To appear in: Journal of Economic Issues

Engines of Growth in China: The Limits of Informal Institutions

Christopher Cunningham

University of Missouri St Louis

Sel Dibooglu*

University of Missouri St Louis

Abstract

Since the 1978 reforms, China has experienced rapid economic and social development. GDP growth has been in the double digits on average yearly, creating the fastest sustained economic growth recorded by a major economy in history. Not only did this transform the economy and society at large, China reached important milestones in terms of reducing poverty and creating prosperity in a short period of time. This paper uses the conceptual framework of new institutional economics to examine China's economic growth and how growth has been achieved largely by 'informal institutions' that are grounded in culture, customs, and private interactions that emerge spontaneously. The trajectory by which these informal institutions left their imprint on China's complex economic landscape and how they can constrain future economic growth are also of central importance. After examining decentralization and risk management practices, property rights, and the legal system, we emphasize the importance of creating formal institutions necessary for long-term growth, most importantly innovation. Preliminary evidence shows total factor productivity is tapering off which may reflect the constraints of China's institutional environment. This ought to be reversed if China is to enjoy long-term sustained growth.

Keywords: China, country studies, institutions, legal system, economic growth

JEL Codes: O43, O53, K2, P4

(*) Corresponding author. Department of Economics, 408 SSB, University of Missouri St Louis, One University Blvd., St Louis MO 63121. Phone: 314 516 5530, Fax: 314 516 5352, email: dibooglus@umsl.edu. The authors wish to thank the editor and two anonymous referees for suggestions without implicating them for any remaining errors.

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1. Introduction

With growth rates that spike as high as thirteen percent and rarely below nine percent, the speed of Chinese economic growth has caused international attention. One of the most captive audiences to China's growth has been economists. How does any country achieve such quick rates of growth, let alone within an environment that does not have formal contract and property rights? The explanation for this anomaly is the source of much academic research and requires an approach that strays from neoclassical economics. That is because in the neoclassical framework institutions are not explicitly taken into account (Zinnbauer 2001); however, in China, formal property rights rarely exist and courts hardly perform their standard role of enforcing contracts and interpreting the law, so this paradigm does little good on its own. To deal with this puzzle one must delve deep into the inner workings of the Chinese political and economic landscape and look at the informal institutions that are so important for growth. After looking at how China has recorded such impressive growth, it is also of interest to consider whether it can sustain long-run growth and what reforms it should undertake to do so.

While China has used a variety of "informal institutions" that have created growth in the last several decades, it is important to ask if these institutions will support China to become fully developed with a plethora of socio-economic indicators affording its citizens high standards of living. While it had the second largest GDP in 2016 in the world at $11.2 trillion, its 2016 GDP per capita was $8123, giving the country a GDP per capita closer to Lebanon and Brazil (World Bank 2018)

This impressive story all began with the 1978 reforms, when China began to experience rapid economic and social development (Hou 2011). Yearly GDP growth has been in the double digits on average, creating one of the greatest reductions in poverty in history by lifting one-fifth of the world's population out of poverty (Wang, Wang and Wang 2014). Not only did this transform the economy and society at large, China reached important milestones in terms of reducing poverty in a short period of time. Table 1 shows that this growth took place with an export driven growth, low inflation except for the 1985-95 period, modest fiscal imbalances on average, and modest unemployment.

[INSERT TABLE 1]

[INSERT FIGURE 1a AND 1b]

Moreover, the country grew 26-fold between 1980 and 2015, in a matter of a single generation (Figure 1a). However, it seems this growth occurred at least until 2000 by mobilizing resources rather than a growth in its Total Factor Productivity (TFP). Indeed, Figure 1b shows that the TFP index meandered around 100 between 980-2001, and subsequently increased steeply until 2007. There is some preliminary evidence that the sharp gains in TFP slowed considerably after the 2007-2009 global financial crisis; nevertheless the data points are too few to make a conclusive argument. However, even without a statistical proof, one can make a compelling case that when TFP was monotonically increasing, there were signs of problems. For example, Brandt, Biesebroeck and Zhang (2012) find that two-thirds of TFP growth from 1998 to 2007 was a result of firm entry, most which from private businesses, with negligible contributions due to exit. This literature supports the notion that insolvent state firms are being propped up, causing a lack of creative destruction which will likely have a negative effect on future Chinese TFP.

In addition, state firms are on average 27% less productive, with annual productivity growth 4.6 % lower than their private counterparts. Using 2005-2007 firm data, Yuyan et al (2016) show that in the absence of insolvent state firms, TFP would be higher by 1.06 percentage points per annum. A central argument of this paper is that a lack of a level playing field for the creative destruction process is a significant constraint for long-term innovation-driven growth in China. Furthermore, while capital accumulation, low wages and a favorable dependency ratio have been sufficient to overcome problems so far, it is predicted that a lack of creative destruction will become an issue as accumulation slows down, wages rise and the dependency ratio worsens (Wei, Xie and Zhang 2017). While it is premature to arrive at conclusions regarding the tapering off of TFP, this paper aims to provide a narrative for future TFP stagnation due to the constraints the economy is facing in the light of new institutional economics.

Institutional economics in general, and “new institutional economics” in particular, chiefly focuses on the foundations of growth: the economic environment, the web of relationships, the legal system, and property rights, which collectively can be dubbed the “rules

of the game." This makes it an important framework in examining China's astounding progress and its limits. This paper uses the conceptual framework of new institutional economics e.g., North (1981), North (1991), North and Weingast (1989), North, Wallis, and Weingast (2009), and Acemoglu and Robinson (2012) among others, to assess China's growth experience. We argue that in the absence of formal institutions, informal institutions have accounted for China's growth and while this has worked without too many hiccups, it is unlikely to guarantee long-run sustained growth.

In general, institutions refer to the "rules of the game": Informal institutions are defined here as private constraints stemming from norms, culture and customs that emerge spontaneously. In contrast, formal institutions are constraints on agents and particularly government behavior which are enforced by legal means (C. Williamson 2009). While informal institutions may be sufficient for catch-up growth and even necessary in the transition from a socialist to a market economy, they are inadequate for technologically driven, sustainable growth. After all, technological innovations are risky endeavors and without guaranteed rewards for the fruits of one's labor, the risky technological innovations are unlikely to take place (Scherer 1999). Moreover, technological innovations make old technologies obsolete by creating new technologies (the so-called creative destruction); as such, creative destruction would be suppressed by vested interests. Even when the technology is available, there may exist barriers to the efficient use of readily available technology (Parente and Prescott 2000).

This paper fits in with work by Lin and Tsai (2004), who investigate Chinese growth within the lens of institutional economics. The authors investigate the use of the Chinese burgeoning private sector to subsidize the "comparative advantage defying" state sector. By giving subnational governments freedom to experiment, a concept which will be examined later in this paper, the authors argue that appropriate institutions were allowed to develop endogenously. This approach is in contrast with swiftly removing the state sector, which can cause large negative shocks. The authors argue briefly that China needs to establish a stronger legal system and property rights to facilitate technological progress.

