeating logic of popular consent renders a fundamental dilemma in autocratic governance. As a result, when the cost of rent-sharing surges, the ruler may embrace an alternative governing model, namely, the loyalty model, which places loyalty and the cleanness of government in the central position. In this process, the ruler may employ anti-corruption campaigns as a costly signal to induce the transition to a more cohesive ruling coalition based on relatively more congruent and clean agents.

This simple framework produces three empirical implications. First, when rent-sharing is essential for pro-growth incentives, growth predicts corruption. Political favoritism offers an important protection for property rights and market transactions under weak institutions. Local leaders may help ease credit constraints and ensure contract enforcement. They may also be instrumental for coordinating investments (Busemeyer, 2009; Hall and Gingerich, 2009). Through personal efforts to enhance economic performance, agents naturally obtain a sense of ownership of the regime and demand political rent. This rent can be in the form of pecuniary benefits from corruption or a higher political position in the system. This leads to a political-economic equilibrium of strong pro-growth motives as well as pervasive corruption.

Second, political connection to the principal is negatively correlated with the likelihood an anti-corruption probe. When the ruler places the establishment of a clean reputation ahead of strong performance, political promotion of officials relies increasingly on local knowledge, such as one's disposition to self-discipline and adherence to moral integrity, rather than exclusively on tangible measures such as gross domestic production (GDP) growth. This implies that selections would more likely be drawn from candidates who have close personal ties with the principal and thus can be trusted as loyal and clean allies. Even when some connected agents may nevertheless be corrupt, investigations over them are mitigated by the value of preserving a cohesive political coalition.

Third, in addition to sincere anti-corruption efforts, political selection in the ruling group may become increasingly dependent on personal or organizational loyalty. Political patronage provides a possible solution to buttress popular consent when corruption is poised to be a severe political danger. However, by eradicating corruption, patronage takes the material component of ownership from the hands of subordinate officials, which, in turn, hinders their incentives to promote growth. Consequentially, the other component of the incentive scheme, performance-based promotion, loses its place. As a result, the autocrat must rely on personal or organizational loyalty to sustain the ruling coalition.

The empirical relevance of the argument is explored in the context of the anti-corruption campaign launched by Chinese President Xi Jinping following his ascendance to the leadership of the Chinese Communist Party (CCP) in 2013. The campaign has hit the bureaucratic system at an unprecedented scale. As of August 2017, the investigations led by the CCP's Central Commission for Discipline Inspection (CCDI, Zhongyang Jilv Jiancha Weiyuanhui) had held 224 province-level officials (Sheng-Bu Ji), more than 8,600 prefecture-level officials (Ting-Ju Ji), and more than 66,000 county-level officials (Xian-Chu ji) in custody for corruption

charges.[1]

The literature has provided mixed assessments of the motives and effects of the campaign. Some researchers report a suppression of economic growth associated with the purge of local leaders (Araral et al., 2017; Qu, Sylwester and Wang, 2018), others attribute the investigation strategy employed by the principal to internal power struggles (Zhu and Zhang, 2017; Yuen, 2014). In comparison, several scholarly works interpret the campaign as a sincere effort of reform to boost institutional quality and popular support (Lu and Lorentzen, 2016; Manion, 2016; Zhu, Huang and Zhang, 2017). A recent research by Chen and Kung (2018), based on firm level data, finds that the campaign was associated with a reduction of corruption in land auctions by subnational governments. The theoretical framework presented in this paper provides an explanation that reconciles the discrepant findings. Our analysis suggests that the campaign has had a genuine anti-corruption component. It is intended as a costly signal of the leadership's resolution to switch from a system of political selection relying primarily on pecuniary incentives, to a system that is based more on the selection of "good types". This implies a co-incidence of investigations and strong performance records, as officials who had exerted larger pro-growth efforts have a higher chance of corruption. Meanwhile, the selection of connected officials, those who had co-work experiences with the principals, contributes to the cohesion within the ruling coalition.

We use data on the investigations of prefecture-level city leaders, assembled from the CCDI website to test our theoretical arguments. City leaders play a significant role in managing economic affairs, and there is evidence that economic performance was a key driver of their promotions (Lü, Landry and Duan, 2017; Yao and Zhang, 2015). Mayors and city party secretaries constitute an important pool of potential candidates for provincial and central leaders. Hence, examining the purge and promotion of city leaders shed lights on the changes in governing mechanisms after

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[1]Editorial in the *People's Daily*, September 18, 2017.
`http://paper.people.com.cn/rmrb/html/2017-09/18/nw.D110000renmrb_20170918_2-01.htm`

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2012, the year when the 18th Politburo of the CCP was elected.

Our empirical analyses come down to four findings: (1) The capability of city leaders, as measured by individual fixed effects in the estimation of GDP growth, was positively correlated with investigation for corruption. (2) Leaders with stronger connections with the superiors were less likely to be investigated. (3) Connection and performance have a negative interactive effect in determining the probability of investigation: being connected to a superior mitigated the risk of investigation for higher-performers. (4) The investigations were coupled with changes in the pattern of promotion. Specifically, high performers ceased to enjoy a higher probability of promotion after 2012, and connection to superiors became a more important determinant of promotion with the progress of the campaign.

Although focusing on China, this study aims to provide insights to understand corruption in general. Around the world, corruption is a significant phenomenon in autocracies and dysfunctional democracies. The conventional wisdom attributes corruption to agency or information problems (Bardhan and Mookherjee, 2000; Chang and Golden, 2007; Khan, Khwaja and Olken, 2015; Krueger, 1974). Our arguments emphasize that corruption may be employed as a rent-sharing scheme among political elites. Therefore, corruption may still prevail in the absence of information frictions. Through studying the attributes of investigated officials in China's anti-corruption campaign, this paper adds to the literature a new perspective for understanding the mechanism of autocratic governance.

