NBER WORKING PAPER SERIES

MEASUREMENTS, DETERMINANTS AND CAUSES OF CORRUPTION: LESSONS FROM CHINA'S ANTI-CORRUPTION CAMPAIGN

Hanming Fang

Working Paper 31276
http://www.nber.org/papers/w31276

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 2023

This review is prepared for a special issue of International Tax and Public Finance, and is based on a keynote talk I gave in the International Institute Public Finance (IIPF) Annual Congress at Linz, Austria (August 2022). I would like to thank the Congress Scientific Committee chairs Anne Brockmeyer and Juan Carlos Suarez Serrato for giving me the opportunity to synthesize my understanding of the important topic of corruption and anti-corruption in emerging economies. I am grateful to Hongbin Cai and Lixin Colin Xu with whom I collaborated on my first paper on the measurement of local corruption in China (Cai, et al., 2011). My research on the topic benefits from the insights from my coauthors, Panle Jia Barwick, Hongbin Cai, Haoyuan Ding, Quanlin Gu, Shi Kang, Shangjun Li, Shu Lin, Ming Li, Zhe Li, Wei Xiong, Nianhang Xu, Hongjun Yan, Lixin Colin Xu, and Li-An Zhou. Any errors are our own. The views expressed herein are those of the author and do not necessarily reflect the views of the National Bureau of Economic Research.

Measurements, Determinants and Causes of Corruption: Lessons from China's Anti-Corruption Campaign

Hanming Fang

NBER Working Paper No. 31276
May 2023
JEL No. D73,G38,P37

ABSTRACT

Corruption is a widespread phenomenon in many developing and transitional economies. China is a country in profile both in the prevalence of corruption, and in its attempts to root out corruption. The recent anti-corruption campaign in China, which started in December of 2012 when President Xi Jinping took power, is unprecedented in its magnitude and time length. It has had lasting impact on the functioning of the Chinese bureaucracy, and on the behavior of firms and consumers. It also provides unusual amount of data to study the causes and consequences of corruption, which will have implications for other countries and economies. In this review I discuss the definition and measurement of corruption with a particular focus on the measurements that highlight the city-level heterogeneity of corruption in China, and present simple frameworks to understand the determinants of corruption by government officials and the causes and consequences of corruption and anti-corruption. I summarize the key findings regarding how the anti-corruption campaign affects the behavior of a host of decisions makers in the economy, including firms and bureaucrats, and on the resource allocation in general, and argue that the lessons from China's anti-corruption campaign are useful to other developing countries.

Hanming Fang
Department of Economics
Ronald O. Perelman Center
for Political Science and Economics
University of Pennsylvania
133 South 36th Street, Suite 150
Philadelphia, PA 19104
and NBER
hanming.fang@econ.upenn.edu

1 Introduction

Corruption is a widespread phenomenon in many developing and transitional economies. China is a country in profile both in the prevalence of corruption, and in its attempts to root out corruption. The recent anti-corruption campaign in China, which started in December of 2012 when President Xi Jinping took power, is unprecedented in its magnitude and time length. It has had lasting impact on the functioning of the Chinese bureaucracy, and on the behavior of firms and consumers. It also provides unusual amount of data to study the causes and consequences of corruption, which will have implications for other countries and economies.

A necessary condition for corruption is the discretionary power of government officials in resource allocations. This is not unique to China or other developing and transitional economies. In fact, government plays an important role in any modern economic system, whether it is market economy in a democracy or a planned economy in an autocracy. However, in mature western-style democracy, it is well understood that firms try to influence policy-making via lobbying and other activities that can result in what is known as "regulatory capture" (Stigler (1971); Peltzman (1976); Laffont and Tirole (1991); (Zingales, 2017)). Lobbying is a regulated channel through which firms influence policy making in a democracy; and firms are required to report their lobbying activities to the regulatory agencies (e.g., in the USA, Federal Election Commission). Firms in market economies also engage in illegal ways to gain advantages over their competitors, especially as they compete in foreign markets. In contrast, in developing and transitional economies under autocracy, firms more frequently resort to bribing government officials to obtain preferential treatments, such as subsidies, loans, or other deals. As described in Fang et al. (2023), the relationship between government (both the party and the state) and firms in China is one of the most important defining characteristics of Chinese economy. Relative to their western counterparts, the Chinese governments – from the central government to provincial and local governments – cast a big shadow on all Chinese firms. Indeed to the extent that there are both party and state governments, and central and local governments, and they do not always align, there may be multiple layers of shadows. The shadows may be uneven across different regions; the shadows are darker in some time than in others. Fang et al. (2023) shows that Chinese firms operate in these shadows, actively manage the shadow via connections, bribes, and personnel arrangements. The big roles of the government in the Chinese economy and its weak institutions, as we argue below, give rise to fertile ground for government officials and rank-and-file bureaucrats to engage in quid pro quo and other forms of corruption. Anti-corruption campaigns, though not unique to China and not even unique to autocracies, are often most forceful in authoritarian regimes. Interestingly, China's anti-corruption campaign also provides a unique window for us to understand the causes and consequences of corruption, as well as the consequences of anti-corruption campaigns on the behavior of consumers, firms and bureaucrats.

The remainder of this review article is structured as follows. In Section 2, I discuss the definition and measurement of corruption with a particular focus on the measurements that highlight the city-level heterogeneity of corruption in China; in Section 3, I present a simple framework to understand

the determinants of corruption by government officials and discuss how autocracy and democracy may differ in the degree of corruption; in Section 4, I describe Xi's anti-corruption campaign, provide a theoretical framework to understand the causes and consequences of corruption and anti-corruption, and summarize some of the key findings regarding how the anti-corruption campaign affects the behavior of a host of decisions makers in the economy, including firms and bureaucrats, and on the resource allocation in general; finally, in Section 5, I conclude.

2 Corruption: Definition and Measurement

There is a broad consensus in the economics and political science literature on the definition of corruption. Rose-Ackerman (1999) defines corruption as "the misuse of public power for private gain." Fisman and Golden (2017) defines corruption as "the exchange of power for personal gains." In general, corruption refers to the abuse of *power, position, or authority* for *personal gain*. This definition clarifies the three conditions for a behavior to be corrupt: first, the actor must be in a position of "power" or "authority"; second, the actor must abuse his/her position, i.e. use the position of power in a wrong way; and third, the abuse of the power results in personal gains. The corrupt actor needs to be in a position of power, but the power can be either in the form of bureaucratic power of a public sector employee, or in the form of a private sector power of a corporate employee. If the actor abuses the power or authority, but does not result in personal gains, it would be considered incompetence.

This commonly used definition of corruption, however, is still vague in some aspects. The term "misuse" (or "abuse") and the term "private gains" are both not precisely defined. As person of "power" or "authority", whether he/she is a bureaucrat or a private company CEO, will by definition called upon to make some decisions of consequence on behalf of the government (if the person is a bureaucrat) or the company (if the person is a CEO). These decisions are typically made under environments of uncertainty, thus it is difficult to judge *ex ante* or even *ex post* which decision is in the best interest of the organization. However, even if one can ascertain whether the person chooses an action that does not seem to be in the best interest of the organization, it does not indicate any wrongdoing. According to the definition, it would be corruption only if "private gains" are received by the person of power. But what are precisely "private gains"? Suppose the person of power makes a choice that is not in the best interest of the organization, but the choice can best serve his/her career trajectories? Would this be considered "private gains"? What if the person making the choice that aligns most closely to his/her ideological preferences instead of serving the best interest of the organization? Would these be considered "private gain"? It appears that such misalignment of choices made by the person of power and the interest of the organization would not be considered as corruption as we conventionally construe it. Thus, it appears that "private gains" really means "private financial gains". In particular, bureaucratic *inaction*, i.e., not making a decision or delaying making any decisions, at the expense of the organizational interest, would not fall under the definition of "corruption," but instead it will be called "incompetence." A logical implication of this discussion is that under an intense anti-corruption campaign, bureaucrats

are likely to turn to bureaucratic inaction, or take actions that are less likely to arouse suspicion of the anti-corruption agencies. We will return to this in Section 4 below. Alternatively, if the person of power makes a choice that is consistent with the best interest of the organization, but he/she also receives personal financial gains from the choice, will this be considered as "abuse" or "misuse" of power? The discussion here is to highlight that it is not obvious how to formally define corruption, and there are gray areas where it is hard to distinguish corruption from incompetence and non-ethical behavior.

