# China's Network Governance Development: A Comparative Study Based on Provincial Performance

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# Content

# Abbreviations

| | |
|---|---|
| BBS | Bulletin Board System |
| CCCCP | Central Committee of China Communist Party |
| CCP | China Communist Party |
| CGSS | Chinese General Social Survey |
| CMC | Computer-mediated Communication |
| CNNIC | China Internet Network Information Center |
| CSSN | Computer-supported Social Network |
| CVS | Chinese Value Survey |
| EGDI | E-government Development Index |
| ICT | Information Communication Technology |
| IMS | Instant Message Service |
| IR | International Relations |
| ITU | International Telecommunication Union |
| MCA | Ministry of Civil Affairs |
| MIIT | Ministry of Industry and Information Technology |
| NAG | National Academy of Governance |
| NBS | National Bureau of Statistics |
| NDRC | National Development and Reform Commission |
| NERI | National Economic Research Institute |
| NPC | National People's Congress |
| NSRCRUC | National Survey Research Center at Renmin University of China |
| PCA | Principal Component Analysis |
| RC | Residents' Committee |
| RGOICCNDRC | Research Group on Opening-up of International Cooperation Center of National Development and Reform Commission |
| RO | Reform and Open-up |
| SAPPRT | State Administration of Press, Publication, Radio and Television |
| SCNPC | Standing Committee of National People's Congress |
| SME | Small and Middle Enterprise |
| SMS | Short Message Service |
| SNA | Social Network Analysis |
| SNS | Social Network Site |
| SO | Street Office |
| SOE | State-owed Enterprise |
| UN | United Nations |
| VC | Villagers' Committee |

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# Chapter One:

# Introducing the Puzzle

China has for long drawn attention from academia. Since the Open-up and Reform started in late 1970s, China has gradually disclosed itself through its increasing interactions with the external world. Before it reaches the second-largest size of economy, the tags attached on it included “oriental”, “communist”, “authoritarian”, “underdeveloped”, “mysterious”, and so on. Today, some of the tags have been detached, while some have not. For example, the highest decision-making group remains mysterious for whomever that attempts to solve the puzzles about Chinese politics. Due to the difficulties in collecting information and materials for scholarly investigation when China hided itself behind the iron curtain from the West, political scholars failed to shed light upon all the concerning topics. Instead, they could only rely on second-hand anecdotes and self-made imagination to tell stories about the top leaders. The quite few achievements during the Cold-War decades were made either by those who had the experience of ever being inside the black box and being well trained as political scientist[1], or by those who built up arguments according to historical records before the foundation of People’s Republic of China in 1949. To make this clear is not to blame any specialists of Chinese politics, but to remind those who wants to continue the investigation of the fact that things have changed. Undeniably, political elites belonging to the highest decision-making group who are playing a critical role in any move of Chinese politics still worth notice. However, we should broaden our horizon of Chinese politics beyond what stays in mist when there are accessible data and information about the other strati.

The transformation since 1970s in China approximates a social revolution, if not overstatedly. Without either the collapse of the regime or the disintegration of the society as a whole, it actualizes the potential of growing into a second-largest economy and benefits the world by developing the living standard of a population of 1.4 billion.[2] Despite of the great leap of economic growth, how the political system and the whole society adapt to the accelerating accumulation of wealth and the differentiation of interest becomes a to-be-solved puzzle for scholars, especially those in the field of political and social science. Having been a trial that does not step on the West-style path, the transformation is experimental and unique. Most importantly, this experiment has been operated openly (at least more openly than before) for

[1] In my personal opinion, one of the prominent is Zou Dang (aka. Tang Tsou, 1918-1999), a Chinese American political scientist, the professor of political science in the University of Chicago. He was the son of Zou Lu who had been working with Sun Yat-sen, the founder of Chinese National Party, since the early stage of Chinese revolution.

[2] More than 60% of the population of China was under the international poverty line before 1970s but the number becomes less than 1% in 2015. (World Bank, 2016)

all observers of interest. Quoting Daniel Bell who used to teach in Tsinghua University[3], it can be phrased that the observers deeply engaged have got "front row seats to China's experiment" (Bell, 2015). With such advantages, there is no reason that political scientists retreat from the frontier back into the obsolete fashion of storytelling.

## 1.1 Puzzles about China's Reform

This thesis is another shoot in solving puzzles about China's one-party state. The core puzzle to be solved in this thesis is why the provinces perform differently in the campaign of "the shift to network governance" run by the central authority. Like the experience in the past, the interprovincial diversity transcends the surface of unification of a one-party state in the process of a newly started reform. The variance on provincial level has been one of the most noteworthy research puzzles concerning China. The responsibility of solving puzzle certainly falls onto the shoulder of political scientists who are interested in China's politics.

Following the core puzzle, the research question in this thesis is: why is network governance more developed in some provinces than in other provinces? This question apparently concerns the explanatory factors of network governance. While the central authority is running a national campaign to facilitate the two systems of network governance, the provinces may have made different progresses due to the different conditions as well as restrictions of their own. Most importantly, provinces in adjacent areas are comparable. Firstly, they share the same context of China's one-party state and its policy goal of network governance. Secondly, some variables like population, GDP, infrastructure, etc., are easily controlled when a comparison is made across them. Thirdly, there are accessible data about the variables of the hypothesized explanatory factors from the national statistical sources. A comparative approach is promising while exploring the explanatory factors of network governance.

If the research question is answered by this thesis, it means that this thesis contributes to solving not only the core puzzle, but also some other puzzles in a broader view. One of the puzzles is that what the one-party state has done out of the actual economic reform and the pendent political reform to stabilize a post-communist society. The answer is: a reform of

[3] The university has been a cradle of political elites in China. For example, Hu Jintao, the former General Secretary of CCP and also the President of China, graduated from Tsinghua when he was 23. Xi Jinping, the incumbent one, studied chemical engineering at Tsinghua from 1975 to 1979 and has been granted a doctoral degree for his four-year study from 1998 to 2002 on Marxist Theory. The teaching opportunity at Tsinghua University, especially in political and social science, implies possibilities of being closer to some interesting information about China's politics.

governance mode paralleling the transformation from a centrally planned economy to a semi-market [4] one. As I will mention in the chapter of reviewing China's reform, (new) institutionalist economists have set their direct or indirect influence on the decision-making of some crucial moves in economic reform. This fact makes it inevitable that China's reform to a large extent has been interpreted in the perspective of (new) institutionalist economists. Given that the starting point of the reform is economic reform, it is natural that the (new) institutionalist economists have gained reputation by explaining the relation between institutional change and economy. However, it is not adequate to only interpret the reform from a perspective of (new) institutionalist economics. This thesis would like to provide a different perspective for some new interpretation. Another one of the puzzles is what institutions shape the mode of governance in the transformative period of China's one-party regime. Without democratic institutions, the one-party regime is facing more profound challenges from the increasing complexity brought up by modernization. On one hand, the regime highly relies on the institutional legacy from the past; on the other hand, the regime also takes measures to adapt to new circumstances, such as urbanization and digitalization. The emergence of the old and the new shows the "resilience" of China's one-party regime.

## 1.2 The Risk of Modern Society with High Complexity

The year of 2020 has witnessed the coronavirus disease (COVID-19) pandemic deranging the current order of the whole world. Globalization, which has bound countries tightly with global transportation and communication, is being blamed as the fuel that accelerates the spread of disease. Though the criticism is controversial, it is undeniable that the risk of modern society that has been stretched through globalization is proved much higher than that human could have ever foreseen. The countries deeply involved in globalization are those suffering from losses in terms of both material and mental. The suspicion about an open world where countries keep intensive interaction with each other surges among the people. Under the stress from the public opinion, governments must apply different strategies in controlling the wild spread of pandemic. The incapability of governance is revealed in such an adversity. Not unexpectedly, some governments start to turn the issue into an arena of international relationship by condemning other countries.

[4] To be more accurate, it has been swinging between these two in different sectors delicately since China became one member of World Trade Organization in 2001 after a long-term negotiation with great effort. For example, the restrains of foreign invest into China was firstly relieved in service industry while mass media industry considered as "the battlefield of ideologies" has been a closed area under the severe control of the state.

All these disputes aside, the reflection on globalization could not have been as necessary as it is at this moment. The risk of modern society stretched through globalization has been for long illustrated by philosophers and sociological theorists, but not until this pandemic can we miserably get an opportunity of testing our strategies in subsiding risk or controlling risk under a threshold. One of the strategies is establishing a governance mode oriented to information. High efficiency in collecting and processing information may be a task that all governments should complete while facing the challenge from the inherent risk of modern society. In bird view from an even higher height, the shift of governance mode not only relates to the study on politics of China, but also three universally relevant issues that repeatedly prevail in our thinking about modern society. They are:

1. Complexity and information.
2. Network, market, and civil society.
3. Technology and political system.

These three issues are inherently interconnected, as we have learnt from our experience in the last century. Among them does the first one, complexity and information, as the core issue merit most emphases. Surveillance, which refers to control of information and social supervision, constitutes one of the four institutional dimensions of modernity.[5] The demand of surveillance rises, alongside the increasing complexity in modern society. Information control and social supervision have been institutionalized especially in the domain of governance. Network governance is the latest attempt.

This dimension of modern institution is the starting point for the following theoretical construct in this thesis. It is necessary to give a brief for the comprehension in a holist view first and foremost.[6] With the innovation and spread of science and technology, capitalism shapes the landscape of the world as a whole, and forcefully involve all continents into global trade; the increasing number of involved agents and their interactions boost the complexity, and generate new problems that only with more information could human solve; the worrisome caused by uncontrollable complexity pulses the seek for an alternative to capitalism; the failure of the communist experiment in which centrally planned economy embeds as a core mechanism negatively proves that only market and social network can

[5] Anthony Giddens (1991: 59) construct a circle of four institutional dimensions of modernity in his theory to illustrate their interrelationship. The dimensions are surveillance, capitalism, industrialism, and military power. Surveillance is crucial for the nation-state while it consolidates the administrative power within industry and military.

[6] The three issues will be unfolded analytically in Appendix Ⅰ.

enable the diffusion of information at a relatively low cost; the authoritarian prospect of mastering the infinite information with science and technology provides another option as an alternative to democracy's function in conveying information. The shift to network governance is a response lately given to the challenges brought up by the increasing complexity of modern society.

## 1.3 China's Governance Mode Shift

China has been going through its own optional paths since the modernization was forcefully started under the imperialist invasion in the middle of 19th century. The establishment of modern institution had been interrupted by the two World Wars, as well as the succedent Cold War. Communist experiment which had been the chosen way of modernization failed for certain, and there is no way back. China's reform is another expedition to modernization after the failure of communism. Many scholars in political and social science are focusing on the modernization of institution in China, which is relevant and prevalent in academia. Meanwhile, the shift to network governance has drawn more and more attention in the recent decades.

The ruling party in China, the China Communist Party (CCP) has captured the shift and started to transform the mode of governance. A document of decision[7] has been passed by the 19th Central Committee of China Communist Party (CCCCP) on October 31st, 2019.(CCCCP, 2019) President Xi, who is also the General Secretary of CCP, in his explanation about the decision mentioned that the information and communication technologies (ICTs), such as Artificial Intelligence (AI), the internet, big data, etc., should be applied in advancing the modernization of governance and developing the governance capability.(Xi, 2019)

Benefitting from the infrastructure construction of ICTs started in 1990s, China has the late-developing advantages in upgrading its governance mode with the help of science and technology. One of this thesis's objects is to outline the evolvement of China's governance coupling with the development of ICTs. Besides this hot topic on China's e-government, there is another mechanism bolstering its governance without much scholarly attention. But before further investigation into the core mechanism of China's governance, it is more important to construct a concrete foundation for the theoretical hypothesis.

## 1.4 Outline

It is necessary to make an outline of the succeeding chapters of this thesis.

[7] The full title of the document is The Decision on Persisting and Improving the Socialist Institution with Chinese Characteristics, Advancing the Modernization of State Governance System and Governance Capability.

Chapter Two takes a literature review on the scholarly work about governance. Having realized the shift from government to governance, scholars nevertheless lack common sense on the specific issues. The theories in a broad field concerning political and social issues that shed light on the shift at the early stage include cybernetics, structural functionalism, and institutionalism. Among all of them, the hints from cybernetics and communication theories unusually prompt a possibility to solve puzzles from the perspective of the dynamics between complexity and information. It is concluded that network governance is an optimal option in the shift from government to governance because of its two advantages to deal with the increasing complexity raised by the modernity. The last section in this chapter develops the theoretical hypotheses on network governance. The test of these hypotheses is supposed to give a general explanation to the shift to network governance.

Chapter Three consists of two parts. The first part takes a historical review on the modernization of China that integrates the revolution and reform in the last century from a perspective of the dynamics between complexity and information. It is found that the variant informal actions taken by governing units under provincial level have made breakthrough out of the rigid institution during the process of reform. Those actions were coherently the reaction to the reductionism of institution in the pre-reform era. The reductionism of institution underpinning the centrally planned economy once forcefully intruded into the diverse localities. It encountered resistance at different degrees in the pre-reform era, and thus has become the object being reformed after its failure. The variance horizontally across localities under the one central authority, on the one hand, is the inevitable result of increasing complexity; on the other hand, it is the key to the "resilience" of one-party state. The shift to network governance, as a reform undertaken in the domain of governance, presents the variance as well. The second part sets the scope onto China's network governance. On the one hand, China's network governance exemplifies the big wave of "the shift from government to governance". China's network governance, unlike what the Western countries have experienced, accompanies the reform process during which the ruling party detaches the state from a system based on centrally planning economy. It must make progresses out of the old institution, but it inevitably inherits legacy from the past, whether good or bad. Learning lessons from the experience of 20$^{th}$ century, the CCP has heaved two pillars in its transformation of governance mode. One is the system of residents' committee (RC)[8], the other one is the system of e-government. On the other hand, China's network

[8] The system of RC refers to the system of community governance in which RC is the core agency. At the early stage of reform, RC did not reach such an important position when there was no perception of community governance.

governance is one component of the synthetic of its reform started in 1970s. Hence, it shows the Chinese style in the transformation of governance mode as well as in other domains, which refers to the variance of development strategies and policies taken by the governing units on different levels. The comparative study on this Chinese style is the basis of the research to solve the core puzzle.

Chapter Four discusses the legitimacy of methodology applied in this thesis. It in the first place clarifies the confusion of the conception of "network". The clarification about the differences between "network" and "structure" aims to distinguish "network" in this thesis from those which parallel the concepts of "hierarchy" and "market" as types of structure. The concept of "network governance" in this thesis, therefore, refers to a mode of governance instead of a structure of governance. A literature review of measuring governance modes is offered afterwards. It suggests that a quantitative method to measure certain mode of governance is necessary and legitimate. This thesis takes quantitative method to measure network governance in China through making comparisons between provinces. The measurement of the dependent variable and the three independent variables is also to be found in this section.

Chapter Five as the final section presents the statistical analysis, the conclusions from analysis, and the interpretation on these statistical conclusions within a realist scope. To summarize, three hypotheses developed in the introduction are all accepted in the sense of statistical test. External dependence, strength of social network, and power of local government are all correlated with the development of network governance. The realist interpretation confirms the causality based on the accepted hypotheses on correlation. A self-reflection on this thesis and an outlook for future study are as much necessary as the conclusions and the interpretation to be mentioned.

This thesis attempts to transfer the spotlight upon the political issue about democratization in China to something that has not been spared enough attention yet. Here it refers to the transformation of governance mode. The rather rapid industrialization and urbanization in the process of modernization in China does not cause the swelling of bureaucratic system which would result to increasing burden on finance, internal disorder, and inefficiency. The maintenance of a stable and controllable government on both national and local level benefits from the transformation of governance mode from command mode to network mode. The transformation not only relies on the legacy from the past, which was a mechanism for social surveillance and control, but also has been driven by the wave of digitalization. The former is

Alongside the reform process, RC has become the core agency that pivots the operation of community governance since community governance was raised as a policy goal by the central government.

Residents' Committee system, while the production of the latter is e-government system. They together constitute networks, including personal network or virtual network, weaving the state and the society on individual level. The one living in a community and holding a mobile digital device with official applications installed is capable to receive message and service from the government regardless time and space.

This is the first time to take a close examination on network governance in China. This thesis on the one hand reviews the institutional changes during forty-year reform to provide hints of the institutional enablers and constraints on the selection of governance mode, on the other hand elaborates completed conceptualization and operationalization methods to measure the development of network governance. The hypotheses of the development of network governance raised from the theorization in the introduction have been tested by making a horizontal comparison between different provinces. The statistical analysis confirms the correlations between variables; more importantly, the interpretation based on the timeline of the reform draws conclusions on the causal relationship. In other words, the explanatory power of the theory concerning network governance are embraced by the conclusions.

This thesis contributes a new perspective to not only the study on China's reform, but also the study on globalization and information society, especially in the special period of a worldwide pandemic. Globalization rockets complexity, while it is not all the governments that have been well prepared for the high risk. Facing the external risk alongside globalization, the governments should realize or re-realize the importance of local issue that might lead to unpredictable reaction to globalization. In the current context, the rising popularism omens a worrisome prospect. The transformation of governance mode (to network mode) should not be merely considered as an instrument to simply improve the efficiency of problem solving. Information network would accomplish its greater value if trust were accumulated along the information flow through time and space.

# Chapter Two:

# Review on Governance Theories

This thesis starts from an argument that the shift from command governance to network governance parallels the shift from centrally planned economy to market economy in the transformation of China since the beginning of the Reform and Open-up. Network governance is a governance mode which relies highly on network for collecting information at relatively low cost. It is crucial for the countries like China which are not underpinned by the developed democratic institution. Nevertheless, there is variation of provinces' performance on network governance, like their performance on economic growth as the Reform and Open-up is progressing. The comparison between provinces can be inspiring for us to gain understanding of the factors that might have effect on network governance.

This chapter aims to develop the theoretical hypotheses of network governance with the development of network governance being the dependent variable. What factors does the development of network governance depend on? Three independent variables are hypothesized: the external dependence, the strength of social network, and the power of government.

Before approaching these three hypotheses, it is necessary to take a review on the path of the theorization of network governance.

As a concept in the subset of governance, the term "network governance" origins from a "higher" concept, governance, on the Sartori's ladder of abstraction. Governance is a concept "re-invented" by the scholars who inspect a big change around government. They use the term "governance" to distinguish from "government". It ambiguously implies a new relationship between government and society, or the government's response to the big change. The big change refers to the fact that the inefficiency of the old way in which the government tackles new challenges from the social issues has been disclosed. The new challenges from the social issues are inevitable because the complexity of society is increasing rapidly. For example, environment issue, migrant issue, identity issue, all are seemingly the consequences of globalization. Besides, the ICTs (information and communication technologies) interweaved with globalization have changed many aspects of human society, from the individual's lifestyle to the collective action of political protest and social movement. Government cannot escape from the wave of digitalization. All these new trends show that government has undergone a shift to governance.

Cybernetics, structural functionalism, and institutionalism, the stems of different disciplines offer their arguments on the shift to governance. Cybernetics infers that increasing complexity is the cause of government's dilemma, and the mutual exchange of information is the key to governance. Structural functionalism points out several components of the process of

governing, among which the performance is measurable and thus comparable. Institutionalism, which attempts to give causal explanation, suggests that institution not only provides condition for the choice of governance mode, but also exerts constrains on it.

Network governance is one of the most proposed solutions to the dilemma where government has been inevitably trapped in inefficiency of achieving policy goals. Network is considered as an alternative to hierarchy and market. Network governance inherently is a positive adaptation to a society of increasing complexity. It relies on the network that involves plural actors in a process of governing. The advantages of network are the stepstones for network governance to be the choice of governance mode. Network facilitates the circulation of information, the renovation of knowledge, and the accumulation of social capital. Network is more flexible compared with formal institution, while it is more stable compared with contingent activities. Last but not the least, the wave of digitalization enhances network in both cyberspace and physical world.

However, network governance being the choice of governance mode is not determined by the advantages of network. In other word, the theorization of network governance should discuss the necessary condition instead of sufficient condition. Having reviewed the studies on governance in different disciplines, we can extract some important hints. Firstly, the increasing complexity causes the government's dilemma. Developing the efficiency of collecting and processing information can alleviate the uncertainty in the process of governing. Secondly, there are institutional constrains on undertaking a shift of governance mode. For example, the extra cost of collecting and processing tremendous information hinders the choice of network governance as governance mode. Thirdly, network itself raises a scenario of decentralization of government. The power of government will be weakened after implementing network governance. If government's power overwhelms any other actors in governing, it is hard to develop network governance.

Based on these propositions, a theory of network governance emerges. Modernization, which means more interactions with other agents in global range, increases the complexity. Government, facing the challenge from the increasing complexity, experiences the soared cost in collecting and processing information. It either cuts down the external interactions and internal interactions to reduce the cost or improves the efficiency. The former leads to a shift to command governance, while the latter leads to a shift to network governance. If external dependence is high to the extent that the government cannot stand the loss of decreasing the interactions, if the social network in localities is strong to the extent that the people can resist the forceful change in their personal life, and if the power of government is weak to the extent

that it has no capability to intrude into the private domain, then it will choose network governance.

Therefore, there are three hypotheses.

1. Where the external dependence is higher, network governance is more developed.
2. Where the social network is stronger, network governance is more developed.
3. Where the power of government is weaker, network governance is more developed.

It is noteworthy that the implementation of network governance as the positive adaptation to a society with increasing complexity differs under the special situations in different countries. The next chapter will discuss China's application of network governance in the context of China's reform.

## 2.1 The Shift from Government to Governance

Concrete theory on governance is yet to emerge in extensive literature of governance. The common ground is that some new circumstances within government have been observed and recognized in last decades, especially in 1990s. “A shift from government to governance” is one of the representative and prevalent abstractions of these new circumstances. Those new circumstances were captured by a futurist in a book written earlier in 1982. John Naisbitt, the futurist whose book *Megatrends* (Naisbitt, 1982) was sold more than ten million copies around the world, states that three out of ten megatrends transform the political system

1. from centralization to decentralization.
2. from presentative democracy to participatory democracy.
3. from hierarchy to network.

Among these trends, the first one is preceding and the other two are consequential. By decentralization, Naisbitt, exemplifying with the United States, infers that state and local governments in the U.S. have grown increasingly assertive vis-à-vis the federal government. He begins his arguments with a claim that satellites have transformed the earth into a global village in Marshall McLuhan’s sense. He predicts that the globalization and the transformation into an information society would soon abandon the industrial society, then manufacturing industry is doomed to decline. Manufacturing industry augments centralization, because it is organized by the principle of economies of scale which requires centralized resources, such as labor, capital, material, and so on. The rise of decentralization parallels the sunset of manufacturing industry. More importantly, decentralization does not only impact industry and economy, but also structure the transformation of social relationships and social institution. Firstly, the dependence of the states on federal aid dropped, meanwhile they would serve citizens better with abundant resources. This new fact results from the fiscal balance that most states have achieved. Some of the states, especially those energy-rich, hold massive surplus in the late 1970s. Secondly, local power increases in contrast with federal power. In issue areas like education, crimes, environment protection, political activities on grassroot level driven by local concern and loyalty have surpassed the top-down, master-plan approach from Washington DC. The initiatives on state and local level, as the institutional approach of direct participation from grassroot political activities in national politics, exploded to a much larger amount during 1970s, which indicates the trend of participatory democracy. Thirdly, small towns are blooming in business, population, and citizens’ identity. The factors facilitating “American’s small-town boom” are decentralization of business (which is the tendency for companies to leave metropolis and scatter in suburban areas) and reduction on

commune cost due to the development of highway system. Upon trends like these, network is endorsed as the most appropriate structure in transmitting information and saving energy. Also, network is cutting across issue areas and boosting cross-disciplinary approaches. In contrast, hierarchy is meant to be obsolete in information society.

Regardless of those overstatements on technology's impact on society[9], the shift described in Naisbitt's book has been expressed by professionals of political science in a more deliberate way. Kooiman features the society in shift as "dynamic, complex and diverse social-political system", and attributes the growing dynamics, complexity, and diversity to "social, technological and scientific development"(1993:6) though the developments are not explicitly defined. Maarten Hajer and Hendrik Wagenaar, by stark contrast, criticize that the relationship between macro-sociological change and the crisis of government is often being more asserted than argued. They argue that those changes which account for erosion of state's power are technological developments, globalization, individualization, and emancipation. (Hajer & Wagenaar, 2003:4) R. Rhodes (1996) uses a term of "hollowing out of the state" to summarize the fragmentation of public sector, the loss of functions of government to the alternatives, as well as the discrepancy between politics and administration. Without mentioning any macro-sociological changes, he argues that British government lost its control on resources and consequently lost leverage for further steering because of the increasing networks. He points out that issues across policy areas and service delivery require coordination in complex sets of organizations. The number of networks, which are built up to meet the requirement for coordination, are multiplied by British government. Governance featured by the "hollowing out of the state" and agency autonomy becomes relevant, because these self-organizing networks partly compose the landscape of British government.

Considering the endless disputes on the relationship between macro change and crisis of government, Stoker (1998) highlights the need of an organizing framework, in prior to causal analysis, for understanding the changing processes of governing. He extracts five theoretical propositions:

[9] Optimism and determinism of technology usually are the tags of futurists, but these do not mean that they should be ridiculed with the empirical evidence they offered and the trends they predicted. Not exceptionally, Naisbitt's claims are exaggerating technology's impact on society. There is no simple linear correlation between technology and political/social transformation. Futurists lack sufficient consideration on continuity of beliefs and institutions that is passively countering dramatic change, as well as the availability of the options that power holders have. (Keohane & Nye, 1988)

1. The dilemma of government. Traditional structure of government is fragmented. The involvement of actors and institutions beyond government is increased in service delivery and strategic decision-making.
2. The shift in responsibility. State steps back and non-state actors step forward in tackling social and economic issues, resulting to the blurred boundaries between the public and the private.
3. The power dependence in collective action. Governing is an interactive process involving various forms of partnership between plural organizations.
4. The self-governing network. Actors and institutions blend their resources, skills, and purposes into a long-term coalition: a regime, which forms a governance network taking over the business of government.
5. The drawback of command, power, and authority. To steer and guide, government must learn new techniques and use new tools.

These propositions have reflected new trends spotlighted in 1990s through a theoretical lens. New trends in reality, in whichever way they are recognized and described, create cracks in old theories. To explain new realities, new thinking is demanded. Social scientists who are sensible to the demand grab this opportunity. Generally, they did four things during 1990s:

1. reinvented the concept of “governance”.
2. defined governance by differentiating governance from government.
3. described governance with its characteristics observed in empirical studies.
4. explained causes of the shift in modes/styles/patterns of governance.

Governance implicitly refers to a new process of governing, differentiated from government that has been regarded as a bureaucratic system in a modernist vision. Due to various theoretical roots in different disciplines, this implicitness of definition is the feature of the study on governance, especially at the moment when "governance" has just been reinvented in 1990s. Four stems in social/political science and philosophy have been flourishing since 1960s that inevitably influence the thinking about governance, including a)cybernetics in political science by Karl Deutsche, b)structural functionalism by Talcott Parsons and structuration theory by Anthony Giddens, c) new institutionalism by Douglass North, and d)post-structuralism by Michel Foucault. [10] Accordingly, there are different theoretical approaches in identifying the characteristics of governance, such as system approach, functional approach, institutional approach, and interpretative approach. Through empirical investigation, positivist scholars reached a commonplace where they agree that what

[10] The names listed here are not the unique figures but the most prominent ones in each domain.

characterizes governance is what distinguishes it from government. Based on these characteristics, it is possible to outline the theory of governance. However, post-positivist scholars argue that the distinctive characteristics are not anything new in real world but solely in discourse. For the same reason, the shift from government to governance for some scholars is what appears as observable phenomenon, while for others it is constructed, reflecting the ways in which people frame, rethink, and comprehend new issues in a phase of radical change of society. Interpretative approach, therefore, should dispense itself in governance studies.(Hajer & Wagenaar, 2003:16) Overall, the dispute continue, either between positivism and post-positivism, or between structure-centric approach and agent-centric approach. The bridge between individual and collective action, as well as agent and structure, is critical when analyzing governance.

