The Institutional Foundations of China's Reforms and Development[1]

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Abstract

The Chinese economic reform has created world-record breaking large scale and prolonged fast growth, and has reduced poverty at an unparalleled scale in world history. However, the Chinese institutions look notoriously odd with conventional wisdom. The Chinese reforms pose great challenges to economics. The Chinese political/economic institution is characterized as a regionally decentralized authoritarian system, in which the central government has concentrated personnel controls over subnational governments, whereas subnational governments control the bulk of the Chinese economy. Under the supervision of the central government subnational governments initiate, negotiate, implement, divert and resist reforms, policies, rules and laws. Chinese reform trajectories have been shaped by regional decentralization. Spectacular performance on the one hand and grave problems on the other hand are all created or closely associated with this governance structure. This paper will also confront the problems and tradeoffs posed by the Chinese regional decentralization. General lessons of Chinese reforms are discussed.

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1. Introduction

The Chinese economic reform, which has been in flux for three decades, has more than doubled China's economic growth, from an average of 4.4 percent annually before 1978 to an average of 9.5 percent after 1978. Even more impressively, the contribution of TFP to the growth was increased from 11 percent before 1978 to more than 40 percent afterwards (Perkins and Rawski, 2008). This transformed the world's largest developing country from a centrally planned economy into a mixed market economy. This reform has created world-record breaking large scale and prolonged fast growth, and has reduced poverty at an unparallel scale (World Bank, 2002). During the reform period the Chinese per capita GDP increased by almost eight-fold. China has turned from one of the poorest countries in the world[2] to a major economic power. Today's China is the world's largest producer and largest consumer of many conventional industrial staples and high tech products, such as steel, TV sets, personal computers, cell phones and internet usage, etc. (NSB, 2005) and has the world's largest foreign reserves. The current size of the Chinese economy, in terms of GDP, is larger than the sum of 83 countries in Eastern Europe, the former USSR and all of Africa (calculated based on Maddison, 2003).

Chinese Annual Growth of GDP, Fixed Capital, Labor, and TFP, 1952-2005

Period	GDP	Average Growth of Inputs			Average TFP Growth	Percentage Shares of GDP Growth Attributable to		
		Fixed Capital	Labor Input			Fixed Capital	Education Enhanced	TFP
			Raw Labor	Education Enhanced				
		K	L	H		K	Labor H	
1952-2005	7.0	7.7	1.9	2.6	2.1	47.7	21.4	30.9
1952-1978	4.4	5.8	1.9	2.5	0.5	56.3	32.7	11.0
1952-1957	6.5	1.9	1.2	1.7	4.7	12.7	14.9	72.4
1957-1978	3.9	6.7	2.0	2.7	-0.5	73.7	39.7	-13.4
1957-1965	2.4	5.2	1.5	2.1	-1.0	93.1	49.5	-42.6
1965-1978	4.9	7.7	2.4	3.1	-0.2	67.7	36.7	-4.4
1978-2005	9.5	9.6	1.9	2.7	3.8	43.7	16.2	40.1
1978-1985	9.7	9.2	3.4	4.5	3.2	40.6	26.6	32.8
1985-1990	7.7	6.9	2.5	2.9	3.1	38.8	21.5	39.7
1990-1995	11.7	9.1	1.4	1.9	6.7	33.3	9.5	57.3
1995-2000	8.6	10.5	0.9	1.6	3.2	52.7	10.5	36.8
2000-2005	9.5	12.6	1.0	1.8	3.1	57.1	10.6	32.3

Source: Perkins and Rawski, 2008.

However, in sharp contrast to the spectacular performance, it has been reported that from the view point of standard wisdom, such as Washington Consensus or the recent

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[2] At the outset of the reform, China's per capita GDP was about the same as that of Zambia, which was lower than half of the Asian average or lower than two thirds of the African average, and its size was about one half of the Soviet Union (Maddison, 2003). Moreover, it had almost no trade with other countries.

literature on institution, the Chinese institutions in government, corporate governance, law and finance, look notoriously weak. Moreover, the Chinese reform policies are often unconventional and sometimes even look opposite to 'standard' policy suggestions (Weitzman and Xu, 1994; Rodrik, 2006).[3]

According to the conventional wisdom, the government should protect private property rights, enforce contracts and should be separated from business (North, 1981; Acemoglu and Johson, 2005; Rodrik, 2006). However, the Chinese government has a deep involvement in business (Oi, 1999). There is no clear separation between government and business even in cases where firms are privately owned. Applying commonly accepted standards, China is in general below average for rule of law or for governance quality (Allen et al., 2005; Pistor and Xu, 2005). Moreover, in most periods throughout the three-decade reform there was no constitutional protection to private property rights until recently [the 2004 constitutional amendment]. The Chinese reforms pose great challenges to economics. Are the Chinese reforms explainable by economics? Is the Chinese reform a miracle? This paper will synthesise existing literature to tackle these challenges.

Recent growing literatures on institutions and reforms demonstrate a general consensus among economists and policy makers that a set of institutions must be in place to make markets well functioning. Therefore, a market-oriented reform should focus on institutional building. Nevertheless, a vital challenge faced by all transition economies and all developing economies is how to build these requisite institutions, and how to carry out the reforms. A simplistic, yet fairly popular view is that markets will take place as long as private properties are well protected through proper institutions. However, numerous historical and contemporary lessons show that market orders and economic development do not nurture spontaneously; i.e., private ownership alone is insufficient for the market economy to function. Without government functions beyond protection of property rights, markets often do not develop; even worse, disorder can destroy markets as powerfully as dictators. Yet, failures of market-oriented reforms launched by governments are ubiquitous, whereas omnipotent government does not work either. Indeed, if the government was able to design and to implement reforms, which in turn could solve all the problems to make markets work, then why can't the government solve all the economic problems directly without bothering markets? What is the boundary of the government? This is an ultimate dilemma faced by any institution building reform. This dilemma echoes Coase's famous question: what is the boundary of the firm (Coase,

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[3] In comparing Chinese and Indian reforms with Washington Consensus policies, Rodrik (2006) said: "…their policies remained highly unconventional. With high levels of trade protection, lack of privatization, extensive industrial policies, and lax fiscal and financial policies through the 1990s, these two economies hardly looked like exemplars of the Washington Consensus. Indeed, had they been dismal failures instead of the successes they turned out to be, they would have arguably presented stronger evidence in support of Washington Consensus policies."

1937). By raising this question in this survey, I intend to use Chinese reforms as an example to illustrate that an answer to this fundamental question is ultimately determined by the tradeoffs between costs and benefits of using a government in some particular ways. I argue that the Chinese reforms are neither mysteries nor simple textbook applications. The Chinese reforms are coupled with regional decentralization and I will explain Chinese reform strategies and outcomes by regional decentralization.

Chinese regional decentralization is a result evolved before and during the Chinese reforms. Subnational governments have control rights over a substantial amount of resources, such as land, firms, financial resources, energy, raw materials, etc. (Granick, 1990; Naughton, 1991, 1995; Qian and Xu, 1993; Shirk, 1993; Oi, 1999).[4] Subnational governments are major players to the bulk of the Chinese economy. Under the supervision of the central government they initiate, negotiate, implement, divert and resist reforms, policies, rules and laws. They drive, influence or hamper regional/national economic development, macro economic condition, environment, social stability, etc. That is, Chinese reform trajectories have been shaped by regional decentralization. Spectacular performance on the one hand and grave problems on the other hand are all created or closely associated with this governance structure.

This paper will confront the problems and tradeoffs posed by the fundamental Chinese institution, *regionally decentralized authoritarianism*. The governance structure of this institution is characterized as follows: first, although regional decentralization has gone quite far in economic sphere well before economic reforms, the central government's control is always substantial that the Chinese political and personnel governance structure is always centralized. The subnational government officials are appointed from the above. The appointment and promotion of subnational government officials are served as powerful instruments for the central government to induce regional officials to follow center's policy (Maskin, Qian and Xu, hereafter abbreviated as MQX, 2000; Naughton and Yang, 2004). This feature distinguishes the Chinese regional decentralization from federalism, where governors or mayors are elected, and they suppose to represent and to be accountable to their constituents. The other feature is devolution and regional responsibility. The governance of the national economy is delegated to multi-levels of subnational governments. Regional economies (from provincial level to county level) are relatively self-contained and subnational governments have overall responsibilities to initiate/coordinate reforms (MQX, 2000; Qian, Roland and Xu, hereafter abbreviated as QRX, 2006, 2007), to provide public service, and to make/enforce law within their jurisdictions (Pistor and Xu, 2005). This feature differentiates the Chinese economy from a centrally planned economy.

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[4] "In effect, it is the sub-national levels of Government that implement China's national development agenda. Nearly 70 percent of total public expenditure in China takes place at the sub-national level (i.e. provincial, prefecture, county, and township), of which more than 55 percent takes place at sub-provincial levels" (The World Bank, 2002).

The regional decentralization governance structure paved roads for development of non-state firms, which has been the most important engine of China's growth since the mid 1980s (Qian and Xu, 1993). In addition, given this institutional condition the central government delegated more autonomous power and provided stronger incentives to subnational governments to encourage them to try out reforms and promote economic growth (Liu and Lin, 2000; Jin, Qian and Weingast, hereafter abbreviated as QRX, 2005; Li and Zhou, 2006). Indeed, competition to become rich quicker was a policy set by the central government. When a region has a higher growth rate than others, the head of the region will enjoy greater power and be more likely to get promotion.

In addition to incentives, the way reforms are coordinated also deeply affects reform performance. Chinese subnational governments have had considerable responsibilities for regional coordination. Such decentralized coordination has important benefits. First, since subnational governments are closer to sites they are much better informed on local information than the central government. Second, communication and information processing locally is much easier than those between the centre and the regions. Thirdly, regionally based coordination makes economy-wide coordination failure less likely when there are external shocks. This also makes it easier to experiment institutional changes locally without causing disruption to the rest of the economy. Indeed, almost all celebrated successful early reforms were introduced through experiments (QRX, 2006, 2007).

Decentralization or centralization is relative to a given benchmark. There are two default benchmarks in our discussion of the Chinese regional decentralization in this paper. Given that China was a centrally planned economy, a major benchmark we use is the 'classical centrally planned economy' (Kornai, 1994) or textbook version of command economy. The other default benchmark we use is the structure of a unitary state, given China has never been a federation. This paper is also going to cover the debate on Chinese fiscal federalism (or federalism).

How to motivate subnational governments and at the same time coordinate or control them; this subject has been debated by economists, political scientists, historians and sociologists, etc. for decades, both in general and in the context of China. Their viewpoints are, however scattered and very often scholars in different disciplines do not talk to each other. This paper attempts to develop a coherent conceptual framework to put them together. By doing so we may understand Chinese reforms and economic development better. It may also deepen our general understanding on legal, political, economic institutions, and on the evolution of these institutions. I fully understand the difficulty of fulfilling this ambitious attempt. This paper does not intend to provide an exhaustive literature survey, a full scale of which would require multiple volumes. Therefore, many important contributions are not covered due to restrictions of space and my own ignorance on the subject.

This paper will also address many important policy questions. What are general lessons that we can learn from the Chinese reforms? When the Chinese 'ignored'

standard advice, how did China avoid problems? Was the standard advice wrong or did China simply come up with other policies that better fit with its institutions? What are the key current economic problems in China and how might these problems be best addressed given China's institutions? Finally, is China's growth sustainable under regional decentralization?

The rest of the paper is organized as follows: the next section characterizes the fundamental Chinese institution. A brief history of the evolution of the institution will be presented, which illustrates the path dependent feature. Section three will explain how this institution affects incentives of subnational governments, which in turn determines consequences of the reforms. Section four explains institutional foundations for regional experimentation. Section five gives examples of economic reforms as applications of the conceptual framework of Sections 3 and 4. Section six discusses tradeoffs of the Chinese regional decentralization and major problems faced in Chinese reforms, such as regional disparity and regional protection etc. The last section concludes the paper by summarizing policy options for future reforms and lessons that may be useful for other countries.

2. Economic Decentralization and Political Centralization

Chinese economy is one of the most decentralized in the world. However, its political system is highly centralized such that major regional officials' appointments are controlled by the centre through the Chinese Communist Party (hereafter simplified as the Party). The three decades' Chinese reforms are initiated, implemented and governed by this fundamental institution.

The bulk of the Chinese economy is essentially controlled by Chinese subnational governments (provinces, municipalities, counties). It is not an exaggeration to claim that Chinese subnational governments run most of the Chinese economy. Subnational governments control land within their jurisdiction. Most firms in China are either under direct control or under great influence of subnational governments. Moreover, during the reform process they also controlled or influenced distribution of resources such as credit, share issuance quota, electricity, etc. Furthermore, they are granted high autonomies in regional fiscal policy, which we will further discuss later. In addition to controlling substantial resources and enjoying significant economic autonomies, most Chinese regions are also fairly self-contained. As we will explain in Sections 3 and 4, this provides conditions for regional competition and regional experiments, which are the key elements of Chinese reforms.

Yet, the China system is neither *de jury* nor *de facto* federal. This is because China's regions are politically controlled by the Party and the national government. Political power within China is exercised through the Party and the key of the political control is personnel appointments of subnational governments. The highly centralized

political/personal controls over regions distinguish China from a federal system fundamentally. Nevertheless, the highly decentralized economy also makes China categorically different from a unitary state. Although responsive to incentives provided by the central government, with substantial autonomies subnational governments are awfully sophisticated in dealing with the central government rather than simply obeying commands from the above. Furthermore, the Chinese fundamental governance institution has been fairly stable, whereas markets only become pervasive in less than two decades. The variations on the degree of centralization/decentralization over time in the last three decades are generally changes on the margin.

Indeed, the objective of the reforms introduced by the Party three decades ago has been transforming the economy towards a vibrant market economy without weakening the political supremacy of the Party. This dilemma has led the Chinese authorities to experiment a variety of forms of governance, from firms to markets, such that it has been likened to trying cautiously to feel for stepping-stones across a river.

2.1 Decentralized Economic Governance: Regional Decentralization

A salient feature of the Chinese reforms is an "arm's length" distance between the central government and most of the economy of the nation, and deep involvement of the subnational governments in the economies within their jurisdiction, including regional firms. The Chinese government consists of a region based multi-level hierarchy. Below the central government, there are four levels of subnational governments: provincial level, municipal level (previously prefecture level), county level and township level. The central government directly controls only a small proportion of the Chinese economy. The largest economic sector that the central government controls directly is industry. Even within this industry the central government directly employed only less than 4 % of all the industrial employees nationwide (NSB, 2006b).

Most government functions are implemented by subnational governments. Although by constitution China is not a federal state, in many important economic issues Chinese subnational governments are more 'powerful' than their counterparts in most federal countries in the world. Moreover, Chinese subnational governments are responsible for much broader regional matters than fiscal issues. However, there is no well accepted methodology to measure broadly defined regional decentralization. As a result, most literature uses fiscal decentralization as a proxy for regional decentralization. Contrasting Chinese regional fiscal power with its counter parts in the rest of the world, in the early 2000s, the total expenditure of the Chinese subnational governments accounted for about 70% of the national level, which was far larger than that of the world's largest federal countries such as the U.S. (46%), Germany (40%) and Russia (38%) (Wong, 2006). Yet, a caveat is in order here. Although fiscal decentralization is sometimes a good proxy in empirical work, from time to time this proxy can be misleading when fiscal decentralization goes in different directions from regional decentralization. We will elaborate on this issue later.

The following Figure 1 depicts the Chinese government structure. The statistics in the figure reflects the situation in the year 2005, whereas the government structure has been stable throughout the reform era.[5]

The current Chinese governance structure is an outcome evolved in the past half century (Perkins, 1977; Wong, 1985; Granick, 1990; Naughton, 1995; Liu et al., 2006). Not long after a full scale transplantation of the Soviet model in the early 1950s, there were two major political movements that lead to vast waves of decentralizations started in the late 1950s (the Great Leap Forward (GLF)) and in the late 1960s (the Cultural Revolution) at extremely high costs (Shirk, 1993; Liu et al., 2006).[6] The central

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[5] The total number of central SOEs listed in Fig.1 is 2128, which is from the NSB. However, according to the SASAC (State-owned Asset Supervision and Administration Commission), the number should be less than 170 in 2005 or 151 in 2007 (http://www.sasac.gov.cn/zyqy/qyml/default.htm). The latter is the total number of parent companies controlled directly by the central government, which supervises a large number of subsidiary companies; whereas the former is the total number of all establishments managed by the central government.

[6] For example, the GLF established the People's Commune, thus the Commune-Brigade Enterprises (the predecessor of the TVEs); and expanded local industries under state and collective ownership. An essential part of the costs of the GLF is the Great Famine (see Lin, 1990 and Li and Yang, 2005).

Fig 1. Regional Governance Structure of Chinese Economy

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│                    Central government                        │
│                    (Pop: 1.31 billion)                       │
│              Central firms: 2,128 central SOEs               │
│   Employment: 2.75 million;    Fixed assets: 1314 billion Yuan│
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22 provinces & 5 autonomous regions

(Average pop: 45.7 million)

Regional level firms: 269,707, including local SOEs, collectives, joint, private, foreign, others.

Employment: 66.21 million;   Fixed assets: 9281 billion Yuan

4 Provincial-level municipalities:

Beijing, Shanghai, Tianjin, Chongqing

(Average pop: 17.9 million)

333 Municipality-level units

(283 cities) average pop: 3.71 million

2,862 County-level Units

(374 cities) average pop: 431,426

41,636 town-level units

(19,522 towns) average pop: 29,656

Source: NSB, 2006; 2006b; 2006c.

government's bureaucracy was trimmed; supervision of most state-owned enterprises was delegated from the ministries to provinces, cities or counties, and subnational governments' responsibilities were substantially enlarged. Reflecting the first wave of decentralization in

the late 1950s, the sub-national fiscal revenue to total national fiscal revenue ratio jumped from 20% in 1958 to 76% in 1959 (Table 1). Corresponding the second wave of decentralization in the "Cultural Revolution," the sub-national fiscal revenue (expenditure) to national fiscal revenue (expenditure) ratio was increased from 65% (37%) in 1966 to 88% (50%) in 1975 (Table 1).

Table 1. Evolution of Chinese Fiscal Decentralization, 1953 to 2005

| Year	Sub-Natl/ Tot Rev	Sub-Natl/ Tot Exp	GDP/capita	GDP/capita grw	Institutional Changes
1953	17.0%	26.1%	554	3.2%	1st Five Year Plan
1958	19.6%	55.7%	693	8.8%	
1959	*75.6%*	*54.1%*	*697*	*0.6%*	*Great Leap Forward*
1961	*78.5%*	*55.0%*	*673*	*0.0%*	
1966	*64.8%*	*36.9%*	*753*	*6.7%*	*Cultural Revolution*
1975	*88.2%*	*50.1%*	*874*	*4.5%*	
1978	84.5%	52.6%	979	9.4%	Reform Starts
1980	75.5%	45.7%	1067	2.6%	Fiscal reform starts
1984	59.5%	47.5%	1396	10.4%	
1988	67.1%	66.1%	1816	6.4%	
1993	78.0%	71.7%	2277	8.5%	
1994	44.3%	69.7%	2475	8.7%	Fiscal Sharing Rule
2004	45.1%	72.3%			
2005	47.7%	74.1%			

Sources of data: *China 50 Years' Statistics*; GDP/capita: 1990 international dollars, Maddison (2003).

As a result, outset of the reforms, China had already established hundreds relatively self contained regional economies. Majority of the two thousand counties had SOEs in producing agricultural machinery; 300 counties had steel plants. Small regional SOEs produced 69% of China's total fertilizer output and 59% of cement. More than 20 provinces had SOEs producing automobiles or tractors (Xu and Zhuang, 1998). This is in sharp contrast to all other formally centralized economies where specialization and monopoly is an outstanding feature. With greatly reduced responsibilities of the central government, the Chinese central government is much smaller than its counter parts in other centralized economies. When the Chinese reforms started the number of products directly under the central plan in China, it was only 791 (the number was never more than

one thousand in Chinese centrally planned system) and the number of ministries at the centre was less than 30 (Qian and Xu, 1993).[7]

The reforms took place almost right after the end of the Cultural Revolution when subnational governments already *de facto* controlled a great deal of resources. For political and economic reasons, granting more autonomous powers to subnational governments is one of the major strategies in the first fifteen years of reforms (Shirk, 1993; Liu et al., 2006). Subnational governments were given high incentives and were directly involved in managing or setting up firms, forming joint ventures with domestic or foreign investors, etc. As a result, subnational governments have granted *de facto* property rights to SOEs and collectively owned firms (COEs) within their jurisdictions (Granick, 1990), which count for most of the firms in the nation. Moreover, subnational governments become more important in all major regional affairs, from land allocation, business development, infrastructure construction, and fiscal matters, to law making

Fig. 2. Regional Governance Structure in China
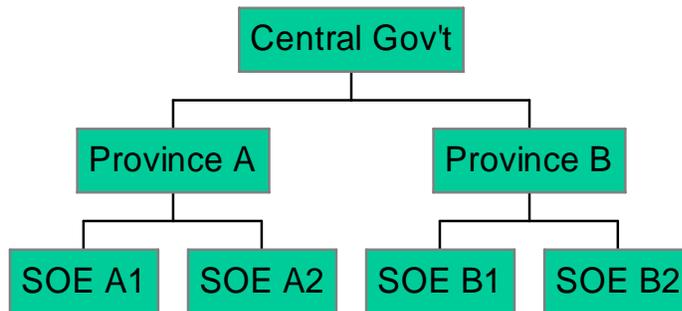
and law enforcement. In terms of fiscal decentralization, 1993 reached the peak that the sub-national fiscal revenue (expenditure) to national fiscal revenue (expenditure) ratio was 78% (72%) (Table 1).