In this paper, we will focus on the corruption of bureaucrats. It is also worth noting that the power of the corrupt actor could be small or large. Government employees, from the police officer giving traffic directions to mayors, party secretaries, or even ministers or top leaders, could all abuse their power for personal gains. Indeed corruption could be isolated cases of some "bad apples" or it could be systematic when almost everyone in any position of power or authority is corrupt. Corruption can take many forms, including bribery, embezzlement, nepotism, and favoritism. Bribery is the act of offering, giving, receiving, or soliciting something of value, such as money, gifts, or favors, with the intention of influencing the actions or decisions of someone in a position of power; bribery is quid pro quo. Sometimes it is difficult to exactly link the bribe and the abuse of the power by the official because there are undoubtedly attempts to cover the "tracks" by both the briber and the official; this makes the detection of corruption a difficult task. Embezzlement can take the plain vanilla form of stealing, but it can sometimes take sophisticated forms such *tunneling*, which is a fraudulent practice that involves siphoning off assets or funds from a company or organization through deceptive means. Government officials in charge of state-owned enterprises could use tunneling to divert company resources for their personal gain or that of their associates, by creating fake invoices or contracts, inflating expenses, transferring funds to shell companies, or engaging in related-party transactions at inflated prices. Not all methods of corruption are available to all officials. For example, a traffic stop officer may only accept bribes but has no way to embezzle or engage in nepotism.

Measurement of Corruption. Measuring the extent of corruption can be a challenging task as corruption often occurs in secret and the people involved may try to hide their actions. There are two distinct perspectives in the measurement of corruption. The first is a macro perspective, which is aimed to measure the overall quality of bureaucracy; the second is a micro perspective, which is aimed to quantify the extent and magnitude of corruption in a particular industry or among a particular component of the bureaucracy.

For the macro perspective, the typical methods of measuring corruption include the following. (1) One common method is to conduct surveys of individuals or organizations to gather information about their experiences with corruption. Surveys can be designed to gather information about the frequency, type, and extent of corruption in a particular country, region, or sector. (2) Transparency and accountability measures, such as the availability of information, oversight mechanisms, and the effectiveness of law enforcement, can provide insights into the extent of corruption. (3) Perception indices, such as the Corruption Perceptions Index (CPI), provide a qualitative measure of the

perceived level of corruption in a country or region based on the opinions of experts and business people.

For the micro perspective, the literature often uses observational data, and there has been substantial progress in recent literature, many of which coming from research on China.[1] One method is to estimate corruption by *direct observation*. For example, McMillan and Zoido (2004) use records kept by a police chief in Peru on the bribes he paid to judges, politicians and the news media, which became public after the fall of the Fujimori regime, to estimate the cost of bribing various officials. Olken and Barron (2009) measure corruption via direct observations in the field on bribery payments made by truck drivers to local police on their routes. This direct observation method only works either by chance or by costly "audit"-like study.

A second method to measure corruption is by *"subtraction"* or *"cross-checking"*. For example, Reinikka and Svensson (2004) use the Public Expenditure Tracking Survey to estimate the leakage of government funds by comparing the amount of a special education block grant allocated from the central government in Uganda with the amount of the block grant received by schools. Fisman and Wei (2004) measure the extent of tax evasion by estimating the difference between Hong Kong's reported exports and China's reported imports of the same products. Hsieh and Moretti (2006) try to detect corruption under the Iraqi Oil for Food program administrated by the United Nations. They use the difference between the price received by Iraq for its oil and the price of comparable oil in the world spot market to gauge the extent of underpricing and corruption. Olken (2007) presents an estimate of the "missing expenditure" on rural road projects in Indonesia by examining the officially claimed amount of money spent on the road with the cost estimates obtained from independent engineers.[2] Niehaus and Sukhtankar (2013) measure corruption by comparing official microrecords with original household survey data on the daily earnings in a government-sponsored employment program in India.

A third approach attempts to estimate the degree of corruption and rent-seeking using *market inference*. For example, Fisman (2001), in a seminal study, estimates the value of political connections to Indonesian President Soeharto by measuring how much the prices of the shares of the firms "connected" to Soeharto moved when he fell ill.[3] Also belonging to this approach are papers that use the equilibrium conditions in labor markets or financial markets. For example, Gorodnichenko and Peter (2007) develop a measure of bribery by estimating the gaps in the reported earnings and expenditures between the public and private sectors. Using a household survey from Ukraine, they find that, controlling for education, hours of work, job security, fringe benefits and other job characteristics, public sector workers received 24-32 percent less income than their private sector counterparts, yet, they had the same level of consumption and assets. These findings suggest that a large part of the gap between public and private sector earnings is comprised of bribes. Khwaja and Mian (2005) examine the rent-seeking in Pakistan by showing how the political connectedness

[1] See Olken and Pande (2011) for a detailed review.

[2] Other studies using the cross-checking approach include Di Tella and Schargrodsky (2003) who quantify corruption in hospital procurements, and Olken (2006) and Antonossava et al. (2008) who both estimate corruption in food distribution programs in developing countries.

[3] Similar event studies using market inference include Faccio (2006) and Khurana et al. (2012).

of a firm, as measured by whether its directors participate in elections, affects the amount of loans it is able to obtain from the banks and the associated default rates. They find that politically connected firms borrow 45 percent more and have 50 percent higher default rates.

The literature on corruption in China has contributed several insightful methods of detecting corruption. One approach is to measure the prevalence of corruption by the firms' potential response to it; in China, the entertainment and travel costs (ETC) expenditures are publicly reported in firms' accounting books and are often used as the accounting item to expense expenditures related to bribing officials. On average they amount to about 3 percent of a firm's total value added, which is about three times higher than that among US firms. In Cai et al. (2011), we find that ETC is a mix that includes grease money to obtain better government services, protection money to lower tax rates, managerial excesses, and normal business expenditures to build relational capital with suppliers and clients. The average firm-level ETC/Value Added ratio in a city can be used as a proxy for the city-level degree of corruption.

Deng et al. (2016) examines the relationship between the prices individuals pay for their homes and their official income, and use it to infer about the "unofficial incomes" received by bureaucrat buyers. This idea is reminiscent of Gorodnichenko and Peter (2007), but the data quality is better in the Chinese context because the data is administrative data from the housing bureau in a major Chinese city.

The anti-corruption campaign also provides unique opportunities to provide local measure of corruption prevalence. One idea is explored in Barwick et al. (2023). Following the Eight-Point regulations – the official first act of President Xi's anti-corruption campaign in December 2012 which prohibits among other things government officials to dine on public expenses in expensive restaurants – one observes massive drops in the restaurant sales across Chinese cities.[4] However, since corruption by bureaucrats in the form of "dining on public dimes" is more likely to take place in high-end restaurants, the anti-corruption campaign is likely to reduce the sales of high-end restaurants more than those of the low-end restaurants in cities with more rampant corruption. Thus the changes in the high-end and low-end restaurant sales share in a city pre and post-anti-corruption campaign can be used as a measure of the city's corruption prevalence.

The studies from both Cai et al. (2011) and Barwick et al. (2023) both show significant *cross-city* heterogeneity in the degree of corruption in China. This enriches the existing literature on corruption that tend to think of corruption as a country-level characteristics, for example, the studies based on country-level corruption perception indices,[5] the World Bank Institute's 'control of corruption' index, or the International Country Risk Guide's 'graft' score.

The unique institutional features in China also permits the analysis of the heterogeneous values of bureaucratic powers by hierarchy, by the criticality of the office, and by geography. Fang et al. (2019) provides an interesting measure of the value of rents associated with government power in the Chinese housing market by the difference in the unit price (per square meter) of the houses purchased by bureaucrat buyers relative to those by otherwise identical non-bureaucrat buyers.

[4] See Section 4.1 for a detailed description of Xi's anti-corruption campaign.

[5] See the corruption perception index compiled by Transparency International.

