

# Protecting property rights under state ownership: Evidence from China

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## Abstract

My job market paper shows that monopoly matters for investment in institutions. The subsequent question is why this is the case. This paper provides evidence suggesting that monopoly serves as the *de facto* institution for protecting private property rights in the absence of formal ones. Unlike in capitalist economies, high-skilled workers in communist economies exhibit a preference for the state sector even in the absence of wage premiums. Analysis of Chinese data from 1992 to 2006 reveals that high-skilled workers are motivated to work in the state sector not primarily for wage differentials (and sometimes not at all for high-skilled managers), but rather for rent differentials. These differentials are measured by the asset per employee ratio, which can reach as high as 26.6 percent for high-skilled managers in the state sector compared to the non-state sector. Higher-skilled workers join the state sector for better positions with richer monopoly rents and higher capacity for protecting them from being taken away.

## 1 Introduction

Well-functioning institutions providing secure property rights protection are crucial for sustainable socioeconomic development. Contemporary developed capitalist economies rely on private property

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rights to resolve conflicts over scarce resources (Alchian and Demsetz, 1973). Competition within an environment of well-protected property rights generates higher economic efficiency by allocating scarce resources to those who can create the greatest value from them (Hayek, 1945). In contrast, economic and political concentrations in less developed economies disincentivize elites to invest in institutions protecting property rights for the general public indiscriminately (Sonin, 2003; Han, 2023).

As argued by North et al. (2009), entry barriers set by political and economic elites impede social transition from natural states to those with open access orders. The question arises: why are economic and political concentrations so critical in institutional changes? Will increased competition dismantle the monopoly status of the elites and subsequently lead to the establishment of formal institutions that protect property rights? Unfortunately, the economic disasters and social disorders in communist economies demonstrate that competition without clear rules for property rights is not a viable solution (Hayek, 1949, 1988). The fact that communism gained a foothold in less developed economies highlights that outright ownership contests without minimum property rights cannot lead to sustainable efficiency and welfare improvement in an economy.

Therefore, it is essential to have a more nuanced understanding of the role of monopoly in institutional changes. Using contemporary data from China, this paper demonstrates that monopoly serves as the *de facto* institution that protects property rights in the absence of formal ones, thereby incentivizing investment. Figures 1 to 3 reveal that, between 1992 and 2006, high-skilled Chinese workers, unlike their low-skilled counterparts, exhibit a preference for the state sector over the non-state sector even in the absence of wage premiums. The primary econometric findings indicate that the higher the assets per employee in the state than the non-state sector, the more likely high-skilled managers are to choose employment in the former rather than the latter. In contrast, the difference in the asset-employee ratio between the state and non-state sectors has no impact on the occupational choices of high-skilled professionals. This implies that the allure of higher asset levels entices higher-skilled managers to prefer the state sector. Consequently, rent differentials, as measured by the assets per employee ratio in the state sector relative to the non-state sector, can explain the preference of high-skilled workers for the state sector in China.

A minimum level of protection for private property rights is necessary to prevent excessive ownership contests and deter rent-seeking activities. Historically, survival of every individual and family requires a minimum level of physical goods, which in turn necessitates a minimum level of property rights protection beyond primitive communism. Similarly, only with a minimum level of property rights protection can rent-seeking activities that undermine productive endeavors be contained to the greatest extent, as exceeding this threshold could suffocate the economy by stifling productive investments. Boundless rent-seeking activities are most likely to occur in a perfectly competitive economy where power and resources are contested, as seen in communist economies.