In Qian and Xu (1993), MQX (2000) and QRX (2006a, 2006b), the Chinese regional decentralization is modeled as a stylized multi-regional governance form (M-form) in which every region is self-contained.[8] The Figure 2 depicts a highly stylized Chinese regional governance structure where each region is self contained (not specialized) in

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[7] As a comparison, in Soviet Union the central planning system is based on the principle of functional specialization that the central government directly controls most of the state-owned enterprises (SOEs). In the late 1970s there were 62 ministries under the Gosplan in the Soviet Union responsible for 48,000 plan "positions" or 12 million products planned and coordinated by the Gosplan (Nove, 1983).

[8] The term M-form was first used by Chandler (1967) and Williamson (1976) to characterize multi-divisional structure of large corporations. where divisions are self-contained and are granted autonomous power, division chiefs are appointed by the headquarters.

both industry 1 and industry 2. As a comparison, in other formally centralized economies, specialized ministries control industrial firms.

2.2 Centralized Political Governance

Fundamentally different from a federal system, Chinese regional leaders are appointed by upper level governments not by regional elections. Moreover, despite devolution of much power over economic resources to the subnational governments, the Party centre still plays a predominant role in membership selection of the ultimate decision making bodies at national level, the Party's Politburo and the Central Committee and in selection of provincial leaders (Huang, 1996).

The Chinese constitution has been amended during the reforms, reflecting the changes of the Chinese system. However, both the pre-reform version and the latest version of the Constitution stipulate that regions have no inherent power, and regional power is granted by the central authorities. The central government is empowered to delegate power to regions, and also to renounce power from regions (PRC Constitution, 1978; PRC Constitutional Amendments, 2004). In practice, regional appointments are controlled by the central government through the Party. When regions obtain fairly high autonomous economic power the central government maintains its influence on regional officials' incentives by determining their career paths.

The central government makes direct decisions on appointment and removal of provincial leaders, e.g. governors. Similarly, most municipal leaders, e.g. mayors, are directly controlled by corresponding provincial governments. This nested network extends the central government's personnel control to officials of all levels of regions, from provincial to municipal, then to county until the bottom of the hierarchy, township government (Burns, 1994). Moreover, reshuffling and cross region rotation of regional leaders is a common practice. From 1978 to 2005, 80% of provincial regions have experienced rotation of governors imposed by the central government (Xu et al., 2007). This personnel control approach is the major instrument to make regional officials comply with the central government's policy and also to provide incentives to promote regional experiments, which will be elaborated on in a later section. Moreover, it allowed the central government to achieve some macro control, such as inflation (Huang, 1996). Furthermore, through this mechanism, the central government has kept considerable leverages in 'building consensuses' with subnational governments in order to push through policies that are in favor of the central government (Naughton and Yang, 2004). In reality this approach worked on issues with highest priorities, but often failed in many second-order important issues.

At institutional level, the central-regional relationship has been fairly stable during the more-than-two-decades' reform era, although there are debates in the literature on whether the central power is weakened by regional powers during the reforms. There are worries that delegating economic powers to regions undermined the capacity of the central power (Wang, 1995). And the central power was further weakened by Party

institutions' enfranchising regional leaders during national-level successions (Shirk, 1993). However, the Party's personal control system provides the mechanism for upholding a balance between economic decentralization and political compliance (Shirk, 1993; Huang, 1996).

2.2.1 From Revolution to Economic Development: Legitimacy of Central Leadership

Given the central importance of the Communist Party of China (CPC) in China's economy, it is imperative to discuss the nature of the Party. The Party's governance structure is essentially a hierarchy. After the "Cultural Revolution" (CR) the objective of the Party's top leaders changed from revolution to economic development. In a sharp contrast to decentralizations taken place in the reforms, the two decentralization weaves, the GLF and the CR, were all outcomes of anti capitalism political campaigns by nature.

Ironically, it was the overwhelming destruction of the CR that paved the road to change the Party from a revolutionary one to focusing on economic development. During the CR the Party bureaucracies, government machineries and legal institutions were dismantled, most party leaders and government bureaucrats were purged. The devastation awakened the elites and the citizens to the fact that "revolutions" in general and "class struggles" in particular had to be stopped and the Party had to change.

A major attempt to change the course happened in the late CR era. In 1975 the late premier Zhou Enlai, together with Deng Xiaoping, his deputy premier after being purged for many years, launched the so-called "Four Modernizations" (modernization of agriculture, industry, science and technology, and defense) campaign. Challenging the theme of the CR this *de facto* reform involved intensive political fights within the Party. To defend the legitimacy of diverting the Party's attention away from the revolutionary goal of the CR, this campaign relied on nationalism, deviated from communist ideology. The reform, which is aimed for catching up developed economies, was depicted as essential and urgent tasks for the survival of China. Deng argued that China was becoming more backward than ever: "being backward will be defeated by the world powers and China would face a danger of being eliminated from the Earth eventually…" "What matters most is the development of China regardless an approach is socialism or capitalism." Disillusioned and awakened by the devastation of the CR, these arguments represented a rising consensus among most elites and citizens in China. However, this reform attempt was politically crashed by the left-wing faction lead by the "Gang of Four," which had a formidable back up from Mao.

Yet, the aborted "Four Modernizations" became a platform for changing the ideology and the goal of the Party. After the death of Mao, thus the end of the CR, which totally destroyed the illusion of the communist ideology, i.e. Communism, and the old legitimacy of the Party, a new political legitimacy of ruling the country had to be found. The reform era was officially inaugurated under the same title "the Four Modernizations" in the Third Plenum of the 11th Central Committee of the Party, December 1978.

Although never made official, the political legitimacy of the Party has been changed into nationalism ever since and economic development of the nation is the core of it. This change of the political legitimacy of the CPC is reflected in the constitution. The Party announced that capitalist entrepreneurs: "represents advanced social productive forces" and should be represented in the Party (the CPC Constitution, the 16th CPC Congress, 2002). Moreover, the Chinese constitution is amended from a socialist one into a basic law which protects private property rights (Constitutional Amendment, 2004). The perceived ability to deliver sustained economic growth is regarded as the most important guarantee of continued legitimacy for the existing leadership (Shirk, 1993).[9]

Ever since the reform era started, China has changed deeply both in its economic development and in its legal development. The change is so great that without eyewitness it would be unthinkable for anyone who knows the revolutionary past of the CPC to imagine this could be done under the Party. Indeed, it would be much more difficult for all of these changes to occur peacefully and rapidly if there was no such total disillusion and disgrace of communism among the elites and if there was no such devastating destruction of the central bureaucracy, which greatly weakened the opposition of the reform.

2.2.2 Personnel Control

Although vast majority of resources are delegated to subnational governments, which enjoy fairly broad autonomies in decision-making, regional officials' career paths are controlled by the central. Specifically, appointments, promotions and demotions of regional officials in China are determined by the national government. These are tied to economic performance of their jurisdictions. It is through this channel the central government maintains its control over the national economy.[10] This makes Chinese economy fundamentally different from a federal system, although it is essentially decentralized.

This personnel control system is a nested network that the centre directly controls the key positions at provincial level and grants each tier of subnational government the power to appoint key officials one level below it. Each level of subnational government oversees the appointment, evaluation, promotion and dismissal of its subordinate level regional leaders.

A set of performance criteria for leading officials at subnational governments is stipulated. Regional officials are assessed in accordance with the important tasks and targets laid down by their superior level of governments. Level by level, each level of

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[9] For related discussions, also see Naughton (1995) and Hsu (2000).

[10] It is interesting to notice that this Chinese governance structure shares great similarities with the Japanese corporate governance structure, particularly before the 1990s (personal communication with Aoki, 2007; Aoki, 19xx).

subnational government negotiates with their subordinate subnational government for performance targets. Then regional officials at different levels sign target responsibility contracts with their superiors. The targets for the tasks to be attained as well as rewards/penalties contingent on the fulfillment of those targets are specified in those contracts (Tsui and Wang, 2004). For example, in a scheme for provincial leading officials, 60 percent were assigned to targets related to economic construction (Tsui and Wang, 2004). In general, performance criteria are broader for leading officials at higher level subnational governments. Whereas the targets set for leading officials at lower level subnational governments tend to be more concrete. According to a handbook issued by the Party, work achievement accounts for 60 to 70 percent of the evaluation of regional officials and other aspects, such as political integrity, competence and diligence together account for the rest, 30 to 40 percent (Edin, 2003).

It is documented that county governments control township and village officials by linking their performance to promotion (Whiting, 2000). In field works at township level governments, it is discovered that party secretaries and township heads sign performance contracts with the county level. In these contracts, township officials pledge to achieve targets setup by county officials, and are held personally responsible for attaining those targets. Performance targets are ranked in three categories: soft targets, hard targets and priority targets with veto power. Hard targets tend to be economic, such as economic development plan and tax revenue, whereas priority targets are often political, such as keeping social order. Fulfilling hard targets is important for bonus and for political rewards, whereas completion of priority targets affects personnel decisions (Edin, 2003).

Moreover, competition between regional officials among the same level of regions, such as at county level or township level, is an essential part of the cadre management system. As discovered in a field work, in one county, leading cadres of the first three ranked townships in the annual evaluation were entitled "advanced leader;" whereas the bottom 5 percent of officials on the list were disgraced. To be a top-ranking township leader and to be awarded with the title of "advanced leader" enhances the chances for promotion substantially, thus it is regarded as a "political bonus." Indeed, some first-ranked township officials were promoted within the county (Edin, 2003).

The personnel control system also combines promotion with rotation or cross region transfer. The practice of rotating provincial level officials has been further institutionalized since the 1990s, and the Central Committee of the CCP has issued Party decrees on the rotation system in 1990, 1994, 1999 and 2006 respectively. The Party decrees announce that a major purpose of rotating regional officials is to promote economic development through diffusion or duplication of regional reform experiences (Xu et al., 2007).[11] Directed by this policy, during the period of 1978 and 2005, about 80% of governors are promoted or transferred from other provinces, i.e. many of them

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[11] Historically rotation was a common practice in the Chinese empire to prevent regional officials from cultivating strong political power bases within their jurisdictions.

were not promoted as a governor within the province. The average duration of their tenures is close to four years with some extremes of just one year or ten years (Xu et al., 2007).

It is documented that in the reform era, rotation was often combined with promotion. The rotation/promotion combination was frequently used to promote mayors of successful municipalities as governors of other provinces, particularly under-performed provinces. This promotion creates incentives for regional leaders to work hard. Moreover, this may also serve as a mechanism to diffuse successful regional experimentation (in Section 4 we will further discuss regional experiments). For example, between 1998 and 2004 three former party secretaries of Suzhou, one of the best performed municipalities in China, were promoted to become provincial governors of Jiangsu, Shaanxi and Jilin. Between 1998 and 2002, a former mayor of Wenzhou, another best performed municipalities in China, was appointed as vice governor and then governor of Sichuan (Chien and Zhao, 2007).

2.3 Central-Regional Relationship

The central-regional (or sometimes called central-local in the literature) relationship is the most essential part of the governance structure of China. The basic structure of this relationship is hierarchical that subnational governments are subordinates of the central government. For the foremost important issues, such as national (or political) unity and macro stability, the central government takes a tough stand to make the subnational governments comply.[12] On the other hand, the central government is pretty much hands-off from regional economic issues. Subnational governments are granted sizeable *de jury* control rights and endowed with substantial *de facto* control rights over vast amounts of economic issues and abundant resources, including fiscal and non fiscal, within their jurisdictions. Complementary to the above two features, the personnel control regime is highly incomplete, they are ambiguous on many issues and there are gaps on other issues. The incompleteness of the personnel control regime is partly by design for granting control powers to subnational governments but partly determined by the nature of contract and law. This opens plenty of room for subnational governments to maneuver against rather than to simply comply with policies of the central government on regional issues. Finally, the authority of the central government is endogenized. On the one hand, the power of the national leadership depends very much on the collective support of the regional leaders. On the other hand, once obtained, the position of a national leader possesses considerable authority within the hierarchy against disobeys of a few regional leaders, provided their challenges share no popularity among other regional leaders. As discussed above, ever since the reform era, nationalism in general development of national economy in particular

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[12] When they defy the central government and challenge the power of the central government, they can be punished severely. Recent examples include the dismissal and imprisonment of the former mayor of Beijing, Chen Xitong, in 1995, and the former mayor of Shanghai, Chen Liangyu, in 2006.

is the political legitimacy of the national leadership. This plays critical roles in selection of national leaders and the interactions between central government and subnational governments reinforced this political legitimacy.

Witnessing impressive regional decentralization in the reforms, there are hot debates on central-regional relationships in China. On the one hand it is argued that the central government is controlling China effectively. It was argued that during the reform era the central government increased its political and administrative control over provincial government leaders, and continues to co-ordinate economic policy-making and implementation (Huang, 1996b). Naughton and Yang (2004) argue that the central government was able to contain periodic provincial economic overheating. This indicates the central government's capacity to control subnational governments. On the other hand, Wang and Hu (2001) argue that central state capacity has been severely undermined by decentralization in the reform era. They warned that the weak capacity of the central government threatens Chinese political stability similar to the situation before the disintegration of Yugoslavia. Somewhat in the middle between the above polar views, Shirk (1993) argues that succession struggles of the Party determine the central-regional relationship. In those political power struggles, central leaders compete for the support of regional leaders via reform policies. Devolution gave central politicians the opportunity to win the gratitude and the political support of officials from the provinces. Thus, the content and sequencing of China's economic reforms are determined by the ongoing succession struggles of the Party.

Recent evidence suggests that the central-regional relationship in China has been rather stable and the central government has kept its control over most important aspects, such as personnel. For example, it is reported that the provincial share in the most important political decision making body, the Politburo of the Party, has been rising slightly during the reform era; whereas the provincial share in the 2nd important political decision making body, the Central Committee of the Party, has been declined by a similar magnitude (Sheng, 2005). Given the hierarchical personnel control and each level of subnational government is empowered to appoint, evaluate and dismiss officials in subordinate subnational governments, career path within the hierarchy is the major concern of most regional officials.

3. Regional Competition and Subnational governments' Incentives for Reforms

One of the most important impacts of regional decentralization is on incentives provided to subnational governments. Chinese regions, provinces, municipalities, counties and townships, are constantly ranked and regions compete for improving their rankings.[13] The effectiveness of tournament competition in providing high powered

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[13] In addition to the most popular GDP growth rate rankings, some other rankings are also getting much attention in regional competitions, such as regional competitiveness in various aspects. As an example, in a recent ranking Shanghai, Beijing and Guangdong were ranked as the first, second and third most

incentives is well known in the literature; however, it requires strong conditions to make it work. This section explains how regional decentralization creates institutional conditions for providing stronger incentives to subnational governments and the tradeoffs of these incentives.

3.1 The Institutional Foundation for Regional Tournament Competition

When reform era started in the late 1970s, an explicit policy was announced which encouraged regions to "get rich first." Policies on special economic zones and other economic development zones enabling subnational governments' competition for investments were implemented. Regions compete for economic growth, for investments and for attracting FDI etc. fiercely. At the same time, municipal governments were granted more powers, and a large number of county governments were upgraded into municipal level. This upgrading further enabled and empowered these subnational governments and provides higher incentives to them. Government statistics and mass media regularly publish rankings of regional performances, which become an important part of evaluations for determining subnational government officials' promotions.

In contrast to the prevalence of regional competition and initiatives taken by subnational governments in Chinese reforms, sub-national level officials in the reforms of other transitional economies were not given strong incentives and they were in general less active. Furthermore, decentralization does not always create strong incentives to regional officials for regional economic growth in most of the other countries in the world. The first challenging question in front of us is the following: What makes China special in providing strong incentives to regional officials for economic development? Moreover, associated with the Chinese regional decentralization and regional competition there are serious problems, such as regional inequality, regional protection, and regional environment problems, etc. Facing these problems we have the second question: what are the conditions that regional competition leads to desirable outcomes? We are going to discuss these problems and to address the second question in later sections.

To address the first question, we summarize the major features of Chinese institution which facilitates regional tournament (or yard-stick) competition in the following. First, the Chinese regional officials are subject to incentive schemes managed by the national leader. With a centralized personnel management for regional officials, the regional competition under this institutional structure is qualitatively different from fiscal federalist regional competitions such as the Tiebout competition (for further discussion see next subsection). Moreover, the Chinese national government not only posses superior powers of appointment, promotion and dismissal of subordinate government officials, it is also strong enough to eradicate collusions between lower level subnational governments. This preserves regional tournament competition since collusion

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competitive regions in China in 2007, which is unchanged from those in 2006; whereas inland provinces Anhui and Hubei improved their rankings significantly (Xinhua, 10/03/2008).

among regional officials could destroy the competition. Second, inhered from history Chinese regions, particularly regions at county or higher levels are relatively self-sufficient so that each region contains multiple economic sectors. Therefore, most Chinese regions are alike in their economic structures. This is a critical condition for tournament competition to function. We will further discuss this point later. Moreover, this greatly weakens interdependence between Chinese regions, which enables subnational governments to coordinate most of the economic activities within their jurisdictions. Finally, not only enabled, Chinese subnational governments are also empowered to take responsibilities on economies within their jurisdictions. They are granted with fairly high autonomy powers on economic activities (Qian and Xu, 1993). Enablement and empowerment themselves are vital sources of incentives. Furthermore, ultimately incentives to officials can play important roles only when they are enabled and empowered to take reform initiatives or growth enhancing measures, etc.

To understand the relationship between regional decentralization and high-powered incentives associated with regional tournament competition, Maskin, Qian and Xu (2000; MQX, thereafter) developed a model. The basic issue to be addressed by MQX is about incentive problems for officials at different levels of a hierarchy. This hierarchical feature of the model captures the governance structure of China as previously discussed. Using the concepts developed in Qian and Xu (1993), China is modelled as a multi-regional organizational form (M-form) that there are two sub-national units, regions, each of which is assigned with managing similar tasks such as manufacturing and agriculture. As a comparison, former Soviet Union or Central-Eastern European economies are modelled as a unitary form (U-form) that there are two sub-national units, ministries, each of which is assigned with managing specialized tasks such as manufacturing or agriculture. This captures well the governance structure of those economies before 1989. Contrast to China, in those economies there were no ministerial or regional competitions in reform measures or growth enhancing efforts although they started reforms much earlier than China. If regional competition is an effective reform measure in China, then what is the specific mechanism of this approach? And what prevented the FSU-CEE countries from deploying a similar approach?

The MQX focuses on incentive issues of the sub-national officials. The outcomes of the tasks in the model are determined jointly by the managing efforts of the relevant officials and outside random factors. The officials' efforts are not observable to others and are costly to them. When there is no proper incentive scheme they will shirk. In the context of economic reforms or growth enhancing management, this implies no reform efforts, etc. It is known that facing unobservable efforts tournament competition could provide better incentives than other schemes (e.g. Lazear and Rosen, 1981; xxx and Stiglitz, 1983). However, the above theoretical result requires strong conditions. A set of vital conditions is that the tasks of the agents should be similar and the outside random factors that the agents face should follow the same distribution. In reality, directly applicable cases of these conditions are quite restricted. MQX demonstrates that various

ways of organizing a hierarchy are in fact different ways of organizing tasks, such as the task of a regional governor in the Chinese M-form economy and the task of a minister in the FSU U-form economy, which may alter the way of pooling outside random factors for each official.

The following is an intuition that tournament may provide better incentives when regions are alike. Suppose that one way to provide incentives to officials to carry out reforms is to reward them on the basis of reform performance. But performance is not perfectly correlated with their efforts due to outside random factors. Thus, if a governor or a minister shows a poor performance, he may try to blame the outcome on bad luck to his region or his industrial sector. This excuse will not be convincing, however, if all the regions or all the industrial sectors are similar in their compositions and all other regions or ministries are prospering. Thus, it will, in general, be desirable to make the official's reward, such as promotion, depend not only on absolute performance but also on performance relative to that in other regions. However, regional or ministerial tournament will not be efficient if regions or ministries are sufficiently divergent to each other. Intuitively, one may imagine that relatively self-contained Chinese regions are more similar in each other's economic compositions, whereas highly specialized ministries and regions in former Soviet Union and Central-Eastern Europe are fairly different to each other.

