

Institutional Rebound:

Why Reforming China's State-Owned Enterprises Is so Difficult

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Reforming the internal institutions of state-owned enterprises (SOEs) and other public institutions alike is notoriously difficult and slow. Although reforms are often perceived as absolutely necessary to improve efficiency, their implementation tends to drag on for decades. Why are perennially entrenched institutions so tenacious, even after years of trying to introduce reform measures? One might attribute this pattern to the age of institutions and argue it is a matter of path dependency, but this answer focuses on institutional stability without specifying the exact mechanisms for actors to both carry out reforms and preserve the old rules. The argument that targets public ownership often treats institutions as synonymous with property rights and overlooks the internal rules that govern employee incentives, which are often far more entrenched than ownership.

This article untangles such mechanisms and proposes a theory of how institutions bounce back without entirely falling into institutional stagnation. It investigates the case of China's internal reforms in existing SOEs, which seek to break the three "iron institutions" in employment (iron bowl), leadership (iron chair), and wages (iron wage) and introduce competition based on meritocracy. Instead of launching rapid privatization like Russia, China adopted a gradualist approach and sought to reform SOEs over the long run. Once introduced, however, these reforms triggered the bounce back of old rules.

I find that the major obstacles to reforms lie in the processes that activate informal institutions, which I define as a set of routinized, widespread rules or norms that initially occurred as informal practices. Although new institutions were created, they often became the mask for these informal rules; thus, the *de facto* practices often bent towards the same old rules and reinforced initial power asymmetry, albeit in the new formats. I termed this phenomenon institutional rebound. Two patterns of institutional rebound—active manipulation and performative resistance—emerged and mutually reinforced each other.

When institutional rebound was paired with mandates to complete reforms, they gave rise to a specific reform sequence: within SOEs, reform first targeted lower-level workers who were vulnerable, and across SOEs, reforms first targeted nonstrategic sectors.

Among SOE leaders and cadres at the upper level, reform bounce back was characterized by active manipulation. Informal institutions helped cadres and their cronies to obtain appointments or avoid being laid off. Reforming them involved tougher battles. By contrast, for lower-level managers and line workers who had fewer political resources, performative resistance was prevalent. Perfunctory implementation gave rise to informal rules that reverted to old practices or punished reform activists. Firms in the strategic sectors employed more leaders and cadres, and hence they were dominated by active manipulation. In contrast, firms in nonstrategic sectors tended to employ a large proportion of lower-level employees and were more likely to display performative resistance.

When such patterns of rebound were paired with the mandates of completing the reforms, it often unleashed a bottom-up reform process within SOEs. Both interviews and text analysis show that lower-level, powerless workers and nonstrategic firms were targeted first so that the state and SOE leaders could complete the reform tasks. However, institutions rebounded among those who stayed. The vacant positions at the lower level were soon refilled with cronies, which paradoxically shrank the pool of possible reform targets, making future reforms even more difficult to complete. And because lower-level workers tended to be employed by nonstrategic sectors, more reforms were observed and reported in these sectors in the early stage.

Empirically, the analysis triangulates the data by combining first-hand interviews, secondary sources in English and Chinese, and structural topical modeling of Chinese newspaper and journal articles over three decades. While in-depth interviews enabled me to specify the detailed mechanisms of institutional rebound within each firm, text analysis and machine learning helped identify the bigger trends over different periods and across sectors.

Studying how institutions bounce back enhances our understanding of the sources of institutional change and resilience. The process examined here goes beyond the positive feedback and path dependence, as there were indeed moments of reforms. But new institutions became the guise for informal rules, which did not produce complete stagnation but reinforced the practices the reform sought to fight. This rebound process, although not immediately noticeable, permeates public sector reforms. This article unravels the detailed process of reforming SOEs' stubborn institutions and identifies the source of the reform's difficulty.

A Theory of Institutional Rebound for Difficult Reforms

Institutional Change and Resilience Any reforms that involve transforming public sector institutions seem to be especially hard to implement. Those designed to alter the institutions governing the actors' incentives—such as increasing civil servants' efficiency, fighting judicial corruption, or improving the welfare system—often become

long-term battles.¹ Even if most actors involved agree on the urgency of the reforms, the process can last for years, if not decades, without producing meaningful results.

China's SOE reform is a classic example. Avoiding the shock therapy that Yeltsin did in Russia, China chose to improve the efficiency of SOEs gradually. However, a report lamented that the country's "inefficient, resource-draining state-owned enterprises" were still a drag on the economy.² The lack of profit-maximizing behavior on the part of managers, rather than the financial costs or social burdens, was found to be the major explanation for SOEs' inefficiency.³ While one could argue that the Chinese state never really intended to reform SOEs, this is at least not true for internal-institution reforms, as leaders of different generations have tried. In neo-institutionalists' words, when the old institutions have become too "costly," rational actors would desire a change.⁴ However, why do old institutions persist, and even grow stronger, after repeated reform waves?

The classic pattern of institutional change is the punctuated equilibrium model. Once reforms are launched at "critical junctures," institutions are expected to shift to a new equilibrium.⁵ This perspective helps describe patterns of institutional changes when they have already occurred, but is less powerful in explaining the success or failure of institutional change. The notion of "partial reform equilibrium" captures incomplete reforms or reform inertia.⁶ Yet, by focusing on winners who stripped assets, these works overlook losers who have struggled actively or passively in the institution-building process.

Institutional reinforcement, path dependence, and positive feedback can explain why institutions are stable and entrenched. However, they cannot account for the situation when changes are introduced with old rules rebound in new formats.⁷ Terms like "self-reinforcing" may imply an automatically triggered process and obscure the politics, agency, and contestation associated with institutional maintenance.⁸ The analytical vacuum is then filled with notions such as "inertia," "freezing," or "following the paths."⁹ Works that do discuss mechanisms of path dependence mostly focus on patterns of reproduction, how institutions repeat until losers emerge to challenge them.¹⁰ In reality, making old institutions survive in the new context takes much effort from actors, who not only simply resist one-time change, but consistently spread informal rules.

This inadequacy naturally brings us to studies of institutional adaptation and resilience.¹¹ This literature sheds light on how institutions make incremental adjustments without experiencing a breakdown or revolution. China's authoritarian government is found to be highly "resilient" and "adaptable": it can adapt to new political and economic developments without a dramatic regime change.¹² But in these studies, the notion of "resilience" is associated with flexibility; institutions are regarded as moldable clay that is open to revision. While this is often true, one still must ask: how will actors remodel the institutions? In light of reform implementation, the resilience of institutions is instead more like a rubber band that bounces back in a direction to impede real change.

Institutional Rebound I propose a theory of institutional rebound to explain such reactions to difficult reforms. I define institutions as formal or informal rules, norms, and procedures that are widely practiced in routine behavior. I argue that the process of

changing from old to new institutions gives rise to informal institutions. Although newly established formal institutions seem to have set up procedures for open applications, fair competition, and evaluations, under the veneer of these procedures are informal institutions. They first occur as a myriad of informal, subversive strategies that preserve vested interests. With repetition and diffusion, these strategies became routinized informal rules that infiltrated, altered, and eroded the formal institutions intended for open competition.¹³ These informal institutions are then incorporated into the next round of reforms.

Bringing back the process of institutional rebound bridges the institutional-change literature with policy implementation. While several studies on institutional change focus on the sources of such change (e.g., endogenous versus exogenous or internal versus external), the process of implementing institutional change mandated by the state has not been taken seriously.¹⁴ Yet gaps often emerge between the original policy design and the outcomes of reforms.¹⁵ Tsai shows that informal institutions have aided China's reforms in the private sector by pushing for formal institutional change.¹⁶ However, informal institutions can also become important obstacles that impede reforms, as mentioned by Helmke and Levitsky.¹⁷ This is especially the case for reforms that involve vested interests and when informal institutions are at odds with formal ones. They are, in short, tentacles that have a firm grip on past rules and can find various ways to survive.

Through what key mechanisms do informal institutions emerge and re-emerge? I identify two dominant types of institutional rebound within firms: active manipulation and performative resistance.¹⁸ For top to mid-level cadres with extensive political connections through family or careers, they manipulate rules in the form of nepotism or cronyism. Practices such as resorting to upper-level family connections to beat competitors for a position, helping descendants to bypass or cheat in exams, and creating new rules to compensate for wage loss have become widespread and serve to benefit the politically connected and their protégées. As a result, this type of institutional rebound is hard to tackle, and reforms often face tough political battles.¹⁹ Active manipulation is prevalent among strategic sectors, which tend to have large numbers of cadres. These sectors are essential for national and economic security (e.g., electric power, oil, and aviation).

For actors with fewer political connections, creating informal institutions to enact performative changes and punish reformists has been the dominant mechanism, which has occurred most frequently in nonstrategic sectors because they tend to have a larger proportion of their workforce comprised of lower-level workers. As with active manipulations, informal rules emerged to obstruct the newly established formal rules. But unlike active manipulation, the creation of informal institutions mostly protects the status quo instead of seeking extra political gains. Thus, formal institutions serve performative purposes, whereas informal institutions tend to delegitimize or penalize the reformists.¹⁹ Practices such as staging the selection of leaders, voting collusions, voting out reform advocates, and invalidating contracts have all delayed reforms. One interviewee compared the situation to throwing a stone into stagnant water (死水): although it might create a few ripples, eventually, it sinks to the bottom.²¹ Performative resistance opposes challenges as well, but it can be dealt with by replacing workers who are powerless or pressuring reform advocates to quit.

