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The Price of Probity: Anticorruption and Adverse Selection in the Chinese Bureaucracy

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Abstract

Fighting corruption is often seen as a crucial step toward building better institutions, but how it affects political selection remains less well understood. This article argues that in systems where corruption functions as an informal incentive for government to attract talent, anticorruption initiatives that curb rent-seeking opportunities may unintentionally weaken both the quality and the representativeness of the bureaucracy. The authors test this argument in China using an original nationwide survey of government officials and an identification strategy that exploits exogenous variations in enforcement levels created by the recent anticorruption campaign. The study finds that intensified enforcement has generated two potentially negative selection effects: a deterrence effect that lowers the average ability of newly recruited bureaucrats, and a compositional effect that discourages the entry of lower-class individuals in favor of those who are affluent and well connected. These findings highlight important hidden human capital costs of corruption elimination in developing countries.

Keywords: political selection; anticorruption; bureaucratic recruitment; representative bureaucracy; instrumental variable; China

Corruption is endemic in the developing world and widely considered to have pernicious effects on political and economic governance (for example, Mauro 1995; Rose-Ackerman 1999). Countries that aspire to achieve a better quality of government often make fighting corruption one of their highest priorities (Klitgaard 1988; Svensson 2005). In places as diverse as Nigeria, Singapore, India and China, political leaders have taken forceful measures to punish official venality with the promise of building cleaner and better government. Anticorruption has also been a centerpiece of the institutional reform programs advocated by international donors and development agencies since the mid-1990s (United Nations 1998; World Bank 1997). Prior empirical research has shown that anticorruption measures, if sincerely and effectively executed, can indeed curb predatory behavior by government officials (Avis, Ferraz and Finan 2018; Bobonis, Cámara Fuertes and Schwabe 2016; Chen and Kung 2018). However, corruption is rarely merely an isolated phenomenon independent of other institutions and practices. By changing one part of an interconnected politico-economic equilibrium, anticorruption may also have important repercussions in other parts of the political system. How these repercussions affect the quality of government is not yet well understood.

This article studies the unintended effects of anticorruption on a key aspect of government quality – political selection. It is widely recognized that achieving good governance requires a government that can recruit and retain candidates who are both competent and represent the interests of the broader society (Besley 2005; Dahl [1961] 2005; Dal Bó and Finan 2018;

Fearon 1999). For many scholars and practitioners, fighting corruption can help improve political selection. By removing rent-seeking opportunities associated with government offices, anticorruption drives away candidates who are motivated purely by pecuniary returns and encourages the entry of individuals with better morals and stronger public service motivations (Ferraz and Finan 2008; Perry and Wise 1990). An implicit assumption in this view, however, is that the formal benefits offered by government jobs are already sufficiently competitive to attract and retain talent. In this article, we argue that this is not always the case in many parts of the developing world, where governments lack the necessary fiscal resources to pay public servants market-competitive salaries, and mobility between the public and private sectors is limited. In those settings, corruption often serves as an important source of complementary income to attract talent into the civil service (Bayley 1966; Besley and McLaren 1993), and its elimination may unintentionally weaken both the capability and representativeness of candidates entering the government.

Specifically, we argue that anticorruption enforcement can produce two potentially negative effects on political selection. The first is a *deterrence effect*: by lowering the expected returns from government service, anticorruption measures undercut the attractiveness of public sector jobs, especially in the eyes of high-ability candidates, who typically have many alternative employment options; this can lead to a decline in the quality of candidates recruited into the government. Secondly, since individuals from different socioeconomic backgrounds often assign different degrees of importance to short-term income, anticorruption can also produce a *compositional effect*: compared to those from affluent families, candidates from lower class backgrounds may have stronger incentives to switch to higher-paying jobs outside of government because they face greater financial constraints; this means that those who enter public service during a phase of intense anticorruption may have more elitist backgrounds and be less representative of the general population.

To substantiate these claims, we study how anticorruption enforcement affects the characteristics of incoming entry-level civil servants in China. The ability to draw a large number of capable individuals into government has long been viewed as a core strength of the Chinese Communist Party (CCP) (Bell 2015; Yao 2018). However, this ability is also inherently puzzling given that government officials' salaries are only on par with those of average urban workers (Chan and Ma 2011). We argue that the presence of various rent-seeking opportunities within the government is an important reason why the regime can attract talent without paying a high nominal wage, and estimate how curtailing such opportunities may affect the type of individuals recruited into the civil service.

Our empirical design combines a nationwide survey of civil servants with a province-level panel dataset on anticorruption enforcement. We match each survey respondent to the level of enforcement in the province-year spell in which he/she graduated from college, and exploit the cross-cohort variation in exposure to anticorruption enforcement for estimation. To overcome the endogeneity problem associated with anticorruption enforcement, we adopt an instrumental variables approach, leveraging two plausibly exogenous sources of variation in enforcement created by Xi Jinping's recent anticorruption campaign. The first is a sharp, unexpected rise in the overall intensity of enforcement after late 2013, when the campaign was launched in full force. The second is the regional variation in enforcement intensity determined by each province's political connections to Xi.

The results from the instrumental variables analysis provide support for both of the theorized effects. Consistent with the deterrence effect, we find that, on average, civil servants who graduated in (or were recruited from) province-year spells with a high level of enforcement report significantly fewer activities and achievements during college than those who graduated in low-enforcement spells. Consistent with the compositional effect, we find that the share of civil servants recruited from poor, rural families declines precipitously during high-enforcement province-year spells. We also observe a corresponding increase in the share of new recruits who are children of government officials or come from economically affluent families. These findings

are robust to a range of additional tests, including altering the sample time span, using different measures of the dependent and independent variables, and applying various post-stratification weighting adjustments for sample representativeness. We also conduct additional analyses using several other surveys and administrative datasets to substantiate the theoretical mechanisms and to address important alternative explanations. Lastly, we provide some evidence that the compositional change among new civil service recruits is also accompanied by a change in their policy preferences: those who join the service during more intense enforcement spells tend to be less supportive of redistributive policies, suggesting that the selection effect of anticorruption may have long-term policy ramifications.

This article contributes to several strands of literature. By examining the unintended consequences of anticorruption on political selection, our study is directly related to the literature on the effects of anticorruption. Many researchers have argued that anticorruption measures, if implemented sincerely and effectively, can curb rent-seeking behaviors (Avis, Ferraz and Finan 2018; Chen and Kung 2018), reduce administrative waste (Olken 2007) and improve the overall quality of governance (Reinikka and Svensson 2005; Teachout 2008). On anticorruption's effect on selection more specifically, several recent studies suggest that anticorruption measures, such as mandatory financial disclosure laws, can discourage the entry of potentially corrupt candidates (Ferraz and Finan 2008; Fisman, Schulz and Vig 2017; Szakonyi 2018). Most of the discussion about the negative effects of anticorruption, however, focuses on extraneous causes, such as weak enforcement or political manipulation (Gordon 2009; Ramalho 2003; Shleifer and Vishny 1993). While not denying that there are important positive benefits of tighter enforcement of anticorruption, our study provides an important qualification to the relatively optimistic received wisdom: when formal civil service compensation is universally low and the attractiveness of government jobs depends heavily on rent-seeking opportunities, eliminating such opportunities may unintentionally undermine government quality through poorer selection.¹

This article also speaks to a large body of work on the determinants of political selection. Researchers have studied how monetary rewards affect the quality of candidates for government jobs (Dal Bó, Finan and Rossi 2013; Ferraz and Finan 2009; Keane and Merlo 2010; Kotakorpi and Poutvaara 2011; Krueger 1988). We complement this line of research by studying the selection effects of a *reduction* in *non-wage benefits* due to anticorruption enforcement. Another important line of research has studied the selection functions of political institutions, such as competitive elections (Fowler 2016; Galasso and Nannicini 2011), term limits (Alt, Bueno de Mesquita and Rose 2011; Fearon 1999) and gender quotas (Baltrunaite et al. 2014). This literature, however, has focused mainly on formal and nominally 'good' institutions; it has paid relatively little attention to *informal* institutions that have negative/ambiguous normative standings but are nonetheless very common in developing societies (Helmke and Levitsky 2004). Only recently have a small number of studies begun to document the potentially positive roles that informal institutions, such as corruption and patron–client relations, can play in supporting the functioning of governments in non-Western societies (Jia, Kudamatsu and Seim 2015; Jiang 2018; Weaver 2018). Our study contributes new evidence to this nascent literature by showing what may happen to political selection when these informal institutions are disrupted or removed.

