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**Innovation Through Iteration:
Policy Feedback Loops in China's Economic Reform**

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Abstract

How did China overcome information problems and institutional gaps to successfully implement early market reforms in its state-owned economy? When the Chinese government initiated economic reform in 1978, it needed to stimulate information sharing across hierarchical bureaucracies and incentivize adaptation to varying market and local conditions. Neither state design nor grassroots efforts alone could overcome these gaps. Instead, policy feedback loops—driven by flows of people, information, and ideas linking enterprises with the state—facilitated dual bureaucratic and economic transformation. Process tracing using qualitative and quantitative data reveal how policy feedback loops functioned for three reforms with varying degrees of success: contract responsibility system reform, cost control system reform, and procurement management system reform. This analysis extends the concept of policy feedback beyond advanced industrial democracies, suggests that overlap between policy experimentation and implementation can facilitate adaptive policy-making, and illuminates the centralization and exercise of state authority in China's economic reform.

Keywords

economic reform; policy experimentation; policy implementation; policy feedback; state-owned enterprises; China

Introduction

China's leaders faced a serious dilemma at the start of economic reform four decades ago. The government had built a centralized bureaucracy to carry out top-down production planning and rule-making, but it could not build and govern a market economy by administrative fiat. It needed to incentivize market-oriented behavior and stimulate lateral information flows—while simultaneously maintaining hierarchical political control. Doing this would require that state factories transition from taking ministry orders to proactively adapting their operations to varying market and local conditions. Only through enterprise initiative and information sharing could progress be made in developing new institutional arrangements to facilitate commercial exchanges, promote horizontal and vertical information flows, solve coordination problems, and price goods and assets (Beckert, 2009; Fligstein, 1996; Fligstein, 2002; North, 1990). However, China lacked the rules and practices seemingly requisite for market activity—government regulations concerning transactions and competition, legally enforceable contracts, norms of currency-based commercial exchange, and even basic cost accounting were weak or absent. How did China overcome these obstacles to successfully implement early market reforms in its state-owned economy?

Two stylized perspectives characterize existing scholarship about China's experience of economic reform. One credits the state as its primary architect, stressing top officials' choices about policies, institutions, organizational forms, and resource allocation. In this view, state elites exercise ultimate authority by designing the institutional incentives that influence economic governance and growth, such as the Chinese Communist Party's centralized personnel management system governing leading officials within government and Party bureaucracies, state-owned enterprises, and other domains (Huang, 2006; Landry, 2008; Leutert, 2018; Li and

Zhou, 2005; Landry, Lü and Duan, 2017; Shih, Adolph and Liu, 2012). The state can also shape markets through its regulatory authority, such as the power to rework rules and laws in areas like labor and the environment, and through its constitutive authority, such as the abilities to designate particular geographic areas as special economic zones or to define specific industries and technologies as strategically important (Hsueh, 2011; Pearson, 2005; Yang, 2004).

An alternative perspective emphasizes spontaneous action and innovation in response to changing economic and political conditions. In this view, state and especially non-state actors advance institutional experimentation and market development from the bottom up in the context of administrative decentralization (Montinola, Qian and Weingast, 1995; Qian and Xu, 1993; Xu and Zhuang, 1998; Wang, 2009). Reform of prices, for example, enabled embedded information about resource scarcity and demand to be exchanged among disparate and distanced market actors (Hayek, 1945). Private entrepreneurs may also transform organizations and institutions by adapting the structures of their firms and developing informal information and capital networks (Krouch and Keune, 2005; Nee and Opper, 2012; Tsai, 2004; Tsai, 2006). As growing numbers of individuals and enterprises find utility in decoupling from existing institutions and positive externalities spread, the state ultimately accommodates and legitimatizes their innovations (DellaPosta, Nee and Opper, 2017; Verdery, 2003; White, 1998). Liberalization of trade and investment and increased engagement with international markets may also help domestic market players to surmount information problems.

Both perspectives, however, fall short in answering a key question: how do political elites' designs interact with extemporaneous experimentation and exchanges during the reform process? In this article, I argue that policy feedback loops—driven by flows of people, information, and ideas—link enterprises with the state to yield adaptive policy-making. The state does not

engineer economic reform in isolation from enterprise activity and performance. Yet price signals and private entrepreneur innovation also provide an incomplete explanation for how the information problems of economic transition can be overcome. Signals and feedback transmitted through the administrative apparatus itself are also crucial. This is especially true during early stages of reform in the state-owned economy, where prices are likely to remain tightly controlled, engagement with international markets limited, and private entrepreneurship restricted or even prohibited.

Policy feedback loops operate in multiple overlapping stages. They begin when the central government issues broad directives in a particular policy area. Policy feedback loops continue as local governments respond by devising a course of action (or inaction). Next, central and/or local governments review the results of initial experimentation and act as selection agents by designing pilot programs, selecting model enterprises, and/or drafting provisional regulations. These government actors then diffuse successful organizational experiences by arranging in-person exchanges and circulating written materials. As they do this, the scope of experimentation and implementation expands and more enterprises or local governments engage. Finally, the central government assesses the results, determines success or failure, and the cycle begins again.

I examine policy feedback loops in China's state-owned economy, where the transition from plan to market was most stark. Specifically, I analyze three reforms: contract responsibility system reform, cost control system reform, and procurement management system reform. I use process tracing on an extensive body of qualitative and quantitative data that spans three decades and includes primarily Chinese-language government and enterprise documents, writings by key reform participants and secondary sources.¹ This analysis yields evidence that policy feedback

loops functioned in each of these three cases, with varied outcomes, and it identifies the mechanisms through which they operated.

This article contributes to scholarship on economic reform in several ways. First, it extends the study of policy feedback to transitional, non-democratic states like China. The concept of policy feedback, which inverts the causal process to show “when effect becomes cause,” emerged through examination of advanced industrial democracies (Pierson, 1993).² Pushing this idea further in space and time, policy feedback loops reveal a more complex causal chain characterized by iteration and continued potential for multi-directional influence. In China, central policies changed state-owned enterprises from administrative appendages to increasingly market-oriented entities, remaking their relationship with the state from one of bureaucratic command to strategic bargaining and even lobbying. This prompted new central policies as the state grappled with transformed enterprises, and as the outcomes of particular policies affected the structure and resources of organizations within the state.