Furthermore, I find that the theory of institutional rebound can also account for distinctive ways of power reinforcement and reform sequence both within and across the SOEs. Cadres who were politically powerful (often the iron-chair holders) tended to create rules to protect their cronies (often the iron-bowl holders). Hence iron-bowl reforms became a competition for connections to iron chairs. Arguably, it is most crucial to target the politically powerful. However, the mandates of completing reforms unleashed a bottom-up reform process: reforms started with lower-level, powerless employees in the nonstrategic sectors where a performative completion was the easiest. However, precisely because of institutional rebound and reinforcement, the vacancies were immediately replaced with cronies and sycophants of the upper-level cadres. This reform sequence shrank the possible pool of candidates that were “targetable” for reform completion and pushed reforms to upper levels, ironically creating uphill battles for reforms and made them more difficult to carry out.

Why Internal Institutions Are Important for SOE Reforms SOE reforms around the world have been fraught with difficulties.²² In many countries, such reforms are equated with privatization, their performance varies across countries—they are more efficient in Brazil, the Gulf countries, and Singapore—as well as within countries, which suggests that factors beyond ownership matter for performance.²³ The reform blueprint based on Western market economies does not travel well to developing countries such as Turkey, Nigeria, Russia, and Argentina precisely because old institutions established before the reforms are entrenched.²⁴

Since China’s reform and opening, modern managerial systems, contracting systems, and labor regulations modeled after Western capitalist corporations have been introduced to SOEs.²⁵ Despite these changes, SOEs, as the dominant element of state capitalism, continue to be plagued by a variety of problems ranging from soft-budget constraints to declines in productivity, lack of autonomy, and non-performing loans.²⁶ Thus far, little attention has been devoted to a core problem, the internal institutions governing personnel incentives, which are sometimes referred to as stimulating mechanisms (激励机制).

To address the inefficiency of SOEs, the dominant concern of current studies is ownership and privatization. This is partly because in the late 1990s and early 2000s, China initiated the reform of “grasping the large and letting go of the small,” which privatized small and medium SOEs, generating a large number of private firms.²⁷ However, in non-privatized SOEs, various types of corporate reforms took place. Among them, “break the three irons” (and later “three institutional reforms”) may have been the most long-lasting reforms, but they received inadequate attention.

Without denying the role of property rights, this article goes beyond ownership arrangements and draws attention to institutions that govern the internal incentives of people.²⁸ SOE managers themselves have primarily identified reforming institutions that “govern the people” as the top priority,²⁹ but such a “human dimension” is often missing from current studies.³⁰ The control of SOEs’ property and revenue is exercised through property rights

(产权), while the control of decisions and institutions is exercised through the right of management, often referred to as rights of control (制权). Pure ownership reform often comes with its own limitations. Both Russia's and China's experiences suggest that privatization can lead to asset stripping and rent-seeking from insiders.³¹

Internal institutions that govern employees' incentives tend to be much more entrenched than property rights. Even before the onset of the Dengist era market-oriented reforms, institutions within SOEs had created a dependent culture that did not base rewards and punishment on performance.³² After decades of reforming personnel incentives, inefficient institutions remain, despite the creation of modern corporations and multiple rounds of full or partial ownership reforms in shareholding.³³ These shareholding reforms often disproportionally influence the upper executive level by changing the sources of financing without altering everyday operations.³⁴ By contrast, internal institutional reforms have a much broader effect on employees. When the internal institutions are completely reshuffled, SOEs' efficiency can still be improved. The best-known examples, although quite rare, are ZTE and Hikvision.³⁵ Their reforms have completely reshuffled personnel management by separating the politically powerful from the professional line of promotion.

Finally, examining internal institutions reveals the current reform dilemma faced by leaders. It is not in top leaders' interest to privatize all SOEs. The state's control of major strategic sectors is crucial for its consolidation of political power.³⁶ However, the leaders constantly worry about SOEs' competitiveness and seek to increase their efficiency.³⁷ Reforming internal institutions strikes a delicate balance between the two and is deemed necessary.

Data and Methods

The article goes beyond viewing SOEs as simply a matter of abstract ownership and adopts an exploratory, process-based approach to reveal the internal institutions governing individuals' incentives and strategies.³⁸ To achieve this end, the analysis triangulates the empirical evidence by combining in-depth interviews, secondary literature, and topical modeling of newspaper and journal articles. This method also helps tackle the disruption to research caused by Covid-19. First, I conducted twenty-two interviews with higher and mid-level managers and mid- and lower-level workers of SOEs in coastal and inland China from various industries in 2019 and 2020; each interview lasted one to two hours.³⁹ Interviewees shared insider stories from the earliest three-iron reforms they could recall until the latest. Second, I supplemented these interviews with studies of the "three-iron" reforms published in both Chinese and English, paying special attention to reform processes in case studies.

Third, to estimate the overall trend of reforms across time and sectors, I conducted a text analysis of 1,533 newspaper and journal articles (1.8 million Chinese words) that mentioned the reforms as keywords over the past three decades from CNKI and China Digital Library. After gathering and processing these articles, I employed the structural

topic modeling (STM) method.⁴⁰ I coded articles into strategic and nonstrategic sectors as well as different geographical regions (coast, inland, and central).⁴¹ The articles covered thirty provinces and fifty-nine industries and generated twenty-one topics (based on SearchK process).⁴² The modeling process and results are discussed in detail in a later section and in Appendix C. The text analyses allowed me to estimate the variation of frequently discussed topics over time (from bottom-level workers in the 1990s to top-level cadres at present) and how different sectors (strategic and nonstrategic) interact with such trends in terms of topic prevalence and specific words used in topical content.

Breaking the “Three Irons”: Processes, Strategies, and Informal Institutions

Before the launch of institutional reforms, the personnel and wage systems in China’s SOEs were based on “three irons”: iron chair (cadres and managers who can be promoted but not demoted), iron bowl (ordinary employees with guaranteed jobs), and iron wage (salaries that are almost impossible to decrease). Overall, the system featured a “lack of correct incentives”: whether one worked harder or performed better made no difference. Employees were often seen as lazy parasites living off state assets, and their positions were often passed on to descendants.⁴³ As Ms. T complained to me when recalling the 1990s:

We had a colleague in my office who was a bureaucrat’s wife and whose job was simply to distribute newspapers to offices and fill up the thermos on our floor. ... But she was paid the same as our technician in the R&D department and as our financial accountant.... I just watched her come every morning, took about fifteen minutes to finish all her tasks, and then spent the rest of the day gossiping or eating sunflower seeds till she got off work at 3:30 pm (which should be 5:30 pm for us). Can you believe that? Such people occupied various positions in our companies and disincentivized us all. Talented people will seek outside job offers.⁴⁴

Institutional reforms sought to “break the three irons” (破三铁). Since the reforms concern the institutions governing the internal rules of cadre selection, employee recruitment, and the wage system, they are also known collectively as the “three institutional reforms” (三项制度改革). Initial discussions of the reforms started in the 1980s under Zhao Ziyang, and the pilot experiments first began in 1991 in Xuzhou City of Jiangsu Province.⁴⁵ Zhu Rongji formally launched the first round of reforms in 1992;⁴⁶ he was known as an iron-fist “economic czar.” Citing the loss of 310 million yuan from SOEs in 1991, Zhu urged:

No matter how good the external environment is, if we do not change the internal institutions of enterprises, these enterprises will continue to lean on (躺在) top of the state, and the employees will lean on top of the enterprises. Everyone uses an iron bowl to eat from a big pot. We cannot motivate the incentives of cadres and workers, and the enterprises lack the pressure to pursue technological progress and economic efficiency.⁴⁷

The first wave of the reform, which involved more than 1,000 firms, encountered varying levels of resistance throughout the 1990s.⁴⁸ Zhu then pushed for a second wave of “three-iron” reform in 2001 in remaining SOEs, after privatizing small SOEs in the late 1990s and early 2000s. For the Hu-Wen government, although the reform was not initially a priority, the losses of SOEs caused by the 2008 financial crisis motivated another round of reform (State Economic and Trade Committee 2001).⁴⁹ In the Xi Jinping era, the Chinese government recognized a range of rampant problems in SOEs. Following the central state’s call to deepen SOE reforms in 2015, the State-owned Assets Supervision and Administration Commission (SASAC) issued its “advisory opinions” on institutional reforms.⁵⁰

Table 1 Formal Institutions, Informal Institutions, and Reform Outcomes

| | Iron Chair | Iron Bowl | Iron Wage |
|--|---|---|--|
| Previous Institutions | Cadre positions are lifetime appointments: they can be promoted but not demoted. | Once employees are hired, they cannot be fired. Positions are passed on to family and descendants. | Universal salary across ranks without differentiation based on performance. ⁵¹ Large gaps between cadres and workers. |
| Formal Institutions Announced | Procedures are set up for open applications, competition, and evaluations. Multiple candidates give oral presentations followed by employee voting. ⁵² | Hiring decisions are based on examinations and interviews. Some involve voting. Contract system introduced. | Floating salary systems (basic salary, performance salary, and bonus) are used. Human Resources decides salary based on performance. |
| Informal Institutions Based on Active Manipulation | Resort to the parent company’s upper-level political power to obtain appointments. | Invoke special rules for offspring, bypassing and cheating in examinations. | Make new rules to compensate for wage loss; internal retirement to meet quota. |
| Informal Institutions Based on Performative Resistance | Stage the selection process; use iron-bowl reforms to distract attention from the iron chair; internal retirement. | Vote out and punish reform-minded advocates; invalidate contract dates. | Assign the same wage regardless of performance; use gift cards and reimbursement to compensate for salary loss. |
| Reform Results | Leaders’ positions are strengthened vis-à-vis lower-level staff; talent exits. | Unfair competition; nepotism and cronyism in recruitment. Unconnected employees are marginalized. | Salaries are still based on a static hierarchy; few performance incentives; talented staff is underpaid. |

In addition to central government policies, provincial and city governments have also implemented more detailed measures.⁵³ Appendix B displays the number of newspaper and journal articles published each year on the “three irons” or “three institutional reforms,” which corresponds almost exactly to the three waves of reform initiatives. As I will detail below, each round of reform policies emphasized different priorities, but they shared the same goal of changing the mentality of “eating from one big pot” to a meritocracy-based reward system.