Krug and Hendrischke (2008) investigate Chinese firms and networks, in addition to issues of informal property rights using new institutional economics, public choice, and collective action theory. They also use the paradigm of endogeneity when analyzing the Chinese

institutional framework. They argue that allowing subnational governments to have autonomy in their economic activity has been an important tool in creating exceptional growth. Finally, the authors are wary of the dismissal of informal institutions not created and enforced by a federal government. They argue that these informal institutions should be viewed positively because of the flexibility they afford subnational governments. They do not address the long-term viability of these informal institutions, however. This paper will more closely examine this idea of institutions necessary for long-term sustainable growth.

In this paper, we examine how informal institutions have formed in China's complex landscape, and their limits for long-term growth. Section 2 of the paper focuses on the role of institutions in economic growth. Section 3 walks through China's growth from a new institutional economics perspective by evaluating risk management practices, property rights, the legal system, and social networks, norms and culture. In Section 4 we discuss implications for reforms that would anchor the country on a long-term growth path. Section 5 concludes the paper.

2. Why Institutions Matter

New Institutional economics considers the informal and formal constraints that frame economic and political phenomena in the analysis of economic outcomes (North 1991). These constraints are not usually explicitly taken into account in neoclassical economics, where the models are akin to models in physics with little friction. Thorstein Veblen, an influential name in the "old institutional economics," drew heavily from evolutionary biology and used these formal and informal constraints to explain why some institutions succeeded and some failed. However, in Veblen's work, institutions weren't just constraints, but an element which could affect consumer preferences directly. Using this framework, Veblen created the idea of conspicuous consumption (Rutherford 2001), which describes the consumption of goods and services to signal social status and prestige (Veblen 1934). Veblen was also critical of what he saw as "waste" caused by competitive advertising, and business behavior that contributes to business cycles and unemployment (Rutherford 2001)

With the rise of Keynesian economics in the 1930s, the desirability of empirically testable models rose and old institutional economics fell out of vogue. Institutional economics experienced a resurgence, however, in the 1960s and 1970s when "new institutional" economists

like Douglas North and Ronald Coase began publishing their research (Leite, Silva and Afonso 2014). In line with the old institutionalists, the new institutionalist economists often referenced the role of bounded rationality, the notion of limited cognitive competence, which can be traced back to Veblen's critique of the rational agent in economic theories as a "lightening calculator" (Rutherford 2001).

Contrary to the old institutional school, many of the new institutionalists considered institutions endogenous; e.g., Aoki (2001) who considers institutions as endogenous, self-enforcing rules (cited in Roland 2004). In their narrative and models, institutions can be created by agents as part of the economic "story" or model and the behavior of the agents can then be affected by the institutions, creating a feedback effect (Leite, Silva and Afonso 2014). The new institutionalists have also pointed out that social welfare generating institutions may fail to develop, while inferior institutions can emerge and even be sustained. (Rutherford 2001). For example, Olson (1965) held that inefficient institutions may survive due to the difficulty of collective action among interested groups, while Acemoglu and Robinson (2001) have held that in some cases rulers are not interested in improving inefficient institutions because the gains from new, more efficient institutions can't be credibly promised by the resulting winners of the power struggle. The most important elements of these narratives and models add to the understanding of how countries develop, including China.

One of the most important aspects of institutional economics concerns transaction costs. At the heart of the issue is how economies can take advantage of Smithian gains of specialization, which are a major component of economic growth. However, the power of specialization relies on the ability of economic actors to trade. In small-scale societies, where trade networks are small, like villages or even hunter-gatherer societies, the game theoretic context is conducive to cooperation: There are a small number of actors, repeated games, and relatively complete information. However, these desirable qualities come at a cost. These agents must live in a society which is significantly capped in its economic potential, due to a lack of specialization. As a society begins to specialize the aforementioned desirable qualities diminish and the gains from defection rise. Finding a solution to this problem is one of the fundamental issues of organizing society on a large scale (North 1991).

In the history of the Homo sapiens, this is a relatively new problem. Even as long-distance trade started on a small scale, the use of family to deal with principle-agent problems was effective. North (1991) describes the stationary merchant who sends a relative with cargo to do his bidding, but if that merchant desires a larger scale operation there are only so many cousins one has to send. This is an issue, because use of a non-kin agent in this context creates a situation rife with principle-agent problems. There is no way to tell if the agents are shirking their responsibilities, so perhaps a binding formal contract that makes the non-kin agents responsible for the cargo as well is an effective tool to prevent this problem. The societies that develop methods of achieving solutions to this and many other complications have economic trajectories that far outreach those without them, because they can more effectively capture the gains from specialization. On a macro scale, property rights are also paramount to a nation's development. Without this feature, an economy will experience issues with incentives in work, capital accumulation and innovation, all of which are building blocks of growth. However, property rights are not easy to maintain in a world where defection pays or where a capricious ruler is unrestrained from taking property at will (North, 1991).

More recently, in a series of papers and a popular book, Acemoglu and Robinson and their colleagues tackle the puzzle of development by arguing that property rights and contract rights required for long-term economic growth and development can only be achieved through inclusive economic and political institutions [see Acemoglu and Robinson (2012) and the references cited therein]. Since it will be the basis for evaluating China's recent remarkable experience in transforming the economy in a short period of time, it is instructive to comment on the essential themes in the book.

The basic thrust of what is conducive for economic success (and with lack thereof for failure) is institutions, more precisely the political environment that shapes the setup and the nature of economic institutions. Accordingly, political institutions can be "extractive" in nature where a small number of powerful individuals try to take advantage of the rest of the society. Alternatively, a large group of people can be involved in the setup of "inclusive" institutions, where governance tends to follow mutually beneficial arrangements for a large number of people and exploitation is minimal. Even though economic success necessitates political institutions be sufficiently centralized to provide basic public goods and services such as justice, contract

enforcement and education, there is no guarantee that the resulting modes of the resolutions of these functions are going to be efficient or inclusive. But when these functions are carried out in an efficient and inclusive manner, the resulting institutions enable innovation and technological progress to take place and lead to sustained growth.

Even though extractive institutions can deliver growth, these are useful only in what economists call "catch-up growth." Extractive institutions, by their very nature, cannot succeed when innovation-based growth is needed and "creative destruction" must take place. Hence, any success under extractive institutions is temporary and inclusive institutions are a prerequisite for innovation-based, sustained growth. Without inclusive institutions, creative destruction would be suppressed by politically vested interests for fear of losing their grip on power. While North, Wallis and Weingast (2009) argue that underdevelopment is intimately linked to "limited access orders" created by a powerful rent-seeking coalition that limits access to the political and economic system, Acemoglu and Robinson (2012) focus on the primary role of *politics*: political institutions are the outcomes of conflicts, which in turn, shape economic institutions, investment, and innovation.

Regardless of whether the primacy is in the economic/social order, as North, Wallis and Weingast (2009) claim, or in politics, as Acemoglu and Robinson (2012) argue, the bottom line is that institutions create incentives, which in turn makes it possible for transactions that lead to prosperity. In this paper, we argue that the continued privatization of the economy, the unambiguous formalization and enforcement of property and contract rights, and inclusive institutions broadly construed are necessary for long-term growth in China. Societies that have provided decentralized markets, a supportive political system and a social context where those markets functioned properly were able to grow and develop at extraordinary rates without major hiccups.