Second, the overlapping stages of policy feedback loops blur the distinction between policy experimentation and implementation and may facilitate adaptive policy-making. The pragmatic combination of theory and practice exemplified in such “learning by doing” can be found across a wide variety of economic and political contexts in China and the former Soviet Union (Cseh, 1998; Cseh, 1999; Stein, 1994). While scholars stress the importance of institutional experimentation and learning for economic development, they do not always show how it shapes domestic policy processes (Evans and Block, 2005; Hausmann and Rodrik, 2003). Policy feedback loops reveal how variation in implementation outcomes yielded by local initiative and innovation is actually integrated into subsequent cycles of experimentation. Policy feedback loops also illuminate the ways in which individual officials blend policy

experimentation and implementation as “policy entrepreneurs,” for example by selecting which bureaucratic units to designate as models for wider emulation, or by determining how the outputs of a particular round of experimentation are to be used (Kingdon, 1984).

Third, examining policy feedback loops suggests that authority over key aspects of economic reform continues to be centralized in the hands of the state. In China, the entrepreneurialism and innovation of actors at the local level like officials, businesspeople, and farmers—including some individuals who may even be all three at the same time—rightly draw scholarly attention for their contribution to grassroots economic and political transformations. However, government bureaucracies in central and provincial capitals have also been active, if less visible, participants in processes of experimentation and implementation. This has been especially true for enterprise reform in China, because enterprises are an important source of government revenues and spill-over effects across enterprises and industries risk economic and social destabilization (Fewsmith, 1994: 56-57). Study of policy feedback loops opens the black box of the state to reveal the multiple pathways through which central and local governments shape the reform process and continually adapt their policies based on its results.

This article proceeds as follows. The following section introduces the concept of policy feedback loops and outlines the stages through which they operate. The next section applies this conceptual framework to analyze three reforms in China’s state-owned economy. Finally, the article concludes by discussing what policy feedback loops contribute to the study of policy experimentation and implementation in China and questions for future research.

Policy Feedback Loops

A large body of scholarship examines policy feedback in advanced industrialized democracies in North America and Europe (Day, 1990; Esping-Anderson, 1990; Hall, 1986; Jacobs and Weaver, 2015; Mettler and Sorelle, 2014; Pierson, 1993; Skocpol, 1995; Weir and Skocpol, 1985). These influential works invert the conventional focus on how political systems shape policymaking by providing resources and incentives. In contrast, they emphasize that policies can also alter political systems by catalyzing mass publics, activating interest groups, fostering networks, and shaping organizations' goals, structures, resources, and behavior. As individuals and organizations engage in the policy process, they access new information, interests, and identities that may ultimately alter themselves, the original policies, and the state. The insight that “new policies create new politics” underscores the numerous ways in which the effects of a policy's implementation may shape subsequent policy contestation and choices (Schattschneider, 1935).

Feedback loops occur when output becomes input in a new cycle that either amplifies the original input (positive feedback) or inhibits it (negative feedback). The idea originates in systems theory and complexity theory, both of which highlight actors' inter-connectedness and the dynamics of competition, adaptation, and selection among them (Axelrod and Cohen, 1999; Von Bertalanffy, 1952). Systems theory views social and economic systems as integrated wholes, with properties that emerge from interactions among the elements of interpenetrating systems (Luhmann, 1979: 37-41). Building on this premise, complexity theory focuses greater attention on the actors in a particular system—their interactions, strategies, learning, and hierarchies of influence. It suggests that specific interventions by influential actors may have system-level effects. For instance, governments may intervene deliberately to alter interactions among actors

within and across particular systems through segregation and integration policies, zoning restrictions, immigration rules, and educational exchanges (Axelrod and Cohen, 1999: 21).

Policy feedback loops combine the concepts of policy feedback and feedback loops. Specifically, “policy feedback loops” refer to pathways by which some of the output of a particular policy becomes new input in a cyclical process that ultimately reinforces or alters existing policies. They operate over space and across time, as people, information, and ideas circulate between the state and organizations active in a particular policy area.³ This circulation generates an interactive and open-ended process of policy change that may evolve in unanticipated and unintended ways. In theory, policy feedback loops create the potential for multi-directional influence among actors. However, in practice feedback from policies does not necessarily reduce state power and conversely may even have “state building” effects.⁴

Policy feedback loops in China are multi-actor, multi-level, multi-phase processes. Actors may include the central government (specifically ministries, planning agencies, and Party organs), local governments (at the provincial level and below), enterprises, and non-governmental or research organizations affiliated with the state. Policy feedback loops begin as the central government issues broad directives in a particular policy area. By keeping reform goals wide in scope and not specifying means to achieve them, the center deliberately allows subordinate actors space to experiment in accordance with their particular conditions (Ang, 2016). Central-level reforms may also focus on desired ends rather than particular means simply because the central government does not know how to realize them. In theory, the Chinese Communist Party’s personnel management system incentivizes lower-level actors to respond to the center’s initial directives and remain engaged throughout the policy feedback loop.⁵ At the same time, conditions of uncertainty may prompt these actors to improvise, innovate, and reinterpret

central government directives in divergent and even contradictory ways (Katzenstein and Seybert, 2018).

Policy feedback loops continue as leaders in state-owned enterprises and local governments interpret and respond to central reform directives. Yuen Yuen Ang aptly terms this dynamic, strategic interaction “directed improvisation” (2016). However, officials may be unwilling performers—they may also choose not to act, to delay, to subvert, or even to oppose the implementation of central reform directives. Enterprise or government leaders must interpret the central government’s goals, formulate multiple possible methods to achieve (or resist) them, select a strategic path of action (or inaction), allocate and mobilize organizational resources and personnel, and then endeavor to carry out their preferred strategy. The variation that this organizational-level experimentation generates is a necessary condition for policy feedback loops, because it allows the relative success of different approaches to be compared.

Next, central government and/or local governments review these already acting organizations and serve as a selection agent. They may choose several initially successful cases to participate in pilot programs, designate model units for broader emulation, and/or issue provisional regulations.⁶ Models and pilot programs may be intertwined: a model unit might serve as the cornerstone for a pilot program in a particular policy area, or an organization that succeeds in a pilot program might be tapped as a model unit. Both pilot programs and model units influence policy experimentation and implementation by promoting the widespread adoption of particular forms of organizational structure and behavior; this narrows space for enterprise and government leaders to formulate divergent strategies or freely alter organizational structure.

Central and local governments subsequently endeavor to recognize, legitimate, and diffuse successful organizational experiences of reform through in-person exchanges and publications. In-person exchanges might include gatherings of representatives from different organizations, such as forums or on-site meetings at a model unit, or reciprocal exchanges of visits by individuals holding the same position in different localities or in firms within the same industry. Today, some government-fostered exchanges of information and ideas among officials may even occur virtually.⁷ In addition, government agencies share organizational experiences of success by publishing profiles of particular organizations' reform approaches and their results and distributing them to other enterprises, government bodies, and even the general public.