The paper is also related to research on political purges. Bueno de Mesquita and Smith (2017) study a formal model in which the autocrat may strategically use purge to enhance the likelihood of political survival in the face of external shocks. Easton and Siverson (2018) report cross-country evidence that purges helped autocrats to maintain longer tenure. Our finding that the investigations were mitigated by political connections is consistent with the ideas of those two papers, although purges were specifically targeted at corrupt officials in the Chinese case.

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2 Theoretical argument

Autocratic rulers grapple with two kinds of risks: the external risk of rebellion posed by discontented masses (Hale, 2005; Hollyer, Rosendorff and Vreeland, 2015; Tang, Huhe and Zhou, 2017) and the internal risk of power-struggle within the ruling group (Brumberg, 2002; Svolik, 2013; Wright, Frantz and Geddes, 2015). Solid popular consent is necessary to contain the risk of mass rebellion. To hold onto power over the ruling group, rulers often must accommodate the rent-sharing demands of elites. We argue that these competing conditions give rise to a dilemmatic cycle of autocratic governance.

First, performance enhances political survival. The conventional wisdom in political economy predicts bad performance for autocratic regimes due to a lack of political accountability. However, autocratic countries are often featured with remarkable economic performance (Przeworski and Limongi, 1993; Przeworski and Luo, 2018). The motive for enhancing performance in autocracies stems from the logic of political survival. In the framework originally proposed by Shirk (1993) and formally developed by Bueno De Mesquita et al. (2005), a polity is characterized the fixed size of the selectorate and the winning coalition in the society. Under this formulation, the ruler is induced to provide more public goods as opposed to engaging in rent redistribution when the size of political winning coalition is expanded.

In the long run, however, a winning political coalition needs to be sufficiently inclusive to neutralize the external risk of rebellion. The economy is the ultimate source of jobs and rent creation. Continuous improvement in income and living standards deters rebellious attempts and reduces the institutional cost of compliance (De Mesquita and Smith, 2010; Wright, Frantz and Geddes, 2015). Strong performance serves as a signal for the strength of the regime. In contrast, economic recession exposes the autocrat to increasing risk of social unrest and induces a higher

probability of coup d'état (Casper and Tyson, 2014; Londregan and Poole, 1990; Reuter and Gandhi, 2010). As Gallagher and Hanson (2015) correctly contend, "the sizes of the selectorate and winning coalition are often endogenous to the process by which an autocrat attains power." This reasoning explains why some countries have become record-holders of economic miracles under autocratic leaders. The list includes Lee Kuan Yew in Singapore, Park Chung-hee in Korea, Pinochet in Chile, and Chiang Ching-kuo in Taiwan.

However, the growth model in autocracies may be self-defeating due to the rise of corruption. Lacking political and legal accountability, local leaders hold almost unchecked political power and pose a serious moral hazard problem in managing economic affairs. Rent-sharing is an inevitable compromise for transition economies as it provides pecuniary incentives for government officials to grease the wheels of growth (Aidt, 2009; Kang, 2002; Méon and Weill, 2010). Through personal efforts in helping overcome institutional frictions and broke market transactions, local leaders take bribes from the private sector as an efficiency wage (Bardhan, 2016; Gorodnichenko and Peter, 2007). However, this greasing model is hardly sustainable, because it reinforces the moral hazard problem by investing an increasingly large stake of development in powerful leaders. Over time, the amount of rents that are needed to meet the incentives of local leaders may be prohibitively high. The exclusive focus on tangible measures of growth leads to distortions in other important public policy domains, such as health and environment (Anderson, Rausser and Swinnen, 2013; Cai and Treisman, 2004; Kahn, Li and Zhao, 2015; Ottersen et al., 2014).

Second, relying on rent-sharing is inconsistent with the demand for maintaining the internal loyalty of the ruling coalition. A winning coalition is an effective tool for political survival only if conflicts are properly processed through policy concessions (Gandhi and Przeworski, 2006; Sekeris, 2011). When the majority of the subordinates become opportunists, it is difficult for concessions to sustain the coop-

eration of agents due to the lack of commitments. This is a more critical a problem during leadership transitions, when, to increase their political strength, new leaders strategically recruit agents. The recruitment of new faces triggers intergenerational power conflicts. Over time, conflicting interests pose a severe threat to the internal cohesion of the coalition. Corruption can become rampant with the presence of intra-party competition among political factions (Golden and Chang, 2001).

Third, a governing structure based predominantly on performance renders a "loyalty-versus-competence" problem in political selection. When ideological congruence is compromised in determining qualification for political promotion, high performers may pose a challenge to the internal stability of the ruling coalition.[2] More capable agents may be more effective in plotting coups against the ruler, as in Egorov and Sonin (2011). Or they may have better outside options and, hence, lower incentives to pledge allegiance to the ruler (Zakharov, 2016). When loyalty becomes a major concern of the ruling coalition and economic performance starts to have decreasing returns to external stability, the ruler needs to downplay the emphasis on performance and switch the political discourse toward loyalty and cleanness. This requires more prosocial policy initiatives, putting more emphasis on equality, poverty reduction, justice, and the integrity of the political system.