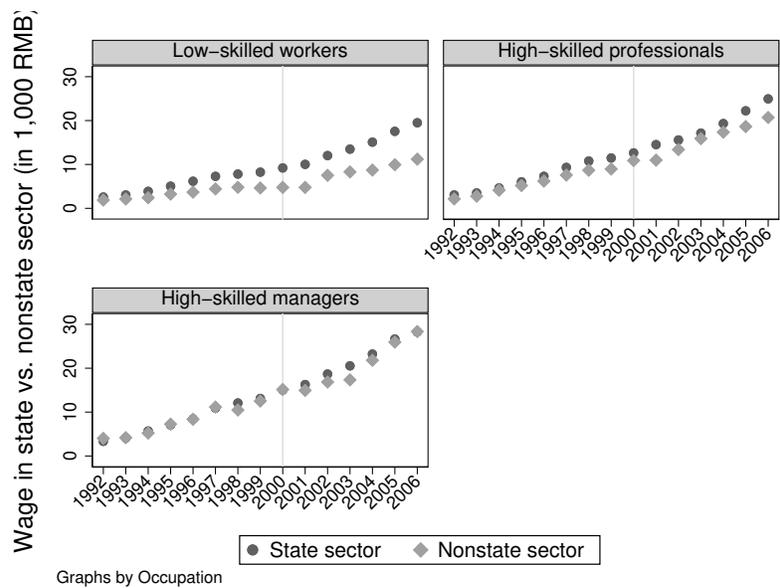


Figure 1: Wage premium by occupation from 1992 to 2006

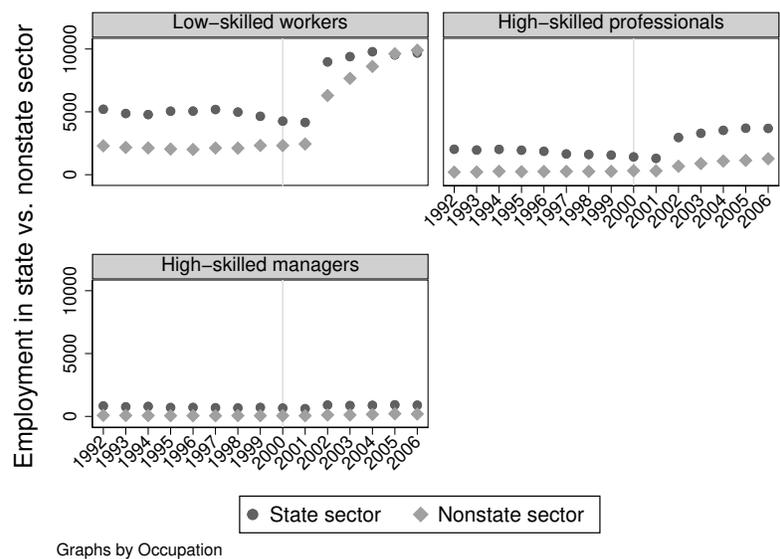


Figure 2: Employment numbers by occupation from 1992 to 2006

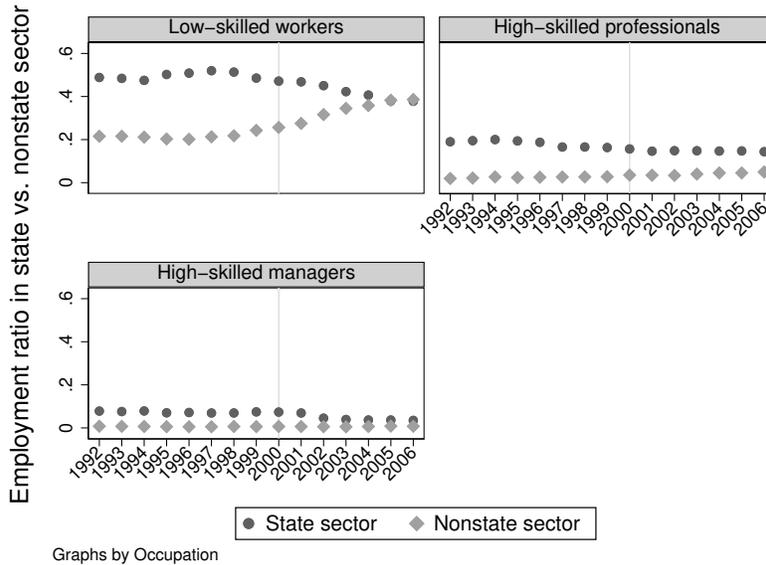


Figure 3: Employment size ratio by occupation from 1992 to 2006

Economists from democracies have observed this phenomenon from an opposing perspective: Tullock (1967) suggested that the prevalence of competitive markets in the United States made it more difficult for firms to engage in rent-seeking behavior, as they would face strong competition from other firms vying for the same rents.