As these external activities occur, organizations and their leaders act internally to incorporate the new information they gain. Such actions may include establishing internal working groups comprised of relevant department heads, conducting employee trainings, and designating a small number of internal units to try out new approaches before wider implementation. During this process, organization leaders report regularly to government superiors about their efforts and results.

Finally, the policy feedback loop comes full circle when state agencies at the central level review the results of larger-scale experimentation and implementation, judge them successful or unsuccessful, and initiate a new cycle of reform. If a reform is deemed a success, then the state will retain the original policy while simultaneously issuing new ones to begin a fresh round of reform. If a reform is judged a failure, then the central government will discontinue the original policy and issue a new one. Figures 1 and 2 below illustrate policy feedback loops for successful and failed reforms.

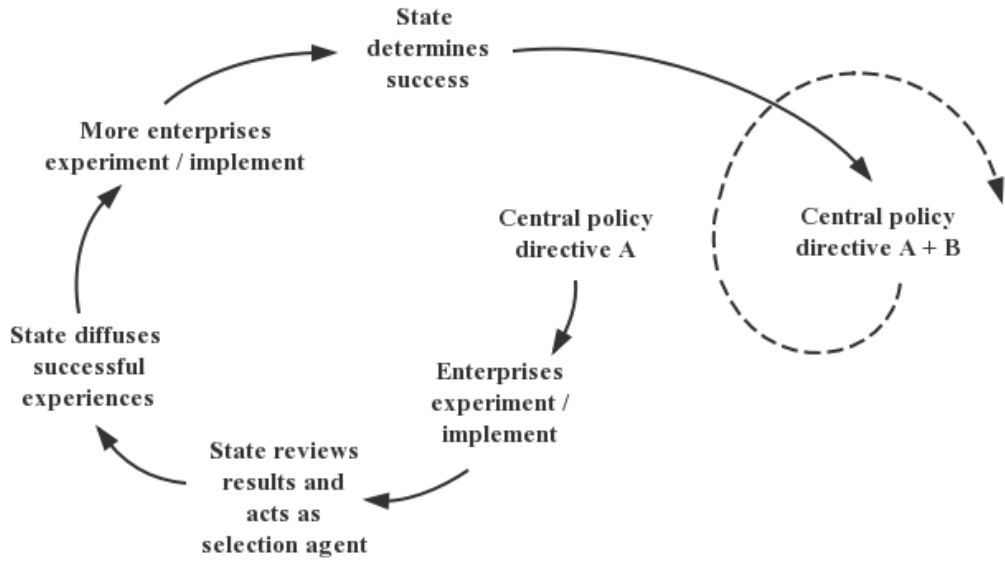


Figure 1: Policy Feedback Loop for Successful Reform

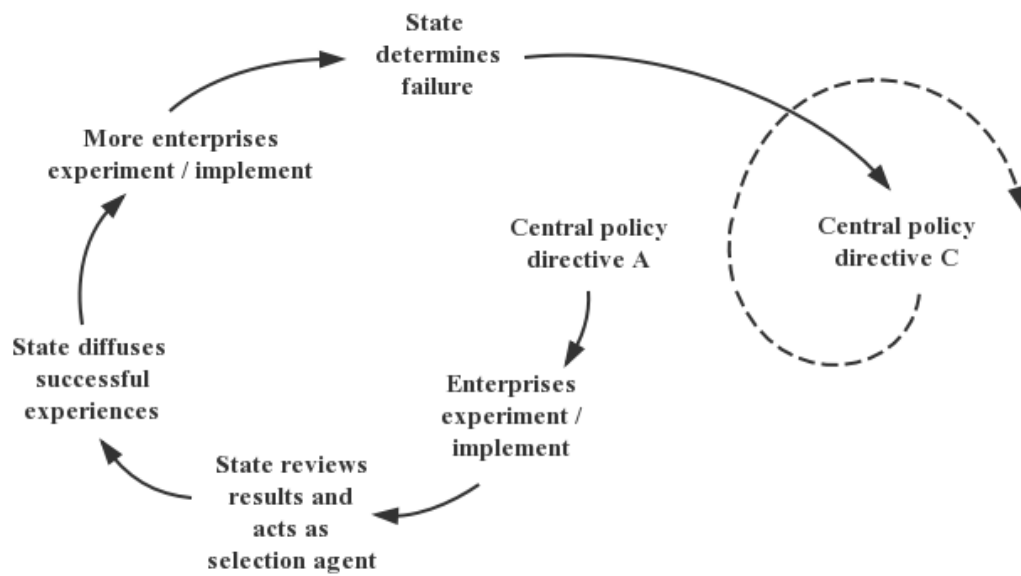


Figure 2: Policy Feedback Loop for Failed Reform

Beyond the unsuccessful outcomes of particular reforms, there may also be instances in which the policy feedback loop itself “fails.” There are several ways in which this might occur. First, a policy feedback loop may fail to be initialized. Consider a case, for example, in which the central government issues policy guidance but there is no response to or non-compliance with it. A policy feedback loop could also fail at a later stage if the government decides to abort a reform, or if the reform itself is subverted through non-compliance. Finally, there may be instances in which the behavior of enterprises or other actors drives the formulation of central policies, thereby replacing a state-initiated policy feedback loop.

Under what conditions are policy feedback loops most likely to function rather than fail? Conditions of high uncertainty often motivate the initiation of policy feedback loops and sustain their functioning. For example, the state may have desired ends but lack the means to achieve them, or firms may face common challenges but lack information about others’ successful approaches in a particular policy area. Alternatively, rapid change in technology, society, and economic or political systems may render experimenting to find and roll out better approaches a survival imperative. The existence and strength of institutionalized mechanisms for communication and coordination among enterprise and state actors also affects the operation of policy feedback loops. Finally, policy feedback loops are most likely to function when they involve policy areas where high interest alignment among relevant actors incentivizes constructive cooperation.⁸ The extent to which these conditions are met varies across different policy areas.