Using a large data of mortgages for new apartment purchases from one of the largest Chinese banks, they found that, first, despite the fact that bureaucrats on average earn lower incomes than other buyers in the housing market, they are more likely to buy apartments in relatively more expensive apartment complexes, and to buy larger apartments. Second, after controlling for a detailed set of characteristics of buyers, apartments (including controls as detailed as the floor number, the apartment complex, and the orientation of the apartment unit) and mortgage loans, bureaucrat buyers receive about a 1.05 percent discount in unit price relative to non-bureaucrat buyers in the same housing market. More interestingly, Fang et al. (2019) exploits the fact that the mortgage data set contains information about the hierarchical ranks of bureaucrats and the government agencies for which they work, which allows them to examine the gradients of the market value of power measured by hierarchy, by criticality and by geography. They measure hierarchy by the rank of the bureaucrat, criticality by the importance of the government agency to real estate development, and geography by whether the bureaucrat works in the city where the housing transaction takes place. They find that bureaucrats working in the agencies critical for real estate development or having a higher rank in the official hierarchy receive larger price discounts in their housing purchases. For instance, they find that bureaucrats from critical agencies receive a 2.48% price discount, while bureaucrats from other agencies only obtain a 0.98% price discount. Bureaucrats working for provincial governments enjoy an even higher price discount of approximately 3.9%. They also find that the effect of government power on price discounts decreases substantially when bureaucrats leave their jurisdictions and buy houses in other jurisdictions, and that bureaucrats with lower ranks but in critical agencies may enjoy larger price discounts than those with high ranks but not working in critical agencies. There is no analogous studies of the gradients of government power in other settings.

3 Determinants of Corruption

What explains the different prevalence of corruption across countries, and within a country? These are classical social science questions. The definition of corruption itself provides clues to the answers to these questions. We defined corruption as "the abuse of *power, position, or authority* for *personal gain*."

Why would a person in the position of power abuse his/her authority for personal gains? Ultimately the answer will come down to a cost-benefit calculus. On the benefit side, receiving bribes increases the pecuniary or non-pecuniary disposable resources of the bureaucrats; and *if* there are willing bribers – a big "if" that we will get into shortly – then corruption is to be expected as long as there is no or little costs of abusing the position of power for personal gains. There are multitude of potential costs if one abuses the position of power for personal gains. First, there is the potential moral costs of being corrupt. To the extent that there is heterogeneity in the population in the moral cost of being corrupt, the mechanism to attract and select individuals into government bureaucratic sector is crucial. The selection mechanism differs crucially between democratic and authoritarian regimes. The Chinese political system is a top-down system where the lower level of-

ficials are appointed by higher level officials, ostentatiously via a promotion tournament that values performance metrics and other factors, including factional ties (see Li and Zhou (2005)). The selection mechanism is not necessarily in favor of candidates with higher moral principles; in fact, one could easily envision dynamic equilibrium in which corrupt higher-level officials prefer to promote a corruption-prone subordinates for several reasons (Tirole, 1996): first, the corrupt higher-level officials may prefer promoting the subordinate who is willing to pay him/her the highest bribes (i.e., selling the office to the highest bidder); second, the corrupt higher-level officials may feel safer post retirement if he/she knows that the subordinates he/she promoted are corrupt themselves.

The key deterrence against corruption is the threat of detection, prosecution and punishment. This is where institutions such as independent press and judiciary, and rule of law more generally, matter. It is well known that lack of transparency and accountability can create opportunities for corrupt practices. Independent press can provide a strong oversight that increases the chances that corruption will be detected; an independent judiciary will ensure that corrupt officials are found guilty and punished. An authoritarian system in which the press and judiciary are controlled by the state is not most conducive in exposing corrupt officials and subject them to deserved punishments. Even though thousands of government officials at all levels were prosecuted in the anti-corruption campaign, the lack of free press and independent judiciary makes people wonder if these prosecutions were selective and whether the punishments were meted out in a fair manner.

The large literature that tries to examine the cross-country variations in corruption perceptions could be understood via the above simple framework of costs and benefits of corruption in different economies, which can also be useful to synthesize the various empirical findings in the literature.

A Simple Framework. Let $U(y, b; \theta)$ denote the utility function of a bureaucrat where y stands for his regular income, $b \in [0, +\infty)$ is the amount of bribes he takes, and θ represents the potential heterogeneity in bureaucrats' preferences, including one's moral principles regarding corruption. The probability that his corruption will be detected is presented by $D(b; \kappa)$, where κ represents features of the press, legal and political system that affect how likely corrupt officials will be detected. Conditional on being detected of corruption, the punishment could be in various forms, including jail terms or losing the reelection, and we will denote it by $P(b; \gamma)$ where γ denotes the severity of the punishment for officials who are detected of corruption. However, it is important to note that firms are willing to pay the bribes only if their profit from paying bribes b, denoted by $\Pi(b; \omega)$, is higher than that if they do not pay bribes, denoted by $\Pi(b; \omega)$, where ω represents the extent of government control over firms' profits. The bureaucrat's privately optimal bribe choice maximizes:

$$\max_{b \geq 0} U(y, b; \theta) - D(b; \kappa) P(b; \gamma) \tag{1}$$

$$\text{subject to: } \Pi(b; \omega) \geq \Pi(0; \omega) \tag{2}$$

The simple framework above allows us to consider the various determinants of the prevalence of corruption in different economies. First, the importance of bureaucratic power, which is a necessary

condition for corruption, is captured in the constraint (2). If the bureaucrats have no power to influence the firms' profits, then the constraint set $\{b : \Pi(b;\omega) \geq \Pi(0;\omega)\} = \{0\}$, and thus clearly the bureaucrat can only choose $b = 0$, i.e. no corruption. The more bureaucratic power, the larger is the set $\{b : \Pi(b;\omega) \geq \Pi(0;\omega)\}$, thus the bureaucrat is more likely to choose higher levels of bribes, i.e. becoming more corrupt.

Second, the impact of free press, citizen monitoring, and government transparency in general is captured by the corruption detection function $D(b;\kappa)$. In order for bureaucrats to face punishment for taking bribes, the existence or extent of corruption must be known by the voters and/or law enforcement in a democracy or by anti-corruption government agencies in an autocracy. The corruption detection probability $D(b;\kappa)$ will increase with b more so in environments with free and investigative journalists and media, and in societies with more government transparency. Indeed, there is both historical and contemporary evidence that media access and penetration is a key factor in promoting accountability for corrupt behavior by public officials (Gentzkow et al. (2006); Reinikka and Svensson (2005);Reinikka and Svensson (2011)). Advances in monitoring and surveillance technologies can also affect the corruption detection function $D(b;\kappa)$, especially if bribes and corrupt transactions leave digital traces such as wire transfers and email/tel-communication.[6]

Third, how would bureaucrats be punished following the detection of corruption, as represented by the term $P(b;\gamma)$, also plays an important role in determining the extent of corruption. Here it is important to note that the way the punishment is metered out to corrupt officials differ significantly between democracy and autocracy, and between elected officials and appointed bureaucrats. Under democracy, the punishment is mainly in the form of losing the reelection for elected officials which depends on voters, in addition to possible jail times; under autocracy, the punishment is typically the loss of the official position, promotion and possible jail times, and they tend to depend on other higher level government officials.

Fourth, some argue that higher wage for public servants would make the public sector more efficient and reduce the abuse of power, a hypothesis known as the "efficiency wage" hypothesis. This effect is captured in the impact of income y on the marginal utility of bribe b; it is plausible to assume that wage y and bribe b are substitutes, i.e., $\partial^2 U \backslash \partial b \partial y < 0$. Thus theoretically, ceteris paribus, higher public sector wage y will drive down the bureaucrat's choice of bribes. The empirical evidence, as discussed in Navot et al. (2016) however, suggests that higher wages may actually increase public corruption. Navot et al. (2016) advance two possible channels that can also be understood within the simple framework. First, higher public sector wage y, i.e. increasing pecuniary incentives for public service, may attract individuals who are more interested in advancing their own self-interests to join the public sector; that is, the bureaucrats' type θ may be affected by higher wage y; second, a higher public sector wage may also lead the public (e.g., the voters in a democracy) to be more tolerant of corruption, thus changing $P(b;\gamma)$ in a way to make the punishment less sensitive to the level of bribes taken by the bureaucrats.