This implies that a minimum level of property rights protection is necessary for fostering investment. Given the high transaction costs involved in collective action to establish formal institutions for property rights protection, it is inevitable that, in practice, industrial production becomes concentrated. It is less costly for a small number of political elites to collectively internalize the profits from productive investments and minimize the negative externalities of ownership contests associated with public ownership. At equilibrium, rent-seekers invest up to the level of monopoly profits seeking the monopoly status. Therefore, the size of the costs associated with rent-seeking activities is equal to the monopoly profits (Tullock, 1967). The total social welfare costs comprise the deadweight loss caused by lower production under a monopoly, plus the costs of rent-seeking activities. Rent-seeking activities related to the monopolistic organization of industrial production are incurred to realize any industrial production in the absence of formal institutions for property rights protection, which is only feasible with a much higher and sophisticated level of collective action and social governance.<sup>1</sup> Rents generated by monopolies trickle down to their employees. Higher-skilled

<sup>1</sup>"Most property-related arrangements in an advanced economy must involve various self-enforcing mechanisms ingrained in the incentive structure of spontaneous economic behavior so that moral virtue and the legal system are necessary to deal with only a thin layer of aberrational occurrences. The reason why most people perform their

workers choose sectors where they can access higher rents and better protect their property rights.

Using China's data, this paper demonstrates that high-skilled workers are less inclined to choose the state sector based on wage premiums, unlike low-skilled workers. Instead, they are driven by the potential for substantial rent differentials. These rent differentials can be as high as 26.6 percent for highly skilled managers, who not only have access to richer rents but also are better positioned to safeguard those rents. Highly educated workers are more likely to join the state sector to secure better positions that grant them access to these lucrative rents and protect them from being usurped. It is the potential rents within the state sector, rather than wage premiums, that attract high-skilled labor. Moreover, the degree of monopolization in the industry plays a crucial role, as higher levels of monopolization correspond to greater rent levels and an increased likelihood of high-skilled workers selecting the state sector.

This paper contributes to several interconnected strands of literature. First, it engages with the literature on incentive systems that are rooted in property rights arrangements across different political regimes. Acemoglu (2008) compares the trade-off between distortions arising from entry barriers in oligarchic societies and those resulting from taxation in democratic societies. He argues that oligarchic societies employ entry barriers to redistribute income towards entrepreneurs by reducing labor demand and wages, while also preventing more productive agents from entering entrepreneurship. On the other hand, democracies use taxes to redistribute income from entrepreneurs to workers, aiming for a more egalitarian distribution of resources. Initially, entrepreneurs in oligarchic societies tend to be more productive, resulting in limited distortions. However, over time, comparative advantage in entrepreneurship shifts away from incumbents, rendering the entry barriers in oligarchic societies increasingly costly (Parente and Prescott, 1999). As a consequence, oligarchic societies may initially experience economic growth but eventually lag behind democratic societies, which allow agents with a comparative advantage in new technologies to enter the market, whereas oligarchies typically impede new entry (Parente and Prescott, 2002). Building on observations of the Russian economy following the collapse of communism, Guriev and Sonin (2009) discuss potential property rights arrangements between dictators and oligarchs.

However, these papers do not incorporate insights from the experiences of economies transitioning from communism to capitalism. The extensive literature on the incentive compatibility problem in soft budget constraints in communist economies can provide valuable insights for cultivating effective institutions protecting property rights. In communist societies, state ownership over all properties is demanded to achieve an ideological egalitarian distribution of resources. Unlike democracies, communist societies do not have the formal institutions of taxation as a firewall

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contractual obligations, for example, is not that they are afraid of remorse or state coercion, but that in the extended context in which they are expected to conduct their business, a breach would be against their best interests. However, the self-enforcing mechanisms on which compliance depends in the overwhelming majority of cases are themselves institutions produced by the market, not a set of rules that can be laid in advance." (Rapaczynski, 1996)

preventing political elites from arbitrarily infringing upon private property rights. In contrast to oligarchies, communist societies formally deny the protection of property rights through constitutional state ownership. Consequently, due to excessive competition over existing resources, soft budget constraints and a lack of commitment to long-term investment with expectations of higher returns ensue (Kornai, 1980). The threat posed by the state to the security of broadly defined property rights is particularly severe when the state owns a significant proportion of national assets. A state that primarily exercises its policy through its ownership rights, which allows decision makers a high degree of discretion, tends to neglect the development of regulatory capacities that require transparency and procedural regularity. As a result, the pursuit of economic policies becomes more arbitrary (Rapaczynski, 1996).