In practice, policy feedback loops may involve contestation and operate simultaneously within and across policy domains. Multiple policy feedback loops operating at the same time across subnational and industry lines can yield a potentially messy and even chaotic reality at the

central level. The more numerous and varied actors involved in a given policy feedback loop are, the greater the challenges of coordination and consensus become—even in political and economic systems in which authority is highly centralized. Furthermore, there may be delays in reporting, distortion and in extreme cases even falsification of information, and debates within the state about how to interpret and act upon reported results.⁹

Policy feedback loops can have broader effects on the state and the reform process itself. Firms changed by experimenting with or implementing a particular policy can also transform the state through strategic bargaining or lobbying. In the global economy, inter-linked firm and state transformation can also occur as domestic firms become embedded in global production networks and partner with multinational enterprises, empowering them to renegotiate and reshape the organization and policies of their home states (Yeung, 2016). The success or failure of particular reforms can also impact the organizations within the state associated with those reforms. For example, the central government may promote individuals or expand agencies and working groups for reforms it judges successful by increasing their personnel allotments and budgets. Conversely, it may demote, downsize, or disband those that worked on unsuccessful reforms.

Research Design and Methods

I employ process tracing on a large body of primarily Chinese-language qualitative data spanning three decades.¹⁰ Process tracing is an appropriate method for this study because it enables analysis of: 1) the steps through which experimentation and implementation actually occurred for specific reforms, 2) dynamic interactions involving numerous organizational and individual actors, and 3) changes over time in organizational structures and behavior. Collecting

and analyzing data for each reform that covers a significant span of time, typically up to one decade, is essential to assess and map potential policy feedback loops from beginning to end. Using qualitative data allows examination of formal policies and experimental arrangements (such as pilot schemes) and quantitative measures of policy implementation and outcomes (such as cost-profit ratios) to be supplemented with detailed evidence of changes in enterprise activities, strategies, structures, and informal work practices.

I select three reforms as the units of analysis: contract responsibility system reform, cost control system reform, and procurement management system reform. I choose these reforms to capture variation along several dimensions. First, their occurrence at different times over a period of three decades helps to assess whether feedback loops may be specific to a particular point in time. In addition, these reforms engaged overlapping but distinct sets of actors: contract responsibility system reform addressed the relationship between enterprises and their supervising government bureaus as well as intra-enterprise relations, whereas reforms addressing cost control and procurement management systems targeted actors and practices within firms. This makes it possible to evaluate whether feedback loops linking the center and state-owned enterprises were present only for reform policies involving government actors, or only for those involving changes to firm-level operations.

The observable implication of this article's argument is that the stages of a policy feedback loop, outlined above, should be present as China's government introduced early market reforms in the state-owned economy.¹¹ Empirical analysis should also yield evidence of the flows of people, information, and ideas linking these stages. Rather than variable-based analysis testing competing explanations for variation in reform outcomes, such as elite politics or alternative privatization strategies, this study conceptualizes and assesses policy feedback loops

as a potential mechanism in the reform process. Put most simply, policy feedback loops are a mechanism, not an explanatory variable. In the following sections, I investigate whether policy feedback loops were present for these three reforms in China's state sector and, if so, the extent and mechanisms of their operation.

Redefining State-Enterprise Relations—Contract Responsibility System Reform

At the end of the 1970s, China's state-owned economy was formally constituted as groups of wholly state-owned and state-run factories embedded in government bureaus (see Figure 3). These factories were essentially production units: they had little authority for operational decision-making or responsibility for performance. Bureaus oversaw factories' daily operations and determined their production methods, inventory levels, and product distribution. While factories were formally subject to both ministry and local government control, ministries directly controlled only a small number of key players and local governments exercised strong influence over the rest. Horizontal links bridging factories and localities did exist, but they were limited and frequently informal in nature (Lyons, 1990).

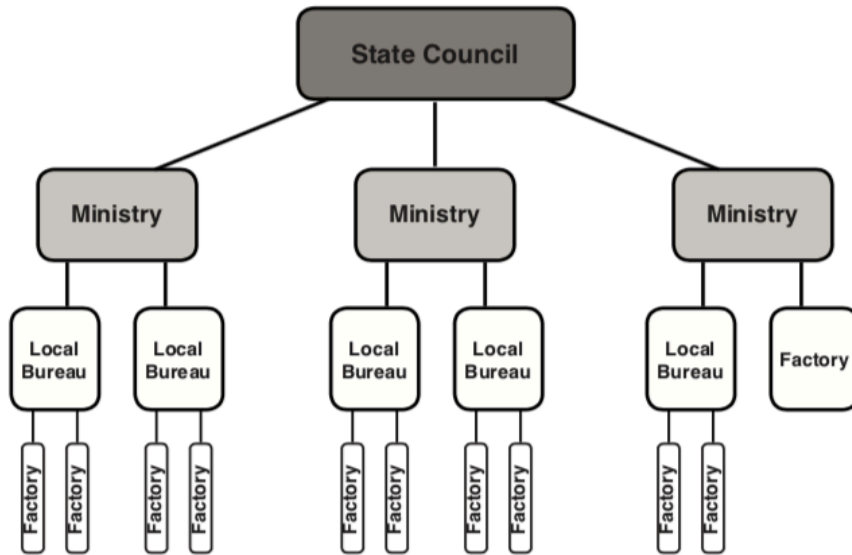


Figure 3: Formal Organization of State-Owned Industry in China at the Start of Reform

Contract responsibility system reform redefined state-enterprise relations by requiring state factories to negotiate tax rates and profit- and loss-sharing arrangements with industrial bureaus. This aimed to clarify state factories’ rights, interests, and responsibilities externally vis-à-vis the state and internally vis-à-vis their employees. The reform appealed to the central government because it held the promise of improving enterprise performance and stabilizing fiscal revenues (Wu, 2018). In theory, it would improve enterprise efficiency and productivity by requiring enterprise heads to formulate longer-term strategic plans and confront market changes, like increased input costs, instead of simply modifying contract targets in the short term.

The policy feedback loop for contract responsibility system reform began with broad directives from the central government about what it initially termed economic responsibility system reform. In 1981, the State Economic Commission and the Economic System Restructuring Office identified its key principles—profit-sharing between industrial bureaus and enterprises and enterprises’ assumption of responsibility for losses—and outlined multiple possible approaches to carry it out (State Economic Commission, State Council Economic

System Restructuring Office, 1981). Later in the year, the State Council released further opinions providing additional information about the central government's goals for the reform (State Council, 1981).