Moreover, our study sheds new light on our understanding of China's recent anticorruption campaign. There has been an ongoing debate among researchers and China observers about the nature and consequences of the campaign. While critics regard the campaign as short term, opportunistic and selectively enforced by the incumbent to eliminate political rivals (Pei 2018), others suggest that its underlying motives need to be taken more seriously (Manion 2016) and provide evidence that the campaign has indeed helped reduce corruption in certain

¹Related to our view, a small body of literature on administrative laws has argued that anticorruption measures may produce a proliferation of regulations and procedures that undermine administrative effectiveness (e.g., Anechiarico 1996).

areas (Chen and Kung 2018; Lu and Lorentzen 2016; Shu and Cai 2017). Our analysis of the changes in government recruitment patterns lends greater support to the second view – that is, China’s anticorruption campaign has generally succeeded in lowering popular expectations about the availability of rent-seeking opportunities within the government. This change in belief may be an important step toward building a culture of clean government in the long run (Manion 2004). However, to the extent that corruption has been an integral part of how the system works, effective anticorruption may have actually weakened the bureaucracy, at least in the short run, by making it both less capable and less representative of the broader society.

Corruption, Anticorruption and Political Selection in The Developing World

The quality of government is determined to a large extent by those who run it (Key 1956). A key prerequisite for achieving good governance is therefore to recruit competent individuals to make and implement government policies. Previous studies have identified several ways in which governments can attract talent.² One approach is simply to pay them a higher salary. Raising the formal salaries of public servants has been shown to improve the quality of candidates for government jobs (for example, Dal Bó, Finan and Rossi 2013; Ferraz and Finan 2009; Kotakorpi and Poutvaara 2011). In systems that have a ‘revolving door’ arrangement, talent may also be drawn into public service with the expectation of post-tenure rewards in the private sector (Blanes i Vidal, Draca and Fons-Rosen 2012; Eggers and Hainmueller 2009). For these arrangements to work, however, there has to be either a state that has access to a stable, robust revenue base, or a strong and vibrant private sector that is willing and able to provide employment to retired government officials. Both conditions can be difficult to satisfy in most developing countries, where government fiscal capacity is typically weak and the linkage between the private and public sectors is underdeveloped (Evans 1995; Migdal 1988).

We argue that when these two options are not available, another common strategy for governments to attract talent is by providing informal opportunities for corruption (Bayley 1966; Leys 1965).³ Instead of paying public servants for the full value of their service, governments can reduce their nominal wage but allow them to earn additional informal income by exploiting the public power attached to their offices (Besley and McLaren 1993). This type of arrangement was common in pre-modern regimes, when royal tax collectors were implicitly or even explicitly allowed to keep a portion of the tax revenue for themselves (Grindle 2012; Guardado 2018). Many developing countries still tolerate such practices. According to Gorodnichenko and Peter (2007), for example, public sector employees in Ukraine are paid about one-quarter to one-third less than their private sector counterparts, but manage to enjoy an essentially identical level of consumption due to the presence of unreported informal income. Similarly, in India, Indonesia and the Philippines, civil servants’ formal salaries usually cover only a fraction of what is needed to maintain a decent standard of living, and officials rely heavily on various types of rent-seeking activities to make up the difference (Palmier 1985; Quah 2011). In those systems, corruption is not only an isolated immoral action

²For a theoretical discussion of different compensation regimes for government employees, see Besley and McLaren (1993). They distinguish between two wage regimes for government tax collectors – an ‘efficiency wage regime’ (effective monitoring, high formal wage and low corruption) and a ‘capitulation wage regime’ (ineffective monitoring, low formal wage and high corruption) – which broadly corresponds to the distinction between developed and many developing countries in terms of how civil servants are compensated.

³There may also be other non-financial reasons for using an informal, corruption-based arrangement to compensate government officials. For example, the government may not have sufficient monitoring capacity to deter corrupt behaviors (Besley and McLaren 1993), or there may be public pressure against setting a high nominal wage for government employees. Alternatively, Hollyer and Wantchekon (2014) suggest that allowing corrupt practices to supplement civil servants’ pay can help strengthen the political leader’s control over the bureaucracy and ensure that only zealous supporters will seek bureaucratic posts.

taken by a small group of greedy individuals, but a crucial source of supplementary income for a large number of government employees.

Recognizing the integral role of corruption in public servants' compensation has important implications for thinking about the effects of anticorruption enforcement in many developing countries. When most individuals enter the government with the expectation of receiving additional income through some form of rent seeking, denying such opportunities can induce profound changes in the candidate pool for government jobs. Specifically, we argue that anticorruption enforcement can have two important selection effects. The first relatively straightforward one is a negative effect on candidates' overall competence. This effect follows directly from the negative impact of anticorruption on government officials' expected income. When the risk of losing one's office increases while the return declines (relative to that in other sectors), fewer individuals will be willing to pursue a public service career. In particular, those with higher abilities may be more reluctant to enter the government compared to their less capable counterparts because it is easier for them to find safe and good-paying jobs in the private sector. Both the reduction in the overall size of the applicant pool and the scaring away of higher-ability individuals imply a loss of human capital for the government. Consistent with this, recent studies have shown, in various country settings, that a reduction in formal compensation to public servants can result in lower skill levels among politicians and civil servants by disproportionately discouraging high-skilled individuals from taking up government jobs (Keane and Merlo 2010; Olowu 2010). Extending this line of reasoning to informal, corruption-based benefits, our first hypothesis is as follows.

HYPOTHESIS 1 (Deterrence Effect): As a *de facto* negative income shock to government jobs, anticorruption enforcement will cause a loss of talent in the government by reducing the size of the candidate pool and discouraging the entry of high-ability individuals. This means that, all else being equal, the capabilities of recruits will decrease during a period of heightened anticorruption.

In addition to the deterrence effect, we argue that anticorruption also has a second, more subtle impact on the *composition* of government officials. This is because individuals from different backgrounds often vary in their expectations about what they can get from a political/bureaucratic career (Avis et al. 2017). Studies have shown that, in making private sector career decisions, candidates from affluent families tend to pay greater attention to the prospects of long-term career development, whereas those from poor families usually care more about short-term earnings (Erola, Jalonen and Lehti 2016; Zellweger, Sieger and Halter 2011).⁴ The same contrast is also likely to hold for public sector employment. In China, for example, long-term rewards from civil service jobs include political promotions, knowledge about the operation of the government and personal contacts with key decision makers. In order to be able to enjoy these rewards, however, one must stay in the government for a long enough period of time while living off a modest nominal wage. When anticorruption enforcement removes the informal benefits, individuals with poorer economic conditions will find it harder to make ends meet in the short run. As a result, they will be more likely to stay away from government jobs than their affluent counterparts, who can afford to be more patient due to income support from other sources (for example, families).⁵ This leads to our second hypothesis.

⁴More generally, research in labor economics has found that the poor usually have a higher rate of time preference (i.e., less patience) than the rich (Lawrance 1991).

⁵It can be argued that the compositional effect may partially offset the deterrence effect if individuals from a higher socio-economic status are also more capable. This, however, is not always the case if there are pre-selection mechanisms (e.g., college or civil service exams) that reduce the disparities in ability between social classes among eligible applicants.

HYPOTHESIS 2 (Compositional Effect): The negative income shock produced by anticorruption enforcement differentially reduces the appeal of a career in government for individuals from different socioeconomic backgrounds. In particular, a period of intense enforcement is more likely to discourage those from poorer, lower-class families from applying for government jobs, which will lead to an increase in the share of the more affluent class among those who enter the government.

Rent-seeking Opportunities and Civil Service Recruitment in China

For much of China's history, the bureaucracy has been the quintessential institution for governance. It has not only provided capable administrative support for the ruler but has also served as an important channel of upward mobility for ordinary families (Ho 1964). This continues to be the case today under the CCP. Many observers attribute the party's resilience and impressive economic performance to its ability to attract the best and brightest into the party-state (Bell 2015; Yao 2018). Civil service positions are among the most highly sought-after jobs in China. Each year, millions of individuals, mostly fresh college graduates, go through a highly competitive selection process to join the civil service, with a success rate of less than 2 per cent (Burns 2010).

On the surface, the popularity of civil service positions may appear puzzling given the modest pay associated with these jobs. Despite several rounds of wage adjustments over the past two decades, average civil servant salaries remain at the level of an average urban worker, even though the selection of the former is far more competitive (Wu 2014).⁶ Opportunities for post-government employment in the private sector, while growing in recent years, are still rather limited relative to the vast size of the bureaucracy.⁷

We argue that instead of a high nominal salary or the prospect of a lucrative post-government career, a much more important (financial) appeal of civil service jobs lies in the presence of substantial *informal benefits* from a wide range of rent-seeking activities. These activities include not only more 'conventional' types of corruption such as bribe taking (Liu 1983; Manion 2004), but also many other activities that would be considered illegal or unethical in a more professionalized system, such as diverting budgetary funds to pay staff bonuses, abusing position-based consumption for private purchases, and using government vehicles or equipment for private purposes (Chan and Ma 2011; Chen 2009). When dealing with non-government sectors, officials can also leverage their power and elevated status to receive various preferential treatments, including discounts for property purchases (Fang, Gu and Zhou 2019), higher priority in medical services, and guaranteed admission of their children to high-quality primary and secondary schools.⁸ The risk of engaging in these more mundane forms of rent-seeking activities is generally low,⁹ and sometimes such behavior is even implicitly encouraged by higher-level authorities as a way to incentivize subordinate bureaucrats.¹⁰

⁶For instance, the average annual salary for state employees in 2015 was about 70,000 yuan (US\$10,390), whereas the average salary for all urban private sector employees was 62,029 yuan (US\$9,210). See: China Labor Statistical Yearbook, 2016, 151–153, <https://bit.ly/2V19Thr>.