Literature comparing incentives and information structures in corporations with M-form (multi-divisional form) and U-form (unitary form) argues that the M-form is likely to provide better incentives than the U-form, as it promotes yardstick competition more effectively under certain assumptions (Holmstrom, 1982; Qian and Xu, 1993; Maskin et al., 2000; Qian et al., 2006). The explanation comparing transitional performances between the former Soviet Union (and Eastern Europe) with a U-form and China with an M-form builds on the intuition that "the 'variation' between the performances of two regions producing similar outputs is likely to be lower (in the appropriate statistical sense) than that between the performances of two production ministries." This makes it easier in China to provide better incentives because it promotes yardstick competition (i.e., relative performance evaluation) more effectively (Maskin et al., 2000). A substantial empirical literature in economics and political science provides systematic evidence that Chinese tournament-like regional competition is effective when the government's sole objective is growth (Li and Zhou, 2005; Xu, 2011; Li et al., 2019). Chinese economists argue that the successful transition of the Chinese economy in the past four decades should be attributed to the coordination role of governments (overcoming the coordination failure due to higher transaction costs in markets) and the competition from markets (overcoming the information problem in public management). Essentially, the coordination role of governments hinges on political elites' incentives to internalize the externality of collective action, whereas the information generated from the competition in markets relies on clearly defined property rights. Therefore, this paper explicitly points out that the strong incentives unleashed by yardstick competition originate from localized property rights, which can be better protected in horizontal subnational territories with the *de facto* land ownership, as compared to vertical ministries with divided specialization for economies of scale in an environment without property rights. The finding by Fang et al. (2022) that the fraction of residential land parcels purchased by State-owned enterprises (SOEs) increased significantly relative to that purchased by private developers after the anti-corruption campaign starting from 2012 further corroborates the point that local governments take advantage of SOEs to protect their property rights.

Another strand of relevant literature focuses on rent-seeking, talent allocation, and economic development. Building on the pioneering work on the social welfare implications of rent-seeking activities (Tullock, 1967; Krueger, 1974), Baumol (1996) proposes that the relative payoffs offered by society between productive activities, such as innovation, and largely unproductive activities, such as rent-seeking or organized crime, determine the allocation of talents. Murphy and his coauthors (Murphy et al., 1991) further highlight that the reward structure between rent-seeking and entrepreneurship, along with the properties of returns to ability and scale and market size, are significant factors determining occupational choice and have implications for economic growth prospects. Acemoglu (1995) extends this analysis by exploring the determinants of the reward structure in a society. He argues that the negative externality of rent-seeking on productive agents implies that relative rewards are endogenously determined and can result in multiple equilibria, each with a different reward structure. The selection of equilibrium can influence the non-pecuniary reward structure, which may persist due to this endogeneity. Considering the importance of upholding property rights and enforcing contracts in an economy, Acemoglu and Verdier (1998) theorize that an intermediate level of property rights enforcement may be optimal, as a portion of the population needs to work in government bureaucracy to enforce property rights, while corruption prevention is costly in the presence of incomplete contracts and incentive problems. This implies that political elites managing the public sector need the incentives of internalizing the externality in enforcing property rights to provide the institutional public good of property rights protection. In line with this, this paper proposes a more general conceptual framework, arguing that a minimum level of property rights protection is necessary for productive activities to generate a minimum level of economic growth and sustain a reasonable social order. Absent formal institutions that fairly enforcing property rights, industrial production becomes concentrated and thus favors monopoly interests. This naturally leads to a labor market outcome that industries, sectors, and regions with higher accessible rents and more secure private property rights can attract higher-skilled workers. The paper presents empirical evidence to support this argument.

The paper goes as follows: Section 2 introduces the institutional background, Section 3 documents the data results, and Section 4 concludes.

## 2 Institutional background

Since 1949 in China, state ownership has been the formal institution governing property rights. Prior to 1978, China implemented this institution in its most fundamental sense, which involved the elimination of private property rights, as seen in the commune system of the 1950s. However, the resulting economic collapse eventually necessitated a departure from this institutional arrangement around 1978. Subsequently, China gradually began to recognize and acknowledge private property

rights, starting with agriculture in rural areas where the ideological resistance was relatively weaker. In these areas, individualized production became feasible, with land collectively owned by groups of farmers who had constitutional entitlements. This change led to increased income from higher land productivity, as rural farmers were entitled to the residual claimants of their own production choices, creating a growing demand for non-agricultural goods and services (Zhu, 2012). While state-owned enterprises (SOEs) lacked the incentives to meet this market demand, Town-Village-owned Enterprises (TVEs) quickly emerged to fill the gap. TVEs had a comparative advantage due to their localized property rights, which did not conflict with the ideological taboo on private ownership. Eventually, mounting losses stemming from the SOEs' inability to adapt to market competition paved the way for comprehensive reform of the SOE sector in the 1990s, following an initial attempt to incentivize SOE managers based on firm performance in the 1980s (Groves et al., 1995).