Table 1 summarizes the old and new institutions. It also overviews a repertoire of informal institutions routinizing widespread practices of active manipulation or performative resistance, which ultimately lead to reform backsliding. At the beginning of each round, policymakers looked back and found that “the rigid system and institution have not had any fundamental changes.”⁵⁴ Hence they had to “deepen” the reform measures. SOE employees were well aware of the problems, but old institutions seemed to be highly resilient.

Active Manipulation SOE insiders saw the iron chair as the most powerful and entrenched of the institutional arrangements, and rightly so. Factory heads, executives, department heads, and higher-level management usually occupied these iron chairs. Their positions were often stable and unchallenged throughout their lifetime. Furthermore, these higher-level managers exercise various degrees of control over the design and implementation of the reform agenda, and hence have more room to maneuver than lower-level employees.

The first type of manipulation involves seeking upper-level connections to modify the rule. For example, according to an interviewee who worked in an electric power equipment company in Sichuan, a qualified candidate was selected to become the head of the financial department in the mid-1990s after participating in an open application process and delivering an oral presentation to a selection committee consisting of senior company leaders.⁵⁵ The committee informed the successful candidate a few days before they could publicly announce the result. At this time, a much less qualified candidate was surprised she was not chosen for the position and argued for reconsideration by attacking the chosen candidate’s background. The less qualified contender’s father worked in the provincial government department that directly oversaw the company. As most of the firm’s employees witnessed the selection process, the top leaders did not feel able to change their decision immediately. However, there was persistent upper-level pressure. The leaders ultimately decided to announce a temporary vacancy for the position, while forcing the originally selected candidate to a lower-ranked department head position in a spin-off company. Three years later, the connected candidate received the original job.

When it comes to lower-level hires to break the “iron-bowls,” using political connections to bypass or cheat in the competitive recruitment process was one of the most powerful weapons of active manipulation. In Huaneng Company located in Southwest China, a senior department head of another energy company intervened after their daughter failed her Huaneng recruitment exam.⁵⁶ In a closed-door meeting, the candidate’s parent invoked an informal rule that senior managers had the privilege of hiring their children with lenient conditions under special circumstances due to senior managers’

exceptional contributions to the industry. While initially only making decisions based on her exam result, the company eventually agreed to hire her. In several other examples, candidates with personal connections to firm leaders were given copies of the exam questions and answers in advance.⁵⁷

In other cases, when senior managers reviewed the lists of employee names to decide who to target with the employment reforms, they were frustrated to find that it would be costly to offend anyone.⁵⁸ In an interview I conducted in a centrally-owned SOE located in Sichuan, Mr. Cai, a mid-level staff member, complained:

Rather than working hard, the most crucial way to get ahead is to have an important father or grandfather. Honestly, it's almost impossible for college graduates to find a job in a good SOE directly. I got my job through my dad's connections. But upon my arrival, I found that most of my other co-workers were kids from more important families. Suddenly, I felt that I was a loser.⁵⁹

In the iron-wage reform, the new rules tied firm leaders' income to the gains or losses of the enterprise to induce profit-generating behavior. A mid-level employee in a transportation firm (firm M) recalled that when the firm was being reformed in the 1990s, there was one year when the enterprise failed to meet the targeted profits on the contract for the firm's leaders. The contract specified that when this happened, 20 percent of the upper-level cadres' salary should be deducted and returned to the enterprise, which resulted in a deduction of 3,600 yuan that year for the general manager. In response, the manager issued an internal rule allocating the firm's cadres extra allowances of 300–400 yuan per month, which exceeded their annual loss in salary.⁶⁰

Note that these informal rules became widespread, going beyond a random, *ad hoc* strategy. They countered and bent the formal rules, protected the actors, and brought extra benefits in appointments and wages, thus entrenching the power positions for the politically connected.

Performative Resistance Not everyone had the option of resorting to political connections, especially lower-tier employees. Under such circumstances, performative changes arose to protect the status quo. The type of informal rules that emerged among them tailored reforms in a way that delayed institutional change but did not usually generate extra political benefits compared to the status quo.

One must be clear that there has been continuous labor unrest in China, even under the *danwei* system.⁶¹ In the late 1990s and early 2000s, especially, numerous workers' protests and direct resistance broke out, which has been extensively studied in important works such as Hurst and Cai.⁶² Many of these protests were triggered by large-scale layoffs as a result of bankruptcy, mergers, and privatization, which deprived firms of the resources to pay workers.⁶³ The "iron-bowl" reform under the "three irons" also involved laying off workers, but usually because of poor performance and lack of competitiveness rather than privatization or bankruptcy. My interviews suggest that such layoffs were typically individual-based, a selective number at a time, and not publicly announced.

They went through several rounds, which lasted from the early 1990s until today. They were not “simultaneous layoffs.”⁶⁴

Among employees who were laid off or demoted due to the “three-iron” reforms and who lacked other channels to express their grievances, some resorted to violence, such as threatening or physically assaulting SOE leaders, throwing chairs, breaking home windows, or attacking leaders’ families with vehicles or knives, resulting in injuries and deaths. Such violence was mostly reported in the 1990s.⁶⁵ However, this type of resistance did not lead to organized collective action compared to layoffs based on bankruptcy and privatization. Moreover, these violent strategies did not consolidate into widely practiced informal rules.

By contrast, although everyday resistance within SOEs was non-eruptive, it impeded reforms and contributed to informal institutions. Such resistance has been understudied thus far. Informal rules based on performative resistance include strategies that solidified into widespread practice. A prevalent and highly important informal institution—common in industries with large numbers of shop floor workers—was to delay the iron-chair reform and use the iron-bowl reform to “complete the reform task.” This practice was uniquely available to iron-chair holders. As the popular saying goes, the reform was seen as “only targeting the lower level but not the upper administration level, and only targeted at the employees but not the management cadres” (只改基层, 不改机关, 只改员工, 不改干部).⁶⁶ A number of mobilization meetings (动员大会) were held, but the reforms seemed to be overwhelmingly targeted at the iron bowl.

Another commonly practiced but hidden rule in iron-chair reforms involves staging the selection process and going through the open competition phase as a performative procedure. Afterward, the original personnel remained in the same positions; in many cases, various department head and low-level management positions were staffed with the cronies of the company leaders. Where there were different opinions on appointments between the staff assembly and firm managers, the managers dominated.⁶⁷ Leaders continued to reward and promote sycophants who lacked the necessary expertise. According to a former employee in a plastic-making company, placing these sycophants in management positions disincentivized highly talented employees who were less skilled at networking.⁶⁸

The bounce-back mechanism that dealt with redundant personnel was the internal retirement institution. These cadres begin their *de jure* retirement a few years early, stop appearing at work, but are *de facto* treated as non-retired employees. In the case I interviewed, the cadre received the same salary and benefits from the SOE as they would before they retired, although they had ceased contributing to the enterprise in 2018. This system allows a firm to claim it has shed a certain number of unnecessary personnel to meet the reform quota.⁶⁹

In a reform to shed redundant workers in a food production firm on the northeast coast, the firm launched a campaign to persuade workers to liberate their thoughts (解放思想) and to vote anonymously on which employees would be laid off in the mid-1990s. The firm designated a reform-minded person in every department, the “reform role model,” to initiate and lead the voting process and called on everyone to support the reform. The ballots were counted publicly as planned, but many voters

(mid to lower-level workers) colluded to vote for the reform role model to be laid off to stop the reforms from further taking place.⁷⁰ The strategy changed the voting rules, and was not an isolated case, as three other firms I interviewed reported similar practices.

Although collusion occurred in a short time period, many other similar practices constitute a long-term, hidden process. A good example of a widely adopted rule was to formally introduce a contract system with employees, but to neither fire employees nor renew their contracts when they expire. Thus, the contract has only *de jure* instead of *de facto* power, and the old practice of hiring and firing continues.⁷¹

Human resource departments in charge of iron-wage reforms also ended up with institutional rebound. Horizontally, the human resources evaluation system sought to avoid offending colleagues and creating conflicts. The evaluation team gave individuals with the same rank the same bonus, regardless of their performance.⁷² This logic has been extended to many of the shareholding reforms, where every individual employee of the same rank had the same number of shares.⁷³ Vertically, different salary ranks perpetuated rather than fluctuated according to performance. The performative changes in the iron wage instilled perverse incentives for reform advocates, leading talented employees to flee the state-owned sector entirely. When the pressure to reform unreasonably high wages for cadres was raised in the mid-2000s, an increasing amount of gift cards worth tens of thousands of yuan were issued to higher-level ranks, in sectors such as oil, gas, and electric power, as more subtle methods of reimbursing personal purchases as cost.⁷⁴

As these subversive strategies became widely practiced informal rules among an increasing number of firms, reforms were often reversed, suspended, or watered down. Reform advocates and talented entrepreneurs flew to spin-off firms or the private sector.