⁷According to official statistics from the Ministry of Human Resources and Social Security, only about 0.2 per cent of civil servants resigned from their jobs in 2015 (see <https://bit.ly/35kWiT> in Chinese). Our analysis of a nationally representative survey (the 2014 China Family Panel Survey) also suggests that among respondents who have ever held civil service posts, 87 per cent remained in the government for their entire career.

⁸Personal interviews, BJ201904 and GD201906.

⁹According to Burns (2010), engaging in corruption was a fairly low-risk activity in China until Xi's anticorruption campaign. Less than 3 per cent of all corruption cases, for example, led to sentencing during the 1990s.

¹⁰Both Ang (2016) and Huang (2017), for example, argue that in order to promote business development and revenue collection, political superiors sometimes allow subordinate agencies to pocket part of the funds that they help to collect/generate and to use them for the benefit of the agencies' staff.

Although it is difficult to ascertain the exact share of informal benefits in civil servants' compensation, anecdotal evidence suggests that it is substantial: when civil servants choose to quit their jobs and join the private sector, they usually do so only when the move can increase their nominal salary by multiple times.¹¹ The size of the informal benefits has also fluctuated significantly over time. When these benefits decrease, the government typically has a difficult time recruiting and retaining talented individuals. During the early 1990s, for example, the post-1989 corruption crackdown, coupled with a flourishing market sector, led to a relative decline in civil service income. This propelled millions of cadres and officials to leave the government and start their own businesses (Cooke 2004). Likewise, Xi's recent anticorruption campaign has considerably reduced the expected return from government employment. The prosecution of hundreds of high-ranking officials and many more lower-ranking bureaucrats with corruption charges significantly has increased the *likelihood* of punishment for rent-seeking behavior. The campaign has also imposed a number of draconian regulations that drastically reduced the *scale and scope* of the informal rents that government employees had previously enjoyed. For example, officials may lose their jobs for attending extravagant banquets, accepting expensive gifts from businesspersons, or enjoying pay and benefit levels above what their grades formally permit (Yuen 2014). In many localities, civil servants also lose their informal privileges in healthcare, housing and their children's education. Although these changes were generally welcomed by the public and the press as a way to curb official venality, the argument presented in the previous section suggests that the disappearance of informal rents might have had adverse impacts on civil service recruitment. Some anecdotal evidence suggests that this may indeed be the case,¹² but systematic evidence remains scant. We seek to address this gap by introducing a research design that exploits exogenous variations created by this campaign to estimate the effect of anticorruption enforcement on civil service selection.

Research Design

Overview

To test our hypotheses on how anticorruption enforcement affects political selection, an ideal design would be to study within a sample of potential civil service applicants how exposure to information about anticorruption enforcement differentially affects their decisions about whether to join the civil service. Implementing such a design, however, would be practically challenging because (1) there is usually no well-defined population of 'potential applicants' for government jobs and, even if there were, (2) tracking individuals' career decisions in such a population over time would incur formidable logistic and financial costs. In light of these challenges, this study uses an alternative design that focuses on those who join the civil service. We analyze and compare the characteristics of civil servants who enter the government during periods with varying degrees of anticorruption enforcement. Although we do not directly observe those who chose not to apply for government jobs, with some reasonable assumptions,¹³ we can use individuals who entered the

¹¹For an example of the nominal wage difference between private and public sector jobs, see <https://bit.ly/30cc6w5> (in Chinese).

¹²See, for example, 'Disillusioned Bureaucrats Are Fleeing China's Ministries', *Bloomberg Businessweek*, 19 March 2019, <https://goo.gl/vqisdo>.

¹³For this inferential strategy to be valid, three key assumptions must hold: (1) there are no significant sociodemographic changes in the underlying population during this period, (2) career choices are relatively 'sticky' (once a person has entered the government, he/she will not be able to change his/her career decisions as easily as someone who has not done so) and (3) the government does not significantly change its recruitment preferences (i.e., demand-side change) as anticorruption enforcement becomes more intense. To verify the first assumption, we examine cross-cohort trends in cognitive ability and family background among the general population using data from a major nationally representative survey and find no sharp, discontinuous changes within the cohorts covered in our MPA survey (see Figure A.8). Consistent with the second assumption, we find that those who have spent more years in government are significantly less willing to consider private

government during a period of relatively low enforcement as the reference point to infer how recruitment patterns changed after enforcement became more intense.¹⁴

Our empirical design combines a nationwide survey of government officials with province-level panel data on anticorruption enforcement. We measure each respondent's exposure to anticorruption enforcement by focusing on the intensity of enforcement in his/her college province during the year of graduation (which is often also his/her first year of work). The estimation leverages variations across both college cohorts and provinces of graduation. To address endogeneity concerns, we use two features of Xi's anticorruption campaign to create instruments that capture the plausibly exogenous temporal and regional variations in enforcement intensity. The remainder of this section walks through the design in greater detail.

Data

The first empirical challenge associated with studying the dynamics of political selection is obtaining a representative sample of government officials. Conventional social surveys do not cover government officials very well due to their small share of the Chinese population and the general difficulty of accessing government buildings. Establishing an appropriate sampling frame for government officials can also be difficult because there is little publicly available information about the regional breakdown of their number and demographic attributes. In this study, we circumvent these problems by instead surveying government officials who are pursuing part-time Masters of Public Administration (MPA) degrees. Having a graduate degree is a key formal prerequisite for promotion in the Chinese government; as a result, most government officials will enroll in a graduate program at some point in their careers. MPA degrees are one of the most popular choices for low- and mid-level civil servants because the tuition is relatively low and the content of the curriculum is tailored to public sector employees.¹⁵ When there are major changes in the type of civil servants recruited, we expect such changes to also be reflected in the characteristics of the civil servants enrolled in MPA programs.¹⁶

It is important to acknowledge, however, that although MPA programs provide a useful avenue for accessing government officials, conducting a fully randomized sampling of all MPA programs in China is not possible at this time due to various logistical and political constraints.¹⁷ Instead, our sampling procedure strives for a balance between geographic representativeness and practical feasibility. We first divided China (excluding the ethnic minority regions) into six key geographic regions (Northeast, North, Northwest, Southwest, South-Pearl Delta, South-Yangtze Delta) and then selected one or two programs in each region to field our survey. The choice of specific programs depended on both the availability of our personal contacts in that region and the

sector career options (see Table A.14). To evaluate the third assumption, we analyze the content of government job postings. We show that there is no major change in recruitment standards during our sample period (see Figure A.10). We also provide evidence that our main results continue to hold even when we narrow the observations down to a small 3-year window in which many of the underlying policies and demographic conditions can be plausibly assumed to hold constant (see Figure 3).

¹⁴More generally, finding an appropriate benchmark group is a common challenge in empirical research on political selection and anticorruption, because the counterfactual group can be difficult to observe. Our design is similar to those of several other studies that leverage cross-cohort/time variations to make inferences about how macro-level interventions affect selection and enforcement patterns (e.g., Baltrunaite et al. 2014; Galasso and Nannicini 2011; Gordon 2009).

¹⁵Other options include Masters of Business Administration (MBA) and graduate programs in the School of Marxism. CCP party schools also offer degree-granting programs (Lee 2013), but these programs are usually not available to junior civil servants. Admission to MPA programs requires applicants to have 2–3 years of work experience and pass both a paper-based exam and an interview. Most admitted candidates study part time without leaving their jobs. The tuition typically amounts to 20–30 per cent of an entry-level official's annual salary; some schools offer tuition assistance to government officials to encourage their application.

¹⁶Liu (2019) and Meng, Pan and Yang (2017) use a similar approach to sample government officials.

¹⁷Given the high concentration of government officials, MPA programs are typically unwilling to let outside researchers survey their students; access depends heavily on personal connections.