The reform process gained momentum following Deng Xiaoping's southern tour in 1992. One of the most radical aspects of the reform was the decision to retain larger state-owned enterprises (SOEs) while disbanding smaller ones that had a surplus of workers. This approach, known as the "Grasping the large, letting go of the small" SOE reform, was piloted in 1994 and fully implemented in 1997. A fundamental objective of the "Grasping the large" strategy was to transform the large state-owned firms into profit-maximizing entities under government control. Therefore, the disbandment of small SOEs did not imply a loss of state sector control over the economy. According to Hsieh and Song (2015), more than 80 percent of state-owned firms in 1998 were either shut down or privatized by 2007. However, many of these firms underwent restructuring and were registered as private firms with a state-owned conglomerate holding a controlling share. After 2007, the pace of privatization and convergence in labor productivity decelerated, while the establishment of new state-owned firms continued at a similar rate. Among the privatized firms, Gan et al. (2018) find that the government still retained significant ownership, with the level varying depending on the method of privatization, ranging from 20 percent in management buyouts to 50 percent in share issue privatization.

Since the transformation of the remaining state-owned enterprises (SOEs) with strategic importance in the economy into market-oriented enterprises with new governance structures is a crucial objective of the reform, the establishment of the State Asset Supervision and Administration Commission (SASAC) in June 2003 marked a significant shift in the state administration of SOEs. The SASAC introduced a total wages and salaries contract regime, through which SASAC negotiates annually with each centrally-controlled SOE regarding the number of wages and salaries. This regime effectively limits wage costs and prevents unreasonable pay increases for SOE workers. Despite the shrinking employment share, SOEs continue to possess a majority share of total assets in the economy, and this trend has been increasing over time. These findings are consistent with the ob-

served convergence in average labor productivity between SOEs and private firms, while significant differences in average capital productivity persist (Hsieh and Song, 2015).

Parallel to the reform of state-owned enterprises (SOEs), the reform of government personnel management was also underway. In 1982, for the first time in its history, the Chinese Communist Party officially abolished the lifetime appointment of party and government officials and implemented a mandatory retirement system. The central government's tight control over personnel and the absence of comparable external opportunities in the political labor market created a powerful incentive mechanism for local government officials, as promotion and termination prospects were directly linked to the performance of the local economy (Li and Zhou, 2005). This mechanism led local party-state bureaucrats to undertake experiments related to property rights during the first two decades of the reforms (Xu, 2022). The central authority placed significant emphasis on GDP growth, recognizing the challenges highlighted by the experiences of the Eastern Bloc. As a result, regional governments were encouraged to find ways to outperform other regions. Under this mechanism, many local bureaucrats engaged in varying degrees of privatization experiments, even when private property rights were illegal, in order to succeed in regional competition. Successful methods were later promoted or replicated nationwide. Notable examples of these experiments include land reform through the "household responsibility system," the establishment of special economic zones (SEZs) to protect foreign property rights on Chinese land, the development and subsequent privatization of Town-Village-owned Enterprises (TVEs), the privatization of SOEs (initiated in Zhucheng, Shandong province), and the rapid growth of new private firms. These extensive changes in property rights laid the foundation for the 2004 institutional change, which officially recognized private property rights in the Chinese Constitution.

The Chinese government utilizes state-owned enterprises (SOEs) as instruments for economic intervention, enabling it to assume a coordinating role in economic development, as argued by certain Chinese economists (Lin et al., 1997; Zhou, 2018). At the national level, SOEs dominate and monopolize strategic upstream industries such as energy and finance. Meanwhile, at the local level, governments exert their influence through their monopoly control over land, effectively leveraging the economy. However, this powerful government intervention also gives rise to corruption and the influence of special interests, particularly in relation to the monopoly status enjoyed by certain entities. These issues ultimately led to the initiation of a high-profile anti-corruption campaign in 2012. The growing prominence of the state sector and the increasing concentration of markets further indicate that local governments exploit the state sector to safeguard local property rights (Fang et al., 2022).