An anti-corruption campaign can then be employed as a strategic move to clear the hurdles in the transition process. For political selection, loyalty precedes capability or performance as the first criterion for evaluating good type agents. The autocrat can opt to select truly trustworthy friends, those who become followers because of belief, ideology, patriotism, and policy affinity with the autocrat. A natural question is why all the good things cannot go together. For example, why is it that the autocrat cannot promote competent agents who are willing to forsake rents and are genuinely loyal? A delicate equilibrium as such is next to infeasible

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[2]The compromise on ideological congruence is best indicated by a famous line of the former CCP leader Deng Xiaoping that "It doesn't matter whether a cat is black or white, as long as it catches mice."

due to inherent two-sided commitment problems elaborated by economic theorists (Myerson, 2015). Without formally binding rules of bureaucratic accountability, the ruler cannot commit not to renege on promised political promotions, and may often resort to purges to clear political debts. Facing political uncertainty, competent and clean candidates will not invest a large political stake upfront in defending the ruler. In equilibrium, it is likely that opportunists dominate "goods types" in group size. Following this logic, performance, loyalty, and integrity (cleanness) amount to an impossible trinity in autocratic governance.

3 Background and hypotheses

3.1 Changing governing models from Jiang to Xi

The theoretical argument presented in the preceding section suggests that a balance among performance, loyalty, and cleanness is hardly feasible in autocratic governance. Rather, the governing mechanisms may follow a cycle between a model relying primarily on performance and rent-sharing and an alternative one relying on loyalty and cleanness. We draw on the contemporary Chinese context to examine these models. Specifically, the analysis suggests that the governing mechanisms under two former presidents, Jiang Zemin and Hu Jintao, were characterized by the former model (henceforth, the Rent model), and the governing mechanisms under Xi Jinping are characterized by the latter (henceforth, the Loyalty model). The anti-corruption campaign was implemented by the CCP's new leadership under Xi as a strategic "big bang" toward the Loyalty model. The pattern of anti-corruption investigation and promotion reflects the logic of this induced institutional change.

The political-economic system of China during the Jiang Zemin era (1989-2003) featured the Rent model. In 1992, Deng Xiaoping, the retired spiritual leader, made the famous Southern Tour and reiterated support for reform and openness. Jiang quickly responded by espousing Deng's pragmatic lines on the economy. In

the following decade, his administration implemented a set of economic reforms, including massive privatization of state owned enterprises. Jiang also did not take an ideological hard line. The guiding political principle of the Jiang era, the theory of "Three Represents," assumed a pragmatic line of economic policies (Guo et al., 2014; Tsai, 2006). The leading role of the Communist Party in Chinese society was stated as representing "advanced social productive forces," "the progressive course of China's advanced culture," and "the fundamental interests of the majority." The principles opened the road toward pro-market reforms and helped stimulate economic growth, which was clearly a central focus of the CCP's leadership at the time.

Three features warrant a key role of subnational leaders in facilitating economic growth under the Rent model. The first feature is attributed to the developmental state, which holds economic growth as a primary focus and grants overwhelming economic power to government officials. The second feature is a high degree of decentralization, which allows local leaders to make full use of local information and preserve market institutions (Oi, 1995; Qian and Weingast, 1997). The third feature is that the CCP exerts firm control over subnational leaders through personnel management, which induces growth competition among regional governments (Li and Zhou, 2005; Xu, 2011; Yao and Zhang, 2015).

However, strong growth became a hotbed for corruption under the Rent model. The testimonies of investigated officials, which were released by the official media, suggest that a sense of entitlement to rent-sharing was behind many corruption cases. For example, Liao Xiaobo, a charged former deputy director of the Reform and Development Commission in Guangxi province, claimed that, "*My life is indeed ruined, but I do not think that I am worthless, especially in economic development. I will not despise my own morality. It is no exaggeration that almost every item of expressway, coastal port, river port, airport, subway and countless projects came from me... You can criticize my life and my morality, but my hard work can not be*

obliterated."[3]

Lacking an institutionalized mechanism to price the pro-growth efforts, corruption became an inevitable by-product of economic growth. Meanwhile, corruption at the local level was often coupled with severe social costs, such as the abuse of power, human rights violation, environmental degradation, and surging economic inequality. Although anti-corruption investigations were periodically pursued, they never reached a level of political salience comparable to the campaign by Xi Jinping's administration. It is a widely held belief that the tolerance for corruption provided important grease for growth (Fan and Grossman, 2001; Méon and Weill, 2010; Wei, 1999), and it was certainly so during the Jiang Zemin era.

The policy orientation in Hu Jintao's era (2002-2012) did not shy away from the focus on economic performance. Annual GDP growth was maintained at 12% from 2003 to 2007 in Hu's first term. Nevertheless, Hu and premier Wen Jiabao attempted to address popular discontent. The second Hu-Wen administration abolished the agricultural tax, established health insurance in rural areas, promoted fast expansion of the public sector, and implemented stimulus packages to boost the economy in the stagnant northeastern provinces. However, the leadership did not touch upon the issue of corruption. The image of rampant corruption peaked toward the end of Hu's second term, with some standing politburo members getting involved in corruption scandals. The Rent model was slightly modified but generally kept intact in the Hu era.

In sharp contrast to the two predecessors, Xi Jinping took on a major policy shift immediately after assuming power in 2013. First, Xi did not place economic performance as a first and foremost condition for regime stability. Discourses on the necessity of a recalibration of the economic structure downplayed the importance of growth. In the face of economic slowdown in 2014, Xi proposed the term "New Normal" to rationalize the structural adjustments. He also emphasized that

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[3] *Chinese Bulletin of Discipline and Inspection*, February 16, 2015.

GDP growth should not be regarded as an exclusive base of promotion criteria for government officials. Instead, after the start of the anti-corruption campaign in 2013, the official media began propagating a strong populist agenda to reinstall a clean government for the people. Clearly, from the view of the current leadership under Xi, the reputation of a clean government supersedes performance as the most critical component of popular consent for the regime.

