STATE OWNERSHIP AND REGULATORY COSTS: A LAW AND ECONOMIC EXPLANATION FOR THE PREVALENCE OF STATE-OWNED ENTERPRISES IN CHINA

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Despite China's effort to privatize many state-owned enterprises (SOEs) after 1978, SOEs remain a prevalent type of enterprise in contemporary China. There is a widespread belief that they are inefficient and only exist because they have captured the government. This belief, however, does not fully explain why SOEs have been privatized in some sectors but not in others. This Article provides an efficiency explanation of SOEs in China. Applying the law and economic theory on the ownership of enterprise to state ownership, this Article conceptualizes the efficiency of SOEs as a tradeoff between two social costs: ownership costs and regulatory costs. SOEs generally have high ownership costs and thus are not common in many developed countries. However, in developing countries with weak regulatory capacity and legal institutions, they may help reduce regulatory costs, including the social costs associated with the enactment, alteration, and enforcement of regulatory rules, and those costs resulting from the failure to regulate enterprises adequately. The magnitude of regulatory costs in a specific country and industry, in turn, is significantly influenced by the regulatory institutions within which the enterprises operate. An important implication is that refining regulatory regimes may reduce regulatory costs and – in part by facilitating privatization of SOEs – enhance social efficiency.

INTRODUCTION

There is a widespread belief that state-owned enterprises (SOEs) are generally inefficient, mainly because government officials lack incentives to reduce costs and to innovate.[1] Despite this widely held view, SOEs remain a common type of enterprise, especially in developing countries such as China.[2] Since 1978, China has been trying to transform its centrally planned economy into

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[1] Most theoretical analyses and empirical evidence suggest that SOEs have worse financial performance compared with private enterprises. As a result, privatizing them may promote social efficiency. The World Bank published an influential report in the 1990s presenting this argument. *See* WORLD BANK, BUREAUCRATS IN BUSINESS: THE ECONOMICS AND POLITICS OF GOVERNMENT OWNERSHIP, A World Bank Policy Research Report, http://documents.worldbank.org/curated/en/197611468336015835/Bureaucrats-in-business-the-economics-and-politics-of-government-ownership, at 50 (1995). *See also e.g.,* Andrei Shleifer, *State versus Private Ownership*, 12 J. ECON. PERSP. 133 (1998); Andrei Shleifer & Robert W. Vishny, *Politicians and Firms*, 109 Q. J. ECON. 995 (1994); Oliver Hart, Andrei Shleifer, & Robert W. Vishny, *The Proper Scope of Government: Theory and an Application to Prisons*, 112 Q. J. Econ. 1119 (1997); Sam Pelzman, *Pricing in Public and Private Enterprises: Electric Utilities in the United States*, 14 J. L & ECON. 109 (1971); Harold Demsetz, *Toward a Theory of Property Rights,* 57 AM. ECON. REV. 347, 348(1967); John Vickers & George Yarrow, *Economic Perspectives on Privatization*, 5 J. ECON. PERSP. 111 (1991); David G. Davies, *The Efficiency of Public Versus Private Firms, The Case of Australia's Two Airlines*, 14 J. L. & ECON. 149 (1971). For a good summary of empirical evidence of the effects of privatization, *see generally* William L. Megginson and Jeffry M. Netter, *From State to Market: A Survey of Empirical Studies on Privatization*, 39 J. ECON. LITERATURE 324, 325-326(2001). For empirical evidence from China, *see e.g.*, Bai Chongen(白重恩), Lu Jiangyong(路江涌), Tao Zhigang(陶志刚), Guoyou Qiye Gaizhi Xiaoguo de Shizheng Yanjiu(国有企业改制效果的实证研究)[Empirical Studies on the Effects of Reform of State-owned Enterprises], 8 JINGJI YANJIU(经济研究)[ECON. STUDIES] 4 (2006). Hu Yifan(胡一帆), Song Min(宋敏), Zhang Junxi(张俊喜), Zhongguo Guoyouqiye Minyinghua Jixiao Yanjiu(中国国有企业民营化绩效研究)[Studies on the Effects of Privatized State-Owned Enterprises], 7 JINGJI YANJIU(经济研究)[ECON. STUD.] 49 (2006); Zhang Weiying(张维迎), *Cong Xiandai Qiye Lilun Kan Zhongguo Guoyouqiye de Gaige[Reform of State-owned Enterprises Based on Modern Enterprise Theory]*, 6 GAIGE YU ZHANLUE[REFORM & STRATEGY] 18 (1994) (China). A few scholars, however, believe that SOEs may be efficient under some circumstances. *See e.g.* Ravi Ramamurti, *Why Haven't Developing Countries Privatized Deeper and Faster?*, 27 WORLD DEV.137 148 (1999)(" In most countries, the SOE sector consists mainly of firms operating in four sectors: public utilities, heavy industries, financial services, and extractive industries. . . . Neither the theoretical nor the empirical literature suggests unambiguously that such firms will perform better if privatized.").

[2] SOEs are also prevalent in Brazil, India and several other developing countries. According to a report issued by the Organisation for Economic Co-operation and Development (OECD) on SOEs, 204 out of the 2000 largest

a market-oriented one by encouraging private enterprises to develop and transferring the state's ownership interests in SOEs to private investors. These efforts have been successful in many sectors. For example, private enterprises now dominate most manufacturing sectors. However, SOEs are still prevalent in some sectors, including the petroleum, electricity grid, coal mining, tobacco, and water utility sectors.[3]

Current theories have not provided adequate explanations for the prevalence of SOEs in certain sectors in China. If SOEs are inefficient, why are there still so many of them in China? One influential explanation is that SOEs continue to exist for political reasons. A World Bank project report in the 1990s suggests that reform on SOEs would typically occur when three conditions are met: political desirability, political feasibility, and credibility.[4] It is most important that privatization benefits the leadership or governing coalition.[5] SOEs may have political connections with the leadership, which allow them to influence political decisions in order to benefit their employees and managers.[6] Similarly, Milhaupt and Zheng argue that SOEs exist because they have captured the government to prevent themselves from being privatized.[7] They may also have captured regulators who then devise rules that limit market competition and allowe them to extract

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listed corporations in the world in 2010-2011 were state-owned. Developing countries, especially the "BRICS," have a significantly larger number of SOEs than OECD countries. SOEs are active in the mining, civil engineering, land transport and transport via pipelines, air transport, manufacturing, and steel sectors. *See* Przemyslaw Kowalski, Max Büge, Monika Sztajerowska and Matias Egeland, *State-Owned Enterprises: Trade Effects And Policy Implications*, Organisation for Economic Co-operation and Development[OECD] Trade Policy Paper No. 147, TAD/TC/WP(2012)10/FINAL 21 (2013). While this Article mainly focuses on SOEs in China, the theory developed herein may apply to other countries.

  [3] *See* infra section II.A.1 for a detailed discussion.

  [4] WORLD BANK, *supra* note 1, at 175-176 (1995).

  [5] *Id.* at 178. I use the term "privatization" in this Article to refer to the process that SOEs are turned into private enterprises or that new private enterprises emerge and eclipse SOEs in importance.

  [6] *Id.* at 179 (noting for example, in Chile, "[s]ignificant SOE reform could occur because . . . groups that benefited from the SOE status quo, particularly SOE employees, were not part of the new military government's support base."). According to this view, even if privatization generates social benefits, SOEs may persist because politicians do not always choose the policy that maximizes the benefits to the society. *See also* Shleifer & Vishny, *supra* note 1.

  [7] *See also* generally Curtis Milhaupt & Wentong Zheng, *Beyond Ownership: State Capitalism and the Chinese Firm*, 103 GEO. L. J. 665. (2015). *Oi, Jean C, Patterns of Corporate Restructuring in China: Political Constraints On Privatization*, 53 China J. 115 (2005)(" Even though China's officials need not worry about being voted out of office, they must worry about the political fallout from restructuring. Breaking the iron rice bowl while there is still an inadequate welfare system is a politically dangerous proposition."). Jose Edgardo Campos and Hadi Salehi Esfahani, *Why and When Do Governments Initiate Public Enterprise Reform?*, 10 WORLD BANK ECON. REV. 451, 452 (1996)("[T]o consent to a reform package, interest groups that currently support or could support the ruling coalition must know what they will gain from the reform, how the gains will be distributed, and whether the distribution of rewards will indeed be honored by the government.").

economic rents. [8] However, while all SOEs have incentives to obtain subsidies from the government, to lobby for limitations on market competition, and to thwart privatization decisions, many of them have failed to stop the tide of privatization in many sectors in China.[9] In addition, private enterprises are also capable of capturing the government to gain access to markets and obtain subsidies.[10] The ability of SOEs to capture government does not fully explain today's uneven distribution of SOEs across industries.[11]

Another possible alternative explanation for the prevalence of SOEs is that they gained dominance because of ideological reasons – the state has held strong ideological preference in favor of SOEs.[12] However, privatization has succeeded in many sectors of the economy, suggesting that political ideologies did not constrain China in its decisions to privatize, at least in some sectors.[13] Furthermore, although China has decided to maintain SOEs in sectors that are considered important for national security or the national economy,[14] some of them have also been partly privatized; while in some sectors not considered economically important, such as the water utility

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[8] Milhaupt & Zheng, *supra* note 7, at 691.

[9] Most manufacturing sectors are dominated by private enterprises. Many large internet corporations, such as Alibaba and Tecent, are also privately owned. See Infra Section II. A for a detailed discussion.

[10] *Id*.

[11] Moreover, China managed to find ways to compensate employees of SOEs to overcome their objections, through what some scholars called "reform without losers." Lawrence J. Lau, Yingyi Qian & Gerard Roland, *Reform Without Losers: An Interpretation of China's Dual-Track Approach to Transition,* 1 J. POL. ECON. 120 (2001). It suggests that it is possible to devise a privatization scheme that achieves a Pareto efficiency outcome. As this Article is going to show later, both the central and local governments in China consider economic development to be a top priority. Thus, the political problems may not fully explain the current landscape of SOEs. *See* Infra Section II.A. For arguments indicating that the Chinese government may make political decisions that promote social efficiency, *see e.g.* Ronald J. Gilson & Curtis J. Milhaupt, *Economically Benevolent Dictators: Lessons for Developing Democracies,* 59 AM. J. COMP. L. 227, 262 (2011) ("[T]he Party embedded high-powered incentives for growth within its own organizational structures…. And just as poor performance of the private equity general partner can be punished by investors withdrawing their capital at the end of the partnership's ten year term, so the Communist Party's role is hostage to economic performance; poor performance would threaten the party leadership and, perhaps, the regime itself.").

[12] Campos & Esfahani, *supra* note 7, at 477. Jiangyu Wang, *The Political Logic of Corporate Governance in China's State-Owned Enterprises*, 47 CORNELL INT'L L. J. 631, 639 (2014).

[13] Scholars have argued that Chinese state capitalism is a system highly similar to other state capitalism in both developed and developing countries, and is different from the state capitalism in the Soviet days. Aldo Musacchio, and Sergio G. Lazzarini, *Chinese Exceptionalism or New Global Varieties of State Capitalism*, in REGULATING THE VISIBLE HAND?: THE INSTITUTIONAL IMPLICATIONS OF CHINESE STATE CAPITALISM (BENJAMIN L. LIEBMAN & CURTIS J. MILHAUPT ED.) 404 (2016).

[14] Guanyu Guoyou Qiye Gongneng Jieding yu Fenlei de Zhidao Yijian(关于国有企业功能界定与分类的指导意见)[Guiding Opinions on the Functions and Categorization of State-Owned Enterprises](promulgated by the State Assets Supervisory and Administrative Committee, the Treasury Department, and the National Development and Reform Committee, Dec. 29, 2015).

sector, private enterprises are still relatively rare.

This Article presents the first attempt to employ the Law and Economic theory of the ownership of enterprise to provide an efficiency explanation for the prevalence of SOEs in China.[15] It argues that state ownership serves an important function in reducing what I call "regulatory costs," which are the social costs borne by the state or the enterprise in a regulatory relationship, including enactment costs, enforcement costs, and costs of opportunistic actions. They arise because of bounded rationality, asset specificity, and opportunism. Privatization would meet with difficulties if these costs were too high. One major problem with privatization in such context is that the state lacks sufficient experience and knowledge, and thus cannot fully foresee future circumstances that may demand regulation. Partly because of this inability to make comprehensive regulatory rules, the state is afraid of losing control and as a result, fails to develop strong legal institutions that would enable it to make credible commitments. Many SOEs in China operate in regulated industries, which cannot easily be privatized because the related regulatory capacity takes time to develop. [16]

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[15] According to the Law and Economic theory of the ownership of enterprise, ownership serves an important function of reducing transaction costs. For example, investor ownership of firms reduces the transaction costs between investors and firms. Employee ownership reduces the transaction costs between employees and firms. One of the determining factors for the allocation of ownership thus is the size of transaction costs between firms and their different "patrons". In some special firms, such as law firms, employee ownership is more efficient than investor ownership because the transaction costs between employees and firms may be high. By comparison, law firms do not need a significant amount of fixed asset investment and thus have lower transaction costs with finance providers. Thus, allowing lawyers to own law firms is more efficient compared with investor ownership. Another determining factor is ownership cost. Different types of owners may incur different level of ownership costs. Hansmann uses transaction and ownership costs to explain various types of ownership, including investor ownership, employee ownership, and consumer ownership. *See generally* Henry Hansmann, *Ownership of the Firm*, 4. J. L. ECON & ORG. 267 (1988). This Article expands upon this framework to explain state ownership. It argues that state ownership serves a similar function, although the "transaction" between the state and enterprise is usually regulation.

[16] For example, in regulating the price of goods produced by a natural monopoly, say, a water utility company, the state often uses a cost-of-service regulation – setting the price at a level that allows the natural monopoly to recover its costs in producing the goods and gaining a fair rate of return. In enacting the regulatory rules, however, the state faces the problem of how to calculate the costs of water supply, including for example, employee salaries, executive compensation, and depreciation of assets. To enforce the rules, the state needs to delve into the businesses of the natural monopoly and inspect its costs. The water utility company may spend resources in exaggerating its true costs or manipulating its accounting standards to raise costs. Because of these difficulties in regulation, the regulators sometimes face political pressure to maintain low water tariffs to avoid criticism, hurting the financial interests of the company, which may deter private investment. These are the regulatory costs resulting from the divergence of interests of the state and enterprises. When the state owns the water utility company, however, the interests of the state and the company are aligned. The company may not have as strong an incentive to pursue profits as a private company. The state can cut off the link between the salaries of employees and the profits made by the company to reduce their incentives to exaggerate the costs. More importantly, whether water tariffs are correctly set does not matter significantly here: if it is too high, it is similar to a tax collected by the government; if it is too

To be sure, SOEs usually have high ownership costs and relatively poor financial performance, for a variety of reasons, including the "soft-budget constraint" problem and the lack of incentive to improve performance.[17] Thus, the distribution of SOEs can be explained by the tradeoff between ownership and regulatory costs: in industries where regulations are not needed and regulatory costs are low, private enterprises are more likely to develop; where regulatory costs are exceedingly high, SOEs are more likely to persist even though they have high ownership costs.[18] Ownership and regulatory costs explain why SOEs in China are more prevalent in regulated industries than in areas where markets can operate efficiently without any need for state intervention. This efficiency explanation fills an important gap in the current literature and can be combined with current theories to provide a more comprehensive explanation for the landscape of SOEs in China.

This thesis has significant contemporary theoretical and policy implications. First, it contributes to the literature on the ownership of enterprise. Hansmann has developed a theory of the ownership of enterprise to explain various types of ownership, including investor ownership, employee ownership, and consumer ownership.[19] This Article explores the extent to which his theory of the ownership of enterprise can be applied to state ownership.

Previous studies have also used economic analysis, including the incomplete contract theory, to analyze state ownership.[20] For example, Hart, Shleifer and Vishny examine the choices of the government between "contracting out" traditional states' services and "in-house" provision.[21] They argue that public enterprises may be more efficient than private enterprises when the quality of

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low, the state can simply subsidize the company.

[17] John Vickers & George Yarrow, *supra* note 1*, at 115. *See generally* Oliver Hart, Andrei Shleifer, & Robert W. Vishny, *supra* note 1.

[18] The discussion here presumes that the starting point is state ownership. Note that the question of who initially has ownership is not important to our discussion – the state and private investors can transact ownership rights as long as transaction costs are low relative to the surplus created by the transaction. In fact, many new state-owned enterprises have been established after the reform since 1999. Chang-Tai Hsieh & Zheng Michael Song, *Grasp the Large, Let Go of the Small: The Transformation of the State Sector in China*, BROOKINGS PAPER ON ECONOMIC ACTIVITY, 14 (2016) https://www.brookings.edu/wp-content/uploads/2016/07/BPEA_ChineseTranslation2.pdf.

[19] *See generally* Hansmann, *supra* note 15.

[20] *See* Oliver Hart, Andrei Shliefer, & Robert W. Vishny, *The Proper Scope of Government*, 112 Q. J. ECON. 1127, 1131 (1997). The previous studies also have not emphasized the difficulties in enforcement and considered the opportunistic actions by the government. Oliver Hart, *Incomplete Contracts and Public Ownership: Remarks, and an Application to Public-Private Partnerships*, 113 ECON. J. C69, 71 (2003). JEAN-JACQUES LAFFONT & JEAN TIROLE, A THEORY OF INCENTIVES IN PROCUREMENT AND REGULATION 637, 638 (1993).

[21] *See* Hart Shleifer & Vishny, *supra* note 20.

services is difficult to specify because of the incompleteness of contract.[22] Sappington and Stiglitz also point out that the choice between public and private provision of goods depends on the transaction costs of governmental intervention.[23] The discussion to be presented here is not limited to government choices, but also choices made by private parties. Additionally, this article addresses a different subject – the comparison of social costs between regulation of private enterprises and SOEs that produce goods for consumers, which has yet to be sufficiently analyzed. The argument closest to my thesis is presented by Laffont and Tirole, who recognize that private firms must serve the interests of both shareholders and regulators, which may cause inefficiency because the two principals may "exert externalities on each other unless the agent[enterprise] carries full responsibility for social welfare."[24] This article further develops this hypothesis into an analytical framework and uses it to explain SOEs in China.[25]

Second, this article also deepens our understanding of privatization. Although scholars have long realized that privatization often gives rise to new regulatory institutions,[26] the difficulties in establishing effective regulatory institutions following privatization have not been sufficiently emphasized.[27]

Third, this article deepens our understanding of state capitalism. Since the foundational work of Berle and Means in 1920s, the separation of ownership and control has become a major concern

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[22] *Id*, at 1128.

[23] *See e.g.*, David E. M. Sappington & Joseph E. Stiglitz, *Privatization, Information and Incentives*, 6 J. POL'Y ANALYSIS & MGMT. 567(1987).

[24] Jean Tirole, *The Internal Organization of Government*, 46 OXFORD ECON. PAPERS 1, 19 (1994). *See also* Laffont & Tirole, *supra* note 20, at 639.

[25] Laffont and Tirole make no distinction between regulation and contract, which led them to conclude that one of the disadvantages of public enterprises is under-investment. As I will show below, private enterprises may also under-invest because the state can change regulatory policies at any time. Laffont & Tirole, *supra* note 20, at 644.

[26] *See e.g.*, Colin Scott, *Agencification, Regulation and Judicialization: American Exceptionalism and Other Ways of Life*, in ADMINISTRATIVE LAW AND GOVERNANCE IN ASIA 40(TOM GINSBURG AND ALBERT H. Y. CHEN, EDS., 2009) ("The rise of regulation . . . is largely, through not exclusively, a response to the problem of big government. In this dimension, governments struggling with unmanageable public enterprises were seeking mechanisms to shrink the state.").

[27] Some researchers argue that without sophisticated legal instutions, especially corporate law, privatized firms may suffer from managerial expropriation. However, few consider consumer protection, environmental protection, economic stability, and other legitimate government objectives. *See* Joseph Stiglitz, *Quis Custodiet Ipsos Custodes?*, 42 Challenge 26, 33 (1999) ("And although institutional infrastructure requires time to create, without it, privatization may lead more to asset stripping than to wealth creation."). John Nellis, *The World Bank, Privatization and Enterprise Reform in Tansition Economies: A Retrospective Analysis*, Operations Evaluation Department (OED) Working Paper 23737, 46 (2002). Bernard Black, Reiner Kraakman & Anna Tarassova, *Russian Privatization and Corporate Governance: What Went Wrong?*, 52 STAN. L. REV. 1746 (2000).

for corporate law scholars. [28] The Law and Finance literature suggests that good corporate governance encourages diversified investment and dispersed ownership structure, which is economically efficient.[29] Other scholars disagree and have proposed various explanations for the varieties of capitalism across the globe.[30] Despite its increasing significance, state capitalism has not been fully explained and studied.[31] This paper contributes to this literature by examing how the need for regulation shapes state capitalism in a country with relatively weak regulatory capacity.