## 2.2 Studies on Governance

### 2.2.1 Cybernetics

Cybernetic approach is another application of natural science epitomized into social science, initiated first by Karl Deutsch in 1960s. Government is theorized as a control center in a political system. The operation of this system highly depends on the circulation of information. While the cybernetic approach is criticized that it encourages reductionism and mechanism in studying human society, it is to some extent inspiring when we retrospect the path of thinking on information society.

Deutsch states that among promising resources of thinking in natural sciences [11] does cybernetics outstand. The general concepts of a self-controlling system in cybernetics include information, message, and the efficiency of communication channel, which are all meaningful in human society and measurable with the material reality. Feedback, as one of the key concepts elaborated since 1940s, is positioned in the center of modern control engineering, as well as in nervous system of animal and human beings. By feedback it means "a communication network that produce action in response to an input of information, and includes the results of its own action in the new information by which modifies its sequence behavior". (Deutsch, 1963: 88) To steer a system, decisions must be made in advance based on feedback. Furthermore, the process of steering, goal-seeking, and autonomous control,

[11] Social scientists have for long been humble in front of their counterparts in natural science. They are knee to learn from theories and methods in natural science, and meanwhile produce new concepts in social sciences. It was proved fruitful with introducing thinking on mechanism, organism, and natural selection during a two-century period of the 18th and the 19th. Nonetheless, these classic analogues or models have been found inadequate in explain phenomenon in human society, such as growth, evolution, internal rearrangement, etc.

which would be impossible without feedback, is strikingly similar to certain processes in politics.

Following Deutsch, Kooiman's theoretical root partially embeds in natural science. His starting point is the fundamental characteristics of society: dynamic, complex, and diverse. The question thus carved out is that how dynamic, complex, and diverse social-political system can be governed in a democratic and effective way. He particularly stresses that we lack the tradition in looking at and working with dynamics, complexity and diversity in public administration and political science while these characteristics are not something new but the nature of biological, physical, and social world where we live in. To supplement the lack of tradition, it is necessary to introduce concepts and theories from natural science. For example, the basic dynamics of the system is formed by the tension of forces like entropy and negentropy. The problem can be defined in terms of disturbances of equilibrium or disequilibrium of a certain system or subsystem. Governance, therefore, should turn to a new pattern that makes use of tension between different forces in multilateral interaction. Interaction between public and non-public, of which the continuous process is conceptualized as social-political governing, is critical to solve systematic problems. Hence, there is a shift from traditional governing pattern of "one-way traffic" to a pattern of "two-way traffic". (Kooiman, 1993: 4) By "one-way traffic" he means unilateral (government or society separately), and "two-way traffic" means interactional (government interacting with society). Walter Kickert furthers the understanding of governance with introducing natural science theories, including cybernetics, chaos theory, theory on self-organization and self-referential system. He argues that public governance is control in a complex network, in which government is only one among various actors. Control in a complex network is an influence from each actor on others and others on themselves, not an influence exerted by a third party. Apparently, it highlights the distinction between governance and government. As he put it, "direct top-down governmental control is more and more replaced by autonomy and self-regulation of social institution". (Kickert, 1993: 200) The network where governance operates is not only complex but also dynamic. To maintain stability of a dynamic network is to reach an equilibrium that forces from different dimensions counter each other and end up with a zero in sum. However, as all known, governance in practice is far from equilibrium because the forces from different actors are diverse and unmeasurable. Chaos Theory is supposed to model the system with high imbalance and diversity. Fluctuations and disturbances accumulate in the system till a certain threshold of disruptive change is passed. New order on the meta-level emerges from disequilibrium. Although Chaos Theory inspires the insights of

unpredictability and uncontrollability in complex and dynamic system, it is yet to provide an appropriate model in explaining governance. Similarly, the theory on self-organization and self-referential system[12] ignites hints of self-governance. It hardly becomes helpful to gain our understanding of government and governance in human society. It conceives a system without a controller, which apparently refers to a political system without government. However, the exclusion of government is still unrealistic because it is evident that government still occupies an importance position in political system.

### 2.2.2 Structural Functionalism

Compared with cybernetics, structural functionalism offers more rigorous arguments, benefit from the abundant theoretical resources in sociology. One of the core arguments provided by Talcott Parsons, who came to prominence as a structural-functionalist, is that a social system is not able to sustain and function without adequate motivation of its component actors to fulfill the requirements of role-expectation. Institution is considered as being made up of "a plurality of independent role-patterns or components of them."(Parsons, 1991: 25) The fulfilment of role-expectation gives primacy to either instrumental or moral considerations. In a highly differentiated system, the instrumentally orientated activities of actors are structured by institutional patterns under specific interaction situations. Though the concrete objects under the situation may function as instrumental and moral objects, the functional significance of their actions should be understood in terms of the actual or probable consequences for the system, not the motivation. Moreover, only the instrumental orientations have universalistic standards of effective goal-attainment. Goal-attainment plays a vital role while it scales up from micro level of actors to the macro level of society. Bureaucratic organization of collective goal-attainment is one of the four complexes fundamental to the structure of modern society, as Parsons put forward. (Parsons, 1964: 356) Following the doctrine, therefore, some functionalistic theorists advance in a reductionist manner that the measurable performance related to a given goal should take a central position of theories on government, as well as governance.

The absence of state as central actor in some theories of governance[13] is questionable, so argues B. Guy Peters (2012). Peters reasserts the importance of state by highlighting

[12] The main argument of this theory is that a self-centric and self referentially closed system is more likely to step on a track to extreme conservatism on the one hand, but it is more capable to maintain itself and survive in a chaotic and turbulent environment on the other hand.

[13] For example, excluding state as central controller in a self-control system apparently is the point of cybernetic governance theory.

governance as a political concept and governance theory as a political theory. From a functionalist perspective, public sector is assigned the crucial function of making policy and steering society. The function must be performed in a process of governing; it is certain as the baseline of empirical comparison, no matter how political systems differ. Governance, therefore, is to fulfill a set of functional requirements, including:

1. goal selection.
2. goal reconciliation and coordination.
3. implementation.
4. feedback and accountability.

These requirements are ordinal in the process of governing alongside which the involvement of other social actors is increasing. It is a relatively concise way to consider governance as an analytical concept but still far from causal analysis which is the component of a "theory". It is noteworthy that feedback is also listed here because "individuals and institutions need to learn from their actions"(Peters, 2012: 23). Unlike in the cybernetic governance theory, feedback is put very obscurely without clarifying the sender, the receiver, or the content, let alone its function in successful governance.

### 2.2.3 Institutionalism

Given the insufficiency in causal analysis from functionalism, it is reasonable to turn to institutionalism. Institution in North's sense is the constraints that human devise to structure political, economic, and social interaction. It serves to create order and reduce uncertainty. In other word, effective institutions can lower transaction cost and help realize the potential gains from trade. (North, 1991) Williamson (1998) ever points out that the institution of governance, which is regarded as the play of game, is one of the principal interests of New Institutional Economy (NIE). Transaction-cost economics is concerned most with governance as a branch of NIE. Here governance is supposed to accomplish order within conflicts that threaten the gains from trade. Governance structures, including firm[14], hierarchy[15], market, hybrids, etc., are characterized by their cost and competence. While assessing the comparative advantages of different governance structures, transaction is the unit of analysis. Different from Williamson considering firm as one governance structure, Ménard raises a concept, "governance mode" of firm. It refers to the institutional arrangements of organization (primely firm) within which transactions are decided and implemented.

[14] Firm is reconceptualized by Coase (1937) as a mean, just like market, to organize economic activity and allocate resource.

[15] Sometimes the word "hierarchy" is replaced with the word "bureaus".

Governance mode is determined by the transaction cost. When there are some alternatives of governance mode, one among them is chosen over others because of the lower transaction cost. “When the cost of using the price system becomes too high, the organization of activities under a central command may become advantageous.”(Ménard, 2005: 287) The mode either directing by central command or relying on internal coordination has its own comparative advantages. However, both tensive control and internal coordination becomes costly while the scale of organization is increasing, because there is loss of information along transmission in a multi-layered hierarchy, as well as across sections. The tradeoff between cooperation and control exhibits the importance of information and communication. Ménard advances that a mode of hybrids in literally diverse but heterogeneous vocabulary (e.g., cluster, network, symbiotic arrangement, chain system) is to be chosen because it can simultaneously sustain inter-partner’s mutual dependence and confront uncertainties as a consequence of both internal and external factors.

Following the issue on “the institution **of** governance” discussed by Williamson, “the institution **for** governance” by Ménard, later there comes the issue on “institution and governance”. The difference is: transaction cost is determinant to the institution of governance and the institution for governance, while institution and governance become explanatory to each other. "Governing is about making decision, and institutions define the ways in which those decisions are made", as B. Guy Peters (2013: 81) put it to link governance and institutionalism. He argues that governance is to be one of the explanatory variables of the formation of institutions. For example, interactions between multiple actors in a temporarily connected network which are proven appropriate and efficient for governing can be routinized and regularized as patterns and finally institutions. Likewise, institutions provide explanations to governance. As scholarly recognized, there are three variants of institutional approaches: normative approach, historical approach, and rational choice approach. Commonly shared values and norms (normative approach), path dependence (historical approach), or rational choice based on calculation for maximizing utility (rational choice approach) can be the explanatory factor to that individual voluntarily becomes integrated in institutions, behave and act within the settings. Institutions filter the potential options which might violate the norms, the traditions, or the assumed max utility of everyone before making decisions. On the one hand, institutions to some extent reduces trial-and-error cost and uncertainty in achieving decisions collectively and improve the efficiency of governance; on the other hand, institutions may eliminate the innovative ideas which might be developed into decisions effectively reacting to challenges. The relationship between the quality of

governance (with criteria of both efficiency in process and desired effect as result) and institutions is more likely to be U-shaped.

At a general level, institution explains the constraints on governance choices as it constrains individuals who behave and act under its rules in a normative or structural way. As Sørensen and Torfing put it, "the negotiated interaction between network actors does not take place in an institutional vacuum".(2007: 10) They point out that institutionalized framework provides network with rules and procedures in a regulative aspect, norms and values in a normative aspect, codes and knowledge in a cognitive aspect, as well as identities and ideologies in an imaginary aspect. In all, institutional framework helps stabilize the interactions within governance network, whereas the stabilization is not always ensured. Institutional framework might be too weak to tame the fierce conflicts and power struggles, or too strong to leave peripheral actors with opportunities to change the asymmetric distributions of resources. The disappointed actors would detach themselves from the network, which hamper the sustainability of it. (Sørensen & Torfing, 2007b)

## 2.3 Common Propositions and Recent Disputes

What listed above is the theoretical exploration for conceptualization at an early stage. To summarize, there are some common propositions albeit under the frameworks of different social theories:

1. The complex social interactions between plural actors and other alleged factors hinder the achievement to expected results in terms of policies. This problem is exacerbated by the bureaucratic inefficiency of government.
2. Government thus is facing challenge and falling into dilemma. The shift to governance, either as realistic change in state-society interaction or just as discursive trick, is the proposed response to the challenge.
3. Network governance seems to be one of the solutions to the dilemma of government. Institutional constraints and power relationship should be considered while trialing and applying the solutions.

These propositions point out a way to formulate a promising explanation on a causal chain. Among them is the third one whirling in the latest disputes. Network governance is questioned on a) whether it is the refined solution or just the expedient measure; b) whether it is the revival of democracy, or the pitfall set by interest groups; c) whether it is decentralizing the power of state or conducted by asymmetric power relations.

One the one hand, the broadening of civil participation combines network governance with democracy (not representative democracy but deliberative democracy); on the other hand,

liberty and accountability should be ensured, irrespective of what networks the governance embeds in, as argued by Peter Bogason and Juliet A. Musso. Involving broadened participation from citizens and local communities beyond politicians, parties and interest groups, network governance is gaining legitimacy in terms of democracy. Bogason and Musso exemplify with the cases of Ghent and Los Angeles where NGOs have played a key role via electronic forums on the Internet, state-sponsored forums, and neighborhood council. Accordingly, they note that there is no insurmountable fence between state and civil society because governance networks span a continuum between them. The neighborhood council in Los Angeles, for example, might be able to create communication between the governors and the governed, and lead a way to democratic accountability. However, it is still unsettled that the council system may not abate the difficulty of the discrete small groups to organize their own networks. In this case, powerful players can remain dominant in city governance process. As they conclude, "the dangers confronting network governance are the age-old issues of accountability and abuse of power that come into play in any system of government". (2005: 14) Institutional settings can be used as instrument by the powerful players in their own favor to jeopardize and exploit the weak ones. The mission of further study is to find out whether these problems are aggravated in network governance or not. In another word, whether democracy in network governance is degenerated or in the opposite way.

Network governance should not be considered as an unfolded mode of governance until the latest decade, so does Jeremy Richardson argue. Taking a review on the relevant studies in the past decades and demonstrates that the style of governance, he indicates that a process of regular consultation and bargaining between governments and non-state actors has been the focus of studies on policymaking since 1970s. The research interest resting upon "new governance" is rather a "rediscovery of an aspect of governing that has been observed for many decades and an old intellectual fashion" than new finding or new theorization. (Richardson, 2012: 313) He also points out that the shift to "new governance" (academically coined as the terms like "issue network", "policy network", "network governance", etc.) is not a linear progress from hierarchy to network as some studies imply. Government can seize the power following the doctrine of the ruling party (for example, Margaret Thatcher's Conservative government), or regain the power at the moments of crisis (for example, debt crisis within EU). The key variable determining the style of policymaking is power situation, which should be recognized as varying over time and across sectors. A reverse back to hierarchy can be imposed by government when it outweighs. Contest with the argument that the "new" style is the necessary solution to increased complexity, Richardson suggests that

crisis in national finances pose the demand from the opposite side: a shift from network to hierarchy.

However, governance as a concept has already been placed in many relevant studies before the theoretical exploration reaches a promised land. Theories have always been chasing rapid changes in the real world, which unsurprisingly occurs in social science studies. Scholars turn their attention to the categories of the governance modes within different frameworks and, later, to the analysis on the independent variables which influence the formation and function of governance modes.

## 2.4 Questions to Be Answered

Literatures on governance are increasing, as it is roughly outlined above, but a lack of a concrete theory is obvious. A concrete theory on governance modes is supposed to clarify concepts, provide baseline of empirical comparison, raise hypothesis, and test it. This thesis aims to contribute to the building of a concrete theory on governance modes. Three questions that are supposed to be answered by the theory on governance have not had convincing answers yet. Firstly, why are someone governing instead of others? Secondly, why do they govern in this mode (for example, hierarchically) instead of other modes? Thirdly, why is the mode necessary to be network governance as a solution? Among these three questions, the third one on network governance implies the most promising path towards a concrete theory. The first question is, why are someone governing instead of others? Clearly, this question should be answered after we empirically identify who are governing. Whether the shift mentioned above occurs in real world or solely in notion, it is plural actors beyond public sector that decentralize state as the monopolist on legitimate use of violence and get involved in governance. In another word, there is a commonly acknowledged shift during which plural actors are achieving the position of governing that was previously occupied by public sector. Then, we can put it a re-phrased question: why have they (plural actors) become the governing ones during the shift? Or why have they reached where they are now during the shift? There are two underlying possibilities: a) they are evolving to the status being more capable to govern than state, at least in certain issue areas; b) they have been like what they are now, but they were not able to govern before because some conditions were not met.

Functionalists would prefer the first possibility. They might argue that the people/organizations are chosen to govern. The function of governance is given in any polity. It is not “they must perform the given function because they are governing”, but rather “they are identified as governors because they perform the given function”. The ones who perform function better, the ones who govern. For example, the authority and competence of the state

shrink in globalization. Government alone is inadequate to govern on global issues including environmental problems, human rights, and food security, etc. Civil society organizations (CSOs) take over accountability in global governance on those issues because they have accumulated experience and reputation in collecting disparate information, delivering public service, and bridging cooperation across nations. The functions of government are substituted by those of CSOs to the extent that it is worried that CSOs have suppressed the growth of state capabilities. (Krut, 1997)

To verify the second explanation, diachronic approach is needed to examine the evolvement of a complex system. Cybernetics is unable to provide it because the system in cybernetics is given at a certain moment in the duration of evolvement. Chaos theory might give us some clues about disruptive change in system. Stepping over the threshold, the system turns into another phase in which some candidates of governing eventually get their position. However, these clues will lead us into a mist where the causes of disequilibrium and equilibrium, the essence of the threshold, and the timing of transcendence remain rather opaque. Moreover, if we had clarified the opacity, which I do not think is even worth trying, it would be powerless in explaining the shift of governance because it lacks linkage between cause on meta level and effect on micro level. Considering the handicaps of theories introduced from natural science, historical approach might be appropriate to complement the investigation into the evolvement of system.

The second question is, why do they govern in this mode (for example, in hierarchy) instead of other modes? Neither cybernetics nor chaos theory can answer it because of the reasons mentioned above: the system and its controller are given; the emergence of pattern from chaos is untraceable. Both of these two theories dehumanize the people who are governing. In addition, cybernetics presumes that the controller has unitary wholeness, which is obviously not the case in the governance of human society. Government, and non-government organizations as well, consist of individual members who might have conflicts in terms of interest, belief, ideology, and position. It is not a unitary controller that executes process automatically according to information input and feedback.

As theories on system level, functionalism and institutionalism are more competitive in answering this question. For functionalists, the modes of governing differ because the requirements of performing functions differ. For example, selecting goal is primarily a collective action conducted by a small group of elites in which the assertive ones prevail. By contrast, implementing decision requires the coordination of plural actors with different interests. Governance in the mode that benefits coordination would perform better than in

the mode that only benefits the assertive ones. Therefore, in the stage of implementing decision, network mode is prime for governance. New Institutionalist economists grab transaction cost as the determinant of governance mode. As commonly known, network smoothens exchange of information without which it is too difficult to reduce the transaction cost. Under the circumstance that central command is more costly than network, network governance is supposed to be taken as governance mode. Institutionalists emphasize the contextual constraints posed by institution on governance modes. Path dependence, for instance, explains the continuity of the old governance mode to which the people under the institution adhere. Moreover, the theorists have not overlooked the importance of institution in enabling governance modes. The stabilized institution across time and space provides a greenhouse for modes of governance to emerge and develop.

This question can also be answered on individual level concerning more the subjectivity of the people who are governing. Theorists committed in the assumption of rational choice would argue that people opt to govern in a certain mode because they perceive to maximize their personal utility while doing so. However, the realization of personal utility is never unlimited and unconditional. While self-interest individual intends to build better strategies through exchange and cooperation in complex negotiations, governance network is preferred more than formal institution because of its advantages in solving problems of communication, information, opportunism, and transactions. (Hertting, 2007: 51) In addition, network also compensates the deficiency in communication while making collective action. Collective action is not an assembly of individual choice. Similarly, public choice is not equal to private choice, as noted by Brennan and Buchanan (2000). Deficiency in communication and uncertainty about choices of others lead individual not to a self-interest optimum. The absence of constitutional commitments weakens the faith in future-period interest, thus short-term choice overwhelms. Constitutional constraints must be considered if we accept the assumption of rational choice while explaining governance modes.

## 2.5 Why Network Governance?

The third question is: why is the mode necessary to be network governance? It is the question that must be answered. Not only because it is easier to answer comparing with the two general questions above, but also because it is an explicit starting point for understanding governance and its modes. To answer this question is also the central mission of this thesis. I will argue that there are three critical elements in building a concrete theory to explain the shift to network governance: the given context, the constraints, and the sufficient conditions.

These elements can be empirically observed, measured, and hence are comparable across different states and issue areas.

Firstly, the complexity of society keeps increasing, which is the given context of the shift to network governance. Back to the beginning of this section, it is undeniable that the evidence of escalating complexity is neither the production of discourse nor only the game played between powerful players. We, the ordinary people, have experienced radical changes in many aspects of life since 1960s. To depict a few, the technological innovations spreading all over the world have changed global transport and communication. The iron curtain between socialist camp and capitalist camp has been torn down. The intense interactions between states have been weaved into a form of network and incarnated a global system. More states, non-governmental organizations, and transnational enterprises get involved in the global system, higher complexity will there be. If we admit that people now are living within a more complex environment than ever before, then response should be made in terms of governance. This is the given context of "the shift from government to governance" in literatures, or the shift from one governance mode to another. What is worth noting, "another governance mode" has not been decided yet while the governing ones have realized that they must change over to a new mode. Constrained and enabled by institutions, the governing ones have reproduced the institutions with an intention to generate new mode of governance. As Giddens put it, "in and through their activities agents reproduce the conditions that make these activities possible." (Giddens, 1984: 2) The governing ones, restrained but meanwhile nourished by the resources and the power provisioned from institution, face latent modes of governance among which they must make a choice. It is not necessary to be network governance.

Secondly, there are two options theoretically available to government facing challenge of high complexity, as well as the corresponding restraints on the availability of two options. The two options are lower complexity and more information, respectively. Either lower complexity or more information would relieve the stress over those responsible for governing. After all, more information is needed by the governing body alongside the increasing complexity. However, more information means higher cost in collecting and processing information. Based on rational calculation, the first option of lower complexity is more attractive to governors for its less cost and immediate effect. The second is to change the modes of governance for lower cost and higher efficiency in collecting and processing information. However, there are certain constraints on options of governance modes. Only when the first

is not actually available, the second will be the alternative.[16] High dependence on external world, coherent embracement of network from the current society, and weak power of government hinder the way of the government to take the first option.

Thirdly, the sufficient conditions for network governance as one of governance modes are its advantages in mitigating the problems that government has failed to deal with. The problems are a) the inherent drawback of bureaucratic system limits the processing of information; b) the knowledge and information that government or any other single actor has is deficit in particular issue areas; c) highly organized subsystems of society have gained capability to resist the direct influence from government and act on their own.

Information (feedback) and communication play a central role in governance from a cybernetic perspective. Information can be used as detector and effector; feedback that informs the actor of the consequences of its action can provide evaluation of governance. However, cybernetic model of governance in practice might face the technical and political barriers. The technical barriers result from the limitations of social indicator of which reliability and validity is still suspect, while the political barriers result from huge inertia, disjointedness, and competitiveness inside government itself. (Peters, 2012b) In one word, the barriers rest in the way of processing information due to the inherent limitations of feedback collection and bureaucratic system. Even if the barriers could be removed away by improving the methods of feedback collection and intra-communication of government, some problems are still insolvable. Kooiman (2003: 11) points out that no single actor, public or private, has all knowledge and information required to solve dynamic, complex and diversified problems. Similarly, post-positivist theorists also advocate that the policymakers should let go of the notion that decisions can only be made once the appropriate knowledge is available. Instead, decisions must be made under the condition of "radical uncertainty". (Hajer & Wagenaar, 2003: 10)

Knowledge problem, among other causes of the failure of political control, is the first being diagnosed by scholars who raise the critics. Indeed, the insufficiency of knowledge and information has been seen as the "disease" leading to the failure of governing (in Western states), especially the hollow state after "man-made" "economic miracle" and euphoria of central planning. However, by reflecting upon longitude research on the failure, Renate

[16] These restraints have been overlooked by the major scholars. Those studying governance unconsciously mold all latent modes of governance into only one (e.g., network governance) that comes into being in the Western democracies. However, the political context of Western democracies is universally "modern" embracing network in a scale of globe. The second option has been taken for granted.

Mayntz (1993: 15) argues that there is no fundamental barrier of knowledge and information while the resistance against political control is the result of growing power resources and capacity for collective action of highly organized societal sectors. The solution is to decentralize partially. Local information and knowledge can fill the gap between local issues and poor knowledge of the center on these issues after the local agencies get empowered through decentralization. But it worked as an alternative only before 1970s. Renate points out that the challenge comes from not only local issues, but also subsystems, as scholars realized after 1970s. The internal dynamics of societal subsystems, such as economy, science, health, etc., makes them impenetrable for outsiders, in the sense of being cognized and influenced. Central controller finds it more difficult to predict the behaviors of the target groups for certain goals in those subsystems. The knowledge problem becomes more insolvable under condition of high complexity so that it is diagnosed as disease but in fact it is the symptom of the disease. She suggests that governing with different modes is the call from highly organized policy sectors.

The advantages of network are the sufficient conditions of the shift to network mode of governance. Network[17] boosts the dissemination of knowledge and information, nourishes the cooperation, and exchange in terms of resources and skills; most importantly, it integrates plural actors into specific goal-seeking projects on micro level, as well as into the holist process of governing on macro level. Let alone the information technologies provide network with the most appropriate infrastructure. As some constructivists suggest, network is not new. It is the embracement of network from technology that makes network governance outweigh over other modes additionally.

[17] It is not that hard to define network. Node and tie, sometimes also called position and link, are the basic components of a network. Node might be individual, organization, or sovereign state. For example, a firm, as a node, constitutes a network, i.e. a subset of market, together with other two or more firms. (Thorelli, 1986) Tie is defined as the interaction between two nodes. In this case, the tie between two firms could be supplier-and-dealer transaction in which money flows. Here comes the third basic concept regarding network: flow. Flow is either unidirectional or dual directional. As mentioned, money flows between firms. Under other circumstances, trust flows in personal network, or knowledge flows from higher educated to lower ones. Information flow, however, has been most common and vast in worldwide scale since the revolution of communication technology. It is exclusively defined as the only flow between nodes in network by Manuel Castells (2004: 3). The technological revolution extends the reach of communication media to all domains of social life in a network. As a result, the landscape of power relations in these domains is impacted by the revolution and become more vulnerable to the changes in communication field.(Castells, 2007)

### 2.5.1 Mediation between Stability and Flexibility

As Norbert Wiener put it in 1948, “If the seventeenth and early eighteenth centuries are the age of clocks, and the later eighteenth and the nineteenth centuries constitute the age of steam engines, the present time is the age of communication and control.”(1961: 39) The modern automata are life-alike, coupled to the external world effectively with their ability of communication and control. Sense organs, effectors and the equivalent of a nervous system they contain to integrate the transfer of information are crucial.(Wiener, 1961: 43) To mention it here is not making an oversimplified metaphor of society as an automaton but revealing a general feature of this era. In this changing society, only if they can gather and process information to make right decisions could organizations survive. Organizations interconnected in network receive more information from each other before making decision than those isolated. Therefore, organizations nowadays find themselves more and more involved in networks.

Network in the field of social science unsurprisingly has become a hot topic in organization study since 1980s. It is not only the involvement into external network, but also the internal network for knowledge sharing and value creation that draws scholarly attention. Empirical research on network, either external or internal network, can provide practical advice to firms that always want to take optimal strategy and improve performance in market competition. (Economides & Salop, 1992; Uzzi, 1996; Tsai & Ghoshal, 1998; Achrol & Kotler, 1999) Meanwhile, the concept of policy network has emerged when scholars of political science shed light on the informal network functioning in political process of making decision.