The divergent path followed by Xi's leadership stems from his personal beliefs and the constraints he faces. As a member of the so-called "princelings" and being the son of first-generation revolutionary leaders of the CCP, Xi has a strong personal attachment to the ideal socialist model (Lam, 2015). Hence, there is good reason to believe that the anti-corruption campaign was motivated to clean the bureaucratic system.

At the same time, the campaign was likely also driven by a power struggle. Xi confronted a more severe problem of power consolidation than his predecessors did at least during his first term. As a former provincial party secretary in Zhejiang and Shanghai, Xi did not have enough opportunities to garner political alliances. Being sandwiched between two power factions affiliated with the two former presidents, he was in a relatively weak position in 2013, the year his first term began. It was likely the case that, for Xi, following the old Rent model would have been prohibitively expensive, as the "price" for political loyalty (in the form of corruption) had become too high. His response, as a new leader, might have been to promote trustworthy agents with close personal ties, and make positions void through the anti-corruption campaign.

The strategies for the anti-corruption investigation and promotions are consistent with a broadly defined Loyalty model. In the context of the party-state, the concept of political loyalty is not confined to personal ties, but more in ideological terms. Loyalty implies full faith in the Party's ideological lines and compliance with the leadership. A symbolic term for the shift to the Loyalty model is the "Four

Consciousnesses" announced in 2016, that is, the consciousnesses "of the need to maintain political integrity, think in big-picture terms, support the leadership core, and keep in alignment with the center."[4] This was in contrast with the selection criteria in the Jiang and Hu eras, when the party openly coopted economic elites under the spirit of representing "advanced social productive forces" (Dickson, 2003).

3.2 Hypothesis development

We argue that the pattern of anti-corruption investigations spells out a logic of induced institutional change. Under the Rent model, the personal efforts of local leaders are indispensable for economic development. Local leaders with higher economic performance records play a larger role in helping broker market transactions, through personal networks and regional favoritism. Local leaders can materialize political power under fast economic growth, expecting that corruption would be condoned as routine business. When the anti-corruption campaign started nationwide, high performers became a salient target. Hypothesis 1 summarizes the nexus between performance and corruption as indicated by the anti-corruption campaign.

Hypothesis 1 *High performance is positively associated with the probability of investigation.*

Connection matters. When cleanness becomes a fundamental issue for political selection, the principal may condition promotion decisions more on personal traits that are unobserved by researchers. That is, the principal may statistically discriminate among subordinate officials, treating connected officials more favorably. In this case, personal connection reduces information asymmetry. We expect that local leaders with stronger connections to their superiors face a lower chance of investigation. Hypothesis 2 highlights this point.

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[4]*Code of Conduct for Intraparty Political Life under New Circumstances.*

Hypothesis 2 *Connection to the superior is negatively correlated with the probability of investigation.*

Moreover, even in the case that all officials are equally corrupt, the superior may reign in favor of connected agents for the purpose of coalition building. More capable agents pose a larger threat to the principal, as the competence-versus-loyalty argument suggests (Egorov and Sonin, 2011). By contrast, connected agents have higher ideological congruence with the principal, so forgiving them may be a safe bet. The discussion on political discourse in the Xi era in the previous subsection shows a clear intention to switch the political focal point to loyalty. Following this logic, Hypothesis 3 suggests that the probability of investigation for high performers is mitigated by connections.

Hypothesis 3 *Connections to superiors protect high performers against investigations.*

Finally, performance and connection matter differently in different periods. Under the Rent model, performance is a good predictor for promotion, because rank and power help accumulate rents. Under the Loyalty model, with performance being downplayed as a basis of popular consent, the CCP needed a new handle for the promotion system. The remaining option was to shift to loyalty. Consistent with the reasoning for the anti-corruption purges, Hypothesis 4 maintains that performance had more significant predictive power for promotion before Xi's campaign, and connection became more important for promotion during the campaign.

Hypothesis 4 *Following the start of the anti-corruption campaign, performance became a less important determinant, and connection became a more important determinant for political promotion.*

4 Data

The data are from three sources. The first source is the China Center for Economic Research official dataset, which provides detailed personal and career information on mayors and party secretaries in prefecture-level cities for 1994-2016. This paper uses information on prefectural officials who were in office during 2013-2016, when the anti-corruption campaign was launched. The second source is the list of the names of all investigated officials, provided by the website of the CCP CCDI (www.ccdi.gov.cn). We matched the information on investigations with the China Center for Economic Research data on city leaders. The third source is the publications of the National Bureau of Statistics that provide economic data on cities.

We focus on city leaders, as opposed to province or higher-level leaders, to examine the hypotheses presented in Section 3.2. City leaders include mayors and party secretaries of prefectures, who constitute the major candidate pool for the selection of provincial leaders. The sanction and promotion of city leaders have far-reaching impacts on the ruling coalition of the next generation. Moreover, internal power structures at lower levels resemble those at the top. In turn, changing patterns in political selection and anti-corruption at the subnational level reflect the CCP's highest leadership.

4.1 Investigated officials

Our data cover 1,118 city mayors and party secretaries (henceforth, city leaders) for 2013-2016. Altogether, 83 city leaders (7.42%) were officially investigated for corruption.[5] Among the investigated officials, eight of them were charged in 2013 when the anti-corruption campaign started, and 35 were investigated in 2014. In the

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[5]Only five provincial governors or party secretaries were investigated during the period. In addition, we do not study vice mayors, vice party secretaries, or departmental heads in the provincial government, because it is difficult to measure their performance, a key variable in our hypotheses.

following two years, 21 and 19 officials were charged, respectively. This distribution was linked to the frequency of the CCDI's inspections conducted in each year. Starting in 2013, the CCDI began to send inspection teams to provinces. Corruption charges often followed inspection. Because inspections on individual provinces were not carried out in the same year, the timing of inspection could affect the number of charged officials in individual provinces. We control the year of inspection in each province to deal with this problem.