This analysis also has significant policy implications. It suggests that to further promote efficiency, China should strive to reduce regulatory costs in the long run by developing the relevant regulatory and legal institutions. It should be recognized, however, that regulatory institutions may take a long time to develop. Thus, in the short term, China should categorize SOEs based on the difficulties in regulation and gradually privatize those that they can effectively regulate.

In this Article, I will mainly focus on one type of state intervention – economic regulation of industries with market failures, since one of the major justifications for governmental intervention in the market is market failure. The thesis here may also apply to social regulations and other government objectives. A state's legitimate interests are plural, including environmental protection, higher employment rates, and national security. Calculating the social benefits and costs of these values that society deems important may be difficult, but not impossible.[32] If a state is willing to incur higher ownership costs in exchange for other social goals,[33] these choices may be socially

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[28] See generally, ADOLPH A. BERLE, JR. & GARDINER C. MEANS, THE MODERN CORPORATION AND PRIVATE PROPERTY (1932).

[29] Rafael La Porta, Florencio Lopez-de-Silanes, Andrei Shleifer, & Robert Vishny, *Law and Finance*, 106 J. POL'Y ECON. 1113-55 (1998).

[30] See generally Mark J. Roe, *A Political Theory of American Corporate Finance*, 91 COLUM. L. REV. 10 (1991) (proposing a political explanation for the dispersed ownership structure in the United States); Ronald J. Gilson, *Controlling Shareholders and Corporate Governance: Complicating the Comparative Taxonomy*, 119 HARV. L. REV. 1641 (2006)(arguing for a distinction between efficient and inefficient controlling shareholder regimes.). See also Ronald J. Gilson, *Corporate Governance and Economic Efficiency: When do Institutions Matter?*, 74 WASH. U.L.Q. 327 (1996); Peter A. Hall & David Soskice, *An Introduction to Varieties of Capitalism*, in VARIETIES OF CAPITALISM: THE INSTITUTIONAL FOUNDATIONS OF COMPARATIVE ADVANTAGE 1-21 (PETER A. HALL & DAVID SOSKICE eds. 2001).

[31] For some studies, see generally Mariana Pargendler, Aldo Musacchio & Sergio G. Lazzarinni, *The Puzzle of Private Investment in State Controlled Firms*, Harvard Business School BGIE Unit Working Paper No. 13-071, https://ssrn.com/abstract=2217627; Aldo Musacchio & Sergio G. Lazzarinni, *Leviathan in Business: Varieties of State Capitalism* (2012), http://ssrn.com/abstract=2070942.

[32] Susan Rose-Ackerman, *The Limits of Cost/Benefit Analysis When Disasters Loom*, 7 GLOBAL POLICY 56, 61 (2016) ("[A] democracy may make choices that do not jibe with those supported by technically trained analysts, but that is a problem for analysts, not a critique of democracy").

[33] Mark J. Roe, *Backlash*, 98 COLUM. L. REV. 217, 219 (1998) (arguing that stability is important in the analysis

desired.[34]

This Article proceeds in the following order: Part I compares state ownership and regulation and illustrates their relative strengths and weaknesses. It then develops a framework to analyze the costs and benefits of state ownership. Part II uses several case studies to show that ownership and regulatory costs can explain both the historical development and sectoral distributions of SOEs in China, whereas theories in the current academic literature cannot adequately explain them. Part III discusses several normative implications of this thesis. Part IV concludes.

I. A THEORETICAL FRAMEWORK: OWNERSHIP COSTS AND REGULATORY COSTS

Previous studies on the efficiency of SOEs largely focus on their financial performance.[35] Put another way, these studies examine whether state ownership incurs higher social costs due to the state's inability to control and manage enterprises compared with private investors. However, SOEs may also play a role in reducing the social costs of regulation.[36] A full analysis of the efficiency of SOEs should consider both the social costs of ownership and those of regulation,[37] which I refer to as ownership and regulatory costs. Subsections A and B discuss in detail the concepts and components of these two costs.

A. Ownership Costs

Many studies show that state ownership generally incurs higher ownership costs.[38] The state

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of economic efficiency). DOUGLAS A. KYSAR, REGULATING FROM NOWHERE 222 (2010) (arguing that many environmental policies need to be determined by political procedures and not just cost-benefit analysis).

[34] *Id.*

[35] *See e.g.*, Megginson & Netter, *supra* note 1, at 325.

[36] W. KIP VISCUSI, JOSEPH E. HARRINGTON, JR., JOHN M. VERNON, ECONOMICS OF REGULATION AND ANTITRUST 503 (2005). This Article mainly focuses on the tradeoffs between using state ownership and regulation, since the comparison of social costs of state ownership and public-private contract has been discussed before. *See generally* David E. M. Sappington & Joseph E. Stiglitz, *supra* note 23.

[37] Previous studies have largely presumed that regulation is effective, rendering state ownership unnecessary. Shleifer, *supra* note 1, at 136. World Bank, *supra* note 1, at 36 (noticing that "[i]n monopoly or oligopoly markets, private firms may be more efficient than SOEs, but they may exploit consumers," but arguing that it can be addressed by regulation.).

[38] It should be noted, however, that some scholars have pointed out that the efficiency of SOEs depends on the industry they are in. Ramamurti, *supra* note 1, at 148 ("In most countries, the SOE sector consists mainly of firms operating in four sectors: public utilities, heavy industries, financial services, and extractive industries. . . . Neither the theoretical nor the empirical literature suggests unambiguously that such firms will perform better if privatized.").

may lack incentives to monitor managers, to promote technology, or to reduce unnecessary costs.[39] Managers of SOEs may simply be self-interested and only consider their own benefits.[40] Additionally, SOEs have two goals – to promote shareholder welfare and to fulfill various social purposes, which hinder their efficiency, because the managers of the enterprises can manage in a way that benefits themselves while claiming to achieve a certain goal.[41] Another problem with state ownership is the so-called "soft budget constraint" problem. SOEs can usually obtain more capital from the state when they face financial distress, which weakens the market disciplinary effects on managers.[42] Thus, managers of the enterprise thus face no pressure to regain capital through issuing new stock or borrowing more money.

B. Regulatory Costs

Although SOEs usually incur higher ownership costs than regulated private enteprises, they may reduce regulatory costs. This sub-section first addresses the major components of regulatory costs, and examines how state ownership may reduce these costs. It then discusses the major factors that might affect the magnitude of regulatory costs.

1. The Components of Regulatory Costs

Market failures, including information asymmetries, natural monopolies, and externalities, may lead to efficiency losses. Although many scholars argue that governmental interventions create "government failures," and may lead to worse results than market failures, these interventions are ubiquitous in the market today. If we accept that regulation is inevitable, the costs of regulation need to be considered in evaluating the social costs of state ownership.

Regulation can take many forms. The state can provide subsidies, tax incentives, and penalties to influence the decisions of private corporations. It can also impose an outright ban on more severe undesirable activities. For the sake of convenience, these measures can be categorized as

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[39] *See generally* Oliver Hart, Andrei Shleifer, & Robert W. Vishny, *supra* note 1.

[40] *Id.*

[41] Corporate Law usually requires the board of directors to maximize shareholder welfare to avoid this agency problem. Jonathan R. Macey, *Obligations to Nonshareholder Constituencies from A Theory of the Firm Perspective*, 84 CORNELL L. REV. 1266.

[42] John Vickers & George Yarrow, *supra* note 1*,* at 115.

regulations, because they are all means to incentivize certain actions or business decisions of private enterprises through law instead of ownership.

Regulatory costs include enactment costs, enforcement costs, and costs of opportunistic actions by both the state and regulated firms. The enactment of regulatory rules often involves significant procedural costs, similar to those created by contracting processes. Rulemakers need to obtain sufficient knowledge to write sophisticated rules that cover as many foreseeable circumstances as possible.[43] The ability to enact complex rules needs to be developed over time. Thus, developing countries often lack the ability to write sophisticated regulatory rules.[44]

After rules are enacted, the state may also find it hard to monitor the behavior of firms and to enforce regulations.[45] To detect wrongdoings is difficult enough. The enforcement itself may also cause significant costs. The regulated corporations may also go bankrupt before the regulator can take any action because of the limited liability protection.[46] Thus, the law often fails to impose sufficient deterrence on shareholders, who may benefit from violating regulations.

Apart from enactment costs and enforcement costs, regulation also incurs costs of opportunistic actions. Opportunistic action is "self-interest seeking with guile,"[47] or the "residual behavior that would be contracted away if ex ante transaction costs were lower."[48] Political pressure may encourage regulators to act opportunistically *ex post*, distorting outcomes. The failure of the state to make credible promises is sometimes referred to as the credible commitment problem.[49] After investments are made in an industry, the state may suddenly change its policies

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[43] Laffont & Tirole, supra note 20. Katharina Pistor & Chenggang Xu, *Incomplete Law*, 35 N.Y.U. J. Int'l L. & Pol. 931 (2003) (arguing that "law is inherently incomplete"). If, however, the government leaves a lot of discretion to itself or allows itself to change the rules easily after they are adopted, it would create the cost of opportunistic action to be discussed below.

[44] The Internal Revenue Code of the United States, for example, contains thousands of sections, while the Individual Income Tax Law of China contains no more than fifteen rules. Geren Suodeshui Fa(个人所得税法)[Individual Income Tax Law](2011 Amendment)(promulgated by the Standing Committee of the National People's Congress, June 30, 2011, effective June 30, 2011)(China).

[45] The recent Volkswagen scandal vividly illustrates this point. Guilbert Gates, Jack Ewing, Karl Russell & Derek Watkins, *How Volkswagen's 'Defeat Devices' Worked*, N.Y. TIMES, Mar. 16, 2017, https://www.nytimes.com/interactive/2015/business/international/vw-diesel-emissions-scandal-explained.html?_r=0 ("Volkswagen admitted that 11 million of its vehicles were equipped with software that was used to cheat on emissions tests.").

[46] David E. M. Sappington & Joseph E. Stiglitz, *supra* note 23, at 573.

[47] OLIVER E. WILLIAMSON, THE ECONOMIC INSTIUTIONS OF CAPITALISM 47 (1985).

[48] Henry Smith, *Equity as Second-Order Law: The Problem of opportunism* 14 (Harvard Pub. Law Working Paper No. 15-13, 2015), http://ssrn.com/abstract=2617413.

[49] Peter H. Schuck, *Law and Post-Privatization Regulation Reform: Perspectives from the U.S. Experience*, in

or enact new laws that impose inordinate costs on the investors.[50] This problem worsens when "asset specificity" arises. These investors cannot withdraw their investment from their projects easily and will suffer a great loss, because the assets cannot be used for other purposes. Private investment thus would be discouraged. This problem is exacerbated by high enactment costs.[51] Since it is difficult to foresee future circumstances, regulatory rules may remain ambiguous and unpredictable, which may give rise to opportunistic actions.[52]

The regulated parties may also act opportunistically.[53] Take tax law for example.[54] While laying out clear tax laws protects the interests of private enterprises, rigid tax laws leave room for tax-avoidance activities. Therefore, it is also crucial that regulations remain flexible so that they can adapt to new circumstances.[55] The widespread belief in corporate law literature that corporations should maximize shareholder welfare also contributes to the cost of opportunistic action, because it encourages corporations to impose externalities on outside stakeholders.[56] This view presumes that the state can effectively control wrongdoings by regulation, just as it presumes creditors and other stakeholders can control corporations with contracts. However, regulation is not without costs. When these costs are too high, shareholder wealth maximization may lead to socially undesirable consequences.

It must be pointed out that these regulatory costs are social costs in the sense that they are not a transfer of wealth from one party to another, but a decrease in social welfare. The credible commitment problem in regulation may lead to underinvestment in the market. The inability of the state to regulate private enterprises also leads to market failures that decrease welfare. Regulatory

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REGULATORY POLICY IN LATIN AMERICA 38 (Luigi Manzetti ed.).

[50] John Vickers & George Yarrow, *supra* note 1, at 114.

[51] Jean-Jacques Laffont, & Jean Tirole, *Should governments commit?* 36 EURO. ECON. REV. 345 (1992) (A justification for not commiting is "the difficulty of signing complete state contingent contracts in an uncertain environment.").

[52] Peter H. Schuck, *Law and Post-Privatization Regulation Reform: Perspectives from the U.S. Experience*, in REGULATORY POLICY IN LATIN AMERICA 38 (Luigi Manzetti ed.).

[53] This is sometimes referred to as the problem of government capabilities. LUIGI MANZETTI, PRIVATIZATION SOUTH AMERICAN STYLE 22 (1999).

[54] I consider tax essentially as a form of regulation, since it is a form of state intervention in private businesses based on law.

[55] As some scholars point out, in countries where the governments play a larger role in economic activities, the check and balance of political organs is generally weaker, because the procedural constraints on the government may hinder it from exerting influences on the markets. *See generally* J. C. Reitz, *Political Economy and Separation of Powers*, 15 TRANSNAT'L L. & CONTEMP. PROBS. 579 (2006).

[56] *See generally* William W. Bratton, *Enron and the Dark Side of Shareholder Value*, 76 Tul. L. Rev. 1275 (2001-2002); JEAN-JACQUES LAFFONT & JEAN TIROLE, supra note 20, at 638.

costs are socially undesirable regardless of who bears them.

2. Regulatory Costs of SOEs Compared with Private Enterprises

SOEs may alleviate these regulatory costs in several ways. State investment would not be deterred by future changes in regulation. Consider the price regulation of natural monopolies for example. If the state sets the price too low and hurts the interests of the enterprise, it must subsidize the enterprise in order to provide the necessary goods and services, as long as the state is held accountable for the provision of water to public consumers. The underinvestment problem usually does not arise. If the price is set too high, the additional profit is similar to a tax collected by the government and can be spent for the public.

Additionally, the state can prevent the enterprise from acting opportunistically, thus saving the resources spent in evading regulation and the negative consequences of regulatory failures.[57] State ownership of enterprise is similar to a vertical integration between the government and an enterprise.[58] Ownership confers the residual rights to control and earnings. The control based on state ownership, what Laffont and Tirole call "internal control," affects firm decisions mainly through the state's control over managers.[59] With ownership, the state possesses many reward and penalty instruments, including "employment, promotion, remuneration and internal resource allocation."[60] Managers and employees are under the state's control and are selected by the state. It can thus control their incentives more effectively, examine their backgrounds, and place them in a long-term relationship with the state.[61] By contrast, private enterprises may be liquidated or go bankrupt at any moment. In developing countries with less developed credit systems, private investors may even get away by escaping to foreign countries or using faked identities.

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[57] Sappington & Stiglitz, *supra* note 23, at 568 ("[D]irect government intervention into delegated production arrangements generally involves smaller costs under public provision than under private provision").

[58] OLIVER E. WILLIAMSON, MARKETS AND HIERARCHIES 104 (1975).

[59] Laffont & Tirole, *supra* note 20, at 638. ("Internal control is the control of the firm's inputs through managerial incentive schemes, intervention in the decisions concerning employment, level, location, and type of investments, and borrowing.") According to Laffont and Tirole, the government possesses both external and internal control over public enterprises, while it only possesses external control over private ones.

[60] Oliver E. Williamson, *The Vertical Integration of Production: Market Failure Considerations*, 61 AM. ECON. R. 112, 114 (1971).

[61] Jiangyu Wang, *The Political Logic of Corporate Governance in China's State-Owned Enterprise*, 47 CORNELL INT'L L.J. 631, 651–660 (2014) (illustrating the mechanisms by which the state controlls SOEs).

Moreover, the state can structure internal incentives to consider governmental goals other than profit-seeking, [62] which may promote cooperation and resolve conflicts between the enterprises and other stakeholders. In many industries, such as public transportation, municipal utilities, and hospitals, profit-seeking corporations pose a severe threat to public safety and welfare. SOEs allow the state to structure incentives for managers to encourage them to consider other factors.[63] The government may also gain more information about the SOEs' business.[64]

Governments can also impose regulation on private enterprises, in the form of national statutes or regulatory rules. [65] It possesses the police power to define property rights and to interfere when the public interest is at stake. [66] However, regulatory efforts may meet with difficulties because regulators may not easily control private investors, who possess control rights of private enterprises and may instruct them to evade regulatory scrutiny. One clear example is the regulation of accounting. Accountants are often regarded as bearing the responsibility of inspecting corporations and protecting investors. The Enron scandal demonstrated the difficulty in regulating

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[62] For example, managers responsible for violation of law or regulatory rules would be punished by the Chinese State-owned Assets Supervisory and Administrative Commission, if the violation results in significant employee casualties and environmental pollution. Zhongyang Qiye Fuzeren Jingying Yeji Kaohe Banfa(中央企业负责人经营业绩考核办法)[Measures for the Assessment of the Performance of Managers of the Central Enterprise](promulgated by the Chinese State-owned Assets Supervisory and Administrative Commission Dec. 8, 2016, effective Dec. 8, 2016), Article 45. *See* also David C. Donald, *Conceiving Corporate Governance for An Asian Environment*, 12 U. PA. ASIAN L. REV. 120 (2017)("The CCP[Chinese Communist Party] has its own ideological position, and this does not always correspond to profit maximization or 'shareholder value.'").

[63] Theoretically speaking, SOEs can be made similar to non-profit organizations, which incur relatively lower risks of fraud and infringement on relevant stakeholders compared to private corporations. *See generally* Henry Hansmann, *Economic Theories of Nonprofit Organization*, in THE NONPROFIT SECTOR: A RESEARCH HANDBOOK (Walter W. Powell and Richard Steinberg eds., 1987).

[64] Carl Shapiro & Robert D. Willig, *Economic Rationales for the Scope of Privatization*, Princeton University Discussion paper 7 (1990). Sometimes the number of SOEs is too large, making them difficult to oversee, in which case media scrutiny may be helpful. *See* Li Peigong(李培功) and Shen Yifeng(沈艺峰), *Meiti de Ggongsi Zhili Zuoyong: Zhongguo de Jingyan Zhengju(媒体的公司治理作用: 中国的经验证据)[The Corporate Governance Function of the Media: Empirical Evidence from China]*, 4 JINGJI YANJIU(经济研究)[ECON. STUDIES] 14 (2010). Mariana Pargendler, Aldo Musacchio & Sergio G. Lazzarinittt, *"In strange company: The puzzle of private investment in state-controlled firms,* 46 CORNELL INT'L L.J. 569, 589 (2013).

[65] David M. Trubek, *Toward a Social Theory of Law: An Essay on the Study of Law and Development*, 82 YALE L. J. 1, 30 (1972). ("Regulatory law is a hybrid of the universal rules of pure market and the specific directives of pure command: It is more specific than the general rules that establish contract, tort and property rights; yet more general than the specific directives of the command economy").

[66] With this power, states can impose certain restrictions on private property or activities without paying any compensation when the private property is "affected with a public interest." Munn v. People of State of Illinois, 94 U.S. 113, 126 (1876).

accountants who have strong financial incentives to obey the orders of the audited corporations.[67] While accountants are independent contractors instead of corporate insiders, it is safe to assume that regulating managers in profit-seeking private firms would be even more difficult.

Finally, the problem of "regulatory capture" is worth discussing here. "Regulatory capture" refers to the circumstances in which regulated enterprises successfully turn the regulator into their "servant," and affect regulatory policies to further their interests,[68] which may create a loss in efficiency. However, it remains unclear whether state ownership will result in more regulatory capture, since both SOEs and private enterprises may capture regulators.[69] To be sure, regulatory capture is one possible explanation for SOEs, which I will address later.[70]

3. Major Factors that Affect the Magnitude of Regulatory Costs

The magnitude of regualtory costs depends on a series of factors. One major factor is the scope of the regulation. The more aspects of the business decisions of the enterprise the state needs to regulate and the more difficult it is to define the state's control, the higher regulatory costs become. States impose regulations on virtually all enterprises, for example, on their business scope, book-keeping, land use, or emission of environmental harmful substances. In some industries, the state needs to engage in business decisions that directly affect the enterprises' interests, such as price regulation and quality control. Regulatory costs thus become higher in these industries.