Institutional Reinforcement and Reform Sequence

As a result of institutional rebound, the politically connected were able to manipulate resources to set rules and consolidate their power; the mid-level cadres sought political protection, and many lower-level workers resisted. Nepotism and cronyism abounded. As a department manager commented:

Our companies are certainly more modern, and we have installed many corporate concepts from the experiences of developed countries. ... I feel we are always reforming ... but the effective rules and the way of life for SOEs have remained almost unchanged throughout the past twenty to thirty years.⁷⁵

What makes reforms even more difficult is the fact that institutional rebound went beyond the individual dimension and became mutually reinforcing. Iron-chair reforms had become the deepest source of institutional rebound not only for leaders sitting on these chairs but also for iron bowls and iron wages, which were connected with holders of iron chairs through patronage networks. The competition for iron bowls became a

contest over how sturdy their connected iron chairs were, just as in Mr. Cai's company. Meanwhile, holders of iron chairs or iron bowls also created, practiced, and reinforced the rules to protect themselves against the potential loss of wages associated with underperformance, as firm M has experienced. Institutional connections were further strengthened when the reforms were used as opportunities for factions to wage war on each other to eliminate their adversaries, which involved attacking competing factions in meetings, writing anonymous letters, and spreading rumors. These struggles consolidated patron-client connections, leading the leaders to cultivate and promote those who were the most loyal rather than those who were the most capable.⁷⁶

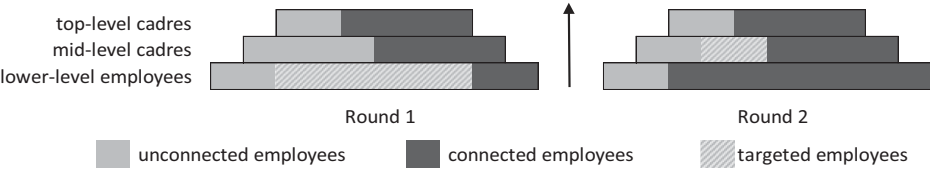
Arguably, to unravel such an interlocking, complicated system, reforms should first target SOE cadres who actively manipulated rules, as they were the most significant source of political protection. However, reform mandates were implemented from the central state to central SOEs or from the central state to local state and local SOEs with a timeline (usually a year).⁷⁷ With pressures to complete the tasks within the enterprise, leaders usually set the agenda to first target employees with the fewest political resources at the lower tier. That was why "break the iron-bowl" was much better known than "break the iron-chair" among observers. Pushing reform downward allowed them to complete reforms and protect the interests of the politically powerful. According to two domestic surveys in 1992 and 2002, most complaints from the staff were associated with leaders' attempts to initiate the iron-bowl reforms without changing the iron chairs.⁷⁸ Across sectors, nonstrategic sectors had a larger proportion of lower-level workers, so they were also the initial targets of reforms.

However, completing reform as a task did not mean a fundamental change of rules. Institutions rebounded with informal rules sequentially as well. Targeting the lower level elicited performative resistance first, except for the few with connections. In the end, employees who lacked connections were often laid off (after performative resistance), left on their own (usually talented employees), or voted out (as in the case of collusion above). But this reform sequence also made room for active manipulation. The vacant or contested positions were immediately re-staffed with cronies and sycophants of high-to-mid-level cadres, who worried about future demotion and sought to consolidate their patron-client relations. Of the twenty-two interviews I conducted, thirteen mentioned the phenomenon where reforms crowded out employees at the lower level.

Figure 1 provides an example. An electric power equipment company originally had 20 percent bottom-level employees, 50 percent connected mid-level cadres, and 67 percent of top-level cadres hired due to connections. The first round of reform (which lasted six years) targeted 60 percent of the lower-level employees and, afterward, re-staffed them with cronies, resulting in 80 percent of them being hired as connected employees. In the second round, the firm identified part of the mid-level cadres to be targeted, who were then replaced by cronies in the next round.⁷⁹

Thus, ironically, as "reforms plus institutional rebound" took place across various levels, the pool of "targetable," un-connected employees shrank, and the difficulty of completing reforms increased. In the meantime, millions of workers were laid off due to privatization or bankruptcy, and the overall composition of SOEs became increasingly

Figure 1 Bottom-Up Reforms and Institutional Rebound in an SOE



Note: unconnected employees who were targeted resulted in three groups: 1) those who were laid off, 2) reform advocates who were voted out, and 3) talented employees who left.

concentrated in strategic instead of nonstrategic sectors.⁸⁰ By the mid-2000s, after more than a decade of reforms, those that could build informal rules or seek protection from above had already done so. Reform targets have since shifted to mid-level or higher-level personnel, and the locale of institutional rebound also moved to the higher level, eventually involving those sitting at the Central Committee of the CCP.⁸¹

Exploring Temporal Evolution and Sectoral Variation

While in-depth interviews helped identify detailed strategies of institutional rebound within firm cases, I rely on text analysis of 1,533 newspaper and journal articles for identifying the larger trend across time and sectors. In this section, I describe the results of using a machine-learning method to compare the distinctive topics on break-the-three-iron reforms in national and local newspapers and journal articles across different sectors and periods (see Figure 2 for article examples).

First, chronologically, my above analysis indicates that reform implementation would start from the bottom and gradually move up both internally and across the sectors. This means we should see the focal points of the discussion gradually shift from dealing with bottom-level workers to politically connected cadres. Second, across different sectors, we would expect to see topics discussing strategic sectors to be focused more on high-level leadership topics, whereas those on nonstrategic sectors should be focused on bottom-level workers' issues. Such differences are expected to interact with variation over time so that the later the reform period, the higher the level of the focal point and the more likely for reforms to be focused on strategic sectors. Finally, sectors with different levels of political connections are also expected to emphasize distinctive content even when discussing the same topic. Appendix C presents a flowchart for the process of building the corpus, processing text, and conducting STM estimation.

To examine topical prevalence over time, I used the year of publication as a continuous, non-linear covariate without adding the sector variable. Figure 3 shows three representative topics and estimates when they are expected to peak based on 95 percent confidence intervals. The sample peaking topic was the workers and wages during the first wave of reforms, which changed to mid-level cadre hiring in the second wave, and

Figure 2 Examples of Newspaper and Journal Discussions



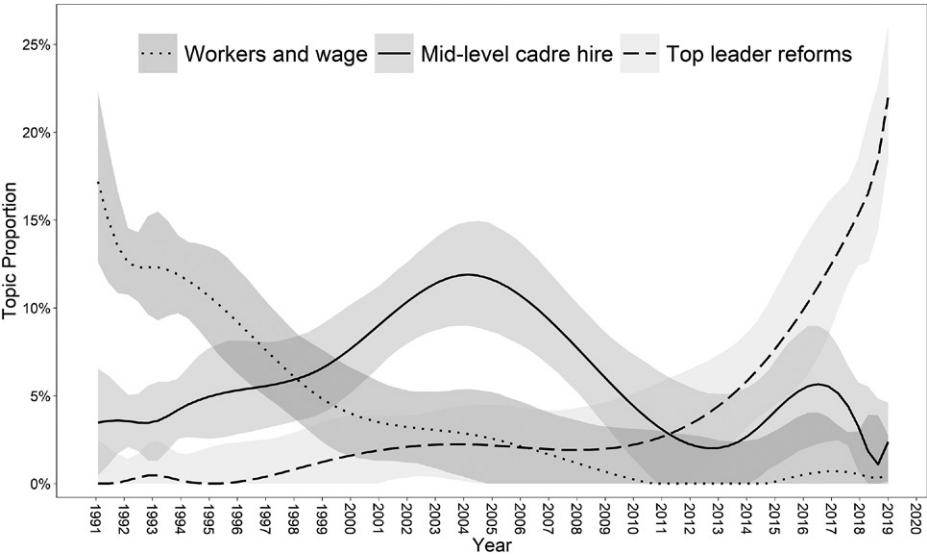
Note: *People's Daily* discusses reforms in Shaanxi Province on March 4, 1992. *Guangxi Electricity Industry Journal* discusses a case in the electric power company of Guanyang County in Guangxi Province in 2003.

finally to top leader reform in the third wave. The variation suggests that the reform started with the least powerful group and shifted to the more powerful. Due to space constraints, I only show one representative topic for each wave of reforms.

Topics that peaked during the first wave of reforms, represented by the dotted line in Figure 3, predominantly focused on workers, wages, and iron-bowl issues. Reforms during Jiang Zemin-Zhu Rongji's term in the 1990s and early 2000s largely fell into this category. During this period, the state informed local officials of the timeline to complete reforms, and local officials further passed down the pressure to SOE party secretaries and heads. SOE cadres targeted bottom-level workers with the fewest political connections so as to avoid iron-chair reforms at the top. These reforms were met with performative resistance, except for a few employees with connections. Key words in this topic described these workers' jobs as tiring (累), dangerous (险), bitter (苦), and dirty (脏).⁸²

During the Hu Jintao-Wen Jiabao period, which is characterized by the rise of the topic on the hiring of mid-level cadres (the solid line), SOEs became more consolidated and their overall strategic value and technical intensity increased. After laying off a large number of bottom-level workers, only a small population could be targeted. Further eradicating them would cause more social instability and go against a "harmonious society." Meanwhile, the government was also not powerful enough to directly tackle top-level SOE leaders. This is the likely reason that the topic of "mid-tier cadre hire" peaked during

Figure 3 Predicted Topic Proportions over Time Based on Prevalence Model



Note: Prevalence model with the year of publication as a non-linear covariate using spline. Ribbons show 95% confidence intervals.

this time; “competition for positions” (竞聘), “examination” (考核), “democratic evaluation” (民主评议), and “mid-tier cadres” (中层干部) were the most frequently occurring words in the topic. However, as mentioned earlier, the reform activated the informal rules of further seeking upward political ties and turned the competition for positions into a competition among one’s political resources.⁸³