This simple framework also allows us to understand the complicated relationship between democracy and corruption, which is covered in a vast literature that is beyond the scope of this

[6]See World Bank (2020) for a detailed manual to fight corruption in the public sector.

article.[7] Earlier models and empirical tests of the relationship between corruption and democracy assume that corruption falls as democracy matures, however, more recent theoretical developments suggest an inverted-U relationship between corruption and democracy (Rock, 2016). Anecdotes abound: as argued in Brueckner (2021), the experience of the 1990s has shown that not all episodes of democratization were associated with a significant reduction in the risk of corruption. For instance, in some countries—such as Russia after the end of the Soviet Union, or the Democratic Republic of Congo—there was, according to Political Risk Services data, no significant reduction in the perceived risk of corruption following democratization. Cross-country regression studies, with all its caveats about causality, confirm that there is an an inverted-U relationship between corruption perception indices and democracy indices. Rock (2016) suggests that new or partial democracies have (slightly) higher perceived corruption than do non-democracies, even though the perceived corruption levels in long-standing, fully institutionalized democracies are (much) lower.

The simple framework presented above allows us to understand why democracy, particularly new or partial democracy, does not necessarily lower corruption. On the one hand, democracy typically comes with free media and greater transparency, thus voters could potentially be more informed about corruption. However, voters in a young democracy are likely to have lower levels of voter education and awareness and the media is likely to be underdeveloped or not fully free. Thus the corruption detection probability $D(b;\kappa)$ in Eq. (1) may be lower in a new or partial democracy. In addition, electoral punishment against corrupt politicians are not guaranteed in a democracy if voters trade off corruption against competency of the politicians. This lack of electoral punishment against corrupt politicians will be especially acute in situations where the voters believes that all politicians are corrupt, in which case they would not even punish an incumbent just because he/she is corrupt. As we mentioned previously, the corruption detection probability in an autocracy could be high because an autocratic government could use more aggressive surveillance than legally permitted under a democracy, though the lack of free press and media lowers the chances of detecting corruption. The punishment against corrupt politicians can be high under an autocracy, though it is often the case that other factors such as factions and networks with the higher level officials are more important determinant of punishment than the bribe level b.

4 Causes and Consequences of Corruption: What can Anti-corruption Campaigns Tell us?

Anti-corruption campaigns are not unique to China.[8] Xi's anti-corruption campaign is also not the first in China; in fact, anti-corruption campaigns have been a recurring theme throughout China's history. The current Anti-Corruption Campaign (2012-present), launched under President Xi Jinping, has been one of the most extensive and far-reaching efforts to combat corruption

[7] See Stephenson (2015) for a comprehensive review of the literature on the relationship between democracy and corruption.

[8] Several other countries have also launched in recent anti-corruption campaigns, including Brazil, South Korea, India, Nigeria, Vietnam, among others.

in China's history. It has targeted officials at all levels of government, as well as in state-owned enterprises and the military, and has resulted in the punishment of thousands of officials. According to official Chinese government data, as of December 2022 more than 1.5 million officials have been investigated, prosecuted, and/or punished for corruption since the campaign began, including high-ranking officials and members of the Communist Party. Some of the most prominent officials to be caught up in the campaign include former security chief Zhou Yongkang, former presidential aide Ling Jihua, and former top military official Guo Boxiong.

Ding et al. (2020) argues that the anti-corruption campaign in China provides a unique perspective to shed light on a crucial, yet unsettled, question: what are the causes and consequences of corruption? The idea is that, the causes and consequence of the corruption could be revealed by the forced removal, or at least a significant reduction, of corruption during an intense anti-corruption campaign. Thus, observing how the bureaucrats, firms and markets react to the anti-corruption campaign in China allows us to shed light on this crucial question via "reverse engineering."

To be specific, there are two different views of the effect of corruption on economic development. The conventional wisdom, often referred to as the "grabbing hands" hypothesis, holds that corruption is a distortion and is costly for economic development (e.g., Klitgaard (1991); La Porta et al. (1999); Shleifer and Vishny (1993)). The "grabbing hands" of bureaucrats increase the cost of operating business, leading to less entry on the extensive margin and to smaller scale on the intensive margin. Under this view, eliminating governments' grabbing hands will lead to more firm entry and higher profits for existing firms and in general will improve economic efficiency.

An alternative view, often referred to as the "grease of the wheel" hypothesis, argues that in an environment with excessive bureaucratic burden, paying bribes may help avoid bureaucratic delays and make government officials work harder. This view is first put forth by Leff (1964) in his influential essay "*Economic Development Through Bureaucratic Corruption*" where he laid out several arguments for the possible efficiency-enhancing role of corruption. Leff (1964) argues that: "The critique of bureaucratic corruption often seems to have in mind a picture in which the government and civil service of underdeveloped countries are working intelligently and actively to promote economic development, only to be thwarted by the efforts of grafters. Once the validity of this interpretation is disputed, the effects of corruption must also be reevaluated." Leff suggested that the government would often be indifferent or even hostile to entrepreneurs, and it could establish misguided anti-market policies in the form of crushing government bureaucracy and red tapes; bribery of government officials would help the market function by allowing the entrepreneurs who pay the bribes to avoid the shackles of the bureaucracy. This view of corruption as the "grease for the squeaking wheels" of a rigid administration is famously summarized by Huntington (1968): "In terms of economic growth, the only thing worse than a society with a rigid, over-centralized, dishonest bureaucracy is one with a rigid, over-centralized, honest bureaucracy."

These two views are not necessarily conflicting. Red tapes and misguided regulations could well be *endogenous* choices of bureaucrats created by bureaucrats for the purpose of rent-seeking, which we refer to as "*endogenous grits effect*"; at the same time, corruption can serve as the grease to at least partially undo the distortions by the red tapes and misguided regulations. The effect of

corruption on economic performance in this equilibrium framework is more nuanced. In the absence of the opportunities to engage in rent-seeking, the red-tapes and misguided regulations may not be present, thus making moot the "grease-of-the-wheel" role of corruption. Thus, whether the opportunities of corruption by the bureaucrats increase or hinder the economy crucially depends on the eventual institutions (including government regulations) when corruption is rooted out (see, e.g.,Kaufmann and Wei (1999); Wei (2000a,b)).

4.1 Chronology of Xi's Anti-corruption Campaign

Xi Jinping officially assumed the title of the General Secretary of Chinese Communist Party (CCP) and Chairman of the Party Central Military Commission on November 14, 2012 at the conclusion of CCP's 18th National Congress. The new leadership in China considers corruption as not merely a significant problem to economic growth but a real threat to the party's survival. Almost immediately upon assuming power, Xi started an anti-corruption campaign. On November 20, 2012, the Central Commission for Discipline Inspection (CCDI), which was led by Xi's close ally and CPC Politburo Standing Committee member Wang Qishan, issued a warning that "the public's trust in the Party and the government has fallen to a critical level" and argued that the Party must fight corruption and treat anti-corruption as a major political task. On December 4, 2012, CPC Politburo of the Central Committee issued a policy document titled the Eight-Point Regulation, which provides explicit rules regarding the behavior of leading cadres from the Communist party, and bans bureaucrats and employees of state-owned firms of extravagant house, luxury goods purchases, and state-funded banquets. However, in China anti-corruption campaigns were often waged after an important political transition, but often such campaigns were short-lived, and it was considered possible tactics to weaken or purge political opponents in order to consolidate power. Moreover, no concrete measures were mentioned in the Eight Point regulations regarding how the regulations would be enforced. Since similar anti-corruption announcements were also made by previous leaders, the market did not view them as a credible commitment to fighting corruption. The expectation at the time when the Eight-Point Regulation was issued was that this was yet another anti-corruption campaign by President Xi that would be short-lived.

Concrete and more credible investigation and punishment actions arrive in the middle of 2013. On May 17, 2013, the Central Commission for Discipline Inspection (CCDI), which is the highest internal-control institution within the party system, made an announcement that it will conduct several rounds of inspections. In the first round of inspections, the CCDI will send inspection teams to five provinces, including Chongqing, Guizhou, Jiangxi, Inner-Mongolia, and Hubei.