Changes in the market and the macroeconomic environment may also affect regulatory costs. Regulatory costs are higher when regulation needs to cope with issues that change rapidly over time, because states and enterprises need to renegotiate their regulatory contracts frequently.[71]

In a developing country, or a newly developed industry, newly enacted laws may be ineffective in dealing with new circumstances. There are also more loopholes in the regulations

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[67] *See generally* William W. Bratton, *Enron and the Dark Side of Shareholder Value*, 76 TUL. L. REV. 1275 (2002) (explaining why we should feel skeptical towards maximizing shareholder value).

[68] *See* Richard A. Posner, *The Concept of Regulatory Capture: A Short, Inglorious History*, *in* PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 49 (Daniel Carpenter & David A. Moss eds., 2013). George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. 3 (1971).

[69] *See generally* Milhaupt & Zheng, *supra* note 7.

[70] *See generally id.* I will discuss the alternative explanations in Section II. D. In the case study of water utilities below, I will also use empirical analysis to examine whether regulatory capture exists. *See infra* Section II. B.

[71] This is similar to the incomplete contract argument. *See* Williamson, *supra* note 60, at 115–17.

under these circumstances. The problem of bounded rationality thus becomes more severe, leading to higher regulatory costs. It also discourages the governments from making credible commitments, because they may be more concerned about foreclosing their options and hence losing control of the situation.

In some industries, fixed investments are needed upfront whereas profits come in the long run.[72] Investors face the asset-specification problem: their investments become specific and cannot be used for other purposes, which renders them more susceptible to government predation. Private investors may not enter the market when they find it too difficult to calculate the risks *ex ante*, which leads to underinvestment and hence a decrease in efficiency.

The foregoing discussion on regulatory costs presumes that the state needs to intervene to address market failures. If the market can resolve its own failures without any state control, fewer regulations are necessary and regulatory costs become lower.[73] In some countries, non-profit organizations play a central role in addressing market failures.[74] Non-profit organizations do not distribute their profits to their members, shareholders or other persons in control.[75] However, they also involve many practical difficulties. For example, they usually have difficulty accessing capital and adapting to the changing need for investment and expansion.[76]

Another way to resolve market failures is through reputation. Even without regulation, enterprises in the market may consider their reputation among the public and would not act opportunistically because the long-term benefits of maintaining good reputation may be higher than the short-term gains of opportunistic actions. The reputation mechanism makes regulation unnecessary and thus reduces regulatory costs. However, in many developing countries, significant

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[72] Susan Rose-Ackerman & Jim Rossi, *Disentangling Deregulatory Takings*, 86 VA. L. REV. 1435, 1438 (2000) ("Any commercial enterprise is subject to changes in the state's tax and regulatory laws, but these risks loom especially large for infrastructure industries. Infrastructure projects involve considerable risk for private investors because of the high levels of fixed capital and the long payback periods.").

[73] Some countries may tend to solve market failures without resorting to the bureaucratic system. This is a special feature of the United States. *See* Robert A. Kagan, *American and European Ways of Law: Six Entrenched Differences* 6–7 (JSP/Center for the Law and Society Faculty Working Paper, 2006), *available at* http://escholarship.org/uc/item/3kt912b3 (arguing that America has the legal propensity of "adversarial legalism," as opposed to "bureaucratic legalism," mainly because American people tend to distrust centralized government). *See also* MIRJAN R. DAMASKA, THE FACES OF JUSTICE AND STATE AUTHORITY: A COMPARATIVE APPROACH TO THE LEGAL PROCESS 17 (1991) (distinguishing hierarchical and coordinate ideals of authority).

[74] *See* Damaska, *supra* note 73 at 72.

[75] Henry B. Hansmann, *The Role of Nonprofit Enterprise*, 89 YALE L. J. 835, 838 (1980).

[76] *Id,* at 877.

information asymmetry still exists and reputations take a long time to build.

Civil society sometimes also incentivizes enterprises to pursue social goals besides profit-seeking objectives, through economic or legal means. Communities, environmental groups or other social interest groups may initiate boycotts against enterprises that have caused harm to the public.[77] The objections raised by these interest groups may also prompt regulators to take a harsher stance against these corporations.[78] However, these measures are only effective when social groups are sufficiently organized.[79] Additionally, the corporation must be a long-term repeated player for this mechanism to be effective. When these conditions are not met, regulatory costs become higher.

C. Ownership and Regulatory Costs: A Framework for Analyzing State Ownership

The evaluation of the social costs associated with SOEs must consider both ownership and regulatory costs. SOEs generally have higher ownership costs compared with private enterprises, which explains why most of them have been privatized in ordinary industries where few regulations are needed. However, in some regulated industries where regulatory costs are high, SOEs are more likely to persist.

Table 1: The Social Costs of SOEs v. Private Enterprises

	Ordinary industries	**Regulated industries**
Social costs of private enterprises	Low regulatory costs + low ownership costs	High regulatory costs + low ownership costs
Social costs of SOEs	Low regulatory costs + high ownership costs	Low regulatory costs + high ownership costs

In a regulatory relationship, regulatory costs may be borne by the government or by the

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[77] Neil Gunningham, Robert A. Kagan & Dorothy Thornton, *Social License and Environmental Protection: Why Business Go Beyond Compliance*, 29 LAW & SOC. INQUIRY 307, 323, 334 (2004).

[78] *Id,* at 328.

[79] *Id,* at 332.

enterprise and its private investors. Private investors face the cost of opportunistic actions by the government, which discourages them from entering certain regulated markets. Those who have already entered the market may suffer from state expropriation and decide to leave.[80] Private investors are rational actors seeking to maximize their wealth. Assuming that regulation is necessary and appropriate, the fact that private investors voluntarily choose to leave the market and give way to SOEs suggests that it is a relatively more efficient outcome.[81] Second, the regulatory costs may sometimes be borne by the government. The government may choose not to privatize SOEs, if they believe it is difficult to regulate them afterwards.

This analytical framework is an extension of the theory of the ownership of enterprise developed by Henry Hansmann.[82] Hansmann argues that different types of ownership incur different level of transaction costs and ownership costs.[83] For example, it is usually efficient for shareholders to own corporations because corporations then avoid the trouble of seeking long-term capital investment and repeatedly renegotiating with capital providers.[84] Similarly, employee ownership is efficient when the transaction costs between employees and the firm would otherwise be too high, for example, in the case of partners owning a law firm.[85]

While Hansmann's theory largely focuses on private ownership, it can also be applied to state ownership. The state, like consumers, creditors and employees, is an important stakeholder of an enterprise. The regulation imposed by the state is similar to a contract, or "transaction," between the state and enterprise. And similar to transaction costs, regulation incurs certain regulatory costs, which need to be considered in evaluating the social costs of SOEs versus regulated private enterprises.

II. EXPLAINING THE PREVALENCE OF SOEs IN REGULATED INDUSTRIES IN CHINA

The function of state ownership in reducing regulatory costs may explain many phenomena in the privatization process in China. Subsection A discusses the development of SOEs in different

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[80] *See infra* Section II. B. for example.

[81] Of course, the regulation may not be appropriate. The state may set up unnecessary market entry or other types of regulation to benefit SOEs. See Infra Section II. D. for a detailed discussion.

[82] *See generally* Hansmann, *supra* note 15.

[83] *Id.*

[84] *Id.*

[85] *Id.*

sectors of the economy in contemporary China, focusing on four particular industries as examples. It shows that SOEs are more prevalent in industries where there are deep regulatory problems that cannot easily be resolved. Subsections B and C then employ more data to examine the regulatory costs of private enterpirses and SOEs in the water utilities and insurance industries in greater depth. Subsection D consider some alternative explanations for the prevalence of SOEs in China.

A. An Overview of SOEs in Major Sectors

Prior to 1978, SOEs were prevalent in almost all sectors in China's economy. China encouraged private enterprises to grow gradually, which can be attributed to the high ownership costs associated with SOEs. Many empirical studies show that SOEs in China gain fewer profits than private firms.[86] By promoting private investment, China can incrase the total profits generated by enterprises in the economy, increase fiscal income of governments, and boost economic growth.[87] Since the Chinese government largely bases its legitimacy on economic performance,[88] the central government has a strong incentive to reduce the proportion of SOEs in the economy.[89] However, evidence suggests that privatization initiates a corresponding rise in regulatory costs that counteract this trend in regulated industries.[90]

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[86] Although there are some studies showing otherwise, most studies show that SOEs perform worse in terms of profitability. For evidence showing SOEs perform worse, *see e.g.* Bai Chongen(白重恩), Lu Jiangyong(路江涌), Tao Zhigang(陶志刚), *supra* note 1.

[87] *See generally*, Gilson & Milhaupt, *supra* note 11. *See also* Curtis Milhaupt & Wentong Zheng, *supra* note 7, at 694 (arguing that China has based its legitimacy on economic performance, which led them to support private enterprises). Wang Hongling(王红领), Li Daokui(李稻葵), & Lei Dingming(雷鼎鸣), Zhengfu Weishenme hui Fangqi Guoyou Qiye de Chanquan(政府为什么会放弃国有企业的产权)[Why do Governments Give up Ownership of SOEs?], 8 JINGJI YANJIU(经济研究)[ECON. STUD.] 61 (2001). Han and Dai discovered that one major motivation for privatization was to increase fiscal revenue. Han Chaohua(韩朝华) & Dai Muzhen(戴慕珍), Zhongguo Minyinghua de Caizheng Dongyin(中国民营化的财政动因)[The Fiscal Motives for Privatization in China], 2 JINGJI YANJIU(经济研究)[ECON. STUD.] 56 (2008).

[88] *Id.*

[89] In practice, many complex arrangements are possible. The governments may partially privatize their SOEs by selling a portion of shares to private investors, while still maintaining some control. These public-private joint ventures fall in the middle of the spectrum between pure private and state-owned enterprises: they probably have lower ownership costs than SOEs because private investors will actively monitor the enterprises, while their incentive to seek profits are also higher than pure SOEs. They exist because the governments wish to alleviate the ownership costs problem while retaining some control of the market. *See generally* Mariana Pargendler, Aldo Musacchio & Sergio G. Lazzarinittt, *supra* note 64.

[90] The People's Daily has recently organized a survey of 53 enterprises, and found that they face significant costs in dealing with government and regulations. *Renmin Ribao Diaocha 53 Jia Qiye: Zhiduxing Chengben Kunrao*

The charts below depict the proportion of SOEs as a fraction of their economic sectors, and the proportion of assets held by SOEs as a fraction of the total assets held by their entire sector in 2013 and 1999 across various industries.[91] In 1999, SOEs were more prevalent in virtually all industries. As a fraction of all enterprises, SOEs declined in terms of their number and assets held in most industrial sectors. This suggests that privatization has been successful in many sectors of the economy in China. For example, the percentage of assets held by SOEs in the economic sector that processes food from agricultural products dropped from 100% to less than 10%. However, they persist in a few regulated industries, including the oil and gas, coal mining, tobacco, and electricity production and supply industries. In these four industries, the assets held by SOEs still account for more than two thirds of those of all firms' assets. Regulatory challenges might have prevented the privatization of SOEs in these industries.

Zuida (人民日报调查 53 家企业：制度性成本困扰最大)[People's Daiy Investigated 53 Enterprises: Institutional Transaction Costs Haunted Private Enterprises the Most], RENMIN WANG-RENMIN RIBAO(人民网-人民日报) [RENMIN WANG- PEOPLE'S DAILY], May. 9, 2016, http://xz.people.com.cn/n2/2016/0509/c138901-28298777.html.

[91] The calculation here uses book values of assets held by these enterprises. NATIONAL BUREAU OF STATISTICS, CHINA STATISTICAL YEARBOOK 1999-2013 (China Statistical Press). The industrial sectors do not include finance, agriculture, construction, real estate, wholesale and retail trades, hotel, tourism, transportation, postal, and telecommunication services.

Figure 1: Proportion of SOEs in 1999 vs. 2013 by Economic Sector
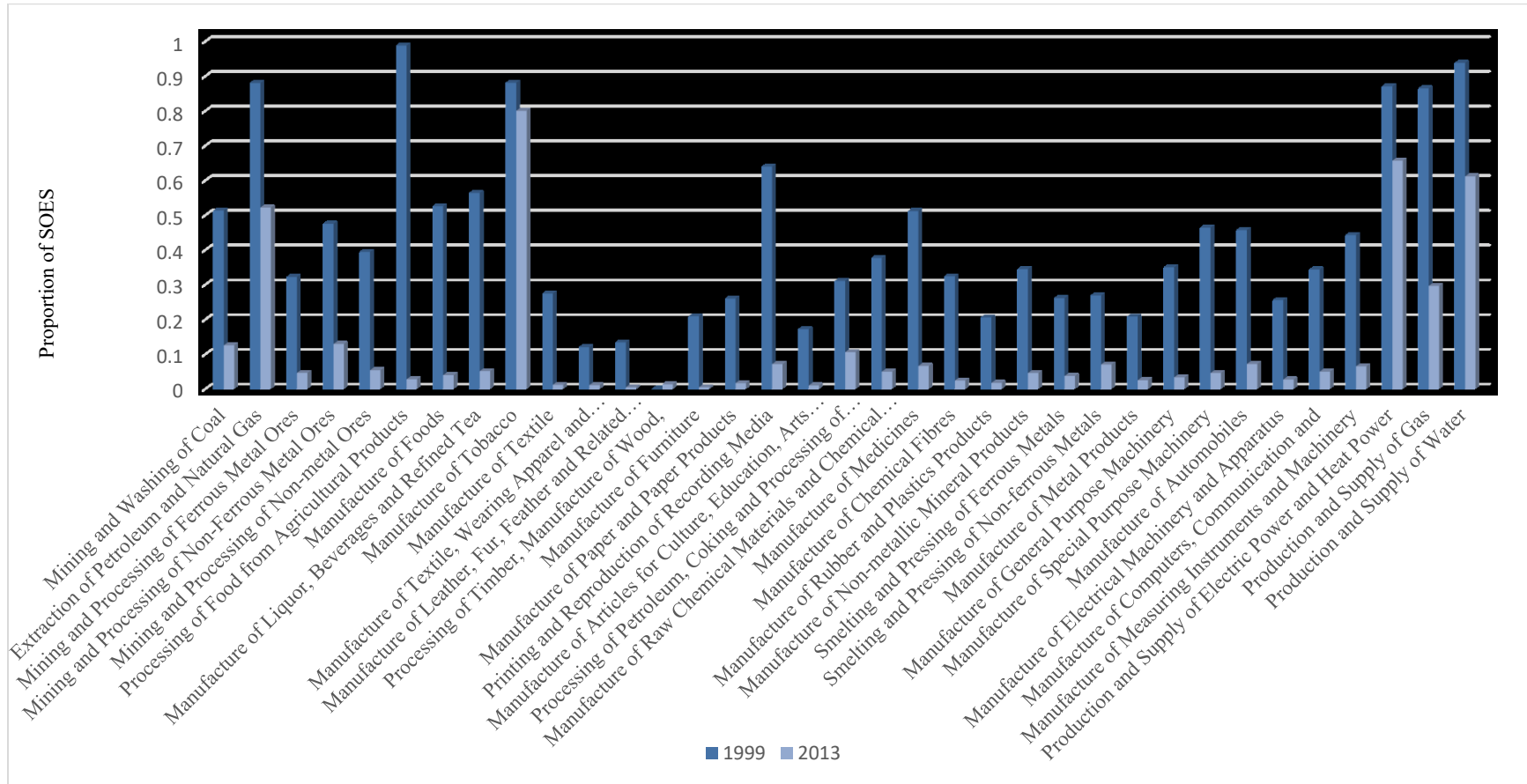
Source: China Statistical Yearbook

Figure 2: Proportion of Assets Held by SOEs in 1999 vs. 2013 by Economic Sector
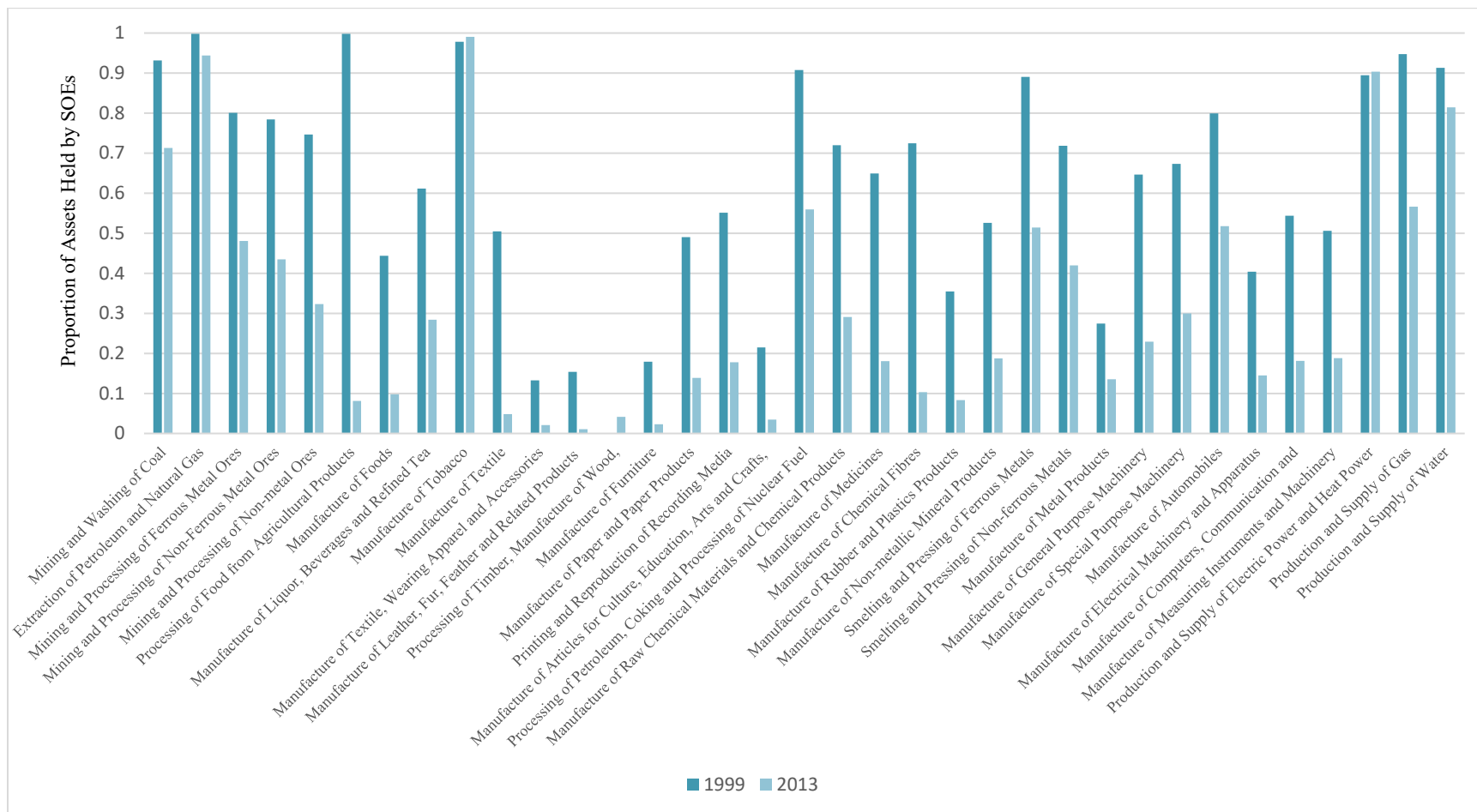
Source: China Statistical Yearbook

1. Production and Supply of Electric Power

Although electric power is still mainly produced and supplied by SOEs, China has attempted to separate the production from the transmission sector and to encourage private investment in the electricity production sector.[92] The electric grid is a natural monopoly and hence subject to complex price regulations, while the power-generating sector can be privatized and turned into a competitive market. Today, SOEs play a more significant role in the transmission of electric power. The two major grid companies, the State Grid Corporation of China and China Southern Power Grid, are both owned by the state. By contrast, private power-generating companies constitute 76% of all companies in the sector,[93] although they possess only 12% of the total electricity-generation capacity.[94]

State-owned electrical grid companies may reduce the likelihood of power failures and ensure the stability of the electricity supply, which is crucial for society and business activities. SOEs also played an integral role in repairing and maintaining the electric grid when natural catastrophes such as hurricanes or snowstorms occur.[95]

To be sure, without state ownership, the government can still regulate private companies and impose liabilities on them in cases of power failures or service outages. The state may impose strict liability on electrical grid companies, or adopt a negligence rule. In both cases, the courts face the difficult question of evaluating damages;[96] in the latter case, they also need to determine the

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[92] *See e.g.*, Guojia Dianjianhui Guanyu Jiaqiang Dianli Jianguan Zhichi Minjian Ziben Touzi Dianli de Shishi Yijian(国家电监会关于加强电力监管支持民间资本投资电力的实施意见)[Implementation Opinions on Strengthening the Supervision and Administration of Electric Power and Supporting the Investment of Private Capitals in Electric Power](promulgated June 14, 2012, effective June 14, 2012).