The topic of top-level cadre reforms in SOEs, shown by the dashed line, peaked in the Xi era (2013 and after). Example words of the topic are “leading” (引领), “top-level design” (顶层设计), and “cadres” (干部). SOEs have increasingly concentrated in the strategic sectors during this period. Xi Jinping is the only national leader whose name occurs in the top ten words associated with any topic, signifying his importance. Xi realized that to implement any changes in such tightly knitted institutions in these gigantic SOEs, the initiatives had to come from the top. Among other measures, Xi has reshuffled the SOE heads and recently pushed to de-bureaucratize the headquarters after sending central inspection teams (巡视组) to some central SOEs.⁸⁴ At the same time, the SASAC separated political cadres from professional managers in the salary management system.⁸⁵ The theme that emerged in the text analysis also resonates with reports of central inspection teams (中央巡视组) between 2013 and 2021. Almost all thirteen of the targeted central SOEs for the three-irons reforms reported that management-level evaluations were the key.⁸⁶ Two interviewees confirmed that systematic KPI evaluations of chief executive officers (CEOs) had been implemented.⁸⁷ But so far, this

measure has not shaken the deep roots of the institutional rebound problem plaguing SOEs' operations in practice, as interviewees commented that the informal rule of seeking political resources persisted and started to involve leaders beyond their own firms.⁸⁸ And when such SOEs are centrally-owned, it means the institutional rebound can involve Central Committee members of the CCP, who have cultivated strong patronage networks through SOEs.⁸⁹

After discussing reforms peaking in different periods at varying levels of the firms, I then added the sector variable (strategic versus nonstrategic) as a covariate. The upper three figures in Figure 4 show the continuous plots of the predicted value of topic proportion for the same three topics in Figure 3, but with the added sectoral effects. The results, as expected, show that nonstrategic sectors are more likely to discuss the topic of workers and wages. In contrast, articles on strategic firms discuss topics of middle-level cadre hire or top-level leader reforms more frequently.

The strategic and nonstrategic sectors are not necessarily parallel and are expected to interact with the years over time.⁹⁰ The results, shown in the lower three figures of Figure 4, suggest that the strategic value of the sector reinforces the bottom-up reform sequence and institutional rebound. For mid-level cadres, the strategic sectors are more likely to discuss the topic, but the frequency declines after the focus moves upwards to SOE leaders. For top leader reforms, strategic sectors rose much faster over the years than nonstrategic sectors, and overall, the topics increased for both of them with the sectors.⁹¹

Figure 4 Predicted Value Plots with Sector and Year as Covariates and Interaction Effects Plots Using Sector as a Moderator for Year



Finally, in addition to the frequency of discussing specific topics, different sectors are expected to use different words to discuss the content of the same topic.⁹² Appendix I displays the perspective plots on two topics based on the content model. In terms of “human resources,” the strategic sectors focus on SOE cadres (干部), evaluations (考核), and appointments (聘任) in order to enhance enthusiasm (积极性) to work hard and introduce competition (竞争). The nonstrategic sectors, in contrast, tend to shift the reform pressure downwards to workers (工人) and focus on labor (劳动) and wage (工资) issues as well as distribution (分配).

On the topic of “mobilization of workers” (also in Appendix I), the strategic sectors emphasize how to lead (领导) the masses (群众) and channel their behavior. But overall, they use fewer words to discuss this topic compared to nonstrategic sectors, which seek to educate the employees through thought work (思想工作) and emphasize politics as well as the role of employees’ representative conference (职代会) and party committees (党委). Some other distinctive words that are too small to show for nonstrategic firms also include: frustrated (挫败), worried (担心), misgiving (顾虑), and conflicts (矛盾).

Comparing variation across time periods and sectors reveals an overall trend of moving from lower-level iron-bowl reforms to higher-level iron-chair reforms across time, which interacted with cross-sector dynamics. As the major mechanisms of institutional rebound changed from performative resistance to active manipulation, the strategies and narratives of the reforms also shifted from cultivating incentives or placating losers to promoting meritocratic evaluations. Viewed in this perspective, SOEs’ institutional rebound is not unique to the Xi era, even though the so-called “advancement of the state sector and the retreat of the private sector” (国进民退) is often framed as such.⁹³ The seeds of rebound were sowed decades ago. Despite the effort to crack an opening for reforms, informal institutions have locked reforms in a quandary.

Conclusion

The institutional rebound in China’s SOE sectors over the past thirty years showcases a typical example of arduous reforms being especially hard to push through. Many of the dynamics featured here have occurred in reforms of other public sectors (schools and governments) within and outside China, where complicated mechanisms of resistance eroded newly established institutions.⁹⁴ Influential works on the public sector have focused on institutional change,⁹⁵ but institutional resilience, embodied in informal institutions under the guise of formal institutions, needs to be taken more seriously.

Revealing the process of institutional rebound helped advance an approach that could potentially be useful for contexts beyond China. Russia’s shock-therapy approach was often seen as instantaneous. However, various directors of SOEs, who opposed Yeltsin’s reforms, started their resistance far ahead of the implementation and clung to state subsidies afterward.⁹⁶ The lack of change in corporate governance has entrenched the soft budget constraints and other informal beneficial arrangements, which persisted

after the reform.⁹⁷ Thus, it would be helpful to identify not only the actors but the persistent informal institutions that defeated the original reform initiative. In Turkey and Venezuela, reform implementation was thwarted by rent-seeking from vested interests, suggesting that informal rules survived the formal institutional change.⁹⁸

The article draws attention to the role of institutions, but it does not seek to downplay agency and actors. Only when the process of institutional reform is untangled—how formal and informal institutions interact, how cadres and workers actively and performatively use informal institutions, and how different dimensions of institutions interlock with each other—can one clarify the various actors' strategies. The approach developed here can be especially helpful in explaining failures of institutional change, a process that is too often assumed to be static but turns out to be dynamic, as the term "institutional rebound" suggests.

NOTES

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3. Nicholas Lardy, *The State Strikes Back: The End of Economic Reform in China?* (Washington, DC: Peterson Institute for International Economics, 2019).

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36. Sarah Eaton, "Political Economy of the Advancing State: The Case of China's Airlines Reform," *The China Journal*, 69 (January 2013), 64–86.

37. Naughton and Tsai.

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39. For a list of interviewees, please refer to Appendix A (only fifteen are cited in the article). The interviews were suspended due to the Covid-19 outbreak. Secondary literature and text analysis were used to triangulate the empirical evidence. For research ethics, see Appendix N.

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41. See Pearson for sectoral categories. See Appendix K and Appendix L for coding details.

42. The number of topics was determined by the SearchK process that considers semantic coherence and exclusivity. See Appendix D for topic number selection and Appendix H for topic labels.

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51. According to one interviewee, the guard at the gate and a scientist working for the same company would receive the same salary in the 1990s. Interview SD120319. Also see Cliff.

52. For examples, see Yafei Wu et al., "7 hu shengshu guoqi niannei jiben wancheng sanxiang zhidu gaige." *Sichuan Daily*, Oct. 30, 2014; Jiang Da, "Kuse zhihou shi xiangtian." *Liaoning Journal*, Apr. 28, 1992; Jianwen Yi and Jiang Xie, "Chenzhoukuang 'sanxiang zhidu' gaige tisu." *Chinese Journal of the Mining Industry*, Apr. 19, 2005.

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56. Interviews SC110519 and SC110619.

57. Ibid.

58. Man Zhao, “Sanxiang zhidu gaige zhong de ruogan wenti de zongshu,” *Journal of Zhongnan University of Economics and Law*, 5 (1993), 77–78; Changyi Liu, “Gongye qiye neibugaige de nandiansuozaizhi qidui sikao,” *Jiangnan Forum*, 12 (1992), 25–27. Similarly, Zhang documented that among the 691 mid-level cadres in China’s largest state-owned Bank, ICBC, 240 were family members of these cadres. Changdong Zhang, *Governing and Ruling: The Political Logic of Taxation in China* (Ann Arbor: University of Michigan Press, 2021).

59. Interview SC011620.

60. Interview BJ010420a; Interview BJ010420b.

61. Elizabeth Perry, “From Native Place to Workplace: Labor Origins and Outcomes of China’s Danwei System,” in Xiaobo Lü and Elizabeth Perry eds., *Danwei: The Changing Chinese Workplace in Historical and Comparative Perspective* (New York: Routledge, 1997), 42–59.

62. William Hurst, *The Chinese Worker after Socialism* (New York: Cambridge University Press, 2009); Yongshun Cai, “The Resistance of Chinese Laid-off Workers in the Reform Period,” *The China Quarterly*, 170 (June 2002), 327–44.

63. Hurst.

64. Cai. It is unclear whether these were deliberate strategies to prevent collective protests. Note in this article, “the iron-bowl” refers to a subset of reforms in “three-iron reforms,” which was the original meaning of the phrase. Only later was it used by the media to refer to any kind of layoff or simply to SOE reforms generally.

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68. Interview SH010720; SC011620.

69. Interview SC110619.

70. Interview SD120319.

71. For an example, see Yanchun Ma and Xin Tong, “Lun dongbei laogongyejidi guoyouqiye ‘sanxiang-zhidu’ gaige,” *Contemporary Economic Research*, 8 (2005), 37–40.

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73. For Hubei’s case, see Shengping Qiu and Yongming Fan, “Zhuanhuan jizhi shi gaizhiqiye de shouyao renwu, machengshi guoyouqiye gaizhi de xianzhuang yu sikao,” *Hubei Finance and Taxation*, 6 (2000), 45–47.