Incentives in general tournament incentives in particular depend on quality of information available to the organization. In this sense, an organizational form which can provide superior quality of information will be able to provide superior incentives. To illustrate the MQX model, let us look at the following simple example. In this example we focus on the two upper level officials of a hierarchy and call them the centre and the middle officials. The hierarchy can be organized by region—the M-form, or by industry (ministry)—the U-form. The middle official i's certainty equivalent utility function is

$V_i = E(w_i) - g(e_i) - \dfrac{r_i}{2} Var(w_i)$, $i=1,2$; where w_i is random income for middle official i, e_i

is effort from middle official i, r_i is absolute risk aversion for middle official i, E(w_i) is expected income for middle official i, $Var(w_i)$ is variation of income for middle official i, and the last term in the equation is risk premium (the amount that a risk aversion person is willing to switch from a certainty income to a risky income) for middle official i. The

middle official i exerts efforts to produce output $x_i = e_i + \varepsilon_i$, where $i=1,2$; and ε_i is a

random noise faced by middle official i, which follows a normal distribution with zero

mean and $\sigma_1^2 = \mathrm{var}(\varepsilon_1)$, $\sigma_2^2 = \mathrm{var}(\varepsilon_2)$ and $\sigma_{12} = \mathrm{cov}(\varepsilon_1, \varepsilon_2)$. In this example, assume

compensation schemes are linear so the compensations for the two middle officials are:

$w_1 = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2$ and $w_2 = \beta_0 + \beta_1 x_1 + \beta_2 x_2$. respectively.

Supposedly the central government official is risk neutral and cares profit. Thus, his

utility function is: $U(x,w) = E\{ x_1 + x_2 - w_1 - w_2\}$. Given transferable utility functions with a binding individual rationality constraint, an efficient contract maximizes the sum of the individual utilities subject to the two middle officials' incentive compatibility conditions. Thus, the central government solves the following incentive program:

$$\max_{e_i,\alpha_i,\beta_i} \Pi(e_i,\alpha_i,\beta_i) = V_1(w_1,e_1) + V_2(w_2,e_2) + U(x_1,x_2,w_1,w_2)$$

$$s.t.\, \alpha_1 = g'(e_1)\ (IC1)$$

$$\beta_1 = g'(e_2)\ (IC2)$$

The optimal incentive scheme and the optimal effort level of middle official

$1, (\alpha_1,\alpha_2,e_1)$, is characterized by the following first order conditions:

$$\alpha_1 = \frac{1}{1 + r_{11}\sigma_1^2(1-\rho_{12}^2)g''(e_1)}; \alpha_2 = -\alpha_1\rho_{12}\frac{\sigma_1}{\sigma_2}; \text{ and } \alpha_1 = g'(e_1).$$ By symmetry, the optimal

incentive scheme and optimal effort level of middle official 2, (β_1,β_2,e_1), the conditions

are similar.

This simple model captures two effects of incentives: the absolute performance effect, α_1 and β_1, which tie an official's compensation to his own outputs, and the relative performance effect or tournament effect, α_2 and β_2, which link an official's compensation to other's outputs in a negative way. The absolute performance effect, α_1, is stronger if σ_I^2 is smaller. On the other hand, the tournament effect, α_2, which captures the competition between the two middle officials, is stronger if ρ_{12} is larger. That is, the overall incentives of officials depend on variance-covariance matrices of the exogenous random shocks, which are in general hard to compare to each other. However, conditional

variance, such as $Var(\varepsilon_1|\varepsilon_2) = \sigma_1^2 - \frac{\sigma_{12}^2}{\sigma_2^2} = \sigma_1^2(1-\rho_{12}^2)$, can summarize all the useful

information by a scalar. Intuitively, a smaller $Var(\varepsilon_1 | \varepsilon_2)$ implies that ε_1 and ε_2 are more similar in distribution, and/or ε_1 is more certain.

Although distributions of industry-specific shocks and of region-specific shocks are exogenous, they affect officials' incentives differently under different organizational forms. If an economy is organized in U-form, the two middle officials will be ministries responsible for industry 1 or industry 2 respectively. We use subscripts 1 and 2 to denote for the two ministers and for the two industry-specific shocks. If the economy is organized in M-form, where the two middle officials are governors responsible for region A and region B respectively, we use subscripts A and B to denote for the governors and for region specific shocks. Applying these notations to the optimal incentive schemes and optimal efforts, we can interpret α_1, α_2 and e_1 as those for minister 1 and β_1, β_2 and e_2 for minister 2 under the U-form, and α_A, α_B and e_A for governor A and β_A, β_B and e_B for governor B under the M-form.

To compare the incentives of the middle officials under different organizational

forms, we substitute conditional variances $Var(\varepsilon_1 | \varepsilon_2)$, $Var(\varepsilon_2 | \varepsilon_1)$, $Var(\varepsilon_A | \varepsilon_B)$, and

$Var(\varepsilon_B | \varepsilon_A)$ into corresponding optimal incentive schemes. Then for compensation

schemes of minister 1 and governor A under the U-form and the M-form we have
$g'(e_1)=1/[1+r_1 Var(\varepsilon_1 | \varepsilon_2) g''(e_1)]$, and $g'(e_A)=1/[1+r_1 Var(\varepsilon_A | \varepsilon_B) g''(e_A)]$ respectively.
Similarly, we can obtain optimal e_2 and e_B for minister 2 and governor B respectively.
From the above optimal solutions, it is obvious that everything else be equal, if $Var(\varepsilon_1 | \varepsilon_2)$

$> Var(\varepsilon_A | \varepsilon_B)$, then the governor A in the M-form exerts a stronger effort than his

counterpart in the U-form, the minister 1, i.e. $e_A > e_1$. Symmetrically, if

$Var(\varepsilon_2 | \varepsilon_1) > Var(\varepsilon_B | \varepsilon_A)$, we have $e_B > e_2$. From here, we are able to conclude that every

thing else being equal, governors in regionally decentralized economies have stronger
incentives to work hard than ministers in more centralized economies if $Var(\varepsilon_i | \varepsilon_j) >$
$Var(\varepsilon_r | \varepsilon_s)$, for all $i, j = 1, 2$ and $r, s = A, B$.

The above illustration example relies on assumptions of exponential utility function
and linear compensation scheme,[14] and it is restricted to a two level hierarch. The MQX
model deals with a three level hierarchy, which can be organized either by region
(M-form) or by industry (U-form), and all of those assumptions on utility function and
compensation scheme are dropped. They show that independent from functional forms of
the utility function and the compensation scheme, as long as in each pair-wise
comparison between conditional variations of regional shocks and conditional variations of
industrial shocks the former is always smaller than the later, the M-form will be able to
duplicate the information set under the U-form by adding noises. Therefore, under this
condition the M-form will be able to provide better incentives than the U-form. The
following proposition summarizes this theoretical result.

Proposition: Incentives under the M-form are at least **as** good as those under the
U-form (in the sense that any U-form incentive scheme can be replicated by an M-form
incentive scheme) provided that in each pair-wise comparison between conditional
variations of regional shocks and conditional variations of industrial shocks the former is
smaller than the later.

Of course, if in each pair-wise comparison the former is always larger than the later,
the conclusion will be reversed. Therefore, ultimately, whether regional decentralization
should be more beneficial than a centralized regime is an empirical matter and the MQX
provides a methodology to test it.

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[14] It is known that models under these assumptions have fairly broad applications (Holmostrom and
Milgrom, 1987).

3.2 Evidence

In the following we are going to discuss three groups of systematic evidences on regional decentralization and regional competition. The first group of evidence concerns whether the Chinese governance structure, the M-form, provides better conditions than alternative governance structure, the U-form, for jurisdictional tournament or not. Then we survey evidences that regional competition provides incentives to regional officials. The last group of evidences suggests that Chinese regional decentralization has made significant contributes to economic growth.

Using a firm level dataset consists of 520 Chinese state-owned enterprises from 1986 to 1991, MQX finds that Chinese regions are indeed 'alike' that regional tournaments should work better than ministerial tournaments. Their dataset contains industry classification codes and location codes for each firm. Industry-specific shocks and region-specific shocks are estimated by running the log-linear Cobb-Douglas production function. This allows for calculation of regional and industrial conditional variations.

In their sample, 70% of the results satisfied the condition of the proposition and there is no single case that the condition is reversed. In the remaining 30% cases, the condition is satisfied half way, i.e. one of the conditional variances under the M-form is smaller than its counterparts under the U-form. This implies that the two organizational forms are indifferent in providing incentives. Therefore, overall these results suggest that the M-form enhances incentives through regional competition. However, this evidence does not deal with the question whether relative performance evaluations are actually used in China.

To address this question, MQX investigate the relationship between the promotion of regional officials and regional economic performance. They use regional representation in the Party's Central Committee as a proxy for the promotion chances of officials in that region and measure economic performance of a region by its growth rate in national income. Then they investigate how the improvement of a region's performance relative to other regions would later affect the promotion of this region's officials. Specifically, they constructed the national ranking index of each province's representation at the 11th Party Congress in 1977 and in the 13th Party Congress in 1987, and constructed national ranking index of provincial economic performance in growth rate before the Party Congress, that is, in 1976 and in 1986. They find that the change of relative ranking in economic growth is positively and significantly related with a large magnitude to the change of relative ranking for the promotion chances of officials in that province. The evidence that officials from relatively better performed regions have better chances to be promoted relatively faster suggests that regional tournament competition is at work.

With a more updated and elaborated data, Chen, Li and Zhou (2005) find further evidence of regional tournament competition. Using a data covering 344 top provincial leaders (187 party secretaries and 157 governors) from China's 28 provinces for the period 1979–2002, they find that that relative performance evaluation has significant impacts on provincial officials' career paths. Specifically, every thing else being equal,

the provincial GDP growth has a positive and significant coefficient, while the provincial GDP growth of the immediate predecessor has a negative and significant coefficient (columns 5 and 6 in Table 3). This indicates that the likelihood of promotion (termination) for provincial leaders is positively (negatively) associated with their own economic performance, but negatively (positively) associated with the performance of the immediate predecessor. That is, each official's performance relative to his/her immediate predecessor had a significant impact on his/her promotion.

Li and Zhou (2005) provide evidence that regional officials were given strong incentives to promote regional economic growth. Using a panel dataset covering 254 provincial leaders (provincial party secretaries and governors), who served in 28 Chinese provincial units from 1979 to 1995, they find that regional officials' promotions are determined by the performance of their jurisdiction. Everything else being equal to a higher GDP growth rate in a province improves the likelihood of the provincial leaders' promotion significantly. They suppose that the central government makes promotion/termination decisions, or turnover decision, y, based on a performance score of provincial leaders, y^*. Formally, *Prob(y) = f(y*)*. The economic performance score is related to regional GDP growth rate. That is, $y^* = x\beta + \varepsilon$, where, x is provincial GDP growth rate and ε is a random variable which follows a normal distribution. They assume that only turnover of a provincial leader, y, is observable; thus, both specification of $f(y^*)$ and the value of y^* are unknown. Supposedly if a provincial leader performed badly, his job should be terminated later, i.e. $y = 0$, if $y^* \leq a1$, where, $a1$ is the cutoff point for an official's remaining at the same level (or termination). However, if he performed very well he should get a promotion, i.e. $y = 2$, if $y^* > a2$, where, a2 is the cutoff point for and official's getting promotion. Consistently, if he was doing ok, he may remain at the same level within the hierarchy, i.e. $y = 1$, if $a1 < y^* \leq a2$. Their regression controls for other factors may also affect provincial leaders' promotions, such as their connections with the central government (better connected officials may get a promotion easier than others), their age and their tenure at the job, etc.

The regression results in the first two columns of the Table 2 suggest that the annual GDP growth rate has a positive impact on the probability of promotion and a negative impact on the probability of termination. Moreover, the marginal effects of economic growth on turnover are large. When the annual growth rate increases by one standard deviation from the mean, the probabilities of promotion (or termination) will increase (decrease) by 15 percent of the average probability of promotion (termination).

Table 2. The Effect of Economic Performance on the Turnover of Provincial Leaders (Ordered Probit Regressions)

	dependent variable: turnover (0=termination, 1=same level, 2=promotion)					
	(1)	(2)	(3)	(4)	(5)	(6)
Provincial annual GDP growth rate	1.615**	1.581*				
	(2.05)	(1.87)				
Provincial average GDP growth rate			4.727***	4.540***		
			(4.34)	(3.90)		
Provincial average per capita GDP growth rate (A)					3.001**	
					(2.10)	
Provincial average per capita GDP growth rate of the immediate predecessor (B)					−3.584**	
					(2.36)	
(A)−(B)						3.309***
						(3.41)
Age		−0.026*		−0.023*	−0.071***	−0.070***
		(−1.91)		(−1.68)	(6.81)	(6.77)
Age65		−0.974***		−0.976***	−0.303**	−0.303**
		(−5.27)		(−5.25)	(2.07)	(2.07)
Education		0.154		0.187	0.183	0.184
		(0.96)		(1.17)	(1.48)	(1.5)
Central connection		0.384***		0.404***	0.082	0.085
		(2.79)		(2.89)	(0.74)	(0.77)
Tenure		−0.053*		−0.055*	−0.062**	−0.062**
		(−1.74)		(−1.78)	(2.44)	(2.45)
Lagged per capita GDP (million yuan)		0.080		0.010		
		(0.43)		(0.05)		
Cutoff point 1	−1.320***	−3.162***	−2.850***	−2.850***	−6.992***	−6.929***
	(−3.67)	(−2.98)	(−2.64)	(−2.63)	(8.42)	(8.66)
Cutoff point 2	1.621***	0.106	0.455	0.455	−3.736***	−3.662***
	(4.63)	(1.01)	(0.43)	(0.43)	(4.64)	(4.7)
Number of observations	864	864	864	864	1227	1227

Note: The numbers in parentheses are t-ratios based on robust standard errors. The significance levels of 1%,

5% and 10% are noted by ***, ** and *. All regressions include the provincial and year indicators. Columns (1)-(4) are based on Li and Zhou (2005), and columns (5) and (6) are based on Chen, Li and Zhou (2005).

Of course promotion of regional officials is not solely determined by their performances in economic affairs. In column 2 of Table 2, many of the non-economic performance factors are controlled. One of them is the impact of regional officials' connections with the central government on their promotion, which is measured by their previous or current work experience in the central government. Not surprisingly, they find the central connection indicator has a positive and significant impact. Moreover, the magnitude of this effect is large that central connections increase the probability of promotion by 3.4 % and decrease the probability of termination by 3.5 %.

If economic performance is a determining factor for promotion, given the average measure, it is less likely to be subject to short-term shocks than the annual measure; the average measure should weigh more in turnover decisions. The last two columns of Table 3 report the testing results. These results indeed indicate that promotion and termination appear more sensitive to the average growth rate than to the annual growth rate. The estimated corresponding marginal effects of the average GDP growth rate are larger than those of annual measures. When the average growth rate increases 0.06, the probability of promotion will increase by 33 percent of the average probability of promotion, and the probability of termination will decrease by 30 percent of the average probability of termination.

In addition to providing incentives through appointment and promotion within the hierarchical structure, the decentralization-based reforms also further delegate autonomies to subnational governments through various channels. One of those is city status upgrading scheme. In city status upgrading schemes municipal governments' are granted with more administrative authority and raise political position of a city and thus stronger incentives of its officials. One of these kinds of practices is to entitle some county governments as city governments (county-to-city upgrading). From 1983 to 2001, 430 county-level cities were established, mostly by upgrading (Li, 2007). Another measure is to upgrade some prefecture level municipalities to the deputy provincial rank city, which is officially called separately-itemized cities (*jihua danlie*), which means they enjoy substantial autonomy and are treated separately from the province in which they are located. Since 1984, 14 cities obtained deputy provincial rank (Shi and Zhou, 2007).

Using a large panel data set covering all counties in China during 1993-2004, after controlling for the official upgrading requirements, such as industrialization, population and fiscal strength, Li (2007) finds that everything else being equal, counties with a higher growth rate were more likely to get city status. He interprets this as evidence that upgrading is used by the central government as an incentive mechanism to align regional interests with the national ones. By controlling for cities with similar performance and structure, but have never been upgraded (non treatment groups) and performance before upgrading (before treatment), Shi and Zhou (2007) show that everything else being equal, cities

obtaining deputy provincial rank, i.e. autonomy, increased per capita GDP by 9.3%, per capita FDI by more than 50%, per capita investment by about 80%. This indicates that enabling and empowering subnational governments by granting them more autonomy power together with high-powered incentives enhances regional economic growth effectively.

3.3 Chinese Regional Competition and the debate on Fiscal Federalism

There is a large amount of literature that debates whether the quality of public fiscal policy can be improved through regional competition or fiscal federalism in general. The seminal Tiebout model (1956) shows that jurisdictional competition among subnational governments can make provision of public goods efficient. Musgrave (1959) and Oates (1972) further develop a theory of fiscal federalism, emphasizing the appropriate assignment of fiscal authorities to the various levels of government to improve social welfare. Based on this line of thinking, the second generation of fiscal federalism developed an argument that under certain conditions fiscal federalism is self-enforcing and is market-preserving. The core mechanism is the commitment mechanism created by the market-preserving fiscal federalism to confine the national government from intervention and this provides proper incentives to government officials at all levels to foster the growth of the market (Weingast, 1995). China is taken as a major example of market preserving fiscal federalism (Montinola, Qian and Weingast (MQW), 1995; Qian and Weingast, 1997; Jin, Qian and Weingast (JQW), 2005).

At the same time there is also a fairly sizeable literature that challenges fiscal federalism on the following aspects. First, inter-jurisdictional competition for capital may lead to a 'race-to-the bottom' in local tax rates, or the provision of some local public goods (Keen and Marchand, 1997). It may prompt local governments to exploit spill-over, exporting taxes or pollution to their neighbors (Gordon, 1983; Oates and Schwab, 1988). Central government intervention may be necessary to solve such problems (Cumberland, 1981; Gordon, 1983; Rivlin, 1992; Wildasin, 1989). Without a strong central government, fiscal federalism alone will not lead to efficient results and will not be market-reserving (Blanchard and Shleifer, 2001). Second, interregional competition for capital may encourage subnational governments to act in ways that corrode the capacities of the central state such that fiscal federalism will not be market-preserving (Cai and Triesman, 2004, 2006).

Evidence from cross country studies is mixed that fiscal federalism in many countries often is found inefficient (Fornasari, Webb, and Zou. 1999; Rodden, 2002; Rodden and Rose-Ackerman, 1997). Furthermore, arguments are made and evidence has been found that Chinese fiscal decentralization is neither self-enforcing nor market-preserving (Wong, 1991; Cai and Triesman, 2006; Tsui and Wang, 2004).

Since this is not a paper on fiscal federalism in general, the focus here will be the relationship between the Chinese regional decentralization and the debate. The major point we like to make here is that the Chinese regional decentralization violates some

basic assumptions of the Tiebout model and those of the "market-preserving fiscal federalism." Therefore, applying fiscal federalism models is not proper for understanding the mechanism of the Chinese regional decentralization.

First, in fiscal federalism theories, including the Tiebout model, explicitly or implicitly subnational government officials are elected and they are accountable to their constituencies. However, as discussed above, Chinese subnational government officials are appointed from the above and they are held responsible to their superiors. Obviously, the incentives of elected officials are qualitatively different from the incentives of appointed ones. This implies that one has to be very careful on limitations when applying the Tiebout model or other theories on fiscal federalism to Chinese regional competition.

Similarly, the market-preserving fiscal federalism requires: "[t]he allocation of authority and responsibility has an *institutionalized degree of durability* so that it cannot be altered by the national government." This requirement "provides for credible commitment to the federal system and thus for limits on the national government's discretionary authority. Not only must there be decentralization, but that decentralization must not be under the discretionary control of the national government." This is "a necessary component of federalism's market-preserving qualities" (MQW, 1995). However, under the Chinese constitution and the Chinese governance practice, both *de jury* and *de facto,* the central government preserves its discretionary power over regions and the power has been exercised during the reform era (the PRC Constitution, 1982, 2004; Mertha, 2005). A prominent example that the Chinese fiscal decentralization violates a basic assumption of the market-preserving fiscal federalism is the recentralization of the tax collection power after more than one decade's fiscal decentralization; i.e., there is no commitment of limiting the central authority's power in fiscal policy. Facing a decline of central government's fiscal revenue while the economy was growing fast (Wong, 1991), in 1994 a reversal of the fiscal decentralization took place in central government's attempts to overcome this problem (Tsui and Wang, 2004). As a result, the share of subnational governments' tax revenue in national tax revenue was reduced substantially from 70% to 40% (World Bank, 2002). This implies that the logic of the market preserving federalism would not apply to explain the Chinese regional decentralization.