Evaluation of China's Growth from a New Institutional Economics Perspective

3.1. *Institutions and China's Economic Growth*

While China now has a market economy in many ways, there is plenty to be done in terms of creating sustainable growth. Recall that in the new institutional economics framework, growth can take place where supportive institutions do not fully exist. While some nations can

grow very quickly without formal institutions, this is mostly due to "catching up" with the frontiers of technology and reallocating workers and capital from some sector to others. Once a nation has completed this process, it will eventually experience sluggish growth due to inadequate innovations for several reasons.

First, innovation requires property rights, especially of the intellectual variety. Without these, the potential innovator won't have the economic incentives to put in the hard work necessary to innovate. Second, research, development and technological innovation are risky endeavors with no guarantee of financial success. For example, an innovator has to take into account the probability of technical success, the probability of commercialization given technical success, and the probability of financial success given commercialization. Since these are all conditional probabilities, the innovator's overall average success will be the product of all these probabilities (if they are independent outcomes). Indeed, a successful innovation from inception to commercialization with financial success faces daunting risks (Scherer 1999). Finally, zooming away from the individual, extractive institutions prevent creative destruction, which has been the hallmark of modern sustained growth (Schumpeter 1942; Acemoglu and Robinson 2012). One must note that technological innovations do not necessarily require a particular form of undertaking. For example, Mokyr (2002) notes that technological changes were historically initiated by the central government in China, particularly the bureaucracies of the Tang and Sung dynasties. It is also the case that technological innovations, research and development (R&D) have spillover effects and externalities that warrant government support. However, efficient technological progress needs organizing and a well-designed incentive scheme *free of resistance* by powerful groups. What is needed is also "a system in which people are free to experiment and reap the fruits of their success if the experiment works…" (Mokyr 2002, 224).

Joseph Schumpeter coined the term creative destruction to describe the process of new technology replacing the old, through innovation (Schumpeter 1942). Aside from the pain it causes those in obsolete industries, it also has the potential to create political power that could challenge regimes that do not keep pace with it. According to Acemoglu and Robinson (2012) while China has experienced a great deal of growth in the last forty years by "catching up" to the frontier of modern technology and industry, the nation's growth will be greatly constrained under the current institutional setup. An examination of the Chinese political and economic landscape

will be necessary to determine how the country has grown so much in the last four decades, to see how the new institutional economics holds up and to evaluate the nature of its long-term growth prospects.

The start of modern Chinese growth begins in 1978 when the Third Plenary Session of the 11th Central Committee of the Communist Party of China was held (Hou 2011). While China had the highest GDP in the world in 1870, things turned sour for the country in 1871 after the Nian rebellion that weakened and eventually led to the collapse of the last imperial Qing dynasty (Chiang 1967). The nation suffered economically thereafter with numerous wars (the Civil War from 1927-50; the Japanese invasion and the subsequent Sino-Japanese war) (Phillips, 1991), the Great Leap Forward in 1958-1960 (MacFarquhar 1983), and the Cultural Revolution in 1966-1976 (Zhao 2016). With the Third Plenary, the government put economic growth at the forefront of its objectives (Xu 2015). The reversal of land rights to villagers, which was still ultimately owned by the state, led to a significant increase in grain production and one of the most successful reductions of poverty in history (Mattingly 2016). Perhaps one of the most radical measures came from The Communist Party of China which created a system of new informal property rights for private firms all across the nation.

3.2 Delegation of Economic Responsibility and Risk Management Practices

China's governing structure is defined by centralized political power, yet resource allocation is mostly decentralized, which Xu (2015) characterizes as a "Regionally Decentralized Authoritarianism" (RDA). Birthed by the new focus on economic growth created in the Third Plenary Session of the 11th Central Committee of the Communist Party, the central government allowed each sub-national government to be in charge of their local economy, while retaining the right to collect taxes from these regions. This framework spawned informal property rights by allowing subnational experimentation and competition, which solves several problems of a centralized economy. In order to create incentives, the local party leaders were made the residual claimants and owners of control rights for their region's firms, creating a more efficient system than the previous setup in which all state-sector enterprises were centrally controlled.

The RDA regime also allowed local party leaders to acquire greater knowledge and give more resources and time to firms under their control compared to central government officials (Li 2004). Moreover, competitive arrangements were designed which entered local governments

into regional tournaments with the sole objective of GDP growth, which encouraged greater productivity in the Chinese economy. Within this framework, local governments were encouraged to experiment given local constraints. This is particularly powerful because the central authority may have neither the knowledge nor the resolution to deal with such localized problems (Xu 2015). To some extent, the risk spreading caused by this experimentation led to "portfolio diversification" of local governments. If the central government designed an economic plan and implemented it across the entire nation, a failure could be catastrophic for the economy as a whole (Yao and Yueh 2009). However, with the partitioned regional experiments of the local governments, a systematic risk was transformed into *an idiosyncratic risk* which was spread out across the nation.

Moreover, the delegation of authority with the associated incentive schemes resolved important problems inherent in a managed economy such as principal-agent and *moral hazard* problems where the manager does not have a *"skin in the game."* Accordingly, if decision makers have a skin in the game where they share in the costs and benefits of their decisions that might affect others, they tend to make more prudent decisions than when decision-makers can impose costs on others without bearing any risk and reward. Such a system acts as an evolutionary filter that *removes* bad risk takers from the system so they do not harm others (Taleb and Sandis 2013). One cannot underemphasize the importance of delegating power to locals with vested interest in the success of economic enterprises and the implied risk management practices. In a centralized system, be it a large organization, a national government or a multi-national organization, sources of mistakes are not clearly visible and local checks such as shaming, ostracizing, or loss of reputation are not effective. As Taleb and Sandis (2013) note, in a decentralized system, managers among others, avoid risky decisions because avoiding shame is a strong motivator, where as a centralized system provides bureaucratic anonymity making social pressures ineffective.

While this delegation of economic responsibility was initially created to improve state-owned enterprises, local governments began encouraging private enterprise to stay competitive. Local governments were primarily responsible for earning their own revenue, a policy that was magnified in 1994 when the central government ceased all funding to subnational governments making collective enterprise budget constraints harder. As a result, subnational governments became chiefly interested in creating an environment to extract taxes from. If the first

decentralization was giving de facto firm ownership from the central government to local governments, the second decentralization was from the local governments to private firms (Li, Li and Zhang 2000). For some regions, the state sector had a strong legacy and the local governments discouraged the private sector from flourishing, instead using their time and energy on gathering state-funded capital and protecting public firms. However, in some areas with little legacy of state sector businesses, local governments sought out the private sector (Clarke, Murrell and Whiting 2008). Through the interest in extracting taxes, local governments allowed private enterprises to have their own effective property rights; this process will be examined in more detail below, under "Property Rights in China."

The system that was created to improve the state sector spawned numerous private firms and the central government hesitantly welcomed this outcome. Perhaps they were keenly aware that institutions, and the incentive structure they create, decide whether a society experiences "growth, decline or stagnation." (North 1991, 97) For example, the growing support of private enterprise fueled by the central government's single objective of GDP growth is clear in the wording of the various amendments to the Chinese Constitution since the 1978 reform. In the 1982 constitution, it was declared that the most important facet of China's economy was "socialist public ownership," while the private sector was a complement. In the 1988 constitution, however, it was stated that the private sector was still under the "guidance, supervision, and control" of the state. The next step came in 1999, when the constitution was amended to read that the private sector was an "important," and not merely supplemental, part of the economy. Today, China refers to itself as a socialist market economy (Clarke, Murrell and Whiting 2008).