The thinking of network is highly related to human behavior and economic activity in market, although the function of strong ties in kin family network was studied earlier in sociology. (Sussman & Burchinal, 1962) The constant interactions between strangers, for example, buyers and sellers, establish ties and then expand to a network. The network structure, reducing uncertainty in an ambiguous market, becomes a substitute when people find no accessible information. (Burt, 2000) Also, the weak tie between acquaintances introduces individual into labor market because the recruitment is always conducted under recommendation from personal network. Those who have larger outreach of weak ties benefit from advantages associated with information about employment opportunities flowing across different social circles in job-finding. (Granovetter, 1983)

Compared with self-interest behavior of individuals under temporary collectivity, network is relatively stable, like an island in an unpredictable ocean. It is proved that for individuals who are assumed rational and self-interest in the Prisoner’s Dilemma, simply irrelevant

communication to help them get acquainted of each other does not have significant effect on dilemma resolving. Only does relevant discussion on the dilemma bring up the possibility of cooperation instead of defection.(Dawes, McTavish, & Shaklee, 1977) Unlike the dilemma in which people fall into sophisticated consideration about defection and morality, network facilitates the diffusion of information, knowledge, trust and shared value via ties, whether strong or weak. It effectively reduces transaction cost and fosters cooperation. As one of the basic characteristics of network, it has been emphasized both empirically and theoretically on the analytic level of organization. (Achrol, 1997; Holm, Eriksson, & Johanson, 1999; Reagans & McEvily, 2003) But more importantly, network plays a role in macro economy and even democratization. It is suggested that Japanese economy once boosted because of the cooperation between companies based on organizations' network, namely *the keiretsu*. There are two major structures of keiretsu: one is horizontal which consists of presidents from several dominating groups, the other is vertical which consists of manufacturing or supply chain groups. Neither vertically nor horizontally, no one in keiretsu has crucial importance. Embedded in the cultural context of Japan, simple human interactions, such as face-to-face talk and late-night get-together, are the elementary building blocks of keiretsu and members are bonded well to each other by norms of obligation, trust, and reciprocity. (Lincoln & Gerlach, 2004) It is by no means the unique case that only occurred in Japan. Putnam argues that social trust, spread via social networks (either informal or formal, vertical, or horizontal), is the key ingredient that sustains the economic dynamism and government performance in northern Italy. Where citizens prove their trustworthiness through personal interaction over a period, where they can cooperate for mutual benefit in a dense network and resolve dilemma in collective action. Consequently, citizens who inherit civilized Medieval city-state tradition in northern Italy, comparing with those in the south, show a higher level of civic engagement and thus democracy works smoother. (Putnam, 1993)

The other basic characteristic of network is its flexibility. Yet only compared with formal institution network makes itself distinctive with flexibility, just as its stability in comparison with contingent individual behavior. Institution can be represented formally as control structure, which is the backbone of modern society. Institutions are stable designs for action, which means it is present in only one but can be instantiated in indefinite number of concrete collectivities. (Fararo & Skvoretz, 1986) Network can be formulated based on institution. For example, contract between firms is institution; the interaction for signing and executing the contract constitutes the tie between firms in a network. Also, informal network can emerge under informal institution. There are unspoken norms under which the members achieve

unspoken consent and informal networks are formed. Those norms embedded in cultural context that leave an obscure space for understanding and interpretation characterize network with flexibility.

Network flexibility has been defined as “the ease with which a network can adjust to changing circumstances and demands, both in terms of infrastructure and operation”(Feitelson & Salomon, 2000:463) in a paper about physical network of telecommunication and transport, but still this definition is meaningful when it comes to social network. Hence, three dimensions of network flexibility can be identified according to its components, which are node flexibility, tie flexibility, and flow flexibility. In other words, when network must respond to changes, either external or internal, it is easier, thus the cost is lower comparing with institution. Generally, there is neither single ruler nor authority within a network, like a web without spider. The ties built between nodes are not necessarily acknowledged by any ruler or authority, although it should be recognized by the dyad mutually in some cases. New nodes have accessible resources flowing through easily built ties while the members engaging in institutional changes often devote special effort which is highly costly or time consuming.

Due to its flexibility, network may provide a glass tube in which possibilities fuse and react with each other to cautious experimenters if they cannot afford high price for the failure of a wrong formula. It is obvious when we investigate how bureaucrats in hierarchic government adopt innovation and undertake institutional change. (Peled, 2001) Facing the outside change, groups of interest start to weave an informal network without any superior position for primary information exchange. No one is formally subordinated to others, thus ideas with equal relevance flourish. Frequent informal meetings enlarge the reach of network and involve more staffs who pursuit the same interest. The initiation of network as a trial attempt is low-cost, although there is still a long way to go before substantive reform in future.

The flexibility is also good for manipulating behind the scenes. Interaction in informal network can be extremely private and keep promising in a secret way. It is likely to be more invisible but more influential than actors on highlighted stage in political plays (or criminal, though it is not proper to put it in a same manner here). The most well-known network for this instance is lobbying network. It is rather apparent in democratic states or regions, such as the US and the EU, or Japan additionally, that interest groups take advantages of lobbying network to pave the way to formal institution. To be precise, the network of lobbyists firstly intermediate between interest groups and the institution in certain policy issues areas. The highly active lobbyists could expand the reach of network to other issue areas, whether the core or the peripheral. (LaPira, Thomas III, & Baumgartner, 2009) Secondly, the network connecting

actors from interest groups with ex-politicians can help actors gain access to the institution with information previously hold by insiders only. (Schaede, 1995) Last but not the least, institution otherwise has the demand for access good including expertise knowledge and information about encompassing interest. Business interests exchange access good with institution for their access to institution in a network established through lobbying. (Bouwen, 2002)

It is not only the advantages of network but also the increasing complexity of society and governance that raises the importance of network in political process in practice. As mentioned above, the concept of policy network rises in the horizon of political science since 1970s. The trend of functional differentiation of society, decentralization of the state, and transnationalization of domestic politics leads to political overload and the pressure on government. The increasing need to mobilize information and resources requires government to deeply engage in policy network. (Kenis & Schneider, 1991) So, analytically speaking, what is a policy network? Firstly, interest groups and government are the unchangeable players. As Heclo put it in 1978, "American's love affair with interest groups is hardly a new phenomenon". (1978: 271) For recent decades, those groups have become so dispensable for government to make decisions and execute policies as they are specialists in various policy areas. They get entangled in complicated relationships with government, and of course, with each other, around the differential effects that policies may cause. Secondly, information, knowledge, capital, authority, and other resources scholars name differently, flow in network. Here is an example that Duncan Tyler and Claire Dinan review how the policy making was influenced by interest groups in British tourism. The power and responsibilities of British government in tourism policy were fragmented in nine departments. This inadequate of state control created space for interest groups to set their own agenda by providing consultancy. During a period from 1992 to 1999, reports published by associations of tourism industry addressed the importance of tourism to global competitiveness and domestic employment. They eventually managed to integrate tourism into the broader agenda of government which leveraged the 1997 general election. (Tyler & Dinan, 2001)

Networking in network is the social practice of which consistency across time and space is demarcated from individual behavior and institution. It is more stable than contingent behavior and more flexible than institution. Network initiates knowledge sharing, mutual trust, and the birth of innovations on technique, management, and policy. But not until the plethora changes brought about by information communication technologies (ICTs) reached virtually every corner of the world do the advantages of network culminate. The infrastructure of ICT

is intrinsically compatible with social network and networking. ICT has created a cyberspace, emancipating users to engage in the activities that might be impossible in the physical world. The absent agents in cyberspace are connected with each other via the virtual social network which is enhanced by technical network. Social network applications, developed by commercial IT companies and intermediating online and offline activities, strengthen network as structural principle in information society.

### 2.5.2 Being Enhanced by ICTs and Social Media

Information communication technologies (ICTs) have been applied broadly around 1990s in many aspects of human life as they have thoroughly changed the way of communication and control. The scenario of "network nation" was described in the early 1990s and reasonably updated to a perception of a network globe. The computer-mediated communication (CMC, i.e. computer conferencing) was believed to change personal interaction, organization management, and social dynamics. (Hiltz & Turoff, 1994) And so it does. The establishment, expansion, and demise of network can be easily initiated by members with virtual identities in cyberspace on the technological basis. Information flow has experienced geometric growth along countless invisible ties all over the world. Computer-supported Social Networks (CSSNs) are not only fostering the information exchange, but also providing social support, companionship, and a sense of belonging to people involved in network of work and community. (Wellman et al., 1996) CMC breaks the constrains of spatial distance for face-to-face communication and guarantees constant interaction between participants. The constant interaction enhances the solidarity of collective identity among grassroot participants, which is an important resource in mobilization for social movement. [18]

The quality of IT infrastructure is also an important factor in moderating the relationship between virtual community and the level of community activities. Well-organized offline events are more necessary to stimulate the community when the quality of IT infrastructure is lower. (Koh, Kim, Butler, & Bock, 2007) The emergency of Social Network Sites (SNSs) results from the improvement of ICT and its infrastructure development. Early in 1957, some isolated disables built up a "social network" for remote communication through telephone network. In 1975, email discussing group emerged, which allowed the group members communicated via email. In 1989, the first Bulletin Board System (BBS) was established. In 1997, *Sixdegree*,

[18] However, the changes resulting from CMC technology vary depending on where it applies. In the organizations highly relying on mobilization of participatory resources, CMC plays a greater role than in the organizations that are mainly sustained with professional resources. In contrast, the mature organizations, such as WWF and Friends of Earth, do not need to mobilize individual members directly.(Diani, 2000)

as a prototype of present SNSs, came out with functions for users to create personal profiles and add friends to contact lists.(Ryan, 2010) Apparently the demand for communication in long distance exists all the time. SNSs, which can meet the demand perfectly, did not appear until the technology and the infrastructure of Internet have been improved. Aside the rapid improvement, the application of internet for commercial purpose that meets the demand of human interaction has also been developed from Web 1.0 (around the year of 2000) to Web 2.0 (around the year of 2005). O'Reilly[19] defines it as the second generation of Internet. The crucial principle of Web2.0 is "The web as platform", not only as application. (O'Reilly, 2005) What differentiate it from the first generation are user participation, openness, and network effects. (Musser & O'Reilly, 2006)

Following information portal websites, instant message service (IMS), BBS, and blog, SNS as the representative of Web 2.0 platform have been launched across the world and won billions of users. Different from CMC that networks strangers, SNS enables individual to sustain and articulate the pre-existing social network. User's profile (which contains information about the individual's status in real world) and their connection with other users are displayed publicly on the websites. For example, Facebook, one of the world's most popular SNSs, was primarily designed to network college students. Only those who have an email address with harvard.edu can join. (Boyd & Ellison, 2007) Additionally, users can post photos and videos recording their daily life, which, were not possible because of the constraint of the limited bandwidth. In a word, SNSs make users with online profile and disclosure closer to the real persons and more trustworthy to others. The research investigating different ethnics and communities has pointed out that collective action is yet to emerge if members are only bond by virtual ties. Offline meetings can complement the low social presence under computer-mediated environment. Without physical contact, strong ties are hardly sustained among members. The level of belonging to a real community, in vice versa, has positive correlation with the level of propensity of online interaction. (Matei & Ball-Rokeach, 2001; Koh, Kim, & Kim, 2003; Byrne, 2008)

SNSs fetch tremendous attention from multidisciplinary researchers because of its features: Participation, Openness, Conversation, Community, Connectedness. (Mayfield, 2008) Christian Fuchs (2014) focuses on what "social" means to social media (which is terminologically interchangeable with "SNSs"). Based on the theory of Hofkirchner, he argues that it means cognition, communication, and co-operation, which are three social information

[19] O'Reilly, as the founder of O'Reilly Media, has been a pioneer in developing and popularizing protocols and technologies of the Internet. He is famous for his advocating of open source and Web2.0.

processes forming sociality. As an example, Google was only a search engine that implemented cognition process in 1999. In 2007, it started operating email service, which implemented communication process. Three years later in 2010, g+, designed by Google as a social media platform competing with Facebook, has implemented co-operation process.

If the SNSs simultaneously connect people whose identities are valid in networks both online and offline, how will the interplay between the real and the virtual world evolve? Research in social and political science has been concentrating on the usage and the effect of SNSs and the afterward "social media". Roughly categorized, the research sets agenda mainly on three issues, inheriting from those during the short CMC period: individual engagement in community, management in organization, and participation in social/political movement. The core question in these empirical studies of SNSs is how the usage of SNSs effects, positively or negatively, on the issues. As proven in empirical studies, the effect depends on many variables, such as the personalities of users, the subgroups they belong to, the algorism and design of some certain SNSs, etc. (Correa, Hinsley, & Zúñiga, 2010; Zúñiga, Jung, & Valenzuela, 2012)

Research on social media has been steered to examine the relation with political change since the Arab Spring burst in Tunisia and Egypt in early 2011. Through analyzing data collected from typical social media in the Arab Spring, researchers (Howard & Duffy, 2011) summarize that a) social media played a central role in shaping political debates; b) a spike in revolutionary conversations often precede major events on the ground; c) social media helped spread democratic ideas across international borders. With the technologies people who share an interest in democracy learned to build extensive networks, create social capital, and organize political action. Moreover, they indicate that different social media, including Twitter, Facebook, YouTube, and Internet mobile phones, play different roles in those movements. Clay Shirky (2011) attributes the success of social movements organized through social media to the potentiality of social media, which lies mainly in being bolster of civil society and public sphere. Social media increase "shared awareness" (the ability of each member of a group to not only understand the situation at hand but also understand what everyone else does) by propagating messages through social networks. For political movements, shared awareness is one of the main forms of coordination.

On the one hand, studies have shown social media play a crucial role in political change with its potentiality of providing free-circulating information under less control than traditional mass media in authoritarian nations. The information is diffused from person to person, person to group, group to group, whether they are familiar or not. People who share the same interests get social support strongly enough through social network so that they trigger the

protest against the authority. On the other hand, the scholars who analyze the content producers' status under pressure have a much less optimistic view. Generally social media users could gain influence among only if they gain media literacy, depending on their status in real life. Those who are merely heard in real life have little chance to impact the public debates and public opinions. The organized media rather than ordinary individual users are more noticed and thus more influential on social media. Zeynep Tufekci and Christopher Wilson (2012) examine the relation between social media and political participation in Arab Spring, precisely the protest on Tahrir Square in Egypt. They find that protestors get information and communicate with other protestors through varied media use. Social media in Egypt mediated many kinds of ties and brought individuals news, information, and the social support needed to spur participation in political protest. Social networks, often mediated through the new online platforms in the emergent networked public sphere, played a crucial role. However, the communication centers in the process of organizing social movements are located in some active websites, which select, translate, and transmit news reports from oversea media, such as BBC, to individual users. Information from those centers was widely spread in the protest and influenced the issues and agenda in public debates.

To summarize, network society articulating with ICTs has been accelerated and consolidated around the world. Social media are the pivot coupling the real and the virtual, the public sphere, and the cyberspace. In the chorus about how technologies boost freedom and cooperation, we cannot ignore the powerful drums played by "controller" in the grand theme. The monopolies have access to citizens' private data. Governments have regulations to take these data for security reason whether it is domestic or international. Citizens, or netizens in this era, enjoy the convenience of technologies to the extent that they sacrifice their privacy. If they keep isolated from network expanding everywhere, they are deemed to be marginalized. Network not only connects individuals and groups, but also binds up citizens and Leviathan. Network governance in this sense is the latest attempt to regaining control over society with high complexity.

## 2.6 Theoretical Hypotheses of Network Governance

The theories have suggested that the shift from government to governance is highly relevant with the process of modernization. To give further explanation, theoretical hypotheses about the independent variables of governance mode are necessary. The theoretical model constructed in this section proposes a mechanism of the shift to network governance: it starts from increasing complexity, then the decision-makers within government either reduce the complexity by applying command governance or adapt to the new mode. The constrains to

apply command mode is the dependence on external world, the strength of social network in locality, and the power of government itself. The constrains, therefore, are the independent variables that have effect on network governance as the new mode.

### 2.6.1 Information and Communication in Governance

Governance mode is the core of this theoretical model. Information and communication play such a critical role in governance that the mode of governance is the result of how government tackles the problems of information and communication. Before making an argumentation, I will for the first step conceptualize governance from a perspective of information. [20] The second step is checking the cost of tackling communication problems in governance, which is inspired by the theory on transaction cost from new institutionalism. The difference between the costs of two options is determinant. Governance mode with lower cost and higher availability will prevail. The cost and availability depend on both enabling and constraining factors framed in the institutions.

Governance, in its most abstract sense, is what a living system does to steer itself to achieve certain goals. The basic schema of the system presumed in this thesis, consists of governing body, the branches it develops, and other sectors; outside the system there is the environment. The concept of “governance” mentioned primarily in political studies, here is defined as all the activities of the governing body with the purpose to steer and control the polity. For modern society, which is highly differentiated, the more precise definition is "all those activities of social, political, and administrative actors that can be seen as purposeful efforts to guide, steer, control or manage (sectors or facets of) societies", as Kooiman (1993: 2) puts it. [21] The body conducting governance in a polity could be one person, group, or organization, such as a charismas leader, a group of elites, commission, government, etc. In this thesis, I primarily focus on governance of modern society. Accordingly, "governing body" refers to national government, while “other parts” include its branches and other agents in the system, like private sectors, non-government organizations, and individual citizens.

[20] Cybernetic theory, information theory, and complex system theory in sequence provide inspirations in this term. They are at first the theories developed around 1950s in natural science on mathematic, automatic, and biological system. After decades, they have been gradually realized by social scientists as theories that to some extent has explanatory power in economic system and social system. These theories all stress the importance of information and contribute to give an explanation on the behavior of agents in system. Likewise, it is possible to scrutinize political system in which government is a key agent from a perspective of information.

[21] Governance, as a noun, is an abstraction of all the activities, while governing is to emphasize the dynamic process. It is where I disagree with Kooiman on the difference between governance and governing. By governing Kooiman means activities, but by governance he means the patterns emerging from governing activities.

Nonetheless, I will begin with some theoretical propositions about governing body in general sense.

For governance, one of the keys is information flow. [22] The flow contains information (such as idea, command, sacred text, precept, policy, etc.) from the governing body to other parts, feedback from other parts, and information input from environment as well. Governing body that wants to steer the polity as it desires has certain goals, for which it pursues the decrease of uncertainty from the standing point of itself. Information reduces uncertainty; therefore, governing body relies heavily on information flow.

Governing body has been tangled in between the problems of information communication and its efforts to solve these problems. There are problems on three levels to communicate information, which are technical problem, semantic problem, and effectiveness problem. (Shannon & Weaver, 1964: 4) The problem on the first level refers to a fact that information, either carried on physical medium as symbol or transmitted by electromagnetic wave as signal, inevitably dissipates when the distance between sender and receiver is greater than the transmission range of either time or space. Alongside the scaling of the whole system, the governing body develops inferior branches on multilevel to add intermediate nodes within the process of communication. The intermediate nodes, dividing the long distance into several shorter ones, supposedly function to offset the dissipation of information. There go local governments, for example, in a state governed by a central government. But political system is not machine. The information received by these nodes are re-sent after being decoded and recoded, which means the original information is distorted. This is the semantic problem on second level: the meaning expressed through message is hardly comprehended in a desirable way. The receiver thus hardly initiates the motion in the way the information sender desires, which leads to the effectiveness problem on the third level.

During the long period of governance in history, the conveyance of information was impeded by various factors, primely the deficiency of communication technology in large space and intentionally imposed distortion. As a result, clearly, most polities that occupied continental territory were not able to sustain itself for long and thus were divided into smaller ones. To govern desirably, governing body has spared no effort in smoothening information conveyance in three ways when it is capable to motivate surplus resources beyond the basic provision for its own survival. Firstly, extending roads, paving communication channel with advanced technology, and developing branches as intermediate nodes to solve the technical problem. Secondly, standardizing language, popularizing education, and achieving common

[22] Of course, processing, possessing, and distributing information is also critical, but it is not the focus of this thesis.

consent to solve the semantic problem. Thirdly, centralizing authority to solve the effectiveness problem. The central government highly centralizes its authority to the utmost to minimize the dismissing or the distortion from the subordinates. However, the inferior branches which supposedly function to solve the technical problems meanwhile raise the effectiveness problem. The more branches are there, the more uncertain is their accordance. As shown in history of vast empires, this inherent paradox causes tension between the central and the local. For example, there is a tradeoff between the effective governance on local level and the unitized rule on national level in China because of the large scale of governance. The effective governance on local level empowers the local government and weakens the unitized rule of the national government; the unitized rule of the national government oppressively or slightly overrides the space of local governance vice versa.(Zhou, 2017)

It is not only the problems of communication, but also the essential property of complex system that perplexes governing body as an increasing challenge. Although the importance of information flow in control system of machine is stressed in cybernetics[23], apparently, political system is much more complex than a mechanical system. Compared with cybernetics, complex system theory has more powerful implications on political system. Polity should be considered as a complex adaptive system (CAS). [24] When there is higher complexity, there is higher uncertainty that makes information more demanded by the governing body. Furthermore, polities that never exist in a vacuum are the agents in a macro-CAS. For example, states are agents in global system. With more agents and further interactions, the global system is even more complex. This is true especially when it comes to international relationships and public issues arising with globalization. Governance in the states that get involved in the globalization unavoidably causes unpredictable results due to this essential property of complex system. It is an increasing challenge facing governing body all the time.

### 2.6.2 Reduce Cost of Information Collection

Information collection meeting high requirements in a large range is extremely consuming, in regards with both money and time. Information collected is required to be completed, undistorted, and un-delayed, elsewise it loses use value that government needs. The higher requirements on information, the more cost for collection. Also, the cost to collect feedback

[23] “Governance” is "cybernetics" in automat and mechanical system because “cybernetics” stems from Greek word *kybernetes* (“steersman”, metaphorically meaning “governor”) which was borrowed by the mathematician Norbert Wiener in his book *Cybernetics*.

[24] CASs are composed by agents, which learn or adapt in response to interactions with other agents. To say it simply, "the whole is more than the sum of the parts".(Holland, 2014: 9)

will increase if the complexity of society increases. Not every government is willing to pay or is capable to afford such price. Government must adjust the mode of governance to minimize the cost while remaining stable and sustainable without disrupts in political system.

Logically there are two options to minimize the cost of feedback collection: reducing complexity and improving the efficiency of feedback collection. The first option is to lessen the need of information, which means to lower the complexity of system by reducing numbers of agents and interactions between them. In a stagnant and isolated system, the probabilities of events could shrink to even minimum one and thus all the results turn much more predictable. This brings lower information entropy, thus less information is needed.(Shannon & Weaver, 1964) The second option is to improve the efficiency, which means the cost is relatively reduced.

Let us examine what the governing body can do if it chooses the first option. There are two methods.

1. curtail the input from the external world, including but not limited to material resources, cultural products, immigrants, labor, etc. On the one hand, less inputs mean less factors that may affect the results of governance. On the other hand, the system does not need to maintain numerous sensors for feedforward at a high cost.
2. simplify the internal structure. For example, reduce the levels of branches. Or, cut down the horizontal links between different sectors and only keep the top-bottom verticals. In the extreme case, government eliminates other sectors, functions as a substitute of them and becomes omnipotent government.

It is reasonable to propose that the first method is impractical in today's world because most states get involved in globalization, whether positively or passively. Interdependence keeps growing in international relations with the ongoing globalization. If a state depends heavily on the input from external world, it is uncapable to suffer the loss of cutting the input down. As for the second method, it is also impractical in the modern states because the links between different sectors are persistent and vigorous. Modern citizens have for long inhabited in a state where they have social links with acquaintances as friends and colleagues, partners in companies on market, or strangers in public institutes who are endorsed by the abstract system and expert system in Giddens's sense.(Giddens, 1991) In addition, it is hard to imagine that the government in a conservative, institutionalized, and long-standing state forcefully turns the ownership of the private sector into the public because the cost to change the fundamental constitution is much higher. Yet, it is somehow achievable in a semi-modernized

state where the institutions are more plastic, the links between different sectors are weak, or the government is much more dominant with power over others.

Next, let us examine the second option. Unlike the first option, this one is much palatable for those states of which governments are not capable to change the constitution easily. To improve the efficiency, there are also two methods.

1. establish self-generation mechanism of feedback.
2. take advantages of technical innovations.

These two methods sound more plausible, but what is noteworthy, they require long-term effort and do not necessarily mean low cost.

Self-generation mechanism, in which "self-generation" means it is generated spontaneously without either carrots or sticks from government, can be driven by the will of citizens to exercise their political rights. Added a normative dimension and an institutional dimension, the self-generation mechanism is what we call “democracy”, including representative democracy, deliberative democracy, participatory democracy and so on. For example, vote is a self-generation mechanism of feedback. With strong will to exercise political rights, citizens actively vote for proposals in the framework of direct democracy, or representatives who promise to bring what they want in the framework of representative democracy. Once the proposals are voted against by majority, or those elected fail to fulfill the promise and lose their positions in next election, government can collect information about the public choices of citizens and the failure of previous governance. The will to exercise political right is a bonanza for studies in multiple disciplines and the very subject in political philosophy beyond what this thesis can cover. No matter what determines the will of citizens, however, the will is not imposed enforcedly by anyone else. While it is free in economic sense for whom make use of it, it is also uncontrollable in political sense. From a historical perspective, this mechanism had been a severe threat to the pre-existing governance because it has unleashed uncontrollable force of the mass. Only a few states have established it with a top-to-bottom approach alleviating the pain of blood and tears. Since the complexity of society boomed from the big bang of modernization, its value to governance has been gradually recognized. Today, it still works in most democratic states as a mainstream mechanism of feedback generation, although recently critics rise.[25]

[25] For example, the distrust and dissatisfaction from citizens towards government and current electorate procedure is increasing in advanced industrial democracies. They probably tend to directly participate in politics instead of being represented. (Dalton, 2004: 15) Direct participation has at least one advantage over representative democracy of reducing the distortion of feedback from citizens to governing body.

The other method is to take advantages of technical innovations. Technologies, especially ICTs that create new medium of message and builds new channel of communication, bring tremendous benefits. The content and the dissemination of messages are respectively reflecting the opinion and the behavior of people who are nowadays immersed in cyberspace. Messages carried on media and sent via communication channels can be automatically recorded, collected, and analyzed by certain technologies. The access to the massive data of these messages means significant advances in feedback collection and further decision making. In economic sense, the marginal cost of the collection of each incremental piece of feedback decreases if the sum of collected feedback increases in a large scale. Undoubtedly, technology can reduce the cost of feedback collection because it enlarges the scale of feedback collection.

However, technology is expensive. Meanwhile, it is highly constrained by technical and political factors. Firstly, the technical innovation would have failed if there were no support from government that can motivate immense resources during war. In fact, most advanced technologies today originated from the Second World War and the afterward Cold War serving military purpose.[26] Secondly, the spread of technologies would be a castle built on sand if there were no nationwide infrastructure that becomes applicable solely under long-term construction. There is obviously a prudent tradeoff between the cost of information collection with old technologies and the cost of upgrade into new ones. Thirdly, the limitations of the current technology constrain the automatization of information collection. Not until recent days when social media, big data, and the cloud computing technology can collect and transmit the data recording the opinion and the behavior of users does information collection become automatized. Fourthly, government must take charge of message medium and communication channel, partially or entirely, to collect information. That is why nowadays some governments are keen to foster e-government by setting their own websites and social media accounts. Furthermore, the legislation makes it become an obligation of the companies which possess massive data of internet users to share the information with government, if necessary (for example, in the United States). To take charge, it requires a powerful government.

[26] For example, the technology of electronic digital programable computer had been used by the British to break the code of encrypted German military communication during the Second World War. The development of communication satellite technology has benefited from the arms race between the United States and the Soviet Union during the Cold War.

To sum up, there are two options to reduce the cost of information collection for governance. The first one is to reduce complexity; the second one is to improve efficiency. The eligibilities of these options depend on the enabling and the constraining factors. The factors, both external and internal, include the external dependence, the strength of social network, and the power of the government.

### 2.6.3 Command Governance and Network Governance

The modes of governance can be defined by the ways in which feedback is collected with the minimum cost. It is not a binary, either reducing the complexity or improving the efficiency; sometimes there is also a hybrid of these two. There are two ideal types of governance mode. One is command governance, and the other is network governance. If a government manages to reduce complexity, command governance that requires least feedback is the most appropriate mode. If a government fails to reduce complexity, it must rely on information exchange or technical development to improve efficiency and reduce the cost. The increasing need of information exchange generates the worldwide network based on the development of ICTs; the worldwide network bolsters the worldwide information exchange vice versa. Governance mode, hence, is the result from the interplay between the intention of agent (i.e., government) and the constraints of system on selecting these two options.

Command governance, somehow compatible to “command economy”, refers to the mode in which government send commands from top to bottom with little feedback needed. Network governance, by contrast, refers to a mode of governance that collects feedback through mutual information exchange. Under certain circumstances, the governing body opts to cut down external or horizontal interactions to lower complexity. Rational calculation, which was believed being the most “scientific” method to steer human society, does turn simple and accurate in the stimulation of a stagnant and isolated world with unchanging input parameters. According to the calculation, the governing body issues direct commands in steering the economy, as well as the society. It is defined as "command governance". Under other circumstances, governing body opts to facilitate information exchange. It is defined as "network governance" according to the principle of high efficiency of information conveyance in governance. Its high efficiency is the result of the advantages of network, which have been summarized in the last section. What is noteworthy, it is not a dichotomy of governance modes. Rather, these two modes are two extremes of a continuum in terms of information exchange.