Second, one of the most important assumptions of the Tiebout competition is factor mobility. Similarly, the market-preserving fiscal federalism, as one of the five fundamental conditions, also requires that "[t]he national government has the authority to police the *common market* and to ensure the mobility of goods and factors across sub-government jurisdictions" (MQW, 1995). However, to make factors mobile is one of the major targets of Chinese reforms. Indeed, labor in China has only become partially mobile since the mid 1990s (Whalley and Zhang, 2004). Capital is even more immobile than labor and segmentation of capital market is still a major problem today (Gorden and Li, 2003; Boyreau-Debray and Wei, 2005). Moreover, the national common market requirement is also under serious challenges (Young, 2000). Although the debates on the trend of trade barriers crossing regions and the trend of factor mobility are intensive, the

existence of severe factor immobility and regional trade barriers in China are never a debating subject (Young, 2000; Naughton, 2003; Bai et al., 2004).

Focusing on fiscal policies and federal systems within a fiscal federalism theory framework, a violation of factor mobility makes inter-jurisdictional competition among regions impossible. Without factor mobility citizens would not be able to vote by their feet, thus there will be no Tiebout competition. Similarly, in the framework of market-preserving fiscal federalism inter-jurisdictional competition would fail to serve as an important incentive device without a national common market and factor mobility (JQW, 2005). However, not only in China but also in most developing economies, factor mobility is limited and national common market is to be developed; this makes people doubt the usefulness of fiscal federalism model for economic development (Bardhan, 2002). Indeed, economic development and development of national common market are pretty much a chicken-or-the-egg dilemma. Therefore, a recipe for economic development conditional on the existence of a common market may not be very useful for understanding or for policy.

What happened in Chinese reforms is that when factors were highly immobile, i.e. when Tiebout conditions were violated, Chinese regions competed fiercely with each other. Moreover, under the Chinese governance institution not only its regional competition is efficient and growth enhancing, but also factors gradually become more mobile and national common markets evolve. That is, the Tiebout conditions become more satisfied as an outcome of the reforms but not as a precondition of the reforms. This manifests that the Chinese regional competition is governed by a qualitatively different mechanism from those of fiscal federalism models.

Finally, it is important to notice that fiscal federalism models are based on the very feature of market economies that the economic roles of governments at different levels are restricted to fiscal policies. Thus, the key issue of fiscal federalism models is about fiscal policies such as taxation and provision of public goods by local governments. However, as we discussed above, Chinese subnational governments are responsible for much broader roles and fiscal policies are only a subset of those. Therefore, applying fiscal federalism models to focus on fiscal policy alone will miss large parts of the reforms and will not be able to explain China's economic reform and growth. This point is also valid for most transition economies at least before the bulk of their economies are privatized.

4. Coordinating Regional Institutional Experiments

It is documented that China's reforms have been carried out by an experimental approach, which also appeared as gradual and piecemeal. This is well echoed by the renowned "philosophy" of Chinese reform: "crossing river by touching the stones." To some extent, the "stones" are reform measures and "touching the stones" are regional experiments. Starting from 1978, almost every major reform step was tried out by a few regions first before being lunched nationwide. The imperative role of subnational

governments in trying out reforms is related to uncertainties of reforms.

Reforms face vast uncertainties. One of the major uncertainties is related to the challenges of political resistances because reforms create winners and losers in changing institutions. The political economy of institutional changes affects paths and strategies of reforms (Roland, 2002; TBA). Under certain conditions regional reform experiments may find ways to weaken political resistances and to reduce uncertainties of the reforms. A successful experiment outcome not only provides information on what reform program works, but also can be used to support the reform and to persuade the unconvinced. Moreover, compared with a nationwide full scale reform, when a regional experiment fails the drawback may be contained to the experimenting region. Furthermore, some compromise policies or compensation schemes to the opponents may be experimented to ease the opposition of starting a reform. That is, the option value carried with regional experimentation may bear weights to tip the political balance in favouring those reforms that otherwise would be discarded.

If regional experiment is an effective reform strategy it should be used in other reforming countries. However, it is claimed that Eastern Europe and the former USSR followed the "big bang" strategy. And it is regarded as an explanation why China's reforms performed so differently than those in Eastern Europe (McMillan and Naughton, 1992; Sachs and Woo, 1997). Yet, experimental approach were in fact utilized in the pre-1989 reforms in Eastern Europe and the Soviet Union but failed miserably. Those failures led to discrediting the experimental approach in reforms and to the adoption of the big bang approach. Ironically, to a large extent, China followed many of the Eastern European gradual reforms in earlier stages of its reforms. A fundamental question is what are the conditions that make China special in deploying regional experiments successfully? What makes experimental approach work in China but not in Eastern Europe?

The key potential benefit of experimenting is to reduce uncertainties of reforms. However, this potential benefit will be realized only when results can be obtained through experiments which do not disturb the rest of the economy, particularly in case of failures. It turns out that how an experiment is coordinated determines whether an experimental approach will be fruitful. Whereas the way experiments are coordinated is determined by the way the economy and the government is organized.

Some people may wonder why not use market to coordinate a reform experiment. It has been argued in the literature that essential coordination tasks have to be carried out through non market mechanisms even in developed market economies (Coase, 1937; Weitzman, 1972). For economies carrying out reforms aimed to transform a centrally planned economy into a market economy this is particularly true since markets there are yet to be developed. In his Nobel Lecture, Coase (1992) argues the function of

management of the firm "was to co-ordinate" beyond the markets. He asks: "Why was it needed if the pricing system provided all the co-ordination necessary?" His answer is that: "[t]o have an efficient economic system it is necessary not only to have markets but also areas of planning within organizations of the appropriate size." When an organization is large, such as a multi-national company or a national government, a related key issue is "the appropriate size" of the sub-organization which coordinates; or who should coordinate what within an organization. In the spirit of Coase, to some extent different ways of allocating authorities within a government, or different ways of decentralization is an institutional design issue to address the question, what is the boundary of different levels of the government?

In reality, success or failure in coordinating reform experiments are deeply entangled with the political economy of reforms. To make the analysis tractable, in the following subsection we simplify important political economy issues into a reduced form as parameters of a model. This allows us to focus on analysing coordination problems. Then in subsection 4.2 we bring political economy issues back to real cases of regional experimentation.

4.1 The Institutional Foundation for Regional Experiments

Reforms are vastly uncertain and often each reform involves several complementary programs that fail to coordinate among the programs. Moreover, markets often do not work for coordinating reforms. Indeed, government coordination is vital for implementing reforms or urgent tasks even in developed market economies (Bolton and Farrell, 1990; Milgrom and Roberts, 1992). The role of the government in coordinating reforms is much more vital in developing economies or transition economies where many markets are missing or ill functioning.

The challenging question to be addressed here is if a government is organized properly to coordinate the reforms. A typical Chinese region is relatively self-contained and a subnational government is responsible for most economic activities within its jurisdiction. Thus, subnational governments are responsible to initiate and to coordinate regional reform experiments. Moreover, given interregional dependence is relatively weak in China, when a regional experiment fails its impact to the rest of the national economy is more or less isolated (Qian and Xu, 1993).

QRX (2006; also 1999, 2000, 2007) developed a theory which explains how Chinese regional decentralization creates conditions that alleviate coordination problems in reforms and that allows for experimenting reforms in flexible ways. As a comparison, plagued by coordination problems, many previous reform experiments in Eastern Europe and the former Soviet Union failed.

The coordination concept in QRX relates to the adjustment of the government to exogenous disturbances to reform programs and random contingencies. QRX analyze coordinations as 'attribute matching' (a la Milgrom and Roberts, 1992). In the model, implementing a reform can be viewed assembling of complementary sub-programs. Each

sub-program of the reform is characterized by its attributes. These complementary sub-programs must ultimately be integrated to fit together. A reform is completed successfully only if the characteristics of each attribute of the various sub-programs are matched successfully. Failure in the matching of attributes implies a break down of economic order, i.e. a drastic failure. QRX assumes that ex ante a program is well designed in the sense that all the attributes are matched in the blueprint of a reform program. However, some of the attributes may not suit the local conditions ex post and adjusting these attributes may lead to mismatches with the attributes of other tasks, which will then require further adjustments.

To illustrate the above discussion let us look at the following example. Supposedly a reform has two sub-reform programs: enterprise restructuring program (laying-off excess workers) and creation of a social safety net. The attributes of enterprise restructuring are the number and individual characteristics of the laid-off workers, such as age, seniority, family composition, length of residence, sex, type of contract, current wage, history of employment, etc. The attributes of compensation from the social safety net are rules of eligibility such as length of employment, special circumstances (veteran or not), status of enterprises, rules of benefits such as size and length, types of benefits (monetary or not), technical support of computers, administration, budget, etc. If some attributes of the two tasks are not matched, many laid-off workers may not be compensated appropriately, so they may strike.

In the QRX framework, a successful reform requires both a good reform blueprint and correct implementation (coordination). There exists uncertainty about the quality of a reform blueprint. The uncertainty of the quality of a reform program is a reduced form expression for two factors: a) the political support/resistance to/against the reform; b) the technical quality.[15] A program with more political doubts or challenges is more uncertain. A reform program that incites strong political oppositions will fail regardless of how "good" the program looks from an outsiders' point of view. We call a program without political support bad. Moreover, a program is technically uncertain on its outcomes even when there is a full political support. A bad reform program always lead to a failure, however well coordinated the implementation. Yet, without a test it is not known ex ante if a reform program is good or not.

On the other hand, a good reform program needs to be implemented correctly, which requires good coordination. The quality of coordination depends on the quality of the information available to decision-makers in the organization. QRX assumes that only regional officials are able to observe local information, and communication is necessary for others to use that information (a la Hayek, 1947). However, communication is imperfect and there is a probability that the transmitted message is wrong. Here, the

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[15] All the political economy interpretations and examples of the QRX model discussed in this section are the views of the survey author, which may or may not be shared with the other authors of the QRX papers. And those are not in the QRX papers.

imperfect information transmission is a reduced form expression of two elements: a) political noise; b) technical noise. The political noise occurs when information is transmitted through political skeptics or opponents; whereas technical noise arises from the fact that two officials have different knowledge and different interpretations of the same message or some other technical reasons. In an organization that consists of self-contained regions, the attribute matching can be done locally. In contrast, in an organization that consists of specialized ministries that are complementary to each other, attribute matching cannot be carried out locally and has to be done by the centre.

A reform experiment faces two potential problems. The first problem concerns the quality of its blueprint. A blueprint has an uncertain outcome: it can be "good" with probability p and "bad" with probability $1 - p$. QRX assumes that a good blueprint, together with successful coordination in implementation, raises the payoff from each region by R/2 but a bad blueprint always reduces the payoff from each product by R/2.

The second problem concerns coordination. On the one hand, even if all attributes are matched perfectly and ex ante in the blueprints and the blueprint are good, unforeseen attribute shocks occur in implementing the blueprint. Attributes must then be mutually adjusted to observe attribute shocks. It is possible that the official who coordinates is not the official who collects information about attribute shocks. In such a case, the coordinating official relies on the message sent by the official collecting information. The probability of each message being correct is λ. With $\lambda \leq 1$, information transmission is generally imperfect. A coordination failure would lead to a failure of a reform experiment.

Similar to the MQX model, the QRX economy consists of two regions A and B, which are similar to each other; and two industries (or functions), 1 and 2, which are complementary to each other. Different from the MQX model, which focuses on impacts of regional decentralization on regional competition, the QRX model focuses on impacts of regional decentralization on regional experimentation. In a regionally decentralized economy, an M-form, complementary tasks are grouped together. Governor A is responsible for tasks 1A and 2A and governor B for tasks 1B and 2B. Because the two tasks which require attribute matching are assigned to the same governor, the middle officials can match attributes well locally. Experimenting each reform in region r involves coordination of attribute matching between tasks $1r$ and $2r$ ($r = A, B$). The central government's job is to make nationwide strategic decisions on selecting reform program, to deciding reform strategies, etc.

In contrast, in a Soviet type centralized system, a U-form, similar tasks are grouped together for the supervision by ministers. Specifically, minister 1 is responsible for tasks 1A and 1B and minister 2 for tasks 2A and 2B. Thus, the two ministers need to send the attribute shock information to the central government, who then coordinates attribute matching between tasks 1A and 2A and between 1B and 2B.

Two types of reform experiments are modeled by QRX. The first type of experimentation is the so-called "full-scale experimentation" where a reform always

starts simultaneously in both sub-national units of the economy. Under the regional decentralization, the M-form, given each governor is responsible for coordinating reform experiments locally, perfect attribute matching can be achieved within his jurisdiction. A reform is uncertain that when the reform program is bad, the experiment fails and a new program will be tried in the next period. Defining stage i as the stage at which a total of i reform experiments have been successfully implemented. At stage i, the current period payoff for the two ministries without a new experiment is given by $(i + 1)R$. Therefore, at stage i, with a successful new reform experiment, the current period payoff for the two ministries is given by $(i + 2)R$. Thus, the recursive payoff V_i^{MF} can then be written as:

$$V_i^{MF} = -C + p[(i + 2)R + \delta V_{i+1}^{MF}] + (1 - p)[iR + \delta V_i^{MF}].$$ Here, C is a setup cost to

be paid to the two regions. From this recursive formula, the payoff at stage 0 can be obtained as:

$$V_o^{MF} = -\frac{C}{1 - \delta} + \frac{pR}{1 - \delta}\left(2 + \frac{\delta}{(1 - \delta)}\right).$$

As a comparison, under a centralized regime, the U-form, the central government is responsible for coordination which relies on messages received from the ministers. Because the communication is imperfect, even when a reform program is good, there are still uncertainties: with probability λ^2, attribute matching is successful; with probability $1 - \lambda^2$, attribute matching fails, which leads the reform to a failure. The recursive formula for the payoff at stage i in terms of the net present value V_i^{UF} is the following:

$$V_i^{UF} = -\frac{C}{2} + p\{\lambda^2[(i + 2)R + \delta V_{i+1}^{UF}] + (1 - \lambda^2)(iR + \delta V_i^{UF})\} + (1 - p)(iR + \delta V_i^{UF})$$

where, the setup cost $C/2$ is lowered than that in the M-form this is because the scale economy of the U-form is in coordination. Similarly we obtain:

$$V_o^{UF} = -\frac{C}{2(1 - \delta)} + \frac{p\lambda^2 R}{1 - \delta}\left(2 + \frac{\delta}{(1 - \delta)}\right).$$

By comparing V_o^{MF} and V_o^{UF} it is clear that when a reform program is more uncertain, e.g. when there are more doubts on a reform program, the M-form is more effective than the U-form in full-scale reform experiments. This advantage becomes further stronger when political noise within the government hierarchy is larger, that coordination failure may occur more often, i.e. when λ is smaller.

A more important advantage of the regional decentralization is its flexibility in experimenting reform programs. In addition to a full-scale experimentation, the M-form can also launch a "small-scale experimentation" or regional experimentation where reform experiments start in one region first and extend the experiment to the other region in the next period if the first experiment is a success. In a small-scale experiment, a new reform experiment program starts in region A, the experimenting region, but not in region B, the non-experimenting region. There are now two possible scenarios. At stage i, if a

program is good, the current period payoff is *(i+1+s)R/2* in region A and *(i+s)R/2* in region B. In the next period, the previous successful experiment program can be used in region B after a setup cost *C/2* is paid (because region B needs to match attributes) and region A will try a new experiment program. If the program is bad, the current period payoff is *iR/2* in the experimenting region A and is *(i+1)R/2* in the non-experimenting region B. In the next period, a new experiment will again be introduced in region A. The payoff at the *i*th stage small-scale reform experiment, V_i^{MS}, is thus as follows:

$$V_i^{MS} = -\frac{C}{2} + p\left\{\frac{(i+2)R}{2} + \frac{(i+1)R}{2} - \delta\frac{C}{2} + \delta V_{i+1}^{MS}\right\} + (1-p)\left\{\frac{iR}{2} + \frac{(i+1)R}{2} + \delta V_i^{MS}\right\}$$

Compared with a full-scale experiment, the setup cost in the current period is reduced by half because only governor A coordinates. This recursive formula leads to the following payoff of small-scale experimentation at stage 0:

$$V_o^{MS} = \frac{-(1+p\delta)C}{2(1-\delta)} + \frac{R}{1-\delta}\left(\frac{s}{2} + \frac{p}{1-\delta}\right).$$

By comparing V_o^{MS} with V_o^{MF} we obtain the relative advantage of small-scale experimentation than the full-scale experimentation under the M-form:

$\frac{1}{1-\delta}\left((1-p\delta)\frac{C}{2} - (p-\frac{1}{2})R\right)$. It is now clear that the more uncertain a reform program is, e.g. more skeptics or more resistances on a reform program, the larger the relative advantage of a small-scale experimentation will be. This is because a small-scale experiment has an option value of waiting to learn about the quality of the blueprint, $\frac{(1-p\delta)C}{2(1-\delta)}$, which increases as *p* decreases; i.e., as the uncertainty of the reform becomes more uncertain.

Contrary to the flexibility of M-form in reform experimentation, the U-form is rigid that small-scale experiment is always dominated by full-scale experiment. The fundamental problem is related to the way the tasks are grouped under the U-form. The complementary tasks are grouped separately into specialized ministries and coordination must be solved across ministries. In order to coordinate a small-scale experimentation, the U-form has to carry it out in multiple steps. These complications in coordination incur deadweight losses even when communication is perfect; i.e., when λ is one or close to one. Taking a political economy interpretation of λ, this means that a centralized regime hinders small scale regional experiments even when there is no political noise within the government hierarchy.

The M-form structure provides flexibility and allows reformers for carrying out small scale regional experiments without interfering with the rest of the economy, and thus enhancing chances trying out new programs. The problems in coordination make reformers in the U-form more difficult from exploiting small scale experiment strategy to ease the resistances. Instead, reforms in the U-form must be comprehensive in order to avoid coordination failure and must be coordinated from the top.

4.2 Regional Experiments on Land Reform and Special Economic Zones

In the following, we illustrate how regional decentralization paves roads for regional experiments in Chinese major reform measures. The common key feature of those regional experiments is that these were all initiated and coordinated by reforming subnational governments. Successful regional reform experiment outcomes provided a foundation for large scale diffusions of the reform programs later. *Ex ante* with reduced uncertainties regional experiments gave reformers better chances to try controversial programs. *Ex post* with successful experiment outcomes, even partially successful, the outcomes can be used as substantiations to convince undecided and to accumulate momentum of political supports for the reform.

Our first example is the Chinese agriculture reform started in the late 1970s. The essence of the reform is de-collectivization in land ownership. The most important part of the reform is officially called household responsibility system (HRS). It is regarded as: "a major social experiment in the design of institutions in which a system emphasizing social values has been replaced by a system relying on economic incentives" (McMilan et al., 1989). During the period of experimenting the HRS between 1978 and 1984, output in the Chinese agricultural sector increased by over 61 percent. McMilan et al. (1989) find that 78 percent of the increase in productivity in Chinese agriculture in this period of time was due to changes in the HRS reform.

By examining many other factors, Lin (1992) disentangled the contribution to output growth of the HRS reform from those of other reforms, as well as from that of increased input availability. He confirms that the dominant source of agriculture output growth during 1978-1984 was the change from the production-team system to HRS, directly responsible for 49 percent of the output growth. Moreover, 46 percent of the output growth came from increases in inputs. The most important is the increase in the application of fertilizer, which alone contributed to about one-third of the output growth in this period. The results also suggest that the changes in state procurement prices and market prices had a significant impact on output growth, probably through their influences on application levels of inputs, such as fertilizers and crop pattern. For the latter, Lin (1992) finds that the change in crop pattern, away from grain to non-grain crops, had a positive impact. However, the effect was very small in magnitude.

Although it may be a bit of an exaggeration to call the introduction of the HRS "the design of institutions," it is pretty accurate to regard this process as "a major social experiment." A key point here is that this major social experiment was initiated and carried out by subnational governments.

Similar to what happened in Central-Eastern Europe pre 1989 reforms or in the former Soviet Union *perestroika*, political/ideological resistances to the land reform were strong in China. Any change in the direction of de-collectivization was seriously challenged and any failure associated with the land reform would be used by the conservatives for political reasons. Thus, to minimize the political and technical uncertainties of the land reform is critically important for the survival of the reform and

the reformers themselves.

The "proto-types" of HRS were tried in many Chinese regions during the early 1960s but they were banned and people involved in the experiments were punished in the "Cultural Revolution." In the late 1970s similar try-outs were resumed in a handful of counties in a few provinces such as Anhui, Sichuan and Guangdong. One of the best known examples is in Xiaogang village, Fengyang country of Anhui through initiatives of local governments. In those localities, land and output quotas were contracted out from local governments (collective farms) to individual households. The experiments were carried out under high risks, given people who were involved in the 1960s' land reform were heavily penalized not long ago. Moreover, in the late 1970s, land reform was not only unconstitutional (The 1978 Constitution of China) it was even prohibited by the majority of "reformers." For example, land reform was officially banned by the Communiqué of the Third Plenum of the 11th Central Committee of the CCP, which is always quoted officially and in the literature as the first milestone of the reform era (Kelliher, 1992; Naughton, 1995). The State Council and the Party's news paper, People's Daily, issued decrees and commentaries on behalf of the central government to stop any land reform with political threats based on the ban of the Communiqué.