The "dual track" nature of the RDA, in which state and private business coexist, gives context to the gradual evolution in the language of the Chinese constitution, but also the difference between Chinese and former Soviet Union economic performance. While the planned economy was suddenly removed in the former Soviet Union, the Chinese economy largely maintained its planned structure with privatization in the periphery, taking up a larger portion of the economy at a slow, steady rate. The collapse of the planned economy in the former Soviet Union led to the weakening of past agreements and ties, which created a distrust throughout the economy. The institutions of a market economy couldn't develop fast enough and the nation's economy couldn't handle the resulting stress (Clarke, Murrell and Whiting 2008).

However, China's slow merge of market-based institutions into the existing realm gave the country more stability. Many old mechanisms slowly deteriorated and the political landscape has been slowly restructured (Clarke, Murrell and Whiting 2008). The dual track system also made the reform transition smoother by allowing the market portion of the economy to subsidize the state-owned portion (Yao and Yueh 2009). The Chinese RDA scheme also differed from the former Soviet Union model of GDP growth targeting because it was far more decentralized and self-contained. In the Chinese model, subnational government leaders need not report to central authorities before performing tasks, as long as objectives are being met (Clarke, Murrell and Whiting 2008).

The incentive-based approach to government has been a substantial success compared to pre-reform era standards. For example, prior to reform, farmers had little incentive to produce output. They didn't receive any of the profit from their labor, instead earning "work points" for that day's labor irrespective of output (Yao and Yueh 2009). The decentralized governance style has not been without significant hiccups at times, however. For example, the incentive structure that helped state businesses grow under the RDA system at the beginning of reform caused catastrophe after the economic environment loosened. Tighter economic conditions at the beginning of reform meant that the managers' "feasible set" consisted solely of maximizing profit through output. However, when they acquired the ability to strip companies of their assets, this was akin to adding defection to their possible choice set of actions and many took advantage of this new option. The central government reacted by converting more state enterprises into private businesses and joint venture companies to deal with problems of separation of ownership and control (Clarke, Murrell and Whiting 2008). The various problems of corporate governance, like weak rights for minority shareholders, has made family run firms an optimal firm structure in order to avoid principal agent issues (Burkart, Ellingsen and Giannetti 2011)

The singular GDP targets in the RDA system, to the exclusion of all else, have caused socioeconomic problems like widening income inequality. Moreover, rapid economic growth brought many problems to the forefront such as rapid urbanization, stress on the environment, and external imbalances. China also started to face demographic pressures and the internal migration of labor. The country has even noted this in their Twelfth and Thirteenth Five Year Plan, by establishing goals of expanding public welfare services and environmental protections. The incentive structure of the RDA system did not escape Acemoglu and Robinson's (2012)

criticism of central command economies: with the GDP targets set up by the central governments, the country will focus on output at the cost of innovation, which is the primary driving force of long-term growth. After all, why take a risk on innovation that could potentially reduce a firm's chances of meeting its GDP target? Given the risks inherent in R&D projects, success tends to favor small, young firms in stimulating innovation as opposed to fewer larger grants in technology development (Howell 2017). Even though investments required in R&D vary widely, a considerable fraction of technological innovations come from small-scale hands-on problem solving on the ground that is unlikely to yield any patents (Scherer 1999). This makes decision making at the local level even more important and calls into question the incentives and property rights of the prevailing setup.

While private firms have grown considerably in the past decades, there are still concerns regarding state involvement in the Chinese economy, with state enterprises making up a considerable portion of the economy. While the industrial output of state enterprises has shrank from 77.6 % in 1978 to 26.2% in 2011, 90% of the total revenue of China's top 100 firms in 2011 were from state-owned firms. In addition, there has been a recent resurgence of state involvement in the economy, in part due to the emergence of large state-owned conglomerates known as centrally administrated state-owned enterprises (CSOE). After the global economic crisis of 2008-09, which led to a weakened demand for Chinese products, local government officials began attracting state enterprises and CSOEs, particularly because of the preferential treatment these companies receive in the form of bank loans at below-market interest rates, favorable tax treatments, and technological development funds (Yu 2014).

This is a troubling development because of the relative inefficiencies of state enterprises. These inefficiencies are highlighted by yields from R&D investment, as state enterprises generate 2.2 patents for every ten million yuan invested, while private or foreign firms generate 6.5 to 7.6 patents (Wei, Xie and Zhang, 2017). In addition, state firms which are privatized yield an increase of patents of 200% to 300% within five years of privatization. (Fang, Lerner and Wu 2017).

State firms are associated with further inefficiencies due to their preferential treatment in credit markets. Well-connected state enterprises are more likely to receive subsidized credit, especially from state-owned banks, often leaving private firms with higher interest rates in informal credit markets. If firms equate their marginal product of capital with the interest rate,

this would point to a capital misallocation in China, as the more productive private firms are underutilizing capital. Indeed, Hsieh and Klenow (2009) document such a capital misallocation and show that if capital were allocated as dictated by profit maximization, this could raise TFP by a 30% - 50% margin.

This evidence supports the notion that a growing state sector is detrimental for the long-term, technologically driven growth of the country. Additionally, the vying of state officials for increased involvement of these state enterprises distorts the profit/loss signal and the economic calculus, risking past accomplishments that were dependent on market liberalization and the associated incentive structure.

3.3 Property Rights in China

The state formally reserves the right to expropriate land, but within the incentive structure of the RDA, *informal property rights* have emerged. Clarke, Murrell and Whiting (2008) describes a two pronged system by which this institution has evolved. First, local government leaders are incentivized to meet GDP targets through promotion within the bureaucratic hierarchy. In tournaments, firms from different regions compete against one another in the product market, so the secret to success for these local leaders is efficiency. There is a classic principle-agent problem here, however. Firm managers paid irrespective of their output are less productive than their profit-motivated counterparts, a problem similar to the aforementioned pre-reform farmers. To tackle this problem, many local leaders made managers the residual claimants of the firm's output and owners of control rights. This makes the manager the "de facto owner" of the private firm, transforming the regional competition into something closer to a market competition. The hardening of budget constraints for local governments further incentivized the privatization of businesses. This is another sign of the gradual development that separates China from the former Soviet Union and provided leaders with extra incentives to have productive firms from which they could extract revenue (Li, Li and Zhang 2000).