Under what circumstances government select one mode instead of the other? While reducing complexity is ineligible, improving efficiency becomes the alternative. Command governance

with reduced complexity is possible only if the dependence on external world is low, network is not coherently embraced by the locality, and the power of government is strong. Otherwise, the high dependence on external world, the robust social network, and the weak power of government constrains command governance and lead to the shift to network governance. In other word, network governance will be more developed where command governance is less available. Hence, **the basic hypothesis of this thesis is: governance mode depends on three factors, including the external dependence, the strength of social network, and the power of government.**

Hypothesis 1: Where the external dependence is higher, network governance is more developed.

Hypothesis 2: Where the social network is stronger, network governance is more developed.

Hypothesis 3: Where the power of government is weaker, network governance is more developed.

Here, to summarize roughly, are five theoretical propositions about governance.

1. Governance refers to all the activities by the governing body with purpose to steer, manage, and control the polity.
2. Information flow is crucial for governance, consisting of information from governing body to others and feedback from others to governing body. There are problems on three levels in communication process of information. Governing body invests resources into solving these three problems and driving information flow.
3. Governing body is more capable on sending information, rather than requesting feedback from its branches and other sectors. It rationally tends to reduce the cost of collecting information that becomes higher when the system becomes more complex.
4. The way of dealing with the cost of information collection, which is a central issue for government, differentiates governance modes. There is a continuum of governance modes, from command governance to network governance. Command governance is the mode with least feedback needed, while network governance is the mode that improves efficiency of collecting feedback.
5. Governance mode, hence, is the result from the interplay between the intention of agent and the enabling and the constraining factors of system on selecting these two options. The external dependence, the strength of social network, and the power that government has over others, decide which mode of governance the government orients to.

The theory of governance based on theories of cybernetics and communication, plus the transaction cost theory from new institutionalism, provides a new perspective to explain governance modes and the shift between different modes. It should be noted here that

> Cybernetics envisages a set of possibilities much wider than the actual, and then asks why the particular case should conform to its usual particular restriction. (Ashby, 1957: 3)

In other word by Gregory Bateson(1967), the agent in a system, such as a letter in a word and a word in a sentence, is to be negatively explained by an analysis of restraints. However, this argument is somehow reductionist when it comes to human society instead of ecosystem or linguistic system. The formation and the shift of governance modes are certainly not only decided by the constraints. It is necessary to take the agency of agents in the system into consideration with an agency-structure approach. The tendency to which mode of governance should be explained by the interplay between the agency and the enabling/constraining aspects of structure in Giddens's sense (Giddens, 1984: 83). In the next chapter I will analyze how this interplay is working in the specific case of China, as the brief of the revolution and reform throughout the latest one hundred years.

Nonetheless, this chapter aims to outline the general constraints on selecting governance modes, including the dependence on external world, the strength of social network, and the power of government. Therefore, the enabling and the constraining factors themselves are not conceptualized normatively. The discussion about the selection is neither to judge good/bad governance, nor to correspond to the dualism between democracy and authoritarianism. There are no fixed couples of governance mode and political system. One of contributions that this thesis is supposed to make is to distinguish governance mode from political system. Whereas norms, values, ideologies, classes, strata, etc., all can be explanatory to the formation and the shift of certain political system, complexity as well as its inherent need of information is the first concern while studying governance mode.

# Chapter Three:
# China's Network Governance

This chapter aims to define network governance in China's style. Network governance is inherently a positive adaptation to a society with increasing complexity, as discussed in the last chapter. It is commonly recognized that China has experienced a thorough transformation since its "Reform and Open-up" at the end of 1970s. The transformation of governance mode is also a part of the grand transformation. It has been pillared by two systems: Residents' Committee and e-government. The most important institutional enabling factors of network governance mode include the provinces' autonomy of some degree granted in the reform, the legacy from the Mao's era (referring to the Residents' Committee system), and the enforcement power of central authority to set policy goal for provinces (e.g., improving governance capability through network governance). Meanwhile, the development of network governance is constrained by three factors including external dependence, strength of social network, and power of local government. These three factors constitute the explanatory factors of the development of network governance on provincial level.

Some puzzles about China's reform have attracted the attention from political scholars. One of the biggest puzzles is how China as one-party state remains united while the intension between an authoritarian center and more than thirty diverse provinces is unavoidable. The success of China's reform shows that a process of decentralization has been handled delicately. The power relationship between the central and the provincial has been re-arranged by the fiscal reform undertaken to keep coordinated with the economic reform. The economic reform has been transferring the economy from the centrally planned to the market. The prerequisites to develop market economy differ on provincial level after the commands from the central authority to the provinces were unraveled; hence, the provincial government won more independence of decision-making on fiscal revenue and expenditure to encourage private sector. In this sense, the reform essentially remarks a gradual process that admits the incapability to remain the old economic system, acknowledges the existence of diversity, and recovers the right of provincial governments (as well as individuals in private domain) being diverse.

The unbound actors together construct a picture of pluralization. It brings up an ordeal to the newly modernized government system of the one-party state. Like the governments of other states facing the challenges from increasing complexity, China's government also has to make change. The shift to network governance is officially adopted by the highest decisionmaker group because command governance has been proved unsustainable. The purpose of the shift is to mitigate the heavy burden on local government of collecting and processing infinite information. The central authority inherits and further reforms the Residents' Committee

system to completement grassroot administrative agency. Additionally, it takes advantages of the technological innovation of ICTs to digitalize the local government. In one word, it exploits the value of network in the physical world and in the cyberspace as well. The reformed RC system and recently developed e-government system both serve to the purpose of improving the efficiency of collecting and processing information. Besides, they have encouraged the participation of residents in governance, thus increase the transparency and accountability of local government.

The campaign of developing network governance initiated by the central authority in nationwide achieves different progresses on provincial level. Given the “tradition” of China’s reform, it is not surprising that the development of network governance varies in different provinces. By making comparisons between provinces, the theoretical hypotheses developed in Chapter Two can be tested. The next chapter will elaborate the legitimacy of methodology and the operationalization of all relevant variables.

## 3.1 The Institutional Context of Governance Mode Shift

The history of Chinese Revolution and "Reform and Open-up" could be interpreted from a perspective of the dynamics between information and complexity in modernization. Without the interpretation on China's revolution and reform, it is hard to understand the institutional context in which the shift of China's governance mode embeds. Overall, the path started from a point of lowering complexity but ultimately turned to an end of meeting the increasing demand of information. In the word of this thesis, it is a shift from command governance to network governance in terms of governance mode. The Chinese communist experiment was supposed to lower the complexity by restructuring the society. As part of the worldwide wave of communism, the trail of communist regime was the alternative of capitalist democratization. The general strategies applied during the experiment step by step included demolishing the previous collectivities from which individual was detached, simplifying the relationship between resident and state to that between employee and syndicate, and installing "employees" and resources into rigid departments under centrally planned economy. After its failure, the Reform and Open-up becomes information-oriented to tackle the increasing complexity. The main institutional changes simultaneously progressed in three ways: the decentralization of central authority, the demarcation between state and society, and the release of individuals out of their ever-unchangeable socioeconomic status. A pragmatic strategy was created at the early stage of reform: "hooking". "Hooking" has been created as an expedient measure in a vacuum of formal institution of demarcation between state and society. It hooks the legitimacy of private sector on the undisputed legitimacy of public sector without violating the stiff dogmas of communism. With this measure, government obtains the information on private sector through the cooperation of "hooking". However, it has been institutionalized in the process of reform. As a result, the obscured demarcation between state and society, and the direct interpellation from state to individual, shapes the landscape of China's network governance. In this institutional context, the one-party state takes advantages of the legacy from Mao's era and also technological innovation of information age to develop China's network governance.

### 3.1.1 Chinese Revolution (1911-1979)

Chinese revolution (not the narrow concept of Chinese Revolution in 1911), from a scholarly view, has been recognized as social revolution. Unlike any other unrests in previous structure, social revolution leads a thorough transformation in both political structure and social structure "in a mutually reinforcing fashion". (Skocpol, 1979: 5) The most noteworthy mark is a regression of individual liberation. The first time of individual liberation is the impulse of the

revolution in 1911. It is benefited from this revolution that individual has been liberated from old collectivity (blood-based clan following the mandate from authority in the sense of morality and power). The second time is the impulse of the reform in 1979. Individual which had been compressed in the communist collectivity (work unit following the mandate from authority in the sense of communist ideology) seeks liberation for personal freedom and well-being. The deviation from this progression is the endeavor of communist movement.

The critical outbreak at the beginning is the "liberation of individual" as revolutionary ideology in the New Culture Movement (1915-1923), and its inheritor, the May Fourth Movement (1919) after which the "liberation of individual" had been put into practice. "Individual" without doubt at that moment had been an invented concept by the intellectuals and also the translators who eagerly translated the works from the West (some in Japanese version) to save the country from the crisis of being colonized. There was a same situation with the concept of "liberation". "Liberation of individual" refers to a remedy proposed by some intellectuals that the people, especially the youth who had access to modern[27] education and publication, should be liberated from the traditional ideology which endorsed blood-based clan, patriarchy, and imperial monarchy.[28] It was called "liberation" because the traditional ideology, which was considered rooting in the history, the culture, and thus the essential nationality, was attributed to China's impediment in transforming to a modern state. It is asserted that only if individual abandons the traditional ideology and becomes westernized, the nation (another newly invented concept) would be saved. Accordingly, the embedment of individual in family, patriarchal clan, and previous social network should be destructed. However, this was just the overture for a grand theme. It is liberation in the sense of the asserted legitimacy of modernization; rather, it is detachment. Individual has been detached

[27] In the modernist narrative, "modernization" is interchangeable with "westernization". As well known, this narrative has been criticized for so long. However, it was true in the cognition of the Chinese people at that moment. It has been a cognitive conjuncture of time and space: the Westerners intrude into the Middle Kingdom of China in spatial thinking (though they landed along the southeastern coastline) because the modernity surpasses the tradition in the linear thinking of progressivism and historical determinism.

[28] A broadened Confucianism provides a systematic ideology for a three-level structure of social organization in traditional China. On the top level, it supports the legitimacy for imperial monarchy with a belief of Dao from Heaven (Chinese: 天道; pinyin: tiandao). On the middle level, it empowers the elites of culture and ethic to take the role of cooperating with local government and guiding the grand rural society in taxation, administration, social relief, and education. On the bottom level, it normalizes blood-based clan with ethical order. The institution of traditional China is the result of the institutionalization of a systematic Confucianism ideology. The integration of the ideology and the three-level structure of social organization has enhanced the traditional China as a ultrastable and enclosed society in a long term. See Jin & Liu (2011).

from the old collectivities only for the preparation of merging into the new ones. Individual that has been atomized through this "liberation" is not the purpose but the instrument for a social revolution under the name of either class or nation.

Communism, as one of the ideologies introduced from the West (in fact it was translated from or through Russian and Japanese), inspired the youth who intended to raise up a revolution. They, armed with the convincing success of Russian revolution, attempted to grab the very opportunity to fuse the atomized individual into one class, the Proletarian. China Communist Party (CCP) was secretly founded in 1921, only two years after the May Fourth Movement, by several young intellectuals. Their cause was undoubtfully an arduous one, because the traditional institutions were much more formidable than they expected. Most of the population in China were still living within patriarchal clan and working for the landlords in rural areas. Emperor was no longer ruling after 1911, but apparently this fact did not immediately crumble the ideological identity[29] and the life world of the Chinese. The uprisings organized by the Party constantly failed because the mobilization under the flag of the Proletarian was weak among the rare industrial workers in underdeveloped industry. The most insightful ones (Mao Zedong and those standing by him) in the Party thus prioritized social revolution over political revolution, in stark contrast to the Nationalist Party, which had been the ruling party since the monarchy was overthrown.[30] Furthermore, they had gradually realized that it was the cause of a nation rather than a class since the Sino-Japanese War broke out as part of the Second World War. The association of the Communist Party and the Nationalist Party was fighting against Japanese invaders until the Imperial Rescript on the Termination of the Greater East Asia War was announced by Japanese Emperor Hirohito in 1945.

Political revolution has been ended by 1949 since the Communist Party and its army won the Civil War with the Nationalist Party, but social revolution continued. The following Cultural Revolution was the response of Mao to the outbreak of governance crisis raised by the increasing complexity. In the first decade of state-building under the communist regime, publicization of the means of production, centrally planned economy, and totalitarian

[29] Ideological identity refers that the members of a society identify with a systematic ideology and take it as the belief, the norm, and the guideline of behavior and action. Here the ideological identity is the identity with Confucianism ideology. Also see Jin & Liu (2011).

[30] There had been a period of more than 10 years during which the Nationalist Party and the regional warlords staged political struggles and military conflicts for the rule over the whole country after the Nationalist Party led the Xinhai Revolution overthrowing the monarchy in 1911. The Nationalist Party hardly championed its position as the ruling party by the end of 1920s.

government were established step by step in imitation following the Russian Soviet Republic. Workers in urban areas and farmers in rural areas were clustered into collectivities like state-owned factories and people's communes (Chinese: 人民公社; pinyin: renmin gongshe) respectively. Social structure had been reconstructed as people simultaneously worked as employees for the "state syndicate" and lived on the products distributed by it. Social networks had been cut up not only because there were neither free market nor civil society (which were never prosperous before) but also because there was no patriarchal clan anymore.

Social revolution, as the Party had planned since 1920s, was seemingly successful. However, Mao Zedong, who had become the most admirable icon in the eyes of the mass but not as that powerful as he looked among the top leaders, was still upset by the opposite factions, political subgroups, autonomous associations, and the bureaucratic system. They represented the disorder in a unified entity, that is, one Trinity of party-state-society with pure faith in his Utopian envision.[31] Initiating the Cultural Revolution was the action following not only his ambition that reconstructs political structure, social structure, and the mind of the Chinese people, but also his frustration on the inefficient and corruptive bureaucracy. He, as a charismas leader and savior in his personal cult, spoke publicly and directly to the individuals[32] on the Tiananmen Rostrum and through the national broadcasting system that even reached the remote villages.[33] Furthermore, he mobilized the army instead of the bureaucratic system to govern the whole state in a harsh and more authoritarian manner while the bureaucratic system was paralyzed during the Cultural Revolution as he wished in the first place.

The characteristics of Maoism summarized below (Nathan, 1999a) in all indicate stagnation, isolation, and homogenization as necessaries for a centrally planned economy. Firstly, China

[31] It is not only Mao's personal envision, but also one of the necessaries for a ultrastable and enclosed system. Like the integration of ideological identity with Confucianism and social organization in the traditional China, communism of Mao's version must penetrate in social organization at all levels and function as stabilizer. Mao's version is not necessary to be orthodox communism. Personally, he was always a skeptic on classic Marxism, Leninism, and Stalinism. Besides, he was a nationalist who kept high alert and rivalry against USSR's hegemony. Historically, China had been an agricultural empire for thousand years. The orthodox communism rather provides more directions to the capitalist countries with developed industry.

[32] The individuals were primarily the youth as Red Guardians. Red Guardians were the students from middle schools, colleges, and universities whose purpose was guarding Mao and enforcing Maoist ideology. They were well organized with special uniform and mottos, even equipped with arms for combat.

[33] CCP proposed to develop rural broadcast network in 1955 on the Sixth Plenary Session of the Seventh Central Committee. Before Cultural Revolution started in 1966, the number of broadcast stations increased to 2001, and the number of loudspeakers reached 8.48 million. (Zhang, 2019)

had not yet established normal diplomatic relations with most Western states because of the iron curtain in between. On the one hand, China had no choice but became self-reliant; on the other hand, the central planning board would find the economic calculation much easier without external input parameter. Secondly and consequently, the heavy self-reliance on the limited domestic resource, investment, technologies, and labor impeded the industrialization. Thirdly and further consequently, the de facto rural-urban segregation paved the way of maximization of the forceful exploit on rural areas for its costless primary products to support industrialization. In order to avoid the rural labors escaping from their obligation, residence management system (Chinese: 户口; pinyin: hukou) became necessary. It was constructed with the same purpose of work unit system (Chinese: 单位; pinyin: danwei) and class status system (Chinese: 阶级出身; pinyin: jieji chushen) to control the mobility of population. Recording the information of residence, class status, and work unit, the profile of individuals that had been generated since their birth was kept for life-long time in the hands of official agencies. Individuals themselves have no right to modify the profile. It means that their fate had been decided by the recorded information that brought adversity or privilege. On the one hand, the residents in urban areas generally enjoyed better housing condition, education, and health care; on the other hand, welfare and opportunity were unequally distributed among the residents according to their class status.[34] Last but not the least, all these systems were justified ideologically. Without the legitimacy affirmed by ideological mobilization, it would have been impossible to maintain the relative stability. In all, both the geographic and the socioeconomic mobility were stagnant, the whole state was isolated from the rest of the world (except the Socialist bloc), and the individual was homogenized as an easily controllable atom in a compound.

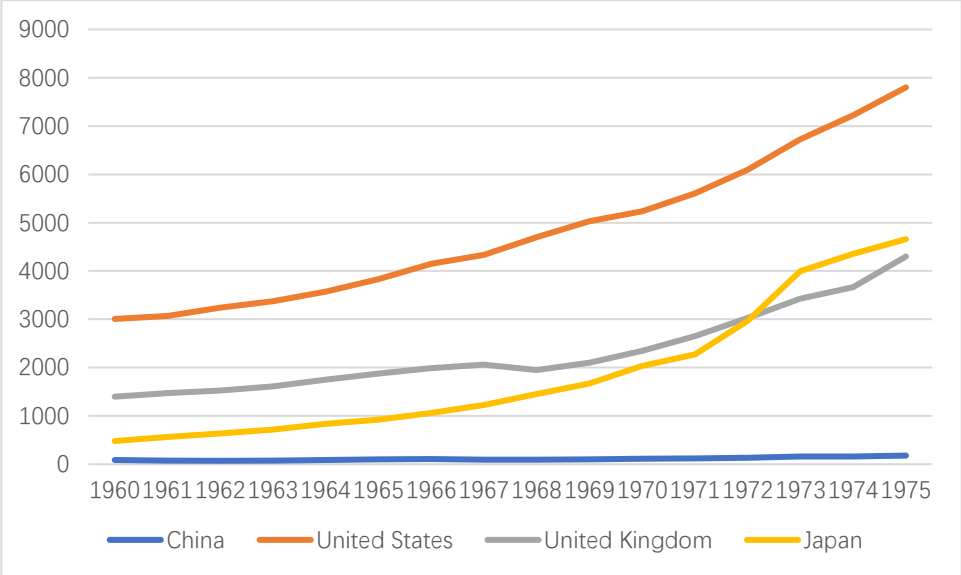
Mao failed. His failure interconnected with the failure of the communist experiment. Or to be more accurate, the failure of one of the remedies supposed to save China out of its dilemma in modernization. It was Mao's personal fantasy that billions of people simply and purely share one mind, as he experienced among only thousands of people at Yan'an, Shaanxi from 1942 to 1945 through the Rectification Movement[35]. However, stagnation, isolation, and

[34] For example, the class status of being "bourgeois" was a sort of ill omen for those whose parents once ran business before 1949, whether large or small. In fact, they themselves hardly held private property but they were stamped as "bourgeois" in their profile. They had suffered from restrains in education and employment, as well as contempt (even physical abuse) from others whose status were "peasant" or "worker".

[35] The Rectification Movement initiated by Mao was a Great Purge of Chinese version. Mao consolidated his highest authority and centralized power in both the CCP organization and the Chinese Red Amy through a harsh repression

homogenization had been for long necessaries for the Utopian envision throughout the exploration for an alternative to capitalism. Capitalism, which was believed bringing up colonialism, world wars, ecological disaster, enlarging gap between the rich and the poor, and existential anxiety, made the Utopian envision rather attractive. Mao's version was the one flourished to an extreme extent by his personality. After Mao's death in 1976, the Party indeed fell into a crisis of legitimacy. The Cultural Revolution, the social revolution, and the preceded political revolution, have all been questioned on their legitimacy by the people who were experiencing worsened living standard in contrast to what the Party had promised to bring.

*Figure 1 Comparison between China, United States, United Kingdom, and Japan on GDP per capita (current US$), 1960-1975*




*Source: World Bank*

### 3.1.2 Reform (in 1980s)

The impulse of reform in 1979, as mentioned, is that individual seeks personal freedom and well-being. During the whole 1980s, this impulse constantly hit the wall of communist institution. The highest authority has been decentralized, the locality has avoided being suffocated by the unified command from the central, and the individual has been released from the previously unchangeable socio-economic status. However, the extreme party of revolution and the extreme party of conservation was neither the winner in the zero-sum

on his opponents, political dissenters, and some senior officials who had loyalty towards Stalin and USSR. The movement transformed the Party to a completed subordination to Mao. Mao gained absolute power in the Party organization and insurmountable supremeness in interpreting Communist ideology after this movement. More importantly, it deeply influences the political atmosphere not only inside the Party, but also in the whole China. It restructured the Party organization, bequeathed the instruments of repression, and spread the terror of intrigue against each other. (Gao, 2000)

game. The event in 1989 ended the gaming between these two parties and started the reform on the next stage.

The fact that "China was being left farther and farther behind on the world stage economically and technologically" was the imperative for reform. (Mantzopoulos & Shen, 2011d: 20) The Party under Deng's leadership that pragmatically transfers its emphasis from class struggle onto economic recovery have made some trials since the end of the Cultural Revolution. It means that the rigid arrangement about individual in human-made collectivity will be ultimately surrendered to the allocation by a market. First and foremost, Deng led the decision-making of the resumption of college entrance examination in 1977. It released the vigor of those who had been repressed because of their ever-unchangeable adverse class status. It is a milestone of the reform that derestricts the mobility in both geography and socioeconomic status. Another decision in the same year for soliciting knowledge and expertise among intellectuals was the reconstruction of Chinese Academy of Social Science (CASS) as one of the most important think tanks. Once summoned, the professionals in economics were soon assigned to design the blueprint of economic reform because the most urgent problem to solve was the centrally planned economy on the edge. However, the blueprint design in which a broad range of professionals from the former deputy of national statistics bureau to the graduate students from the Graduate School of CASS participated had been controversial from the beginning.(Liu, 2010) Centrally planned economy was the core of communist system; therefore, it was also the core of the communist dogmas. Devaluating or even abolishing centrally planned economy was considered as humiliating the Communist Party. The Party thus vacillated among the options from the most conservative one of remaining centrally planned economy to the most radical one of replacing it completely with market economy.

The cracks firstly appeared in the peripheral part of the rigid system, which is, rural areas. While the debates on paper in Capital Beijing were awaiting decision from the authority, several peasants in Anhui Province secretly took a step towards privatization through granting themselves the lease of collective-owned land. In 1978, privatization was not only taboo in terms of communist ideology, but also illegal activity that faced harsh punishment. However, it was eventually permitted with the tacit approval throughout the hierarchy of government. Just like the Communist Party set its base in rural areas for the social revolution from 1930s to 1940s, the prudent move to reform the economic system was taken in rural areas again. The demise of communes in rural area brought up the prosperity of village industry and a new redistribution system among different sectors; meanwhile, it retained the political authority

of the party-state that transferred from local party cadres to local governments without a factual demise.(Oi, 1990; White, 1990)

In a few years, the trials were expanded to suburban areas, especially those where had advantages in transport infrastructure along inland waterway and coastline. The study by Zhang and Li (1990) shows that Wenzhou in Zhejiang Province is a good example witnessing the emergence of market economy. Firstly, the trial of privatization that allows the operation of family workshop and small business was fruitful for the purpose of economic growth. The gross output of primary sector and secondary sector in Wenzhou, as well as the fiscal revenue of the local government, quadrupled during the period from 1977 to 1985. Secondly, the trial was officially recognized and approved. "Wenzhou Model" was reported by the official media *Liberation Daily* (Chinese: 解放日报; pinyin: jiefang ribao) in 1985. More importantly, establishing an experimental zone in Wenzhou was proposed in the next year by the top leaders in Beijing. Thirdly, investigations like the one led by Zhang and Li were encouraged to explore the key of "Wenzhou Model" which was supposed to apply in a broader range. Their field study evidences that social network is the key to the blooming market in its rural area, including money market and labor market. Social network not only endorsed the credit between relatives, fellows, and acquaintances, but also connected employers with potential employees. According to their survey, 90% employees were introduced and recommended by relatives and friends. Last and perhaps most importantly, the clarification of the ideological dispute on "public versus private" was drawn. Property right as legal right is not equal to ownership as the summation of production relations in the tenets of Marxism. It means that private property does not contradict the public ownership of means of production because they are not paralleling concepts. It sounds bizarre, but still significantly marks that the rule of law is given more weights on the balance of ideology.

"Hooking" method is worth noting when it comes to the institutionalization of the boundary demarcation between public and private, as well as state and market. It is not anything else but the rule of law that sustains private property rights, free competition, and market economy. However, property right and private business in Wenzhou, like elsewhere in national wide, were just to emerge without a developed legal system by the end of 1970s. The local government creatively found a solution to legalize the private sector. (Zhou, 1997: 101) Private company, which was yet to be legally acknowledged as legal person, was allowed "hooked" (Chinese: 挂户; pinyin: guahu) on a state-owned enterprise. The company, once hooked after achieving mutual consent, can use the title, official letterhead, bank account, and receipt of the state-owned enterprise at a cost. It is a triple-win: the private was framed

into the legitimate institutions, the state-owned got extra profit, and the local government collected more tax.

This "hooking" method not only worked in Wenzhou, but also has been put into use throughout the marketization in national wide.[36] Apparently, it was a temporary expedient in a transitional period when the ideological disputes were intensive and the boundary between private and public was unclear. However, it has become a formal measure to remain the unclear boundary between state and society for the expansion of state control.

The final decision from the central authority was being suspended because of the continuous debates while the reform in village, countryside, and suburban area triumphed. The large state-owned enterprises under the control of the central government, unlike those in smaller scale on local level, were the columns of the whole system of centrally planned economy. They were too important to be taken into an experiment at a high risk. Under this caution, the interlocking obstacles of economic reform were the government's control of the prices of major goods and the government's interference in the management of enterprises. (Nathan, 1991: 102) The private sector, of which the existence was newly acknowledged at the Seventh National Congress in 1988, has brought up price mechanism in commodity market, while the prices of industrial raw materials were under the determination of some specific government departments. This double-track system of price raised two severe problems: one was the inflation that subsided the living standard of urban residents because of the rising good price, the other was the corruption because of the rent seeking upon the price gap between the market and the official.[37] At the moment, there were two proposals by economists to solve these problems. The one was price reform by Wu Jinglian, the other was enterprise reform by Li Yining. The former aimed to narrow the gap between the market and the official, and finally abolish the double-track system. The latter aimed to push the state-owned enterprises under administrative management and official protection into a real market environment through "stockification" (turning enterprise assets into stocks). Not unexpectedly, Wu's proposal of

[36] For the private company, the method was ended because the company law that legally acknowledges the rights of legal person enacted in 1992. But for other private entities, it has been polished and formalized in different administrative regulations instead of laws. For example, only the non-government organizations hooked on official agencies (e.g., the ministry of culture and tourism, the bureaus of sport, on either state or local level) are permitted and can be registered according to the Regulations on the Registration and Management of Social Organizations issued by the State Council in 1998.