74. SC010620b, SH011020.

75. Interview ZJ011320.

76. Here I mostly refer to fighting during the reform process, but for everyday factional struggles, see Weiying Zhang, “Wei shenme guoyou qiye neibu quanli douzheng yanzhong,” in Yining Li, Jinglian Wu, Yifu Lin, Qiren Zhou, and Yongnian Zheng, eds., *Dudong zhongguo gaige* (Beijing: CITIC Press, 2019).

77. Xie and Liang.

78. Zhonghua Zhao and Weiting Yu, “Qiye po ‘santie’, zhigong zai xiangshenme, dui bufen qiye zhigong sixiang zhuangkuang de diaocha,” *Corporate Economics*, 6 (1992), 49–50; Jinxue Zhou, “Sanxiang zhidu gaige, qiye zhigong panxiesha,” *Journal of Political Work Study*, 10 (2002), 17.

79. This example is provided by narratives of a department of manager of an electric power equipment company based on interview SC010620b. The example provided is in percentage. But other interviewees provided similar stories, such as SD120419, SC110619, ZJ011320, and SH010720.

80. Pearson, Rithmire, and Tsai. See Appendix M for the changing structure of sectors.

81. Jun Zhang, Qi Zhang, and Zhikuo Liu, “The Political Logic of Partial Reform of China’s State-Owned Enterprises,” *Asian Survey*, 57 (May/June 2017), 395–415.

82. “Zhurongji zai neimenggu shanxi kaocha gongzuo shi qiangdiao: zhengque renshi dangqian xingshi caiqu gengyouti de cuoshi, quebao jingjigaige he fazhanmubiao shunli shixian,” *People’s Daily*, Aug. 3, 1998; Liren Xie and Huiqiu Wang, “Xiaolv youxian, jianggu gongping, guanyu jilin huaxian gongsi gongzi gaige de

diao cha,” *China Textile*, 1 (1998), 33–36; “guilinshi quanmianchujǐ jìhuo guoqìgaige,” *Strategic Information for Leaders*, 20 (1999), 22.

83. This topic also peaked slightly during the third wave of reform in the Xi era, but its frequency is trumped by the top leader reform topic.

84. Wendy Leutert, “Challenges Ahead in China’s Reform of State-Owned Enterprises,” *Asia Policy*, 21 (January 2016), 83–99; *The Paper*, “Guanyu zhongyangqiye kaizhan ‘zongbu jìguanhua wenti’ zhuanxiang zhenggai gongzuo de tongzhi,” https://m.thepaper.cn/newsDetail_forward_5219694, accessed March 1, 2021.

85. “Zhongyang guanli qiye fuzeren xinchouzhidu gaige fangan,” <http://finance.sina.com.cn/china/20141111/030120781809.shtml>, accessed March 1, 2021.

86. <https://www.ccdi.gov.cn/special/zyxszt/>.

87. Interviews SH011020, SC01162020. Also see Jerry Cao, Michael Lemmon, Xiaofei Pan, Meijun Qian, and Gary Tian, “Political Promotion, CEO Incentives, and the Relationship between Pay and Performance,” *Management Science*, 65 (July 2019), 2947–65. In combination with the anti-corruption campaigns, some of the previous sources of subversive strategies, such as offsetting salary reductions with reimbursements for cost, were also constrained at the firm level, although gift cards are still pervasive.

88. Interview BJ0115020. For many conflicting goals of Xi’s reforms, also see Barry Naughton, “Two Trains Running: Supply-Side Reform, SOE Reform and the Authoritative Personage,” *China Leadership Monitor*, 50 (April 2016), 1949–2008.

89. Zhang, Zhang, and Liu.

90. Due to the relatively small sample and degrees of freedom, linear interactions rather than nonlinear ones are examined here.

91. There might be concerns that the outcomes can be attributed to regional variations, hence Appendix G shows the results of predicted topic proportion and interaction effects after adding the regional variable for articles (central, inland, east coast, and other). The effects of the sector as a covariate and as a moderator remain the same. In addition to the three topics shown, Appendix E displays all twenty-one topics and their coefficients and correlation in a network plot. Appendix F displays the same plot but with predicted peak times for all topics using the same prevalence model.

92. Thus far, STM package allows only one topical content covariate.

93. Lardy.

94. There are similarities and differences between the internal SOE institutional reforms and the civil servant system reforms. For example, exams and recruitment of the latter are more standardized nationwide.

95. Jacob Hacker, “Review Article: Dismantling the Health Care State? Political Institutions, Public Policies and the Comparative Politics of Health Reform,” *British Journal of Political Science*, 34 (October 2004), 693–724; Ben Ansell, “University Challenges: Explaining Institutional Change in Higher Education,” *World Politics*, 60 (January 2008), 189–230.

96. McFaul.

97. Frye.

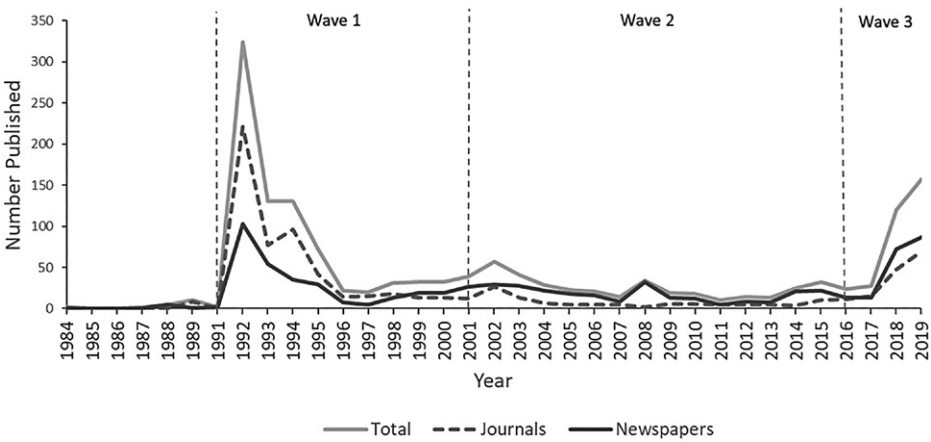
98. Önis; Luigi.

APPENDIX

Appendix A Author's Interviews Cited

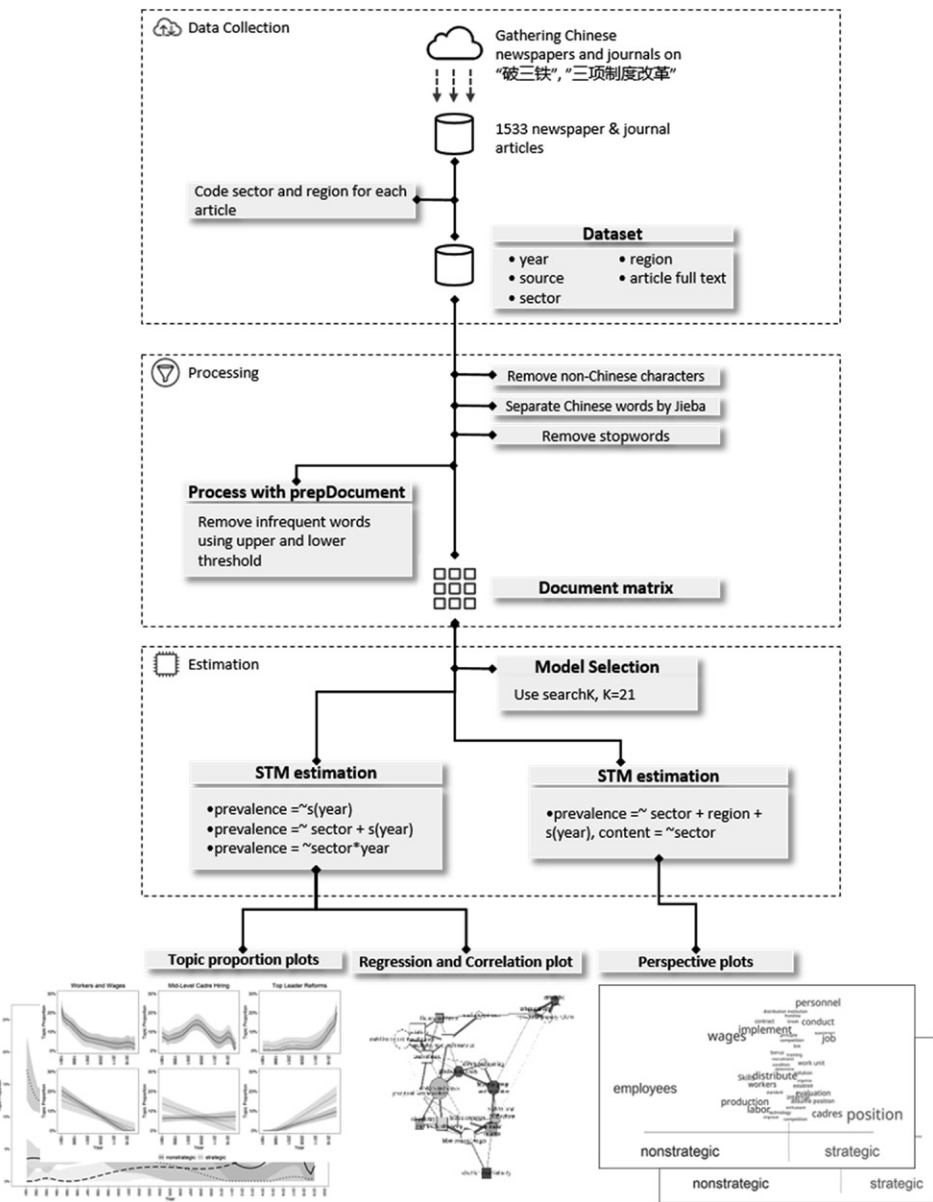
| Interview Code | Year | Location | Interviewee |
|----------------|------|----------|--|
| SD120319 | 2019 | Shandong | Manager, food production firm |
| SD120419 | 2019 | Shandong | Department manager, metal company |
| SC110519 | 2019 | Sichuan | Mid-level employee, finance department, Huaneng Group |
| SC110619 | 2019 | Sichuan | Finance department staff, power grid company |
| BJ010420a | 2020 | Beijing | Mid-level employee, transportation company |
| BJ010420b | 2020 | Beijing | Bottom-level employee, transportation company |
| SC010620a | 2020 | Sichuan | Former financial department head, electric power equipment company |
| SC010620b | 2020 | Sichuan | Department manager, electric power equipment company |
| SC010620c | 2020 | Sichuan | Staff, electric power equipment company |
| SH010720 | 2020 | Shanghai | Former employee, plastic-making company |
| SC011620 | 2020 | Sichuan | Former employee, cargo and transportation company |
| SH011020 | 2020 | Shanghai | Vice president, finance company |
| ZJ011320 | 2020 | Zhejiang | Department manager, transportation company |
| ZJ011420 | 2020 | Zhejiang | Accountant, sprayer-making company |
| BJ0115020 | 2020 | Beijing | Vice manager, pharmaceutical company |