Facing the daunting challenges of carrying out the land reform, in 1979, Zhao Ziyang and Wan Li, then the governors of Sichuan and Anhui respectively, decided to experiment different schemes of land contracting schemes in a few counties within their jurisdictions. According to Tian Jiyun, a Vice-Premier of the State Council between 1983 and 1993, Dangtu county was one of the counties picked up by Wan in 1979 and about seventeen percent of rural households there participated in the land contracting experiment.[16] All the land reform experiments were coordinated regionally.

In 1980, substantiated with the successful regional experiment results, Wan and Zhao reported to the central government and rallied for expanding reform experiments into more regions in the nation. Supported by their successful experiment results, in late 1980 the central government decided to allow for nationwide land reform experiments. Zhao and Wan were promoted as the Premier and Vice-Premier of the State Council, respectively, to carry out the nationwide reform experiments (Tian, 2008). Since then the nationwide land reform experiment propagated fast that in 1981 about 45% of rural households participated in the reform. Subsequently it was increased to 80% in the next year, and finally, reached 99% in 1984 (Lin, 1992). Thereafter, the agricultural reforms in general and land reform in particular are further progressed and consolidated by numerous further reform measures. Similarly, most of those are based on successful regional experiment results. [17]

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[16] Similar experiments were also carried out in Guangdong in 1978 under the leadership of governor Xi Zhongxun at that time but stopped under the political pressures from the conservatives in the central government (Cai et al., 2008).

[17] Although rural households enjoying residual income and residual control rights on what they do with the

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Another most noticeable outcome of the Chinese reforms is the special economic zone (SEZ) development and foreign direct investment (FDI). Started from virtually zero amount of FDI in 1978, China became one of the largest two FDI recipient countries in the world, sometimes the largest, in a quarter of a century—and one of the largest trading countries in the world. The most important institutional reform which nurtured the rapid and sustained expansion in attracting FDI is the setup of the SEZs.

It is clearly shown in the following Table 2 that the FDI in China and the Chinese exporting are essentially driven by the SEZs. When China just opened up in attracting FDIs and in trading, 37% of the FDIs in the nation were located in SEZs in 1985, and 89% of the national exports were from the SEZs in 1985. In 2005, when China became the largest FDI recipient country in the world, 93% of FDIs were located in SEZs, and 93% of China's exports were from the SEZs. It is not an exaggeration to claim that it is the SEZ that made China the country with the largest foreign reserve in the world and with the largest trade surplus with the US and the EU. Therefore, among all the Chinese reform measures the SEZ has the greatest direct impacts to the global economy.

Although in conventional wisdom or in retrospect of the reforms it seems trivial to suggest SEZ reform policies for improving trade and attracting FDI, to initiate and to carry out that reform was a great challenge at the beginning of the reform era. When the constitution (including the Party's constitution) did not protect private property rights how to convince foreign investors to come? When imports/exports were all controlled by government agents, national and regional, how to accommodate foreign and domestic firms to develop trade-intensive businesses? Moreover, there were strong political oppositions to the idea of renting land to multi-national firms or other foreign firms. These kinds of practices were regarded as selling the nation. The political risk would be too high for a reformer to bear if one had to confront the convention of the planning apparatus at a full scale or to confront the constitution head-to-head. Thus, how to attract FDI into China faced tremendous political and economical difficulties and uncertainties

Facing the tough constraints, the idea of setting up SEZs to attract FDI and to develop export-oriented industries was initiated and experimented by subnational governments. The strategy of regional experimentation played a vital role in dealing with the difficulties and the uncertainties. According to the archives (Cai et al., 2008), the idea of conducting municipal experiments to attract FDI was proposed by officials of Guangdong province in 1979. The proposal suggested authorizes Shenzhen and Zhuhai as experimenting municipalities, and required that conditions be on the success of the first experiment Shantou and other cities will follow similar experiments in the next step. A major part of the experiment involves trying new sets of institutions, legislations and

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land, under the HRS the control rights of allocation and management of land resources are kept with the local officials. Thus, most cultivated land in rural China remains partially collectively owned. Jacoby, Li and Rozelle (2002) show the existence of inefficiencies caused by this partial privatization. However, they also show that the inefficiency level was not high.

rules for the purpose of attracting FDIs, and the municipality governments should be responsible for implementation. Moreover, the proposal asked for greater regional autonomies, particularly for decision-making power in regional experiments.

The skepticism on the SEZs was strong at the top level of the central government (Zeng, 1984). There had been ferocious debates at the central government and within the party apparatus on the desirability and the nature of SEZs, and on the paths of development the SEZs should take.[18] As a compromise of the intensified debates, an approval was given by the State Council for small-scale experiments in four remote cities in 1979 (The Central Government Circular No.50, 1979, *Zhongfa (1979) 50*).

Together with authorizing the experiments for SEZs, the central government also granted Guangdong government and particularly the experimenting municipal governments more autonomy in regional planning, in enterprise management and in policies related to FDI. In August 1980 the People's Congress approved the State Council's proposal of setting up four SEZs in Guangdong and Fujian and passed the first legal rule on the SEZs: "the Regulation for Guangdong SEZs." This is the first kind of regional law tested, which was drafted with the help of legal experts sent from the central government (Cai et al., 2008). When the experiment is expanded into other provinces, the law is also adopted and modified accordingly by those provinces.

Supported by initial achievements of the first group of SEZs in 1984, the central government endorsed another 14 cities to experiment SEZs, and the experiment was further expanded to more cities in 1985. In 1992, the SEZs included all the capital cities of inland provinces and autonomous regions, 15 free trade zones, 32 state-level economic and technological development zones, and 53 new- and high-tech industrial development zones. Currently, SEZs encompass more than 100 national economic and technological development zones, 15 national bonded areas and 14 border trade and co-operation regions in the broadest sense.

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[18] Chen Yun, a top political figure in the Party, cast deep doubts on the SEZs. The idea of setting up the SEZs was regarded as equivalent to a "rented territory" or "the selling of the nation," which would be a revival of the semi-colonial era. The other objection charges that the SEZs would exacerbate inequalities (Kung, 2002).

Table 3. The Impacts of SEZs on National FDI and Exporting

year	Number of SEZs	Nat'l Exports (mil US$)	SEZ Exports (mil US$)	SEZ share of Exports	Nat'l FDI (mil US$)	SEZ FDI (mil US$)	SEZ share of FDI
1980	4	18119	278	1.5%	145	51	34.9%
1985	77	27350	24327	89.0%	1956	728	37.2%
1990	290	62091	44602	71.8%	3487	2551	73.2%
1995	341	148780	124692	83.8%	37521	33694	89.8%
2000	341	249203	228779	91.8%	40715	38796	95.3%
2005	342	761953	709373	93.1%	60325	56397	93.5%

Sources: China statistical yearbooks 1986-2006; China Urban Statistical yearbook 1986-2006; China Urban Forty years; Provincial Statistical yearbooks 1996-2006; State Council documents.

One of the major features of the small scale regional experiments, such as the HRS and SEZ reforms, is that in a certain period of time the non-experimenting regions are kept unchanged until diffusion stages commence. The co-existence of two systems, experimenting vs. non-experimenting or reforming vs. non-reforming, in the reform process is sometimes called "the dual track system." The dual track system has been used to describe both small scale and full scale reform experiments in which all regions implement a reform experiment at the same time, whereas keeping non-experimenting system for a certain period of time. A major example of a full scale experiment is the dual track price system. The most important benefit of the dual track system is to reduce resistance of a reform by substantially reducing the number of losers through keeping the non-reforming system at earlier stages of the reform (Lau, Qian and Roland, 2000). However, there are essential conditions to be satisfied to make the dual track approach beneficial in reforms. Che and Facchini (2007) argue that if the state is weak in enforcement and as a result parties are able to siphon resources away from low-priced existing transactions to high-priced new transactions, the dual track approach may not be an efficiency enhancing reform strategy. Thus, the subnational governments' enforcement capability to restrict firms' strategies is vital for the dual approach to be Pareto improving.

4.3 Incentives of Experimenting: Promotion and Rotation

The regional experimentation has helped to move reform forward before decision-makers are certain or before there are enough supports for an important resolution. Experimenting involves high risks for regional officials who conduct the experiments, and it also creates large positive externalities, which may take away some

benefits from the experimenting region. Moreover, conducting reform experiments require officials take initiatives and make extra efforts to deal with unexpected contingencies. Without initiatives to solve problems, experiments would easily fail. Therefore, without proper incentives very few officials would voluntarily conduct experiments.

It is the regional competition based promotion system that creates motivations for some regions to experiment. Although experimenting involves risks and positive externalities, experimenting also creates chances to outperform others, and more importantly, to lead others, which implies getting unusual promotion opportunities. Indeed, benefits associated with promotions will correct disincentives from positive externalities. Positive externalities dilute the value-added created from experiment, thus incurring costs for experimenting regions. In a Tiebout federal system, where officials are elected from their constituencies, the value dilution due to the positive externalities will dis-incentivize regional officials and lead to too little experiments (Gordon, 1983; Cai and Triesman, 2005).

However, in the Chinese regionally decentralized authoritarian regime, regional officials are appointed by the center and initiating or implementing successful regional experiments can lead to substantial promotions. In addition to the costs of experiments, another critically important issue is who decides what to experiment and who conducts the experiment. Granted with broad ranges of control rights on regional economic affairs, the regionally decentralized structure converts many regional officials into entrepreneurial bureaucrats. When a regional official identifies a reform experiment, it may become an opportunity for his career path and he will initiate it. If at the end there are other regions to follow his experiment, it implies a clearer sign that this reform experiment is a success. Thus, the chance of getting a substantial promotion becomes high. Perceived this, officials with greater career ambitions would initiate reform experiments on their own, sometimes even taking high risks. That is, the centralized personnel control internalizes the externality problem of regional experiments.

The HRS and SEZ experiments discussed in the previous subsection are the most visible examples. In those examples, the experiment pioneers of the HRS and SEZ reforms were promoted substantially when the experiments were recognized by the central government as models for the nation to follow.

Moreover, it is observed that a common practice in reform era is to promote officials from more developed municipalities, where many reform experiments were tried out earlier, to leading provincial posts, particularly in less developed regions. Chien and Zhao (2007) document that from the late 1990s to the early 2000s there were three former heads of Suzhou city who were promoted to become governors of Jiangsu, Shaanxi and Jilin respectively; a former Shenzhen mayor was appointed as the governor of Hunan, and a mayor of Wenzhou became the governor of Sichuan. All of these three cities are among the best reforming municipalities in China in that they pioneered many reform experiments on their own.

By using a panel data consisting of thirty provincial regions between 1978 and 2005, through a difference-in-difference approach to control for groups with and without transfer of governors and before and after transfer of governors, Xu et al. (2007) find that everything else being equal, cross regional governor transfer increased regional GDP growth rate by 1%. In the more recent period of 1992 and 2005, the effect was enlarged to 2%. By constructing a panel data consisting of thirty provincial regions between 1978 and 2004, with a similar approach, Zhang and Gao (2007) find that the effect of cross regional governor transfer on regional GDP growth rate was significant for the period of 1990 to 2004.

5. Regional Competition and Regional Experiments in Major Reforms

This section discusses some major economic reforms which substantially affected China's economic growth in the past three decades. This discussion serves two purposes. Firstly, it is important to understand the mechanisms of these important reforms for their own sake. We are going to explain how regional decentralization as the institutional foundation determines the strategies and outcomes of these reforms. Secondly, these reforms are good illustrations of the conceptual discussions on the mechanisms of regional competition and regional experimentation.

5.1 Corporate Reforms in the Framework of Regional Decentralization

Most firms in China are controlled by subnational governments. Particularly, Chinese subnational governments "own" most of the SOEs in the nation. Thus, when the officials' career path is determined by regional tournaments their incentives have great influences on corporate reforms. In a recent nationwide survey it was found that, driven by career concerns, Chinese subnational governments strongly support firms' development within their jurisdictions regardless of ownership of the firms (Guo and Xu, 2008).[19]

Three major aspects of SOE reforms have been discussed in the literature. The first aspect concerns appointment or selection of SOE managers. Before the mid 1990s, subnational governments were responsible for selecting SOE managers within their jurisdictions, they became much more performance-conscious in doing so (Groves, Hong,

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[19]   This is a random sampling survey of firms, which well represents the population of the Chinese firms in all the regions, industries, ownership structures and sizes. Regarding government, in the survey, top managers of each firm were asked for their subjective judgments. Firm managers believed that subnational governments were very keen to support firms' development, with an average score 4.1 in the scale of 0-5. Moreover, they believed the reasons for subnational governments doing so were for regional fiscal revenue, for improving their performance, which determines their promotions, and for complying with the central government's policy with scores of 4.0, 3.7 and 3.2 respectively.

McMillan, and Naughton, hereafter abbreviated as GHMN, 1995). The other aspect of the reform involves managerial incentives (GHMN, 1994; Zhuang and Xu, 1996). Associated with these reforms, productivities of SOEs' are improved (GHMN, 1994, 1995; Jefferson *et al*, 1996; Li, 1997). The last aspect of the SOE reforms is privatization of the state sector since the late 1990s mostly initiated and implemented by subnational governments. In 2005 more than two thirds of Chinese regional SOEs were privatized.

As discussed in previous sections, regional officials were under robust regional competition which links their career paths to regional performance. Moreover, the vast majority of SOEs were controlled by subnational governments, particularly at the municipal level. Subnational governments are the residual claimants of the enterprise earnings. To some extent, regional economies were treated as if they were huge regional conglomerates. And subnational governments functioned like headquarters of huge regional conglomerates (Oi, 1999). This analogy is particularly relevant for county or township level regions. SOE managers were appointed by regional officials. The regional Party played a role similar to the personnel department of this regional "corporation," selecting managers, deciding promotions/demotions, maintaining dossiers and tracking their managerial records. In response to the regional competition and changes in property rights and control rights on management selection, also under the encouragement of the central government's reform policy, subnational governments experiment various "managerial responsibility systems" in which managers were delegated power to make many decisions, and employees were given financial incentives tied to enterprise performance.

By using firm level panel data covering the whole 1980s, GHMN (1994, 1995) and Li (1997) evaluate some major SOE reform experiments in that decade. In the GHMN sample, Over 80 % of the managers were appointed by subnational governments. Their careers were determined by the evaluations of bureaucratic superiors. During the 1980s, several SOE reforms were tried out in many regions. Imitating the HRS in agriculture, SOE managers were given more authorities in management. In the GHMN sample, this experiment was introduced in the majority of SOEs by the mid-1980s and became predominant by 1988. The enlarged autonomy allows SOEs to keep a large proportion of their profits and to use the retained fund for worker bonuses, worker welfare facilities, and enterprise investment, etc. Similar to the performance contracts signed by county or township officials, performance responsibility contracts for SOE managers were experimented in many regions. The contracts specified performance indicators, such as profits and reinvestments etc., and compensation structures. Most of the SOEs' managers in the GHMN sample signed the contracts. GHMN (1994) investigates how SOE managers respond to the increased autonomy and how the productive of the firms are being affected. They find that with autonomy in output decisions and with higher marginal profit-retention rates, SOEs increased their use of bonuses and hired more fixed-term contract workers. Moreover, the strengthened incentives were positively correlated with higher productivity.

Another important SOE reform being experimented was the system of management selection by competitive auctions. About 14 percent of the managers in the GHMN sample were selected through competitive auction. This kind of reform experiment peaked in the late 1980s. 1987 and 1988 accounted for 57.4% of the competitive auctions in the GHMN sample. As regional experiments, auction procedures varied among regions. But in general, a typical SOE was put up for auction by its superior municipal government. The most important part of a bid was a promise of profit turn-over to the municipal authority in the near future. In most cases, bidders also made promises to reinvestments, etc. The municipal government as the owner of the SOE then chose the winning bidder on the basis of promised profit delivery and the management plan etc. The top manager often signed a management contract and frequently was required to put up a security deposit, which could be forfeited if the manager failed to meet the promised performance.

Based on their firm level data, GHMN indicates that managerial labor market was already functioning in China's state sector that SOE managers changed jobs sufficiently frequently. They find both demotion/promotion of the previous manager and the conditions of the new manager's appointment can be partially explained by the corresponding firm's performance. Moreover, they find that SOE managers' total compensation is positively related to firm profits. In their sample, overall, SOE per worker output rose 67% (in constant prices) for the decade of the 1980s.

Li (1997) further substantiates the GHMN discoveries on the Chinese state sector reforms. He investigates the impact of a set of reforms on changes in total factor productivity of the SOEs. The reforms to be studied include changes in incentives, factor allocation, and product market competition. He finds that between 1980 and 1989 TFP growth contributed to 73% of output growth. More importantly, he finds that over 87% of the TFP growth was attributable to improved incentives, intensified product market competition, and improved factor allocation.

Compared with SOE reforms, reforms that facilitate the development of the non-state sector are even more important. Indeed, the surge of the Chinese economy in the first fifteen years reform mainly came from the new entry and excellent performance of the non-state-owned firms, particularly the township-village enterprises (TVEs) (McMillan and Naughton, 1992; Qian and Xu, 1993).

5.2 The Township-Village Enterprises (TVEs) and the Non State Sector

Although productivity of SOEs was improved, facing ever growing tough competition from non-state firms, the number of SOEs that became loss making increased rapidly. This makes the Chinese SOE reforms, particularly for those before the mid 1990s, controversial. Moreover, the pace of growth of the state sector compared with other sectors was also much slower. The state sector was utterly out competed by the non state sector that without a conventional privatization, i.e. privatize existing SOEs, the

share of Chinese state sector in the national economy shrunk from 78% in 1978 to 53% in 1991. This makes the large scale of entry and fast development of non-state sector a distinctive feature of Chinese reforms.[20] The sector, which played the most important role before the mid 1990s, is the TVEs. By the early 1990s, the TVEs counted for about 4/5 output of the non-state sector. Between 1981 and 1990, total industrial output of TVEs grew at an average annual rate of 28.1%, while the rate for the state sector was 7.7%. As a comparison, China's average annual GDP growth rate was 8.7% between 1979 and 1991. Moreover, TVEs had substantially higher TFP growth rates than the state sector in those years. Therefore, it was the most important engine driving the unprecedented growth of the Chinese economy during the early periods of Chinese reforms (Xu, 1995).

The institutional foundation for the growth of non-state firms in general, the TVEs in particular, is the Chinese regional decentralization (Qian and Xu, 1993). Facing tough regional tournaments officials have strong incentives to support the development of TVEs for improving their performances and for fiscal reasons. Moreover, relatively self-contained regional economies gave TVEs opportunities to grow. There are broad ranges of products which the TVEs can produce to meet local demand, and often sufficient local semi-products to supply to TVEs as inputs. Close links between TVEs and local SOEs often facilitated technology and management know how transfers (Xu and Zhuang, 1998).

Concerning corporate structure, TVEs (township-village enterprises) are collectively-owned enterprises located in townships or villages. All the people in the township or village which "sets up" the TVE own the firm collectively. The community government of the township or village is regarded as the "representative" of the people in the community, and is the *de facto* executive owner of the TVEs in the community. The property rights of the TVEs are vaguely defined. From a viewpoint based on 'standard wisdom' the governance of these firms appears deficient and should definitely be unproductive. Therefore, the spectacular performance of the non-state sector, particularly the TVE sector, poses major challenges to economics (Weitzman and Xu, 1994). Several complementary explanations are proposed in the literature. Although they addressed different mechanisms of the TVEs, the role of the community government is always an important part of it.

Most conceptual discussions on TVE emphasize the second best (or the n-th best) nature of the TVE governance structure when there is weak or no legal protection of private property rights. The literature is centred with role of community government control over TVEs. Chang and Wang (1994) and Li (1996) argue that it is more efficient and is social welfare enhancing to give residual returns of the TVEs to community citizens and township-village governments, rather than to give the control rights of the TVEs to township-village governments. That is because township-village governments

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[20] Hungary, Poland and Vietnam are the other transition economies that shared this feature to some extent and they all enjoyed better performances than other transition economies.

had access, whereas community citizens did not have access to resources when there was no constitutional protection to private property rights.