### 3 Testable hypothesis and empirical evidence

#### 3.1 Testable hypotheses

Developed from the conceptual framework presented in the introduction, this paper puts forth the following hypothesis: Higher-skilled workers are more inclined to choose state sectors with greater monopoly power, offering access to rents and positions that safeguard property rights, even in the absence of wage premiums in comparison to nonstate sectors. The logic is as follows: Higher degree of state ownership  $\rightarrow$  fiercer competition over *de facto* property rights  $\rightarrow$  more severe free-riding problem in property rights protection  $\rightarrow$  higher degree of monopoly as *de facto* institutions protecting property rights  $\rightarrow$  higher rents  $\rightarrow$  more attractive to higher-skilled workers even without wage premiums in the state sector.

#### 3.2 Data description

This paper utilizes household and firm data collected by the National Bureau of Statistics of China. The surveys encompass nine provinces, namely Beijing, Liaoning, Zhejiang, Anhui, Hubei, Guangdong, Sichuan, Shaanxi, and Gansu, covering the period from 1992 to 2006. The nine sample provinces well represent China since they include both less developed and more developed provinces from east, middle, and west of China. In this study, employment in the state sector is defined as individuals working for the government, public institutions, and state-owned enterprises, and is represented by a dummy variable with a value of 1.

#### 3.3 The existence of rents

Payoff differentials in the state sector, representing the maximum rents workers are willing to pay to secure a job at equilibrium, will fully dissipate. Assuming that wage differentials and other rent differentials are the two components of the total payoff differentials between the state and nonstate sectors, wage differentials offset other rent differentials at the margin, resulting in payoff differentials equaling zero when workers become indifferent to jobs in both sectors.

The results in the first two columns of Table 1 employ the following specification:

$$\log(wage)_{ijt} = \beta_0 + \beta_1 Occ_{ijt} + \beta_2 Edu_{ijt} + \beta_3 X_{ijt} + \gamma_{industry} + \mu_{region} + \delta_t + \epsilon_{ijt} \quad (1)$$

in which  $Occ_{ijt}$  is individuals' occupational choice defined as a dummy taking value one if working for the state sector and zero otherwise with subscript  $i, j, t$  denoting individual, region, and time respectively,  $X_{ijt}$  are control variables including experience, age, gender, number of kids, log of GDP per capita, and log of population size,  $\gamma_{industry}$ ,  $\mu_{region}$ , and  $\delta_t$  are industry, province, and year fixed

effects. The results show a 35.7 percent wage premium in the state sector. Interestingly, the wage premium for high-skilled professionals and managers is 11.3 and 26.6 percent lower, respectively, compared to low-skilled workers. This indicates a higher rent of 11.3 and 26.6 percent for high-skilled professionals and managers.

The findings are robustly supported by the propensity score matching (PSM) regression results in the last four columns of Table 1, which address the issue of selection bias. The treatment effect of working in the state sector implies a wage premium of close to 30 percent for low-skilled workers and high-skilled professionals, while there is no such wage premium for high-skilled managers. This suggests that high-skilled managers in the state sector enjoy higher rents than those in the nonstate sector, compensating for the absence of a wage premium in the state sector.

Table 1: Rent differentials beyond wage differentials between the state and nonstate sector: 1992-2006

Y: log(wages)	OLS1	OLS2	PSM1 (all workers)	PSM2 (low-skilled)	PSM3 (professionals)	PSM4 (managers)
State sector(=1)	0.357*** (0.014)	0.525*** (0.062)	0.291*** (0.015)	0.282*** (0.007)	0.225*** (0.022)	0.008 (0.053)
High-skilled professionals	0.328*** (0.018)					
State sector × high-skilled professionals	-0.113*** (0.017)					
High-skilled managers	0.500*** (0.044)					
State sector × high-skilled managers	-0.266*** (0.037)					
Education years		0.077*** (0.007)	Y	Y	Y	Y
State sector × education years		-0.018*** (0.109)				
Experience	0.032*** (0.003)	0.030*** (0.003)	Y	Y	Y	Y
Experience square	-0.0005*** (0.0001)	-0.0004*** (0.0001)	Y	Y	Y	Y
Age	0.012*** (0.003)	0.185*** (0.003)	Y	Y	Y	Y
Age square	-0.0003*** (0.0000)	-0.0003*** (0.0000)	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
Industry/province/year FE	Y	Y	Y	Y	Y	Y
Province&industry-year trend	Y	Y	Y	Y	Y	Y
Obs.#	197,394	199,621	199,621	143,767	40,769	12,740
R <sup>2</sup>	0.3701	0.3889				

Notes: PSM stands for Propensity Score Matching. Control variables include experience, age, gender, number of kids, log of GDP per capita, and log of population size. Standard errors in parentheses: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

### 3.4 Rent differentials as incentives for working in the state sector

Critical to the analysis, this paper uses the asset-labor ratio in the state sector relative to the nonstate sector as a proxy for rents. The rationale behind this choice is as follows. As emphasized by certain Chinese economists, the combination of government coordination and the utilization of local market information through regional competition has been a significant factor contributing to China's economic success over the past four decades (Zhou, 2018, 2023). The central government has

played a coordination role through top-down personnel control and the competitive pursuit of GDP growth and SOE management. At the local level, governments coordinate primarily through land and SOE management. The assets controlled by the state sector serve as the primary mechanisms for this coordination process.