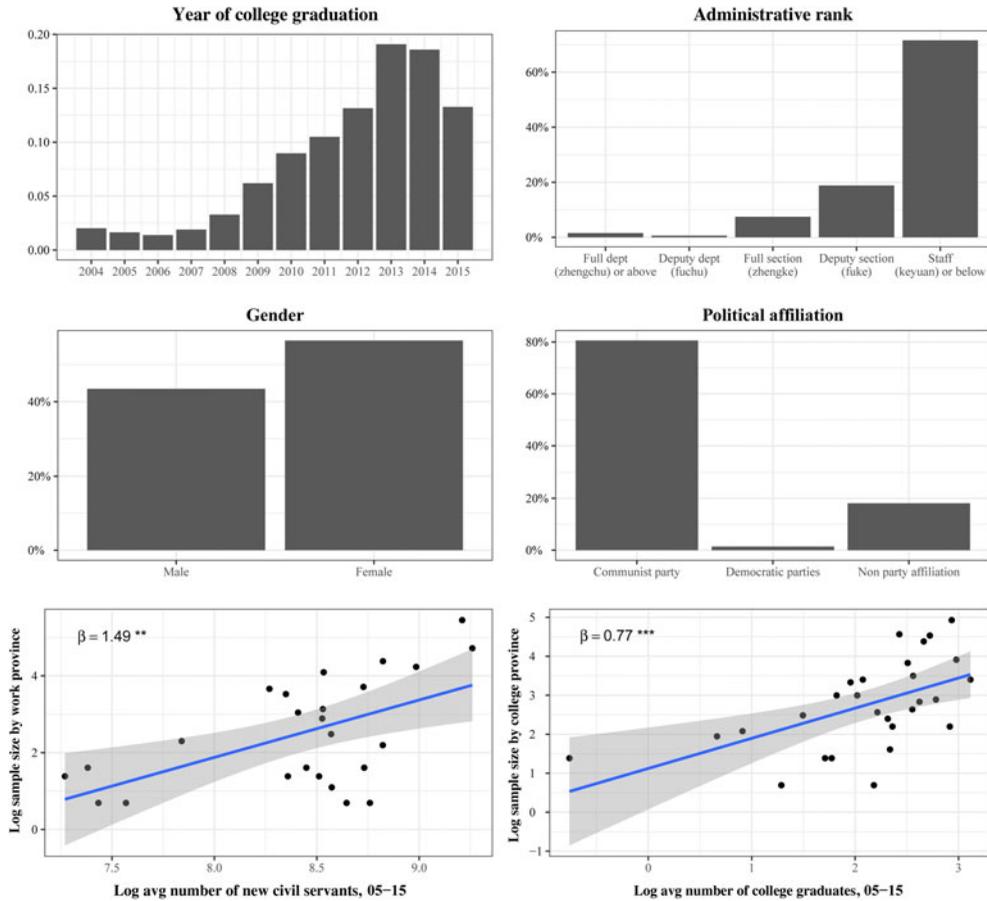


Figure 1. Demographic distribution of survey respondents

characteristics of the programs. In general, we preferred larger programs that take in students from multiple provinces; however, we also selected several smaller programs to ensure that there was some variation in program quality.

In September 2018, we first fielded a pilot survey in a southern school ($n = 302$) and then expanded it to eight other schools ($n = 910$) over the next six months. Details about the survey implementation can be found in Appendix B.¹⁸ Among all MPA students who responded to our survey, 791 (65 per cent) were incumbent civil servants.¹⁹ Figure 1 presents the distribution of key

¹⁸Of the nine MPA programs that we worked with, four belong to the national top 25 per cent in terms of academic reputation, three to the middle 25 to 70 per cent range, and the other two to the bottom 30 per cent (<https://bit.ly/2DZnRef>). The average class size in the nine schools is 170, whereas the national average is 130. Clearly, larger and more prestigious programs are over-represented in our sample. However, to the extent that civil servants coming out of top-ranking programs typically have a better chance of being promoted to positions of power, one may be particularly interested in the changes that have occurred within this higher-quality pool because such changes may have greater political and policy implications. In a later analysis, we try to account for this bias through post-stratification. The results are reported in Appendix F.

¹⁹Other respondents included employees in non-governmental public institutions (e.g. social organizations, academic institutions), state-owned enterprises, non-governmental organizations (NGOs) and private firms. Although public sector employees have also been influenced by some of the anticorruption measures, most of them do not wield as much administrative/political power as government officials and their formal salaries are less regulated. Therefore, for most of our analysis below, we focus exclusively on the civil servant sample.

demographic characteristics in this sample. Respondents in our sample were quite young: most of them (75 per cent) had graduated from college between 2011 and 2015 and still held an entry-level job (staff member, or *keyuan*, ~73 per cent). There were more women than men in our sample (57 per cent v. 43 per cent), which is consistent with the fact that the majority of newly recruited entry-level civil servants are now female.²⁰ Moreover, about 81 per cent of the respondents are CCP members, a figure that is in line with the general impression that government employees are overwhelmingly party members.

How representative is our sample of entry-level civil servants in China? The two bottom panels of Figure 1 compare our sample to two pieces of aggregate information – the number of newly recruited civil servants and the number of new college graduates, respectively, both of which are collected from provincial yearbooks. If our sample captures important demographic trends among entry-level civil servants, we expect that (1) there will be more respondents working in provinces that have recruited a larger number of civil servants in the recent past and (2) there will be more respondents who obtained college degrees in provinces that have produced more college graduates. Consistent with these expectations, we see that both sets of relationships hold and are statistically significant at the 95 per cent level or above. For a 1 per cent increase in the size of the new recruitment/graduate cohort in a province, the size of the corresponding cohort in our sample increases by about 1.4 and 0.7 per cent, respectively. This strong proportionality gives us confidence in the representativeness of our sample. Later, we evaluate the generalizability of our findings in greater detail using various subsample analyses and post-stratification adjustments (see Section 5.3 and Appendix F).

Measurement

Civil servants' ability and background

We embedded in our survey a range of questions that measure respondents' abilities and personal backgrounds. For ability, we focused on respondents' experience in college. We compiled a list of activities common in Chinese universities and asked our respondents whether they had taken part in any of them during college.²¹ This list included academic-related activities such as receiving prestigious scholarships, participating in overseas exchanges and conducting undergraduate research, as well as extra-curricular experiences such as running student-led organizations and participating in sports competitions or artistic performances. Since all MPA students admitted to the same program typically have similar course grades and standardized test scores, they cannot be differentiated solely based on academic performance. Instead, the breadth and depth of their overall activities during college would be a better indicator of personal capability. We thus create two variables. The first, *Activities in College*, simply sums the number of activities to which a respondent answered 'yes'. The second, *Achievements in College*, narrows it down to the more challenging activities, including significant leadership roles in student organizations and competitive awards based on *individual* merits.²² According to research on the labor market outcomes of Chinese college students, activities and accomplishments in college are strongly correlated with job market success in both the public and private sectors (for example, Li and Zhang

²⁰For related statistics, see http://www.sohu.com/a/21993035_131015 (in Chinese).

²¹In constructing the list, we consulted undergraduate directors in several Chinese colleges as well as their universities' own classifications of undergraduate achievements.

²²There are a total of five such activities: (1) receiving a university-level scholarship, (2) serving as a leader in the student union or the Communist Youth League, (3) assuming a leadership role in student-run organizations, (4) winning an award in a university-level (or higher) English speech contest and (5) receiving an individual-based award, such as 'Merit Student' or 'Outstanding Student Cadre' at the university level or higher. The detailed activity list is provided in Appendix B.1. Since the number of activities available to Chinese college students has increased over time, we normalize both variables by subtracting from them the average number of activities/achievements by non-civil servant respondents in the same graduating cohort. These normalized measures tell us how competent the civil servant respondents are *relative* to their non-civil servant peers in the same cohort.

2008; Liu 2019).²³ Based on the first hypothesis on the deterrence effect of anticorruption enforcement, we expect civil servants recruited during the anticorruption campaign to have fewer activities and achievements in college than those recruited before the campaign started.

Respondents' socioeconomic background is measured in two ways. First, we asked respondents about the occupations of their parents. Since most of our respondents are junior civil servants with limited personal savings, their social status is determined largely by that of their parents, and studies have shown that occupation is a powerful predictor of social status in China (Walder 2003). Government officials are widely regarded as one of the most privileged occupations, followed by other urban occupations, such as state sector employees, white-collar professionals and business owners; farmers typically lie at the bottom of the social hierarchy (Goodman 2014). We create two variables, *Farmer Parents* and *Official Parents*, to capture the occupations at the two extremes. Both variables take a value of 1 if either of a respondent's parents is a farmer/official, and 0 otherwise.²⁴ We expect that, compared to those with parents who hold other occupations, individuals with farmer parents are more likely to be discouraged from entering government due to heightened anticorruption enforcement because they face tighter short-term financial constraints. By contrast, those whose parents are government officials should be less discouraged, both because their families are relatively affluent and because they usually have better access to networks/tacit knowledge that can help mitigate the risk of investigation.²⁵ This implies that there will be an increase in the share of individuals with parents who are government officials (and a decrease in the share of those with parents who are farmers) among civil servants who were recruited during the anticorruption campaign.

We also designed two questions to directly measure respondents' economic conditions based on their life experiences. One question asked how often respondents had experienced economic hardships when growing up (1 = never; 4 = very frequent). The other question asked whether respondents had participated in work-study schemes, which is a common income-assistance program provided by colleges to students from poor families. In Appendix A.2, we show that the occupation and experience-based measures are closely correlated: respondents with parents who are officials are less likely to have experienced economic difficulties or to have participated in work-study schemes than average respondents, whereas farmers' children report both types of experiences at much higher rates than the sample average.

Anticorruption enforcement

We obtain data on the intensity of anticorruption enforcement from two sources. The main source is the China Political Elite Database (CPED), a comprehensive biographical database covering over 4,000 Chinese officials in leading city, provincial and central positions since 2000 (Jiang 2018). We use the CPED to calculate the total number of politicians investigated in each province-year spell. Since the database only covers the leading officials at each level (for example, party chiefs, government heads and standing committee members), this measure essentially captures major corruption cases involving senior political figures. As a robustness check, we

²³In the Appendix, we validate these measures by examining their relationship with other indicators of group or individual quality. We show that respondents with more activities/achievements in college are more likely to attend better MPA programs, to become CCP members and to reach higher ranks within the government (see Table A.2).