Che and Qian (1998) argue that allowing community governments to control TVEs is an organizational response to the lack of protection of private property rights against state expropriation. Their model separates the community government (or local government in their paper) from the state. They argue that when the firm is directly owned by the state, the manager is not able to hide any revenue, and hence has little incentive to exert effort. Moreover, the community government has no incentive to offer local public goods to support the firm either, because the ownership arrangement allows the state to collect all the revenue from the firm. Without secure property rights, the manager of a privately-owned firm will hide the revenue to avoid state predation, thus compromising efficiency as well. However, when the firm is owned by the community government, the community government has less of an incentive to hide revenue even though the community government may also face the threat of state predation. This is because the community government uses the revenue to finance its local public goods provision, which helps enhance the firm revenue in the future. This discourages the forward looking state to expropriate the community government immediately. Furthermore, because the community government owns the firm and is therefore able to hide revenue from the state, such an ownership arrangement also gives the community government stronger incentives to provide local public goods. Related to their last point, Naughton (1994) argues that TVEs are vehicles for the community government to cash in the value of land under its control when asset markets are underdeveloped.

Complementary to the above surveyed literature, Weitzman and Xu (1994) focus on informal institutions of TVEs, such as implicit contractual relationships between community governments and TVEs between TVE employees and between TVEs. They conjectured that local culture or social norm may be an important factor behind informal institutions. This explanation is based on the fact that most TVE employees, managers and substantial number of township-village officials lived in the same community for generations when there was almost no migration before the early 1990s. Under certain conditions, close long-term interactions among community members (virtually infinitely repeated overlapping-generation relationship) might foster a social norm within the community, which may facilitate informal institutions like TVEs. In contrast, SOEs are not organized based on natural communities, such as villages, many of the informal mechanisms prevailing in TVEs would not function in SOEs. This conjecture shares the same spirit of the evolutionary repeated game theory of social norms (Axelrod, 1984; Fudenberg and Maskin, 2008). Empirically it sheds lights on substantial regional differences in TVE development which reflexes the history of diversified Chinese regional economic developments. Yet, this explanation faces theoretical and empirical challenges similar to the challenges faced by the literature on evolution of social norm, culture and human behaviour.

A central challenge of the TVEs comes from the spectacular performance of the TVEs and the lack of protection of private property rights. It looks in sharp contradiction with the conventional wisdom that investment level should be low and firms should be inefficient without protection of private property rights (Weitzman and Xu, 1994). This is particularly true before the mid 1990s.

A common feature of the above theories is that they all embedded with a transitional feature. They imply that the benefits of TVEs may disappear if protection of private property rights is improved, if asset markets are developed, or if large scale migration occurs. Indeed, anecdotes and field works suggest that after the early 1990s an increasing share of TVE employees, including top managers, became migrant workers. In the terminology of evolutionary game theory, there were lots of mutants which invaded the repeated games and that would change the equilibrium strategy of the game. Associated with the ever growing migration and changing communities, there were rapid changes in TVE governance and a sharp decline of efficiencies of TVEs. Moreover, there has been an evolution of the constitution and the laws that private properties are being better protected gradually (Clarke, Murrell and Whiting, 2006). Laws are changed; asset markets and domestic migration have grown rapidly since the mid 1990s. Eventually, private property rights obtained constitutional protection in 2004. Under these transformed conditions, all of those theories would imply that ownership structure of TVEs, which prevailed before the early 1990s, may become sub-optimal and may be replaced by some more standard alternatives. Evidence on massive privatization of TVEs in the late 1990s documented by Kung and Lin (2007), Park and Shen (2003), and Li (2003) is more or less consistent with the above predictions.

Based on data collected from dozens of villages in four provinces in 1994, Chen and Rozelle (1999) suggest that when markets are not developed, government officials had a comparative advantage in managing a firm. Their external management inputs, such as accessing difficult to come by goods and services, might offset inefficiencies caused by bureaucracy. However, as markets develop, this advantage disappears. As a result, subnational governments provided managers with more incentives, more autonomy, and larger shares of residual profits. Using a dataset of 80 TVEs, which were randomly chosen from 600 TVEs in Wuxi of Jiangsu from 1984 to 1993, Chang, McCall and Wang (2003) report substantial changes of ownership structures in the early 1990s. Moreover, they find TVEs under private ownership performed better than TVEs under community government control. Using a sample of 88 privatized TVEs from Jiangsu and Zhejiang for the period from 1994 to 1997, Li and Rozelle (2004) find privatization had a significant positive effect on labor productivity. By comparing privatized and not-privatized firms, Lu, Tao and Yang (2007) study costs and benefits of community governments' ownership in COEs, including TVEs. Their investigation is based on a firm level panel data set, which covers nationwide COEs, for the period of 1998-2003. They find that after privatization, both benefits and costs of government ownership were reduced. Moreover, employment level decreases, whereas wages increase.

5.3 Governments' Budget Constraints

A prevalent type of moral hazard problems with businesses conducted by the government in general and state-owned enterprises in particular, are the so-called soft budget constraint syndrome (SBC). The SBC syndrome is a serious problem caused by the lack of a credible commitment from the government to discipline loss-making SOEs, or the lack of credible bankruptcy threats to the SOEs. The well acknowledged consequences of the SBC to transition economies and developing economies are profound (Kornai, 1980, 1994; for recent surveys see Maskin and Xu, 2001; Kornai, Maskin and Roland, 2003). Therefore, hardening budget constraints has been identified as a top policy priority for transition and for development by economists and international organizations, such as the World Bank and the IMF. However, it has been proven that hardening budget constraint in those economies is a fairly difficult task.

Qian and Xu (1993) observed that the Chinese regional decentralization helped to harden budget constraints. This is because lower level subnational governments, as well as local branches of the state banks and rural credit cooperatives, have more limited financial resources available in their disposal. Moreover, their access to subsidies and credits from the central government is seriously restricted by the rule. These limitations have prevented subnational governments from bailing out many loss-making enterprises even when they preferred to do so.

Qian and Roland (1998) develop a model that regional decentralization entails a harder budget constraint. They argue that when fiscal authority is delegated to subnational governments, who tax and spend within their jurisdictions, regional competition can help to harden budget constraints. Supposedly, certain state enterprises will be profitable only if they undergo restructuring. But restructuring is costly to an enterprise's manager and so will be undertaken only if the enterprise would otherwise go bankrupt. Therefore, if the manager anticipates that he will be bailed out by the government, he will not restructure. Whether or not a bailout occurs depends on the opportunity cost of the government's funds, in particular the marginal benefit of investing in infrastructure. Under regional decentralization, the various subnational governments would compete with each other for attracting outside capital to their non-state enterprises by investing in infrastructure. Infrastructure investment raises the productivity of capital. Given the limited financial resources each subnational government faces, the bigger the infrastructure investment the higher is the opportunity cost of bailing out failing firms. This opportunity cost is higher under regional decentralization than under centralized fiscal authority. Thus, a decentralized regime hardens budget constraints of subnational governments.

In the SBC literature, when efficiency is improved by hardening budget constraint inflation should also be reduced (Kornai, Maskin and Roland, 2003). However, it is observed that decentralization in credit control in China has led to losing control over

monetary policy and thus inflation (Wang, 1991; Huang, 1996). Brandt and Zhu (2000) argue that decentralization explains the coexistence of improvement of efficiency and worsened inflation of the Chinese economy. The key of their argument is that the central government supports the employment and investment of the state sector by cheap credits from the state-owned banks and money creation. When decentralization improved efficiency of credit allocation that more financial resources are invested to the more productive non-state sector, the central government was forced to rely more heavily on money creation to finance the state sector. This causes inflation to increase. They emphasize that decentralization itself is not the underlying cause of inflation. Rather, the government's commitment to employment growth in the state sector and the growing transfers to the inefficient state sector are the source of inflationary pressure. It should be noticed that the observation made in this paper is based on data before 1996, i.e. before large scale layoff of the SOEs started (see the Table 4).

Concerning the reason that government commits to the support of the state sector, Lin and Tan (1999) argue that this is due to the policy burdens of the government. It is argued that state firms in China or in a transitional economy carry many types of policy burdens, such as employment and social security etc., inherited from the pre-transition system (Lin, Cai, and Zhou, 1998). With the policy burdens, the state is accountable for the losses incurred from policy burdens. Therefore, they argue that the key to mitigate the SBC syndrome is to reduce policy burdens. Without a reduction of policy burdens, even privatization will not necessarily harden the budget constraints of enterprises. This is because bearing policy burdens, to provide the same policy service a private enterprise will demand more *ex post* subsidies from the government than an SOE due to more agency problems between the state and private firms (Lin and Li, 2007). The implication of regional decentralization on policy burdens is a research subject yet to be carried out.

The evidence on governments' budget constraints in general and the impact of regional decentralization on budget constraints in particular is mixed. Based on firm level data in the 1980s, GHMN (1994, 1995) report no evidence that budget constraints for state-owned firms were hardened. In studying the "fiscal contracting system" operating between the central and provincial governments from 1980-93 JQW finds that the discrepancy between *ex ante* contracts and *ex post* implementation declined over time. They interpret this as credibility of fiscal contracts between the center and provinces. However, JQW also find that the central government was not able to keep commitment on disciplines to restrain from offering ex post subsidies to subnational governments.

The aggregate statistics in Table 4 indicates a mixed development which looks consistent with the mixed picture presented in the literature. On the one hand, it is clear that the total losses in the state sector kept worsening since 1993 until it was peaked in 1998, when the state sector made a net loss of 285 billion RMB. The record-breaking huge losses of the state sector lead to the unprecedented amount of non-performing loans (NPLs) in the Chinese banking sector, indicating a severe worsening of the soft budget

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constraint problem. It created deep worries on the sustainability or even the survivability of the Chinese economy in general.[21]

On the other hand, coupled with the ever worsening of the financial situation of the state sector, some major measures of hardening budget constraints were enacted. Large-scale layoff in the loss-making state sector started in the mid 1990s. The state sector's layoff peaked in year 2000 when accumulated total layoff reached 6.57 million. The overwhelming majority of the layoffs were from regional SOEs. Associated with this layoff is the implementation of the bankruptcy law. Furthermore, a large number of regional SOEs were privatized, which we will further discuss in the next subsection.

It seems these measures worked well enough that financial situations of the state sector have changed from losing 285 billion RMB in 1998 to making a profit of 99 billion RMB in 2000 and 627 billion RMB in 2005 (Table 4). Productivity in the corresponding period is also improved (Brandt, Hsieh and Zhu, 2008; Jefferson, Rawski and Zhang, 2008). However, given many reform measures were taking place in the same period of time, such as privatization, layoff, change of corporate governance, market competition, larger scale of FDIs and low interest rates, it is a challenge to find out what has contributed to the improvements of productivity and profitability of Chinese firms.

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[21] Around that time, some authoritative China experts, such as Nicolas Lardy, worried that with a continuation of worsened NPLs, the Chinese financial system would collapse soon, which would lead to disasters of the economy.

Table 4. Losses and Layoffs in the State Sector, 1991 to 2005

	Losses (bil)	Profits (bil)	Layoffs (mil)	Net Profit (bil)
1991	92.59	74.5		-18.1
1992	75.68	95.5		19.8
1993	46.94	166.7		119.8
1994	62.45	160.8		98.4
1995	80.21	147.0		66.8
1996	112.7	87.7	5.42	-25.0
1997	142.09	54.0	6.34	-88.1
1998	306.65	21.4	5.95	-285.3
1999	214.49	114.6	6.53	-99.9
2000	184.6	283.4	6.57	98.8
2001	199.36	281.1	5.15	81.8
2002	180.25	378.6	4.10	198.4
2003	281.98	476.9	2.60	195.0
2004	303.06	736.9	1.53	433.8
2005	331.39	958.0	0.61	626.6

Sources:中国财政年鉴1996-2006; 中国会计年鉴1995-2005; 中国劳动和社会保障年鉴2006; 中国劳动经济年鉴1997, 1998

Losses: the total losses in the state sector; Profits: the total profits from the profitable SOEs; Layoffs: the accumulated number of employees laid-off by the state sector.

5.4 Privatization and Subnational governments

Privatization in China started in the 1990s and proceeded slowly and quietly until the end of the 1990s when the losses of the state sector and NPL problem of the banking system achieved the worst peak. Since then it has been substantially speeded up. Similar to most other reforms, Chinese privatization started from regional initiatives as experimentations and was sanctioned by the central government some years later. This fact is documented by numerous government archives and anecdotes, and is confirmed by a World Bank report based on their field surveys on Chinese privatization in six cities conducted in 2002 (Garnaut, Song, Tenev, and Yao, 2005) and by a nationwide random survey of all Chinese industrial firms conducted in 2005 (Guo and Xu, 2008). According to this nationwide survey, about two-thirds of the Chinese SOEs and COEs with annual turnover of more than 5 million RMB Yuan (about $620,000) have been privatized and the total asset value involved in the process was about 11.4 trillion RMB (or 1.63 trillion USD) in 2005 (Guo and Xu, 2008). Although this is the largest privatization in the world, the literature on this subject is still at its beginning stage due to the recentness and the lack of data.

One of the early major reforms, which lead to privatization later, was regional experiments of leasing SOEs in the late 1980s. The top managers of small or medium SOEs leased the firms by paying the subnational government a fixed proportion of the firms' profits. As we discussed in a previous subsection, this reform improved productivity of the firms. Moreover, this reform gradually led to *de facto* privatization in some regions. For many firms, after some years of leasing the value of a manager's capital would outweigh that of the owner, the subnational government, and the firm would be *de facto* owned by the manager. The other major reform initiative, which leads to privatization later, was incorporation. Although officially incorporation was restricted to the exchange of shares among the SOEs, tentatively private shareholding was allowed by some subnational governments. The first reported cases were in Guangzhou in the late 1980s when employees of some SOEs bought substantial amount of shares of the firms that they hired.

Most privatizations in China were initiated by subnational governments (Guo and Xu, 2008). The most important impetus for speeding up privatizing regional SOEs in the 1990s was the large amount of debt built up by the state sector. A representative regional privatization experiment was carried out in Zhucheng. In that city more than two thirds of their SOEs were loss making in 1992, with losses amounting to the city government's revenue over 18 months. A large number of SOEs were converted into employee shareholding. Another representative example is the municipal government of Shunde in Guangdong. Shunde city government also encountered a serious debt problem when it privatized most of its state and collective firms in 1992 (Garnaut et al., 2005).

A prevailing privatization strategy chosen by most Chinese subnational governments is insider privatization, selling ownership of SOEs and COEs to their employees and managers. Employee ownership was most popular at earlier stages of privatization. Whereas management-buy-out dominates when privatization becomes large scale. According to a nationwide survey, top managers of three quarters of the privatized firms became owners of the firms (Guo and Xu, 2008).

After the change of ownership, the roles of subnational governments on the decisions of the privatized firms were reduced substantially. A nationwide survey indicates that the roles of subnational governments on decisions of the firms on issues such as employment/layoff, on wage/compensation, on production/marketing were all reduced from moderately important to unimportant after a firm was privatized. Associated with this change, privatization has significantly improved the profitability and efficiency of the firms (Guo and Xu, 2008). Consistent with this, by examining the impact of privatizing formerly state-owned large and medium-size enterprises for the period from 1994 to 1999, Jefferson et al. (2005) find that privatization increased productivity and investments in research and development. Based on firm level data collected from one city, Dong, Putterman and Unel (2006) find that privatization for

urban firms are associated with significant improvements in productivity and profitability. Moreover, privatization to insiders improved productivity by 11 to 20 percent and profits by 3.4 percent.

5.5 Subnational governments and Reforms in Financial Sector and Judiciary System

During the Cultural Revolution, China dismantled the formal legal system. As a result, China had to build its legal system virtually from scratch during the reform era. Moreover, China substantially delayed efforts of establishing a legal framework on protecting private property rights. Together with the lack of judiciary independence, China was worse than average transition economies in legal reforms and this looks puzzling in confronting China's spectacular economic performance. A solution to this puzzle lies in the role of subnational governments in filling in the governance vacuum (Pistor and Xu, 2005). One of the most serious problems associated with the role of subnational governments in law enforcement is the dependency of the court on the subnational government (Clarke, Murrell and Whiting, 2006).

The legal roles of subnational governments are vastly subtle and various from region to region. Encountering lagged behind law developments, many subnational governments step in as a substitute (Pistor and Xu, 2005).[22] When they did this, sometimes governance vacuums were avoided, sometimes private businesses were disguised by subnational governments. Indeed, before the mid 1990s when the Communist Party allowed for privatization, the development of private sector, including privatization, pretty much relied on initiatives and protections by subnational governments (Cao, Qian and Weingast, 1999). Many of the initiatives and protections provided by subnational governments to private firms were inconsistent with the constitution. Thus, strong incentives given to subnational governments played essential roles for them to take the risks.

The roles of the municipality governments of Taizhou and Wenzhou of Zhejiang province in developing private sectors ahead of relevant legal developments may illustrative this point well. The municipal governments offered "red heads" to private firms within their jurisdiction to conceal their vulnerable legal status. Thanks to this kind of development in many regions where subnational governments provided similar protections, the private sector in China experienced a double-digit growth for more than one decade without a full legal protection. To some extent it is this spectacular development of private sector which pushed the legalization of private property rights. When the constitutional protection to private property rights was enacted in 2004 the private sector was already the dominant sector in Zhejiang and one of the largest sectors in China. That is, the Chinese solved the chicken-or-the-egg dilemma in a different

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[22] Pistor and Xu (2005) focus on financial regulation, whereas Gordon and Li (2003) discuss distortions of Chinese financial markets from a different angle.

sequence than most of the other transition economies.

It is worth it to notice that the above Chinese practice is by no means unique in history. Indeed, there were plenty of cases that business practice went first and relevant laws developed later not in European and American history. For example, important securities laws (US 1933/34 Acts) were developed decades behind major developments of securities markets in the US. However, in Europe/US, there were functioning legal systems that effectively enforced general laws, such as contract law, tort law etc., to new business practices (Xu and Pistor, 2008). But in Chinese reforms, a basic functioning legal system itself is under construction. Thus, it is essential to have the role of subnational governments as a substituting mechanism to fill in the governance gap (Pistor and Xu, 2005).[23]

Built upon weak legal institutions and regionally decentralized economic structure, China introduced a regulatory decentralization in its public regulation system. The central regulatory authorities break down the regulatory tasks and delegate them to subnational governments. Together with regional competition, this system implements some national regulatory goals. The newly evolved regulatory regime relies essentially on subnational governments' assistance and cooperation in enforcing regulations, regulatory decentralization regime (Du and Xu, 2008a). One of the major instruments being deployed by the Chinese regulatory decentralization regime is the quota system. Some major practices of the quota system that have been deployed in China's regulatory regimes are in the following.

The development of the Chinese financial regulation illustrates the evolution and operation of Chinese regulatory decentralization. When China's securities markets initially emerged, the Shanghai and Shenzhen stock exchanges were *de jure* self-regulatory organizations with supervision from the corresponding municipal governments, and the central government had only a minimal role (Green, 2004). The quota system of equity share issuance was introduced to the Chinese equity market in 1993, designed to control the size of financial markets to maintain balance among the regions and to preserve the dominant position of public ownership. The central government determines the total number of shares to be issued in the nation and then allocates stock issuance quotas to regions and ministries. Subnational governments in turn allocate quotas to selected SOEs for going public through IPOs or to listed companies seeking SEOs. The subnational governments collect information on these firms and submit it to the China Securities Regulatory Commission (CSRC), the national regulatory agent. After reviewing the company information, the CSRC gives its approval

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[23] Without a functioning legal system, corruption must be a major syndrome for the powerful and deeply involved subnational governments. Anecdotes and mass media coverage have been consistent with this expectation. However, it is not clear that subnational governments' who support private sector more are necessarily more or less corrupt. Based on a recent nationwide survey, Guo and Xu (2006) find that subnational government corruption is uncorrelated with subnational governments' support to private firms.

to companies to issue shares in the public equity markets. The quota system was officially in place from 1993 to 2000. However, it actually governed financial markets up until around 2003 (Pistor and Xu, 2005).

Another major example is the bank credit quota system, which was utilized by the People's Bank of China (PBC) to control the aggregate money supply until 1998 (Du and Xu, 2008a). The PBC formulated the national credit plan and allocated credit quotas to the headquarters of all major state banks, which in turn reallocated these to their regional branches and subsidiaries. The regional allocation of bank credit quotas depends largely on the regional banking performance, such as the deposits taken by regional banks in the previous year, and the regional economic performance, etc. The bank credit quota system was a major instrument for implementing macroeconomic policies in general and monetary policy in particular when market-based credit allocation mechanisms were not yet ready to be deployed.

The quota system is also applied to regulate land use and to pollutant emission control (Du and Xu, 2008a). The major purpose of land regulation is to prevent excessively converting arable land for non-agricultural usage. To facilitate compliance with the land use quota system, regions violating the land use plan will face a deduction in future quota allocation together with other penalties. In order to provide incentives to regional officials to comply with pollutant emission quotas, the performance in fulfilling quotas is taken as part of the criteria for evaluating government officials' work, and regions pay penalties if their pollutant emission exceeds the emission quota.