While the RDA governance structure has encouraged informal property rights, the fiscal system associated with it has put the property rights of many others at risk. Weak individual property rights have lowered bargaining costs associated with land grabs for investment and fueled growth. The long-run sustainability of such a divisive approach is dubious, at the very least with respect to social cohesion (Zhang 2007). In addition, following the fiscal system change, many local governments found themselves in trouble due to falling revenues and static

public responsibilities. Beginning in 1998, in an effort to fulfil their duties, local governments began expropriating land to sell and rent, in order to gain the necessary revenue. This wouldn't have been possible prior to 1998, because a legitimate housing or land market didn't exist, but the central government allowed a legal market to form largely because of fiscal problems (Xu 2015). Instead of selling land, some local governments have decided to redistribute it from one villager to another in the hope of higher revenues. In 2010, land revenues accounted for one third of prefecture-level (a level of subnational government) municipality's revenue. After land is expropriated, the villagers are often compensated the "appropriate" value (Clarke, Murrell and Whiting 2008). Appropriate value is the market value of the goods the land can yield, not the value of the alternative uses of the lands. The frequent expropriation of land called "forced demolitions" or "qiangzhi chaigian" has caused numerous social conflicts in China (Xu 2015).

The problems involving the fiscal system don't end with expropriation, however. While local governments can't borrow from banks, they can create businesses commonly called Urban Development Investment Corporations, which can borrow money on their behalf and use the region's land as collateral. With these funds, local governments have often chosen to invest in unprofitable ventures like luxury office buildings, causing the need to take out further loans to pay off their debt. In 2012 alone, more than half a trillion US dollars' worth of land was expropriated and throughout the past two decades land has been requisitioned from tens of millions of villagers. This creates a high stakes economic environment in which a decrease in the value of land could cause a nationwide financial crisis due to the subnational government's incredibly high use of it as collateral (Xu 2015).

While Chinese businesses can attain effective property rights under a local government, there is nothing that promises complete safety from expropriation. A case in point is the privately owned Jiangsu Tieben Steel Co. In 2004, the central government attempted to prevent overcapacity and sent an inspection team to conduct a comprehensive investigation of the fast-growing Tieben. After finding the company had illegally expanded, Tieben was closed and its assets were put on the auction table. The founder and chairman of Tieben, Dai Guofang, was sentenced to five years in prison. After the Tieben incident, the Ministry of Industry and Information Technology (MIIT) took some regulatory steps in the country's steel industry, which replaced administrative approval with some industry standards (Acemoglu and Robinson 2012).

Even though China made some strides in gradually shifting its legal system towards a European-style legal system since 1978, it is still a work in progress and plenty remains to be done. Private rights were encoded in 1986 when the General Principles of the Civil Law (GPCL) was enacted. However many Chinese homeowners do not legally own the lots upon which they build their homes. These are leased for a limited number of years from the government, which creates uncertainty in China's rapidly expanding real estate market. Recently there has been a push by the national government in China to expand the rights of individuals, known as "personality rights," which include reputation, image, name and freedom. This law has been taken by the National People's Congress (NPC) in March 2017, and more detailed laws are expected to be passed by 2020. The new law brings reforms to the Chinese Civil Code ranging from ecological conservation to property protection and the guardianship system ("China Focus" 2017). However, there remains a question as to how far the law will guarantee a Western style civil code, individual rights, and property protection.

Another area of concern is shareholder rights. There is a large literature that strong legal protection for investors is instrumental in the transfer of funds from savers to borrowers, financial development, and economic growth. Despite some improvements to the legal foundations, China is not up to par with regards to its regulatory regime. The securities fraud scandals and the low conviction rates point to insufficient public securities law enforcement. Weixia (2013, 305) argues that securities fraud litigation should be enhanced in order to balance the "competing interests of state control, social stability, and minority shareholder protection in the listed companies."

While informal property rights have developed after the market reforms, not all property rights are created equally and this yields important differences in innovation quality. Fang, Lerner and Wu (2017) show private firms in regions with stronger intellectual property rights have higher quality patents, as measured by the number of citations a patent receives, degree of scope of patent and the number of patents active in U.S., Japan, and European patent offices. As is clear in the next section, China has much work to do in strengthening intellectual property rights and is far from unambiguously formalizing and enforcing the institution. The aforementioned research shows that improving the quality of such property rights can make a substantial difference.

In addition, Hodgson (2009) argues that laws cannot be reduced to the sum of informal institutions. While laws often form initially from customs, formal institutions deal with highly abstract relationships which customs alone cannot resolve. It is argued that the codification of rules became necessary as verbal communication and imitation of behaviors were not sufficient to deal with the complex transactions resulting from specialization of labor. Instead the state is a necessary, but not sufficient, condition for the development of law, which is a direct result of the complexity of large-scale society. The law can rise to the level of abstraction found in the social interactions in such a world (Hodgson 2009) and it is this complexity of economic activity that allows specialization of labor and technological development. Therefore this paper argues that formalized laws for property rights and growth-inducing institutions are necessary for long-term, technology-driven growth.

This views is in conflict with the view of Clarke (2003) which states that predictability is the only essential element of private property. The problem with this argument is that long-term predictability may require a host of complex qualities which are difficult to attain without formalized law that accounts for a variety of *contingencies*. In addition, the predictability is predicated on the local government bestowing informal property rights, a non-robust solution due to unforeseeable incentive changes for local government leaders.

3.4 Foreign Direct Investment and "Catching Up"

A large source of Chinese growth has been the flood of foreign direct investment (FDI) coming into the country, as FDI results in the acquiring of foreign technological knowledge and higher wage jobs relative to alternative opportunities (Yao and Yueh 2009). The large number of foreign firms lining up to do business in China is puzzling given the country's weak formal institutions. The solution to this puzzle lies in the alternative legal system that China set up for joint venture companies, which gave greater assurance that property wouldn't be expropriated, starting with the creation of the 1979 Joint Venture Law (Clarke, Murrell and Whiting 2008). Joint venture companies have also enjoyed more relaxed tax laws in addition to this protected status (Tang and Hussler 2011). This special treatment has been given to joint ventures precisely because the Chinese government understood the importance in terms of technology transfer (Yao and Yueh 2009). As a result of this flow of information, in some fields the use of foreign technology is as high as 50%. However, in line with the gradual pace of China's market based

reforms, the separate legal system for joint ventures has slowly crept into domestic business legislation (Clarke, Murrell and Whiting 2008). Some businesses have even taken advantage of the legal loopholes in the Joint Venture Law by sending their capital abroad and shipping it back. This tactic of domestic firms exploiting the benefits of joint ventures in this way is called "round tripping" (Yao and Yueh 2009).

Since the reforms began, the high technological innovation spurred by FDI has been significantly larger than the result of domestic high-tech research and design (Tang and Hussler 2011). The rapid proliferation of FDI also brought with it an increase in intellectual property rights infringement. This is partly due to the lower purchasing power of Chinese consumers which causes them to favor low-cost, pirated products, and therefore motivates firms to engage in reverse engineering and intellectual property infringement. Enforcement of intellectual property rights is difficult due to the unclear formal recourse when a factory in one province produces a counterfeit good, but the finished product is sold in another (Cao 2014). Given the overreliance on using technology from foreign companies and slow pace innovations in China, a strong intellectual property system is necessary to spur innovation and push the technological frontier.

The Agreement on Trade-related Aspects of Intellectual Property Rights by The Uruguay Round of the general Agreements on Tariffs and Trade signaled that intellectual property rights have been forming in China. In addition, China acceded to the World Trade Organization (WTO) on November 1st 2001, adopting the property rights protection laid out in The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), an internationally binding legal agreement between all members of the WTO. There is evidence however, that these legal efforts by the Chinese government are not sufficient and more resources ought to be devoted to enforcement of intellectual property rights infringements. After all, China ranks as the largest source of pirated product seizures by the US and European Union customs statistics (Zimmerman and Chaudry 2009).