²⁴Cross tabulation of the two variables suggests that very few respondents had both farmer and official parents (only four). Private business owners are another upper-class occupation, but only about 6 per cent of respondents reported having parents who are private entrepreneurs, which is too small for us to measure any meaningful variation in outcome.

²⁵Here, we assume that those whose parents are government officials (or from better-off families more generally) join the government mainly for the long-term benefits, which are less affected than short-term rents by anticorruption enforcement. This assumption is likely to hold for two reasons. First, a substantial part of the long-term reward associated with government jobs comes from promotions and access to political power, which do not change with anticorruption enforcement. A second reason is that, at least at the beginning of the anticorruption campaign, many expected it to be only a transitory phenomenon that would eventually subside.

also construct a second measure for the *total* number of disciplinary investigations using data from the provincial disciplinary agencies' annual reports (available in the provincial yearbooks). The two measures are highly correlated ($\rho = 0.43$, $p < 0.001$).

Identification Strategy: Exploiting Variations in Anticorruption Exposure Across Regions and College Cohorts

We match our survey with province-level enforcement data based on each respondent's year and province of college graduation. The key explanatory variable is the intensity of anticorruption enforcement to which a respondent was exposed in the province where he/she studied in the year of their college graduation. For college students in China, the year of graduation (which is also the year most of them begin their first job) is a critical juncture in their career development. It is usually a period of intense job hunting and weighing up various options. Employment contracts are typically signed right before the graduation ceremony in July or sometime during the summer vacation. During this period, students are likely to be highly attentive to any information that may provide clues about the viability of their chosen careers. Since the majority of our respondents work in the provinces in which they went to college (~70 per cent), we expect that they will be attentive to the scope and intensity of anticorruption enforcement in their college provinces when deciding whether to become a government bureaucrat.²⁶ In one of the robustness checks (Table 4), we also try matching enforcement data to each respondent's year and province of his/her first government job, and we obtain substantively similar findings.

Given the structure of our data, a naïve way to estimate the effect of anticorruption would be to simply regress respondents' characteristics on anticorruption intensity. However, this approach can raise important endogeneity concerns. Since anticorruption enforcement is obviously not randomly assigned, it may be correlated with unobservable regional factors that can influence college graduates' career choices. The biases caused by these unobservables can be either positive or negative. For instance, if anticorruption specifically targets more corrupt provinces, where government jobs are very appealing to capable individuals, the deterrence effect caused by enforcement may be difficult to detect because it is offset by a higher level of pre-existing human capital stock within the government. Alternatively, if anticorruption is more frequent in more developed provinces, where many capable graduates are hired by the private sector and the rural population is relatively small, we may observe a spurious negative relationship between enforcement intensity and the measures of civil servants' ability and social status, even in the absence of actual causality.

To circumvent this problem, we use an instrumental variables (IV) approach that leverages variation in enforcement arising from the recent anticorruption campaign. This campaign, which led to the downfall of tens of thousands of officials at various levels, produced two types of plausibly exogenous variations that are important to our causal identification. The first type of variation is intertemporal: while prior to 2013 the overall level of enforcement was quite low and stable, the campaign subsequently introduced a sudden and dramatic increase in enforcement intensity. According to the CPED data, a total of 127 senior city and provincial officials were investigated within the first two years of the campaign (2014 and 2015), more than the total from the previous decade (124 for the period between 2004 and 2013).²⁷

Secondly, the intensity of enforcement during the campaign was unevenly distributed across provinces. Enforcement levels tend to be lower in the four provinces in which Xi has either served as a senior provincial leader or has strong family connections (that is, Zhejiang, Fujian, Shanghai and Shaanxi).²⁸ For the purpose of identification, the most important assumption here is that

²⁶In the Appendix, we analyze Internet search indices to confirm that provincial enforcement levels are indeed strongly correlated with local public attention to anticorruption (Table A.4).

²⁷This is also corroborated by reports based on official statistics. See <https://goo.gl/zX3AcR>.

²⁸For a discussion of Xi's personal networks, see Li (2016).

both types of variations are caused by factors that are unrelated to regional-level confounders that may affect college students' career choices. Our substantive understanding of the campaign suggests that there are good reasons to believe that this is indeed the case: Xi's ability to launch the anticorruption campaign was aided by a number of contingent events that occurred within the top leadership, and the timing and intensity of the campaign could not have been foreseen by anyone at that time.²⁹ Moreover, the fact that some provinces developed strong ties with Xi was mainly due to birthplace connections or rotation decisions made by previous leaders many years before his ascent to power.³⁰ Both sets of variations are therefore likely to be orthogonal to contemporary provincial conditions. We provide some evidence to support this claim in the following subsection. Later in the article, we also conduct IV analysis using only the variations caused by the post-2013 increase in enforcement, which we believe is the more exogenous type of the two, and all our results still hold (see Table 4).

Specification

The main estimation framework is a two-stage least-squares model with fixed effects. The first-stage model estimates each respondent's (predicted) exposure to anticorruption enforcement given his/her college province and year of graduation.

$$\text{Anticorruption enforcement}_{ipt} = \gamma \text{After } 2013_t \times \text{Xi province}_p + \theta \text{After } 2013_t + \phi_p + \tau_t + \epsilon_{ipt} \quad (1)$$

where i , p and t index the respondent, college province and graduation year, respectively. In light of the previous discussion, we create two instruments. The first, *After 2013*, is a binary indicator that captures the campaign's intertemporal variation in enforcement. It takes a value of 1 if the respondent graduated from college after 2013, and 0 otherwise. The second instrument is an interaction between *After 2013* and another binary indicator, *Xi Province*, which takes a value of 1 if a respondent graduated in one of the four provinces where Xi had worked or had native ties. This interaction essentially captures the differential change in the enforcement level between Xi and non-Xi provinces after the campaign was launched. In more extensive models, we also include a linear measure of the year of college graduation τ_t and college province fixed effects ϕ_p , which absorb all time-invariant heterogeneity across provinces, including the main effect of Xi province.

We use the first-stage model to generate a predicted value of *Anticorruption Enforcement*, which we employ as our main explanatory in the second-stage regression, which takes the following form:

$$y_{ipt} = \delta \overline{\text{Anticorruption enforcement}_{ipt}} + \phi_p + \tau_t + \zeta_{ipt}. \quad (2)$$

Here, y_{ipt} is a measure of respondent i 's ability or social status. δ is the main coefficient of interest, which tells us how much the characteristics of an average civil servant will change given a one-unit increase in anticorruption enforcement. Since our treatment varies at the province level, we cluster our standard errors by the respondents' college province to account for the possibility that individuals graduating in the same province may have correlated error terms.³¹ Later,

²⁹See 'The Resistible Rise of Xi Jinping', *Foreign Policy*, October 2017, <https://bit.ly/2UUB11K>. Search indices from both Google and Baidu (the most popular search engine in China) reveal that public attention to anticorruption enforcement witnessed a sharp, discontinuous increase in 2014 (see Appendix Figures A.3 and A.4).

³⁰In the Appendix, we use data collected by Cai, Fang and Xu (2011) and Zhu (2016) to show that there were no meaningful differences in corruption levels between these two types of provinces prior to the campaign (Figure A.5).

³¹We also conducted significance tests based on unclustered robust standard errors and the Wild Bootstrap methods (Davidson and MacKinnon 2010) and obtained similar results (Table A.8).

we also add to the model fixed effects for MPA programs and several individual- and province-level covariates as controls.

For the IV estimation to be valid, two key assumptions must hold. The first assumption, often known as the relevance condition, requires the relationship between the instrument and the endogenous variable to be sufficiently strong. To verify this, we plot the yearly variation in anticorruption intensity (separately for Xi and non-Xi provinces) in the two top panels of [Figure 2](#). The top left panel uses the number of investigations for prefectural and provincial leaders from the CPED and the top right panel uses the total number of investigations collected from the provincial yearbooks. In both panels, we see that (1) there was a sharp increase in enforcement intensity after 2013 and (2) the enforcement gap between Xi and non-Xi provinces became notably larger when the campaign was underway. These patterns strongly support the relevance of our instruments. As a more systematic test, we present in Appendix Table A.5 the numerical results from our first-stage regressions. The F statistics from the joint significance test of the two instruments are consistently over 30, which is substantially higher than the conventional threshold of 10.