[37] According to research, the gap between the market and the official (including price of good, exchange rate, and interest rate) reached an astonishing portion of GDP with more than 20%. That means the sum of rent for the potential rent seeking theoretically reached more than 20% of GDP. (Mao, 1996: 225)

price reform, which was supposed to be short-term and promptly effective, won higher priority, but it pulsed even more severe inflation as already warned. The price reform proposal was abandoned soon before the enterprise reform came onto the stage. However, enterprise reform was more systematic, thus it took more precautious moves, longer time, and more patience. With these unsolved problems, the China Survey in 1990 shows that the top issue priorities were inflation and corruption on which the public drew the deepest concern.(Nathan & Shi, 1999)

The deadlock of reform in urban areas and the vigorous growth in rural and suburban areas formed a stark contrast. The central authority started to appreciate decentralization and thus tactically granted more autonomy to the state-owned enterprises at local level. Upon this background, fiscal-taxation reform merits mentioning. At first, the granted autonomy enlarged the space of the price adjustment following decision of local administration instead of command from the central authority. It was supposed to motivate the local administrations and their enterprises for more profits and more contribution to tax and fiscal revenue. However, the enlarged space otherwise turned to a manipulatable space for bargaining between these parties of interest, including locally owned enterprise, individual employee, local administration, and the central government. The distribution of profit was yet to be determined through bargaining formally or informally.[38] Self-interest rationality led to a situation that every production unit conceals the real sum of profits from the upper administration to which it has obligation. The thorough investigations by the central authority to avoid the invisible loss due to the arbitrary manipulations on the listed costs of enterprises, tax, and fiscal revenue burdened itself heavily. Additionally, the localist protection at provincial level on its own resources and the profits of the goods produced by its own enterprises hindered the integration of a nation-wide market. What is worse, the gray space for bargaining bred bribery and corruption between different levels of government, and also between governments and enterprises. Zhou and Yang (1992) point out that the administrative decentralization did not alleviate but rather exacerbate the distortions of the relationships between the cost and the profit, the market price and the official price, as well

[38] The key issue was the distribution of profits on different levels (employee at the bottom level, enterprise at the third, then local administration at the second, and the central at the top). The inferior level has obligation to the superior level, and they must turn over the profit to the higher level according to the plan decided by the central planning board. However, the enlarged space of price adjustment provided opportunity for the inferior level to keep some of the profit out of its obligation to the superior level. For example, employees could keep some of the profits as bonus, enterprises could keep some of the profits to expand the scale of production, and local administrations could keep some of the profits as fiscal revenue.

as the central and the local. They suggest that it is a market-oriented reform instead of administrative decentralization that could motivate the self-interest unit to pursue more profits in market competition. Enterprises should be managed by neither the central nor the local, but themselves. The local government should withdraw its hand on the management of the enterprises and take more responsibilities on improving environment, attracting investment, and increasing the employment opportunities. However, this proposal was logically part of the enterprise reform that had been stuck for a while, hence it was not helpful in practice for the problem-solving by the end of 1980s.

The anomies during an unrest period of reform that involved virtually every aspect and every stratum of the society, including the chaotic economy, irresponsibility of the government, and the degrading living standard, all led to a crisis of the Party's legitimacy. The setbacks of the reform which was supposed to transform China into a modern state have compelled the intellectuals to reconsider the other approaches of modernization at the crossroad. It is rather understandable that the resonance with their predecessors in the May Fourth Movement was elevated to a public debate beyond the circle of intellectuals. A documentary film *River Elegy* (Chinese: 河殇; pinyin: he shang), which was broadcasted in 1988 on Chinese Central Television (CCTV), asks the real reason for that China has been walking haltingly on its way of modernization since the beginning of 20$^{th}$ century. It concludes that the dilemma is the result of the essential flaw in Chinese culture. Chinese culture is river-like, which means self-limited on land; by contrary, Western culture is ocean-like, which means self-expanding and then covering the whole globe. The destination of Chinese culture is merging with the West, just like the river is running towards the ocean. The sharp criticism on Chinese culture and the so-called essential nationality struck the public and reminded them of the miserable history of China being the victim of Western colonialism. Inevitably the public find themselves quite reasonable to question the legitimacy of the Party: if the Party ever claimed that communism is the only savior of China, what now?

It has been a sophisticated question facing the public since they started the reflection on the Cultural Revolution: what should they blame the dilemma on, the essential flaw in Chinese culture? Communism? Or the rule of the Party? The answers to this question differentiate the prospects of China's future. Those who blame on culture appeal for the completely westernization, especially in the aspects of science and technology, education, lifestyle, and mass media. Those who blame on communism turn to capitalism, which refers to privatization, free competition, market economy, and openness to global trade. Those who blame on the rule of the Party require democratization for which free speech, human right, multiparty

competition, and periodical election are necessary. There was indeed a diversification in ideologies among the official, the unofficial media, the liberalized official media, and a broad group of pro-democratic intellectuals during the transition from Mao to Deng. However, it would be misleading if we believe all Chinese people are truly eager for either westernization, capitalism, or democratization. Although the prospects are differentiated, it is a national atmosphere of seeking change that unifies the people. No matter which approach is optimal, the ultimate goal is the revival of Chinese nation. The diversification and the unification simultaneously shape the ideological landscape after Mao's death.

Among the different answers, the rule of the Party that was relatively perceivable and touchable became the focus of public debates. The public with the accumulating unsatisfaction about the corruption inside government and the inequality between different strata started to fire at the rule of the Party. Furthermore, the short period of 1980s witnessed the enthusiasm (if not in a radical manner) of "bourgeois liberalization"[39] (Chinese: 资产阶级自由化; pinyin: zichanjieji ziyouhua). The new generation born during the Culture Revolution was more attracted by the popular culture introduced from Hong Kong and Taiwan where the cultural products of the Western entertainment industry were touted. They pursued the freedom of sexual activity, marriage, employment, and of course, expression. These factors, including the accumulating unsatisfaction of the whole society, the reflective doubt on the rule of the Party since the wreck of Cultural Revolution, and the rebellious new generation, all led to a nationwide movement of opposition. It is not surprising that the university students posted severe charges against the top leaders on the Democratic Wall in Beijing, ran for the elections of representatives in Beijing subdistricts, and organized street demonstrations that evolved into the Tiananmen Event in 1989.

### 3.1.3 After 1989

The Tiananmen Event has been a turning point of China's reform. The Party under Deng's leadership has learned some lessons from this tragedy that has cut an incurable wound upon the collective memory of the whole nation.

a) The first and foremost mission of the Party should take is improving living standard of every stratum with economic growth. For this purpose, the radical reform in political

[39] It is the political discourse that Deng composed to label the inclination to capitalist ideology. Capitalist ideology refers to the advocacy of anti-socialist institution, Western democracy, and laissez-faire market economy in which there is no space for the intervene from the Party and the government. Therefore, it is the enemy of the Party that should be eliminated. Details about the struggles between the Party and the intellectuals who were affected by the "contagious" "bourgeois liberalization", see Goldman (1994).

institution must be postponed without a timetable to provide a stable environment for the experiments of economic reform. (Mantzopoulos & Shen, 2011a: 40)

b) The Party's legitimacy rests on the backbones of nationalism. (Rowen, 1998) The nationalist vision includes the retrieval of economic prosperity, the reunification of pre-colonialized regions, and the recognition from the international community. For this purpose, openness to globalization and commitment to international norms are necessary.

c) The greatest common divisor within the set of [economic growth, openness, no political reform] is replacing political reform with something else that could keep the political system resilient, efficient, and legitimate. That is, governance reform with technologies applied.

Accordingly, Deng on the one hand repeatedly emphasized the Four Cardinal Principles[40] that have been primarily identified as the Party's basic line at the 13th CPC National Congress in October 1987, on the other hand unchained the ideological bond between socialism and centrally planned economy. The Party's basic line has been consolidated in an authoritarian manner, but it has otherwise encouraged economic growth. A comparative study (Mantzopoulos & Shen, 2011a) supports the hypothesis that China's economic growth has been positively affected by the foreign investment based on the confidence in the stability of China's extremely controlled political environment. As Deng's saying put it, "it is a good cat as long as the cat catches rats, no matter it is white or black".[41] This widely spread saying redefines "socialism". It means that anything can be defined as "socialism" as long as it benefits the people, no matter it is private ownership or public ownership. He also directed the establishment of experimental zones along the coastline where the Chinese companies can interact with the foreign companies and learn from them.

In addition, Deng pushed forward the proposition of "one country, two systems" that becomes the precondition for the negotiation with the United Kingdom to transfer the

[40] Four Cardinal Principles: keeping to the path of socialism; upholding the people's democratic dictatorship; upholding the leadership of the Communist Party of China; upholding Marxism-Leninism and Mao Zedong Thought. In fact, the concepts of "socialism", "people's democratic dictatorship", and "Marxism-Leninism and Mao Zedong" have been re-interpreted in Deng's speeches and other official documents, except for that of "the leadership of the Communist Party of China".

[41] This expression firstly appeared in 1962. Deng argued on a conference of which the topic was the devastating decline in economy around 1960 that it does not matter if the peasant gets lease of public land for private production when they are facing famine. However, Mao as the highest authority at that moment harshly criticized this opinion. During 1990s, this expression which is known as "theory of cat" was recited to be the advocacy of economic reform.

sovereignty over Hong Kong back to China. After Deng, the Party persistently put efforts in obtaining the recognition from the international community as a market-economy country, striving for the membership of World Trade Organization (WTO), and campaigning for its capital Beijing as the host of the Olympic Games. (Gries, 2007) The rightful place enjoyed by a modern China was symbolically represented at the opening ceremonies of the 2008 Beijing Olympic Games. The ceremonies, which were certainly adhered to the propaganda line of the Party, not only carried out spectacular rituals of Chinese cultural heritage, but also exhibited the accomplishments China has made in the regards with science and technology. The nationalist emotion at the moment reached a summit; meanwhile, the Party "presented itself as the carrier of a sacred national destiny". (Madsen, 2011: 183)

It is impossible to maintain stability of the society without the stable ruling party. To stabilize the ruling party which just took a breath after the restlessness of the Cultural Revolution, self-restraint, peaceful succession of leadership, power check and balance, are all dispensable. Deng, as one of the victims in the Cultural Revolution who was exiled several times from the power center in Beijing, has realized that a dictator and the personality cult are doomed to become a disaster of the Party. To lower the probability of a second Cultural Revolution in the future, it is crucial to restore the collective decision-making institution in the highest ruling group. Deng himself, without absolute authority, had kept a modest gesture in comparison with Mao in front of his senior colleagues. He also achieved the consent among the powerful figures on the highest layer about the decision of his successor. Since his death, the Party has stepped into a track of peaceful succession of leadership rather than the political struggles sometimes with the use of violence. (Zheng, 2001) Besides these intraparty efforts, the external check and balance also appears in the horizon, although it has been limited to the extent that would not challenge the dominance of the Party. The National People's Congress, as legislature, has been empowered and gained more independence from the Party according to the modified Constitution in 1982. Additionally, the newly elected members of the People's Congress are more diversified in political, ethnic, educational, and professional background. (O'Brien, 2008)

The critical and the most stressful move in the reform has been the acknowledgement of the private property in economic system, legislation, and ideological arena. The next has been the demarcation of the boundary between public and private, government and enterprise, state and society. Undeniably, these moves would have been taken in a much drearier way for the reformers if there had been no authority (of Deng, or anyone else). The demarcation of the boundary between public and private occurs primely in the mind of the Chinese people who

engage themselves in small business outside the work unit/commune system, while that between government and enterprise has achieved progresses with the withdrawal of government's hand out of the microeconomic entities. (Mantzopoulos & Shen, 2011b: 110) During 1990s, these two sorts of demarcation have been institutionalized. As mentioned, the Company Law has legalized the rights of private company as legal person since 1992. The fiscal-taxation reform alongside has also been advanced according to the proposition raised by Zhou[42] and Yang after the enterprise reform relieves both the local government's responsibility for enterprise management and the central government's burden of supervision and investigation. In sequence, the decentralization of taxation has been institutionalized with the "Decision on Implementing the Tax-Sharing Financial Management System" made by the State Council and enacted in 1994. Unlike the previous administrative decentralization, taxation decentralization identifies the rights and the obligations of local government and central government, respectively. The identification and institutionalization not only ended the worsening situation that entangled the central and the local, but also turned the role of government from enterprise manager to policy-incentive provider. It results to the improvement of the relationship between the central and the local, and the rapid increase of the national fiscal revenue.

However, the demarcation of the boundary between state and society has not been fully approbated. This fact explains why China is seen as an authoritarian country of the whole time. Indeed, the state control over mass media and social organizations inherits the old "hooking" method that mass media and social organizations are only officially permitted after they have been "hooked" on certain official agencies of government departments. During the process of media marketization started around 2000, the "hooking" method has been institutionalized into administrative permission and licensing system. Some presses and newspapers have been partly commercialized to pursue their own profits on market to ensure their own survival instead of relying on the public expenditure from government departments. For this part of profit, they can produce contents that have attraction to consumers instead of that only execute the commands from the higher bureaus. Notwithstanding, the outlets under the Party's direct control remain their position as mainstream media that are endorsed by multilevel propaganda departments and function as "throat and tongue" (Chinese: 喉舌; pinyin: houshe) of the Party. As for the newly emerging online media, such as news portal

[42] Zhou Xiaochuan was appointed as the governor of the Central Bank of China in 2002 and also the chairman of monetary policy committee of it in 2003. His promotion to important occupation implies that his proposals were appreciated by the highest authority.

websites Sina and Yahoo! China, they were required to apply for permission from the government department of information industry according to a regulation of online information service (State Council, 2000) issued by the State Council in 2000. It was relatively loose because the news they uploaded were produced by the media that have been granted the permission. After a public health event in 2003[43], the user-generated contents (UGC) online seemingly prevailed the content provided by the outlets of the Party, even some professional and commercial media, especially when there was instant censorship on news contents. Considering this, the News Office of State Council, the State Administration of Press, Publication, Radio, Television (SAPPRT), associated with the Ministry of Industry and Information Technology (MIIT), issued a regulation about online news information service in 2005 (State Council & MIIT, 2005), and a regulation about the content production onto the Internet in 2007 (SAPPRT & MIIT, 2007). From 2008 on, only the legal person of wholly state-owned enterprise, or company with the state being the sole investor, can be the applicant for a permission of online video and audio production. There are also other studies showing that the state has some other methods, formal or informal, to exclude whatever the Party dislikes before it goes public. (King, Pan, & Roberts, 2013 & 2017) In all, mass media and social organizations, apparently, are all under the rigorous supervision of the state. The mechanism of control is not the twenty-four-hour watching, rather a Damocles sword over the ones whomever have obtained or not yet obtained a permission, because the permission is periodical and withdrawable.

## 3.2 Review on Post-reform Institutional Change

The point at which politics scholars have achieved the common understanding is that the Leninist political system is not compatible with market economy, and thus it cannot sustain itself untouched. (Rowen, 1998; Waldron, 1998; Oksenberg, 1998; Mantzopoulos & Shen, 2011) The furthered argument is that the incompatibility within the political system leads to an unresolvable contradiction between the pursuits for economic growth and political stability. The result, which is logically deducible, would be either democratization or economic

[43] A public health crisis caused by SARS epidemic broke out in 2003. The official misinformation at first concealed the truth about the worsened situation to quell public panic, but rumors and hearsays never stopped spreading through Short Message Service (SMS), online bulletin board, and local community on the Internet. Some doctors who countered the pandemic on the frontline stood out and revealed truth to the public. More and more non-official information was sought and received to the extent that the government had to take a “full disclosure” measure. A survey shows that 60% respondents received SARS-related information from sources other than the mainstream media in Guangdong Province as the first area suffering from the pandemic, and the figure was 40% in Beijing as the lately impacted area. (Tai & Sun, 2007)

decline. (Pei, 2012; Wang, 2013) But before this supposed result comes into being like a train arrives at the platform, the scholars in the waiting room have some different ideas about what exactly keeps China travelling at a high speed without crashing out of the track. The ideas of what institutional changes that the authoritarianism sustains include “federalism in Chinese style”, “pluralism”, “technocrats”, and “network”.

The political basis of the success of China’s reform is “federalism in Chinese style”, as Montinola, Qian, and Weingast (1995) argue. It refers to a style of federalism distinguished from the federalism under Western democracy and the authoritarianism of the highly centralized Soviet Union. On the one hand, China’s political decentralization has some similarities to the Western style in terms of the relationship between governments on different levels, thus it is unlike the centralization of Soviet Union. On the other hand, there is neither the constitution that provides foundation to federalism, nor the institutional constrains on the power of the central government. Instead, the competition between jurisdictions enables the power check and balance. A result of the reform is the enhancement of local government’s autonomy in fiscal and economic affairs. Local governments compete in developing the economy with policy incentives under the special conditions of the locality. Through developing the economy, governors on local level gain opportunities to make personal well-beings, which means either more benefits as a bonus aside from the formal income, or more possibilities of promotion on the bureaucratic hierarchy. The key of understanding the striking success of China’s economic reform is the local particularism.

Both Harding (1998: 45) and Scalapino (1998: 62) points out that the trend in China is a gradual transformation to pluralism while still distinctly featured by authoritarianism. By “authoritarian pluralism” Scalapino means that while political life is under the unchallenged control of authoritarian regime, there are civil society and market economy apart from the state with autonomy and freedom of some degree. He suggests that this sort of political system serves to the purpose of stabilizing the whole society in the rapid changes as the result of economic growth. Stability has a considerable appeal among the people in the similar situation. Therefore, authoritarian pluralism has been found in the developing East Asian societies, including South Korea, Taiwan, Singapore, and Indonesia.

Turning more elitist is what they predict about the nature of the ruling in China. Well-educated specialists and technocrats now take more positions in the power center. Simply put it, the regime gains its legitimacy through elite cooptation. (Béja, 2009: 216) The ordinary intellectuals benefit materially from the new elite-friendly development policies proposed by Deng and continued by Jiang. Xiao (2003: 87) names it as “technocratic authoritarianism”. The

pragmatic technocrats who make decisions based on functional rationality and cost-effectiveness instead of ideological dogmas will handle the challenges accompanying with modernization.

MacKinnon (2011) develops a concept of "networked authoritarianism" that refers to the authoritarian regime adaptive to digital communication. In China, the ongoing online activism makes Chinese Internet users have more sense of freedom, and forces grassroot-level government to be more accountable through revealing its unaccountability to the public. Nevertheless, the successful online actions are in fact pre-censored, permitted through the mechanism of filter, and monitored from above. The failed online actions are those interfered before they go disclosed to the public. The freedom of individual lacks guarantees because there is systematic censorship and surveillance but no impartial or independent judiciary. Therefore, embracement of digital communication does not portend the democratization, but consolidates the ruling power and the legitimacy of the Party.

Nathan earlier emphasizes the importance of network in China: not the digital communication network, but the personal network. As he conclusively argues, "What governs China today is more like a network…The concepts of market, state, and society lack clear referents in the Chinese situation". (Nathan, 1999: 224-226) It is the informal personal network, "*guanxi*" (Chinese: 关系), that links individual who works in different sectors, such as the owner of small business, the deputy of government department, the president of university, the local party secretary on village level, etc. Through the network, information is exchanged, interests are aggregated, and gains are distributed, especially when the formal institutions have not been developed yet to comprise the interest conflicts between strangers in modern society.

## 3.3 Ambiguous Boundary between State and Society

It would become a common sense about China's reform that the one-party state intendedly and delicately keeps ambiguous boundary between state and society to leave itself space for manipulation and control within the process of reform. On the one hand, there must be a boundary, as the failure of communist experiment has proved; on the other hand, there must not be a **clear** boundary as the Tiananmen Event reminded the Party of the situation when it lost control over the society. During the forty-year period of reform, the formal institutions in China have been established through the mechanisms of "symbolic tokens" and "expert system" in Giddens's sense. Trust, upon which the social institutions depend in modern society, rests not only in abstract system, but also in long-term acquaintance. (Giddens, 1991) Hence, there are two approaches of remaining the ambiguous boundary between state and society. The one is the upgrade of the "hooking" method inherited from the Mao's era during

which the society had been amalgamated into the state. As mentioned, the Party has institutionalized the "hooking" method as the administrative permission and licensing system. This system ensures the credit of private entities when they get formally permitted or licensed. The other one is the institutionalization of network. What has not drawn enough attention yet is that network has also been institutionalized for the same purpose. In Mao's era, the personal network consisted of acquaintances because it was limited in the multiple collectivities due to the immobility, such as the work unit and the people's commune. At this point, it was similar to the blood-based clan in premodern China. Like the upgrade of the "hooking" method, the Party takes adaptive measure for new circumstances which is an upgrade of an existed system to avoid a radical change. For this reason, the system of Residents' Committee (RC) has been revived since the mid-1980s. Around 2000, it has been upgraded into "Community Building" (Chinese: 社区建设; pinyin: shequ jianshe). It would be detailed in the next section.

However, it would be out of the Party's reach to forcefully insert ambiguousness into the state-society relationship if there were clear boundary before. In fact, the ambiguousness has rooted in the traditional China. The long history shows that the society shared the same structure within the state like a smaller circle (society) settled in a larger circle (state). It is better to firstly correlate network in China's context with the ambiguity between state and society. The concept of "differential mode of association" can explain why the boundary between private and public, as well as that between state and society in China, is ambiguous. Fei Xiaotong, a Chinese sociologist that concentrates on the relationship between Chinese traditional social structure and ethical philosophy, proposes a concept of "differential mode of association" (Chinese: 差序格局; pinyin: chaxu geju) as ideal type.(Fei, 1992) It refers to a social structure made up by elastic networks in which a self is positioning at the center of each web. A self's influence extends out along the web like the wave of a water circle spreads into another circle. It causes the egocentrism of oneself and the differentiation of relationship around it. An egocentric self prioritizes those who are intimate to it (in a patriarchal clan, a kinship community, or a geographically dense space), and become indifferent on those who are far away from the center of the web. Therefore, the public sphere, where is the peripheral area of each web, draws merest attention from each egocentric individual. Society is not an independent sphere apart from state, but an organic association by interconnected personal networks, or an overlapping zone where the network of powerful individual encounters the network of subordinate individual. As a result, it is hard to demarcate the boundary between state and society, as it is hard to disentangle a wave from another wave.

A society of acquaintances inevitably experiences demise in the process of modernization. Nevertheless, the Party has attempted to maintain the structural property of such a society by institutionalizing informal personal network. The result of this attempt is the residents' committee system at grassroot level that amplifies the sense of the state's existence down to the street and household. With the help of ICTs, the state presents itself in every smart device held in the hand of whomever uses it, penetrating the daily life of citizen along with the Internet. Regarding collecting and processing information, democratic procedure is not as prompt and efficient as personal network or digital communication network. In this case, society as the intermediation between state and individual becomes functionally unnecessary as it was before.

What makes it possible that the party-state keeps the economy competent in global market and meanwhile keeps the society stable in rapid surges towards modernization without democratization through which society can intermediate between state and individual? To conclude, the answer from this thesis is network governance. There are two dimensions of "network". The one is the dimension of personal network that roots deeply in the social structure of the traditional China and blurs the boundary between state and society. The other is the dimension of telecommunication network through which the modern society operates in information age. Accordingly, the network governance of the one-party state is uplifted by two cornerstones: the one is residents' committee system, the other is the e-government.

## 3.4 Two Pillars of China's Network Governance

It is time to shed light onto the two efforts of China's one-party state in bolstering network governance: residents' committee system and e-government system. What is worth emphasizing here, the concept of network governance in China's context, or in the general perception of this thesis, does not necessarily imply an incentive of democratization, or any preference in democracy. Network governance is a potential solution for the states which fall into the dilemma of tackling the inevitably increasing complexity of modern society, no matter the states are authoritarian or democratic. From a neutral perspective, network governance, as an efficient mode in collecting the information that the old mode of governance could not attain, does not correlate with the way of possessing, processing, and utilizing the information: authoritarian or democratic, for public good or dictatorship.

### 3.4.1 Residents' Committee

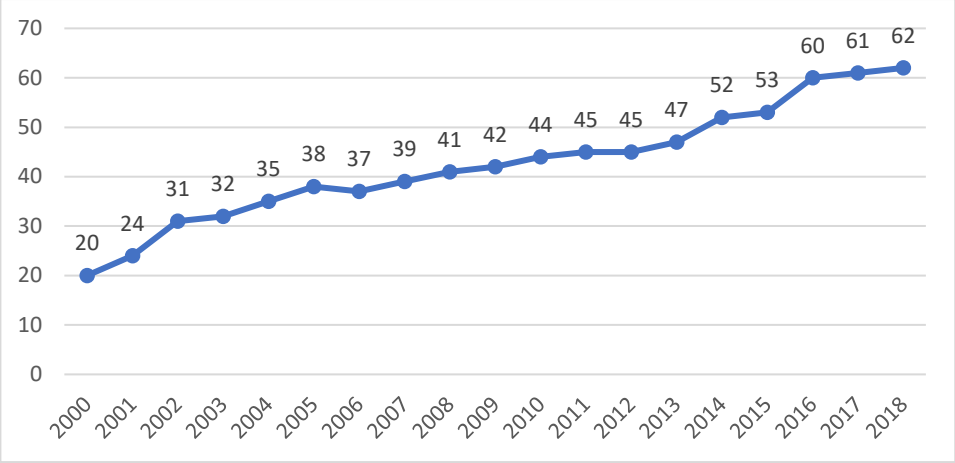
The system of Residents' Committee (RC) was created even before the establishment of the People's Republic of China. It was the legacy of "*baojia*" (Chinese: 保甲) system, of which the prototype was found in Japan. *Baojia* system had been applied under the regime of the Nationalist Party in 1940s. It aimed to monitor the neighborhood and provide intelligence to the government during the war time. After the Communist Party took in, it was acknowledged in the Urban Residents' Committee Organization Regulation, which was passed by the Standing Committee of National People's Congress (SCNPC) in 1954. As the regulation (SCNPC, 1954) entitles, each RC in general covers 100 to 600 households. Permitted, directed, and sponsored by the local government, RC is still defined as "self-governance" (Chinese: 自治; pinyin: zizhi) organization according to this regulation, because it is not the agency representing any government department, but the organization operated by the residents themselves. In fact, it turned into a system that monitors and manages the "non-productive population" outside the work unit/commune, such as the unemployed, the disabled, the retirees, the housewives, and so on. (Ngeow, 2012: 76) In other word, RC was a supplement of the work unit/commune as communist collectivity for the production activity under centrally planned economy. When the communist collectivities reached a higher level of integration that could contain the "non-productive population", the RC became less necessary. It has been proved by the fact that the RC system had abated during the Cultural Revolution, according to Ngeow's study. Not unexpectedly, the RC started to revive after the mid-1980s when the work unit/commune declined alongside the diminishment of centrally planned

economy. The Article 111 of the rewritten Constitution in 1982 acknowledges RC and VC[44] as grassroot organization of self-governance. The regulation of RC organization has been upgraded into a law that was legislated by the SCNPC in 1989. According to this law (SCNPC, 1989), the maximum of RC's cover range increases from 600 households to 700 households. There are five to nine members in RC, including one director, one deputy director, and common members. Their term of service increases from one year to three years. In addition, the definition of "self-governance" has been detailed as "self-management" (Chinese: 自我管理; pinyin: ziwo guanli), "self-education" (Chinese: 自我教育; pinyin: ziwo jiaoyu), and "self-service" (Chinese: 自我服务; pinyin: ziwo fuwu). Accordingly, the functions that the RC is supposed to perform multiply, including not only providing public good and social service, mediating the civil disputes, and conveying the opinions of the residents, as listed in the 1954's regulation, but also informing the residents about laws, regulations, policies, and raising the cultural-ethical standards of the whole neighborhood, as added in the 1989's law. Indeed, the economic reform pulses privatization, labor specialization, and urbanization. As the result, the mobility of labor has been released, the migrants from other regions have surged, and the diversity of urban residents has summited. According to the statistics from the National Bureau of Statistics (NBS), the number of the cities with the population of more than 2 million increases from 20 to 62 during the period between 2000 and 2018. The total number of the urban employed population increases from 231 million in 2000 to 371 million in 2012. [45] Meanwhile, the variety of the market entities within which the employed population have gained work opportunities is larger than before.

*Figure 2 The Number of Cities with Population of More Than Two Million, 2000-2018*

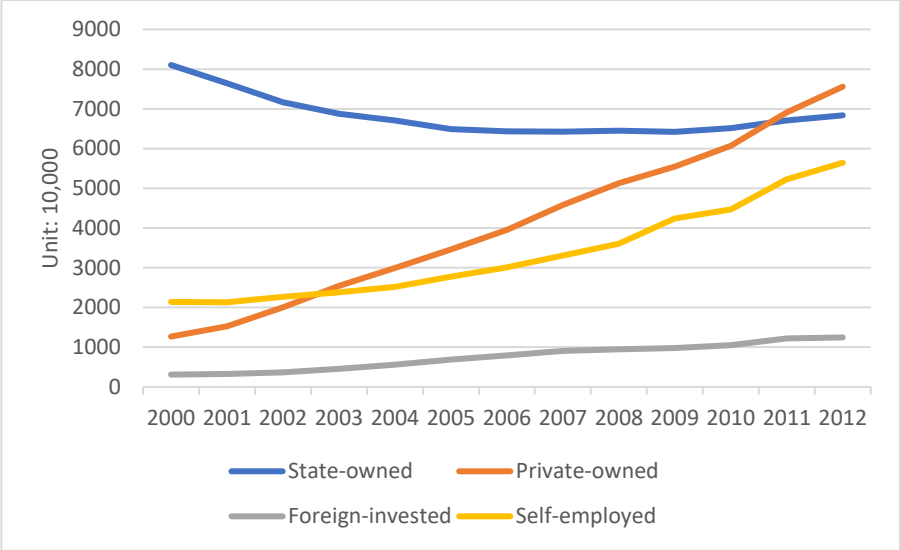
[44] Villagers' Committee (VC) is the counterpart of RC in rural area. Organization Law of Villagers' Committee has been approved in 1998 by the 9th SCNPC. According to this law, the number of VC members ranges from 3 to 7, including director, deputy director, and common members. All the members are elected directly by villagers. (SCNPC, 1998)

[45] Only the data from 2000 to 2012 are comparable chronically because the statistical categories have been changed since 2012.