4.2   Measuring performance

Testing the proposed hypotheses requires a measure of performance. In the literature on the political economy of promotion, the annual growth rate is often employed as a measure of performance. However, performance is confounded by unobserved city and year effects and may not be attributed solely to subnational leaders' personal merits. We take advantage of the rotation system in the Chinese bureaucracy to disentangle individuals' ability from economic performance.

In the Chinese system, most city leaders served as local leaders at the county and township levels, and many were rotated among several jurisdictions before they became city leaders. Rotation and cumulative performance records help form an arguably precise reputation of an official's economic capability (Xi, Yao and Zhang, 2018). Likewise, a reputation for corrupt activities may have developed for an official over his or her career, and hence the investigator may have a clue about potential targets of investigation. Consequently, personal effects in economic performance should be positively correlated with the probability of investigation. This paper follows Yao and Zhang (2015) in measuring officials' capabilities as individual fixed effects estimated from city-year panel data on economic growth.

$$y_{i(jt)} = X_{i(jt)} + \theta_i + \psi_j + \gamma_t + \epsilon_{i(jt)} \tag{1}$$

In the equation, $y_{i(jt)}$ is city j's growth rate in year t when official i was in city j. $X_{i(jt)}$ is a set of time-varying control variables. θ_i is official i's fixed effect to be estimated. ψ_j and γ_t are city and year fixed effects. $\epsilon_{i(jt)}$ is an independently and identically distributed error term. The individual fixed effects θ_i can be consistently estimated relative to a common mean in a connected sample of cities among which officials were laterally transferred. In the data, the largest connected sample contains all cities except for those in Tibet and Xinjiang. This reduces the number of city leaders used for analysis to 998. We employ the estimated value of $\hat{\theta}_i$ based on 1994-2016 as the measure *Ability*. For the charged officials exiting the sample before 2016, ability measures their individual effects on growth between the first year they took a leadership position and the exiting year when they were investigated.[6]

4.3   Measuring political connections

The literature provides various options for measuring political connection. A shared identity based on common birthplace or hometown, college alumni, and colleague experience are potential candidates for proxying connection (Fisman et al., 2018; Meyer, Shih and Lee, 2016). For the purpose of our study, alumni and common birthplace need not accurately capture information-based loyalty, as discussed in Section 3. Instead, colleague experience can capture the logic of political patronage (Jia, Kudamatsu and Seim, 2015; Lü, Landry and Duan, 2017; Xi, Yao and Zhang, 2018). We adopt this approach to define a city leader as connected to the incumbent provincial party secretary in the inspection year if the following two conditions are met: (1) the incumbent provincial party secretary was the city leader's superior

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[6]An alternative measure is an index of relative economic growth in comparison with one's peers throughout a city leader's tenure. This second measure controls specific time trends but may be biased by unobserved local conditions that shape a city's long-term growth potential. We computed a measure of capability based on a relative growth index. The results are qualitatively similar to those using ability estimated from Equation (1). To save space, we do not report these results in the main text.

when both worked in a province- or city-level government[7]; and (2) the official's rank at the time was no more than two levels below the provincial party secretary.

In addition to the binary measure of connection, we also measure the strength of connection by counting the number of cumulative years a city leader worked under the supervision of the incumbent provincial party secretary. We define the second measure as "categorical connection" in the tables. We expect the strength of connection to increase over time along with work experience.

Table 1: Strength of connection and investigation

Strength of connection	N	Investigation	Rate of investigation (%)
0	802	62	7.7
1	55	2	3.6
2	30	1	3.3
3	40	0	0
4	33	1	3
5	13	1	7.7
6	10	1	10
7	2	0	0
8	2	0	0
9	1	0	0
10	2	1	50
11	1	0	0
12	2	0	0
13	1	0	0
14	2	0	0
15	1	0	0
17	1	0	0

Source: Authors' calculations.

Table 1 presents the rate of investigation for city officials with varied strengths of connection. It is readily observable that connection is negatively correlated with investigation. The chance of being investigated for corruption is 7.7% for unconnected leaders, and it is only 3.6% for connected city leaders. For city leaders who have spent more than 10 years under the jurisdiction of the incumbent provincial party secretary, the chance of investigation is zero. The simple algebra provides an intuition about the correlation between connection and investigation. We also con-

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[7]Our data starts from 1994. By that time, many current provincial party secretaries already held positions at the city level. Therefore, we are unable to include colleagueship at the county level. Hence, the estimate on colleagueship-based connection can be considered a lower bound.

trol several variables of leaders' personal characteristics, including dummy variables for college education, minority, and female.

Table 2: Summary statistics

Variable	N	Mean	Standard deviation	Min	Max
Individual level variables					
Being investigated	998	0.069	0.25	0	1
Ability	998	0.00	0.02	-0.10	0.11
Relative growth	595	1.00	0.01	0.94	1.08
Binary connections	998	0.20	0.40	0	1
Categorical connections	998	0.65	1.81	0	17
College	998	0.70	0.46	0	1
Minority	998	0.14	0.34	0	1
Female	998	0.06	0.23	0	1
Inspection_2014	998	0.58	0.49	0	1
Inspection_2016	998	0.33	0.47	0	1
City-year level variables					
Promotion	12635	0.16	0.37	0	1
Ability	12635	0.00	0.03	-0.53	0.35
Relative growth	9848	1.00	0.02	0.49	1.38
Binary connections	12635	0.26	0.44	0	1
Categorical connections	12635	0.90	2.08	0	17

Table 2 summarizes the main variables used in the econometric analysis for the 998 officials. The ability measure is normalized to have zero mean. Table 2 shows that, as of 2014, nearly 60% of the cities had been inspected by the CCDI's anti-corruption agents; over 90% of the cities were inspected by 2016. Because the inspections were conducted by the CCDI in a "big bang" fashion, it is unlikely that the selection of inspections was systemically biased by performance.