In addition to the relevance condition, a valid IV must also satisfy the exclusion restriction, which means that the instruments should not be correlated with the outcome other than through the endogenous variable. While this assumption cannot be directly tested, our prior discussion about the nature of the anticorruption campaign suggests that the exclusion restriction is likely to hold. In the middle and bottom panels of [Figure 2](#), we provide additional visual tests of this assumption by plotting the temporal trends of several key province-level variables (for example, GDP, population, number of new college graduates, number of new civil service recruits, wage levels, etc.). We can see that unlike anticorruption enforcement, there is no obvious discontinuity in national trends for these variables after 2013. Although there are pre-existing differences between Xi and non-Xi provinces in some of the variables, these differences remain largely the same after 2013. These patterns provide reassuring evidence of the validity of our instruments. Appendix D.3 provides several additional tests on the exclusion restriction (Davidson and MacKinnon 2010), which showed similar results (Table A.8).

Baseline Results

Deterrence Effect

[Table 1](#) presents evidence of the deterrence effect. Columns 1–4 use *Activities in College* as the dependent variable. We begin with a parsimonious ordinary least squares (OLS) model that only controls for college province fixed effects, and report in Column 2 the second stage of an IV model using the same specification. Column 3 adds to the IV model fixed effects for respondents' MPA schools and individual-level controls for age, gender, ethnicity and a linear measure of year of college graduation. Column 4 further controls for province-level socioeconomic characteristics such as GDP per capita, population, the respective size of government expenditures and the share of private sector output in the provincial economy. Both the OLS and IV results consistently suggest that anticorruption enforcement has a negative and statistically significant effect on the overall ability of entry-level civil servants. Focusing on Column 4, the coefficient estimate suggests that for one additional senior official investigated in a given province-year spell (~72 per cent of a standard deviation), individuals recruited into the civil service from that spell report 0.47 fewer (~28 per cent of a standard deviation) activities in college on average. Since the average number of college activities reported in our civil servant sample is about 2.1 (out of 10), this decline amounts to a 22 per cent drop from the baseline, which is quite substantial.

In Columns 5–8, we change our dependent variable to the more restrictive *Achievements in College* and repeat the analysis. The results are quite similar: one additional major-case investigation in a province-year spell causes a 0.34 to 0.46-unit decline in the number of achievements reported by civil servant respondents recruited during that spell, which amounts to a 19–25 per cent drop from the sample average of 1.8 achievements.

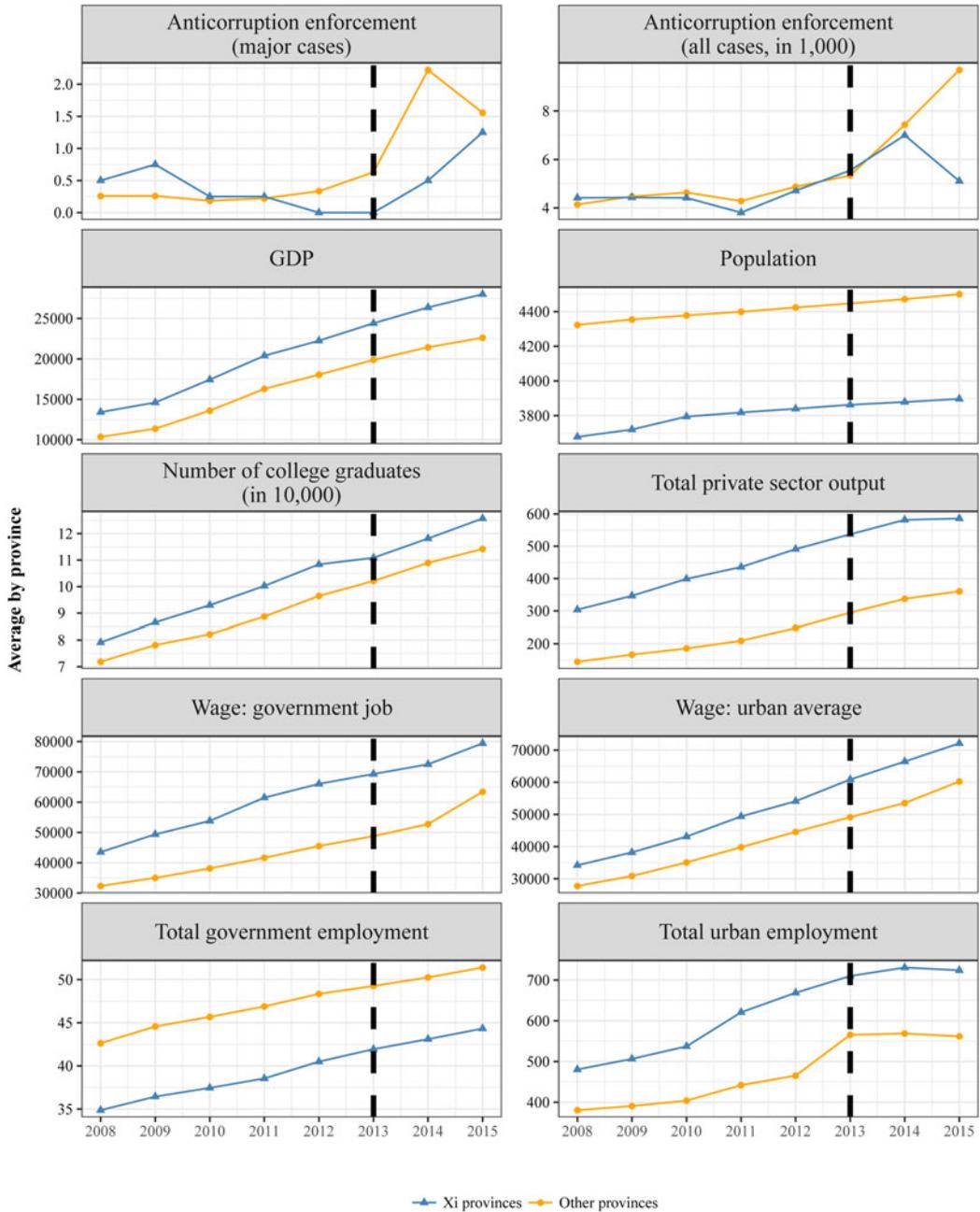


Figure 2. IV validity

Note: this figure visualizes the respective trends in key province-level characteristics for Xi and non-Xi provinces before and after the anticorruption campaign. Numerical results from the regression-based tests can be found in Table A.6.

Since our estimation relies on more than one instrument, it is possible to conduct an overidentification test to assess the validity of our instruments. At the bottom of each model, we report the p-value from Hansen’s J test of over-identification (Hansen 1982), which assesses how much influence our instruments have on the outcomes in addition to affecting the value of anticorruption enforcement. All the p-values are generally quite large, which suggests that we cannot reject

Table 1. Deterrence effects

	Activities in college				Achievements in college			
	1 OLS	2 IV	3 IV	4 IV	5 OLS	6 IV	7 IV	8 IV
Anticorruption cases (major)	-0.114+ (0.057)	-0.312** (0.086)	-0.421** (0.119)	-0.472** (0.115)	-0.112+ (0.055)	-0.343** (0.071)	-0.412** (0.093)	-0.463** (0.096)
College province FE	✓	✓	✓	✓	✓	✓	✓	✓
MPA program FE			✓	✓			✓	✓
Individual-level controls			✓	✓			✓	✓
Province-level controls				✓				✓
Hansen's J (p value)		0.97	0.67	0.49		0.98	0.98	0.94
Observations	555	555	555	555	555	555	555	555

Note: this table presents the effect of anticorruption enforcement on officials' ability. The dependent variables are the number of activities or achievements in college. Individual-level controls include gender, ethnic minority, age, and college graduation year. Province-level controls include GDP per capita, total population, fiscal expenditure and share of the private sector. Standard errors are clustered at the province of college graduation. +p < 0.1, *p < 0.05, **p < 0.01 (two-tailed test)

the null hypothesis that the instruments have no additional impact. This gives us greater confidence in the validity of our instruments.

Compositional Effect

Next, we turn to our second hypothesis about the compositional effects. Table 2 presents the OLS and IV regressions on the effect of anticorruption enforcement on the occupations of the respondents' parents. Columns 1–4 focus on parents who are farmers and Columns 5–8 focus on parents who are government officials. The specifications are identical to those used in Table 1. The results suggest that the intensification of anticorruption enforcement leads to a clear and strong compositional change among entry-level civil servants. According to the first four columns, one additional high-level investigation in a province-year spell reduces the likelihood of having at least one parent who is a farmer by about 5 to 9 percentage points among the civil servants recruited in that spell; the magnitudes of these estimates are equivalent to about 26–51 per cent of the sample average (18 per cent). By contrast, Columns 5 to 8 suggest that more individuals whose parents are government officials are recruited into the civil service in times of heightened anticorruption enforcement. For one extra major case investigation, the share of children of government officials among newly recruited civil servants increases by about 3.2 to 9.6 percentage points, or 8 to 25 per cent of the sample average.

One potential concern about our findings is that the distinction between farmer and official parents may not fully reflect the differences in socioeconomic status among the respondents. To address this issue, we also estimate regressions using the two experience-based measures of economic conditions and present the results in Table 3. The first four columns suggest that civil servants recruited from province-year spells in which the enforcement level was high are less likely to have encountered economic hardships in the past. The last four columns show that there is a similar negative effect for participation in work-study programs. Consistent with the findings on the change in the parents' occupations, these patterns suggest a clear elitist shift in the composition of the civil service following heightened enforcement.