*Source: Official website of NBS (http://data.stats.gov.cn/)*

*Figure 3 Urban Employed Population in Different Market Entities, 2000-2012*



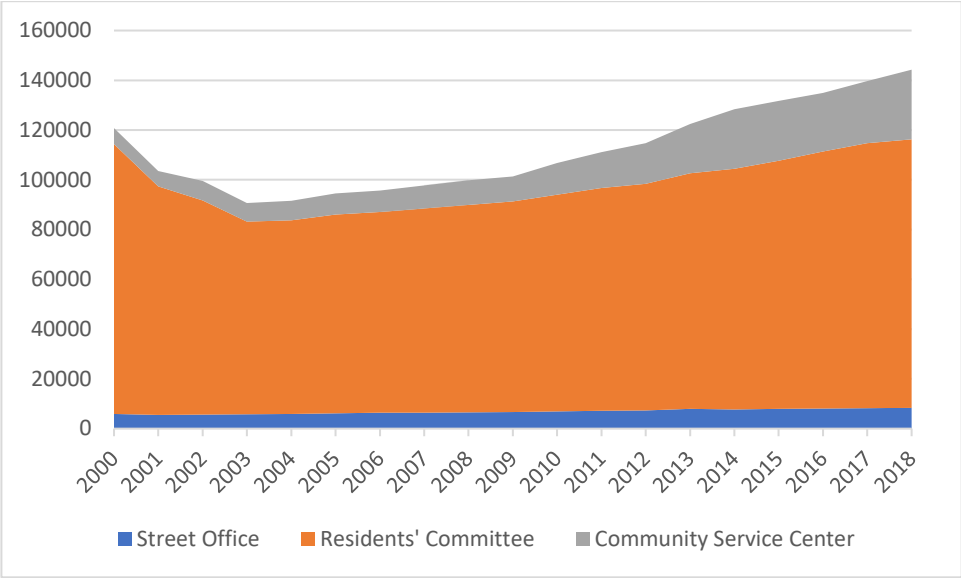

*Source: Official website of NBS (http://data.stats.gov.cn/)*

Under this circumstance, the complexity of governance scales to the extent beyond the capability of governance. On the grassroot level of administrative hierarchy in urban area does the Street Office (Chinese: 街道办事处; pinyin: jiedao banshichu) rest. The SO is empowered as the directive agency of RC, according to the organization law of RC. However, it is clear from the graph[46] below that the growth of street office's number is not paralleling that of either RC or community service center. The number of SOs keeps a relatively consistent and slow growth along these years in comparison with RC and community service center. From the growth of the number of SOs are we able to find signs of neither the great transition of

[46] The statistics of community service center in 2017 and 2018 are cited from the official reports of the Ministry of Civil Affairs (MCA) published on its official website. The numbers with low precision are 25,000 and 28,000, respectively. Source: Official website of MCA (http://www.mca.gov.cn/article/sj/tjgb/)

China's society nor the corresponding change in China's government system. Instead, the curve of RC, as well as the highly correlated community service center, indicates some clues about the change of the role that they have been playing in governance.

*Figure 4 The Number of RC, Community Service Center, and Street Office, 2000-2018*




*Source: NBS, MCA, Statistical Yearbook of Civil Affairs of China*

The revival of RC and the afterward initiative of "Community Building" (CB) [47], on the one hand, can be regarded as a consequence of the decline of work unit/commune system; on the other hand, they also reflect the incapability of the state in providing adequate public good and social service that covers the upswelling urban communities instead of the previous self-sufficient communist collectivities. Except for this, the cases in different regions present different concerns of local government. For example, Shenyang, the capital of Liaoning Province located on the "Rust Belt" in the northeastern China, steps in advance with regard to community building. (Bray, 2006) The local government provides more professional training, directive manuals, and other assistances to the staff working for community service. It is partially because the community service centers can offer employment opportunities to those who lost jobs in the reform of redundant state-owned enterprises (SOEs). [48] While

[47] The concept of Community Building was firstly proposed by MCA in 1991, which might originate from Communitarianism in the US during 1980s. The former President Jiang Zemin put forwards to improve Community Building with the empowerment of SO and RC in 1996. The subjects that participate in Community Building include local government, SO, RC, NGO, and resident. (Wang, 2000)

[48] It was also a national concern especially when the economic reform processed and resulted to lay-offs in the SOEs around 2000. The annual statistical report on civil affairs by MCA in 2000 stresses that the number of community service facilities reaches 181,000, and 286,000 people who are unemployed by the SOEs get re-employed in those facilities. See Finance and Bureau Affair Department, 2001.

Shenyang government invests more in community building, it also requires more returns. Comparing with the RC in Shanghai, the assigned work of the RC in Shenyang from the bureaus, such as the municipalities and district or SOs, possesses a larger portion of all the work that the staff of community service are obligated to complete. (Lu & Li, 2008)

As a common phenomenon in national range, the assigned work gradually erases the self-governance color on the surface of RC and transforms RC to an executive agency for administration which is supposed to be the duty of government. It grows into heavy burden on RC because of the increasing complexity in urban governance. A survey of one RC in a district finds that the number of the administrative tasks assigned from the grassroot bureaus and the Party committees reaches 286. RC staff complain that they get more engaged in the assigned work instead of the self-governance, particularly the self-service for residents. Luo and Cui (2015), who lead this survey, point out that RC highly relying on financial appropriation from the bureaus is not able to resist the expansion of state power.

The situation is rather similar in Community Building (CB). A survey of 24 communities in Beijing (Sun, 2016) finds that the sum of administrative tasks assigned from the bureaus of both the state and the Party on different levels to the each community (including community Party committee, community RC, and community service station) is 221 on average. What is worth mentioning, the purport of these tasks is collecting and verifying information through personal network, and the related statistical and accounting work. Sun indicates that the administrative turning of RC and CB is the determined outcome of the current governance institution in China. On the one hand, the governance institution needs the centralization of authority to make decision; on the other hand, the decision made under the centralized authority must be adaptive to specific situations in its implementation on grassroot level. Considering the size of territory and the domestic diverse within regions of China, this sort of governance institution consumes tremendous resources which the state itself is incapable to afford. Therefore, the state attempts to absorbing social capital and turning it into state capability through its “agent” embedding in social network. Sun’s conclusion is evidenced by Jin’s field study in Shanghai. Jin (2010) argues that the leadership of the RC secretary constitutes the base of micro-power operation of the one-party state. The leadership of the RC secretary (of the execution layer[49]) is not only fulfilling the vacuum left by the loose

[49] To identify the role of RC as a factual self-governance organization in accordance with the law, there went an experiment for solution in six cities. RC in the experimental districts of these cities consist of two layers through specialization: the deliberation layer and the execution layer. In general, the deliberation layer is composed by several representatives elected directly by the residents, and the execution layer is composed by the staff

deliberation layer, but also accumulating through frequent interactions with the residents. In this case, the RC director, Mrs. Zhao, is meanwhile the secretary of the Party branch in the community, which means she could gain support from the SO, the Party, and the residents who she gets familiar within her daily work. Jin advances that the personal network centered around Mrs. Zhao as an elite of leading the RC on the one side contributes to the sustainment of RC, on the other side weakens its self-governance potential because of the high dependence on the personality of certain leader.

These studies reveal the dual role of RC: self-governance organization on paper and administrative agency subordinate to the grassroot bureaus in reality. It should be underscored that RC is the only one self-governance organization written in the constitutional provisions. Moreover, RC is the only one organization of which the election is legislated according to the specific law. In all, it is endorsed by both the legitimacy from the legislation and the subordinate relationship with the government. Therefore, it is inevitably representing the state in the daily implementation of administrative tasks and policies in the eyes of the residents. Gu (2004) points out that RC playing the dual role has advantages in bridging government and residents, but it faces the risk of falling into an arena of interest conflicts between them.

The paradox in the dual role of RC reflects the current relationship between state and society in China, which is conceptualized by Kang and Han as “administrative absorption of society”. The core mechanisms of absorption are “control” and “functional replacement”.(Kang, Han, & Lu, 2010) In general, whether these two mechanisms work successfully depends on the motives of member’s association in those organizations and the capability of the government in providing public good. While the motive of association is strong, the potential of challenging the authority of the state is strong. It means the government prioritizes the control on this sort of association in the first place. However, the control is not intensified directly, but put into effect through the “functional replacement”. For example, people sharing the same religious belief have the strong motive to associate with each other in an organization. The government then establishes official churches as a replacement of the autonomous churches. Similarly, RC is in nature an organization for residents living in the same or adjacent areas who

employed by the street office. The former initiates deliberation and forms decisions under the direction of the Party branches, while the latter executes the decisions and maintains the routine. However, this solution encounters problems as well. For example, the members of the deliberation layer are volunteers without government background so that they may lack the power and the resources to complete what they are supposed to do for the community. (Shi, 2004)

could act unitedly on a concrete base of the commonly shared interests. The government turns RC into a semi-government agency as a replacement of the autonomous organization. On the one hand, the motive of association is not being repressed; on the other hand, the government becomes upper hand in controlling the actions within these organizations. However, the precondition of the operation of "functional replacement" is that government has the capability to provide the replacements. Beyond the government's capability are there the organizations (for example, trade union and trade association) that the government can only set limitations, or concentrate on the interests of the powerful as priority. (Kang & Han, 2007)

Different from "absorption", "penetration" is the concept preferred by Hou. Hou (2019) argues that "absorption" in discourse implies the proactivity of government's action, while "penetration" otherwise describes a process of state capability building. He disagrees with the argument on "control" and "functional replacement" as the core mechanisms, but features "penetration" and "coupling" instead. "Penetration" refers to the motion from the side of state; correspondingly, "coupling" refers to the process of which the pre-existing structure and norm in the neighborhood react with the state-motivated penetration. Penetration is categorized into "organizational penetration", "procedural penetration", "notional penetration", and "service penetration". Organizational penetration is firstly the achievement to 100% coverage rate of the Party branches in each community, even in each block of flat. Furthermore, the secretary of the Party branch is concurrently the director of RC. In Hou's field study, this concurrence occurs in 14 out of 34 communities. Compared with organizational penetration, notional penetration to a larger extent works with "coupling". In the daily practice, the SO constructs the image of RC as its subordinate agency by assigning administrative tasks, allocating resources, and implementing the policies together with the staff of RC. Also, the members of the Party branches who occupy more and more positions in RC construct the image of RC as an agency of the Party. As a result, the notion of the residents is penetrated, or rather enhanced, with a blurred image of the party-state-society as a trinity which has never been clarified. RC, as Hou put it, has been transformed into the agent of the state in society for organizing and mobilizing the mass. It is the result of state penetration; more importantly, it is the medium for further penetration.

What is the further penetration since the one-party state has already had its agent in each block of flat? The answer is e-government. In general thinking, e-government refers to the digitalized government that provides online service to citizens and improves the intra communication with paperless work. However, it is not the whole story of China. E-

government in China of course has been going through digitalization, but digitalization is the least interesting part of the story. What worth telling is the penetration of the one-party state into private life of individual directly. To overstate it in an Althusser's manner, the one-party state is capable to "interpellate" the individual, if he or she has a digital device connected to the Internet.

### 3.4.2 E-government

At the first place, the Internet was considered as a technical innovation that could contribute to the free information flow in the whole world. Government, in the eyes of classic liberalists, could be the threat to freedom. E-government, just like the "democratic dictatorship" written in the Chinese Constitution, sounds like a paradox. As William Stewart (2000a) put it, the principle of free information flow is embedded in the original design and the robust architecture of the Internet. One of the fathers of the Internet, Joseph Carl Robnett Licklider developed a conception of "universal network" connecting a large number of computers through which different people could gain access to a common database with remote use in 1950s.(Stewart, 2000b) A Declaration of the Independence of Cyberspace (1996) by John Perry Barlow[50] was written and widely distributed during his attendance on World Economic Forum in Davos, Switzerland. More importantly, it was publicly representing the resistance against government's control over the rapidly growing Internet. As part of his campaign, this declaration had had an impact on the US president Bill Clinton to make him rethink the sign on the Communications Decency Act that sets limitations on the content online.(Greenberg, 2016) At some degree, the Internet has shown its potential in embracing liberalism, especially with the wide spread of social media services in some authoritarian countries.[51] Upon this background, political scientists also had an optimistic outlook that the development of the Internet in China would positively affect online activism, civil society, and democratization at the beginning of 21st century. (Tai, 2006; Yang, 2011)

However, information barricades against the free flow become more visible when it comes to the second decade of this century. Several public issues concerning the free flow of information appears on the horizon, such as user privacy, information security, the sovereignty over the Internet, let alone the digital gap from the beginning. In fact, as in the other arenas of human society, the monopolies of transnational companies, and the authorities of nation-states, are overriding others on these issues in the cyberspace. The

[50] Barlow himself had been the co-founder of the Electronic Frontier Foundation and the Freedom of the Press Foundation, two non-profit organizations that claim to defend the free flow of information since 1990s.

[51] See Chapter Two.

Independence Declaration in 1996 rejects the sovereignty in the physical world over the cyberspace, but the nation-state undeniably is the main body to initiate the infrastructure construction, to conduct the legislation about activities on the Internet, and to cooperate with each other on building global telecommunication network. In spite of the nation-state, the transnational company is the key player of transforming the technology into products and services that can be purchased, driving the commercialization of the Internet all over the world, and accumulating capital and human resource for the breakthrough of the next-generation technology. In addition, the relationship between the monopolies of transnational companies and the authorities of nation-states has been more sophisticated. On the one hand, PRISM project that has been revealed by the technical staff Edward Snowden employed by National Security Agency of the US to the media in 2013 shows that the US government and the transnational companies, such as Microsoft, Facebook, Google, etc., have been cooperating secretly on the surveillance of user data. On the other hand, the exclusion of HUAWEI, which is the largest telecommunication facility provider originated in China, from the bid for telecommunication infrastructure construction in Australia and Canada in 2012 is the signal that the governments keep a high alert about secret information surveillance from other states through transnational companies, which abides by their national interest.

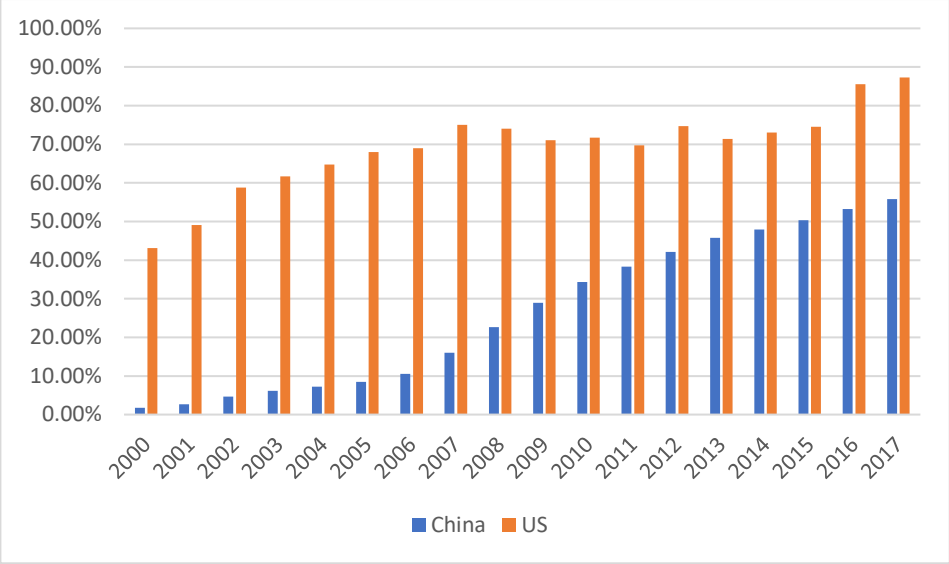
China is not unexceptional from this background that the core issue of the Internet turns from free flow of information to regulation and restriction. Rather, regulation and restriction have come much sooner in China since the period when its Internet penetration was still lower than the global average level. The development of the Internet is a part of the blueprint designed by the Party that is supposed to fasten the process of modernization merely in the aspects of economy and technology. After all, the legitimacy of the Party has resourced from nationalism since 1989, as concluded in the section above. As a result, the early development of the Internet was supported and guided by the state for the economic purpose. For example, the construction of a national economic information network named “Golden Bridge Project” was issued by the vice prime minister Zhu Rongji in 1993. Three years later in 1996, the 8$^{th}$ National People’s Congress passed the government work report that contained a fifteen-year plan about the construction of national information infrastructure. Having been building the infrastructure of ICTs since mid-1990s, the state meanwhile intensifies the regulation on media that produce and disseminate content online, including the exclusion of foreign investment into the media market, the administrative permission and licensing system, the filer and censorship techniques. (Wang & Hu, 2016) In the early 1990s, IT products that can be used to filter the access to certain websites were developed by the IT companies in the US,

primarily Cisco, and introduced to the Chinese government. Afterwards, it has been built as a national project "Great Firewall" to block the information flow which carries the content unwelcomed by the Chinese government.(Goldsmith & Wu, 2006) The existence of the Great Firewall that prevents Chinese "netizens" from visiting oversea websites, in particular Google, signifies the upper hand of Chinese government in dealing with transnational companies which post potential threats to its interest. Google announced to withdraw from the market of China mainland in 2010 due to its conflicts with the government on censorship and keyword filter. China, as Zhao Yuezhi put it, has the "one of the most oppressive regimes in using coercive state powers to control public communication" (Zhao, 2008: 20), although the size of internet users did not exceed 20% of the whole population in June 2008, while the global average percentage was 21.1%. (CNNIC, 2008)

The development of the Internet in China, nevertheless, has shown some "Chinese characteristics". Firstly, it is growing at a higher rate from a lower starting point. As Figure 5 reflects, the gap between China and the US of the Internet penetration is narrowing, especially during the period from 2007 and 2015. Secondly, mobile phone users who get access to the Internet using the relatively cheap device contribute largely to the rapid growth. (See Figure 6 & 7) In the early stage around 2000, personal computer (PC) had been the major device as the terminal used to access to the Internet, but it was not affordable in most household of China. (Hu & Wang, 2015) However, mobile phone, especially smartphone, has become the preferred device over PC since 2007 in China. The first iPhone was released by Apple Inc. in 2007 as the starting point of that smartphone sweeps all over the world. The following year 2008 witnessed that iPhone 3G as a successor of the iPhone prototype took part in the widespread of the 3G (Third Generation) telecommunication technology, the first flagship store of Apple Inc. in China was launched in Beijing, and China's national 3G network was standardized according to the International Mobile Telecommunications-2000 by ITU (International Telecommunication Union) and stretched by three state-owned monopolies.[52] The Ministry of Industry and Information Technology (MIIT) granted three licenses to the three state-owned monopolies of 3G telecommunication business operations in 2009. After 2010, the relatively low-cost mobile phones produced by the domestic industries (e.g., Huawei, Xiaomi, Oppo, Vivo, etc.) have gradually partitioned the market shares of the old brands (e.g., Nokia, Sony, etc.). (See Figure 8)

[52] The three monopolies are China Telecom, China Mobile, and China Unicom. They are the results of a series of restructuring amid merger and consolidation.

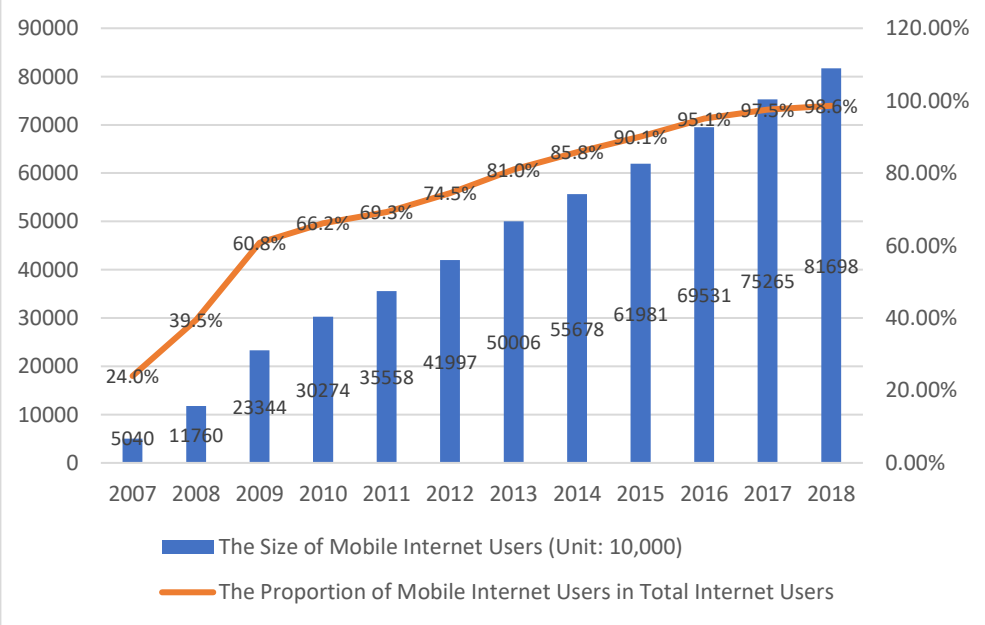
*Figure 5 Internet Penetration in China and the US, 2000-2017*




*Source: ITU, CNNIC (China Internet Network Information Center), World Bank*

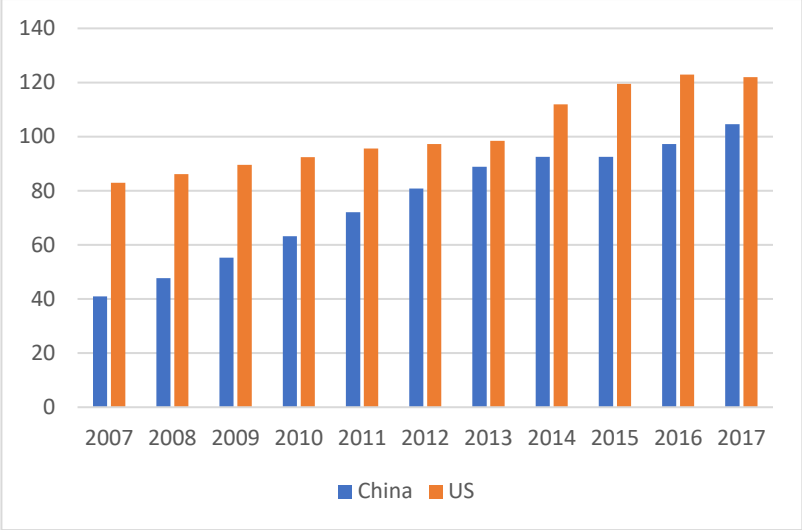
*Note: There are no data on internet penetration in China from 2000 to 2003 according to the reports by CNNIC. Instead, there are only data on the size of internet users during that period. Therefore, the data on internet penetration are calculated as the percentage of the internet users in total population in each year. Data on China's population from 2000 to 2003 are sourced from World Bank.*

*Figure 6 The Size of Mobile Internet Users and Its Proportion in Internet Users in China, 2007-2018*




*Source: CNNIC (The Statistical Report on China's Internet Development, 36th, 39th, and 44th)*

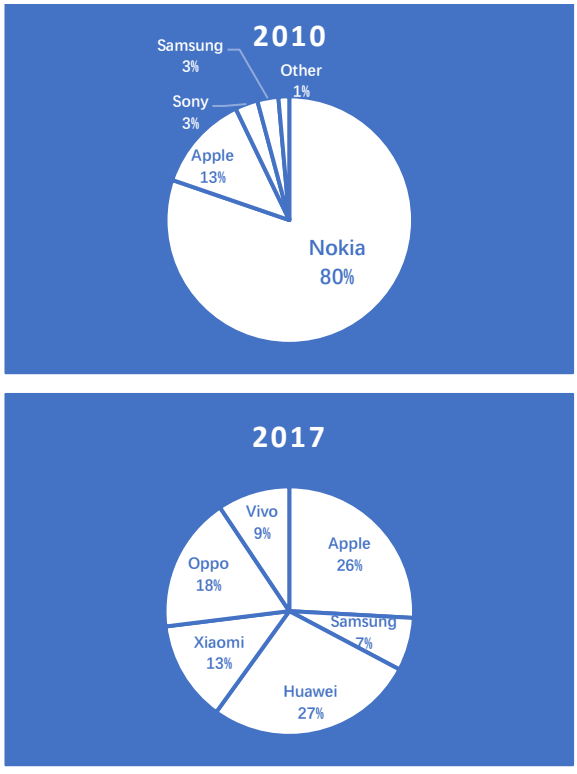
*Figure 7 Mobile Cellular Subscriptions (per 100 people) in China and the US, 2007-2017*




*Source: World Bank, ITU (Roser, Ritchie, & Ortiz-Ospina, 2020)*

*Note: "Mobile cellular subscriptions" refers to the subscriptions to a public mobile telephone service and provides access to Public Switched Telephone Network (PSTN) using cellular technology. It includes both analogue and digital cellular systems (IMT-2000 3G and 4G) subscriptions but excludes mobile broadband subscriptions via data cards or USB modems.*

*Figure 8 Mobile Vendor Market Share in China, 2010 and 2017*



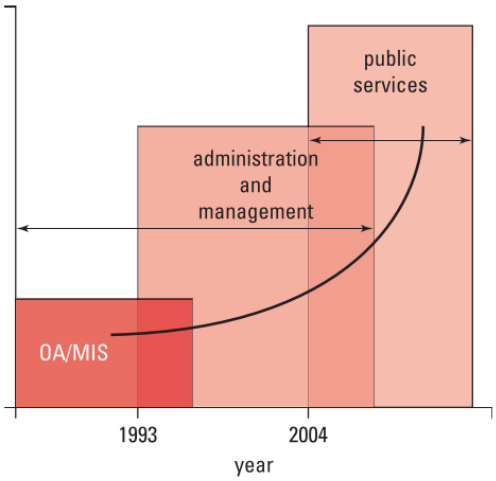

*Source: Statcounter Global Stats*

*Note: 1. All data were the data collected in December of that year; 2. Vivo is the sub-brand of BBK, so that the data of Vivo are taken from those under the name of BBK in the original data from the source.*

E-government of China is the consequences of the state's consistent consideration and awareness about the status of the Internet development. The first consideration is that the

Internet is one of the technologies that can serve to economic growth and anti-corruption movement. The second, the Internet must be put under regulation and restriction intensively. (Zhang, 2002) ICTs can be used in facilitating information exchange on market for economic purpose, and information exchange between government and citizens, but not in freeing public debates and forming civil society. The suppression of free information flow horizontally in public sphere is not contradictory with the adoption of ICTs to improve efficiency of the hierarchic bureaucracy. (See Figure 9) The evidences in GED (Governance for Equitable Development) project show that state agencies rarely invited Civil Society Organizations (CSOs) as equal partners into the forum of consultancy or policy-making process.(Wu & He, 2012)

*Figure 9 Three Stages of E-Government Development in China*




*Source: China's Information Revolution (Qiang, 2007).*

*Note: OA/MIS = Office Automation/Management Information System.*

Moreover, the government has been aware of the status of the Internet users. The Internet penetrates more broadly among the mobile users as the majority who have access to the Internet. It means that the applications on mobile devices are more prevalent than website pages which are designed to be browsed on PC. For example, setting an official account on social media platforms which are most visited by the mobile users offers more chances in responding citizens online than only posting an email address on the government's websites which are rarely visited. According to the 44th Statistical Report on Internet Development in China, 88.9% of the prefecture-level governments have reached the mobile users by setting official accounts on Weibo, setting public accounts on WeChat, and developing client-side government App.[53]

[53] Weibo is most popular Twitter-like social media platform in China with 521 million active users every month (source: fourth quarter financial report by Weibo in 2020). WeChat is the most used instant message and social media application on mobile phone with 1225 million active users every month (source: fourth quarter financial

E-government, being contrary with the previous prediction as hinder of freedom, offers an extra channel communicating with government and an extra term of evaluating government. The citizens' satisfaction in government's websites is positively related to the satisfaction in e-government and trust in government, as shown by a study based in the US. (Welch, Hinnant, & Moon, 2005) In China, the expanded information disclosure from government to citizens is supposed to increase transparency and reduces the corruption of the government. Citizens have more convenience in tracking public information and reporting corrupted officials because of e-government. (Lollar, 2006) Besides, the improved efficiency in delivering public service and responding to public appeal enhances the accountability of government and thus improves the image of the government and the perception of its capability. (Jun, Wang, & Wang, 2014)

However, there are certain drawbacks in such a system of e-government. Firstly, China's e-government applications are not driven by demand of those who need the service.(Qiang, 2007: 101) The initiation of China's central government in promoting e-government is partially the need of administrative reform, in contrast to the citizen-centric initiation in the US. The central government in doing so empowers itself in giving direct command down to the local and collecting detail information about the activities of its citizens.(Seifert & Chung, 2009) Since the outcry against the limitations of information access is muted, China strongly exemplifies the lack of a culture of transparency through ICTs. (Bertot, Jaeger, & Grimes, 2010) Secondly, digital gap also presents here. There are disparities regarding development level between the official websites of national government, coastal provincial government, and inland provincial governments due to the inherent diversity between different areas in China. For example, the highest number of "dead link" on inland provincial government websites reflects their underdevelopment in comparison with other two. National websites incline to provide rich information, while those of coastal provinces offer more opportunities for citizens to get involved in governance process.(Zhou, 2004) The latest report reveals that the gap on provincial level is narrowing in general, but the gap between inner-province cities on prefecture-level is increasing. (Tang & Li, 2019)

### 3.4.3 Conclusion

China's network governance is built on two networks: personal network and telecommunication network. As a state which remains proceeding towards modernization by building modern institution, China must rely on these two networks because its ruling party

report by Tencent). Through following the official account on Weibo or public account on WeChat, users can receive messages from the offices directly.

resists democratization while embracing market economy. In terms of the dynamics between information and complexity in modern society, these networks contribute to an alternative of democracy with relatively low cost in gathering information about the preferences and activities of citizens. China's network governance has been instrumental in improving governance efficiency; therefore, it does not imply a value rationality based on which democratization is conceived desirable. Network governance is picked from a toolkit box where many other options awaiting.