[93] Quanguo Dianli Yewu Xukezheng Chizhegn Qiye Suoyouzhi Qingkuang Baogao Fabu(全国电力业务许可证持证企业所有制情况报告发布)[Release of the Report on the Ownership of Licensed Electric Enterprises], Sep. 11, 2012, http://www.gov.cn/gzdt/2012-09/11/content_2222080.htm.

[94] *Id*.

[95] "Wimaxun" Zhongchuang Hainan Dianwang QIangxiu Yuji yu 19 Ri Qingchen Kaishi("威马逊"重创海南电网 抢修预计于 19 日清晨开始)["Weimaxun" Significantly Damaged Power Grid of Hainan, Repair Work to Start On the Morning of 19th], Nanhai Wang(南海网), July 19, 2014, http://www.hinews.cn/news/system/2014/07/19/016809543.shtml.

[96] A similar example would be the nuclear generation industry. Calculating the damages caused by a nuclear accident would be too difficult and sometimes impossible. Moreover, tort liability may not be a good way to incentivize nuclear companies to follow safety standards, since they are not likely to fully internalize the costs to society given the limited liability protection.

standard of negligence for electrical grid companies.[97] Since power outages often negatively affect a large number of people, class actions may be necessary. Even after the liabilities are determined, the state may face the barrier of limited liability protection of investors. State ownership reduces the bargaining costs and administrative costs in determining the liabilities for violation of regulation *ex ante* with legislation and *ex post* with litigations in and enforcement by courts. China may believe that state ownership provides more reliable instruments of control and thus alleviates the potential difficulty of enforcing regulations.

The electricity tariffs are also regulated by the National Development and Reform Committee (NDRC), a branch of the State Council, because an electrical grid is a natural monopoly. Typical natural monopolies include water networks, telecommunications, railroads, electric grids, and public highways.[98] In these industries, it is efficient to have only one provider of products and services in a certain area.[99] Unregulated natural monopolies may cause social efficiency loss.

The regulation of electricity tariffs in China takes the form of a cost-of-service regulation. The state needs to set the tariffs at the level that allows the enterprises to recover their costs and to earn a certain investment return. This requires regulators to inspect the costs of the grid companies, which may be costlier when the grid company is privately owned.

In regulating the electricity tariffs, the government also has important interests in redistribution. It charges a higher price for commercial and industrial use and users in urban areas, and a relatively lower price for residential users and users in the rural areas. Moreover, the grid companies need to ensure the electricity supply to rural areas where the costs of supplying electricity exceed the potential gains.[100] Using state-owned grid companies to subsidize the poor may be a more efficient way of redistribution than an income tax on the rich and subsidies to the poor.[101]

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[97] *See generally Id.*

[98] Paul. L. Joskow, *Regulation of Natural Monopoly*, *in* HANDBOOK OF LAW AND ECONOMICS (A. Mitchell Polinski & Steven Shavell eds., 2d ed. 2007) 1227, 1232.

[99] *Id.*

[100] 2014 Guojia Dianwang Gongsi Shehui Zeren Baogao(2014 国家电网公司社会责任报告)[2014State Grid Corporation of China Report on Social Responsibilities](hereinafter referred to as "State Grid Report"), http://www.sgcc.com.cn/csr/images/reports/2015/01/30/705546097FA340017BB198FE1297CBF6.pdf, Nov. 22, 2015 last visited, at 38.

[101] Income tax may distort people's behavior in labor. The choice between subsidy through electricity price and income tax depends on the elasticity of electricity demand and labor supply. *See generally* Zachary Liscow,

Apart from redistribution, China also uses cross-subsidization to promote green energy. China sets lower tariffs for coal-fired power-generating companies than for companies using clean-energy resources in order to discourage the use of coal.[102] Cross-subsidizations create difficulties for the privatization of grid companies. Private grid companies may not accept low tariffs or invest in rural grid infrastructure unless they receive sufficient subsidies from the state, which would make it more difficult to enforce price regulation. The state may be reluctant to subsidize them because it lacks capacity in inspecting the costs of the enterprises and determining the right amount of subsidization.

Finally, the state may also be concerned with difficulties in enforcing environmental regulations against private enterprises. Environmental protection is a major concern for power-generation companies as well as for grid companies. Since regulatory capacity in China is relatively weak, the Chinese government may believe that SOEs give more incentives to address environmental concerns.[103]

2. Coal Mining

In the coal mining industry, safety regulation is a main concern. A crucial part of safety regulation is the determination of the standard of care and level of liabilities. The bargaining and enactment costs of determining these standards may be significant. To adequately compensate workers and their families for work injuries, the state needs to engage in the difficult calculation of the value of life.[104] One possible solution is to calculate lost future wages.[105] While this method

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Reducing Inequality on the Cheap: When Legal Rule Design Should Incorporate Equity as Well as Efficiency, 123 YALE L.J. 2478, 2482 (2014).

[102] Jinlong Ma, *On-Grid Electricity Tariffs in China: Development, Reform and Prospects*, 39 ENERGY POL'Y 2633, 2636 (2011).

[103] Currently, both of the grid companies have included environmental protection in their social responsibilities reports and stated that they will reduce the use of fossil fuels and pursue new energy. *See* South Power Grid Report. State Grid Report, at 54.

[104] In the United States, for example, many states enact statutes that grant a fixed amount of compensation for each person for work injuries. *See* Richard A. Epstein, *The Historical Origins and Economic Structure of Workers' Compensation Law*, 16 GA. L. REV. 775 (1982). In China, courts often find it difficult to determine an appropriate level of compensation for lives. *See* Zhang Xinbao(张新宝), "Qinquan Zeren Fa" Siwang Peichang Zhidu Jiedu(《侵权责任法》死亡赔偿制度解读)[Interpretation of the Death Compensation Rules in the Law on Tort Liabilities], 3 ZHONGGUO FAXUE (中国法学) [CHINA LEGAL SCI.] 22 (2010).

[105] *See* Zhang Xinbao, *supra* note 104.

has the advantages of certainty and predictability, the amount reached is usually small compared with the large profits of coal mines, and has thus drawn wide criticism.[106] Some provinces, such as Shanxi, set the compensation to be 200,000 RMB in 2005, a standard higher than other provinces at the time.[107] Opinions differed as to whether the higher compensation was reasonable, since it was unclear how it was calculated.[108]

Additionally, enforcement costs, including *ex ante* monitoring costs and *ex post* enforcement costs, are also considerable. Private mines may evade inspection from their regulator and are hard to monitor given the lack of sufficient human resources and the sheer number of mines.[109] Since the economic reform in 1978, the number of private coal mines had risen to 100,000 in 1991.[110] Most of these coal mines were small in size. By contrast, in the 1990s, the total number of government coal inspectors was only about 30,000.[111] These inspectors were responsible for raising the awareness of safety precautions, training managers and employees, and on-site inspection. High enforcement costs may cause difficulties in regulating private enterprises.

In addition to the *ex ante* monitoring costs, governments also face *ex post* enforcement costs. One particular challenge is that investors may invoke the protection of limited liability when they need to compensate workers for their injuries. Although private corporations in China are required by law to purchase insurance policies for employees,[112] many private corporations have not followed this rule.[113] The legal sanctions for failing to purchase insurance remain uncertain; the

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[106] *Id*. *See also* Ershiwan Siwang Peichangjin Nengfou Huanlai Meikuang Anquan?(二十万元死亡赔偿能否换来煤矿安全？)[Can the Rule on Two Hundred Thousand Death Compensation Create Safety for Coal Mines?], Jan. 31, 2005, BEIJING QINGNIAN BAO(北京青年报)[BEIJING YOUTH DAILY], http://opinion.people.com.cn/GB/35560/3157719.html.

[107] *Id*.

[108] Li Yi Zhong: Kuanggong Siwang Peichang Biaozhun Shewei Meiren 20 Wanyuan Piandi(李毅中：矿工死亡赔偿标准设为每人 20 万元偏低)[Li Yi Zhong: The 200 Thousand RMB Compensation for the Death of Coal Miners is too Low], Mar. 9, 2006, BEIJING QINGNIAN BAO (北京青年报) [BEIJING YOUTH DAILY], http://news.xinhuanet.com/legal/2006-03/09/content_4279237.htm.

[109] Wang Shaoguang(王绍光), *Meitan Anquan Shengchan Jianguan: Zhongguo de Zhili Moshi de Zhuanbian(煤矿安全生产监管：中国的治理模式的转变)*, 13 COMP. STUDIES(比较) 79, 86, 101(2004).

[110] *Id*, at 86.

[111] *Id*, at 101.

[112] Meitan Fa 煤炭法(Coal Industry Law) [promulgated by the Standing Committee of the National Congress, amended June 29, 2013, originally effective Dec. 1, 1996], Article 39.

[113] Zhang Wenfeng(张文峰), Fazhan Woguo Shemei Baoxian de Yidian Sikao(发展我国涉煤保险的一点思考)[Some Thoughts on Developing Coal Insurance], May 21, 2012, ZHONGGUO NENGYUAN BAO (中国能源报)[CHINA ENERGY], http://www.qstheory.cn/st/zyhj/201205/t20120523_159463.htm.

insurance market is also under-developed.[114] Thus, when large-scale accidents occur, these private corporations may become insolvent and unable to bear all liabilities, in which case the government is forced to pay the damages.[115] Additionally, no one will pay for the cleanup of land after coal mining companies go bankrupt, unless the law requires funds to reclaim the land when they start operating.[116]

Apart from regulation, tort law may also play a significant role in regulating coal mines. However, it relies heavily on the efficiency of the judicial system. Countries with better developed tort law and a more efficient judicial system may be more capable of handling these cases, whereas developing countries such as China may find it more difficult. Similarly, criminal law penalties imposed on investors and managers of private enterprises for causing major accidents may not successfully deter risky activities unless the court system is sufficiently capable of handling these cases.[117] These concerns might have led the Chinese government to maintain SOEs in this sector.

Comparing the activities of different types of coal mining companies can further demonstrate the function of state ownership. There are three major types of coal mining companies in China: coal mining companies controlled by the central government, those controlled by local governments, and Township and Village Enterprises (TVEs). Central and local SOEs have very different incentives. Local government officials are constantly under pressure to pursue higher GDP growth to receive promotion. Correspondingly, they tend to grant less priority to non-economic government objectives and to disregard regulatory goals.[118] TVEs more closely resemble private enterprises compared with central and local government-owned enterprises and

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[114] *Id.*

[115] Meikuang Anquan Shigu Peifu Zhengfu Heshi Budan Zhujue(煤矿安全事故赔付 政府何时不担主角)[When can the Government Stop Playing the Leading Role in Paying Compensations in Coal Mining Accidents?], Aug. 14, 2006, RENMIN RIBAO(人民日报)[PEOPLE'S DAILY], http://news.cctv.com/china/20060814/100355.shtml.

[116] Susan Cosier, *Who Pays for Mine Cleanup After Big Coal Goes Bankrupt?,* NRDC BLOG (June 22, 2016), https://www.nrdc.org/onearth/who-pays-mine-cleanup-after-big-coal-goes-bankrupt.

[117] There had been significant disagreements among judges as to the extent of penalties, before the Supreme People's Court of China issued an guiding opinion in 2012. *See* Woguo wei Ezhi Kuangnan Pinfa Panxing Congzhong Congyan Jiancheng Qushi(我国为遏制矿难频发判刑从重从严渐成趋势)[China Adopts more Severe Punishment to Reduce Mining Accidents], Feb. 7, 2012, XINJINGBAO(新京报)[THE BEIJING NEWS], http://news.sina.com.cn/c/sd/2012-02-07/022423890667.shtml.

[118] Zhou Lian(周黎安), *Jinsheng Boyi zhong Zhengfu Guanyuan de Jili yu Hezuo(晋升博弈中政府官员的激励与合作)[The Incentives and Cooperation of Government Officials in the Promotion Game],* 6 JINGJI YANJIU(经济研究)[ECON. STUDIES] 33 (2004).

have an even stronger incentive to evade regulation.[119]

In the coal mining industry, the death rate per million tons mined is lower in state-owned mines than the death rate in mines controlled by local government, which in turn is lower than other TVEs, as is shown in the chart below. The comparison between these three types of enterprises may suggest that SOEs have lowered regulatory costs.

Figure 3: Death Rate per Million Tons of Coal Production
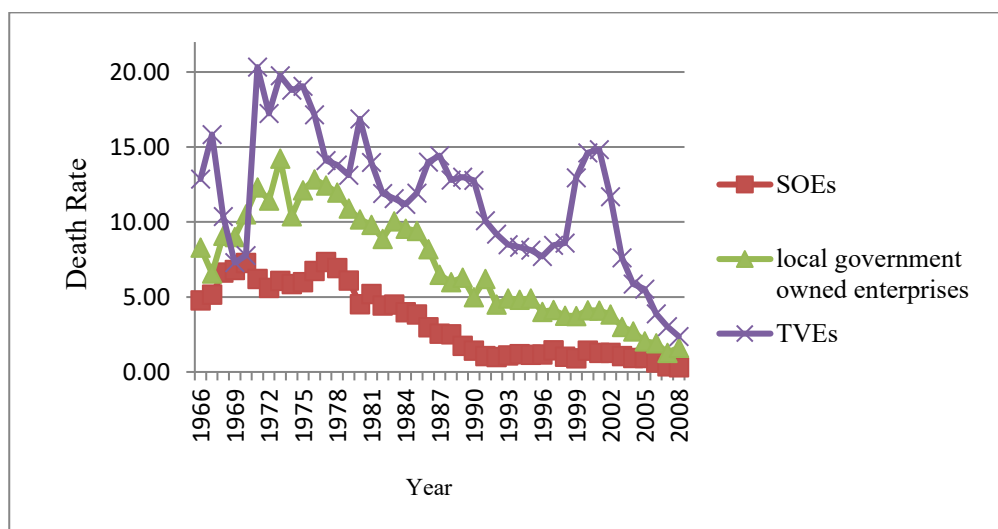
Source: China Coal Industry Yearbook 2008

Centrally owned SOEs may take advantage of *ex ante* internal control, rather than *ex post* liabilities and other deterrence methods, to reduce safety risks. They may devise internal measures that incentivize managers to focus more on the safety of employees. They also enter into long-term relationships with employees and may invest more in human capital.[120] By contrast, TVEs may under-invest in training because the expected employment term is relatively short, leading

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[119] *See generally* YASHENG HUANG, CAPITALISM WITH CHINESE CHARACTERISTICS: ENTREPRENEURSHIP AND THE STATE 1–49 (2008). Payments to employees in TVEs are closely connected to financial performance. *See* William Byrd & Alan Gelb, *Township, Village, and Private Industry in China's Economic Reform* 25 (World Bank Policy Research Working Papers WPS406, 1990), *available at* http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1990/04/01/000009265_3960930001706/Rendered/PDF/multi0page.pdf.

[120] *See* Byrd & Gelb, *supra* note 119 at 24.

employees to engage in more dangerous activities. Moreover, SOEs are generally larger in size compared with TVEs. They may thus find it less costly to install safety equipment due to economies of scale.[121] Thus, SOEs may improve employee safety and reduce the death rate compared with private enterprises.

In the 1990s, the state recognized the challenges posed by small private coal mines and began to close them down. In 1997, about 10,000 mines were shut down.[122] In 2001, all mines owned by TVEs were ordered to close unless they could meet safety standards.[123] As a result, the number of coal mines dropped from 82,000 in 1997 to 22,000 in 2003.[124]

In recent years, however, the difference between the death rates for different types of enterprises has narrowed. A possible explanation for this trend is the increase in regulatory capacity and more sophisticated regulatory rules on liabilities. Additionally, China has incentivized many private corporations to grow in size through mergers and acquisitions, while gradually closing down small-sized coal mines.[125] As private corporations become larger, regulatory costs may decline because large private corporations have a stronger incentive to comply with regulatory goals. They have more to lose when their licenses are revoked due to violations, rendering all fixed investment worthless, which increases the deterrence effect of regulation.

3. Extraction of Petroleum and Natural Gas

Extraction of petroleum and natural gas may, as in the case of coal mining, lead to a waste of nonrenewable energy resources, damage to the environment,[126] and endanger the safety of workers. These problems may also be addressed by regulations, however, enforcing these regulations may be difficult.

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[121] Wang Shaoguang, *supra* note 109, at 95.

[122] *Id*, at 106.

[123] *Id*, at 106.

[124] *Id*, at 107

[125] Guanyu Jiakuai Tuijin Meikuang Qiye Jianbing Chongzu de Ruogan Yijian(关于加快推进煤矿企业兼并重组的若干意见)[Opinions on Accelerating the Process of Merger and Acquisition of Coal Mining Corporations](promulgated by the National Development and Reform Committee, Oct. 16, 2010, effective Oct. 16, 2010).

[126] David M. Schizer, *Energy Subsidies: Worthy Goals, Competing Priorities, and Flawed Institutional Design*, 70 Taz L. Rev. 243, 249 (2017).

This sector faces an additional regulatory problem. Large petroleum companies may obtain the benefits of the economies of scale.[127] However, as petroleum companies become larger, they also gain market power and can set higher prices, which harms domestic consumers. Although the state can still impose price regulation, large petroleum companies may be too economically powerful to control since they may capture the legislature and influence the policy-making process.[128] The administrative capacity of China may also be too weak in enforcing price regulation.

State ownership may alleviate the regulatory problem of petroleum and gas prices. When the enterprise is state-owned, if prices are set too high, the resulting profits will become a source of fiscal revenue that can be used for public purposes. If prices are too low, the state can still subsidize the corporations. Although SOEs do not directly distribute dividends to the public in China today, the state may still legitimately collect dividends from these enterprises and spend them with the public interest in mind in the future.[129]

4. Tobacco

The domination of SOEs in the tobacco sector has largely remained unchanged in the last few decades. One possible explanation is that SOEs in this sector have captured the government to resist privatization. Another possible reason for the state to maintain SOEs in this industry is that it allows the government to extract revenue by monopolizing the industry and taking profits out of it. The effects of monopoly profits are similar to a tobacco tax: they reduce consumption by increasing tobacco prices.[130]

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[127] *See* U.S. GENERAL ACCOUNTING OFFICE, GAO-04-96, ENERGY MARKETS: EFFECTS OF MERGERS AND MARKET CONCENTRATION IN THE U.S PETROLEUM INDUSTRY (2004), *available at* http://www.gao.gov/new.items/d0496.pdf.

[128] In the United States, the fear of concentration of economic power in large corporations has led to the development of Antitrust Law. *See e.g.*, STEPHEN F. ROSS, PRINCIPLES OF ANTITRUST LAW 1 (1993).

[129] In a recent decision made by the State Council, China will establish a national social security fund. The state will allocate equity ownership of SOEs to the fund "used to supplement and adjust social security expenditures such as pension insurance." *See* Quanguo Shehui Baozhang Jijin Tiaoli(全国社会保障基金条例)[Regulation on the National Social Security Fund](promulgated by the State Council on Mar. 10, 2016, effective May 1, 2016).(China)

[130] GENDER, WOMEN, AND THE TOBACCO EPIDEMIC, 210 (Jonathan M. Samet & Soon-Young Yoon eds., World Health Organization Press, 2010) *available at* http://www.who.int/entity/tobacco/publications/gender/en_tfi_gender_women_taxation_economic_tobacco_control.pdf?ua=1.