Robustness and External Validity

We conduct several additional tests to evaluate the robustness of our results. First, since our sample encompasses more than a decade of graduating cohorts (2004–2015), one concern is that our findings may be driven by different patterns of MPA enrollment across these cohorts. Civil servants who waited many years after college graduation to enroll in an MPA program may differ

Table 2. Compositional effects

	Farmer parents				Official parents			
	1 OLS	2 IV	3 IV	4 IV	5 OLS	6 IV	7 IV	8 IV
Anticorruption cases (major)	-0.047** (0.011)	-0.091** (0.021)	-0.061** (0.016)	-0.063** (0.018)	0.032+ (0.017)	0.085** (0.026)	0.086** (0.032)	0.096** (0.037)
College province FE	✓	✓	✓	✓	✓	✓	✓	✓
MPA program FE			✓	✓			✓	✓
Individual-level controls			✓	✓			✓	✓
Province-level controls				✓				✓
Hansen's J (p value)		0.62	0.83	0.81		0.84	0.89	0.83
Observations	791	791	791	791	791	791	791	791

Note: this table presents the effect of anticorruption enforcement on the socioeconomic status of incoming officials. The dependent variables are the occupations of the respondents' parents. Individual-level controls include gender, ethnic minority, age and college graduation year. Province-level controls include GDP per capita, total population, fiscal expenditure and share of the private sector. Standard errors are clustered at the provinces of college graduation. +p < 0.1, *p < 0.05, **p < 0.01 (two-tailed test)

Table 3. Using alternative measures of economic conditions

	Past economic hardship				Participation in work-study			
	1 OLS	2 IV	3 IV	4 IV	5 OLS	6 IV	7 IV	8 IV
Anticorruption cases (major)	-0.061** (0.022)	-0.095** (0.036)	-0.137* (0.067)	-0.143* (0.072)	-0.040+ (0.023)	-0.125** (0.029)	-0.129** (0.044)	-0.140** (0.049)
College province FE	✓	✓	✓	✓	✓	✓	✓	✓
MPA program FE			✓	✓			✓	✓
Individual-level controls			✓	✓			✓	✓
Province-level controls				✓				✓
Hansen's J (p value)		0.97	0.74	0.76		0.67	0.53	0.54
Observations	555	555	555	555	555	555	555	555

Note: this table presents the effect of anticorruption enforcement on incoming officials' socioeconomic status using experience-based measures of past economic conditions. Individual-level controls include gender, ethnic minority, age, and college graduation year. Province-level controls include GDP per capita, total population, fiscal expenditure and share of the private sector. Standard errors are clustered at the provinces of college graduation. +p < 0.1, *p < 0.05, **p < 0.01 (two-tailed test).

systematically from those who chose to attend graduate school soon after college.³² To address this concern, we re-estimate the IV regressions on samples with shorter time spans. The results are visualized in Figure 3. Each circle on the figure represents an estimate from a separate IV regression, and the vertical bars indicate the confidence intervals. From left to right, the time span of the sample changes from eleven years (2005–2015) to three years (2013–2015). Reassuringly, we see that even when focusing on the most restrictive three-year sample, all the coefficient estimates are still statistically significant at the 10 per cent level or above. This helps mitigate the concern that systematic, cohort-based differences are driving our results.

We also evaluate whether our results are sensitive to different sample construction methods or variable and specification choices. To begin with, we replicate our baseline regressions using an alternative way of matching the survey with the enforcement data. Instead of matching based on college graduation, we use the year and province of the first government job. As shown in the top panel of Table 4, all our results remain substantively the same. To ensure that the results are not driven by our measurement of anticorruption enforcement, we also use data on the *total number* of disciplinary investigations from the provincial yearbooks to construct an alternative independent variable and re-estimate all our models. This again does not change our findings (see the middle panel of Table 4). Moreover, one may be concerned that the different enforcement levels that Xi and non-Xi provinces experienced during the campaign were not entirely exogenous. In the bottom

³²We thank an anonymous reviewer for suggesting this important issue.

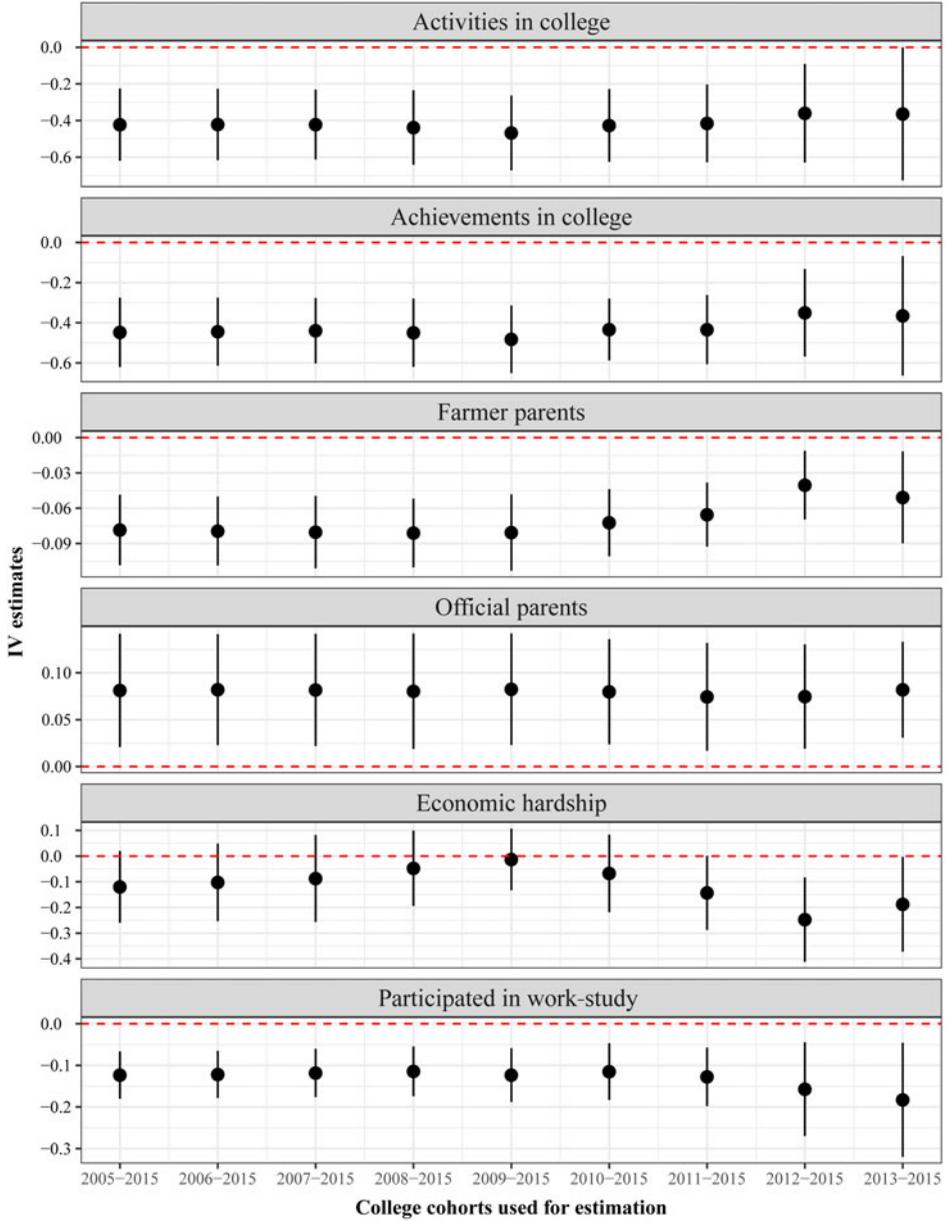


Figure 3. IV results from samples with different time spans
 Note: this figure shows the estimation results using different sample time spans. Each circle represents a separate regression and the vertical bars indicate 90 per cent confidence intervals. The x-axis indicates the cohort years used for estimation.

panel of the same table, we re-estimate our IV models using *After 2013* as the *sole* instrument. All the results continue to hold, and the magnitudes of the estimates are quite similar to those in the two-instrument specification. Additional robustness results can be found in Appendix E.