The instrumental rationality in improving governance efficiency could not change the structure of governance which has been locked in the path of dependence, hence it could not solve the problems rooting in the structure. As Zhou put it in the science of organizations, the challenges and the cost brought up by the scale of national governance could not be solved by the "technical approaches of governance". (Zhou, 2017:24) To rephrase it, I would rather say, the challenges and the cost brought up by the dynamics between information and complexity in modern society, could not be solved by either decreasing the complexity or deluding human's capability in mastering infinite information with the help of science and technology.

This thesis focuses on the question: why network governance is more developed in one region than in others? In the next chapter, the independent variables of China's regional network governance will be operationalized.

# Chapter Four:

# Methodology

This chapter aims to elaborate the legitimacy of the methodology. There are three main sections serving this purpose.

The first section will demonstrate the positivist basis of conceptualization and operationalization of network governance by clarifying the conceptual difference between structure and network. Network has been for long considered as a type of structure paralleling hierarchy and market. However, network is defined by its nodes and ties in this thesis. It will be argued that network is independent from structure in terms of both ontology and epistemology. Structure is ontologically anterior to network while network is epistemologically anterior to structure. After clarifying that network is not a type of structure, network governance can be identified as a mode of governance instead of a structure of governance. As a mode of governance, network governance can be defined and measured with positivist approaches. Having a review on the studies on governance modes can provide some inspirations.

The second section will give reasons for the comparative method. The stable institutions of China's politics, the same goals set by the central, the inner-provincial competition, the autonomy provincial government have, and the variances of provinces, all these factors make the provinces comparable units. The variances of provinces in China have been stretched since the Reform and Open-up (RO) started from the end of 1970s. The end of national enforcement of centrally planned economy is the beginning of disparities between provinces being manifested again. Before the Reform and Open-up, those disparities had existed for long. The RO at the first place was not accurately processing on a meticulous track; in fact, it experienced plenty of experiments in a local scope to explore the path to success. Once the RO started, the local governments have been gradually granted more autonomy in decision-making on fiscal policy and incentives to develop local economy. The autonomy has been the prerequisite of various experiments. Furthermore, the tournament model of promotion of local governor encourages them to compete with others for the promotion to higher position in personal career. The central authority sets goals for the future in its every five-year work plan and requires the provincial governments to achieve the goals regardless of the specific policy tools they implement.

The third section details the measurement of the dependent variable and the independent variables, including the potential independent variables. The most important part of measurement is the index construction. As argued in Chapter Three, the network governance of China is a concept of two dimensions. One is the e-government system in the dimension of cyberspace, the other one is the RC system (community governance) in the dimension of

physical world. The index of network governance is constituted by the indices for the measurement in these two dimensions. External dependence and power of local government are indicated the constructed index by taking references from the achievements that have already been made. Social Network Index is of the first time to be constructed. Despite of these variables, control variable, which is the great regional division, will be also coded in the variable list.

The next chapter will do the statistical analysis with all the obtained data.

## 4.1 The Positivist Basis of Network Governance

This part aims to demonstrate the legitimacy of methodology. There are three pillars to bolster the positivist research of this thesis in terms of ontology, epistemology, and methodology. Firstly, the existence of network (both social network and information network) has the physical dimension, which provides the ontological basis for positivist study. Secondly, network is not structure, thus network governance refers to a mode of governance instead of governance in a certain structure. Thirdly, to classify governance modes we need qualitative methods, but to measure network governance we need quantitative methods. The first one is self-evident with much less discussions needed than the latter two. Therefore, this section puts efforts in differentiating network and structure, then reviewing the hitherto research on measurement of governance modes with two examples, which are collaborative governance and e-governance, respectively.

### 4.1.1 Network or Structure?

Network governance, the term itself does not refer to governance with a structure of network. In this thesis, it must be clarified that network governance is a mode of governance through network without which the governance is impossible. Besides, “a structure of network” is so ambiguous that it should be avoided.

What does it mean by network structure? Some argue that network is a sort of structure paralleled hierarchy and (open) market (Powell, 1990), while some take hierarchy and market as extremes of one continuous spectrum in which network is positioned in the middle (Thorelli, 1986). These arguments are built upon the examination on economic activities of organizations. To illustrate network in this thesis, I would argue that network is not structure in terms of both ontology and epistemology.

Network and structure are different ontologically. Structure, for which I introduce the definition by Waltz, is defined by the arrangement of parts of a system leaving aside the characteristics, behavior and interactions of units. (Waltz, 1979: 79-83) Firstly, network has no boundary while structure does. In a holistic view, network is boundaryless. Information flow, or any other flow, not only runs along the existing ties, but also extends itself arbitrarily to potential nodes and builds up new ties. The boundary of a network is flexible, depending on the given definition of node and tie in analysis. Identifying the openness of a network is the first step before looking into it. In contrast, structure is given a boundary, which is the boundary of the given system. Secondly, it is the interaction between nodes that distinguishes network from structure. Government is a structure, which is typical hierarchy, defined by the arrangement of authority. Analogically speaking, the Solar System is a sun-centric structure

defined by the arrangement of gravity. Government has internal network in whatever sense we define network, but it is hard to say the Solar System has internal network because there is rarely interaction between planets.

Nevertheless, network embeds itself in structure. Network can be the unit of a macro system and conditioned in a relatively solid structure. For example, homogeneous firms constitute inner-competitive networks, such as producer network, retailer network, and credit network. Commercial banks constitute cooperative network for inter-bank lending/borrowing. All together they are assigned different roles in a market structure defined by the arrangement of function. In addition, network parallels structure when they are applied as strategies in different domains. An organization is likely to be structured internally and networked externally. Most firms are hierarchic with a supreme decision-making body while have partnership with other firms in a decentralized network.

If we take network and structure as approaches of analysis respectively, the distinctions are more obvious. Network analysis approach helps us identify a network in which nodes are interacting with others. Let us assume that the interaction between nodes is information exchange. To perceive the information flow, a concept of centrality is hereby introduced. Centrality, which is a property of a node's position in a network, indicates the structural importance of a node. One node might be central in terms of being able to control the flow of information, or being the first one to receive new information, or being the terminal that collect and process all information. (Borgatti, Everett, & Johnson, 2013) Centrality could be observed and measured empirically. However, when structural approach is applied, we should firstly grab the principle of arrangement. If the principle remains ambiguous, it is hard to identify the relationship between the part and the whole. The biggest challenge for scientists is the unobservability of the principle. In natural sciences, the discovery of the principle relies heavily on inspirations of genius. In social sciences, the principle can be theoretically deduced, constructed, or assumed, which makes it often open to dispute. For example, before Newton stated law of universal gravitation, it had been impossible to scientifically explain the structure of the Solar System and predict the movement of planets. Einstein's General Relativity Theory does not contradict but perfect Newton's statement on the Solar System. Differently in anthropology, Radcliffe-Brown's analysis on la structure de la parenté was criticized by Lévi-Strauss while they both applied structural approach. In all, network and structure are different in the sense of epistemology. [54]

[54] Here family study can be taken as an example. With network analysis approach, we can study the intimate relationship in this family from the intensiveness of interaction between family members, like how often they have

Network is not structure; they are paralleled as concepts but interdependent in theoretical analysis. It is the principle of arrangement that decides how structure exists and operates, while the elementary presentation of network is the flow along ties between nodes. The former is unidimensional, unobservable, and sometimes subjectively defined, which usually evokes disputes; whereas the latter is an indirect observable, which is still measurable with some techniques. It is worth noting that structure is ontologically anterior to network and network is epistemologically anterior to structure. Structure, which can be considered as the context of certain network, presets the distribution of resources and positions of nodes, but it is much less observable than network. By observing and measuring the centrality of network, we gain better understanding of the pre-existing structure in which the network embeds.

It is for no good that confusing network with structure in either conception or practice. There are two points to be accentuated in distinguishing network from structure. The first point is: it is a plausible method to identify the structure by measuring the centrality of nodes and the direction of flow in a network. The work by Immanuel Wallerstein in *The Modern World-System* provides an example. He argues that the modern world-system operates in a central-peripheral structure. The central regions in this structure are indicated by their output of capital while the peripherals are indicated by their output of labor and primary goods. (Wallerstein, 2011) The second point is: while shedding light upon network, we should keep structural factors in mind, even though they are somehow invisible. This tip is rather valuable in the case of China which is the subject of this thesis. For example, the influence of structural factors in the market of contemporary China is so strong that it should not be overlooked. Networks consisting of different enterprises including the state-owned and the private, outline a picture of competitive market economy. However, the state-owned enterprises apparently have much stronger competence in some industrial sectors because major banks are to some extent controlled by the state and have a strong preference on state-owned enterprises. Therefore, state-owned enterprises which benefit from financial structural factor

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dinner together or quarrel with each other. Which family member plays a role as the portal of information varies families. Just imagine how different two families are, in one of which one parent acts as bridge between the speechless spouse and adolescent children, in the other of which children link discordant parents who intend to get divorced. Now let the approach turn to structural approach. It is under the arrangement of power that adults are superior to children, and male to female in many cases. Power structure contributes to explain the centrality of a family network and the behaviors of family members as nodes in the network. For instance, father (or grandfather in the traditional China where the elder enjoyed privilege) gives commands and thus occupies the central position of the information network in a family. These analyses are undoubtedly oversimplified, but here I do not intend to discuss further about the agent-structure problem.

gain monopolies with state-endorsed credit and affluent loan even though the debt ratio of them implies high risk. (Breslin, 2014)

Let us return to the category which puts network into the subset of structure and parallels it with hierarchy and market. Now it is clear that this category is unreasonable. It is less ambiguous to say that hierarchy and market are networks which are marked by the number of nodes with higher centrality, than to say that network stands in the middle of the spectrum between hierarchy and market. In a hierarchic network, or to put it as a network with hierarchic structure, one node has the highest centrality far beyond any other nodes, while in an anarchic network (of which free market is representative), no one has distinctive centrality. The number of nodes with highest centrality is one and zero, respectively. The discussion that aims to identify the structure of global system other than merely hierarchy and anarchy inspires plethora of literatures in the field of International Relations (IR).[55]

To conclude, I would rather not use the term of "network structure". Network is different from structure, as demonstrated above. Additionally, it is unreasonable to categorize network into the subset of structure. The centrality reflects the structural importance of nodes in network but it itself does not reflect the structure. Instead, it is the number of nodes with higher centrality that reflects the structure. Based on these conclusions, it is not hard to deduce that network governance does not mean "governance conducted by multiple actors" although it does show a structural characteristic like this. In this thesis, network governance means "governance conducted through network". Since the elementary presentation of network is the flow between nodes, the elementary presentation of "governance network" is the multidirectional flow of information between multiple actors that participate in

[55] IR studies have offered valuable analyses on the structure of global politics. As variants of structure defined by the number of superpowers, there are unipolar structure, bipolar structure, tripolar structure, and multipolar structure. A bipolar structure is featured by two agents, for example, the United States and the Soviet Union, that both have higher centrality than others. The number is two. Similarly, multipolar structure refers to the structure of global system co-dominated by at least three states. (Moravcsik, 2010) The number is minimum three. If we presume that the sum of the centrality that each system with a certain structure has is fixed with a value "1", then, in bipolar structure we get a value approximate to "0.5" (1/2) for each polar, in multipolar structure we get a value lower than "0.33" (1/3) for each polar. These values between "1" (1/1 in hierarchic structure) and "0" (actually, it is infinitely close to zero, mathematically being $1/\infty$ in anarchic structure) construct an interval to measure structures between hierarchy and anarchy. The term of "network structure" referring to the structures in which multiple agents have higher centrality but no one overwhelms is ambiguous. As all know, network is presented by the nodes, the ties, and the flows between the nodes along the ties, not by the number of central nodes. "Multipolar structure" would be a better term as a replacement of "network structure".

governance. Network governance is the mode of governance that is otherwise impossible without the mutual exchange of information.

### 4.1.2 Governance Modes: How to Define and Measure?

As clarified, network is not structure. Therefore, the term of network governance does not explicitly illustrate the structure of governance. Rather, it does refer to one of the certain modes of governance, which are abstracted from our observations of constant, stable, and applicable patterns of governance to indicate how governance operates. If hierarchy and market are used as terms not to depict structure but to identify modes, it is worth a glance.

Governance is seen as a process of "social coordination" throughout which the partnerships pass from the beginning. From this perspective, the modes of governance differ while the motives of partnership differ. Hierarchy and market, as well as network in between, can be classified at the referential point of partnership. Hierarchical mode is featured with partnership generated by the obligation in routinized relation or under authoritative imposition. Market mode revolves around contract and property rights, of which the partnership is mediated by price. Unlike these two modes, network mode prioritizes mutual benefits of the actors who can gain complementary interest from their partners. (Lowndes & Skelcher, 1998) These three modes, as Lowndes and Skelcher point out, can be distinguished in the dimensions of the commitment the parties of interest have in it (hierarchy: medium, market: low, network: high) and the degree of flexibility (hierarchy: low, market: high, network: medium). Among the seven dimensions concerning governance modes listed by them, only these two are set on ordinal level, not only on nominal level. The lack of measurement method is obvious.

Governance modes assigned with indicators should be quantitatively measured, instead of just qualitatively described. However, in studies that conceptualize governance analytically, the mainstream is qualitative methods. The reason for the prevalence of qualitative methods is that the categories of governance are variously constructed according to the conceptualization of governance. The principle of each category is one dimension of governance, which might be the diversity of participants, the collaborative relation, and so on. Apparently, the presence and the absence of the indicators for these dimensions can only tell us about the nominal differences. Qualitative methods, rather than quantitative methods, detail the nominal differences.

More examples have been offered in recent studies. There is a binary classification of governance consisting of the good and the bad if the normative dimension of governance is underscored. (Gupta, Verrest, & Jaffe, 2015) Good governance, on the one hand, draws on

the democratic ideal with characteristics of high transparency, civil participation, and legitimacy from rule of law; on the other hand, it calls for the good performance with characteristics of high quality of public service, high accountability, and quick responsiveness. Measuring governance has been put equally with measuring democracy, although a mixed term of "democratic governance" is created to make the interchange more reasonable.(Norris, 2011) It is quite an ease to equalize two terms, but it causes confusion arbitrarily if not intentionally. Similarly, another binary classification dualizes governance into the "economic" and the "humanistic" based on the assumption of human nature. (Pirson & Turnbull, 2011) It is coined as the economic paradigm if we accept the assumption that human beings are indifferent with anything irrelevant to the fulfillment of their goals, which serve to maximize the immediate personal utility. By contrast, the humanistic paradigm is underpinned by the assumption that human beings have the need to build up friendly and cooperative relationship because their ability in receive, process, and transmit information is largely limited. Hierarchic control as a governance mechanism is appropriate under the economic paradigm, whereas network inclusion of multiple stakeholders as the other governance mechanism is more humanistic. Another example offered by Gupta et al (Gupta et al., 2015) is that urban governance, local governance, and global governance are respectively identified with the spatial levels of governance. They claim that multi-level governance does not simply adumbrate the scales of governance climbing up and down along a ladder but implies the differentiated functions, redistribution of power and resources, and the accordingly different strategies employed by social actors. Likewise, governance can be identified with the objects or issue areas, such as corporate governance, environment governance and climate governance. But these are not much relevant to methodology.

Governance modes are the abstractions of constant, stable, and applicable patterns of governance to indicate how governance operates. They are named under the necessary condition of the pattern without which governance is impossible or unrealistic, for example, network governance, collaborative governance, and e-governance. To be valid, the abstraction should be theoretically deducible and inducted from empirical evidence. Strictly speaking, the ambiguous classifications listed above, especially that anchor on normative dimension of governance, are not giving a clue about the modes of governance, albeit they are informative for studies which aim to judge the degree of democracy in governance. Compared with these, the terms of governance modes such as collaborative governance and e-governance provide more referential value for uncovering new ways of operationalization on this very concept.

#### 4.1.2.1 Collaborative governance

Collaborative governance is the one of governance modes commonly recognized and comprehensively modeled in the accreting studies, very similar to network governance in this aspect. Due to the inherent implicitness of the word “collaborative”, the term of collaborative governance of which the importance has ascended in governance studies is used to cover all governing activities processed in collaborative relationship. Some define it as a common mode of governance to draw scholarly attention from “the species” to “the genus”. Ansell and Gash integrate other interpretations and summarize that “collaborative governance is therefore a type of governance in which public and private actors work collectively in distinctive ways”. (Ansell & Gash, 2007) They extract six criteria of the definition based on which they distinguish the collaborative from the non-collaborative governance, including leadership of public agencies or institutions, participation from nonstate actors in decision-making, focus on public issues and so on. As for the collaborative process itself, some indicative variables, for example, commitment of stakeholders to the process, might be measured by survey. But still, they suggest that case study would be the most appropriate research method to the nonlinear process of collaborative governance.

Broadening the definition developed by Ansell and Gash, Bingham argues that the term of collaborative governance can encompass all the phenomena of governing process if its goal is achieved through partnership of the public and stakeholders. The three stages of governing process, as put in an analogical way, are upstream, midstream, and downstream, respectively. There are some indicators to measure the quality of upstream process for legislation work: “socioeconomic representativeness, consultation and/or outreach with wider public, diversity of participants and views represented, integration of concerns, and information exchange”. (Bingham, 2013) While representativeness and diversity that apparently emphasize the normative dimension of governance are measurable, integration of concerns and information exchange remain unclear in their indicative relation with the “quality” and the measurement methods as well. What is worse, as Bingham himself admit, there is no explicit gap between upstream and midstream. It is also difficult to distinguish midstream and downstream that both involve the dispute resolution. An analog can enhance vivid description and simulate a simplified model but might be neither precise nor accurate in analysis. Moreover, the broadened definition which encompass all phenomena on the one hand is internally inclusive and bias-free, on the other hand is so obscure in extension that the concept becomes a hollow. Against the over-generalization of Bingham’s “collaborative governance”, Emerson, Nabatchi and Balogh (2011) define collaboration governance as one mode of governance for which

collaboration is indispensable. The most noteworthy part is their concept of "Collaborative Governance Regime" (CGR) that tenets an integrative framework of collaborative governance as a subsystem in a general system context. CGR is the subsystem for decision-making, in which actors act on common ground. Actors under CGR have commitment in the shared norms embedding in the system context, otherwise CGR is unrealistic. The researchers establish a relatively complicated model of the collaborative dynamics and actions with multilayers. CGR, the layer between collaborative dynamics/actions and system context, has been input with drivers from system context while outputting adaptation to system and impact on CGR itself. With this model, they post ten propositions for the causal explanation with regard to collaboration governance. To sum up, drivers from system context fuel CGR, while (normative) institution, interaction between actors, and their capacity for joint action within CGR determine the quality of it. Nonetheless, they admit that this framework needs further empirical research because its working assumptions need to be tested and validated.

It is not hard to find from studies on collaborative governance that the measurement of governance mode is still suspended in the air. It is seemingly a little absurd to "measure" the "mode" instead of the "quality", but it is actually what we need for causal explanation.[56] Measurement on "quality" implies a normative evaluation, while measurement on "mode" is neutralized. Moreover, the measurement provides interval and ratio data other than only nominal and ordinal data for further research on governance mode.

#### *4.1.2.2 E-governance*

E-governance is also one of the modes that increasingly draws scholarly attention. In stark contrast with collaborative governance studies, e-governance studies have endorsed neither pure description nor theoretical modeling. The rather explicit definition and undisputed conceptualization leave little space for diverse interpretation. Instead, those studies which

[56] Let us conceive a scene like this: we, while studying collaborative governance, take case study method as Ansell and Gash advise. We have three cases, A, B, and C. The fruitful literatures in classifying governance modes help us identify the modes of A, B and C, respectively. For the question "is the governance mode of A collaborative or not" it only needs a binary answer of "yes or no". But what if A, B and C are all collaborative governance? It does not need an answer of "yes or no" anymore but requires our knowledge about "more or less". What can we count on to answer the question "is the governance mode of A more collaborative than that of B"? The measurement of certain mode. However, the answer with large probability provided by current studies is "yes, the quality of A's outcome is better than that of B's", or "yes, A is more democratic than B". Apparently, the logic is questionable. If we lack the measurement method, we could never answer the question "why is the governance mode of A more collaborative than B". Unfortunately, we lack.

benefit from the easily accessible data of electronic records have taken a lead in measurement and hypothesis testing.

E-governance, literally electronic governance, refers to governance using information communication technologies (ICTs). At the moment when using ICTs becomes a new trend in public administration, however, e-government instead of e-governance firstly attracts scholars. For e-government, the relevant theories originate from the theory of innovation adoption/diffusion by Everett Rogers (Rogers, 1983) that provides a curve model to posit how innovation has been adopted. E-government primarily was measured by the extent to which government adopts ICTs, such as the number of official websites established by government, the portion of staffs who obtain training about ICTs, and the amount of paper-free administrative tasks. Although the studies on e-government have been criticized by Heeks and Bailur (2007) for their weaknesses on methods, they are, at least, applying methods like questionnaire survey, document analysis, and interview to sweep the gloom caused by imaginations and analogs.

E-governance differs from e-government. It is not merely the public administration exploiting the advantages of ICTs, but also the governance expanded into cyberspace where social network sites have woven the real and the virtual together. Governance implies widening participation from the public and the private sectors in the process of decision-making. ICTs in this process are thus not merely instruments for information disclosure and service delivery from government to the public unidirectionally, but also the infrastructure of information network through which information flows between various actors. Hence, the concept of e-governance, compared with e-government, is added a normative dimension of democracy. These two compositions, namely e-democracy and e-government, are both taken account into the measurement of e-governance[57]. (Holzer & Manoharan, 2016) This measurement reflects a distinctive disjuncture between two independent dimensions: the normative dimension and the instrumental dimension. The disjuncture is stressed in the thinking on the relationship between the effect of e-government and democracy. While some argue that e-government improves the transparency of government affairs, some argue that e-government and democracy is negatively correlated. Government can facilitate e-government as an instrument to improve efficiency without an intention to facilitate democracy.[58] In the case of

[57] They use the term of “digital” (which I think is more accurate) instead of “electronic”. But for convenience, all interchangeable terms will be replaced by “electronic”.

[58] It is possible that high efficiency and poor democracy co-exist when the information flow only runs from government towards citizens in one direction but not in a mutual manner via channels activated by ICTs. Citizens

China, the building of e-government even only has been boosted with the reinforcement of central authority overcoming the obstruction posed by the telecommunication operators which counter each other because of conflicting interests. (Zhang, 2006)

Accountability, as one facet of democracy, is considered as an integral part in measuring democracy. The accountability of e-government ("e-accountability") can be indicated by the openness of official websites in terms of transparency and interactivity. (Wong & Welch, 2004) Transparency measures the available amount of data on official websites, while interactivity measures the degree of availability to people who want to access the data. Findings put forward that the accountability of e-government is driven by the normative and policy pressure, rather than by the economic and technical concerns. It is highlighted that the domestic factors, such as the role of state, the mission sense, and the political autonomy of civil services, will lead to a divergence in accountability on national and organizational level while global pressure of technical development fuels the rise of accountability in general.

However, I have demonstrated that the information flow from government to citizens on the official websites, indicated by openness, is inadequate to depict a whole picture of e-governance. The measurement provided by Wong and Welch is still only concerning the unidirectional information flow. The interactivity that measures how easy it is for citizens to access to information is not able to represent the interaction in the process of which citizens play a role of positive information sender instead of passive receiver. To measure e-governance, it is undoubtedly necessary to measure the information flow from citizens to government in the process of interaction. But it is understandable that the previous studies only measured the availability of information and service provided by government because in the early stage of e-government ICTs were too limited to accomplish interactive features on the government websites. The direct interaction between citizens and government based on ICTs becomes realistic in a relatively late stage of e-government, depending on the technical readiness which allows citizens give comments and feedback online via e-mail and bulletin boards. According to the reports from the citizens who visit the government websites, the most expected features include comment boards and automatic e-mail updates for public outreach and democracy enhancement. In addition, it is important to take responsiveness into consideration as it does make no sense if the citizens never receive response after they

gain another approach to access to the information which government is willing to disclose whereas they gain no more chances to participate in public affairs. This fact reminds us that both dimensions should be measured. If only one dimension is considered in measurement, it is apparently biased and misleading to a wrong conclusion, especially when we attempt to reveal the relationship between e-governance and good governance.

give feedback. (West, 2004) Responsiveness in West's research is measured by the time duration before receiving a response from government officials in a test of sending request message via email. He suggests that e-government has the potential of systemwide political transformation only if the communication via websites is user-friendly, interactive, and responsive.

The conceptualization and measurement of e-government are refined along with the developing technical readiness and the evolving online applications. Technologies allow e-government to have more interactive features, which add a democratic dimension to e-government. Ever since, there has been a shift from e-government to e-governance. The combination of e-government and e-democracy gives birth to the concept of e-governance. On the one hand, the efficiency in disclosing information and delivering service is related to the performance of e-government; on the other hand, the participation of citizens in the improvement of the performance and even the initial stage of decision-making via online platform also matters to democracy. Hence, highly relying on the ICTs, e-governance is measured by the mutual information flow between citizens and government. The abundant data generated throughout the online activities of citizens and their interactions with government provide an ever-best chance for political scientists to test their hypotheses. Based on the tested and modified hypotheses, there emerge the possibilities of building theory.