Inspection teams are responsible to examine every ministry and government agencies for each province. Led by CCDI's secretary, Wang Qishan, the inspection teams have the unlimited power to investigate, detain, and interrogate almost anyone that may be involved in bribery, embezzlement, trading power for profit and other personal favors, no matter how high ranking they are. The inspection teams will first perform a background checks of the provinces or organizations to be inspected. Then the teams will stay in the inspected provinces for two months or so and the teams'

contact information is released to the public. During the two-month inspection, the inspectors collect information with the help of local discipline inspectors and anti-graft agency officers, and take tips from the public and retired government officials. If there is evidence of corruption, the inspectors will make records and report it to the CCDI.

Compared to previous anti-corruption measures, the CCDI inspection has a concrete plan and emphasizes on fighting corruption at all levels of governments. This announcement is an unexpected shock and a wake-up call for both government officials and the market participants. It is quite clear to them that this time is different. The inspections are often interpreted as the symbolic event of the start of China's recent anti-corruption campaign. While the announcement on May 17, 2013 did not mention explicit which provinces will be inspected later, it is quite clear that each province will eventually be inspected. As a result, we expect its impact is not regional but national. Indeed, in our empirical analysis, we do find that its impact is national. During the period of 2013-2014 only, the CCDI conducted a total of four rounds of inspections, covering all provinces in China. The inspections broke the unspoken rule regarding "Politburo Standing Committee criminal immunity" by arresting the former Politburo Standing Committee Member Zhou Yongkang (expelled from the Party and sentenced to life in prison). Over 100 high-ranking government officials, and more than 270,000 bureaucrats at different levels were detained and punished for corruption activities.

The announcement of CCDI inspection was unexpected and signaled Xi's anti-corruption campaign differs in its intensity and duration than the past anti-corruption campaigns. In fact it is still ongoing and there are no signs that CCDI inspections would stop anytime soon. Therefore, it is possible that the sustained intensive anti-corruption campaign may fundamentally change the norms of the corruption in China.

4.2 An Extended Framework with Endogenous Grits

In the simple framework presented in Section 3, we summarized the impact of corruption on firm profits by $\Pi(b;\omega)$, where ω represents the extent of government control over firms' profits and was taken as exogenous; thus it is not designed to examine in details about how corruption may impact the firms' profits. In this section, we extend the framework to consider a game between bureaucrats and firms, and study how a strong anti-corruption campaign may change firm performance; in particular, we would like to allow for the possibility that corrupt government officials may both be the "grabbing hand" and"grease the wheel." For this purpose, we will provide a micro-foundation for $\Pi(b;\omega)$. The material in this section is adapted from Ding et al. (2020). As before, let b denote the corruption activity, or bribes, by government officials. We hypothesize that corruption activity by government officials can affect firm $i's$ net profit via the following channels:

- *Grabbing Hand Channel.* We model this by assuming that the "effective tax rate" of a firm, t, is a non-decreasing function of b. We denote $t\left(b;\mathbf{X}_i\right)$ as tax rate of firm i, with characteristics $\mathbf{X}_i$, when corruption activity is b, with $t'\left(\cdot;\mathbf{X}_i\right)\geq 0$. It should be understood that the effectiveness tax rate is inclusive of both the *tax* the firm pays to the tax authority and the bribe b extracted by the bureaucrats. The tax the firm pays to the tax authority

may be a decreasing function of b. The distribution of firm characteristics in the population of firms is given by $F(\cdot)$.

- *Grease of Wheel Channel.* We model this by assuming that the marginal cost of production for firm i, denoted by $C\left(b;\mathbf{X}_i\right)$, is a non-increasing function of b, i.e., $C'\left(\cdot;\mathbf{X}_i\right) \leq 0$.

- *Endogenous Grits Channel.* Alternatively, this could be referred to as the *equilibrium* channel. We assume that the grits of the bureaucracy that affects the firm's marginal cost of production are partly chosen by the bureaucrats. For simplicity, we assume that the bureaucrats can choose between two marginal cost functions $C_H\left(b;X_i\right)$ and $C_L\left(b;X_i\right)$, and the two marginal cost functions are related as follows:

$$C^L\left(b;\mathbf{X}_i\right) = \delta C^H\left(b;\mathbf{X}_i\right)$$

  where $\delta \in (0,1)$. Thus, one can interpret bureaucrat's choice of H as heavy regulation and more license requirements, while the choice of L is light regulation and less licensing requirements.

We suppose that the bureaucrats choose the regulatory regime $r \in \{H, L\}$. They understand that there is an expected penalty if they are caught accepting bribes. The expected punishment for the bureaucrats, taking into account both the corruption detection probability and penalty function is given by

$$D(B;\kappa(a))P(B;\gamma(a))$$

where B is the *total* bribe collected from firms by the bureaucrat, and we let the corruption detection probability parameter κ and the punishment function parameter γ to be functions of a, which represents the anti-corruption intensity. Naturally, we assume that $\partial^2 D/\partial B\partial\kappa > 0$ and $\kappa'(a) > 0$; and $\partial^2 P/\partial B\partial\gamma > 0$ and $\gamma'(a) > 0$. That is, the anti-corruption campaign is assumed to both increase the corruption detection probability and the punishment conditional on detection.

The bureaucrats' objective function is a weighted average of the bribes net of the expected penalty and the net tax revenues received by the government. Specifically, we assume that the bureaucrats' payoff function is given by

$$\lambda U(y, B;\theta) + (1-\lambda)\,T - D(B;\kappa(a))P(B;\gamma(a))$$

where B is, again, the total bribe collected from the firms, T is the total net tax revenue, and $\lambda \in (0,1)$ is the weight on the bribe in the bureaucrats' payoff function.

In the economy, firms have heterogeneous characteristics denoted by X_i. In the population of firms, X_i is assumed to have a distribution $F\left(\cdot\right)$. Under a regulatory regime $r \in \{H, L\}$, the net profit function of a firm with characteristics X_i,, when it pays bribe b and charges price p is given by:

$$\left[1 - t\left(b;\mathbf{X}_i\right)\right]\left[p - C^r\left(b;\mathbf{X}_i\right)\right] Q\left(p;\mathbf{X}_i\right),$$

where $Q(p;\mathbf{X}_i)$ is the demand curve faced by fir i with characteristics X_i.[9] We assume that bureaucrats choose regulatory regime $r \in \{H, L\}$ and also dictate a bribe level b_i from each firm i, and the firm chooses only the price p_i.[10]

Given regulatory regime $r \in \{H, L\}$, a firm with characteristics X_i will choose p_i to maximize

$$\Pi^r(b_i;\mathbf{X}_i) \equiv \max_{\{p_i\}} \left[1 - t(b_i;\mathbf{X}_i)\right] \left[p_i - C^r(b_i;\mathbf{X}_i)\right] Q(p_i;\mathbf{X}_i). \tag{3}$$

Denote the optimal price for firm i under the regulatory regime r by $p_i^{r*}(b_i;\mathbf{X}_i)$.