As a developing country, China faces significant costs in obtaining tax revenue, which are essentially regulatory costs. Enforcing tobacco taxation may be costly because of a lack of administrative capacity and because evading taxes may bring significant benefits to private enterprises.[131] State ownership in the tobacco industry grants the state easy access to revenue. In fact, tobacco and salt served as the major source of revenue in pre-modern societies, when the tax system was less developed.[132] State ownership may facilitate tax collection because managers of SOEs have stronger incentives to cooperate.[133] Tax revenue from the tobacco industry constitutes about 10% of the fiscal revenues of the central government of China.[134]

B. Water Utilities

A more detailed case study better illustrates the social costs of regulating private enterprises. The water utilities industry is an appropriate case for such a detailed study. Water utilities are usually natural monopolies and therefore need to be regulated. Moreover, there is a relatively long history of privatization in this industry. Significant discretion has been granted to local governments to carry out privatization and price regulation. It thus creates an opportunity for us to examine the relationship between state ownership and regulation over time in various cities.

1. Privatization of Water Utilities in China

Prior to 1998, 95% of all the equity in the water utilities industry was owned by the state in China. The charts below show the changes in the state's share of equity in this industry, based on statistics from the CEIC China Premium Database.

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[131] Researchers generally agree that the *efficiency* in collecting income tax is very low. Li Jianjun(李建军), *Geren* Suodeshui *Zhengguan Xiaolv: Lilun yu Shizheng Fenxi(个人所得税征管效率: 理论与实证分析)[The Collection Efficiency of Individual Income Tax: Theory and China's Evidence]*, 2 JINGJI KEXUE(经济科学)[ECON. SCI.] 109(2012).

[132] Ray Huang, *Fiscal Administration During the Ming Dynasty*, in CHINESE GOVERNMENT IN MING TIMES: SEVEN STUDIES, 73, 94 (Charles O. Hucker ed., 1969).

[133] In fact, Head of the Bureau of Tobacco in China boasted the contribution to the stability of fiscal income. *Yancaoju Juzhang: Qunian Shangjiao 8000 Yi Dui Caizheng Wending Gongxianda(烟草局局长：去年上缴 8000 亿对财政稳定贡献大)[Head of the Bureau of Tobacco: Contributed 800 Billion to Stablize the Fiscal Income Last Year]*, http://finance.sina.com.cn/china/bwdt/20141204/100720994904.shtml, Aug. 3, 2016 last visited.

[134] *Id*.

Figure 4: Capital Investment by Different Investors in the Water Utilities Industry
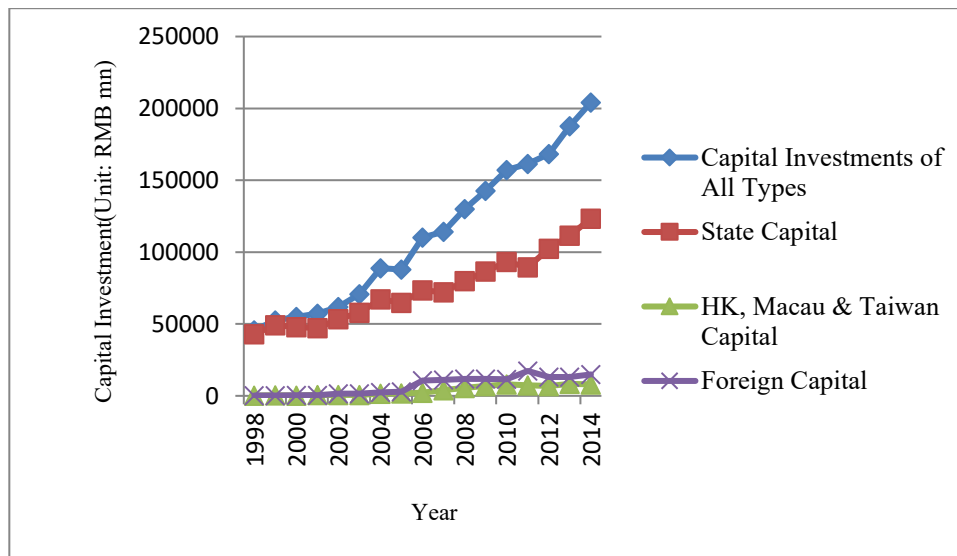
Source: CEIC China Premium Database

Figure 5: Percentage of Capital Investment in Water Utilities Industry that is State-Owned
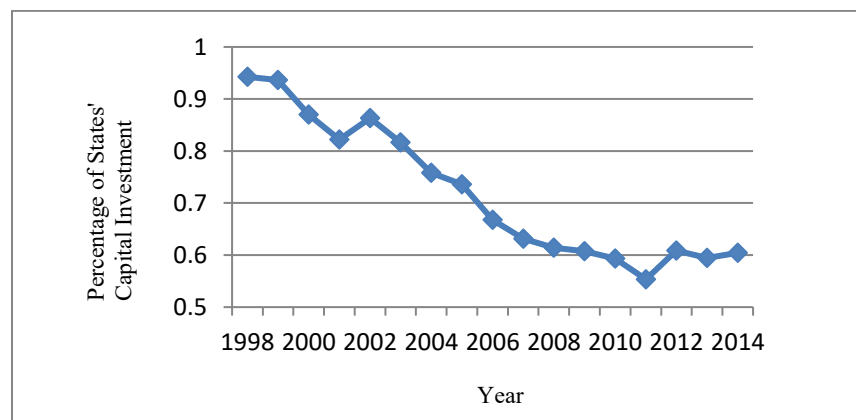
Source: CEIC China Premium Database

To further examine the trend of privatization, it is helpful to look at the proportion of capital investment by local governments as a fraction of all capital investment in 260 cities from 2005 to 2011, utilizing the National Sizable Industrial Enterprise Dataset.[135] Among these 260 cities, 108

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[135] For a more detailed description of this dataset, *see infra* II.B.3.

(41%) experienced a change in the proportion of capital investment by local governments. Among these 108 cities, the proportion had risen at least once in 78% of the cities and had dropped at least once in 89% of the cities. About 39% of the cities experienced a drop followed by a rise.[136] 37 cities experienced a rise of at least ten percentage points. These figures suggest that privatization has occurred in many places but has also met with difficulties.

2. Problems of Price Regulation and the Role of State Ownership

Water utilities are usually subject to price regulation because they are natural monopolies. Although local governments have the incentive to privatize, price regulation is under-developed, creating a major barrier for privatization.

a. Public Hearings and Inspection of Cost

Similar to electricity tariffs, water tariffs are subject to cost-of-service regulations. According to the Municipal Water Supply Price Management Measures,[137] a national regulation, water utilities can submit a request to the price department, a branch of the city level government, to adjust water tariffs.[138] Before approving the adjustment, the price regulator will go through a hearing process, inviting experts and the public to participate in the decision-making.[139] Based on the opinions gathered in the hearing, the price regulator and the city government will determine whether to approve the adjustment.[140] If approved, they will report the decision to the higher level of government.[141]

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[136] Some privately owned water utility companies were nationalized. For example, Time invested in a water utility enterprise in Shanghai in 1998. It sold back the ownership to Shanghai government in 2004. See KE Yongjia(柯永建), WANG Shouqing(王守清), CHAN Albert Ping-chuen(陈炳泉), *Siying Ziben Canyu Jichu Sheshi PPP Xiangmu de Zhengfu Jili Cuoshi(私营资本参与基础设施 PPP 项目的政府激励措施)[Government incentives for private sector involvement in infrastructure PPP projects]*, 49 QINGHUA DAXUE XUEBAO(ZIRAN KEXUE BAN)(清华大学学报(自然科学版))[J TSINGHUA UNIV. (SCI. & TECH)] 1480 (2009).

[137] *See* Shizheng Gongshui Jiage Guanli Banfa（城市供水价格管理办法）[Municipal Water Supply Price Management Measures](1998)(promulgated by the National Planning Committee and the Construction Department, Sep. 23, 1998, effective Sep. 23, 1998).

[138] *Id*.

[139] *Id*, Chapter four.

[140] *Id*.

[141] *Id*.

This process incurs significant procedural costs, as it takes significant time and resources.[142] Moreover, it draws significant criticism from public consumers as well as scholars. As some scholars have pointed out, it is a one-sided decision-making process.[143] Without sufficient knowledge and capacity, public representatives often cannot fully understand the accounting reports on the costs of water utilities through attending the hearing.[144] Under the expectation that the public should have a say in the adjustment of water tariffs, the hearing process is criticized as a public theater without any substantive impact on the final decision.[145] The price regulation also involves distributional concerns – a lower water tariff for residential use would benefit low-income individuals since they spend a larger portion of their income on water usage. Thus, it is sometimes difficult for the public to reach a consensus on the appropriate level of water tariffs.

Additionally, it is difficult to determine the cost of supplying water as a basis for calculating water tariffs. For example, many water utilities provide high salaries to employees.[146] The price regulator thus needs to regulate many business decisions made by the water utility companies, which requires significant resources. The public is often not content with the regulatory constraints imposed on water utilities to reduce their cost of supply.[147] Many accounting terms used in determining the costs of water supply are ambiguous and can easily be manipulated, which have also caused problems for price regulation.

b. The Incentive of Local Governments to Act Opportunistically

The public's distrust and scholars' criticism have put enormous pressure on local governments, making them reluctant to adjust water tariffs frequently.[148] When the costs of water

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[142] Fu Tao (傅涛), Shuijia Ershijiang(水价二十讲)[Twenty Lectures in Water Price] 22 (2011).

[143] Wang Xixin(王锡锌), *Gonggong Juece Zhong de Dazhong, Zhuanjia yu Zhengfu(*公共决策中的大众、专家与政府*)[The Public, Expertise and Government in Public Decision-Makings]*, 4 Zhongwai Faxue(中外法学)[Peking U. L. J.] 462 (2006).

[144] Fu Tao, *supra* note 142, at 17.

[145] Fu Tao, *supra* note 142, at 17.

[146] *Renjun Shouru gao 20% Zhuanjia Xi Zilaishui Gongsi Kuisun Zhenshi Yuanyin(*人均收入高20% 专家析自来水公司亏损真实原因*)[Salaries of Employees in Water Utility Companies 20% Higher than Average: The Real Reasons for the Loss of Water Utility Companies]*, Zhongguo Xinwen Wang(中国新闻网)[China News Online], Aug. 11, 2009, http://www.chinanews.com/cj/cj-cyzh/news/2009/08-11/1812044.shtml.

[147] Fu Tao, *supra* note 142, at 17.

[148] Fu Tao, *supra* note 142, at 21.

suppliea increase, they are borne by the water utilities and shared by all investors. Local governments can thus externalize some of the costs to private investors.

The law on the price regulation of water tariffs grants discretionary approval power to local governments. The regulatory rules allow local governments to consider the development of water utilities, the growing needs for a water supply, and the burden on the public. These objectives are often in conflict with each other, which essentially allow local governments to make decisions with unbounded discretion because they can always find a justification for their decisions.[149]

Because of the difficulties in regulation, some local governments are reluctant to adjust water tariffs pursuant to regulatory rules. Some local governments chose not to adjust water tariffs for a long period of time even though the costs of supplying water had risen significantly.[150] Private investors thus need to bear the cost of opportunistic actions by the government when they enter this industry. Because of this cost, private investors may be deterred from investing, leading to an underinvestment problem and a shortage of water supply. When local governments use SOEs to supply water, they cannot act opportunistically: if water tariffs are too low, local governments must subsidize the enterprise.[151] Thus, SOEs are not subject to the social costs of opportunistic actions as private enterprises would be.

3. Empirical Evidence in Different Cities

In order to illustrate the impacts of price regulation on private investment, I have conducted a statistical study using data in different cities. The data used in this study come from the Chinese National Sizable Industrial Enterprise dataset.[152] The dataset includes all industrial enterprises that

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[149] *See* Chengshi Gongshui Jiage Guanli Banfa, *supra* note 137, Art. 24.

[150] Fu Tao, *supra* note 142, at 21. Wu Nan(吴楠), *Duodi Kai Tingzhenghui Ni Tigao Shuijia Di Shuijia Bei Zhi Zai Butie Furen(多地开听证会拟提高水价 低水价被指在补贴富人)[Public Hearings are to be Convened in Many Cities to Raise Water Tariffs, Low Water Tariffs are Subsidizing the Rich]*, Beijing Wanbao(北京晚报)[Beijing Evening], May 7, 2013, http://finance.sina.com.cn/china/20130507/165515377126.shtml.

[151] Local governments may be reluctant to subsidize private investors for losses, either because they want to externalize the costs to them or because the costs of subsidizing SOEs are much lower than that of subsidizing private enterprises since local governments have less control over how they spend the money and also less information about private enterprises.

[152] This dataset has been used in many previous studies. *See e.g.,* Albert G. Z. Hu, Gary H. Jefferson, & Qian Jinchang, *R&D and Technology Transfer: Firm-Level Evidence from Chinese Industry*, 87 R. ECON. & STATISTICS 780 (2005); Hongbin Cai & Qiao Liu, *Competition and Corporate Tax Avoidance: Evidence from Chinese Industrial*

have revenue of over 5 million RMB and all SOEs regardless of their size from 2005 to 2006, all industrial enterprises with revenue of over 5 million RMB (including SOEs and private enterprises) from 2007 to 2010, and all industrial enterprises with revenue of over 20 million RMB from 2011 to 2012. The difference in selection criteria may cause a problem for the study because after 2011, the percentage of SOEs may become larger in some cities relative to others, depending on the size of the private enterprises and SOEs. To resolve this problem, I thus excluded all enterprises in the dataset with revenue below 20 million RMB.

Water tariffs usually include tariffs for residential, industrial and business uses. I used the water tariffs for residential use and industrial use in 36 cities in this study.[153] The 36 cities include the four municipalities, 27 provincial capitals, and five major cities that enjoy provincial-level status: Shenzhen, Qingdao, Xiamen, Dalian, and Ningbo.

I used two measurements for the influence of state ownership in a given city: (1) the ratio of the aggregate capital investment by the government to the aggregate capital investment from all sources in such city in water utilities; and (2) the ratio of the aggregated revenue collected by SOEs to the aggregated revenue collected by all enterprises in such city. I used two steps to calculate the percentage of capital investment by the government. First, I took the variable of the governments' capital investment provided in the dataset and divided it by the total capital investment. Second, since the capital investment of some enterprises comes from corporations whose owners are unknown and can be government owned, I treated the corporate investment as a state investment if the water utility company reports to be controlled by the state, but the state's capital investment does not exceed half of its paid-in capital.

For the purpose of calculating revenue, I treated an enterprise as a state enterprise if the capital investment from the government is 100% of the aggregate capital from all sources. I used 100% because if an enterprise is partially privatized, the government may still avoid adjusting water tariffs for fear of criticism from the public and externalize the costs to private investors. It also has less control over the water utilities, and so the governments may feel reluctant to subsidize the enterprise. This criterion should have no effect on the calculation of the percentage of capital

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Firms, 119 ECON. J. 764 (2009); Gary H. Jefferson, Jian Su, *Privatization and restructuring in China: Evidence from shareholding ownership*, 34 J. COMP. ECON. 146 (2006).

[153] The database of water tariffs for residential use is developed by Sinofin Information Services. The database for water tariffs for industrial use is provided by CEIC China premium database. The water tariffs are usually adjusted together.

contributed by governments.

The independent variable in my study is the number of times a city had adjusted its water tariffs since January 2005. Given the fact that the costs of supplying water had risen drastically from 2005 to 2012, water tariffs needed to be adjusted frequently to reflect the increase in costs. Otherwise the water utility companies would have suffered significant losses. A smaller number of adjustments of water tariffs indicates a tendency to avoid using regulation to obtain political benefits, which may harm the financial interests of the enterprises, discouraging private investment in this sector.[154] Later in the study, I also examined the relationship between the proportion of state investment and the size of the water tariff. A summary of the major variables used in the study is listed below.

Table 2: Summary of Statistics in Different Cities

Variable	Observation	Mean	Std. Dev.	Min	Max
GDP per capita	198	0.07	0.07	0.01	0.45
Government revenue per capita	199	6.82	8.56	0.52	51.53
Population	200	6455.55	4630.04	449.30	33434.40
Proportion of state capital investment	213	0.87	0.23	0	1
Proportion of SOEs' revenue	213	0.77	0.37	0	1
Number of adjustments (residential)	216	1.43	1.31	0	6
Number of adjustments (industrial)	216	1.70	1.18	0	5
Increase in size (residential)	216	1.28	0.25	1	1.94
Increase in size (industrial)	216	1.60	0.52	1	3.07

To examine the relationship between state ownership and regulation, I conducted a regression analysis with fixed effects and random effects models using a time series cross-sectional data. The model is specified as follows:

$$\textit{State Ownership}_{y,i} = \beta \textit{Adjustment}_{y,i} + \theta_y + \lambda_i + X_{y,i} + \epsilon_{y,i}$$

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[154] Given the rapidly changing environment, it is presumed that the tariff needs to be adjusted constantly.

State Ownership$_{y,i}$ denotes the percentage of the state's investment or the revenue collected by SOEs in city i in year y calculated in the ways stated above. **Adjustment**$_{y,i}$ denotes the number of times that city i has adjusted its water tariff from January 2005 to the end of the year y. I included two control variables in the vector $X_{y,i}$. First, I included the fiscal revenue per capita as a control variable, because the less revenue the government has, the more likely it would privatize the SOEs. Second, I included the GDP per capita in the city as a control variable since more developed areas might have a higher percentage of private enterprises. θ_y are year indicators and λ_i are city indicators. Tables 3 and 4 provide a summary of the major variables by year and by number of water tariff adjustments. Figure 10 shows the average percentage of capital investment owned by the state in cities with different number of adjustments from 2005 to 2012.

Table 3: Summary of Statistics by Year

Variable	Observation	Mean	Std. Dev.	Min	Max
year = 2005					
Proportion of state capital investment	35	0.96	0.10	0.54	1.00
Proportion of SOEs' revenue	35	0.83	0.35	0.00	1.00
Number of adjustments (residential)	36	0.42	0.50	0.00	1.00
Number of adjustments (industrial)	36	0.56	0.77	0.00	3.00
GDP per capita	31	0.04	0.05	0.01	0.27
Government revenue per capita	32	3.35	4.47	0.52	22.67
year = 2006					
Proportion of state capital investment	36	0.92	0.16	0.36	1.00

Proportion of SOEs' revenue	36	0.81	0.34	0.00	1.00
Number of adjustments (residential)	36	1.03	0.56	0.00	2.00
Number of adjustments (industrial)	36	0.81	0.89	0.00	4.00
GDP per capita	30	0.05	0.05	0.01	0.30
Government revenue per capita	30	3.98	5.19	0.60	25.45
year = 2007					
Proportion of state capital investment	36	0.87	0.18	0.51	1.00
Proportion of SOEs' revenue	36	0.78	0.35	0.00	1.00
Number of adjustments (residential)	36	1.42	0.73	0.00	3.00
Number of adjustments (industrial)	36	1.08	1.08	0.00	5.00
GDP per capita	31	0.05	0.06	0.02	0.32
Government revenue per capita	31	4.99	6.39	0.77	30.98
year = 2010					
Proportion of state capital investment	36	0.73	0.37	0.00	1.00
Proportion of SOEs' revenue	36	0.65	0.45	0.00	1.00

Number of adjustments (residential)	36	2.33	1.04	0.00	4.00
Number of adjustments (industrial)	36	1.89	1.30	0.00	6.00
GDP per capita	35	0.07	0.06	0.02	0.37
Government revenue per capita	35	7.53	8.61	1.44	42.59
year = 2011					
Proportion of state capital investment	35	0.90	0.16	0.51	1.00
Proportion of SOEs' revenue	35	0.80	0.36	0.00	1.00
Number of adjustments (residential)	36	2.42	1.11	0.00	5.00
Number of adjustments (industrial)	36	2.03	1.36	0.00	6.00
GDP per capita	36	0.09	0.07	0.03	0.43
Government revenue per capita	36	9.35	10.25	2.26	50.00
year = 2012					
Proportion of state capital investment	35	0.85	0.26	0.00	1.00
Proportion of SOEs' revenue	35	0.75	0.39	0.00	1.00
Number of adjustments (residential)	36	2.58	1.11	0.00	5.00

Number of adjustments (industrial)	36	2.19	1.37	0.00	6.00
GDP per capita	35	0.10	0.08	0.03	0.45
Government revenue per capita	35	10.75	11.07	2.63	51.53