3.5 Chinese Law and the Judiciary

We alluded to the complexity of economic activity and the fact that laws cannot a priori foresee or solve complex problems with many contingencies. What is needed is an independent judiciary that interprets the law, and sets precedents for similar problems in the future. However,

courts in China don't take the role that the judicial body typically takes in a Western legal sense. To put it succinctly, "Courts remain not a source of overarching authority, but simply one bureaucracy among many" (Clarke, Murrell and Whiting 2008, 396). There are several factors that contribute to the inefficiency of the court system. First, due process suffers when there are a large number of government organizations that have the right to make overlapping rules that contradict one another. This is made especially difficult because the courts have no mechanism to deal with conflicting rules. Second, courts have a bias towards siding with lower level governments, even in the face of regulations implemented by higher levels of government. This is because in the hierarchy of government affairs, the court's president is almost always strictly lower ranked than the head of a local government. Local government's appointment of court officials, control of court budget, finances, and judge welfare benefits also add to this uneven power dynamic (Clarke, Murrell and Whiting 2008).

Court enforcement remains weak for a variety of other reasons, however. For example regardless of court rulings, a legal decision can take different implementations depending on the "*guanxi*" of those involved. "Guanxi", roughly translated as "relationships" or "connections", is an important element of business life in China. Many business leaders acknowledge that business success depend on these "connections." There is also an asymmetry between government entities and private entities, with some government organizations ignoring court rulings. Insufficiently trained judges who must work without well-established judicial review procedures exacerbate legal inefficiencies. This is not to say that Chinese courts are useless. Instead of fulfilling their usual role, judges act more as an authoritative and objective third voice in a contract dispute (Clarke, Murrell and Whiting 2008).

The unusual role of a judge shouldn't be a surprise given that a contract is considered a mere general guideline for action, while the guanxi, the social network which maintains business relationships and trust, might play a much larger role in resolution (Cao 2014). Cao (2014) argues that given the long-term focus of the country, the relative truth is far more important, meaning the context can decide the truth when interpreting a rule. However, China needs to strengthen its judicial system and afford it independence so that it can interpret and enforce the law in light of new circumstances and contingencies given the complexities of economic life in a large-scale society. The dense social network of the guanxi is a common theme in China's informal political and economic landscape; therefore it merits its own examination.

3.6 Social Networks and Self-Enforcing Contracts

The relationships and social networks in Chinese business culture have helped lower transaction costs as the economy has grown larger. As mentioned previously, a deeply specialized society faces the game theoretic problem of trading with a large number of agents, in a non-repeated context and with incomplete information. This is the breeding ground for *defection* in a game theoretic framework (North 1991). The dense social network of the guanxi allows ostracism if an agent defects. In fact, in a 2005 survey done by Susan Whiting as reported in Clarke, Murrell and Whiting (2008), 90.6% of firms stated that in the case of significant conflict with a supplier, the working relationship would be broken between the two. In addition, firm's relationships with suppliers inform their reputation in the larger business community. With 74.2% of firms reporting that other businesses would learn if they had a dispute with a supplier, this helps solve some problems with asymmetry of information in the private sector (Clarke, Murrell and Whiting 2008). The effectiveness of the guanxi is in line with the research done on self-enforcing contracts which require a positive probability of a repeated transaction and a setting which ensures the benefit of honest behavior exceeds the benefit of defection (Telser 1980).

These social networks are helpful for government officials and entrepreneurs alike. In the context of business, social ties can help entrepreneurs overcome credit constraints when they receive their goods in advance without paying a deposit to a supplier, with the profits being split afterward. In addition, the black box regulation system makes social contacts a necessity for the possession of a business license (Yao and Yueh 2009). Ties to government officials are incredibly helpful not only to license a company, but also to receive funding for it, due to the extensive state control of the banking sector (Cao 2014). Even if a firm can manage to avoid these obstacles, it needs help from the state in order to transport goods across provincial or city lines (Yao and Yueh 2009).

While the guanxi is a powerful, informal institution, the sacrifice of inclusivity in the Chinese economy is worth noting. Perhaps the number of transactions could grow by multitudes if there were a stronger formal system for legal recourse. Acemoglu and Robinson (2012) argue that this barrier is an important impediment which ultimately constrains long-term growth. The authors also point out that a level playing field created by inclusive institutions are one of the most important engines by which countries spawn great innovators. It is important to note who is

being excluded from the business world when social connections are so important. A potential entrepreneur might be excluded from industry because he or she doesn't have social ties and is formally constrained by the government from entering. For example, one must consider if Thomas Edison, who was born a low-class American, could have achieved his great successes and entrepreneurship in China given the strong role guanxi play and the meager intellectual property rights protection in China.

Clarke (2003) argues that self-enforcing contracts should satisfactorily deal with everything other than these one-shot deals in principal, and that such one-shot transactions are of minimal importance to economic growth. There is reason to be skeptical about both parts of this claim, however. While it can be argued that guanxi relational contracting has served as a second-best institution which was preferable given the overall picture of the Chinese economy (Rodrik 2008), there is evidence that as an economy grows, a formal legal system will be necessary for continued, sustainable growth. The guanxi may explain a great deal of growth that has taken place, however, this approach may become untenable as the economy becomes more complex.

In a survey of firms in Russia, Ukraine, Poland, Slovakia, and Romania, Johnson, McMillan and Woodruff (2002) show that firms which cannot rely on formal contracts and instead use relational contracting pay higher supplier costs due to the cost of switching suppliers relative to firms that rely on formal courts. This leads to greater barriers to entry, as new firms have difficulty attracting new business. Johnson, McMillan and Woodruff (2002) also found that the firms they surveyed which buy customized goods and rely on informal contracting are especially insensitive to lower prices from competing suppliers. The latter finding is significant, because as the composition of the economy changes due to greater complexity, the demand for customized goods increases. The authors find that this inefficiency is reduced for firms that rely on courts, however. Both of these findings are suggestive of the importance of formalization of contract rights as an economy develops.

In addition, Long (2010) uses Chinese firm-level data from 2000 to show that a higher use of the courts for dispute settlement is associated with more long-distance sales. This finding supports the notion that relational contracting cannot support the greater transaction costs associated with scaled up economic activity and long distance trade; [cf. the argument in North (1991).] This also gives credence to the argument that formal institutions allow for a greater degree of complexity in economic transactions as compared to informal institutions (Hodgson

2009). In addition, Long (2010) finds that reliance on courts is associated with greater investment and likelihood of developing new products, a sign that a greater reliance on a more formal framework could have a positive impact on development and productivity.