Since our survey is not based on a probability sample, another important concern is the generalizability of our findings. We address this in two ways. First, we conduct a number of sub-sample analyses, splitting the main sample by school characteristics, such as academic ranking and location, as well as respondent characteristics, such as gender and level/place of work (see

Table 4. Robustness checks

	Activities in college 1	Achievements in college 2	Farmer parents 3	Official parents 4	Past economic hardship 5	Participation in work study 6
1. Matched on year and place of work						
Anticorruption cases (major)	-0.284*	-0.482**	-0.065**	0.090**	-0.199*	-0.164**
	(0.114)	(0.135)	(0.021)	(0.030)	(0.099)	(0.057)
Hansen's J (p value)	0.13	0.74	0.64	0.55	0.92	0.18
Observations	555	555	790	790	555	555
2. All enforcement (yearbook data)						
Anticorruption cases (all)	-0.169+	-0.163*	-0.035**	0.048+	-0.057*	-0.050*
	(0.086)	(0.072)	(0.011)	(0.027)	(0.023)	(0.020)
Hansen's J (p value)	0.75	0.52	0.92	0.89	0.86	0.29
Observations	555	555	791	791	555	555
3. After 2013 as the only IV						
Anticorruption cases (major)	-0.443**	-0.411**	-0.066*	0.087*	-0.161*	-0.121*
	(0.145)	(0.123)	(0.027)	(0.035)	(0.079)	(0.052)
Observations	555	555	791	791	555	555

Note: this table represents several robustness checks of the baseline findings. All models include the following variables: year of graduation, college province fixed effects, MPA fixed effects, age, gender and ethnicity. Standard errors clustered at college province are reported in parentheses. +p < 0.1, *p < 0.05, **p < 0.01 (two-tailed test)

Figure A.6 for details). We find that the basic patterns of the coefficients are remarkably consistent across the different subsamples, although the levels of statistical significance sometimes vary due to changes in the sample size. Secondly, we apply several post-stratification adjustments to improve the representativeness of our sample. In Appendix F.2, we report the results of using four different sets of post-stratification weights. Reassuringly, the weighted estimates are largely consistent with the original (unweighted) ones. The results from these tests give us greater confidence in the external validity of our findings.

Mechanisms and Alternative Explanations

We also carry out a number of further analyses to verify the posited mechanisms and to address several alternative explanations. The key findings of these additional analyses are summarized here and reported in detail in Appendix Section G.

- (1) Consistent with the assumption that anticorruption enforcement lowers the perceived return from government jobs, we analyze multiple years of national survey data (the Chinese General Social Survey 2005, 2006, 2013 and 2015) and find that the public became less likely to identify government cadres as the greatest beneficiaries of the economic reforms when anticorruption enforcement was high (Columns 1 and 2 of Table A.13).
- (2) Consistent with the argument about the deterrence effect, we find that (a) anticorruption enforcement decreases the number of applicants for civil service jobs (Columns 3 and 4 of Table A.13) and (b) high-ability individuals are less committed to a government career than less capable individuals (Table A.14).
- (3) Consistent with the argument about the compositional effect, we find that when making career decisions, individuals from lower class backgrounds tend to face greater parental pressures to choose jobs that promise high monetary rewards (Table A.15).
- (4) To further address the possibility that the results may be driven by unobserved shocks to enrollment in college or MPA programs (as opposed to entry to the government), we estimate placebo regressions on the subsample of MPA students who are not in the civil service.³³ We find that anticorruption enforcement did little to change the characteristics

³³The non-civil servant sample includes those who work in state-owned enterprises (~12 per cent), public institutions (*shiye danwei*, ~20 per cent), private firms (~3 per cent) and NGOs (~1 per cent).

of non-civil servant MPAs, suggesting that the selection effects that we observe are highly specific to those *working in the government* (Table A.16). We also find that enforcement has little effect on a number of other career and demographic factors that are common parameters in MPA admission decisions, such as age, gender, political affiliation, and levels and sectors of work (Figure A.9).

- (5) We also conduct several additional tests to address the possibility that the results are driven by other (non-anticorruption-related) political or policy changes that occurred under the Xi administration. For example, it could be that Xi's assumption of power resulted in direct, qualitative changes in the government's *recruitment preferences*. To address this possibility, we collect and analyze province-level data on both the number and required qualifications for civil service jobs posted between 2011 and 2016. We find no significant change in recruitment criteria after Xi took power (Figure A.10). Secondly, because Xi's administration has also promulgated a number of new policies that have placed heavy implementation burdens on civil servants at the grassroots level, the deterrence effect may be the result of an increased workload rather than diminished monetary returns. To evaluate this possibility, we reran all the models on a sample that excludes respondents working in grassroots-level agencies. All of our results remain substantively unchanged (Table A.17). We also collected and carefully reviewed the timing of a number of other signature policies of the Xi administration. We were unable to find any other concurrent policy initiative of a scale comparable to the anticorruption campaign during the treatment period (that is, 2014 and 2015). Most of Xi's other major policies were implemented much later, after he had consolidated his power through anticorruption (see Figure A.11).

Implications For Future Policy

Finally, we investigate what the changing selection patterns may mean for future policy making. Although it is still too early to gauge the full policy impact, we provide some suggestive evidence based on the revealed policy preferences of the new recruits. Our survey asked about respondents' policy preferences on two issues: property taxes for multiple-home owners and special medical services for the rich in public hospitals, both of which are salient and controversial issues in China today. Typically, more affluent individuals tend to oppose property taxes and support special medical services.³⁴ We use the responses to these questions as the dependent variables in IV regressions. Table 5 shows that, consistent with the previous finding on parental occupation and socioeconomic status, civil servants recruited during high-enforcement spells show policy preferences that are more aligned with the preferences of the privileged: they are less supportive of property taxes and more supportive of commercialized medical services. Assuming that these preferences persist over time, we would expect to see more elitist, and less egalitarian, policies in the future when these new recruits rise to positions of power.

Concluding Remarks

The study's central finding is that when rent-seeking constitutes an informal, yet crucial, part of officials' *de facto* income, efforts to build a cleaner government may have unintended negative effects on both the quality and representativeness of the government bureaucracy.³⁵ Exploiting

³⁴For evidence, see Appendix Table A.18.

³⁵One may, of course, question whether the effects that we observe are truly 'unintended'. While guessing policy intention is typically difficult, one piece of evidence suggesting that this may be unintended is that later on, the government walked back on some of its earlier draconian policies by quietly restoring many former fringe benefits and substantially raising civil servants' pay (Personal interview, GD201906. Also see 'Chinese Civil Servants to Get Pay Rise, With Some Seeing Their Salaries Double or Even Triple', *South China Morning Post*, 21 January 2015, <https://bit.ly/2VLYgTR>).

Table 5. Effect of anticorruption on policy preferences of newly recruited civil servants

	Property taxes on second home 1	Special medical services for the rich in public hospitals 2
Anticorruption cases (major)	-0.156** (0.046)	0.208** (0.074)
College province FE	✓	✓
MPA program FE	✓	✓
Individual-level controls	✓	✓
Hansen's J (p value)	0.12	0.69
Observations	555	555

Note: this table presents the results of the effect of anticorruption enforcement on the policy preferences of newly recruited civil servants in two areas: property taxes and commercialized medical services. Responses are normalized by cohort averages. Individual-level controls include gender, ethnic minority, age and year of graduation. Standard errors are clustered at the provinces of college graduation. +p < 0.1, *p < 0.05, **p < 0.01 (two-tailed test)

cohort-based variations in exposure to anticorruption enforcement, we estimate how anticorruption alters the characteristics of entry-level civil servants. We show that in provinces and years in which enforcement intensity is high, individuals entering the civil service tend to have fewer achievements in college and are less likely to come from rural or low-class families. These findings are robust to a range of additional tests, including using highly restrictive bandwidths and alternative measures for both the dependent and independent variables. We provide aggregate- and individual-level evidence on the mechanism that gives rise to these selection effects and offer suggestive evidence that the change in the class composition of the civil service may have long-term policy ramifications.

Our study has important implications for understanding the challenges faced by developing countries in eliminating persistent corruption. During the past several decades, many countries have adopted forceful measures to fight corruption, but most of these measures have failed to bring about a permanent improvement in the quality of government (Brown and Cloke 2004). While existing explanations of this failure tend to focus on those countries' weak enforcement capacity and/or the political leaders' ulterior motives, our study suggests a different possibility: fully eliminating rent seeking while retaining the current quality of talent may require a level of civil service compensation that few governments in the developing world can afford. To the extent that China is already ahead of many other developing countries in terms of formal civil service pay, the fact that we still observe these sharp changes in recruitment patterns suggests that the selection impacts of anticorruption enforcement are likely to be even stronger elsewhere. This explanation is also consistent with the empirical observation that where anticorruption enforcement did improve government quality (for example, Singapore, Hong Kong and nineteenth-century Sweden), strong enforcement measures were often implemented in tandem with significant civil service pay increases (Persson, Rothstein and Teorell 2012; Quah 2011; Scott 1989).

That being said, the negative selection effects of anticorruption enforcement that we observe must not be interpreted to suggest that governments should not implement anticorruption measures, or that such measures cannot improve the welfare of society. For one thing, tolerating corruption can sometimes lead to greater societal welfare losses than the cost of selection. Moreover, from a general equilibrium perspective, having fewer talented individuals wanting to join the government is not necessarily undesirable if it means that more talent will be entering the private sector, which is typically more efficient and productive. Instead, our point is that when rent seeking is not an isolated act by immoral individuals but the centerpiece of an interconnected political-economic ecosystem, successfully battling it requires doing much more than merely rounding up a few corrupt officials. Building cleaner and better institutions is a systematic project that involves coordinated policy interventions on multiple fronts.

Supplementary material. Data replication sets available in Harvard Dataverse at: <https://doi.org/10.7910/DVN/SFYMSY> and online appendices are available at <https://doi.org/10.1017/S0007123420000393>.

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