Table 4: Summary of Statistics by Number of Adjustments

Variable	Observation	Mean	Std. Dev.	Min	Max
Number of adjustments (industrial)= 0					
Proportion of state capital investment	34	0.86	0.31	0	1
Proportion of SOEs' revenue	34	0.86	0.32	0	1
Year	35	2006	2	2005	2012
Number of adjustments (industrial)= 1					
Proportion of state capital investment	68	0.74	0.36	0	1
Proportion of SOEs' revenue	68	0.81	0.33	0	1
Year	68	2007	2	2005	2012
Number of adjustments (industrial)= 2					
Proportion of state capital investment	58	0.71	0.37	0	1
Proportion of SOEs' revenue	58	0.77	0.37	0	1
Year	58	2009	2	2006	2012
Number of adjustments (industrial)= 3					
Proportion of state capital investment	37	0.61	0.43	0	1
Proportion of SOEs' revenue	37	0.64	0.46	0	1
Year	39	2011	1	2007	2012
Number of adjustments (industrial)= 4					
Proportion of state capital investment	14	0.67	0.34	0	1
Proportion of SOEs' revenue	14	0.74	0.34	0	1
Year	14	2011	1	2010	2012

Number of adjustments (industrial)= 5					
Proportion of state capital investment	2	0.50	0.71	0	1
Proportion of SOEs' revenue	2	0.50	0.71	0	1
Year	2	2012	1	2011	2012

Figure 6: Average Percentage of Capital Investment that is Owned by the State by Number of Adjustments of Water Tariffs for Industrial Use(2005 to 2012)

Number of Water Tariff Adjustments (industrial use)
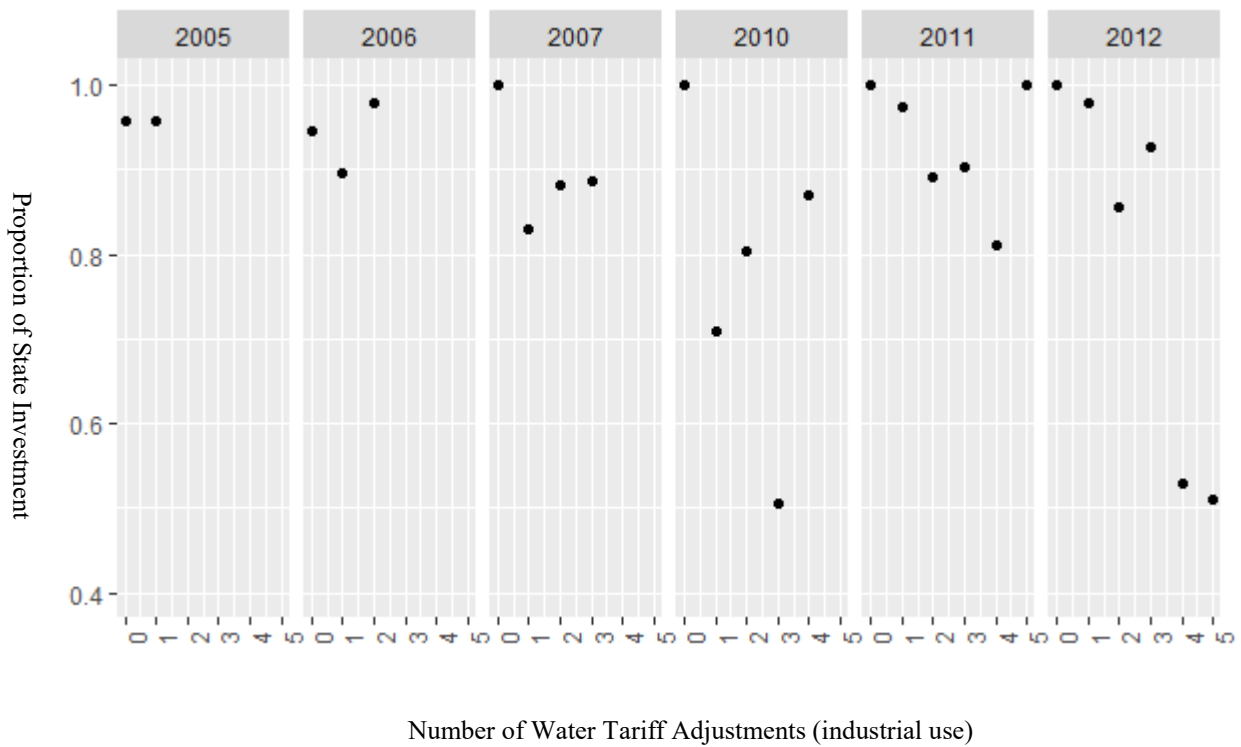
The results of the regressions are plotted in Figure 11 and Table 5 below. In Figure 11, the red line represents the 95% confidence interval. The coefficients of "Adjustment" are statistically significant at the 0.05 level in all but two models. In those two models, the coefficients are still marginally significant at the 0.1 level. In all models, I used clustered standard errors to calculate the level of statistical significance. These results strongly indicate that the more times a city adjusts its water tariffs, the lower the proportion of state investment becomes.

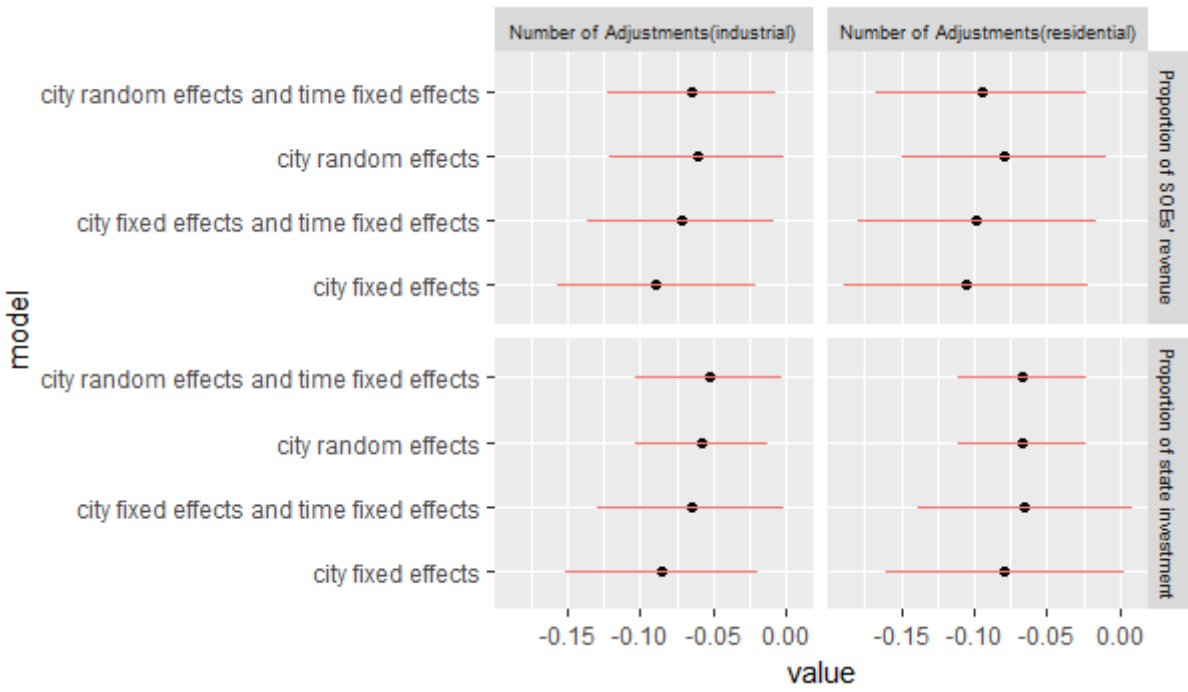**Figure 7: Coefficient Plots Using Time Series Cross Sectional Data**

Table 5: Regression Results of Fixed Effects and Random Effects Models

	Dependent Variable															
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Investment	Investment	Investment	Investment	Investment	Investment	Investment	Investment	revenue	revenue	revenue	revenue	revenue	revenue	revenue	revenue
Number of water tariff adjustment(industrial)	-0.085** (0.033)		-0.065* (0.032)		-0.058** (0.023)		-0.053** (0.025)		-0.089** (0.034)		-0.072** (0.032)		-0.061** (0.030)		-0.065** (0.029)	
Number of water tariff adjustment(industrial)		-0.079* (0.041)		-0.065* (0.037)		-0.067*** (0.022)		-0.067*** (0.022)		-0.106** (0.042)		-0.098** (0.041)		-0.080** (0.035)		-0.095*** (0.036)

GDP per capita	-0.783	-0.690	-0.709	-1.365	-0.667	-0.826	-0.649	-0.772	1.157	0.648	0.118	-0.468	-1.875	-2.034	-2.500	-2.778
	(2.570)	(2.450)	(3.801)	(3.495)	(1.280)	(1.133)	(1.234)	(1.110)	(2.441)	(2.350)	(4.004)	(3.676)	(2.196)	(1.992)	(2.067)	(1.818)
Government revenue per capita	0.0002	0.0007	0.0006	0.0008	0.0005	0.0004	0.0003	0.0003	0.0001	0.0003	0.0003	0.0006	0.014	0.014	0.014	0.015*
	(0.013)	(0.013)	(0.016)	(0.015)	(0.007)	(0.007)	(0.007)	(0.007)	(0.012)	(0.012)	(0.016)	(0.015)	(0.011)	(0.010)	(0.010)	(0.009)
Constant	0.951***	0.979***	1.008***	1.038***	0.983***	0.991***	1.006***	1.031***	0.836***	0.854***	0.881***	0.925***	0.913***	0.929***	0.953***	0.991***
	(0.061)	(0.062)	(0.093)	(0.089)	(0.037)	(0.038)	(0.033)	(0.038)	(0.054)	(0.055)	(0.092)	(0.090)	(0.068)	(0.067)	(0.066)	(0.069)
Fixed Effects / Random Effects	City Fixed Effects	City Fixed Effects	City and Time Fixed Effects	City and Time Fixed Effects	City Random Effects	City Random Effects	City Random Effects and Time	City Random Effects and Time	City Fixed Effects	City Fixed Effects	City and Time Fixed Effects	City and Time Fixed Effects	City Random Effects	City Random Effects	City Random Effects and Time	City Random Effects and Time

|	(1)	(2)	(3)	(4)	(5)	(6)	Fixed Effects	Fixed Effects	(9)	(10)	(11)	(12)	(13)	(14)	Fixed Effects	Fixed Effects
Observations	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195
R-squared	0.119	0.098	0.199	0.198	0.111	0.094	0.197	0.196	0.112	0.124	0.163	0.189	0.1	0.112	0.159	0.186
Number of cities	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36

Robust standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable in columns (1)-(8) is the proportion of state investment in the water utility enterprises in a specific city in a specific year. The dependent variable in columns (9)-(16) is the proportion of SOEs' revenue calculated in the way mentioned above.

To present the results in a clearer way, I also conducted a regression using only the 2012 data. Figure 12 is a scatterplot of the tariff adjustment variable against the proportion of state investment.

Figure 8：Number of Adjustments of the Water Tariff for Industrial Use and the Proportion of State Investment in 2012
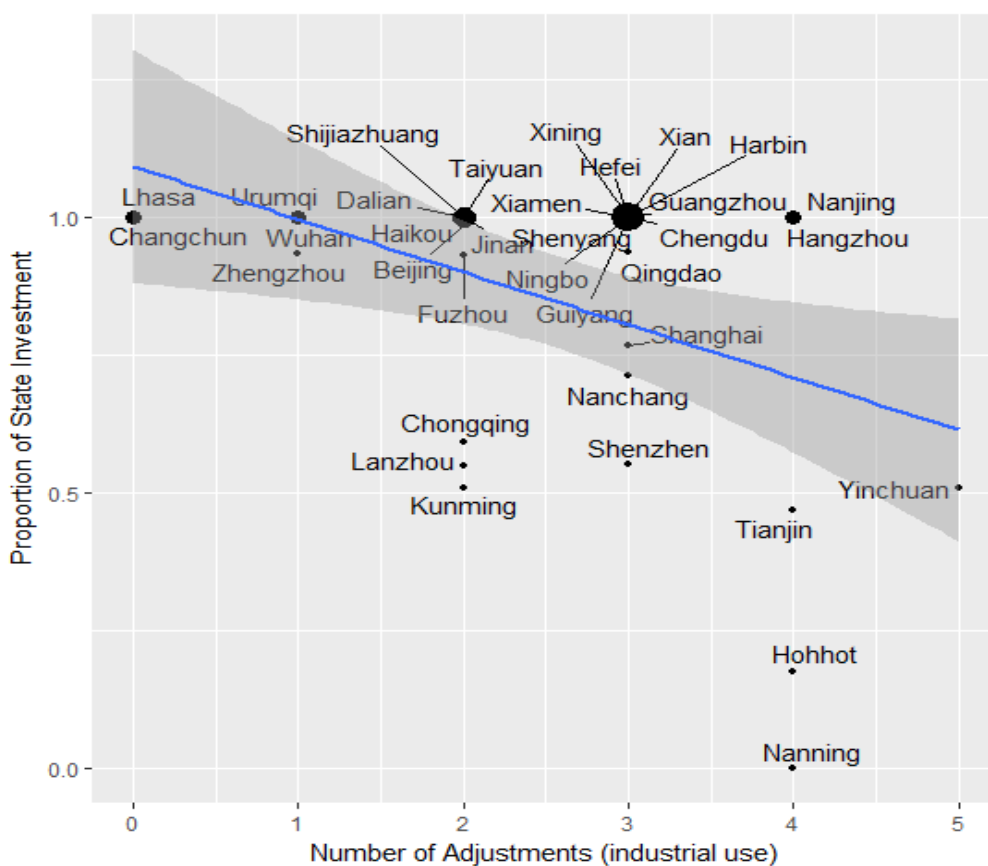
As is shown in the figure, the number of adjustments is highly associated with the percentage of capital investment by the government. The results remain statistically significant after control variables were added. Table 6 below presents the statistical results.

Table **6**: Results of the Regression

|	Dependent variable:							
	Proportion of state investment				Proportion of SOEs' revenue			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Adjustment(Industrial Use)	-0.068**		-0.067**		-0.123**		-0.120**	
	(0.025)		(0.027)		(0.048)		(0.052)	
Adjustment(Residential Use)		-0.048*		-0.048*		-0.115**		-0.116**
		(0.024)		(0.024)		(0.044)		(0.044)
Control for GDP per capita and government revenue per capita	No	No	Yes	Yes	No	No	Yes	Yes
Constant	1.078***	0.996***	1.108***	1.050***	1.106***	1.019***	1.177***	1.142***
	(0.078)	(0.064)	(0.089)	(0.081)	(0.150)	(0.118)	(0.171)	(0.147)
Observations	35	35	34	34	35	35	34	34
Adjusted R^2	0.158	0.083	0.121	0.066	0.142	0.148	0.115	0.151
Note:				$^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$				

I then used two placebo tests to examine the robustness of this result. First, I used a placebo outcome, the percentage of SOEs in 2005, to test my model. One potential worry is that some omitted variables related to the cities may influence both the number of adjustments and the percentage of SOEs. For example, cities situated in developed areas may have higher chances of privatization. If this hypothesis were true, these city-related variables would be likely to influence the percentage of SOEs in 2005. However, as is shown in the scatterplot below, no apparent correlation could be detected between the number of adjustments from 2005 to 2012 and the proportion of state investment in 2005.

Figure 9: Placebo Test with Data in 2005
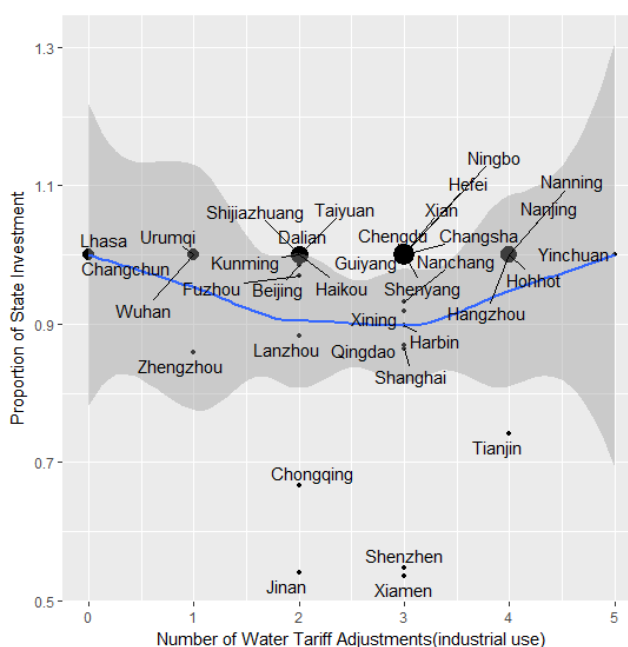
Second, I used a placebo treatment, the increase in the size of water tariffs in different cities, to test my results. As is shown in the scatterplot below, the increase in the size of water tariffs is highly correlated with the number of adjustments.

Figure 10: Relationship Between the Increase in the Size of the Water Tariff for Residential Use and the Number of Adjustment
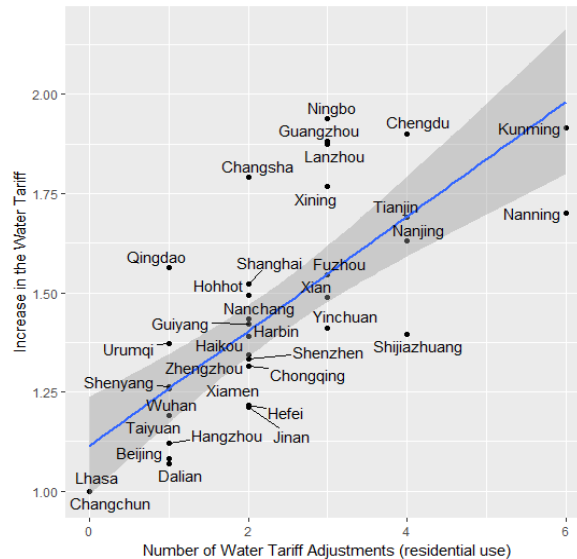
I used the following model to test the relationship between the increase in water tariffs and the percentage of SOEs in 2012:

$$State\ Ownership = \beta Adj + \gamma Increase + \epsilon$$

"Increase" is the water tariff at the end of 2012 divided by the water tariff in January 2005 of the same city. "Adj" is the number of adjustments from 2005 to 2012. The results are shown in Figures 15 and 16. The left column of Figure 15 shows the coefficients of the variable "increase" in different models, with the proportion of the governments' capital investment and revenue as the dependent variables. In some models, the correlation is statistically significant. The right column shows the coefficients in models that control for the number of adjustments. In these models, the coefficients are statistically insignificant. Thus, although the increase in the size of the water tariff for residential use is negatively correlated with the capital percentage of SOEs, this correlation disappears once we control for the number of adjustments. It suggests that the increase in water tariffs is not directly related to the percentage of SOEs, except that it is correlated with the number of adjustment, which is in turn correlated with the percentage of SOEs.
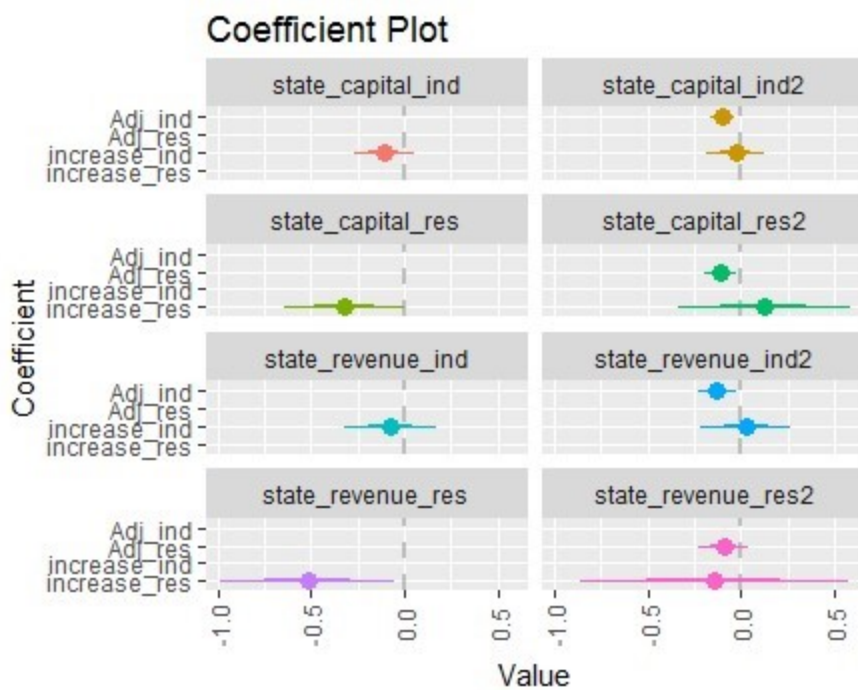
Figure 11: Placebo Test 2

Coefficient Plot

Figure 12: Placebo Test 2

	Dependent variable:							
	Proportion of state investment				Proportion of SOEs' revenue			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Increase in the water tariff(residential use)	-0.319*	0.123			-0.520**	-0.146		
	(0.160)	(0.230)			(0.234)	(0.359)		
Number of water tariff adjustments(residential use)		-0.111**				-0.094		
		(0.044)				(0.069)		
Increase in the water tariff(industrial use)			-0.111	-0.031			-0.075	0.028
			(0.080)	(0.076)			(0.122)	(0.121)
Number of water tariff adjustments(industrial use)				-0.100***				-0.128**
				(0.033)				(0.052)
Constant	1.306***	0.926***	1.057***	1.190***	1.499***	1.179***	0.895***	1.065***
	(0.233)	(0.264)	(0.158)	(0.148)	(0.342)	(0.411)	(0.240)	(0.234)
Observations	35	35	35	35	35	35	35	35
Adjusted R^2	0.081	0.209	0.026	0.221	0.104	0.126	-0.019	0.116

This placebo test rejects the alternative hypotheses that once privatization occurred, private firms would prompt regulators to adjust water tariffs more frequently, leading to the correlation between number of adjustment and percentage of SOEs. If this theory of regulatory capture were true, we would have observed a correlation between the increase in water tariffs and the influence of state ownership, because a captured price regulator would not only increase the number of adjustments, but also increase the size of water tariffs. The failure to find such correlation suggests that only the number of adjustments, or the frequency of the use of regulation, matters.