By the Envelope Theorem, we have

$$\begin{aligned}\frac{\partial \Pi^r}{\partial b_i} = & \overbrace{-t'(b_i;\mathbf{X}_i)\left[p_i^{r*}(b_i;\mathbf{X}_i) - C^r(b_i;\mathbf{X}_i)\right] Q\left(p_i^{r*}(b;\mathbf{X}_i);\mathbf{X}_i\right)}^{\text{Grabbing Hand Effect}} \\ & \overbrace{-\left[1 - t(b_i;\mathbf{X}_i)\right] C^{r\prime}(b_i;\mathbf{X}_i) Q\left(p_i^{r*}(b_i;\mathbf{X}_i);\mathbf{X}_i\right)}^{\text{Grease of the Wheal Effect}},\end{aligned} \tag{4}$$

where the first term captures the "grabbing hand" effect and the second term the "grease of the wheel" effect of bribes. As we will show below, the anti-corruption campaign reduces the demand for bribes from the bureaucrats, even if the bureaucrats do not change the regulatory regime in response to the anti-corruption campaign, thus since $-t'(b_i;\mathbf{X}_i)(p^* - C)Q(\cdot) < 0$, the "grabbing hand" effect of corruption would imply that the anti-corruption campaign will increase firm's profit. In contrast, when b_i is lowered in response to the anti-corruption campaign, and since $-1 - t(b_i;\mathbf{X}_i) C^{r\prime}(b_i;\mathbf{X}_i) Q(\cdot) > 0$, the grease of wheal effect will lower the firm profit, *conditional on the same regulatory regime.*

So far, the *endogenous grits effect* is not yet captured in (4). To analyze how the bureaucrats may react to the anti-corruption campaign by choosing a different regulatory regime, we need to describe the bureaucrats' choice of b_i and $r \in \{H, L\}$. Under the regulatory regime $r \in \{H, L\}$, if the bureaucrats choose $b^r(\mathbf{X}_i)$ for firms with characteristics $\mathbf{X}_i$, the total bribes he/she will receive is

$$B^r = \int b^r(\mathbf{X}_i)\, dF(\mathbf{X}_i), \tag{5}$$

and the total net tax revenue collected will be

$$T^r = \int t\left(b^r(\mathbf{X}_i);\mathbf{X}_i\right) \left\{ \begin{array}{c} \left[p_i^{r*}\left(b^r(\mathbf{X}_i);\mathbf{X}_i\right) - C^r\left(b^r(\mathbf{X}_i);\mathbf{X}_i\right)\right] Q\left(p_i^{r*}\left(b^r(\mathbf{X}_i);\mathbf{X}_i\right);\mathbf{X}_i\right) \\ -b^r(\mathbf{X}_i) \end{array} \right\} dF(\mathbf{X}_i). \tag{6}$$

[9] We can easily allow $Q(\cdot)$ to depend on the bribe and anti-corruption campaign intensity.

[10] Alternatively, we can assume that the bureaucrats choose only the regulatory regime $r \in \{H, L\}$ and each firm chooses b_i and p_i given the regulatory regime chosen by the bureaucrats. In such a case, the only way anti-corruption campaigns will affect the level of bribes and firm performance is that the bureaucrats choose a different regulatory regime. For simplicity, we have assumed only two regulatory regimes, H and L; but we assume that there is a continuum of regulatory regimes indexed by κ, then similar qualitative conclusions can be obtained in this alternative model as well.

For a given r, and facing anti-corruption intensity a, the bureaucrats' choice of bribes for firm with characteristics $\mathbf{X}_i$, $b^r(\mathbf{X}_i)$, solves:

$$V^r(a) = \max_{\{b(\mathbf{X}_i)\}} \left[\lambda U(y, B^r; \theta) + (1-\lambda) T^r - D(B^r; \kappa(a)) P(B^r; \gamma(a))\right]$$

where B^r and T^r are given by (5) and (6) respectively. Simple comparative statics, using the assumption that $\partial^2 D/\partial B \partial \kappa > 0$ and $\kappa'(a) > 0$; and $\partial^2 P/\partial B \partial \gamma > 0$ and $\gamma'(a) > 0$, yields that, for a given r,

$$\frac{\partial b^r(\mathbf{X}_i)}{\partial a} < 0.$$

The bureaucrats' optimal choice $r^* \in \{H, L\}$ solves:

$$r^*(a) = \arg\max \left\{V^H(a), V^L(a)\right\}.$$

The *endogenous grits effect* is captured by how $r^*(a)$ is affected by the anti-corruption intensity a. When the anti-corruption intensity increases from a_0 to $a_1 > a_0$, it is possible that the bureaucrats will switch from the high regulatory regime to low regulatory regime if taking bribes is too costly and the bureaucrats choose instead to focus on tax revenues. This is likely to happen when the bureaucrats put sufficiently high weight on tax revenue, which proxies for local economic development; that is, when λ is not very high. The switch to low regulatory regime will provide an additional boost to the firm's profits. However, when λ is sufficiently high, it is also possible that the bureaucrats will stay within the high regulatory regime and demand less bribes, resulting in higher marginal costs for the firms.

This extended model makes it clear that anti-corruption campaign may have rather complicated effects on the firm performances in an environment where bureaucrats have sufficient discretionary power to affect the firms' effective marginal tax rates and marginal costs; corruption by bureaucrats simultaneously acts as a "tax", and a "grease of the wheel" for the firms. Increasing the anti-corruption intensity a will decrease the total bribes, but the net effect of anti-corruption on firms' after-tax profit is ambiguous, and depends on the strength of the countervailing forces of weakening "grabbing hands" and the diminished incentives to "grease the wheels."

4.3 Empirical Evidence from China's Anti-Corruption Campaign

There is a growing empirical literature on the impacts of the anti-corruption campaign on various aspects of the Chinese economy, including papers that examine the impact on firms, on credit allocation, and on bureaucrat's behavior, among others. The fact that many firms in China are publicly listed allows researchers to study the capital market reactions to the anti-corruption campaign, which are more likely to reflect the market's perception on its long-run impacts, including the potential changes in the bureaucratic norms (Ding et al. (2020)).

Impact on Firms Several studies used the event-study design to examine the stock market's reaction to the news of the anti-corruption campaign. There are several advantages of using stock market data. First, stock market data can capture the market's expectations of the *long run equilibrium* impacts of the anti-corruption campaign; second, it permits analysis of the differential impacts of the anti-corruption campaign on firms with different ownership types or any other firm-level characteristics; third, it tends to be more objective than survey data. Lin et al. (2016) used event study to investigate the impact of the Eight-Point Regulation issued on December 4, 2012 on stock market valuations. They find that Chinese shares rose broadly upon the news of the Eight-Point Regulation, suggesting that reduced expected corruption adds value to the firms overall. They also find that the impact is heterogeneous: SOEs gain broadly, but non-SOEs gain in more liberalized provinces, but decline in provinces where market institutions remain weak.

Ding et al. (2020) argue that the announcement of inspections of provincial governments by the Central Commission for Discipline Inspection (CCDI) on May 17, 2013 represents a significant departure of past norms of anti-corruption campaigns, and thus serves a rare empirical opportunity to examine the equilibrium effects of anti-corruption campaigns for firms. Using an event study approach and May 17, 2013 as the event date, they find that, overall, the stock market responded positively to the announcement of strong anti-corruption actions. The announcement returns, as measured by Cumulative Abnormal Returns (CARs), are significantly lower for luxury-goods producers, and SOES, large firms, or politically connected firms earn lower returns than private, small, or non-connected firms. They also find that existing local institutions play a crucial role in determining the announcement returns across firms.

Their findings that the stock market *overall* responded significantly positively to the CCDI inspection announcement suggests that the market views this new phase of anti-corruption campaign as a positive news that will improve firms' overall performance once a new corruption norm is reached. We view this as evidence that the market perceives this unprecedented CCDI inspection as a chance to fundamentally change the corruption norm in China, thus supporting the "endogenous grits" view of corruption we presented in Subsection 4.2. Ding et al. (2020) also present two pieces of direct evidence on institutional changes plausibly related to regulatory regime of doing business in China, consistent with the endogenous grits effect. First, they examine the commonly-used "Ease of Doing Business" index constructed by the World Bank to present some suggestive graphical evidence. The Ease of Doing Business index presents quantitative indicators on business regulations and the protection of property rights that can be compared across 190 economies. It ranks countries based on how the regulatory environment is conducive to business operation and protections of property rights. A higher rank (a low numerical value) indicates better regulations for businesses and stronger protections of property rights. Examining the global ranking for China in the years 2008-2019, they find that China's ranking was around 90 in the first several years after 2008 and reached an all-time high of 99 in 2012; however, after the anti-corruption campaign, there is a clear pattern that China's rank started to improve. Its rank improved to 83 in 2014, and in 2019, it reached and a record low of 31. They also present evidence using the overall marketization index constructed by the National Economic Research Institute (NERI). The overall marketization index

captures the institutional development in China in five areas, including the relationship between governments and the market, the development of non-state-owned sector, the development of product market, the development of factor market, and legal protection. A higher index value indicates a better institutional environment for business. This index is available at the Chinese province level for the years 2008 – 2016. A simple before-and-after comparison shows that the national average value of this index increased from 5.57 in the pre-anti-corruption (2008–2012) period to 6.48 in the post-anti-corruption (2013–2016) period. Given that the mean of this index for the whole sample period is only 5.97, this is a fairly large increase. When they regress the marketization index on a post anti-corruption dummy that takes the value of 1 for the years 2013 and after, controlling for province fixed effects, they find that the estimated coefficient on the post anti-corruption dummy is positive and statistically significant, indicating a better business environment in China after the anti-corruption campaign. Quantitatively, the estimated effect is also substantial. The estimated coefficient on the post anti-corruption dummy is 0.91, which is 15.2% of the sample mean value of the marketization index.