5 Empirical results

5.1 Testing H1 and H2: Performance versus connection

We use the following probit model to estimate the probability of investigation for city officials.

$$\Pr(investigation_{ij}) = \Phi[\alpha + \beta_A Ability_i + \gamma Connection_i + X_i b + \phi_i + u_j + T_j] \quad (2)$$

In Equation (2), $investigation_{ij}$ is a binary indicator of whether official i working in city j was investigated between 2013 and 2016. $\Phi[\cdot]$ is the cumulative distribution function of the standard normal distribution. $Ability_i$ is the measure of officials' ability in promoting economic performance, that is, θ_i estimated from Equation (1). $Connection_i$ is the binary or categorical measure of political connection to the current provincial party secretary. X_i is the set of personal variables. ϕ_i is a set of dummies indicating whether official i served as a city leader (mayor or party secretary) each year between 2013 and 2016.[8] u_j is a set of dummy variables indicating the region of an official's last post. T_j is a set of dummy variables indicating the year when the city was inspected by the CCDI's inspection team.

Table 3: Capability, connection and investigation

		Dependent variable: Being investigated			
	(1)	(2)	(3)	(4)	(5)
Ability	15.51***	13.33***	17.26***	13.38***	17.52***
	(2.09)	(2.32)	(0.90)	(2.43)	(1.00)
	[2.33]***	[2.31]***	[2.31]***	[2.32]***	[2.32]***
Connection (binary)		-0.41***	-0.31***		
		(0.16)	(0.12)		
		[-0.05]**	[-0.05]**		
Connection (categorical)				-0.06	-0.04
				(0.05)	(0.05)
				[-0.003]*	[-0.003]*
Other controls	YES	NO	YES	NO	YES
Region FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	998	998	998	998	998
Pseudo R-squared	0.22	0.02	0.22	0.01	0.15

Notes: The results were obtained from probit estimation. Robust standard errors are in parentheses; marginal effects are in brackets. The marginal effect of Ability is evaluated as the change in the probability of investigation when Ability increases by 0.01. The marginal effect of *Connection (binary)* is evaluated as the change in the probability of investigation when *Connection (binary)* changes from 0 to 1. The marginal effect of *Connection (categorical)* is evaluated for one-category increase in *Connection (categorical)*. FE = fixed effects. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

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[8]Some officials were moved to other posts during 2013-2016. Often, officials were investigated after they were moved from their posts before inspection. Controlling the year of incumbency alleviates selection bias due to non-random exit.
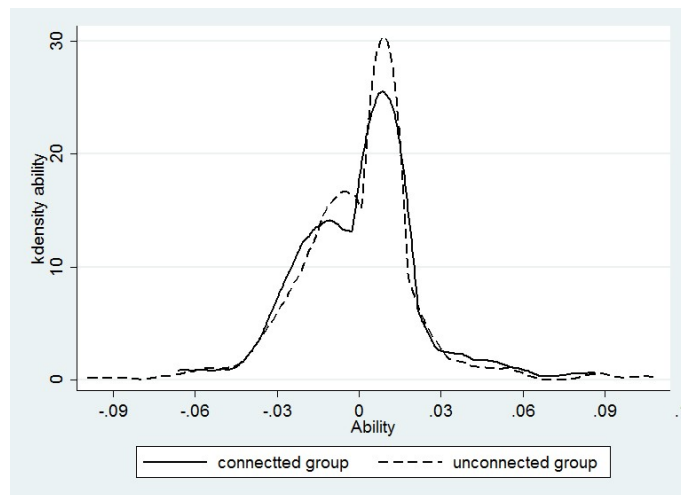
Table 3 tests Hypotheses 1 and 2. In column (1), we focus on *Ability*, together with the individual-level control variables. The coefficient of Ability is positive and significant, attesting to H1. A 0.01 increase in the value of *Ability* translates into an increase of 2.33 percentage points in the probability of investigation. A one-standard-deviation increase in *Ability* explains 18.6% of the variation in the probability of investigation. Column (2) juxtaposes *Ability* and *Connection (binary)* in estimating the pattern of investigation. Consistent with Hypothesis 2, having a connection to the incumbent provincial party secretary reduces the probability of investigation by 5 percentage points, while the effect of *Ability* remains almost the same. The results are qualitatively similar with and without personal-level control variables, as shown in column (3).

Columns (4) and (5), respectively, repeats the exercises in columns (2) and (3), replacing *Connection (binary)* with *Connection (categorical)* . As we observe in Table 3, the results for *Ability* are almost identical. The marginal effects for *Connection (categorical)* become noisier, but they are nonetheless negative and significant at the 0.1 level. We attribute the decline in the level of statistical significance for *Connection (categorical)* to the relatively left-skewed distribution of the variable. Overall, the results for *Ability* and *Connection* are strong and consistent with the proposed premise in section 3. The finding that more capable officials are more likely to fall under an anti-corruption investigation signifies the nature of the campaign as the prologue of institutional change to a new governing mechanism. Consistent with the logic of the Loyalty model, Connection is found to be negatively associated with investigation. The apparently "selective" strategy at the subnational level suggests that the campaign is not just a strategic gimmick at the top level, but rather has an institutional bend toward political loyalty. This finding begs a natural question as to whether the party would protect its own if they happened to be more capable (and hence potentially corrupt).