There is still another possible hypothesis: regulation and the decision to privatize may both be determined by some omitted variable that confound the effects. For example, some governments, hoping to obtain revenue or to promote efficiency of the water utilities, might privatize SOEs and increase the use of regulation at the same time. This hypothesis attests to the validity of my argument: to successfully privatize the state-owned water utilities, governments need to commit to the regular and predictable use of price regulation.

To sum up, local governments may be reluctant to make credible commitments to adjust water tariffs, in part because of the difficulties in price regulation. Private investors thus face a significant cost of opportunistic action by the government, which results in an underinvestment problem. SOEs, by contrast, do not face the same cost of opportunistic action, since local governments must subsidize them to supply water to the region. To successfully privatize SOEs in the water utility industry, local governments need to develop their regulatory capacity and establish legal institutions that enable them to make credible commitments to adjust water tariffs regularly.

C. Insurance

Another area where state ownership plays a significant role is the insurance industry. This industry has severe market failures, and needs significant regulation to protect consumers. China has allowed private capital to enter the insurance industry, which provides evidence that illuminates the relationship between state ownership and regulation.

1. Difficulties in Insurance Regulation

Insurance, especially life insurance, often involves long-term contracting with uncertainty. Insurance companies may lack sufficient incentive to maintain solvency,[155] because they do not take into account the interests of policyholders in their financial solidarity.[156] For this reason, regulators generally require insurance companies to maintain sufficient reserves to ensure future payments. [157] Another source of market failures in the insurance industry is the "lock-in" arrangement. Insurance policyholders usually pay more than what the policy is worth early on and less in the later years. This arrangement is necessary for insurance companies to overcome the adverse selection problem.[158] However, the "lock-in" arrangement gives rise to the danger that insurance companies will deceive consumers into purchasing insurance policies and act opportunistically in the later period by invoking various excuses to rescind the contracts. [159] Property insurance has similar relational contracting problems, although it usually has a shorter term. Thus, the sales of policies need to be regulated.

2. The Role of State-Owned Insurance Companies

Insurance companies with different types of owners co-exist in China. Some are held by the central government. Some are held by local governments, SOEs, or private investors. The state-owned ones referred to herein are the corporations directly or indirectly controlled by the central government, including People's Insurance Company of China (PICC), People's Life Insurance Company of China (PLICC), Chinese Reinsurance Company, China Taiping Life Insurance

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[155] Spencer L. Kimball, *The Purpose of Insurance Regulation: A Preliminary Inquiry in the Theory of Insurance Law*, 45 MINN. L. REV. 471, 478-80 (1961).

[156] Angelo Borselli, *Insurance Rates Regulation in Comparison with Open Competition*, 18 CONN. INS. L. J. 109, 129 (2011).

[157] Henry Hansmann, *The Organization of Insurance Companies: Mutual versus Stock*, 1 J. L. ECON. & ORG. 125, 130 (1985).

[158] *Id*, at 132.

[159] *Id*, at 133. *See e.g.*, Su Xiangcheng deng su Zhongmei Liantai Daduhui Renshou Baoxian Youxiangongsi Beijing Fengongsi (苏向成等诉中美联泰大都会人寿保险有限公司北京分公司)[Su Xiangdong et al v. Zhongmei Liantai Daduhui Life Insurance Ltd. Beijing Branch](No.4 Intermediate People's Ct. of Beijing, Apr. 8, 2016)(China).

Company Limited, and their subsidiaries.[160]

The market share of SOEs gradually declined over years. The percentage of premiums collected by the state-owned insurance companies compared to the premiums collected by the entire industry has generally declined over the past years.[161] The decline reflects the influence of state ownership in the market: the drop of market share may indicate that state-owned insurance companies have trouble competing with other enterprises, which might be a result of high ownership costs.

3. Comparison of the Role of State Ownership across Sectors

As the below subsection illustrates, the market share of SOEs is different across sub-sectors, which may serve as evidence of the relationship between state ownership and regulation. In China, the larger insurance market can be divided into four markets: the property insurance market, the casualty and health insurance market, the traditional life insurance market, and the innovative life insurance market. Innovative life insurance policies can be further divided into participating life insurance and other innovative types of life insurance.

Insurance companies in China are mainly divided into two types: property insurance companies and life insurance companies. Property insurance companies conduct business in the property insurance market and the short-term casualty and health insurance market, while life insurance companies conduct businesses in the traditional life insurance market, the innovative life insurance market, and the long-term casualty and health insurance market.

a. Traditional Life Insurance v. Property Insurance

As illustrated in the table below, SOEs have had a larger market share in traditional life insurance than in property insurance most years. One possible explanation is that consumers purchasing traditional life insurance face a greater danger of opportunism, and may choose SOEs

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[160] China Export & Credit Insurance Corporation is not included because it mainly conducts business in the credit insurance market, which is not addressed here.

[161] NATIONAL BUREAU OF STATISTICS, CHINA INSURANCE STATISTICAL YEARBOOK (China Statistical Press)(2000-2014).

because they are less incentivized to seek profits and are less likely to defraud consumers.

Table 7: Premium Share of State-owned Insurance Companies in Traditional Life Insurance Market and Property Insurance Market

year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
traditional life insurance	0.55	0.71	0.72	0.65	0.67	0.58	0.63	0.6	0.48	0.45
property insurance	0.58	0.52	0.5	0.51	0.5	0.47	0.47	0.47	0.46	0.46

Source: China Insurance Yearbook

Figure 13: Premium Share of SOEs in Traditional Life Insurance Market and Property Insurance Market
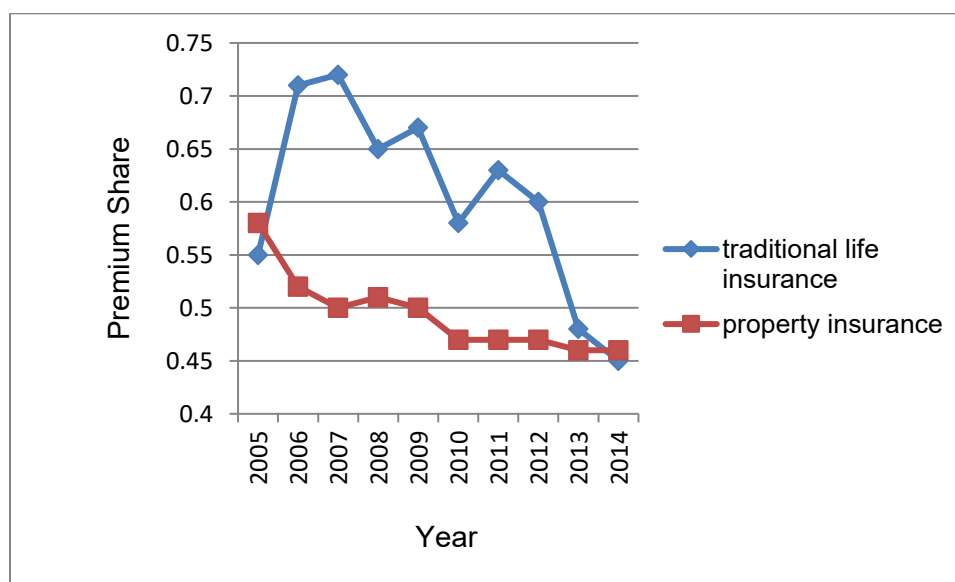
Source: China Insurance Yearbook

One anomaly is that in 2005, the market share of SOEs in the traditional life insurance sector was lower than their share in the property insurance sector. This can largely be explained by recognizing the at that time the traditional life insurance market was still expanding at that time. In the traditional life insurance sector, the total premium collected by the entire industry in 2005

was about 723 billion RMB.[162] China Life Insurance Co., a state-owned enterprise, collected 399 billion RMB.[163] In 2006, the total premium rose to 1002 billion RMB, while China Life Insurance Co. collected 704 billion RMB.[164] The growth of this state-owned enterprise far exceeded other insurance companies in the traditional life insurance sector. By contrast, the market share of SOEs dropped in the property insurance sector as the total premium collected in the property insurance sector grew from 1297 billion in 2005 to 1582 billion in 2006.[165] This comparison suggests that SOEs were more successful in expanding and continuing to play a significant role in the traditional life insurance sector than in the property insurance sector.

In 2013, the market share of SOEs dropped significantly from 60% to 48%. This is mainly because of the rise of a state-owned insurance company – New China Life Insurance Co., Ltd. (New China Life Insurance). The market share of New China Life Insurance in the traditional life insurance market rose from from 1% in 2012 to 13% in 2013. New China Life Insurance was co-founded by a group of SOEs and private investors in 1996.[166] Guan Guoliang, the chief director appointed by private investors in 1998, secretly embezzled money from the corporation.[167] The Insurance Regulatory Commission then used the Insurance Protection Fund to take over the company in 2007.[168] It was turned into a state-owned enterprise in 2009, held by the Huijin Corporation,[169] a financial holding company authorized by the State Council of China to control state-owned financial companies. The company became more well-known and widely trusted thanks to its being listed on the Shanghai Stock Exchange and Hong Kong Stock Exchange in 2011, while Huijin Corporation continued to hold a majority of its stock. Beginning in 2012, New China

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[162] *Id*. I choose 2005 as the starting point here because prior to 2005, data on insurance premiums in the traditional life insurance sector was not available.

[163] *Id*.

[164] *Id*.

[165] *Id*.

[166] Yuning, Su Dandan and Ji Minhua(于宁 苏丹丹 季敏华),Neiburen Guan Guoliang(“内部人”关国亮)[Insider Guan Guoliang], Caijing (Finance and Economics) (Sept. 29, 2007), http://www.caijing.com.cn/2007-05-27/100020559.html.

[167] *Id*.

[168] *Id*.

[169] Chen Huiying(陈慧颖) & Ding Ning(于宁), Xinhua Renshou Tongku Zhuanxing(新华人寿痛苦转型)[New China Insurance Transform Painfully], 新世纪(Century Weekly), Oct. 19, 2010, *available at* http://finance.sina.com.cn/money/insurance/bxyx/20101019/08128801490.shtml.

Life Insurance made a strategic decision to increase its market share in the traditional life insurance sector.[170] After taking New China Life Insurance into account, it is apparent that, taken as a whole, the state-owned insurance companies have continued to play a more significant role in the traditional life insurance sector than in the property insurance sector.[171]

b. Traditional Life Insurance v. Innovative Life Insurance

As illustrated in the table below, state-owned insurance companies generally maintain a higher market share in the traditional life insurance sector than in the participating life insurance sector, except in 2005, when the traditional life insurance market was still growing. The market share of SOEs in both sectors declined over the years, probably because the market has become more competitive and the government's regulatory capacity has gradually improved. At the same time, their market share in the universal and unit-linked insurance market has been trivial. This phenomenon can be explained by the function of state ownership in reducing opportunistic activities by the insurance companies.

Traditional life insurance is more susceptible to market failures. Most traditional life insurance policies are long-term contracts. Consumers who purchase traditional life insurance tend to be more risk-averse and worry more about opportunism than those who choose innovative life insurance. They may choose state-owned insurance companies in the belief that that these companies are less likely to act opportunistically.

By contrast, innovative life insurance serves the dual functions of risk-management and investment. Within the innovative life insurance category, participating life insurance mainly focuses on the function of risk-management, whereas universal and unit-linked life insurance mainly help policyholders manage their wealth. Consumers who purchase these policies may tend to consider more attentively the future returns and may be less inclined to choose SOEs than do purchasers of traditional life insurance companies.

Most life insurance companies conduct business in both the traditional life insurance market and the innovative life insurance market. Thus, comparing the market share of SOEs in the two

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[170] NATIONAL BUREAU OF STATISTICS, CHINA INSURANCE STATISTICAL YEARBOOK (China Statistical Press) 246 (2013). NATIONAL BUREAU OF STATISTICS, CHINA INSURANCE STATISTICAL YEARBOOK (China Statistical Press) 242 (2014).

[171] In 2014, New China Life Insurance continued to possess 7% of the market share.

markets allows us to control for the other aspects of the companies, including their business strategies, distributional channels, and their ability to influence the regulations made by the insurance regulator. In this sense, the difference in the market shares of SOEs across sub-sectors suggests that state ownership plays a more important role in the sub-sectors where market failures are more severe.

Table 8: Market Share of State-owned Insurance Companies in the Traditional Life Insurance Market and the Innovative Life Insurance Market

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
traditional life insurance	0.55	0.71	0.72	0.65	0.67	0.58	0.63	0.6	0.48	0.45
participating life insurance	0.55	0.59	0.61	0.59	0.53	0.48	0.43	0.43	0.44	0.35
universal insurance and unit-linked insurance	0.09	0.15	0.12	0.24	0.14	0.01	0.02	0.02	0.01	0.01

Source: China Insurance Yearbook

Figure 14: Market Share of State-owned Insurance Companies in the Traditional Life Insurance Market, the Innovative Life Insurance Market, and the Long-Term Health and Casualty Insurance Market
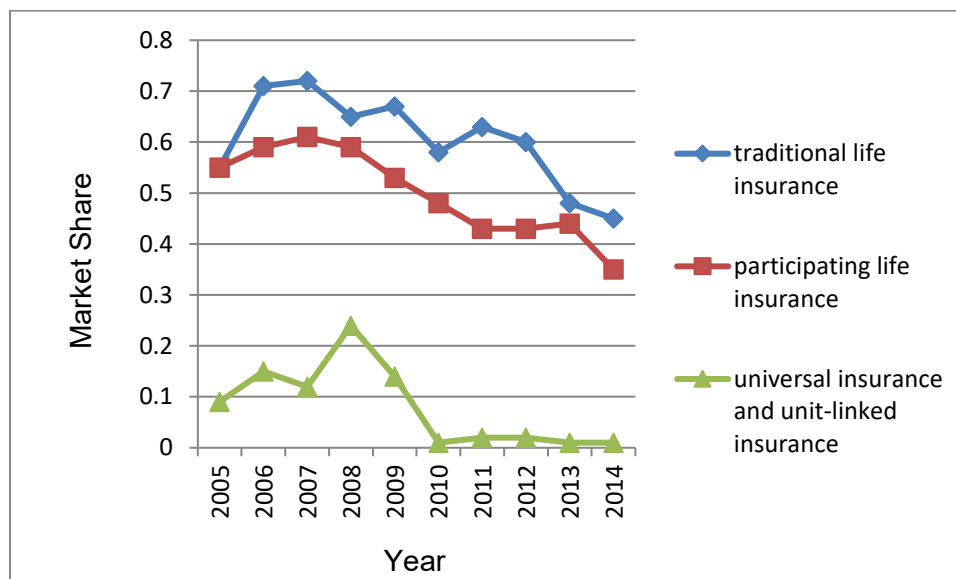
Source: China Insurance Yearbook

Admittedly, given that only nine years of data is available, it is not easy to conduct a quantitative analysis on whether the difference in means between the market shares of SOEs in the traditional and participating life insurance sector is statistically significant.[172] However, it is safe to conclude that the difference in means between SOEs' market shares in the traditional and universal life insurance sector is very large and probably significant. Another problem with this comparison is that other factors may also affect the market share of SOEs. For example, some insurance companies may have built a good reputation that allows them to obtain a larger share in the traditional life insurance market. Some insurance companies may also have more distribution channels, making their products more accessible to consumers. This Article does not purport to show that state ownership is the only factor that affects the market share of insurance companies in different sectors, but simply that it is an important factor that affects consumers' decisions when regulatory capacity is weak.

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[172] One difficulty, for example, is that the market share of SOEs in different years may belong to different distributions.

4. The Difference in the Numbers of Complaints Lodged Against State-Owned and
Privately Owned Insurance Companies

The difference in the numbers of complaints lodged against the state-owned insurance companies and other insurance companies may also illustrate the effectiveness of state ownership in achieving regulatory goals.

The average number of complaints lodged against state-owned insurance companies divided by the total amount of premium collected was lower than that of other insurance companies, as illustrated in the table below. These figures suggest that SOEs probably engage in less opportunistic actions.

Table 9: Average Number of Complaints per Hundred Million RMBs in Insurance Premiums

year	insurance company	state-owned insurance companies	other insurance companies
2012	life	1.04	2.49
	property	1.05	1.95
2013	life	1.03	5.83
	property	1.14	2.31
2014	life	0.75	2.46
	property	1.76	2.97
2015	life	0.89	1.69
	property	1.48	3.29

Data source: Chinese Insurance Regulatory Commission

Figure 15: Average Number of Complaints per Hundred Million RMBs in Insurance Premiums
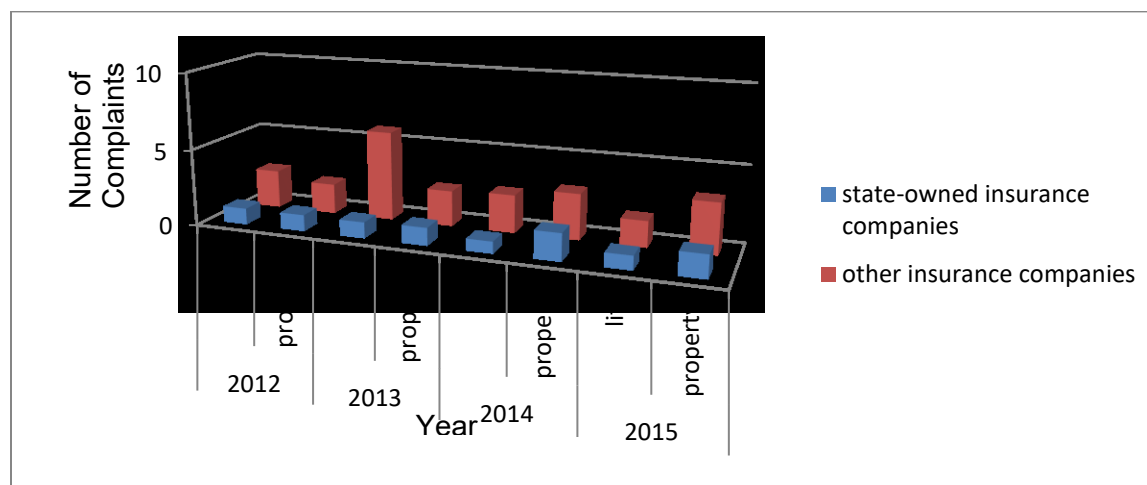
Data source: Chinese Insurance Regulatory Commission

To sum up, state-owned insurance companies generally possess a larger market share in markets where insurance companies are more likely to act opportunistically. Moreover, the number of complaints filed against SOEs divided by the total premium collected is smaller as compared to other insurance companies. This observation reflects consumers' preference for transacting with SOEs when regulation is insufficient in protecting them.