In the next stage of the policy feedback loop, organizational interpretation and trial and error generated variation in approaches and results. Between 1981 and 1982, more than 30,000 industrial state-owned enterprises nationwide implemented economic responsibility reforms (Wang, 1986: 442). A number of large industrial state-owned enterprises, including Capital Iron and Steel Corporation (hereafter referred to as Shougang) and Second Automotive Works, as well as state firms in Jilin and Guangdong provinces were among the first to experiment with the reform (Feng, 1989). Shougang, a large steel company owned by the Beijing municipal government, achieved impressive performance improvements. Shougang's profits increased by 20 percent per year on average between 1978 and 1985 (Beijing Municipal Party Committee Propaganda Department et al., 1992: 70, 90). The company's long-time head, Zhou Guanwu, rolled out new strategies and revamped corporate structure to implement contract responsibility system reform.¹²

The policy feedback loop accelerated when the central government issued temporary directives on economic responsibility reform and selected Shougang as a model enterprise. In 1981, the State Council issued provisional regulations on economic responsibility system reform (State Economic Commission, State Council Economic System Restructuring Office, 1981). In 1982, Shougang signed a groundbreaking 15-year profit-sharing contract with the Beijing government. Economic responsibility reform earned the new moniker of contract responsibility reform with this transition from annual to multi-year contracts. Also in 1982, then Premier Zhao Ziyang and Party elder Chen Yun designated Shougang as a model by praising its success and

urging emulation. By making Shougang a model, the center legitimated the limited extension of authority for economic decision-making and resource allocation to enterprises and their leaders—together with responsibility for enterprise profits or losses.

Central and local governments took action to spread the “Shougang model” through in-person exchanges and publications. Throughout the 1980s and into the early 1990s, leading officials from the State Council, the State Economic Commission, the State Economic System Restructuring Commission, the Ministry of Metallurgical Industry, and the National People’s Congress ordered state-owned enterprises to “study Shougang’s experience and improve economic results.” Central-level government bodies dispatched inspectors to Shougang and disseminated booklets on its reform experience, as did Shougang itself. The Beijing city government also sent officials to Shougang to learn from its experience and mandated the establishment of internal study groups. Official efforts to propagate the Shougang model peaked in May 1992, when top leader Deng Xiaoping toured the company.

State-owned enterprises nationwide studied the “Shougang model” and attempted to implement contract responsibility system reform. Delegations from leading state firms like Anshan Iron and Steel Corporation (Anshan) traveled to Shougang to learn from its successful experience.¹³ However, while enterprises made efforts to show their administrative superiors they had engaged with the Shougang model, not all of them immediately put it into practice. Enterprise heads’ choices to not act, to delay, or to subvert contract responsibility system reforms reflected their strategic assessments about the timing and desirability of reform given existing interests and interpretations of the external policy environment.

Finally, the policy feedback loop came full circle and created a response. After initially expanding experimentation and implementation of the contract responsibility system, the

Chinese leadership reviewed the policy's results and decided to end it. In 1987, China's leaders had identified national implementation of the contract responsibility system as the country's top reform priority (State Council, 1987). By the end of that year, more than 78 percent of all industrial enterprises in the national plan had implemented the contract responsibility system, including 82 percent of all medium and large state-owned enterprises (Zhang, 2006: 177). Contract responsibility system reform initially appeared successful: combined profits and taxes for industrial enterprises in the national budget reached 36.9 billion RMB by the end of 1988, equivalent to the total amount of industrial enterprises' profits and taxes for the entire six years between 1981 and 1986 (Zhang, 2006: 177).

By the early 1990s, however, Chinese leaders realized that these improving figures masked serious issues with the contract responsibility system. The government was losing out on revenue because enterprise leaders' information asymmetry and low baselines locked in at contract signing meant that many contracts ended up being highly favorable to enterprises. The problems of moral hazard and soft budget constraint persisted, because enterprise leaders assumed responsibility for gains but not for losses. Within enterprises, mismatched incentives prompted branch units to over-report production to headquarters to obtain higher wages and bonuses, while enterprises themselves under-reported production to industrial bureaus to retain resources and mitigate future quota increases. The core idea of the contract responsibility system—that state-owned enterprises could succeed economically without change in ownership if the right incentives governing state-firm relations were in place—no longer appeared viable. In 1993, the Third Plenum of the 14th Central Committee of the Chinese Communist Party made no mention of contract responsibility system reform. This indicated the state's judgment that the reform had ultimately failed and would be discontinued. Indeed, China's leaders soon replaced

contract responsibility system reform with a new approach—shareholding system reform—focused on partial privatization through share issuance.

Making Enterprises Accountable to Markets—Cost Control System Reform

During the 1980s, state-owned enterprises struggled to adapt to market pressures amid rising inflation, placing growing fiscal burdens on central and local governments. These developments made cost control system reform a top priority. Cost control system reform had three main elements: cost accounting for production that incorporated the fluctuating prices of key inputs, calibrating production based on input costs and market demand, and pricing outputs appropriately to generate profits. In essence, cost control system reform inverted state-owned enterprises' previous accounting formula that took costs and profits as fixed inputs determining price ($\text{costs} + \text{profits} = \text{price}$) with a new formula that prioritized profits and minimizing costs ($\text{profits} = \text{price} - \text{costs}$) (Shao, 2014). The crucial idea this shift embodied was that making profits involved lowering costs, not simply increasing prices. Cost control system reform was therefore transformative because it challenged enterprises to account for and strictly control production costs in response to changing market conditions.

The policy feedback loop for cost control system reform began in the mid-1980s when the national government urged state-owned enterprises to improve profitability and efficiency by cutting costs. In 1984, the State Council issued a directive on cost management in state-owned enterprises. It outlined basic accounting principles, identified the leaders within enterprises responsible for reducing costs, and enumerated which costs to prioritize. However, it left the specific means to achieve the goal of cost cutting ambiguous, granting state firms significant

leeway to determine “effective measures to decrease costs” and how precisely to carry them out (State Council, 1984).