Appendix B Newspaper and Journal Articles Published on the “Three Irons” Reforms



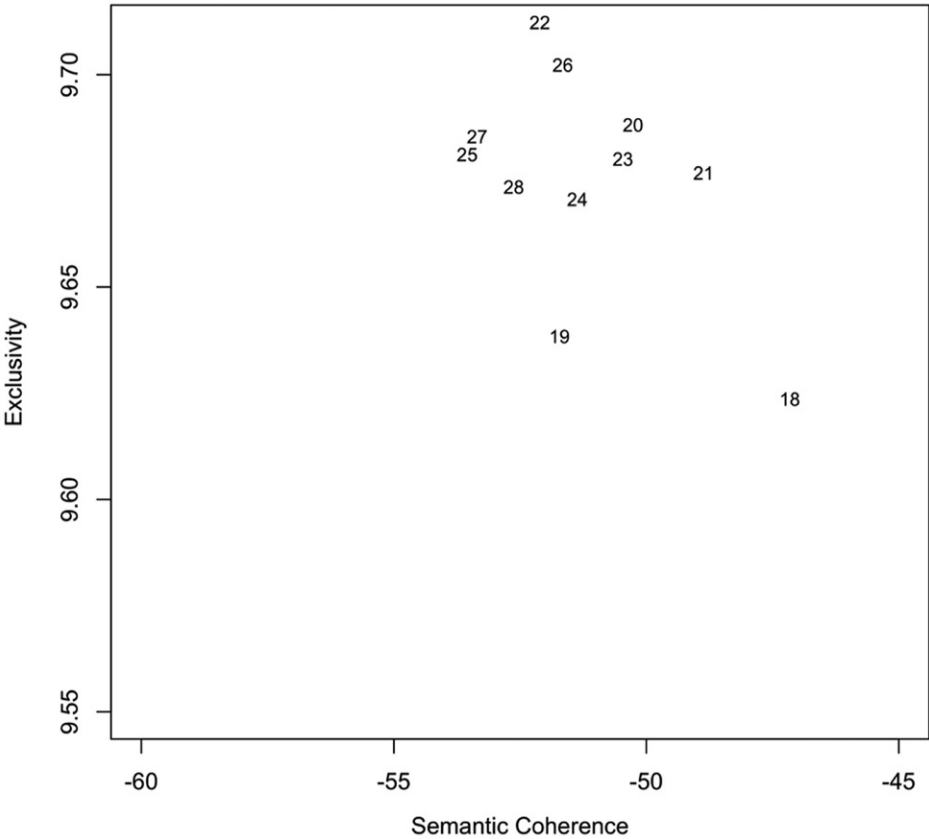
Source: CNKI (<https://oversea.cnki.net/index/>) and China Digital Library (<http://www.apabi.com/jigou?pid=about&cult=US>).

Appendix C Flowchart for Structural Topical Modeling



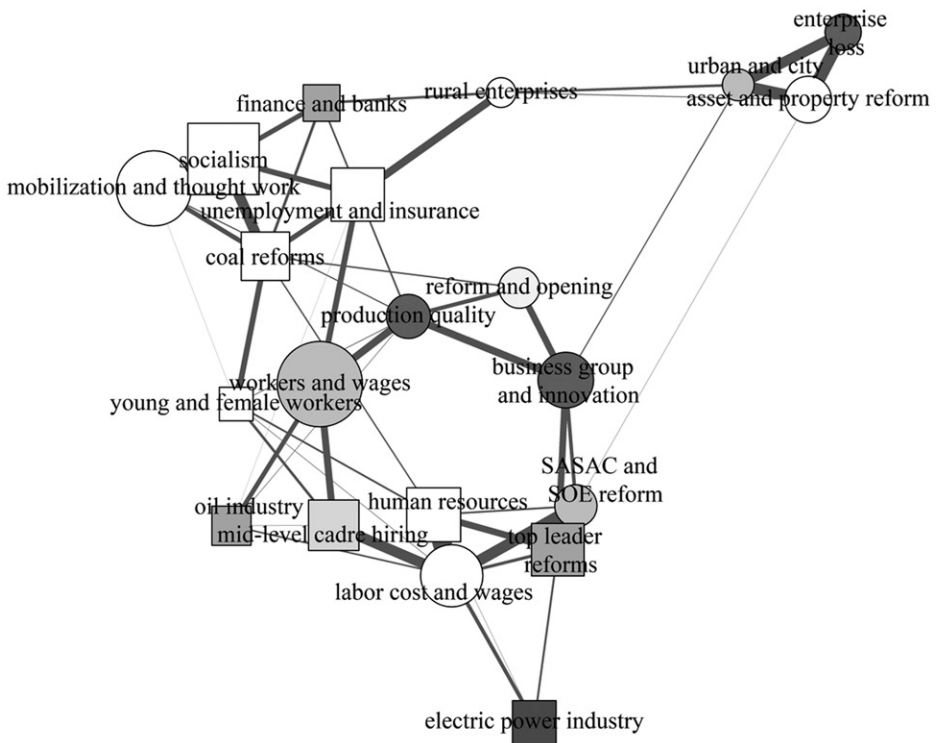
Note: Structural topical modeling (STM) is used to learn topics and to understand the framing of the newspaper and journals. In the prevalence model, I estimate the frequency that a topic is discussed. In the content models, I explore particular words used to discuss certain topics. Appendix G adds regional controls to the second and third prevalence models (without the content model).

Appendix D Using Semantic Coherence and Exclusivity to Decide Topic Number



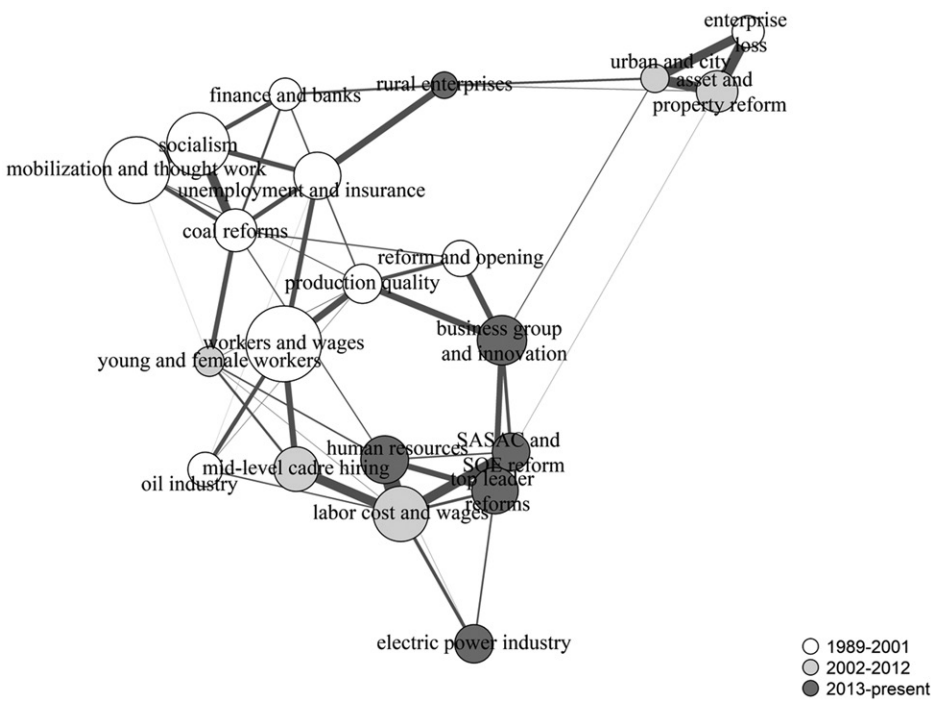
Note: To balance between topic exclusivity and semantic coherence, SearchK package is used and the topic number 21 is used for the model.

Appendix E Regression Coefficients for Strategic Sectors and Correlation among Topics



Note: This network plot reflects correlations among the 21 topics generated by the prevalence model specified in Figure 3. Thicker lines indicate stronger correlations between the topics. The size of the circles is proportional to the number of words for each topic. A square node indicates a positive coefficient for strategic sectors and a round node indicates a negative coefficient for strategic sectors. The darker the color, the larger the magnitude of the coefficients. Only significant coefficients are shown in color.