To estimate the effect of rents on individuals' occupational choice, we employ the following econometric specification (2).

$$\begin{aligned}
 Occ_{ijt} = & \beta_0 + \beta_1 WagePremium_{ijt} + \beta_2 Skill_{ijt} + \beta_3 WagePremium_{ijt} * Skill_{ijt} \\
 & + \beta_4 Rent_{jt} + \beta_5 Rent_{jt} * Skill_{ijt} + \beta_6 X_{ijt} + \gamma_{industry} + \mu_{region} + \delta_t + \epsilon_{ijt}
 \end{aligned} \tag{2}$$

The results presented in Table 2 provide statistical confirmation of the previous descriptive findings illustrated in Figure 1. It is worth noting that these results remain robust when additional control variables are gradually included<sup>2</sup>. The findings further support the notion that it is the availability of positions with higher rents that attracts high-skilled workers to the state sector. The analysis demonstrates that skills play a significant role in predicting job preferences for the state sector compared to the nonstate sector. Interestingly, inconsistent with the general law of labor supply, wage premiums do not explain the decision to work in the state sector relative to the nonstate sector. Additionally, the regression analysis reveals that the higher the ability of an individual, the less likely they are to choose employment in the state sector based on wage premiums alone. This raises the question of what factors drive high-skilled individuals, particularly high-skilled managers, to pursue positions in the state sector. Introducing the variable of accessible rents in the state sector, proxied by the asset per employee ratio in the state sector relative to the nonstate sector, the regression results in Table 2 show that as the higher the asset per employee ratio in the state sector than that of the nonstate sector, the more likely that high-skilled managers choosing to work for the state sector. Interestingly, the asset per employee ratio alone does not have a significant predictive power for individual occupational choices between the two sectors.

### 3.5 Monopolistic organization of industrial production and rent-seeking in occupational choice for property rights protection

An intuitive observation from the development of the Chinese economy reveals that there has been an accumulation of more rents in industries that directly rely on resources owned by the state (such as land and natural resources) as upstream inputs for the production process, particularly after China's accession to the World Trade Organization (WTO). In response to the Asian financial crisis, the residential housing market reform, which began in 1998, has accelerated the privatization and liberalization of the economy, granting greater autonomy at the local level. The coordination

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<sup>2</sup>The coefficients of interest for these variables show consistent results with negligible differences

Table 2: Rent seeking and occupational choice between the state and nonstate sector

Dependent variable:	(1)	(2)
Dummy for working in the state or nonstate sector		
Education	0.0264*** (0.0047)	
Dummy for high-skilled professionals		0.0839*** (0.0254)
Dummy for high-skilled managers		0.1272*** (0.0190)
Wage premium	-0.0899 (0.0788)	-0.0074 (0.0166)
Wage premium $\times$ education	0.0046 (0.0069)	
Wage premium $\times$ high-skilled professionals		0.0313 (0.0382)
Wage premium $\times$ high-skilled managers		-0.0546** (0.0232)
State vs nonstate asset per employee ratio	-0.0048* (0.0029)	-0.0003 (0.0013)
Asset per employee ratio $\times$ education	0.0007** (0.0003)	
Asset per employee ratio $\times$ high-skilled professionals		0.0039 (0.0030)
Asset per employee ratio $\times$ high-skilled managers		0.0149*** (0.0045)
Controls	Y	Y
Industry/province/year FE	Y	Y
N	149,099	146,402
Adj. $R^2$	0.2853	0.2726

Notes: Control variables include experience, age, gender, number of kids, log of GDP per capita, and log of population size. Standard errors in parentheses: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

role of local governments in the economy is highly dependent on their *de facto* land ownership. Since the establishment of the State-owned Assets Supervision and Administration Commission (SASAC) in 2003, the central government has increased its influence in intervening in the economy through strategic State-owned Enterprises (SOEs) and government personnel control. Natural resources and land play a crucial role in this dynamics.