In the next stage of the policy feedback loop, organizational interpretation and trial and error generated variation in approaches and results. State-owned enterprises experimented with numerous ways to get support to reduce their costs, from asking local governments for subsidies to altering worker benefits. Hangang Corporation, a mid-sized steel producer owned by Hangang City in Hebei province, drew attention for its innovative approach. Hangang began to measure and reward branch units’ ability to control costs by calculating internal transfer prices based on average market prices for production outputs, and then using these internal transfer prices to set profit targets for branch units. Using what company leader Liu Hanzhang termed “simulated market accounting” and “cost negation” practices, Hangang aligned branch units’ output with market prices. It also incentivized individual employees to control costs by linking 100 percent of employee salaries and bonuses with cost-cutting targets.¹⁴ The goal of these incentive schemes, Mr. Liu famously remarked, was to make it as if “every person has a calculator on top of his head.”¹⁵

The central government acted as a selection agent by tapping Hangang Corporation as an exemplar for cost control system reform. In 1992, the Ministry of Metallurgy convened an on-site conference at Hangang, singling out the company’s successful approach among its industry peers. In 1993, the newly established State Economic and Trade Commission (SETC) held an on-site meeting at Hangang on “strengthening management, lowering costs,” while the Office of the State Council issued multiple policy documents endorsing the “Hangang experience” (State Council Office, 1993; State Council Office, 1994). In 1996, the State Council released a report directing industrial enterprises nationwide to study the company (State Council, 1996).¹⁶ The

following month, Vice-Premier Wu Bangguo and other top leaders lauded Hangang at a national conference held at the company and attended by more than 400 leading officials from the State Council, provincial governments, and enterprises (Shao, 2014: 303).

At the same time, the central and provincial governments drove the feedback loop forward by organizing in-person exchanges and publishing numerous works on Hangang. The Hebei provincial government, eager to promote Hangang's success, organized dedicated conferences and training sessions as early as 1992.¹⁷ Between 1993 and 1996, 200,000 individuals representing 18,000 enterprises and 22 industries participated in nearly 60 training sessions held at Hangang, while more than 100,000 individuals attended classes by Hangang leaders held at provincial government ministries (Shao, 2014: 303). The SETC and the Ministry of Metallurgy also published myriad works about Hangang, such as their *Hangang Experience Instruction Manual* pairing official documents and speeches by State Council leaders with essays by Hangang departments and more than a hundred pages of blank sample forms and formulas for cost accounting (State Economic and Trade Commission, Ministry of Metallurgy, 1996).

After the SETC began to promote the "Hangang experience" in the early 1990s, state-owned enterprises attempted to incorporate it and reported back on the results. Those in Hangang's home province of Hebei were among the first to announce improved cost control and enterprise performance.¹⁸ In 1995, China's top steel producer, Anshan, sent a delegation to tour Hangang and also invited its head Liu Hanzhang to address employees at Anshan's headquarters. After experimenting internally with Hangang's approach of setting up "simulated market" and "cost negation" systems, Anshan announced it had transformed monthly losses of 100 million RMB into profits of 330 million RMB during the first ten months of 1995 (Anshan Iron and Steel Corporation, 1996: 6). The following year, Anshan attributed its cutting of 20 billion RMB

in annual costs to its study of Hangang (Shao, 2014: 304). State-owned enterprises nationwide reported success in emulating the “Hangang experience,” from Sichuan to Xinjiang.”¹⁹ However, not all reported gains in cost-cutting were achieved through operational changes; in some cases, other methods were used to cut costs, such as reducing workers’ wages. Some enterprises also discovered that over-emphasizing cost reduction risked decreasing product quality and variety.²⁰

Despite these issues during wider experimentation, the central government ultimately deemed cost control system reform a success. In 1999, Premier Zhu Rongji toured Hangang and called the company a “red flag of state-owned enterprises” (*People’s Daily*, 1999). This high-level endorsement signaled that the core tenets of cost control system reform—accounting based on variable market prices rather than fixed costs and emphasis on operational efficiency in addition to production volume—would remain a core component of future reforms. More broadly, the “Hangang experience” prompted the central government to shift from early state sector reforms focused on the incentive frameworks shaping enterprise-administrative relations to targeted policies addressing specific aspects of intra-enterprise incentives and management systems. The idea of “reform as management,” first proposed at the National Enterprise Management Work Conference in 1995, reflected this shift.

Linking Input with Output—Procurement Management System Reform

The spread of poor quality materials, wasteful spending, and corruption during the 1990s made procurement management system reform imperative.²¹ Enterprises had struggled to develop effective internal mechanisms to standardize and monitor their materials acquisition, because most procurement activities occurred externally. Many enterprises had attempted to limit procurement abuses by centralizing decision-making authority or relying on informal

relationships of trust. However, these approaches proved ineffective for industrial state-owned enterprises that needed to routinely purchase large volumes of materials and whose leaders often lacked the time and expertise to assess competing suppliers.

Procurement management system reform originated in the national government's efforts to improve state-owned enterprises' management and tackle corruption. In 1996, the State Council released the "1995 Outline on Enterprise Management (Trial)," which the SETC later formally issued in 1997 (State Council, 1995). These documents identified the national government's goal of improving enterprise management and discussed possible approaches for specific areas—from strategy to procurement to sales—but it did not offer any one-size-fits-all solutions. Instead, these national directives emphasized general issues like internal supervision of the subsidiary units and employees responsible for resource allocation.

In the next stage of the policy feedback loop, divergent enterprise responses to the national government's reform goal yielded variation in approaches and results. Some enterprises restricted authority for materials acquisition to a few trusted employees, while others required top company leaders to personally sign all contracts exceeding a fixed amount. Yaxing Corporation, a state-owned chemicals company owned by Weifang City in Shandong province, innovated by combining centralized procurement authority with horizontal information-sharing. Its leader, Chen Hualin, established an internal leading small group to make decisions about large contracts. Yaxing also centralized powers of funding allocation and budgeting previously delegated to member companies. To overcome information problems, Yaxing created an internal price information network about potential suppliers and changes in domestic and foreign product prices. Through these efforts, Yaxing reduced procurement costs by more than 70 million RMB

between 1994 and 1998 (State Economic and Trade Commission Enterprise Reform Division, 1999).

After reviewing state-owned enterprises' varied experimentation and implementation efforts, the SETC sped up the policy feedback loop by designating Yaxing as a model unit and issuing provisional regulations on procurement management system reform. The SETC decided to promote the "Yaxing experience" nationwide after its internal research group spent 10 months visiting and comparing 35 state firms across four provinces (Shao, 2014: 306). Working closely with Yaxing, the SETC drafted the "Provisional Regulations on State-owned Industrial Enterprises Materials Procurement Management" and released them in 1999 (State Economic and Trade Commission, 1999). The "Provisional Regulations" outlined best practices, such as managers jointly making procurement decisions, always comparing at least two suppliers, and strictly testing product quality before purchasing.

In the next stage of the feedback loop, the national government mobilized to disseminate the "Yaxing experience" and "Provisional Regulations" through in-person exchanges and publications. By the end of 1999, more than 10,000 state-owned enterprise managers and employees attended more than 30 training classes held nationwide, and approximately 11,000 individuals traveled to Yaxing to study its experience on-site (Shao, 2014: 310-311). That year, the SETC also organized a national discussion meeting at Yaxing about procurement management and promoted the "Yaxing experience" through publications, including a how-to instruction manual (State Economic and Trade Commission Enterprise Reform Division, 1999).