5.2 Testing H3: Performance-connection interaction

We now test Hypothesis 3 on the interplay between political connection and capability. It may occur that capability and connection are correlated due to political patronage. A plausible mechanism is that provincial leaders may have exerted personal influence and transferred connected officials to cities that were on an economic upswing. Moreover, connected city leaders may receive more fiscal transfers from upper-level governments. If such scenarios have systemic impact, the estimated effect of *Ability* may capture the punishment on political patronage at the subnational level. To scrutinize on this, in Figure 1 we plot the kernel density distribution of the estimated *Ability* from Equation (1) for connected and unconnected city leaders. As the graph shows, the two distributions overlap each other. The Kolmogorov-Smirnov test rejects the null hypothesis that the two distributions are different, at a large margin.

Figure 1: Kernel density distribution of capability

Notes: The graph plots the kernel density distribution of *Ability* estimated from Equation (1). The solid curve shows the distribution of connected group, and the dashed curve shows the distribution of unconnected group.

Table 4 reports the estimates for Equation (2), with additional inclusion of the

interactive term between *Ability* and *Connection.* Two observations follow from the results. First, the main results obtained from Table (3) are sustained with the interaction term. The estimated coefficients are qualitatively similar to those in Table 3. Second, the marginal effects for the interactive term are estimated to be significantly negative.[9] The results using categorical and binary measures for connection are similar. The mitigating effect of connection on the correlation between *Ability* and the likelihood of investigation resonates with the logic of performance-connection complementarity in political selection, as proposed by Jia, Kudamatsu and Seim (2015). They argue that political connection insures agents against the risk of being purged, leading to a strong incentive of connected agents to enhance performance. By a similar token, although capability is associated with a high probability of investigation, connection may boost mutual trust between superiors and agents and lower the risk of investigation for high-performing agents.

To illustrate the interplay between capability and connection, Figure 2 plots the marginal effects of *Ability* on the probability of investigation, conditional on each category for the strength of connection. It is straightforward to observe that the effect of *Ability* turns from positive to negative as the strength of connection increases. Moreover, the estimates for *Ability* become increasingly noisier along with the increase in the value of connection. Although this result does not suffice to establish that the link between capability and investigation is significantly different between city leaders with strong connections and those without, it does mean that capability has a precise effect of "increasing" the risk of investigation only when officials' connections are weak. For strongly connected officials, capability ceases to be an important predictor for investigation.
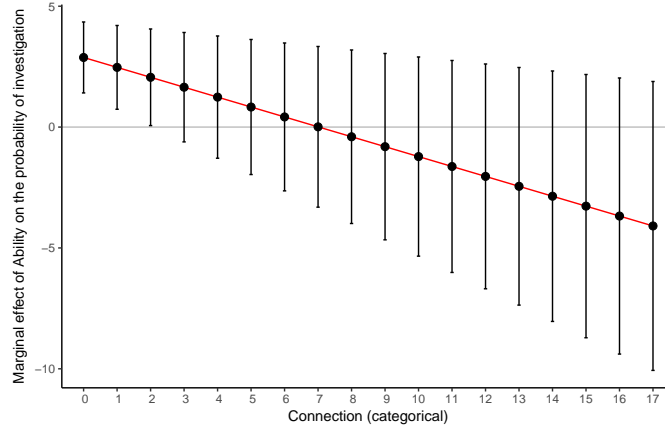
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[9]We use the method proposed by Ai and Norton (2003) to compute the marginal effect of the interactive term. The corresponding Stata command is *inteff*.

Table 4: Interplay between capability and connection

| | Dependent variable: Being investigated | | | |
	(1)	(2)	(3)	(4)
Ability	13.26***	17.25***	13.99***	17.76***
	(2.59)	(0.93)	(2.43)	(0.92)
	[2.30]***	[2.75]***	[2.50]***	[2.88]***
Connection (binary)	-0.38**	-0.29**		
	(0.16)	(0.13)		
	[-0.06]**	[-0.03]**		
Connection (categorical)			-0.07**	-0.07
			(0.04)	(0.05)
			[-0.01]*	[-0.01]*
Ability× Connection (binary)	-9.51**	-10.14**		
	(4.80)	(4.33)		
	[-1.18]**	[-1.39]**		
Ability× Connection (categorical)			-7.97***	-7.44***
			(1.36)	(1.33)
			[-0.48]*	[-0.41]*
Other controls	NO	YES	NO	YES
Region FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	998	998	998	998
Pseudo R-squared	0.02	0.16	0.02	0.16

Notes: The results were obtained by probit estimation. The robust standard errors of the estimated coefficient are reported in parentheses. The marginal effects are reported in brackets. FE = fixed effects. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Figure 2: The marginal effects of *Ability* on the probability of investigation

Notes: The marginal effects are evaluated by setting *Ability* at the sample mean: zero. 95% confidence intervals are presented together with the average marginal effects.

5.3   Testing H4: Pattern of promotion

To conclude the argument that the anti-corruption campaign signifies an institutional shift from the Rent model to the Loyalty model, we now turn to testing Hypothesis 4. We define promotion as a binary variable indicating whether an official got a higher-ranking position at the end of the year. For prefecture-level (Tingju Ji) city leaders, this means transferring to a position at the sub-provincial level (Fubu Ji). As the anti-corruption campaign started in 2013, the year when Xi Jinping's first term began, a straightforward test on the change in promotion pattern would be a before-after comparison of the effects of *Ability* and *Connection* on the probability of promotion. We estimate the probit model as follows for the two respective samples before and after 2012.

$$Promotion_{ijt} = \Phi[\alpha + \beta Ability_i + \gamma Connection_i + X_j b + u_j + T] \qquad (3)$$

In the equation, $Promotion_{ijt}$ is the probability of promotion as defined. The definitions for *Ability* and *Connection* remain the same. X_j is a set of personal

variables, including the official's current age and its square term, and college, minority, and female dummies. u_j and T stand for city and year fixed effects. ϵ_{jt} is an independently and identically distributed error term.