Du and Xu (2008a) argue that the quota system in Chinese securities market functioned as an effective decentralized regulatory instrument. It is because Chinese subnational governments have substantial control rights over the regulatory subjects, i.e. regional SOEs, which were "owned" by subnational government. As "owners," subnational governments are more capable of acquiring information about these firms. Moreover, subnational governments have strong self-interests on the regulatory subjects. That is because regional SOEs provided the bulk of financial resources for subnational governments and regional officials' promotion is linked to their performance in regional competition. Finally, the central government has direct control over resources to be allocated by a quota system, since the share issuance quota allocation is about financial resources in national markets.

Several groups of evidences indicate that regulatory decentralization in China's financial market has created incentives for regional competition and decentralized information collection in stock issuance. Based on firm level panel data from 1993 to 2004, Du and Xu (2008a) find that everything else being equal, a firm located in regions with better performances obtained more quotas in subsequent periods. By explaining firm level quota by provincial performance, this evidence essentially rules out the possibility of a reversed causality since none of the firms in the sample was large enough to affect provincial performance. Besides, more importantly, they demonstrate that everything else being equal, listed firms from provinces that disclosed information better were rewarded

with more stock quotas in the ensuing periods. Moreover, quality of regional information disclosure was substantially more important than other factors, such as regional corporate or macro performances, in determining how quotas were allocated. These findings suggest that stock issuance quota was utilized as an incentive device to induce subnational governments to enforce disclosure rule and to select better performing firms for initial public offerings (IPOs) or seasoned equity offerings (SEOs). Finally, detailed evidence from 23 provincial level regions suggests that the majority of IPO firms selected by subnational governments had been better performing state-owned enterprises before they went public (Du and Xu, 2008b).[24] This indicates that in the pre-listing stage subnational governments tended to choose better-performing SOEs to go public. This seems to imply that the Chinese regulatory decentralization is reasonably effective at the IPO stage. That is, within the regional decentralization framework, this administrative governance of Chinese equity markets has partially filled the void created by the lack of legal governance in China's financial sector caused by the ill functioning of the Chinese legal institution.

However, the admin based regulatory decentralization is not always effective, and when it is effective it may not be a long-term solution as a substitute for law enforcement. For example, in financial market regulation it does not work effectively for non-state-owned firms and cannot ensure adequate corporate governance of listed companies. Moreover, in many non-financial areas, such as environmental protection and land distribution etc., the quota system fails to be effective. Indeed, there are several conditions for regional decentralization to be functioning well as substitutes for conventional legal institutions (Du and Xu, 2008a). Firstly, subnational governments must have substantial control rights over the regulatory subjects, otherwise subnational governments would not play a major regulatory role. Secondly, subnational governments must have strong self-interests on the regulatory subjects, otherwise subnational governments would not be motivated to participate. Finally, the central government must have direct control over resources to be allocated by a quota system. For example, land conversion quota and environment protection quota did not work since quota allocations in those cases do not bear significant incentives.

In addition to law enforcement, subnational governments also play significant roles in lawmaking. In a previous section we mentioned the first provincial law on the SEZs in the nation: "the Regulation for Guangdong SEZs." All the later regional and national legislations for SEZs were developed based on this law. This illustrates the importance of subnational governments in regional lawmaking and law enforcement, not only for regional matters but also for experimenting new legislations.

The subnational governments were endowed with lawmaking power ever since the PRC was founded in 1949. Although during the centralization era of the 1950s most of

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[24] The large majority of the data collected in this paper was published before the quota system was introduced. This reduces the possibility that the data were manipulated for the purpose of going public.

their *de jury* lawmaking power was taken away, they kept some *de facto* lawmaking powers. From the time reform started, subnational governments regained much of their lawmaking power (http://www.china.com.cn/zhuanti2005/txt/2003-02/27/content_5283965.htm). Their lawmaking power was institutionalized by the 1982 constitution amendment. In addition, in experimenting new laws the central government from time to time gave further lawmaking powers to subnational governments such as "authorized lawmaking power" (*shouquan lifa*) or "beforehand lawmaking power" (*xianxing lifa*). As a result, more than six thousands laws have enacted by subnational governments nationwide since 1978. Conflicting between regional laws and national laws is one of the major issues in this system, although in principle whenever there are conflicts the national law over rules.

5.6 The Impacts of Regional Decentralization on Growth

Although evidences have been established at micro level that regional decentralization has strengthened incentives and improved efficiency in China, it is a major challenge to study the impact of regional decentralization on economic growth. One of the most difficult issues is how to measure regional decentralization. The Chinese regional decentralization involves much broader scopes than fiscal decentralization, but statistically how to measure non fiscal elements in regional decentralization is an unsettled subject partly due to the lack of statistics. Given the difficulties, most of the empirical literature concerning impacts of regional decentralization on growth is focused on fiscal decentralization.

Lin and Liu (2000) (abbreviated as LL hereafter) and Jin, Qian and Weingast (2005) (abbreviated as JQW henceforth) find fiscal decentralization contributed to regional growth in general, to the development of regional non state sector in particular. Zhang and Zou (1998) find a negative relationship between fiscal decentralization and regional economic growth in China. LL and JQW suggest potential data and methodological problems in Zhang and Zou.

The LL use provincial data from 1970 to 1993 to study impacts of fiscal decentralization on regional economic growth. Their regressions are based on a Solow type of growth model. Economic growth is decomposed into growth of per capita investment and growth of total factor productivity which can be further decomposed into reform measures. All the major reforms included in the regression models are related to regional decentralization. The major focus of the paper is fiscal decentralization (FD). In addition, other reforms included in the regression model are household responsibility system (HRS); the share of non-SOEs' output in the total industrial output (NSOESH). As discussed in previous sections, the HRS reform and non-state sector development are all consequences of regional decentralization. Therefore, together with fiscal decentralization these variables capture a large part of regional decentralization. Moreover, their regression models also include the growth rate of per capita investment (GI). All of the above variables have significantly positive impacts to regional growth. At the same time, their

regression models also control for financial strength of a region, measured by three-year moving average of per capita GDP (FISCAP); impacts of urbanization and the size of the population on economic growth, measured by the percentage of rural population (POPSHR) and the total population (TPOP), and price liberalization measured by relative price of farm products to non-farm products (FPMP). All of these control variables have insignificant impacts to regional growth.

Table 5. Growth and Regional Decentralization

GROWTH RATE OF PER CAPITA GDP REGRESSION

	Model				
VARIABLE	1	2	3	4*	5†
FD	.0362	.0349	.0265	.0259	.0271
	(2.703)	(2.595)	(2.049)	(1.659)	(2.039)
HRS	.0372	.0408	.0448	.0565	.0336
	(1.768)	(1.951)	(2.163)	(2.304)	(1.685)
GI	.0478	.0493	.0459	.0538	.0237
	(3.819)	(3.897)	(3.692)	(2.879)	(1.919)
FISCAP	−.144	−.126	−.157	−.138	−.125
	(−5.308)	(−4.509)	(−5.664)	(−3.810)	(−3.804)
NSOESH	.142	.145	.203	.259	.173
	(3.163)	(3.288)	(4.116)	(3.811)	(4.052)
FPMP	.0107	. . .	.00522	−.0172	.00575
	(1.158)		(.575)	(−1.149)	(.576)
POPSHR	.0446	. . .	.0353	−.0746	−.0545
	(.630)		(.509)	(−.422)	(−.782)
TPOP	−.209	. . .	−.310	−.405	.137
	(−1.612)		(−2.366)	(−2.634)	(3.960)
Subsidy	. . .	. . .	.0275	. . .	. . .
Dummy			(3.648)		
HN‡	36.31 [8]	34.13 [5]	35.20 [9]	20.24 [9]	37.98 [9]
LR‡	289.29 [47]	285.14 [47]	286.40 [47]	181.34 [35]	215.71 [42]
Adjusted R^2	.52	.52	.53	.56	.51
Sample size	534	534	534	294	406

Source: Lin and Liu, 2000

LL discover that everything else being equal, the growth rate of per capita provincial GDP should raise by 3.62% in response to an increase of the marginal retention rate of regional fiscal revenue from 0 to 100%. Moreover, the impact of the HRS on regional growth rate was at a similar level as that of the fiscal decentralization. Furthermore, the largest impact among all regional decentralization variables is the non-state sector development. Everything else being equal, the regional GDP growth rate should rise by 14.2 % if the share of non state sector increases from 0 to 100%.

Consistent with the LL, by using provincial data from 1980 to 1993, JQW finds stronger fiscal incentives are associated with faster development of non-state enterprises and with greater reforms in state-owned enterprises. Furthermore, JQW find provincial governments in China faced stronger *ex post* fiscal incentives after the reform. Specifically, they find a strong correlation between the current provincial budgetary revenue and its expenditure for the period of 1982-91 when the "fiscal contracting system" was implemented. The JQW discovery is echoed by a literature which argues that different

fiscal federalist approaches between China and FSU are related to well/poorly defined tax rights to subnational governments and strong/weak fiscal incentives to subnational governments. And that sheds lights on the performance gap between China and Russia (Shleifer, 1997; Berkowitz and Li, 2000; Zhuravaskaya, 2000).

Both LL and JQW results are based on data ended with 1993. However, as discussed in previous sections, there was a substantial change of tax rule in 1994 and this makes these results vulnerable to challenges (Tsui and Wang, 2004; Mertha, 2005). Nevertheless, the LL-JQW evidence represents a major step in understanding the impacts of regional decentralization on regional growth. After all, fiscal decentralization is an important part of regional decentralization. During the period of fiscal decentralization, other reform measures, such as land reform, SEZs and non-state sector development, etc. were also introduced within the framework of regional decentralization. Thus, when fiscal decentralization is consistent with regional decentralization, such as before 1994, fiscal decentralization may be a good proxy of regional decentralization. However, the contribution of non fiscal reforms to economic growth is pooled together with fiscal decentralization that which contributes for how much is not disentangled. That is, there is an unsolved identification problem in this literature.

Last but not least, it should be pointed out that although there is a recentralization in taxation in the mid 1990s, there is no sign that regional decentralization is reversed in general. Firstly, in the same period of 'fiscal recentralization' the subnational governments gain more power on non fiscal spheres. Endorsed by the 15th Party's Congress in 1997, subnational governments' *de facto* ownership over regional SOEs has been transformed into *de jury* or nearly *de jury*.[25] Together with other major changes, this endorsement paved the road for subnational governments to privatize SOEs and COEs (Garnaut et al., 2005). Moreover, subnational governments were authorized to sell land within their jurisdictions. Secondly, these changes in turn have impacts to fiscal matters that revenues of subnational governments in more developed regions created through privatization and selling land in the past years were larger than or comparable to their tax revenue (Kung and Xu, 2007). Therefore, despite a 'recentralization' in the formal tax system, it is likely that real fiscal revenues of many subnational governments did not decline (Ping, 2006). More importantly, control rights over land gives subnational governments important leverages in regional development, in regional industrial policy, in regional fiscal policy and in macro control of the region (Kung and Xu, 2007). Therefore, although the share of subnational governments' tax revenue in national tax revenue was reduced substantially, subnational governments' importance in regional governance is almost intact. The central government still relies on subnational governments to govern the bulk of the Chinese economy and subnational governments still dominate regional economic affairs,

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[25] In 2005, all the sub-national governments own about thirty one thousand SOEs plus control of a huge number of COEs (NSB, 2006) whereas the central government owns 166 firms (the State-Owned Assets Supervision and Administration Commission, or SASAC: http://www.sasac.gov.cn/gzwgk/gzwgk_jj.htm).

including fiscal and non fiscal matters, such as allocating critical resources to firms, e.g. land and energy, dealing with contract enforcement and property rights protection, etc.

  6. Tradeoffs of Regional Decentralization

        In the above sections, China's spectacular performance in the past three decades is explained by regional competition and regional experimentation. In those discussions, there is a fundamental implicit assumption that subnational governments' tasks are summarized by a single task, i.e. economic growth. With a single well defined goal, subnational governments compete for developing non-state firms and for attracting FDI— and they try out new reform measures for enhancing regional GDP growth rates.
        However, in reality, subnational governments may face multiple tasks that cannot be summarized as a single objective, such as economic growth. For example, after two decades of fast growth in the recent decade, equality and environmental protection are becoming major concerns and irresponsibleness of subnational governments in those aspects are often blamed. Once the subnational governments are responsible for multi-tasks, the outcomes of the MQX model and QRX model can be changed substantially. Regional competition and regional experiments may be focused on tasks, which are more measurable, whereas less measurable tasks are ignored. High-powered incentives created through regional competition may lead to some consequences, which are undesirable from a social welfare point of view. Even worse than this, subnational governments may be involved in a race-to-the-bottom, i.e. regions may compete in or may experiment on some policies which may benefit the region but damage other regions, or may benefit regional officials but damage most other citizens.
        At earlier stages of the reform, it was commonly agreed by the central government, subnational governments and citizens that economic growth was the most important objective. Under that consensus, as long as economy grows fast, ignoring other objectives is tolerable. Thus, regional competition and regional experiments faced easier tradeoffs. Moreover, at earlier stages of reforms, most growth-enhancing policies and institutional changes avoided immediate conflicts among stakeholders. The land reform (HRS reform) distributed land equally among rural households. The TVE development and other non state sector developments were less intrusive to rural stakeholders' interests, such as land. The development of SEZs looked like a Pareto improving reform.
        However, after two decades of fast economic growth, values of other objectives, such as equality and environment, are raised and multi task nature of subnational governments' duties becomes more pronounced. The general consensus on the dominant importance of economic growth is broken down partly, which may be due to the substantially increased wealth. However, much more importantly, it is due to the nature of the policies taken at later stages of the reforms. Many major reforms implemented since the mid 1990s generated immediate conflicts among stakeholders. A prominent example is firms' restructuring and privatization, which started in the 1990s. In those reforms, a

large number of SOE employees were laid off, whereas new private owners obtained huge amounts of wealth through management-buy-out. Moreover, some of subnational governments' self interests are in direct conflict with their constituencies. Associated with large-scale rapid urbanization and industrialization, converting arable land for non-agricultural developments creates a great number of landless citizens in a short period of time. There are sharp conflicts between those who lost land without receiving proper compensation and property developers who profited immensely from the transactions and are usually closely associated with subnational governments. Among many, regional protectionism, regional inequality, and environmental problems are the most debated subjects related to the role of subnational governments.

6.1 Regional protections

One of the major negative impacts of regional decentralization being blamed in the literature is that subnational governments may opt to put up barriers to shield local firms and industries from competition. This will make factors immobile and will destroy regional competition. Interregional trade barriers and regional protectionism can even lead to serious political problems if there are no effective central-government policies to keep control. It was reported that in the mid-1980s many subnational governments tried to retain low priced raw materials, such as wool or silk, within their jurisdictions in order to favor local manufacturers (Watson, Findlay et al. 1989; Wong, 199x; Bernstein and Lu, 2000). This is confirmed by numerous domestic and international mass media coverage.[26]

There is no debate in the literature on the existence of regional protection and fragmentation of regional factor markets. However, there are fairly intensified debates on the trend of the regional protectionism. Indeed, the central government issued several decrees in 1982, 1990, and 2001 respectively to curb the regional protectionism (Holz, 2006). A State Council circular of 10 April 1982 states: "regional or departmental (trade) blockages … are extremely harmful to China's economy in total." The State Council elucidated that after the plan was fulfilled, enterprises had the authority to sell their above-plan output anywhere in the country they wanted, and subnational governments were not to interfere in the distribution of the above-plan output. In 1990 the State Council issued a circular on breaking inter-regional blockades. It requires that all regional trade checkpoints must be rectified; differential tax rates based on product origin are not allowed. The State Council issued another regulation in 2001 to deal with issues of the malfunctioning of the "market order," including regional trade barriers. It has detailed

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[26] A recent New York Times report demonstrated trade barriers among Chinese regions. To protect their local made car manufacturers, "Tianjin local officials barred taxi companies in the city from buying Geelys," which is produced by a Zhejiang based car manufacturer (NYT, 11/17/2006). A casual observation confirms this as a general phenomenon that most taxi cabs in many major cities, e.g. Beijing, Tianjin, Shanghai, Changchun, Guangzhou, etc., are made locally:

stipulations for revoking specific kinds of regional trade barriers (Holz, 2008). The existence of important government regulations on containing regional protectionism indeed manifests the existence and the importance of the issue. However, whether regional fragmentation was getting worse during the reform has been debated intensively in the literature. Moreover, it is also plausible that regional protection is a reaction caused by ever increasing interregional trade and by intensified regional competition. Therefore, it is not a surprise that whether regional protection gets worse over time is controversial (Bai, Lu and Tao, 2004).

Lau, Qian and Roland (2000) contend that the "dual-track system" introduced in the reforms promotes interregional trades. That is because under the "dual-track system," local officials can "sell" the rights to purchase a certain percentage of raw materials and final products at lowered planned prices. Since opening up the market to other regions may significantly increase the market price, it is beneficial for local officials. There are abundant literature, statistics and mass media reports on the fast growing inter-regional trade. Indeed, one of the most important early reforms in the early 1980s is legalization of cross-region trades carried by state and non-state merchants, including private traders.

In an ideal situation, with perfect national markets all factors should be mobile that their productivities should be equalized; regional economies should take their comparative advantages and their productions should be specialized, and regional prices for the same products should converge. Based on this idea, taking the first best case as the benchmark, it is argued that China suffered from serious regional fragmentation and the situation was getting worse. Young (2000) reports widespread convergence in the structure of production during the reform period, and a rise of the interregional variation of prices during the 1980s. Moreover, there was divergence of regional relative factor allocations and labour productivities. These findings are interpreted as evidence of industrial duplication across regions caused by regional barriers. Based on this he claimed that regional protection in China is getting worse. And Chinese reforms have resulted in a fragmented internal market with fiefdoms controlled by local officials. To some extent, similarly, by studying capital mobility cross provinces, Boyreau-Debray and Wei (2005) find great discrepancies of regional marginal capital productivities. They conclude that Chinese financial system is regionally fragmented.

By using a more disaggregate and more recent data than those of Young (2000), Bai, Du, Tao and Tong (2004) find that regional specialization has been strengthened and has become dominant over the forces of regional protection in recent years. With a data set that consists of 93 products in 36 cities over more than ten years, Fan and Wei (2006) provide evidence of market integration during the reform period. They find overall price convergence in China indicates that markets across different cities are indeed integrated. Moreover, they find the products whose interregional trade was more likely to be restricted by local officials for rent seeking purpose tend to converge to more *absolute* price parity. This finding suggests that the local protectionism might be a less important

obstacle to inter-regional trade in China than some other factors, such as transportation costs.

Although it is non-controversial that regional trade barriers are bad for efficiency and for development, there are serious concerns on methodologies used to study trade barriers. Specifically, focusing on measuring regional specialization alone may not be most helpful in understanding regional protection since it does not have a warrant of a theoretical foundation. As Naughton (2003) points out, without an underlining theory and without a cross country comparison, i.e. without knowing proper benchmarks, looking at one country's regional specialization alone might be misleading. Indeed, state manufacturing sectors in the U.S., an integrated national economy, became less specialized than before that in 1987 they became more similar than they were in the past (Kim, 1995). Moreover, by using a similar approach, Holz (2008) finds that Chinese provinces are similar to American states in the degree of regional specialization. Echoing this finding, Fan and Wei (2006) also find the convergence trend in China is similar to those discovered in the US and Canada. In all of these three economies, lots of prices follow relative price convergence rather than absolute price convergence. Obviously it will not be convincing to claim that market development in China is at a similar level of the US given this group of evidences. However, it must be even much harder to claim that the Chinese economic reform has moved the economy farther away from markets.

In fact, it is quite likely that applying a similar approach, regional specialization in Russia, or more generally in the CIS and Central-Eastern Europe countries, is much higher than that in China both before 1990. But it would be misleading to interpret this as an evidence for better developed markets there. Indeed, based on the theories discussed in Sections 3 and 4, an economy with overly specialized regions would be harmful for regional competition, and would be difficult for conducting regional experiments. Of course, in those theories, compositions of regional economies are exogenous. A more complete theory is yet to be developed to analyse dynamics of regional competitions when both composition of regional economies and scale economy are endogenously chosen by players.

6.2 Regional disparity

Beside the record-breaking prolonged fast growth, rapid widening disparity of wealth in China has been a major concern. It is commonly agreed in the literature that the inequality in China is substantially worsened since the reform, mainly in the recent two decades. The following, Table 6 shows that associated with the increase of GDP and trade, the Gini coefficient has increased from 0.29 in 1978 to 0.37 in 2000 (Kanbur and Zhang, 2005). Some claim that disparity in China is getting close to those of some of the most unequal countries in the world (Benjamin, Brandt and Giles, 2006; hereafter abbreviated as BBG). Regional decentralization or reforms based on regional decentralization has

often been blamed as a major source of the worsened wealth inequality in the recent decade.