State-owned and private enterprises from across the country engaged with the "Yaxing experience" and "Provisional Regulations" internally and then reported their results. Many announced that strengthening oversight, standardizing the procurement process, and new

incentive arrangements yielded major reductions in raw materials costs.²² Provincial officials also described their implementation of the “Provisional Regulations” and reported similar drops in procurement costs for their state-owned enterprises (Shao, 2014: 311).

Based on the results of wider implementation, the central government deemed cost control system reform a success. In regulations issued in 2000, the State Council affirmed the basic tenets of the “Provisional Regulations” and further directed enterprises to ensure their procurement management systems featured transparent decision-making, checks and balances of power, institutionalized comparisons of quality and price, and strict punishment of abuses (State Council Office, 2000). Like the “Hangang experience,” the national government did not replace the “Yaxing experience” with an alternative reform approach. Instead, it remained the basis for subsequent enterprise reforms. Table 1 below summarizes the results for all three reforms: contract responsibility system reform, cost control system reform, and procurement system reform.

Table 1: Summary of Early Enterprise Reforms and Policy Feedback Loops in China’s State-Owned Economy

Reform	Period	Outcome
Contract responsibility system (originated as economic responsibility system)	1981-1993	Unsuccessful, reform discontinued
Cost control system	1984-1999	Success, reform continued
Procurement system	1996-2000	Success, reform continued

Conclusion

Policy feedback loops enabled China to successfully implement early market reforms in the state-owned economy. Policy feedback loops retained the initial hierarchical structure of top-down bureaucratic rule while enabling adaptive governance, as those at the top reacted to and incorporated enterprise successes and failures in subsequent policymaking. Enterprises could tailor policies to varying market and local conditions, while government actors simultaneously guided this process by identifying and disseminating successful approaches. Furthermore, policy feedback loops did not require bureaucrats accustomed to command-style governance to suddenly innovate from scratch. Instead, they blurred the boundary between policy experimentation and implementation, promoting iterative and incremental “learning by doing.” In these ways, Chinese leaders were able to overcome their core reform dilemma: maintaining overall hierarchy and stability while simultaneously promoting economic growth and institutional innovation. They improved China’s overall “transition management” by organizing and coordinating transition processes involving multiple actors across time, space, and levels of government (Fischer, 2010).

The concept of policy feedback loops advances existing scholarship on economic reform in transitional, non-democratic states like China. It reveals that experimentation and implementation can be overlapping, rather than sequential, with positive results. Deliberately melding these processes can strengthen actors’ ability to tailor a policy to local conditions, while simultaneously generating variation in outcomes that helps governments to identify optimal approaches.²³ It also illuminates the mechanisms by which the state can participate in inter-linked processes of experimentation and implementation—by organizing in-person exchanges, circulating publications, and drafting provisional regulations. However, these processes are not

necessarily meritocratic: organizations and leaders stand to gain disproportionate political and material support if they enjoy personal connections or align themselves with the policy agendas of higher-level elites (Cai and Treisman, 2006). And even as policy feedback effects may modify policy trajectories, state-enterprise relations, and even the state itself, government actors can still exercise important influence via their authority to initiate policy feedback loops, mediate their operation, and determine which outputs become inputs, when, and how.

While feedback loops underscore the state's role in economic reform, they also show that policy experimentation and implementation involve genuine open-ended exploration under conditions of uncertainty. Ultimately, the state cannot engineer development. Individual creativity and innovation were crucial for policy feedback loops and the reforms examined here. For example, Peter Nolan credits the success of the “Shougang model” to its head Zhou Guanwu: “The contract [responsibility system] provided the *possibility* for dynamic, growth-oriented management behavior, but it did not *ensure* that this was how the Corporation would behave” (1998: 42).²⁴ Likewise, the “Hangang experience” and “Yaxing experience” originated from their leaders' changes to organizational structure and strategy and their employees' actions. The central government's reform goals aimed to catalyze experimentation and implementation, but productivity and efficiency gains did not always result—and in some cases outcomes diverged significantly from state intentions.²⁵

This study differs from and contributes to China-specific work on policy experimentation and implementation in several ways. First, its focus on the cyclical nature of these processes advances existing concepts of “directed improvisation,” “experimentation under hierarchy,” and “multi-level governance”—all of which foreground dynamics of interaction rather than iteration.²⁶ It further identifies the specific mechanisms underpinning broader processes of policy

experimentation and implementation, such as multiple types of in-person exchanges and the circulation of written materials. Policy feedback loops also extend the center-local analytic framework dominant in much China-specific research on policy experimentation and implementation to more fully encompass enterprises and their interactions with the state.²⁷ Such state-enterprise interactions are more important than ever today, as state-owned and private enterprises alike increasingly partner with the Chinese state to develop and implement policy in biotechnology, urban transportation, rural development, and other areas. Finally, the concept of policy feedback loops integrates and links the disparate strands of China-specific scholarship on policy experimentation and implementation, campaigns, bureaucratic bargaining, decentralized experimentation, policy entrepreneurship, and strategic adaptation and innovation by local officials and enterprises.²⁸

Future research could address several issues. First, further study is needed to identify mechanisms of bottom-up and transnational influence as policy feedback loops function. How do particular enterprises' reform experiences influence national policy-making? Such mechanisms may be formal, like the promotion of a state-owned enterprise leader to a central government position, while others may involve informal communications between enterprises and administrative superiors. Recent studies also suggest that transnational exchanges can impact what might initially appear to be purely domestic policy processes (Gewirtz, 2017; Ghosh, 2020; Heilmann and Shih, 2013; Looney, 2020). Second, additional data collection and analysis are needed to assess whether this article's findings extend to a wider set of policy domains beyond the state-owned economy in China, or to other transitional, non-democratic states. Finally, future research could investigate the informal politics of policy feedback loops through interviews with reform participants. An important limitation of official documents and government and

enterprise publications is that they often highlight successes, minimizing instances of failure, inaction, delay, or even resistance. Interviews would enrich analysis of policy feedback loops by enabling such information to be systematically collected and taken into account. Future investigation of these issues would provide further insight into how policy feedback loops function and their role in China's economic reform.