Ding et al. (2020) argues that, if all new relevant information is fully reflected in firms' stock prices so that the computed CARs during the event window capture the expected net impact of all avenues of exposure to the anti-corruption campaign, then we should expect more firms to enter industries with higher average CARs after the campaign on the extensive margin; and we should expect firms with higher CARs to expand more in their scales on the intensive margin. Using the Chinese Firm Registration data that covers the universe of China firms, they find that at both the industry-level and the more disaggregate province-industry level, higher average CARs during the event are associated with significantly more subsequent entries of new firms; In the listed firm sample, they also find that, on the intensive margin, firms with higher CARs expand significantly after the anti-corruption campaign.

Impact on Resource Allocation Corruption results in distortions in resource allocation, particularly in the allocations of credit. As discussed in Section 4.2, it is ambiguous whether anti-corruption campaign reduces or exacerbates the distortion. Agarwal et al. (2020) report that government bureaucrats received 16% higher credit lines than non-bureaucrats with similar income and demographics before the anti-corruption campaign. Regions associated with greater credit provision to bureaucrats opened more branches and received more deposits from the local government. However, after staggered corruption crackdowns, the new credit cards created for bureaucrats in exposed regions no longer enjoyed a credit line premium, suggesting that the credit allocation becomes less distorted.

Li et al. (2022) studies the impact of the anti-corruption campaign on how banks allocate their credit between State-owned Enterprises (SOEs) and non-SOEs. Prior to the anti-corruption campaign, lenders may have been responding to political pressure to extend credit to less productive state-owned firms. They argue that the anti-corruption crackdowns increase the salience and costs associated with corruption in implicated firms and in exposed industries, and lead to a reallocation of bank credit—from less-productive SOEs to more-productive non-SOEs. Thus the anti-corruption

campaign may have corrected the distortions in credit allocation, especially by state-owned banks, that tend to favor politically connected SOEs, both because of the perceived lower risks to lend to SOEs and the political pressure from politicians.[11]

Impact on Bureaucrats' Behavior Bureaucrats are rational agents. The threat of anti-corruption campaign will change the behavior of the bureaucrats. However, it is important to point out that the goal for the bureaucrats to change their behavior is to *self preserve*, i.e. to avoid being accused of or being caught in corruption, which is not necessarily to be less corrupt. If, for example, the anti-corruption campaign is perceived to be selective, or to be a purge in disguise of opposing factions, it is possible that officials in the dominant factions will continue to be corrupt, or will even become more corrupt, as the informal checks from the opposing factions are removed. It is also possible that the officials in the weak (i.e., the opposing) faction decide that they need to "buy" their way out of prosecutions by the dominant faction, and become more corrupt in the process.

Many studies of the campaign's economic effects suggest a decrease in corrupt behavior among officials. Sales of luxury goods have dropped (Qian and Wen (2015)), corporate spending on "entertainment and travel costs" is down (Ke et al. (2022)), high-end restaurants and hotels have suffered (Barwick et al. (2023)), high-end apartment sale prices have dropped (Peng and Tang (2023)), land sales by local governments are suppressed following inspections (Chen and Kung (2019)), officials are receiving smaller discounts when purchasing apartments (Chu et al. (2019)), etc. The collective evidence from the literature clearly indicates that the government officials have significantly reduced their corrupt behavior.

Fang et al. (2022) provides an interesting analysis of how the anti-corruption campaign affects the local government officials' tendencies to award residential land sales to state-owned enterprises. It is commonly known local government officials in China wield significant discretionary power over real estate developers in their jurisdictions (Fang et al. (2019)). In a context of weak rules of law and widespread corruption, people generally form some shared beliefs (or stereotyping) about the incidence of corruption based on who are more likely to pay bribes to government officials in a specific context. For instance, it is commonly perceived in China that private real estate developers tend to give kickbacks to city government officials who grant them access to lucrative residential land. In contrast, it is relatively rare for SOEs to engage in this type of corruption: the managers of SOEs receive little private gain from the rent-seeking activities but face a large private risk of corruption charge since SOEs generally have a more effective internal auditing system than private enterprises. This public perception is confirmed by the public court verdicts following the sentencing of government officials prosecuted under the anti-corruption campaign. Given such stereotyping, when a massive anti-corruption campaign is launched, local government officials will intentionally avoid corruption-stereotyped transactions with private firms in fear of arousing suspicion from the central government that can result in follow-up corruption investigations, even if

[11] Cong et al. (2019) document that the credit stimulus of 2009–2010 favored state-owned firms and firms with a lower returns to capital.

these transactions are entirely justified on efficiency grounds. The reluctance to deal with private firms is not restricted to "dirty" officials, because "clean" officials also dislike the hassles and reputational damage associated with being swept in investigations even if they are ultimately cleared of corruption. In fact, it is theoretically possible that the incentives of "clean" officials to shun private firms for self-preservation could even be stronger than those of "dirty" officials. As a result, the anti-corruption campaign can induce local government officials, whether clean or dirty, to stay away from private firms so as to protect themselves from investigations; and this can cause an unintended reemergence of the state-owned enterprises in corruption-susceptible sectors. Fang et al. (2022) showed that China's unprecedented anti-corruption campaign triggered a stereotyping of corruption-susceptible transactions and deterred government officials from dealing with private firms, which contributed to the resurgence of the SOEs in the Chinese economy. They also provide evidence that such tilting toward SOE developers results in inefficiency as measured by longer time to develop the land parcels and somewhat lower quality of construction.

5 Conclusion

Xi's anti-corruption campaign represents one of the most intensive and sustained anti-corruption campaigns in China. Some have argued that the anti-corruption investigations, at least at the elite level, is selective (Pei (2018)). The Chinese politico-economic system, where different levels of governments cast large shadows on the market, is fertile ground for officials to misuse their public power for private gains; while its press and media are mostly controlled by the government and heavily censored, and thus not most conducive to detect bureaucratic corruption, the society is also more heavily monitored by the state and thus the state certainly has the capacity to detect corruption if it chooses to do so. There are also noted new government agencies, most significantly the National Supervision Commission (NSC) which was established in March 2018, that would serve as the institutional foundations of the anti-corruption campaign. Significant amount of research has consistently documented that the extent of bureaucratic corruption was significantly reduced since the initiation of the anti-corruption campaign. There is also evidence that the anti-corruption campaign was perceived as positive news by the stock market, which supports the "grabbing hands" view of corruption, as well as the view that severe anti-corruption campaigns may lead to fundamental changes to a lower corruption norm. However, the literature also uncovers some unintended consequences of the anti-corruption campaign, most notably, government officials' incentives to self preserve to avoid being investigated for possible corruption may have contributed to the resurgence of the SOEs in the Chinese economy in the last ten years.

Corruption is a result of unchecked power bestowed to officials. It can not be rooted out completely as long as the officials have discretionary power over resource allocations. The incentives for officials to corrupt is higher if the prevalence of corruption in the society is higher, thus there can be multiple equilibria with different degrees of corruption. China's anti-corruption campaign may lead to a low corruption equilibrium among its bureaucracy, and improve the efficiency of resource allocation.

References

Agarwal, S., W. Qian, A. Seru, and J. Zhang (2020). Disguised corruption: Evidence from consumer credit in china. *Journal of Financial Economics 137*, 430–450.

Antonossava, A., M. Bertrand, and S. Mullainathan (2008). Misclassification in targeted programs: A study of the targeted public distribution system in karnataka, india. Mimeo, Harvard University.

Barwick, P. J., H. Fang, and S. Li (2023). Dining on the government's dime vs. dining on your own dime. *Working Paper*.

Brueckner, M. (2021). Democracy and corruption. *Journal of Risk and Financial Management 14*(10).