While Clarke (2003) is doubtful about the importance of one-shot deals in the economy, there is a concern that technological growth may be dampened when large upfront costs are required for highly specific investments (O. Williamson 1996; cited in Trebilcock and Leng 2006). While China has certainly demonstrated the ability to innovate in certain contexts (Wei, Xie and Zhang 2017 and Fang, Lerner and Wu 2017), the high degree of foreign technology use in Chinese high-tech exports is suggestive that this is a valid concern (Xing 2014). Furthermore, there is evidence that a significant portion of the recent patent surge has been non-innovative (Hu, Zhang and Zhao 2017) and that indigenous Chinese patents are of lower quality, partially because of so-called "strategic" patenting (Thoma 2013)

While none of these points are individually sufficient conditions for the necessity for formal contracting rights, they all point to issues associated with scaled up economic activity and relational contracting, consistent with problems discussed by North (1991) and Hodgson (2009). It is argued that Clarke's line of reasoning applies to much of the early development in China and even some of the recent growth, however with increasing economic complexity and a need for home-grown technology, a formal contracting system will become increasingly necessary.

There is also evidence that reliance on social networks can be harmful in the political sphere, as well as in market transactions. Mattingly (2016) points out one such issue where a key role is ascribed to familial lineage in determining local government leaders. This lineage-based leadership is frequently viewed in a positive light, because these individuals' families have a strong reputation and dense social ties in their respective areas, which can make them more receptive to the needs of their constituents. However, Mattingly (2016) finds that land expropriation becomes a larger problem under lineage leadership. The first factor that contributes to this problem is the high degree of trust villagers bestow upon their lineage leadership and the high social cost associated with dissent with the elders of this elite group, which lowers the monitoring of the local leadership. Largely free of monitoring, this sets the stage for a game theoretic problem in which the local government leader plays a cooperative strategy until the option of expropriation (defection) becomes a part of their feasible set (Mattingly 2016). There is

also evidence that higher corruption is associated with social network reliance found in transition economies (Tonoyan et al 2010).

4. Implications for Reform

This examination of the Chinese economy illustrates a complex and still evolving structure, with the matrix describing the economic and political interactions ebbing and flowing in response to the changing environment. Most importantly, China has developed many informal setups for the most important institutions like formal property rights which are necessary for business development and capital accumulation. For example, Chinese firms can avoid the traditional financial system through informal capital markets created by local governments' competition for their business. In addition, dense social networks act as substitutes for contract enforcement in which non-compliance results in being ostracized. This all occurred because of decentralization; as Taleb and Sandis (2013) emphasized, in a decentralized system, moral hazard problems are minimized and managers are kept in check with the threat of ostracism.

However, these solutions are not infallible. For example, the local governments may give de facto property rights to private firms in their region, but this doesn't mean there is no risk of expropriation of property by the government. The massive amount of debt acquired with which expropriated land acts as collateral is evidence of weak property rights (Xu 2015). In addition, the case of Tieben Steel Co., which had been shut down after threatening the state-sponsored steel industry, is another sign that these informal property rights are far from a proper substitute for formal institutions conducive to long-term growth (Acemoglu and Robinson 2012).

With the nature of small changes that have proven to make a big difference in economic development paths, there is no guarantee the impressive achievements that China's economy has recorded can be sustained. The new institutional economics is replete with empirical evidence that inclusive institutions are not only conducive to economic growth but a prerequisite for technology driven and sustained long-term growth (Acemoglu, Johnson and Robinson 2005; Alonso 2011; d'Agostino and Scarlato 2014). This implies that China's long-run sustainable growth is contingent on the ability to adopt more inclusive institutions. Under this view, as long as problems are solved through informal institutions in China, weak formal property rights and contract enforcement will eventually constrain growth.

Proponents of the contractual and property rights hypothesis have typically reconciled the argument with the impressive Chinese experience in one of two ways. One is that the Chinese

growth experience has been a one-time shift due to reallocation of factors which will inevitably stall because of a lack of formal institutions. The other view is that Chinese growth would have been even higher in a counterfactual world in which the country had formalized property and contract rights (Clarke 2003). However, this papers offers a third possibility: It has been essential for China to slowly phase out many non-inclusive institutions; however, the institutions necessary to keep on this high-growth trajectory are dynamic. The institutional environment must be able to adapt and deal with increasingly abstract problems or else long-term growth will be diminished, as the problems associated with the absence of important formal institutions increase in proportion to economic complexity (Hodgson 2009). This claim is supported by the findings that a firm's use of courts are associated with more long-distance business (Long 2010), and the rigidities and exclusion associated with relational contracting (Johnson, McMillan and Woodruff 2002).

We recognize that China's institutions are still evolving and there have been efforts to expand the rights of individuals, known as "personality rights" which include reputation, image, name and freedom. However, without resources devoted to enforcement and a significant change in the local business culture, the country could stagnate after "catching up" to the frontier of technology" and reallocating factors of production. In the absence of these changes, creative destruction required for innovation is limited. While a larger economic pie is desirable, the intellectual and private property rights necessary for innovation would diminish if not eliminate the ability of the government to expropriate property.

The state of innovation in China shows that institutional economics should not be discounted quite yet. As mentioned earlier, there is reason to skeptical about what the recent Chinese patent surge means for innovation because of a high number of non-innovative filings (Hu, Zhang and Zhao 2017) and the lower quality of indigenous Chinese patents, partially because of so-called "strategic" patenting (Thoma 2013). In addition, high degrees of foreign technology use in Chinese high-tech exports suggests that Chinese innovation is not as strong as it seems with the naked eye (Xing 2014). Preliminary evidence presented above shows that the total factor productivity (a measure of technological progress) in China has tapered off, and that the gains from moving factors across sectors have also diminished (World Bank and the Development Research Center of the State Council, the People's Republic of China 2014).

Given the current pace of innovation in China's economy, it seems a significant change in Chinese institutions is necessary. The problem of initiating major institutional reforms in China, let alone anywhere, would be difficult, however. First and foremost, this requires creating a legal framework for a level playing field, strengthening the judiciary, enshrining equality before the law for all private and public entities, restricting the government's ability to expropriate property, and the design of mechanisms to ensure more accountability in the political decision making process. More specifically, the Chinese government can undertake several steps to achieve these objectives.

First, an increase in government checks and balances: this institutional change would lower fiscal policy volatility, which has been shown to have a harmful impact on growth (Fatas and Mihov 2013). The current institutional framework in China is conducive to such volatility because of the few constraints relative to participatory governance countries with democratic engagement and deliberative practices. Indeed, Chinese fiscal policy volatility is high enough to account for 9% to 27% of capital misallocation between 1998 and 2007 (Ding et al 2018). In a cross-country analysis, Henisz (2004) finds that the largest swings in capital expenditures are so called "white elephant projects," a well-documented phenomenon in China. An increase in checks and balances on government can reduce fiscal policy volatility, including these white elephant projects, and increase the prospects of future Chinese growth. China seems to be headed in an opposite direction as The Chinese National People's Congress have approved amending the constitution to remove term limits for the president[1].

A more independent media and less censored internet is not only essential for the flow of free information but also provides essential checks on government power. The media can lower the cost of monitoring and make potential games of conflict into cooperative games which are more conducive to economic growth. This can be achieved by opening the media up to foreign competition and perhaps privatizing the industry (Coyne and Leeson 2004). In addition, a reduction of internet censorship[2] which aims to lower dissent could provide an additional check on such governmental powers (Yang 2012). Given that the matter of media independence is left to the actors who benefit from low monitoring costs and have an interest in lowering dissent, operationalizing this suggestion is difficult.