Appendix F Topic Correlations and Predicted Peak Times based on the Prevalence Model



Note: This network plot reflects correlations among the 21 topics generated by the prevalence-year model. Thicker lines indicate stronger correlations between the topics. Different color indicates the different predicted peak times of topic proportion using 95% confidence interval for the prevalence model. The size of the circles is proportional to the number of words for each topic in the corpus.

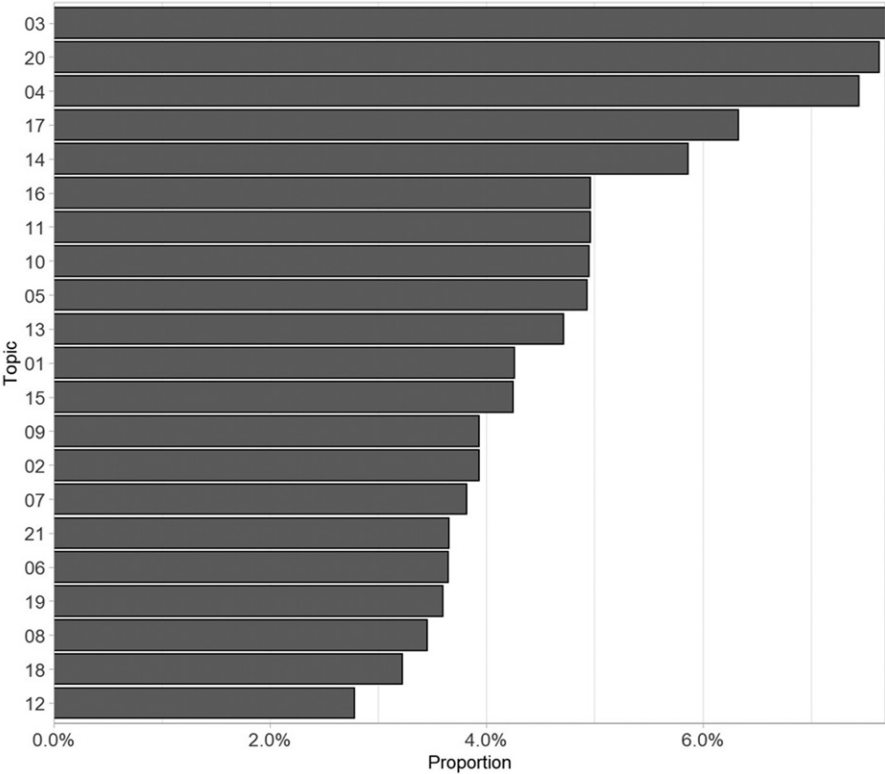
Appendix G Predicted Value Plot and Interaction Effects Plot After Adding Regional Control



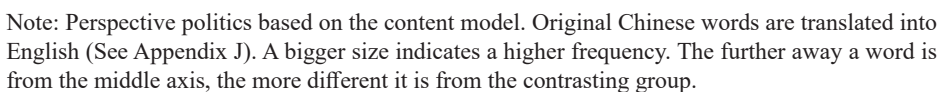
Note: These plots are produced based on the prevalence model with year, sector, and region as covariates. The difference between these plots and Figure 4 is the addition of regional controls.

Appendix H Topic Labels and Proportion Based on the Prevalence Model with Year

| | |
|-----------------------------------|--------------------------------|
| 1. reform and opening | 12. young and female workers |
| 2. SASAC and SOE reform | 13. electric power industry |
| 3. mobilization and thought work | 14. labor cost and wages |
| 4. enterprise loss | 15. unemployment and insurance |
| 5. top leader reforms | 16. mid-level cadre hiring |
| 6. urban and city | 17. socialism |
| 7. coal reforms | 18. finance and banks |
| 8. rural enterprises | 19. oil industry |
| 9. production quality | 20. workers and wages |
| 10. business group and innovation | 21. human resources |
| 11. asset and property reform | |



Topic: Human Resources



Appendix J Translations of Original Chinese Words in Appendix I

Topic: Human Resources

| | |
|------|--------------------------|
| 聘任 | appointment |
| 上岗 | assume position |
| 奖金 | bonus |
| 打破 | break |
| 干部 | cadres |
| 竞争 | compete |
| 完成 | complete |
| 条件 | condition |
| 进行 | conduct |
| 承包 | contract |
| 确定 | determine |
| 分配 | distribute |
| 分配制度 | distribution institution |
| 职工 | employees |
| 积极性 | enthusiasm |
| 建立 | establish |
| 考核 | evaluation |
| 一线 | frontline |
| 实行 | implement |
| 提高 | improve |
| 内部 | internal |
| 工作 | job |
| 劳动 | labor |
| 挂钩 | link |
| 组织 | organize |
| 人员 | personnel |
| 岗位 | position |
| 原则 | principle |
| 生产 | production |
| 用工 | recruitment |
| 技能 | skills |

| | |
|----|------------|
| 办法 | solution |
| 标准 | standard |
| 技术 | technology |
| 培训 | training |
| 工资 | wages |
| 单位 | work unit |
| 工人 | worker |

Topic: Mobilization of Workers

| | |
|------|--------------------------------------|
| 保证 | assurance |
| 业务 | business |
| 干部 | cadres |
| 竞争 | compete |
| 建设 | construct |
| 教育 | education |
| 职工 | Employees |
| 职代会 | employees' representative conference |
| 观念 | idea |
| 实行 | implement |
| 内部 | internal |
| 认识 | knowledge |
| 开展 | launch |
| 领导 | lead |
| 中层干部 | mid level cadres |
| 必须 | must |
| 经营 | operate |
| 组织 | organization |
| 党委 | party committee |
| 坚持 | persist |
| 人员 | personnel |
| 政治 | Politics |
| 岗位 | position |

实际 practical
问题 problem
进行 proceed
生产 production
提高 raise
关系 relationship
社会主义 socialism

加强 strengthen
学习 study
群众 the masses
思想 Thought
工作 work
单位 work unit

Appendix K Coding of Sectors and Regions

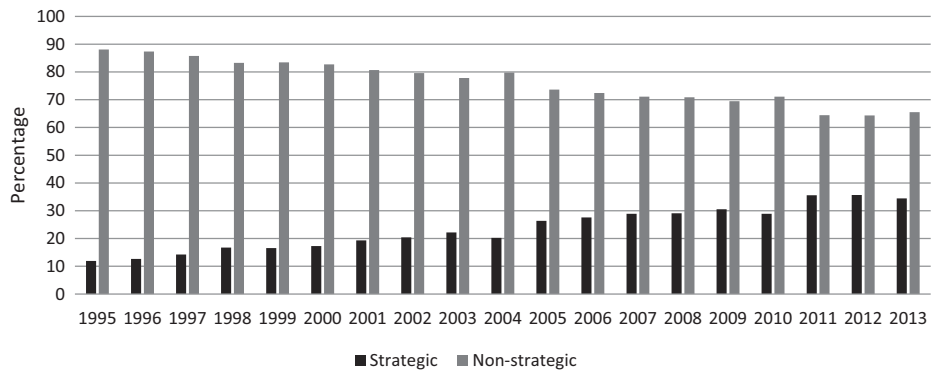
| | Standard Industry Code | Industry |
|----------------------|--|---|
| Strategic Sectors | Sector-top (Strategic sectors) | |
| | 7 | Oil and Gas Extraction |
| | 25 | Oil and Coal |
| | 37 | Transportation Equipment (Railways and Trains, Airplanes and Aviation, Ships, and others) |
| | 44 | Electric Power |
| | 48 | Construction |
| | 63 | Telecommunications |
| | 66 | Finance |
| | 68 | Insurance |
| Nonstrategic Sectors | Sector-middle (Non-strategic sectors) | |
| | 26 | Chemicals |
| | 27 | Pharmaceuticals |
| | 31 | Steel and other black metals |
| | 35 | Special Equipment manufacturing |
| | 36 | Automobile |
| | 38 | Electrical machinery and equipment |
| | 39 | Information, communication and other electronics |
| | 40 | Instruments and appliances |
| Sectors nonspecific | Sector-bottom (Non-strategic sectors) | All other 44 industries |
| | Sector-N | Articles that do not sepecifically discuss an industry. They are only included in the prevelance model but not the content model where sector is binary |

Note: Articles are first manually coded into industries at the two-digit level. Then they are coded into the top, middle and bottom tiers. The top industries are coded as “strategic” and the middle and bottom tiers are coded as “non-strategic.” In this study, strategic industries are those defined to be important to national and economic security by central leaders (Pearson 2015).

Appendix L Coding of Regions

| | |
|----------------|--|
| Region-coast | Articles discussing reforms in Guangdong, Jiangsu, Zhejiang, Fujian, Tianjin, Hainan |
| Region-inland | Articles discussing all other regions |
| Region-N | Articles that do not target specific regions |
| Region-central | Articles that discuss centrally-owned SOEs and their branches |

Appendix M Number of SOEs in Strategic and Non-Strategic Sectors 1995-2013 (in Percentage)



Source: China Industrial Enterprise Survey (1995-2013)

Appendix N Ethics in Human Subject Research

Interviewees in this research were recruited through employees and managers I knew or through local contacts such as scholars or business owners. In the latter case, the local contacts would reach out to potential participants first, and the potential participants would contact me only if they were interested in participating in this study. Oral consent following the standard consent script was acquired before each interview. The study involved minimal risks for interviewees, and it was unlikely to cause any physical or mental harm to interviewees. It protected privacy and confidentiality by storing anonymous interview notes on a password-protected computer. The interview also had the option of not answering questions or stopping participating anytime during the study if the participant was not feeling comfortable.