The results in Tables 3 and 4 show that high-skilled managers working for the state sector enjoy wage premiums after China acceded into the WTO which was not the case before. This can be interpreted as the rise of competition in the overall economy, regardless of state or nonstate sector.

## 4 Conclusion and next steps

The data results show the presence of wage premiums and other rent differentials in the state sector. It is the potentially accessible rents, instead of wage premium, that attracts high-skilled managers to prefer the state to the nonstate sector, unlike low-skilled workers. High-skilled workers work for the state sector much less for wage differentials (even not at all for high-skilled managers) than the low-skilled workers but more for rent differentials which can be as high as 26.6 percent for high-skilled managers. Furthermore, the higher the rent differentials, as proxied by the asset per employee ratio, in the state sector compared to the non-state sector, the more likely high-skilled managers are to choose employment in the state sector.

The future work should employ more convincing identification strategies with specific mecha-

Table 3: Rent differentials beyond wage between the state and nonstate sector: 1992-2000

Y: log(wages)	OLS1	OLS2	PSM1 (all workers)	PSM2 (low-skilled)	PSM3 (professionals)	PSM4 (managers)
State sector(=1)	0.221*** (0.023)	0.381*** (0.020)	0.162*** (0.016)	0.183*** (0.013)	0.207*** (0.053)	0.0727 (0.049)
High-skilled professionals	0.237*** (0.036)					
State sector × high-skilled professionals	-0.113*** (0.017)					
High-skilled managers	0.390*** (0.037)					
State sector × high-skilled managers	-0.218*** (0.037)					
Education years		0.056*** (0.004)	Y	Y	Y	Y
State sector × education years		-0.017*** (0.041)				
Experience	0.0227*** (0.005)	0.026*** (0.003)	Y	Y	Y	Y
Experience square	-0.0002* (0.0001)	-0.0004*** (0.0001)	Y	Y	Y	Y
Age	-0.002 (0.006)	0.008 (0.007)	Y	Y	Y	Y
Age square	-0.0001 (0.0001)	-0.0002* (0.0001)	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
Industry/province/year FE	Y	Y	Y	Y	Y	Y
Province&industry-year trend	Y	Y	Y	Y	Y	Y
Obs.#	82,140	82,199	82,199	57,226	17,765	7,034
R <sup>2</sup>	0.3701	0.3889				

Notes: PSM stands for Propensity Score Matching regression. Controls include gender, number of kids, ln(gdppc), and ln(pop) for the OLS regression. Controls for PSM regressions include gender, number of kids, education, experience, experience square, age, and age square. Standard errors in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 4: Rent differentials beyond wage between the state and nonstate sector: 2001-2006

Y: log(wages)	OLS1	OLS2	PSM1 (all workers)	PSM2 (low-skilled)	PSM3 (professionals)	PSM4 (managers)
State sector(=1)	0.379*** (0.021)	0.549*** (0.058)	0.332*** (0.009)	0.312*** (0.006)	0.274*** (0.024)	0.171*** (0.036)
High-skilled professionals(=1)	0.334*** (0.023)					
State sector × high-skilled professionals	-0.128*** (0.022)					
High-skilled managers	0.512*** (0.053)					
State sector × high-skilled managers	-0.266*** (0.037)					
Education years		0.085*** (0.007)	Y	Y	Y	Y
State sector × education years		-0.226*** (0.043)				
Experience	0.0357*** (0.004)	0.034*** (0.003)	Y	Y	Y	Y
Experience square	-0.0006*** (0.0001)	-0.0006*** (0.0001)	Y	Y	Y	Y
Age	0.015** (0.006)	0.177*** (0.006)	Y	Y	Y	Y
Age square	-0.0003*** (0.0001)	-0.0003*** (0.0001)	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
Industry/province/year FE	Y	Y	Y	Y	Y	Y
Province&industry-year trend	Y	Y	Y	Y	Y	Y
Obs.#	115,254	117,422	117,422	86,541	23,004	5,706
R <sup>2</sup>	0.3160	0.3511				

Notes: PSM stands for Propensity Score Matching regression. Controls include gender, number of kids, ln(gdppc), and ln(pop) for the OLS regression. Controls for PSM regressions include gender, number of kids, education, experience, experience square, age, and age square. Standard errors in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

nisms to demonstrate that industrial organization, as *de facto* institutions, plays a significant role in occupational choice.

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