A particularly negative side effect of non-inclusive institutions is corruption, a growth reducing phenomenon in itself (Mo 2001). While there has been a credible movement within the Chinese government to remove corruption, there are reasons to be skeptical of the long-term effects of these efforts. The legislation on corruption has grown significantly in the last 20 years, however the ability to enforce these laws is lacking. In addition, while the attempt to create cultural change within the government is an important factor in corruption reduction, the robustness of this approach is questionable. It is argued that a concrete change in enforced rules has a better chance of long-term benefit as verbal communication and imitation may not be sufficient enough for intergenerational corruption curtailment (Bao and Lewellyn 2017 and Hodgson 2009). Tonoyan et al (2010) finds that the likelihood of corrupt activities is positively associated with weak legal institutions, which is suggestive of the importance of such formalization in anti-corruption policies. In addition, the authors find that the probability of engaging in corrupt behavior is positively associated with particularized trust toward a bureaucrat making the rotation of government officials a potential source of improvement.

In line with previous reforms in China, the proper steps for these suggestions lie in gradual reform, which takes into consideration the complex tapestry of institutions (Rajan 2004). Informal institutions which are lowering transaction cost should be noted and the appropriate sequencing of reforms should take this into consideration. For example, a sequencing approach which at first formalizes contracts may be superior to those that do away with rents, as shared rents are often a tool to create cooperation in self-enforcing contracts (Rodrik 2008). As such, the precise institutional sequencing for China requires an incredibly high amount of localized knowledge of the prevailing setup. Effective institutional reform combined with Chinese human capital would surely sustain long-term growth. This human capital potential is evident through the country's top ten worldwide PISA test scores, a measure of science, math and reading skills (OECD 2018). However, the correct institutional framework must be in place to fully utilize these abilities.

Using the concept of path dependence, which states that the choice set is heavily influenced by previous decisions, it is incredibly difficult to predict the sustainability of China's growth (Peacock 2013). However, it is possible that the above suggestions will become more difficult to operationalize as time passes, as further developed vested interests have strengthened incentives and abilities to block such institutional changes (Wei, Xie and Zhang 2017).

Chinese prosperity will depend on how the country deals with the new challenges on the horizon. For example, exports of inexpensive goods that China has relied on for its economic growth could outpace world demand if it continues growing at its current rate; a microcosm of this phenomena is the abundance of aluminum which outweighed world demand produced in 2011 and 2012 by an economy eager to put its citizens to work (Rovnick 2012). Aware of this issue, the government plans to prioritize high-technological jobs and place a lower emphasis on manufacturing jobs, like those in the automotive and steel industry (Mcnally, Lüthje and Brink 2014). Generally speaking, the Chinese central government has utilized economic plans that rely on abundant factors of production, including coal, and encourages high exports and investment, so this plan is a significant diversion from the path that has gotten the nation so far. This approach has imposed a significant cost on economic inequality and the environment, which the Chinese government is trying to address. It is not clear yet that the steps taken to reduce pollution and ameliorate income distribution will produce the desired results. Moreover, the goals set out in the 13th Five Year Plan provide government encouragement of high-tech industry ("13th Five Year Plan Stresses Economic Restructuring" 2016), but the efforts to increase total factor productivity are at risk if China does not address legal reform for strengthening property rights, and creating a level playing field for all its citizens.

5. Conclusions

The 1978 reforms in China created the fastest sustained economic growth recorded by a major economy in history. The issue is not whether growth can continue at this pace; rather, it is of concern if China can sustain a growth path typical of developed economies when it catches up with modern post-industrial societies. This question necessitates a close look at the environment and institutions that are conducive to innovation-based economic growth. In this paper, we utilized institutional economics to examine China's economic growth and how the growth has been achieved by informal economic and political institutions.

A casual look at TFP growth suggests that with the new millennium, the Chinese economy recorded significant TFP gains and the impressive growth has been due to a combination of resource mobilization and productivity gains. However, there is some evidence that total factor productivity in China has tapered off, and that the gains from moving factors across sectors have also diminished. Moreover, even when TFP was rapidly increasing there is evidence of a lack of creative destruction, a necessary condition for long-term growth (Brandt,

Biesebroeck and Zhang 2012). Even though there is still a room for growth based on the accumulation of capital, as the economy grows, capital accumulation will make less and less contributions to growth as the capital/labor ratio rises.

We argue that long-term growth is dependent on the formalization of property and contracts rights, as the abstract qualities of an innovating economy require a set of rules which can account for great complexity (Hodgson 2009). The necessity of this formalization is suggested by the gains from formal court reliance in domains specific to the scaling economic activity, such as long distance transactions and highly specific investment (Johnson, McMillan and Woodruff 2002 and Long 2010).

Informal institutions are also not a robust approach due to the lack of sufficient checks and balances in the Chinese political system. The lack of formalized constraints on local government leaders means that if informal private property rights get in the way of short-term economic development, their actions favor short-term gain in certain important contexts. This is evidenced by the high degree expropriation of household property (Zhang 2007), and the increasing role of state enterprises combined with local government leaders actively competing for their business (Yu 2014). These facts show that there is nothing inevitable about the movement towards growth-inducing institutions in the prevailing setup.

The institutional framework will play an increasingly important role as the limits of growth stemming from mobilizing resources and accumulating capital become more acute as the economy develops; a fact associated with diminishing returns. China also faces rising wages and an increasingly unfavorable dependency ratio making the reliance on an abundance of low-wage labor untenable (Wei, Xie and Zhang 2017). The other growth variety comes from technological progress and innovations that are replete with risks. Some of these risks are due to creative destruction where social and political resistance groups emerge because they may end up losing as a result of technological progress. Institutions play a crucial role in determining whether these resistance groups will be successful; as such, institutions with strong property rights, impartial and independent judiciary, and a level playing field are a prerequisite for sustainable, technology driven long-term growth. While China has grown a great deal without these formal institutions, the necessary institutional setup for long-term growth is dynamic. If China is to enjoy further success in the long term, it must continue to strengthen its formal institutions.

Endnotes

[1] The Chinese National People's Congress has approved the measure on March 11, 2018 with only two 'no' votes and three abstentions among almost 3,000 delegates of the National People's Congress, per global news sources.

[2] Internet censorship in China also helps in promoting local alternatives such as Baidu, Tencent, and Alibaba, which are some of the world's largest internet enterprises.

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Table 1. Selected Macroeconomic Indicators, Yearly Period Average

	1980-85	1986-90	1991-95	1996-2000	2001-05	2006-10	2011-15
Trade Balance/GDP(%)	-0.12	-0.06	1.64	3.40	3.58	6.56	2.70
Fiscal Balance/GDP(%)	0.30	-0.72	-1.14	-1.52	-2.16	-0.65	-0.98
GDP Growth per year	10.20	7.98	12.28	8.62	9.78	11.32	7.88
Inflation, GDP Def.	3.72	7.24	12.88	1.60	3.22	5.26	2.74
Unemployment	2.98	2.22	2.58	3.08	4.06	4.14	4.10

Sources and notes: Authors' calculations based on: World Bank (Inflation, Trade Balance); St Louis FED (Fiscal Balance, Real GDP, TFP), National Bureau of Statistics of China (Unemployment). Fiscal Balance is not available for 1980-1981.

Figure 1. Real GDP and Total Factor Productivity in China