The relationship between growth and inequality is a major debating subject (for a survey sees Aghion, Caroli and Garcia-Penalosa, 1999). In a classical view, inequality is regarded as necessary and transitional in the process of industrialization or growth (Kuznets, 1955). Moreover, increase of inequality may not be so bad even for the poor when an economy grows fast since the poor benefit more from increasing aggregate growth than from reducing inequality through redistribution (Dollar and Kraay, 2001). China's fast increasing per capita income came together with rises in inequality and is used as a major example to illustrate the above point (Quah, 2003). The reform policy in the first two decades of Chinese reforms, 'let some people become rich first,' is in line with this thought. Driven by this policy and implemented within the framework of regional decentralization, arguably, in the last quarter of century, China has experienced the largest scale of poverty reduction in human history. The Chinese population in absolute poverty (defined as $1/day income) has dropped from 50% to 7% in twenty years. The number of individuals in absolute poverty was reduced by almost 400 million. This number is nearly three quarters of poverty reduction in the whole developing world (World Bank, 1995).

On the other hand, however, it is argued that inequality has impacts on politics, investment, etc. which in turn can harm stability and growth in general (e.g., Alesina and Rodrik, 1994). Specifically, worsened regional inequality in China may threaten economic and political stability or even the national unity (Hu, Wang and Kang, 1995). Is the Chinese duo of high growth and increasing disparity a 'normal' development path prescribed by the well known Kuznets curve? Will the worsening inequality hurt China's economic growth? To what extent is the widening disparity related to regional decentralization?

Based on a Chinese household survey dataset, with about one million households in the period between 1980 and 2002, Ravallion and Chen (2007) discover inequality and economic growth are unrelated, that there is no evidence of an aggregate growth-equity trade off in China. They find higher growth in rural growth, which corresponds well with HRS reform and TVE development, brought inequality down. It reduced inequality within both urban and rural areas, as well as between them. Moreover, provinces with worse disparities, both within rural areas and between urban and rural areas, were less able to speed up rural economic growth. However, urban economic growth was positively correlated with inequality. Moreover, they find the gains of public spending were poverty reducing but not reducing inequality. And the gains of public spending tended to come from subnational governments, not the central government. Furthermore, they find substantial regional variations that provinces with a more rapid rise in inequality usually had less progress in poverty reduction.

To some extent, based on rural household level data collected from 100 villages in nine provinces during 1986 to 1999, BBG confirms major conclusions of Ravallion and

Chan (2007). They find initial inequality affect growth whereas rising inequality is not related to the growth trajectory. Specifically, they find villages with higher inequality initially; i.e., in 1986, in their sample, grew more slowly over the next thirteen years. However, in village fixed-effects specifications, there is no statistical relationship between inequality and growth. They believe this suggests that the mechanism linking growth to inequality operates "in the long run." Thus, the effect of inequality is differenced-out over shorter periods of time. They also find that more unequal villages had the slowest non-agricultural development. Part of the explanations for long run impacts of inequality to growth may be related to their other finding. That is, low inequality is related to the effect of village education, which leads to higher income growth, especially of non-farm incomes.

Yet, worries on ever increasing inequality are getting worse and the impact of regional decentralization on inequality has been hotly debated. Based on county level data, Tsui (2005) and Zhang (2006) find that the regional fiscal disparity has worsened since the 1994 fiscal reform. Regional disparities in per capita fiscal expenditures (and by implication, the provision of services) are extraordinarily large across rural governments, and they were persistent since the peak reached in the late 1990s. Among the 2,800 county-level jurisdictions, in 2003 the richest spent 48 times as much as the poorest – a gap that is unusually large compared to that in other countries (Wong, 2007). There are some scholars who even argue that rapid widening of regional disparity caused by regional decentralization can lead to the disintegration of China (Hu, Wang and Kang, 1995). Measuring fiscal decentralization by the ratio of sub-national fiscal expenditure over national fiscal expenditure, the following Fig. 3 (Kanbur and Zhang, 2005) illustrates that nationwide inequality is positively correlated to fiscal decentralization.

Table 6. Economic Growth, Reforms and Inequality

Year	GDP	Trade	Decentral'n	GINI	GE	Rural–	Inland–
	(billion)	(%)	(%)	(%)		Urban	Coastal
1978	362.4	9.8	52.6	29.3	14	11	0.4
1980	451.8	12.6	45.7	28.2	13.1	9.9	0.5
1985	898.9	23	60.3	25.8	11.1	6.6	0.5
1990	1859.8	29.9	67.4	30.1	14.9	9.5	1
1995	5749.5	40.9	70.8	33	17.7	11.5	2.3
2000	8940.4	43.9	65.3	37.2	24.8	13.9	3.8

Source: Kanbur and Zhang, 2005.

Nevertheless, one has to be very careful about the economic meaning of fiscal decentralization in the empirical evidence. As we discussed in previous sections, fiscal decentralization sometimes is a good proxy of regional decentralization, which deeply influenced most of the reforms in the past thirty years. However, in some periods, particularly after the mid 1990s, fiscal decentralization may not be a good proxy for

regional decentralization. Thus, further research is yet to be done to study impacts of regional decentralization and various specific reforms on inequality.

Fig. 3 National Inequality and Fiscal Decentralization
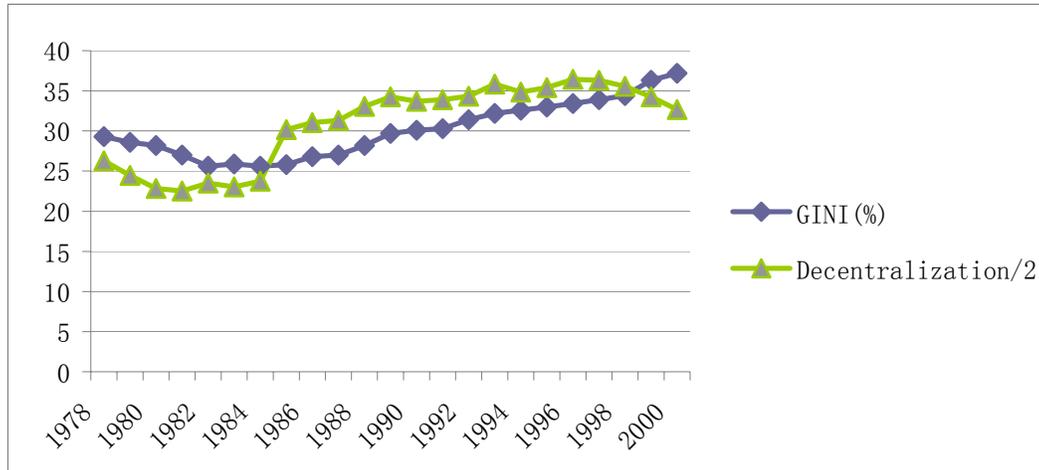
Note: For illustration purposes, the variable "Decentralization" is 1/2 [sub-national fiscal expenditure/national fiscal expenditure].

Based on provincial data, Kanbur and Zhang (2005) use the GE (the generalized entropy index) inequality coefficient, which increased from 0.14 in 1978 to 0.248 in 2000, decompose Chinese inequality into three components: inland-coastal and rural-urban. They suggest that regional decentralization has contributed for about one third of the Chinese inequality. Consistent with some earlier literature (e.g. Tsui, 1993; Chen and Fleisher, 1996; Kanbur and Zhang, 2001) they contend that the regional disparity in general, the inland-coastal disparity in particular, is a key dimension of increased inequality in the reform era. From 1978 to 2000, the inland-coastal GE component was increased by nine times, from 0.4% in 1978 to 3.8% in 2000 (see Table 6).[27] They argue that this rapid widening of the gap between coastal and inland regions is mainly due to FDI and trade since the two regions have different opportunities (see Fig. 4). On the other hand, the rural-urban GE coefficient component was increased from 11% in 1978 to 13.9% in 2000. Although this raise looks marginal, there was an inversed trend that the number was

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[27] However, without looking at urban inequality, by studying rural households BBG find regional inequality declined and the increased inequality was mainly due to widened differences between households within the same village. They find the expansion in off-farm, non-agricultural opportunities, and decline in barriers to mobility reduced the role of regional and village differences in generating inequality, but widened differences between households in the same village. Specifically, between 1987 and 1999, the contribution of within-village inequality to overall inequality increased from 50 to 58 percent.

bottomed to 6.4% in 1984 when the HRS reform was finished.[28] They argue that the worsening off of the rural-urban disparity was also related to FDI and exporting.

Fig. 4 Inland-Coastal Inequality and Trade
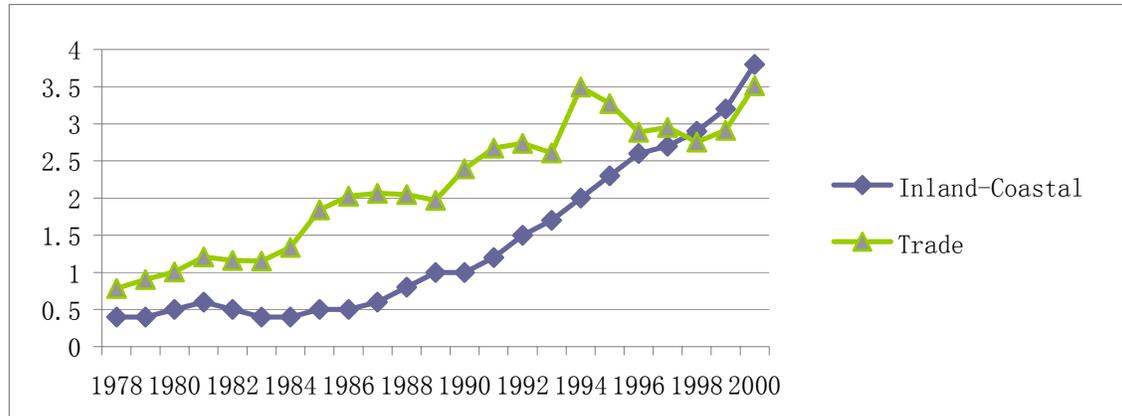
Source: Kanbur and Zhang, 2005.

Based on provincial level data, Lin and Liu (2005) and Fleisher and Chen (1997) also report widened regional disparities were related to regional decentralization. Lin and Liu (2005) emphasize on different subnational governments' strategies and their effectiveness in economic development, whereas Fleisher and Chen (2005) attribute the widened disparity to the central government's policies of favoring coastal regions' development. Most important reforms policies favoring coastal regions are FDI and export related policies. Similarly, Yao and Zhang (2001), Demurger (2001) and Fu (2004) find that these reforms contribute to the regional inequality. They report both exports and FDI has significant and positive impacts on growth in coastal regions but not in inland regions.

6.3 Some Principles for Solving the Tradeoffs

The mechanisms associated with regionally decentralized authoritarian governance drove the changes of the Chinese economy over the past three decades. An interesting irony of this governance structure is that it works well for transforming the economy to markets and for market activities. The reason is because all market activities are ultimately measured by GDP statistics. When economic growth is an overwhelming objective in regional competition, GDP effectively reduces multi-tasks into a single task. Thus, this regime has a built-in mechanism for pushing market-oriented transformation and for growth.

However, it does not function well for non-market activities since all activities not counted in GDP statistics will be ignored in GDP based performance evaluation. When

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[28] Ravallion and Chen (2007) report a similar trend of Rural-urban disparity over this period of time.

non-market activities become as important as economic growth, the multi-task nature of subnational governments makes this regime fail to function. Therefore, there is no built-in mechanism for macro control, for environment protection, for resource protection and for taking care of cross-region externalities. This leads to alleged widening regional protection and regional disparity; to severe environmental problems. It is reported that associated with the fast economic growth there were severe deteriorations in China's environment. For example, SO_2 emission was increased from 19.9 million tons in 2000 to 25.5 million tons in 2005 making China the largest SO_2 emission country (World Bank, 2007). And this deterioration was closely related to the lack of interest in subnational government officials who found enforcing regulation in environmental protection in conflict with economic growth (Li, 2006).

Theoretically, if all tasks could be well measured, then by assigning a policy weight for each task it might be possible to construct an index to summarize an achievement of all tasks. In this way, a multi-task problem could be reduced into a single task problem, regional competition and regional experiments over the redesigned target would function well. The 'Green GDP' proposal of the Chinese government is an effort in this direction (Economy, 2007). However, this idea has some fundamental flaws. Indeed, the reason GDP is a widely used measurement is because it is market based and market transactions have already solved a huge amount of incentive problems. The difficulties in measuring non market activities are notorious due to incentive problems and technical problems. If there existed general ways to measure non-market activities accurately and efficiently, there would be no need to transform a centralized economy into a market economy. In fact, most provincial governments who initially joined this 'Green GDP' project have withdrawn from it due to a conflict of interests and disagreements on technical issues related to measurement.

It is known that the optimal way to deal with multi tasks is to assign low powered incentives to agents within a hierarchy (Holmstrom and Milgrom, 1991). Thus, vigorous regional competition may not be optimal anymore when China's further reform and development inevitably face true multi-task problems. However, with lowered incentives, subnational officials would reduce their efforts in taking reform initiatives and in taking growth-enhancing activities. In the following, I brief some principles, which may be elaborated into solutions to the tradeoffs that I discussed above. Instead of being substitutes for each other these solutions are complementary to each other.

a) Government tasks assigned to central government agencies and to subnational governments should be redefined such that responsibilities for those activities with strong cross-region externalities should be centralized and regulated by central government. This will narrow down the scope of tasks to be carried out by subnational governments. Moreover, the tasks to be handled by the central government should be divided into groups and be handled by specialized ministries, special courts, and special regulatory regimes. To some extent, this remedy calls for a change from the M-form to a mixed U-form and M-form

structure.

b) Should further deepen the reform of the government and the firms that most market activities should be carried out by firms and should be separated from subnational governments. This will preserve strong incentives for firms for economic development even when incentives of subnational governments are weakened when they have to deal with multi-task problems.

c) Many monitoring and law enforcement functions, including regulation, should be carried out by independent press and independent judiciary system. That is, these functions should be separated from subnational governments. This change will not only reduce the multi-task problem effectively, it will also greatly enhance monitoring and law enforcement.

d) The multi-task problem faced by the Chinese subnational governments is fundamentally associated with the following facts that (i) the nature of tasks of any government is multi-dimensional; and (ii) subnational governments are accountable to their superior governments. If instead of being accountable to their superior government the subnational governments are accountable to their constituencies, and if instead of being appointed by their superiors they are elected by their voters, the multi-task problem will be transformed into one dimension, being elected.

8. Conclusion

How to explain the spectacularly successful Chinese reforms is a major challenge in economics. The magnificent performances of the reforms are in sharp contrast with the "market-unfriendly" institutions of the economy. This incredible contrast between poor institutions and the spectacular performance makes China a puzzle. Through synthesising the literature I argue that one of the keys to understanding the 'miracle' is the regional decentralization. The successful Chinese reform ought to be explained by multiple factors and by numerous successful reform policies. Regional decentralization provides the basic institutional conditions for experimenting and implementing reform policies. This paper characterizes the fundamental Chinese institution, *regionally decentralized authoritarianism*, and analyzes how this institution worked in reforms.

It should be pointed out that solutions brought up by Chinese regional decentralization are the second best (or the n-th best) at substantial costs. In the literature there are papers focusing on benefits and costs of regional decentralization. Given the second best nature of the Chinese institutions, many of those seemingly contradicting arguments are actually complementary to each other in revealing different aspects of the Chinese institutions and the reforms.

At early stages of reforms, China seems to have 'ignored' some standard advice completely, such as privatization, and 'ignored' others, such as liberalization, partially. However, the highlight of three decades of China's reforms is pretty consistent with

conventional wisdoms that privatization, liberalization, globalization and law-based governance are all in the process. Thus, in retrospect, the so-called "China puzzle" may be regarded as relevant only to the reform process rather than the goal of the reforms. However, although economic development has been the ultimate goal of reforms in principle, many important institutional reforms, particularly those related to privatization, were evolved as major reform policies but not implemented as designed reform sequences.

The following are some general lessons from the Chinese reforms:

1) A thorough understanding of details of existing institution in general, incentive problem of stakeholders of a reform program in particular is the foremost factor determining the fate of the reform. If there was no incentive problem in reforms, reform programs could be designed and implemented in a similar way as engineering projects. The first best comprehensive reform programs could be designed perfectly in detail, and could be implemented precisely as designed. Consequently, reforms, transitions and economic developments could all be carried out quickly and accurately as building bridges or airplanes. However, institution is endogenous with history, social norm, culture, endowment and technology, etc. This point manifests clearly in details of institutions. The Chinese history, endowment and technology made the Chinese centralized system differ from the Soviet system. Some seemingly secondary important details of institutions may be vitally important in reform policies and performances. Moreover, reforming institutions is endogenous with incentives of stakeholders of the existing institutions. All of these make institutional reform qualitatively different from technological change or technology transfers, and it makes policy design fundamentally different from engineering design. The fundamental reason why many reforms with comprehensive plans, particularly some "shock therapy" or "big bang" reforms failed was not due to the speed or scale of the reforms but due to the absence of understanding details of the existing institutions and on stakeholders' incentive problem in the institutions.

    a. Although at an abstract level there may exist commonly agreed goals of reforms or economic development, there does not exist a universal policy recipe. This is because any effective policy recipe must take into account interests of stakeholders of the existing institution, which varies from country to country and from context to context.

    b. When the Chinese 'ignored' standard advice, what they ignored was mainly the details. The most important reason that those were ignored is because they were not incentive compatible with the Chinese stakeholders, and thus would not work. Sometimes they also 'ignore' basic principles of standard advice, such as privatization due to political considerations, another incentive compatible problem.

    c. Most details of Chinese reform policies were not designed ex ante, but

evolved in the process of the reforms when incentive problems were resolved. The typical approaches deployed in Chinese reforms, such as gradual, experimental and dual track, were evolved in dealing with incentive compatible problems consciously. The Pareto improving requirement (a la Lau, Qian and Roland, 2000) is the strongest criterion, whereas incentive compatible requirement is weaker and more general. Regional decentralization facilitates this approach in the vast majority of cases.

2) Policies based on overly simplistic views of government can be harmful for reforms and for economic development. There is a popular view that reforms in transition economies and developing economies should focus on confining the government and the role of the government should be restricted to property rights protection and contract enforcement. The Chinese reform experience together experiences of other East Asian newly developed economies (Japan, South Korea, Taiwan, Singapore, Hong Kong) do not endorse this view (Lin, 2007). The history of market development in pre-industrial revolution Britain and Holland do not support this either (Andrianova, Demetriades, and Xu, 2008). The government is the most important institution in any country (Stiglitz, 1989) and is an essential player to nurture market development as illustrated by the market reforms in China. A major factor associated with catastrophic failures of some important reforms in transition economies is due to the destruction of essential functions of the government. "Because of its compulsive power, the government has a substantial degree of freedom in adopting policies that will affect the functions of other institutions in society. With good use of its power, a developing-country government can gradually reform its backward institutions, improving incentives for entrepreneurs and workers, increasing savings and accumulation in the national economy for investment in new industries and technologies, and improving resource-allocation efficiency in the economy." (Lin, 2007).

3) Decentralization is important for reforms and economic development in larger countries. The importance of decentralization is not only due to heterogeneous local preferences (Oates, 1999) but also due to heterogeneous local incentive problems and local institutional arrangements which can be handled more properly locally.
   a. Instead of comprehensive plans, a large number of reforms in China were locally initiated responses to existing problems, sometimes urgent matters. The greatest benefit of this decentralized approach is that it evolves within the existing institutional framework. Therefore, it is more incentive compatible and fits better with local conditions, and when new problems arise, officials have incentives and better information to find solutions.

4) To make decentralization work, subnational governments should not only be empowered but also be enabled. The literature on decentralization and federalism

emphasize empowering subnational governments but discuss little on enabling subnational governments. Enablement does not come out automatically with empowerment. Without enablement, subnational governments would not be able to take policy actions and decentralization would not work even in the case that they are legally empowered. Moreover, enablement is a necessary condition for commitment and institutionalization of decentralization.

    a. This point illustrates again that the overly simplistic view of confining government's resources and functions without a careful study on the context can be harmful in policy.

    b. Indeed, in many decentralized developing economies, subnational governments are not enabled. For example, under-funding of required expenditures on local infrastructure or social services has been common in most decentralized developing countries (Bardhan, 2002; Bardhan and Mookherjee, 2006).

    c. In contrast, all major reforms (e.g. HRS, SEZ, and privatization) were initiated and carried out by Chinese subnational governments since they not only have the incentives but also they have the resources to proceed even in the case they are not fully endorsed, i.e. not completely empowered.[29] This may explain partly why "China is the only country [in the world] where the local governments have played a leading role in increasing rates of growth" (Bardhan and Mookherjee, 2006).

5) Economic reforms and economic development are path-dependent. This is true not only at a national but also at subnational level. History determines what interests stakeholders have nested into the existing institution and how those affects change the institutions. And history determines to what extent subnational governments are enabled. This implies that except for general principles, standard policy recipe may not work even within a country. This is another reason to support decentralization.

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[29] Many Chinese local governments in less-developed-regions also suffered sever under-funding problems for local public services (Wong, 2007).

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