Table 5: Changing pattern of promotion

	Dependent variable: Promotion			
	1994-2012		2013-2016	
	(1)	(2)	(3)	(4)
Ability	1.29**	1.50**	-2.52	-2.20
	(0.62)	(0.70)	(2.33)	(2.26)
	[0.32]**	[0.37]**	[-0.41]	[-0.34]
Connection (binary)	0.15***	0.07*	0.26***	0.30***
	(0.03)	(0.03)	(0.09)	(0.09)
	[0.04] ***	[0.02]**	[0.04]***	[0.05]***
Other controls	NO	YES	NO	YES
Region FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	10,289	10,066	2,346	2,343
R-squared	0.04	0.15	0.03	0.11

Notes: The results are obtained from probit model. The robust standard errors of the estimated coefficient are reported in parentheses. The marginal effects are reported in brackets. FE = fixed effects. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Columns (1) and (2) in Table 5 report the estimates for Equation (3) using the 1994-2012 sample. *Ability* and *Connection (binary)* have positive effects on the probability of promotion. When we estimate the effects for 2013-2016, by contrast, the coefficient for *Ability* becomes insignificant. Meanwhile, the estimate for *Connection (binary)* remains significant and the magnitude becomes larger. The discrepancy between the two periods is consistent with the premise of a transition from the Rent model to the Loyalty model.

5.4 Pure purges?

There is a possibility that the anti-corruption investigations exclusively aimed at intra-party power struggles as opposed to institutional change. If that was the case, the investigations of city leaders should have been primarily related to the

purge of provincial leaders who may have been potential rivals of the party钦槌leadership. During 2013-2016, 5 of 91 provincial leaders were investigated for corruption: Zhou Benshun (party secretary of Hebei province), Su Shulin (governor of Fujian province), Wei Hong (governor of Sichuan province), Wang Min (party secretary of Liaoning province) and Huang Xingguo (mayor of Tianjin municipality). We drop all the city leaders with connections to them and re-estimate the model for investigation and promotion. If the main target of the campaign was rival power factions, it should not have had significant impacts on the rest of the city leaders.

Table A1 in the appendix presents the estimates for investigation patterns in this subsample. Unsurprisingly, Ability remains positively associated with the probability of investigation. When the connection variable and its interaction with *Ability* are included, the results are qualitatively similar. *Connection (binary)* and *Connection (categorical)* are negatively correlated to investigation, and so are the interactions. By a similar token, Table A2 in the appendix shows that the promotion pattern demonstrates a similar structural change around 2013, as documented by the estimates in Table 5. These results reinforce the premise that the anti-corruption campaign signified a decisive turning point to a new governing mechanism. The new mechanism is admittedly costly, to the extent that political selection based on capability and performance based political selection are compromised, as the results in Tables 5, A1, and A2 suggest.

6 Conclusion

The comparative politics literature approaches autocratic rule from two routes: its daily business as a political equilibrium, and its collapse as a result of political disequilibrium. By contrast, relatively less attention has been paid to examining the dynamic mechanisms of transition from one to another political equilibrium in

autocracies. This paper shows that the anti-corruption campaign in China served as a strategy for the CCP to induce a transformation from a governing mechanism primarily relying on rent-sharing to one relying on loyalty and a clean system. Consistent with this view, the empirical results help identify a discriminative pattern of anti-corruption investigation for city leaders with varying performance and connections.

Notwithstanding the anti-corruption campaign's achievements to eradicate corruption and purify the party, the transition begs three questions of the CCP regime. First, the purge of high performers may be socially costly, as it represses pro-growth incentives are repressed. This poses a threat to popular consent. Second, by weakening the growth incentive in the bureaucracy, the anti-corruption drive has destroyed one of the important handles of the merit-based promotion system. Third, massive purges of bureaucrats perpetuate the use of personalized mechanisms to process internal power conflicts.

For the ruling CCP, the open question is whether ideological purification is enough to maintain stability. With the absence of institutionalized conflict-processing mechanisms, this renders the next "re-equilibrium" more difficult. Over time, the dilemma may foresee a cycle between the Loyalty and Rent models. A successful induced institutional change necessitates more credible commitments to conflict-processing mechanisms and sustainable pro-growth incentives for public officials.

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Appendix not for publication

Table A1: Investigation: Excluding connections to purged provincial leaders

Dependent variable: Investigation			
	(1)	(2)	(3)
Ability	17.48***	15.42***	11.39***
	(5.35)	(2.20)	(1.78)
Connection (binary)		-0.23*	
		(0.13)	
Connection (categorical)			-0.05*
			(0.03)
Ability × Connection (binary)		-9.23**	
		(4.71)	
Ability × Connection (categorical)			-6.67***
			(1.23)
Other controls	YES	YES	YES
Region FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	976	976	976
R-squared	0.26	0.15	0.13

Notes: The results are obtained by Probit estimation. Robust standard errors are in parenthesis. FE = fixed effects. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table A2: Promotion: Excluding connections to purged provincial leaders

	Dependent variable: Promotion			
	1994-2012		2013-2016	
	(1)	(2)	(3)	(4)
Ability	0.38***	0.38***	0.49	0.15
	(0.16)	(0.16)	(0.33)	(0.37)
Connection (binary)	0.03***	0.02*	0.05***	0.05***
	(0.01)	(0.01)	(0.02)	(0.02)
Other controls	NO	YES	NO	YES
Region FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	8631	8447	1959	1956
R-squared	0.01	0.02	0.01	0.06

Notes: The results are obtained by Probit estimation. Robust standard errors are in parenthesis. FE = fixed effects. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.