Cai, H., H. Fang, and L. C. Xu (2011). Eat, drink, firms, and government: An investigation of corruption from entertainment and travel costs of chinese firms. *Journal of Law and Economics 54*, 55–78.

Chen, T. and J. K.-s. Kung (2019). Busting the "princelings": The campaign against corruption in china's primary land market. *The Quarterly Journal of Economics 134*(1), 185–226.

Chu, Y., W. Kuang, and D. Zhao (2019). The effect of the anti-corruption campaign in china: Evidence from housing transactions.

Cong, W., H. Gao, J. Ponticelli, and X. Yang (2019). Credit allocation under economic stimulus: Evidence from china. *Review of Financial Studies 32*(9), 3412–3460.

Deng, Y., S.-J. Wei, J. Wu, and R. Zhang (2016). Estimating the unofficial income of officials from housing purchases: The case of china. Working Paper.

Di Tella, R. and E. Schargrodsky (2003). The role of wages and auditing during a crackdown on corruption in the city of buenos aires. *Journal of Law and Economics 46*, 269–300.

Ding, H., H. Fang, S. Lin, and K. Shi (2020). Equilibrium consequences of corruption on firms: Evidence from china's anti-corruption campaign. Working Paper 26656, National Bureau of Economic Research.

Faccio, M. (2006). Politically connected firms. *American Economic Review 96*(1), 369–386.

Fang, H., Q. Gu, and L.-A. Zhou (2019). Gradients of power: Evidence from the chinese housing market. *Journal of Public Economics 176*, 32–52.

Fang, H., Z. Li, N. Xu, and H. Yan (2023). Firms and local governments: Relationship building during political turnovers. *Review of Finance 27*(2), 739–762.

Fang, H., J. Wu, R. Zhang, and L.-A. Zhou (2022). Understanding the resurgence of the soes in china: Evidence from the real estate sector. Working Paper 29688, National Bureau of Economic Research.

Fisman, R. (2001). Estimating the value of political connections. *The American Economic Review 91*(4), 1095–1102.

Fisman, R. and M. A. Golden (2017). *Corruption: What Everyone Needs to Know*. Oxford University Press.

Fisman, R. and S.-J. Wei (2004). Tax rates and tax evasion: Imports in china. *Journal of Political Economy 112*, 471–496.

Gentzkow, M., E. L. Glaeser, and C. Goldin (2006). The rise of the fourth estate: How newspapers became informative and why it mattered. In E. L. Glaeser and C. Goldin (Eds.), *Corruption and Reform: Lessons from America's Economic History*, pp. 187–206. Chicago: University of Chicago Press.

Gorodnichenko, Y. and K. S. Peter (2007). Public sector pay and corruption: Measuring bribery from micro data. *Journal of Public Economics 91*, 963–991.

Hsieh, C.-T. and E. Moretti (2006). Did iraq cheat the united nations? underpricing, bribes, and the oil for food program. *Quarterly Journal of Economics 121*, 1211–1248.

Huntington, S. P. (1968). *Political Order in Changing Societies*. Yale University Press.

Kaufmann, D. and S.-J. Wei (1999). Does 'grease money' speed up the wheels of commerce? Working Paper 7093, National Bureau of Economic Research.

Ke, B., N. Liu, and S. Tang (2022). Does anti-corruption regulation improve the performance of state-controlled firms? evidence from china.

Khurana, R., R. Fisman, J. Galef, and Y. Wang (2012). Estimating the value of connections to vice-president cheney. *The B.E. Journal of Economic Analysis & Policy 13*(3), 1–20.

Khwaja, A. and A. Mian (2005). Do lenders favor politically connected firms? rent provision in an emerging financial market. *Quarterly Journal of Economics 120*(4), 1371–1411.

Klitgaard, R. (1991). Gifts and bribes. *Strategy and Choice*, 419–435.

La Porta, R., F. Lopez-de Silanes, A. Shleifer, and R. Vishny (1999). The quality of government. *Journal of Law, Economics, and Organizations 15*, 222–279.

Laffont, J.-J. and J. Tirole (1991). The politics of government decision-making: a theory of regulatory capture. *Quarterly Journal of Economics 106*(4), 1088–1127.

Leff, N. H. (1964). Economic development through bureaucratic corruption. *The American Behavioral Scientist 8*(2), 8–14.

Li, B., Z. Wang, and H. Zhou (2022). China's anti-corruption campaign and credit reallocation from soes to non-soes.

Li, H. and L.-A. Zhou (2005). Political turnover and economic performance: the incentive role of personnel control in china. *Journal of Public Economics 89*(9), 1743–1762.

Lin, C., R. Morck, B. Y. Yeung, and X. Zhao (2016). Anti-corruption reforms and shareholder valuations: Event study evidence from china. Technical Report Working Paper No. 22001, National Bureau of Economic Research.

McMillan, J. and P. Zoido (2004). How to subvert democracy: Montesinos in peru. *Journal of Economic Perspectives 18*(4), 69–92.

Navot, D., Y. Reingewertz, and N. Cohen (2016). Speed or greed? high wages and corruption among public servants. *Administration & Society 48*(5), 580–601.

Niehaus, P. and S. Sukhtankar (2013). Corruption dynamics: The golden goose effect. *American Economic Journal: Economic Policy 5*(4), 230–269.

Olken, B. A. (2006). Corruption and the costs of redistribution: Micro evidence from indonesia. *Journal of Public Economics 90*, 853–870.

Olken, B. A. (2007). Monitoring corruption: Evidence from a field experiment in indonesia. *Journal of Political Economy 115*, 200–249.

Olken, B. A. and P. Barron (2009). The simple economics of extortion: Evidence from trucking in aceh. *Journal of Political Economy 117*, 417–452.

Olken, B. A. and R. Pande (2011). Corruption in developing countries. *Annual Review of Economics 4*, 479–505.

Pei, M. (2018). How not to fight corruption: Lessons from china. *Daedalus 147*(3), 219–220.

Peltzman, S. (1976). Toward a more general theory of regulation. *Journal of Law and Economics 19*(2), 211–244.

Peng, L. and H. Tang (2023, April). Politics and asset prices: China's anti-corruption campaign and prices of luxury homes in beijing. *Working Paper,*.

Qian, N. and J. Wen (2015). The impact of xi jinping's anti-corruption campaign on luxury imports in china. Preliminary Draft, Yale University.

Reinikka, R. and J. Svensson (2004). Local capture: Evidence from a central government transfer program in uganda. *Quarterly Journal of Economics 119*, 679–706.

Reinikka, R. and J. Svensson (2005). Fighting corruption to improve schooling: Evidence from a newspaper campaign in uganda. *Journal of the European Economic Association 3*, 259–267.

Reinikka, R. and J. Svensson (2011). The power of information in public services: Evidence from education in uganda. *Journal of Public Economics 95*, 956–966.

Rock, M. T. (2016). Corruption and Democracy. In *Dictators, Democrats, and Development in Southeast Asia: Implications for the Rest*. Oxford University Press.

Rose-Ackerman, S. (1999). *Corruption and Government: Causes, Consequences, and Reform*. Cambridge University Press.

Shleifer, A. and R. Vishny (1993). Corruption. *Quarterly Journal of Economics 108*(3), 599–617.

Stephenson, M. C. (2015). *Chapter 4: Corruption and democratic institutions: a review and synthesis*. Cheltenham, UK: Edward Elgar Publishing.

Stigler, G. J. (1971). The theory of economic regulation. *Bell Journal of Economics and Management Science 2*(1), 3–21.

Tirole, J. (1996). A theory of collective reputations (with applications to the persistence of corruption and to firm quality). *The Review of Economic Studies 63*(1), 1–22.

Wei, S.-J. (2000a). How taxing is corruption on international investors? *Review of Economics and Statistics 82*(1), 1–11.

Wei, S.-J. (2000b). Local corruption and global capital flows. *Brookings Papers on Economic Activity 2000*(2), 303–354.

World Bank (2020). Enhancing government effectiveness and transparency: The fight against corruption. Technical report, World Bank, Washington, DC.

Zingales, L. (2017). Towards a political theory of the firm. *Journal of Economic Perspectives 31*(3), 113–130.