D. Alternative Explanations

There are, to be sure, several alternative explanations for the prevalence of SOEs in China. Some of them are valid. However, these explanations, independently or collectively, cannot fully explain the distribution of SOEs across different sectors in China. These explanations and the explanation developed herein are not mutually exclusive and can be combined to help us better understand the landscape of SOEs in China.

A possible explanation for the prevalence of SOEs in China is that they are significantly influenced by political ideologies. However, political ideologies did not prevent China from privatizing its SOEs in many sectors.[173] It thus does not fully explain the distribution of SOEs

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[173] Scholars have argued that Chinese state capitalism is a system highly similar to other state capitalism in both

across sectors. China adopted a strategy of withdrawing capital from many industries, allowing private enterprises to develop, while maintaining a controlling position in "strategic industries," including the military, electricity, oil and gas, telecommunication, coal, aerospace and shipping industries, and a relatively strong control in "pillar industries" such as automobiles.[174] However, political ideologies have not prevented China from making efforts to introduce private investments in these strategic and pillar industries.[175] For example, the machinery and equipment sector is regarded as a pillar sector. SOEs' share of gross output in this sector was only about 20% in 2009.[176] More importantly, in sectors not considered as strategic or pillar sectors, such as water utilities, SOEs are still prevalent.

Another explanation is the "capture" theory. SOEs are prevalent because they can obtain significant subsidies from the Chinese government and low-cost financing from state-owned banks, which may have enabled them to continue to exist even though they have suffered significant losses.[177] SOEs may also capture regulators and influence regulatory rules to limit market competition, thus preventing private investors from entering the market and creating economic rents.[178] Capture is problematic if it creates misallocation of capital resources or if it limits competition to benefit SOEs at the expense of the public.[179]

The capture theory alone does not fully explain the distribution of SOEs. Many SOEs have

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the developed and the developing countries, and is different from the state capitalism in the Soviet days. Aldo Musacchio, & Sergio G. Lazzarini, *Chinese Exceptionalism or New Global Varieties of State Capitalism*, in REGULATING THE VISIBLE HAND?: THE INSTITUTIONAL IMPLICATIONS OF CHINESE STATE CAPITALISM (BENJAMIN L. LIEBMAN & CURTIS J. MILHAUPT ED.) 404 (2016).

[174] Woguo Mingque Qida Hangye Jiang you Guoyou Jingji Baochi Juedui Kongzhili(我国明确七大行业将由国有经济保持绝对控制力)[The State Clarifies That the it will Control Seven Major Industries], 上海证券报 (Shanghai Securities News), Dec. 19, 2006, http://news.xinhuanet.com/fortune/2006-12/19/content_5504591.htm.

[175] Guanyu Guli Zhichi he Yindao Geti Siying deng Feigongyouzhi Jingji Fazhan de Ruogan Yijian(关于鼓励支持和引导个体私营等非公有制经济发展的若干意见)[Several Opinions on Encouraging, Supporting and Guiding the Development of Individual and Private Economy and Other Non-Public Sectors of the Economy](promulgated by the State Council, Feb. 19, 2005, effective Feb. 19, 2005). The pillar industries include equipment manufacturing, automobile, information technology, construction, iron and steel, non-ferrous metals, chemicals, and surveying and design. *See* ANDREW SZAMOSSZEGI & COLE KYLE, *supra* note 176, at 34, 41.

[176] ANDREW SZAMOSSZEGI & COLE KYLE, U.S.-CHINA ECON. SECURITY REV. COMM., AN ANALYSIS OF STATE-OWNED ENTERPRISES AND STATE CAPITALISM IN CHINA, 41 (2011).

[177] *See* Milhaupt & Zheng, *supra* note 7, at 689.

[178] *Id*, at 697 (identifying that a type of SOE becomes entrenched by capturing the state to prevent privatization).

[179] George J. Stigler, *The Theory of Economic Regulation*, 2 BELL. J. ECON. & MGMT. SCI. 3 (1971).

been privatized despite their ability to obtain subsidies and access low-cost financing. Moreover, while some features of SOEs, such as the close connections between SOEs managers and government officials, may render the government more susceptible to capture by SOEs,[180] private firms can also capture the government.[181] Private firms also have stronger incentives to corrupt officials of their regulators compared with SOEs. Other factors, such as the design of regulatory institutions, the allocation of the costs and benefits of regulation, and the regulatory environment, may also affect the likelihood of regulatory capture.[182] It remains an empirical question whether regulators are more easily captured by SOEs.

One may also think that the policy of "grasping the large and letting go of the small"(抓大放小) led to current distribution of SOEs. Large SOEs may have stronger political influence and thus can more easily capture the state. However, this explanation is also incomplete. Many water utility enterprises are middle or small enterprises. Their privatization has not been successful, as shown above. Moreover, statistics show that about 10-30% of the largest state-owned enterprises – those at the top decile of the size distribution in 1998 – have been privatized,[183] while the smallest state-owned enterprises are only slightly more likely (30-35%) to be privatized.

Thus, proponents of the capture theory thus need to further elaborate why some SOEs have captured the government to prevent competition while others have not. One possible explanation is that some SOEs can capture the state because they can help the state regulate with less costs.[184] In this sense, the capture theory combined with considerations of ownership and regulatory costs may better explain the distribution of SOEs in China. SOEs that can help fulfill government goals may have a higher chance of continuing to be owned by the state. The Chinese government may have granted some SOEs monopoly status to extract economic rents in return for their service in fulfilling regulatory goals. Whereas in industries where SOEs do not help achieve government goals with less costs, SOEs are less likely to capture the government and more likely to be

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[180] *See generally* Zheng Lei, Benjamin J. Liebman, & Curtis J. Milhaupt, *SOEs and State Governance: How State-Owned Enterprises Influence China's Legal System*, in Regulating the Visible Hand?: the institutional implications of Chinese state capitalism (Benjamin L. Liebman & Curtis J. Milhaupt eds., 2016) 203-23.

[181] *Id.*

[182] Mark Thatcher, *Regulation After Delegation: Independent Regulatory Agencies in Europe*, 9 J. EUR. PUB. POL'Y 954, 958 (2002).

[183] Hsieh & Song, *supra* note 18, at 13.

[184] *See* Milhaupt & Zheng, *supra* note 7, at 689 ("the formation of alliances between business and political elites" can "engender convergence between the fortunes of a specific firm or industry and the government's goals and priorities.").

privatized because of high ownership costs, and because private enterprises can also capture the government.

Assuming, for the sake of argument, that regulatory capture exists, the case studies in the above sub-sections still point to the influence of regulatory costs on privatization. In the insurance case study, evidence suggests that SOEs maintain a larger market share in those sub-sectors where market failures are more prevalent. By examining the percentage of SOEs across sub-sectors, we can control for the factors of subsidies and examine the effect of regulation on state ownership. Furthermore, successful privatization of a sector requires bilateral decisions rather than a unilateral decision made by the government. Regulatory costs are sometimes borne by private parties, which discourages private investments, as the case of water utilities suggests. Thus, overcoming the barriers of capture may be necessary but not sufficient for privatization. The capture theory still needs to be combined with the economic analysis to provide a full account of SOEs.

Another common explanation for the prevalence of SOEs in China is that they address market failures.[185] However, state ownership is not the only solution to market failures, since regulation can also achieve this goal.[186] Thus, the need to address market failures alone does not explain the dominance of SOEs.

Jiahua Che and Yingyi Qian have offered an insecure property protection explanation to SOEs in China that is similar to the thesis presented herein. They argue that Chinese enterprises owned by local governments are superior to private enterprises in China because they have fewer incentives to hide their revenue in order to avoid taxes, and they enjoy more state protection of their property.[187] However, this explanation is still incomprehensive. One critical question remains: why did private enterprises develop more in some industries than others? This Article argues that

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[185] *See e.g.*, WORLD BANK, *supra* note 1, at 36; Eytan Sheshinski and Luis F. López-Calva, *Privatization and Its Benefits: Theory and Evidence*, 49 CESIFO ECON. STUD. 429 433 (2003); Qian Yingyi(钱颖一), *Disanzhong Shijiao kan Qiye Zhengfu Suoyouzhi: Yizhong Guoduxing Zhidu Anpai(第三种视角看企业政府所有制: 一种过渡性制度安排)[A third Perspective of The State Ownership of Enterprise: A Transitional Institutional Arrangement]*, 5 JINGJI DAOKAN(经济导刊)[ECON. HERALD] 1 (2002); William L. Megginson and Jeffry M. Netter, *supra* note 1, at 329 ("[A] theoretical argument for government intervention based on efficiency grounds rests on an argument that markets have failed in some way"). Classic textbooks on law and economics of regulation often list "public enterprise" as one of the way to address market failure. *See* W. KIP VISCUSI, JOSEPH E. HARRINGTON, JR., JOHN M. VERNON, *supra* note 36, at 503.

[186] Curtis J. Milhaupt, *Property Rights in Firms*, 84 VA. L. REV. 1145, 1146 (1998).

[187] Jiahua Che and Yingyi Qian, *Insecure Property Rights and Government Ownership of Firms*, 113 Q. J. ECON. 467, 468 (1998).

property protection is stronger in some industries than others. In regulated industries, demarcation of public power and private property is especially difficult when regulatory institutions are underdeveloped, which may create uncertainty for private investment, and hence reduce the percentage of private enterprises in the market.

III. Implications

The efficiency explanation for SOEs in China proposed herein has several important implications, which will be addressed in this section. The first three subsections will provide practical implications for China. Subsection A argues that, in the long run, China should reduce regulatory costs to improve efficiency. Subsection B proposes that in the short run, China should categorize SOEs based on regulatory costs and maintain state ownership where regulatory costs are high.

A. Improving the Regulatory Regime

One important type of regulatory costs is the cost of opportunistic actions. The government may be afraid of losing control when it is difficult to foresee future circumstances that need regulation. As regulatory capacity develops, China needs to establish legal institutions that enable the central and local governments to make credible commitments, in order to encourage private investment. This sub-section analyzes these institutions and their possible application in China.

1. Administrative Law

The role of administrative law in governing the regulatory relationship is analogous to the roles played by contract and property law in private transactions. As Nobel Laureate Douglass North points out, enforcement of contracts and protection of private property are central institutions to development. [188] Scholars have produced empirical evidence that contract

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[188] DOUGLASS C. NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE 54 (1990). OLIVER E. WILLIAMSON, THE ECONOMIC INSTITUTIONS OF CAPITALISM 2 (1985).

enforcement affects financial development, which is important for economic development.[189] Similarly, in regulated industries, credible commitments by the state will encourage private investment and thus may boost development.

As some scholars put it, administrative law aims to fulfill two major functions: to prevent the abuse of regulatory power and to promote effective regulation.[190] These functions may reduce regulatory costs. An important task in the judicial review of administrative actions is to police the limits set by law on regulators. For example, in most States, administrative actions can be overturned when there is a "violation of the law."[191] In Germany and the United States, for example, the courts often consider legitimate expectations, or the reliance interests of the private parties.[192] An independent and sophisticated court system thus may ensure that the government complies with its promises, and may also "fill the gap" of regulatory rules when private parties exploit the loopholes in the rules, which may reduce the need for devising a detailed regulatory regime. Currently, local courts in China are still tightly controlled by local governments. This approach may not work unless the judicial system is reformed.

2. Independent Agency

Regulatory costs also depend on the institutional design of the regulator. The United States has established some independent agencies to carry out regulation, granting them some legislative and adjudicatory power. They are independent both from "above" (the political branches), and from "below" (the regulated enterprises),[193] although the de facto independence is contested.[194] If

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[189] Michael Trebilcock & Jing Leng, *The Role of Formal Contract Law and Enforcement in Economic Development*, 92 VA. L. REV. 1517, at 1527 (2006).

[190] Daniel B. Rodriquez, *Administrative Law*, in OXFORD HANDBOOK OF LAW AND POLITICS 340, 340-41 (Keith E. Whittington, R. Daniel Kelemen, and Gregory A. Caldeira, eds., 2008); Jerry L. Mashaw, *Explaining Administrative Law: reflections on federal administrative law in nineteenth century America*, in COMPARATIVE ADMINISTRATIVE LAW 37, 44 (Susan Rose-Ackerman and Peter L. Lindseth eds., 2010).

[191] *See* Benado Sordi, *Revolution, Rechtsstaat, and the Rule of Law: Historical reflections on the emergence of administrative law in Europe*, *in* COMPARATIVE ADMINISTRATIVE LAW 23, 30 (Susan Rose-Ackerman & Peter L. Lindseth eds., 2010).

[192] *See also MetWest Inc. v. Secretary of Labor*, 560 F.3d 506 (2009). *N.L.R.B. v. Bell Aerospace Co. Div. of Textron*, 416 U.S. 267, 295 (1974).

[193] Halberstam, *supra* note 190 at 191.

[194] *See* Adrian Vermeule, *Conventions of Agency Independence*, 113 COLUM. L. REV. 1163.

the links between independent agencies and the political branch are cut off, agencies can exercise their regulatory power without being subject to political pressures.[195] Independent agencies thus serve the important function of allowing governments to make credible commitments.[196] While independent agencies are most prevalent in the United States, some European countries have also adopted independent agencies after partially privatizing SOEs.[197]

China has not established independent agencies, perhaps because the government is used to maintaining control with a one-party system.[198] However, it is still possible to design institutions that ensure the independence and accountability of regulators. For example, Guangdong province requires all city governments to establish a small committee to inspect the costs of water utilities before they adjust water tariffs. The committee is constituted by at least two qualified specialists and other specialists in accounting or economics, who must recuse themselves if they have an interest, either directly or indirectly, related to the regulated enterprise.[199] This committee is responsible for the cost inspection work, and might be punished if they violate regulatory rules.[200] These innovations may enhance the independence of regulators and reduce the possibility of opportunism caused by political pressure. They should be encouraged in the future.

3. Informal Mechanisms

While formal mechanisms for making credible commitments take time to develop, informal institutions such as reputation and personal networks may also facilitate transactions and promote

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[195] For example, the Connecticut Public Utilities Regulatory Authority is designed to be independent. The commission is composed of members of different parties. The commissioners cannot be removed at will by the governor. *See* Conn. Gen. Stat. Ann. § 16-2 (West 2011). Conn. Gen. Stat. Ann. § 16-5 (West 2011).

[196] Scott, *supra* note 26, at 44. *See also* F. Gilardi, *Policy Credibility and Delegation to Independent Regulatory Agencies: A Comparative Empirical Analysis*, 9 J. EURO. PUB. POLICY 873 (2000).

[197] Scott, *supra* note 26, at. 42.

[198] *See generally* Matthew C. Stephenson, *"When the Devil Turns ...": The Political Foundations of Independent Judicial Review*, 32 J. LEGAL STUD. 59, 73 (2003) (discussing the political foundations of independent judicial review).

[199] Guangdongsheng Wujiaju Zhengfu Zhiding Jiage Chengben Jianshen Gongzuo Guicheng(广东省物价局政府制定价格成本监审工作规程)[Guangdong Price Department Working Rules and Procedures for Cost Inspections for Government Price Regulations](promulgated by the Price Department of Guangdong Province Oct. 22, 2007, effective Nov. 1,2007) (China), art. 13.

[200] *Id*, art. 15.

investment.[201]

However, informal mechanisms face several challenges. First, local government officials may leave, and private enterprises may go bankrupt, which may undermine the stability of the relationship. Furthermore, these informal mechanisms often lack transparency, and may facilitate capture. Private enterprises may conduct oligopolistic or monopolistic practices, which not only reduce broad social benefits,[202] but also harm the legitimacy of the governments. Thus, formal mechanisms need to be further developed if China is to reduce regulatory costs.

B. Categorization of SOEs and the Meaning of Strategic and Pillar Industries

Improving the regulatory regime reduces regulatory costs and enhances efficiency in the long run. However, regulatory institutions need time to develop.[203] In the near future, regulatory costs are likely to remain significant. The analysis of this Article offers a test for policy-makers to determine whether the state should privatize SOEs in certain industries from an efficiency perspective.

The State-owned Assets Supervisory and Administrative Commission (SASAC) launched its categorization of SOEs in 2015, dividing SOEs into two types: business SOEs and public interest SOEs.[204] The objective of business SOEs is to promote economic development and maintain the value of their assets of SOEs. The objective of public interest SOEs is to improve people's

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[201] *See* Trebilcock & Leng, *supra* note 189, at 1543. *See generally* ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES (1991); Milhaupt & Zheng, *supra* note 7, at 685; TONY PROSSER, NATIONALISED INDUSTRIES AND PUBLIC CONTROL: LEGAL, CONSTITUTIONAL AND POLITICAL ISSUES 20 (1986). *See also* Donald C. Clarke, *Economic Development and the Rights Hypothesis: The China Problem*, 51 AM. J. COMP. L. 89, 94 (2003) (arguing that an effective formal legal system is only absolutely necessary for transactions that are "a one-shot deal between strangers.").

[202] *See* Thomas W. Dunfee & Danielle E. Warren, *Is Guanxi Ethical? A Normative Analysis of Doing Business in China*, 32 J. BUS. ETHICS 191, 200 (2001).

[203] Trebilcock & Leng, *supra* note 189, at 1544 ("[I]t has been widely recognized that it takes time for these economies to develop such legal institutions").

[204] Guanyu Guoyou Qiye Gongneng Jieding yu Fenlei de Zhidao Yijian(关于国有企业功能界定与分类的指导意见)[Guiding Opinions on the Functions and Categorization of State-Owned Enterprises](promulgated by the State Assets Supervisory and Administrative Committee, the Treasury Department, and the National Development and Reform Committee, Dec. 29, 2015).

livelihood, provide public goods, and increase social efficiency.[205] The reform schemes and institutional designs for SOEs in these two categories are different.[206] SASAC encourages private capital investment in business SOEs and in competitive industries, while maintaining controlling positions in industries that involve national security and economically strategic industries.[207] Public interest SOEs are usually maintained by central and local governments, although when certain conditions are met, governments may also introduce private investors into these markets.

While these categorizations are reasonable, they are still vague and unworkable. For example, because all SOEs have a mix of functions, dividing SOEs into strict categories of business and public interest is difficult. Thus, the SASAC created exceptions in both categories. For example, water utilities are considered public goods, but governments have put a lot of effort into introducing profit-seeking private investors into this industry.

The thesis of this paper presents a better test for categorization. China should consider selling equity interests in SOEs in those industries with low regulatory costs. As regulatory capacity develops, the categorization of different SOEs should adjust accordingly. An insurance company owned by private investors, for example, is now heavily regulated by the state in all aspects of its operations, including its appointment and removal of managers, recruitment of employees, and the purchasing, disposal and investment of assets. Given that the insurance regulatory regime is quite developed today, the state may consider further privatizing state-owned insurance companies. To be sure, the magnitude of regulatory costs in each economic sector is difficult to measure. As such, China should conduct experiments in some local markets in order to gradually develop regulatory institutions and accumulate knowledge about regulating private enterprises in those sectors currently dominated by SOEs. Decisions to privatize SOEs should be made based on evaluating the social costs of ownership and regulation, and should not be influenced by capture.

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[205] *Id.*

[206] *Id.*

[207] *Woguo Mingque Qida Hangye Jiang you Guoyou Jingji Baochi Juedui Kongzhili(我国明确七大行业将由国有经济保持绝对控制力)[The State Clarifies That the it will Control Seven Major Industries]*, SHANGHAI ZHENGQUANBAO 上海证券报 (SHANGHAI SECURITIES NEWS), Dec. 19, 2006, http://news.xinhuanet.com/fortune/2006-12/19/content_5504591.htm.

Conclusion

Despite the general understanding that Chinese SOEs incur high ownership costs, privatizing them may create high regulatory costs. Regulatory costs include enactment costs, enforcement costs, and costs of opportunistic actions. The magnitude of regulatory costs depends on the market structure, the nature of regulation, the institutional designs of the legal system and the regulators, and other alternative solutions to market failures. This thesis explains why SOEs are still prevalent in many sectors in China while private enterprises have boomed in others. Alternative explanations, including the theory of capture, do not fully explain the whole picture.

One implication of this thesis is that China should seek to reduce regulatory costs by gradually developing regulatory institutions that enhance its capacity to regulate private enterprises. Given that some institutions take time to establish, China should consider categorizing its industries based on the potential regulatory costs. Then, it should maintain state control over those industries with the most severe regulatory costs, and in other industries undertake the institutional reforms necessary to further reduce regulatory costs in order to create additional opportunities for privatization. In future research, this idea can also be applied to industries, such as health-care and education, and other countries, especially those with less developed regulatory regimes.