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¹ Sources used in this study were collected in Beijing, at the University Services Centre of the Chinese University of Hong Kong, and at the Harvard-Yenching Library and the Fairbank Center Collection of the Fung Library at Harvard University between 2016 and 2019.

² Works applying the concept of policy feedback beyond advanced industrial democracies include: Farid, 2019, on the reciprocal influence between grassroots NGOs and policy-making in China; Hern, 2017, on the impact of public service provision on collective behavior and political participation in Zambia and sub-Saharan Africa; MacLean, 2011, on the effect of public education in sub-Saharan Africa on patterns of citizen political participation later in life; and Sugiyama, 2016, on the potential for recipients of conditional cash transfers through Brazil's Bolsa Família program to organize politically and engage in collective action.

³ As individuals move among organizations, they bring particular sets of knowledge, skills, and relational protocols into the new environments in which they are “transposed.” Padgett, 2012.

⁴ For example, the introduction of Social Security policies in the United States ultimately functioned to increase federal administrative capacities. Béland, 2005; Béland, 2010.

⁵ While the personnel management system may create political incentives to underreport management failures or to distort information about performance, strict punishments for such behavior also discourage it. Furthermore, relative performance gains—not only absolute ones—may be rewarded.

⁶ The units that the national government selects to participate in pilot programs typically serve more as case studies of the implementation process of a particular policy; they do not engage in truly open-ended experimentation. This is because the units selected to participate in pilot programs are often already engaged in carrying out a particular policy, they are typically deemed the most likely to implement it successfully, and they frequently also enjoy additional resources and political support to do so.

⁷ For example, some local officials in China now use mobile platforms and messaging apps to exchange information and experiences. China News Network, 2016.

⁸ For example, reforms to promote economic growth involve greater interest alignment between enterprises and the state than anti-corruption efforts.

⁹ On information problems and distortion of statistical data in contemporary China, see Ghosh, 2020 and Wallace, 2016.

¹⁰ On process tracing, see Bennett and Checkel, 2014; George and Bennett, 2005.

¹¹ Although the precise combination of policy feedback loops' stages and their total duration may differ across different reform areas, their general structure should be consistent.

¹² Zhou Guanwu proposed a strategy of “contracting, guaranteeing, assessing” (*bao, bao, he*) involving comprehensive contracting down to the individual level; coordination among work units, departments, and positions; and strict assessment. He aggressively demoted or removed managers who failed to meet performance targets and streamlined the company's organizational structure by cutting the number of vice-managers in upper management. Nolan, 1998; Steinfeld, 1998; Zhou, 1989.

¹³ For details on central government and Beijing city government efforts to spread the Shougang model and state-owned enterprise and provincial governments' engagement with it, see Beijing Municipal Party Committee Propaganda Department et al., 1992; Ministry of Metallurgical Industry, Central Shougang Committee, 1982.

¹⁴ In the original arrangement, 80 percent of employee salaries and 50 percent of bonuses were linked with cost-cutting targets. Shao, 2014: 301.

¹⁵ Speech by Liu Hanzhang at the “National Conference on Studying and Spreading the Hangang Experience” in February 1996.

¹⁶ This was notable because it was the first time since the Mao-era “industry study Daqing” campaign that the State Council had used a dedicated report to identify a model unit to be studied nationwide.

¹⁷ After organizing a province-wide conference at Hangang in April 1992, Hebei officials organized four training sessions attended by more than 800 people from 200 enterprises. Between 1993 and 1995, it expanded these efforts to reach 1,230 enterprises and more than 6,700 people with reports on the Hangang experience. Speech by Guo Shichang, vice-governor of Hebei, at the “National Conference on Studying and Spreading the Hangang Experience” in February 1996.

¹⁸ Between 1990 and 1995, Hebei province's industrial enterprises' cost-profit ratio ranking jumped from 28th place to 9th place among provinces nationwide. Speech by Guo Shichang at the “National Conference on Studying and Spreading the Hangang Experience” in February 1996.

¹⁹ See reports by enterprise officials about their experiences engaging with the Hangang experience and its results in State Economic and Trade Commission Enterprise Division, China Enterprise Management Training Center, 1997: 51-403.

²⁰ Personal correspondence with former State Council official, January 2018.

²¹ Procurement management system reform was an especially important issue for state industry because the acquisition of material inputs typically constituted the bulk of enterprises' operating costs.

²² For details on enterprise experiences, see State Economic and Trade Commission Enterprise Reform Division, 1999: 188-270.

²³ In the case of procurement management system reform in China, for example, the SETC acted within only a few months to promote the "Yaxing experience" for wider emulation, draft and issue provisional regulations to guide procurement management system reform, and organize national discussion meetings to advance policy implementation and simultaneously assess its preliminary results.

²⁴ Emphasis in original. Yonekura, 1986 also uses the concept of "industrial entrepreneurship" to argue that Kawasaki Steel head Nishiyama Yataro, not the Ministry of International Trade and Industry, was responsible for Japan's post-war embrace of integrated production in the steel industry.

²⁵ One example of such unintended consequences was state-owned enterprises' response during the 1980s to the State Council's 'tax-for-profit' reform, which substituted an income tax for profit remittance. Many state-owned enterprise heads reclassified or underreported their profits to protect the proportion of earnings that their enterprises could retain. The nationwide implementation of this reform in 1984 prompted a 22-month decline in industrial state-owned enterprise profits. Zhang, 2006: 110.

²⁶ Ang, 2016 develops "directed improvisation," Heilmann, 2008a and Heilmann, 2008b introduce "experimentation under hierarchy," and Berger et al., 2013 propose "multi-level governance."

²⁷ On different types of center-local dynamics in Chinese policy experimentation, see Florini et al., 2012. Examples of works centered on state-owned enterprises and their interactions with the state in China include Eaton, 2015; Li, 2014; Nolan, 1998; Steinfeld, 1998; Xu, 2016; and Xu, 2018.

²⁸ For instance, policy feedback loops show that campaigns might catalyze strategic adaptation and innovation and alter existing patterns of bureaucratic bargaining, or that policy entrepreneurship may drive the variation upon which decentralized experimentation depends. On campaigns, see Looney, 2020; Perry, 2011; Zhou, 2011; on bureaucratic bargaining, see Lieberthal and Oksenberg, 1988; on decentralized experimentation, see Heilmann, 2008a; Heilmann, 2008b; Wang, 2009; on policy entrepreneurship, see Mertha, 2008; Mertha, 2009; Xu, 2016; Xu, 2018; on strategic adaptation and innovation by local officials and enterprises, see Ang, 2016; Nee and Opper, 2012.

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