### 4.1.3 Summary

The studies on collaborative governance and e-governance have shown two differentiated tendencies in conceptualization and measurement. The one is the tendency to theoretical modeling; the other is the tendency to hypothesis testing. Ideally, these two tendencies should be integrated into one, serving to the same purpose of building a concrete theory. However, in the literatures of collaborative studies there is a severe shortage in hypothesis testing because of the obscure conceptualization and the lack of measurement, while in those of e-governance studies the accumulating evidence and propositions await theorization. This thesis aims to integrate these two tendencies in building a theory on governance mode. The first step is to develop hypotheses from theoretical assumption and deduction; then the second step is to test these hypotheses in a positivist manner. The first step has been shown in Chapter Two, while the second step will be shown as the main body of this thesis later in the succeeding chapters.

The importance of these two tendencies stressed respectively by studies on collaborative governance and e-governance is not all what they contribute to the future studies. **The theoretical modeling of collaborative governance sheds light on not only the collaborative**

**governance but all modes of governance. It provides hints about the potentially relevant factors, namely the independent variables in hypotheses**, including input from system context, institutions, and dynamics/actions of actors. Of more importance is the envisaged mechanism, which is constructed as being multilayer. The measurement of e-governance is based on accessible data that are generated in information flow via the media of ICTs. Through analyzing those data, we can know the direction of information flow, the availability of information and the centrality of nodes in an information network. **The measurement method of e-governance polishes the simplification and the clarification of governance modes in the dimension of information. In other words, it can serve to measure the dependent variable in hypotheses.**

For the purposes of both acknowledged definition and causal explanation, appropriate measurement methods are required. It is reasonable to deploy qualitative methods to describe and define different modes of governance, while quantitative methods have more merit in hypothesis testing for causal explanation. Especially when virtually every government realizes that collaboration, interaction, broadening participation, and information collection are becoming vital for governance, governance modes in different states are becoming more homogenous. It makes the more valid measurement on governance mode much in demand. Like what has been shown, it is reductional to study a mode without qualitative description. However, our job for now and the nearer future is to test the hypotheses on the relationship between the governance mode and relevant factors, transcending the limitations of pure description and theoretical model. It is neither to criticize qualitative methods nor to deny the value of description and model but to suggest that we need assorted methods to ameliorate the shortcomings in methodology of governance studies. Rather, to accomplish a convincing explanation, both quantitative and qualitative methods play their roles.

## 4.2 Comparative Method on China's Provinces

China is complicated for those who have scholarly interests in it on one hand; it is also an ideal laboratory for them to have observation on the mergences and collisions between different ideologies, institutions, cultures, as well as the restructuration of society on the other hand. As for the subject of this thesis, China's network governance is one of the ongoing projects in the laboratory. According to Chinese government's administrative divisions stipulated in the Constitution, there are 34 regions on the provincial level, including 23 provinces, 5 autonomous regions, 4 municipalities, and 2 special administrative regions. Roughly classified, they locate in several great regions (excluding Taiwan which is de facto not administered by the People's Republic of China). Provinces[59] in the same region, for example, East region, have the similar geographical advantages/disadvantages, natural resources, industrial structure, and development level of economy. The comparisons made between provinces in the same area, or across different areas are commonly seen in China studies. A relatively stable context provided by China's political system and the internal diversity of regions can both benefit the research because they make the practices of network governance in different regions comparable. With a comparative method, the explanatory factors of China's network governance can be identified.

The internal diversity of China as a sovereign state with a third largest territory is too important to be ignored, since it is found that a whole picture of China's political system is hard to depict. It is not only because of the regional diversity in terms of geography, population, natural or human resources, or even industrial legacy from historical period of the country being semi-colonized, but also the result from a gap fixed and enlarged by institutional settings. The most visible and important divergence is presented as the inequality between urban and rural areas, as well as that between coastal and inland regions. In pre-reform era under Mao's regime, industrialization and urbanization were the priorities in developing the national power of economy and military while confronting its rivalry behind the iron curtain. Tremendous resources were forcefully extracted from the rural and then allocated to the urban under the institution designed to build centrally planned economy, while the flow of labor and residence from the rural to the urban was cut off. It is the rigid scissors difference that has widened the inequality between the rural and the urban. By contrast, the inequality between coastal and inland regions has been mounting since the reform started because the economic efficiency differs when the local governments have been granted more autonomy

[59] Here "provinces" include municipalities and autonomous regions as administrative unit on provincial level Thereafter, they are shortened as "provinces" for convenience.

in taking advantages of the local resources. Openness, which is the most relevant advantage of coastal regions over the inland, contributes to global transportation, foreign trade, and investment, thus boosts the gap between them, especially in terms of economy. (Kanbur & Zhang, 2004)

Although the institutional settings carve the gap, the power of locality still keeps growing while counteracting the restrictions from those settings. The relationship between the central and the local differs in each region during their long-time negotiation and gaming under the table. How the party-state on grassroot level, which is local government and party cadre, maximizes the autonomy under the limitations of legal frame and local resources depends on how large the grey space is allowed by the central authority. The grey space where the central and the local share some consent out of the formal institution buffers against the inherent intense between authoritarian power center and incoordinate local party in a hierarchical bureaucracy with such a large size.

Generally, the institutional frame is set by the power center, but the local parties otherwise shape it from bottom to top in a pragmatic way. This dynamic process is particularly obvious when the top itself is uncertain about the path and the destination of the transformation departing from socialist tradition. Without the tacit consent to these illegal activities from the local governments (and the central) under orthodox socialism, it would have been impossible to explore a practical path towards market economy.[60] The research on how local government participated in knocking the crack on the surface of the centrally planned economy have extended the understanding of China's economic reform and political system.

In addition, the meritocracy in personnel along the ladder for climbing to the top is a noteworthy structural factor if we search for an explanation to the local stimulus of institutional change. Governor in each region is assigned by the central, hence takes the

[60] For example, the economic activities between private sectors in the region on the eastern coastline, which were not legal back in 1970s, cultivated the market where the people are engaged into creating personal wealth instead of being restrained in public sector. In rural area, it is the grassroot party cadre that led a dozen of peasants to discard the collective use of land, which constitutes public ownership of the means of production as the backbone of socialist ideology and institution. (See Chapter Three) The exploration of land system reform has experienced the similar stages in the early years around 2000. The main violators against regulations and laws on land were state agencies and collective organizations that occupy, transfer, or sold the land illegally, especially in the most economically developed regions on the eastern coast. The violation from the bottom stimulates the "institutional fix" from the top. It is thus concluded that the socialist state of China cannot avoid fragmentation and disintegration on various administrative level and in between different departments when it comes to land issue. (G. C. S. Lin & Ho, 2005)

obligation of executing the policies and approaching the goals set by the latter. The merit of governor is on paper assessed according to the performance of execution and the accomplishment of goals, while some specific policies and goals set by the central are hardly compatible with the de facto institutions formed in local environment. It causes the deviation between the high score in assessment that results from the compliance with the central and the effect of governor's strategies that well-adapts to the local. When the contribution to GDP growth weighs most in assessing the merit of governor, some of them would take a risk of illegal activities that drive the GDP growth at a high speed. The central government, however, also benefits from those illegal activities because it collects the largest portion of profits as the largest landlord. To increase the benefit from the activities which have not been acknowledged formally yet, or to reduce the cost consumed because of the information asymmetry, the central government is motivated to modify the assessment criteria, the incompatible policies, or even the institution itself.

It is assumed that governor is self-interest and rational individual who participates in a promotion tournament for a championship of entering the power center. The promising reward of higher position and greater power is the incentive for local governors to compete with their fellows. The tournament mode is the high-powered incentive that motivates the governors beyond the decentralization of administrative and fiscal power from the central to the local. (Zhou, 2007) The competition to a large extent can explain the remarkable boost of China's economy.(Cheung, 2014) During the competition, the inspiring entrepreneurship rises from the governors on county level after the land system was reformed. The governors on county level since then has the power to decide the lease of land usage made with other agents (such as foreign investors, state-owned enterprises, and private companies), though only the highest authority in Beijing holds the ownership of land under an orthodox socialist ideology. Governing a county has been like running a shopping mall ever since. The governors leverage the attraction to investors by adjusting the price of land usage for a maximum of rent that they obtain as a certain portion of the profit of the investors according to the lease. When thousands of counties across this country compete, the usage of land reaches a high efficiency in terms of economy, which is close to that in a free market. This high efficiency which results from the intensive competition is an explanatory variable to the rapid growth of China's economy.

By the same token, when network governance owns the advocacy from the central government, there is a campaign for the nationwide development of network governance run downwards the regions. A competition starts, engaging the regional governors in exploring

the practical methods of developing network governance. A national assessment criterion that necessarily accompanies the competition can provide a baseline on which the performance and the accomplishment of each region of developing network governance can be assessed and compared. However, the assessment of developing network governance is unlike that of developing economy which is measurable by several quantitative figures. The lack of commonly recognized conceptualization of network governance brings difficulties in measurement. At present, various think tanks in China are raising their own definitions and methodologies to overcome the difficulties around the relative concepts (including network governance, e-governance, the capability of governing, etc.). The think tanks, or the research institutes in universities, are radiating their heat to the policy makers with stronger expertise and scholarly independence rather than their counterparts in government departments, albeit primarily sponsored by the state. (Naughton, 2002) Therefore, their achievements insofar have offered valuable references to whomever aims to measure network governance.

## 4.3 Measurement of Variables

### 4.3.1 Dependent Variable

The dependent variable in the hypotheses of this thesis is the development of network governance. This shift from command governance to network governance is detailed with a qualitive research on the specific context of China in Chapter Three. Generally speaking, command governance refers to the mode that government sends commands to other sectors (including inferior branches, private sectors, and citizens), while network governance refers to the mode that government establishes information network composed by other sectors for mutual information exchange. Government in command mode does not need massive feedback from other sectors because the complexity of society is at a lowest level so that the governing activities do not lead to unexpected results. But the complexity is increasing alongside the modernization. If government without adequate feedback from other sectors fails tackling some vital issues which could become threats to the current political system, it must turn to network mode. It is not saying that uncertainty can be eliminated thoroughly with the feedback, but that uncertainty can be alleviated to an extent that it remains unthreatening under a threshold.

The measurement of dependent variable is the core issue here. It depends on the conceptualization of network governance, and the conceptualization bases on the constructed definition by which network mode is distinguished from other modes. The key word of the definition in this thesis is “information”, which has the measurable physical presence. Information can either be measured by direct observation, like data received and

sent via digital channels, or be measured by indirect indicators, like the number of information centers supposed to gather and distribute information. Considering the relevance with "governance", however, the range of measured information should be narrowed down to that initiated by government. Placed in the specific context of China, the information initiated by government refers to that exchanged through e-government, and the information center initiated by government refers to the official websites, social media accounts of government, and the Residents' Committee (RC). (See Chapter Three)

To summarize, to conceptualize network governance, two spatial dimensions are dispensable: cyberspace and physical world. Network governance in China has two indicators, respectively, which in cyberspace could be measured by information exchange online and in physical world could be measured by the administrative agency of RC. The one is the indicator of e-government development, the other is the indicator of RC development. The former is relatively well-developed as being applied in the abundant studies on e-government, while the latter is rarely discussed in the scattered literature about community governance.

#### *4.3.1.1 Indices of e-government*

E-government development index (EGDI) is an indicator of the status of e-government development raised by the United Nations (UN). The UN has outputted reports about the status of e-government development of its member states every two years since 2002. This indicator is composed of the measurement in three important dimensions: the provision of online services (OS), telecommunication infrastructure (TI) and human capacity (HC), therefore it is the weighted arithmetic mean of three indices: OSI, TII and HCI. It is the most broadly applicable indicator when researchers want a big picture about the development of e-government in certain cities, countries, as well as regions like Europe, Asia, North America, etc. It can be used to make a comparison between cities, countries, and regions, but hardly serves to the purpose of comparing the units that belong to the subset of the regions in one country. Nevertheless, the simplicity of this indicator attracts the researchers. They calculate the data collected in the three dimensions and obtain the outcome as EGDI of the targeted unit. Additionally, there are supplementary suggestions to this measurement. For instance, Boyer-Wright and Kottemann (2015) demonstrate that institutional efficacy should be considered as another enabling factor of e-government development because it is statistically correlated to the e-government development on a significant level. The index that reflects institutional efficacy is provided by the World Bank as the objectification of "the ease of doing business", which is measured by the steps, time, and cost of procedural process in one country.

Within whatever dimension the data are collected, the measurement of EGDI emphasizes the level of informatization and digitalization of the society in one country; hence this index is rather a macro indicator from which we can know how well e-government is potentially embraced in such a society.

Another attempt of the UN to gain knowledge about the status of e-government in most countries is designed more thoughtfully than EGDI. The Economic Commission for Africa (ECA) of UN has found that it is difficult in measuring the status of ICT applied in government of most African countries. In most African countries, e-government processing on the very primary stage is much less advanced than that in the developed countries. There are barely standardized methods of measurement and internationally comparative statistics. To break this adverse, the commission leads a task group to establish a standard and applicable methodology for the underdeveloped countries. A list of seven core indicators of e-government has been created, six of which are based on the digitalization of central government. For example, it is supposed to measure the proportion of employees in central government using computers and the Internet. (Temtime & Belai, 2014) The main reason of focusing on central government is that central government as the most powerful stakeholder and most reliable coordinator can build standard procedures and collect qualified data of its own. This measurement of e-government adapts to the developing countries with disadvantages to ensure that the statistics are comparable across all the member states of UN. It gives priority to maximal compatibility, friendly operation, and broadly application at the cost of the statistics of subordinate departments and local governments. Therefore, it may be biased when there is a digital gap between the central and the locals.

Another method of assessing the development of e-government is set on the base of the online application of e-government. It is application-centered, instead of necessarily cooperative with government. Compared with the methods above, it is more flexible and precise when the targeted unit is much smaller than a nation-state. It could be a province, a city, even a county. Researchers in marketing group, consulting company, and individual research institute tend to use this method, probably because it is compatible with the investigation that they get used to. In particular, the online application means the official website of government that provides limited information disclosure and public services at the early stage of e-government. On one hand, some figures of which data are easily collected can reflect the quality of the general design of website, such as the clicking responsiveness of hyperlinks, the speed of loading media components, visiting rate of secondary webpages, and so on. On the other hand, survey with questionnaire among citizens who have visited the

website also serves to the purpose of assessment. The questions generally include the ease of accessing the website, the actual responsiveness from the "manual custom services" (meaning there is supposed to be an employee of government responding), the level of accountability and traceability of sequential measure in solving problems, etc. As the online application of e-government develops with the update of the whole internet, the method has been increasingly refined.

For the measurement of e-government on provincial level in China, the third method outstands. This thesis takes the index raised by National Academy of Governance (NAG)[61] as the indicator of e-government development. Delegated by the General Office of the State Council, the E-government Research Center of NAG has published the yearly reports on e-government since 2015. As the delegation of the central government, it is a third party of assessing the performance of the provincial governments. Supported by the State Council, it is granted the authority to require the cooperation from the provincial governments, and the money to design the survey as deliberately and inclusively as possible. In one word, it to a large extent enjoys privileges over other think tanks or research institutes because of its relationship with the central government. This special condition does not necessarily make its index more accurate or valid, but helps it being the most informative for the subject here. In the newest report in 2019, it includes the assessment of the e-government of main metropolises in each province except for that of the 32 provincial governments.

According to the report (NAG, 2019), 5 first-level indicators, 23 second-level indicators, and 86 third-level indicators are applied in the measurement of provincial government websites. The foremost 5 first-level indicators are the accessibility to public service, the standardization level of procedures, the clarity of disclosed information, the convenience of one-stop service, and the efficiency of problem-solving via those websites. It is emphasized that the design of measurement is centered on user experience, because the initiation of this assessment is to turn the provision of public service from the government-oriented to the citizen-oriented. The scale of index is set from 0 to 100, within which each province has been scored. An ordinal category is also used to have a bigger picture: the e-government development level of provinces could be "very high" ($\geq 90$), "high" (80-89), "medium" (66-79), or "low" ($\leq 65$). Half of the provinces are clustered in the "high" category.

[61] National Academy of Governance is the academy also called Party School of the Central Committee of China Communist Party (CCCCP). It has been the highest-level camp for the trainees of future leaders since it was established as the party's school in 1935. Having been entitled as academy in 1988, it is additionally the think tank under the direct supervision of the CCCCP.

However, the index of e-government from NAG does not consider the portion of population in each province that has access to the Internet. For example, the e-government development level in Guizhou province is seemingly higher to that in Beijing or Shanghai, if we judge from the index provided by NAG. Guizhou province locates in the Southwest China where the economy is hindered by the mountainous environment and inconvenient transportation. In this case, the Internet infrastructure in Guizhou certainly lags behind Beijing or Shanghai because of its disadvantages in economy as well as its public expenditure that could be spent on the Internet. In fact, the Internet penetration in Guizhou is much lower than that in Beijing or Shanghai. There is less than half population having access to the Internet in Guizhou, which makes its well-designed government website a remote garden with a few visitors. Under this circumstance, the index which measures the e-government should be reconsidered after being placed into the socioeconomic context of each province to reveal the real outreach of network in cyberspace. For this purpose, the final score of each province of network governance in cyberspace should be the product of the index of e-government multiplied by the Internet penetration.

*Table 1 Calculation of Final Score of Each Province on E-Government*

| | E-Government Index by NAG | Internet Penetration (2016.12) | Final Score |
|---|---|---|---|
| Beijing | 86.97 | 77.8% | 67.66 |
| Tianjin | 81.48 | 64.6% | 52.64 |
| Hebei | 78.71 | 53.3% | 41.95 |
| Shanxi | 81.08 | 55.5% | 45.00 |
| Inner Mongolia | 76.30 | 52.2% | 39.83 |
| Liaoning | 81.83 | 62.6% | 51.23 |
| Jilin | 74.87 | 50.9% | 38.11 |
| Heilongjiang | 80.06 | 48.1% | 38.51 |
| Shanghai | 92.79 | 74.1% | 68.76 |
| Jiangsu | 94.31 | 56.6% | 53.38 |
| Zhejiang | 93.55 | 65.6% | 61.37 |
| Anhui | 92.13 | 44.3% | 40.81 |
| Fujian | 88.29 | 69.7% | 61.54 |
| Jiangxi | 82.75 | 44.6% | 36.91 |
| Shandong | 82.27 | 52.9% | 43.52 |
| Henan | 79.36 | 43.4% | 34.44 |
| Hubei | 81.39 | 51.4% | 41.83 |
| Hunan | 82.64 | 44.4% | 36.69 |
| Guangdong | 94.63 | 74.0% | 70.03 |
| Guangxi | 82.47 | 46.1% | 38.02 |

| | | | |
|---|---|---|---|
| Hainan | 81.37 | 51.6% | 41.99 |
| Chongqing | 83.61 | 51.6% | 43.14 |
| Sichuan | 86.81 | 43.6% | 37.85 |
| Guizhou | 93.55 | 43.2% | 40.41 |
| Yunnan | 82.58 | 39.9% | 32.95 |
| Tibet | 69.29 | 46.1% | 31.94 |
| Shaanxi | 79.73 | 52.4% | 41.78 |
| Gansu | 76.54 | 42.4% | 32.45 |
| Qinghai | 70.09 | 54.5% | 38.20 |
| Ningxia | 82.83 | 50.7% | 41.99 |
| Xinjiang | 61.23 | 54.9% | 33.62 |

*Source: NAG report (2019); CNNIC 39th report (2017)*

#### *4.3.1.2 Assessment on RC development*

Unlike the e-government system, RC system is highly China-characterized. Therefore, there are neither broadly acknowledged methods for measurement, nor specialized research institutes outputting indices for assessment. In recent studies, RC system has been contained as part of community governance. It in fact works for the local government, taking a role of administrative agency in the domain of community.[62] A survey among residents in 7 communities subordinated to one street office in a city shows that RC is the administrative agency with which 95.2% of them get contacted most frequently, and 47.4% of them will contact RC directly when they want to make an expression of demand or requirement. The researchers who undertake this survey thus argue that RC is the main governing body in community governance, from the perspective of residents. (Chen & Zhuo, 2016) In Chapter Three, the importance of RC and the growing trend of communities have been discussed in detail. Considering the embeddedness of RC in community, this thesis supposes that the performance of community governance at a high degree reflects the efficacy of RC system. Fortunately, studies on community governance have built a base of assessment and measurement, although there is still discrepancy between China with RC system and the countries without it.

Two affluents in the mainstream of the studies on community governance are stretching: the one emphasizes “governance”, the other emphasizes “community”. The former conceives that community governance is governance within community as a limited geographic space. The latter, by contrast, prioritizes the characteristics that community primely presents, such as the role of personal network, the motives for good of neighborhood, the appeals

[62] See Chapter Three.

concerning local issues, the grassroot participation and deliberation, and so on. The measurement methods following these two affluents also differ. Governance assessment in general highlights the normative dimension of governance within which democratic procedure, accountability, and transparency weigh much. Governance in this dimension, which is apparently related to the level of democratization in a country, rarely fluctuates in a short term. However, community governance assessment concentrates on the instrumental value of the process engaging a variety of agents to govern community. The requirement of a process for a common good or problem-solving in a much smaller domain rather is being effective and efficient. The consequence of process is dependent on the meaningful interaction between community agents in the structure of governing, thus it varies under different situations. Since the process is relatively difficult to measure quantitively, qualitative method prevails. For those who do not accumulate adequate materials for qualitative analysis, the measurement of the consequence of process is more operational.

To summarize, three approaches to measure community governance have their different focuses. One is structure-centric, one is process-centric, and the last one is consequence-centric. Structure-centric approach, which focuses on the most static object, is designed to indicate the general status of governance of a political entity (for example, a country). The governance issue has drawn attention from the prominent international organizations, which are mostly intergovernmental, hence a world-wide measurement is achievable with the efforts of these organizations. For this reason, the result from this measurement is the most internationally comparable. The process-centric approach and the consequence-centric approach are both more precise than the structure-centric approach when it comes to measure community governance. The difference between them is that the process of governing is diachronic and dynamic, thus more complicated than the static structure and the unchangeable consequence. Qualitative methods (such as fieldwork, small-sample interview, participant observation, etc.) are much necessary in analyzing the process. Therefore, process-centric approach which is naturally compatible with case study hardly applies in a large range. The consequence-centric approach primarily relies on the questionnaire survey responded by the community agents who are engaged in governing process. Simply speaking, it asks questions on the feedback from the respondents if they gain understanding of the mechanism of community governance, feel satisfied with the governing process, or strengthen the connection with the community as a whole, and the other members in the community as well.

RC system, as pointed out, pivots community governance in China's context. The design of community governance assessment must take RC system into account, otherwise it is unavoidably biased and invalid as what is supposed to indicate the real world. In Lu and Ding's design (2019), RC (and the residents whom it is supposed to represent) is one of the three governing subjects in community governance. They identify government, residents, and third-party agencies as the governing subjects that constitute the three first-level indicators. The assessment applies two approaches, which are structure-centric and consequence-centric, in measuring different indicators. For example, public expenditure from the local government into infrastructure construction for community, which is one third-level indicator of government performance in community governance, indicates the structural factor that cannot be changed easily by other agents. The data of the expenditure are collected from the official statistical reports. Meanwhile, the degree of residents' satisfaction towards public service provided by government is another third-level indicator of government performance. The data collection rests on the survey among residents in the sampling communities. However, their design is yet to be accurate for the focus on community. For instance, it is not without doubt that companies, as the third-party agency in community governing, play the important role as much as RC which is also the governing subject defined in their design without a weighted calculation. One of the third-level indicators of companies' participation in governance is their investment in technological innovation. Apparently, there is hardly an indicative relationship between the investment strategies of the companies and their participation in governance. Furthermore, there are 48 third-level indicators of which data are designed to be collected from questionnaire surveys, statistical reports from both government and community, financial statements of companies, interviews with residents and government officers, and so many other resources. For a small sample of communities, this assessment could be concrete (if some indicators were further refined). For a large sample, like communities across provinces, this assessment is expectedly time and money consuming. In all, it is seemingly a great effort in programming a perfect and completed assessment application, but its applicability in practice is unexamined.

To make the cross-province comparison possible, the data collection should be nationwide. Chen (2020) bases his own assessment framework on Chinese General Social Survey (CGSS). This survey has been undertaken by Renmin University of China since 2003. In its 2015 annual survey, 478 RC (including Community RC in urban area and VC in rural area) in 28 provincial regions (in China mainland except for Hong Kong, Taiwan, Macau, Hainan, Xinjiang, and Tibet) are covered, and 10968 valid responses from randomly selected households are obtained,

according to the official website. (NSRCRUC[63], 2018) The assumption raised by Chen is that good community governance has positive affect on three levels, from macro to micro. Under good community governance, the rule of society on macro level is enhanced, the personal relationship between individuals on medium level is tightened, and the well-being of residents on micro level is improved. Therefore, he sets these three objects as first-level indicators. The rule of society refers to the rule in legal and political dimensions both, which are the rule of law and the rule of political participation. The latter, political participation, is specifically indicated by resident's voting in election of RC. The indicator of the personal relationship between individuals measures how friendly residents are to their neighbors, and how often they get engaged into social activity. The questions about the well-being of residents primely asks the feeling of residents about the world around them without any figures identifying socioeconomic status of individual, such as if they feel happy about current life, trust in strangers, get satisfied with public services, etc. The results of measurement of all these indicators undergo weighted calculation according to the suggestions from professionals working in community and community study collected through a survey with questionnaire. The well-being of residents weighs most as being 50% of the final index, while the rule of society and the personal relationship between individuals constitute 25% respectively.

It is not hard to tell that Chen's approach is the consequence-centric one. All data come from the responses of residents widely selected from a large sample in number of thousands. Because of the sampling method of CGSS, it is possible to identify the communities from which the residents are selected. This advantage makes it easy for researchers to have comparisons between cities, provinces, or the rural area and the urban area. Chen himself extracts an index for all 28 covered regions, as well as the rural/urban areas. For this thesis that takes comparative method, Chen's index of community governance appropriately serves to the purpose.

Taking references from the reviewed work, it is reasonable to build up the measurement method for community governance from two dimensions. The one is the dimension of structure, the other one is the dimension of consequence. In the first dimension, the infrastructure construction will be the first-level indicator that depends on the local government's capabilities and efforts. It provides the basic conditions to the residents for the convenience of community facilities and the services by the committee members. Additionally, the efficiency of administrative work of RC largely depends on the directions from the supervision bureau, the Street Office. It is assumed that the number of street offices per RC is

[63] The full title of the research institute is National Survey Research Center at Renmin University of China.

larger, the stress of routine work on each RC is lower. The maintenance of SO indicates that a government does not burden the RC by spending more budget on SO.

*Table 2 Index Construction of Community Governance*

| First-level indicator | Second-level indicator | Third-level indicator | Data resource |
|---|---|---|---|
| Government's engagement | Community construction | The number of community service facilities per RC | National Bureau of Statistics<br>Public reports on final accounts from regional governments[64] |
| | | The government fund on community construction from government on regional level | |
| | | The government fund on community construction from government under regional level | |
| | Administrative management | The general public budget expenditure on community construction from government on regional level | |
| | | The general public budget expenditure on community construction from government under regional level | |
| | | The number of street offices per RC | |
| Resident's engagement | Participation in community governance | The number of RC employees per ten thousand residents (2015) | National Bureau of Statistics<br>China General Social Survey (2015, 2017) |
| | | The percent of having participated in RC voting (a44, 2017) | |
| | Interaction with neighbors | The percent of visiting neighbors in leisure time (a31, 2017) | |
| | | The frequency of having entertainments with neighbors (a31a, 2017) | |
| | | The level of being familiar with neighbors (b21, 2015) | |

[64] According to the fiscal system of China's government, government fund is the largest part of the non-tax revenue of local government. Among all sorts of government fund revenue, the transfer of right of use of state-owned land contributes most, which is also commonly called "land-selling revenue". The revenue depends on the value of local land use and the attraction of policy incentives provided by local government to investors. More importantly, the expenditure is arranged primely by the local government, not the central government. Therefore, the expenditure largely reflects the preferences of local government on public service delivery. In contrary, the general public budget revenue is collected from tax, hence it is relatively unvaried when compared with government fund. For the same reason, the expenditure of general public budget reflects the routine expense of basic public service delivery. On the account of "community construction" particularly, it refers to the infrastructure construction expense under government fund, while it refers to administrative expense under general public budget.

| | | | |
|---|---|---|---|
| | Satisfaction on construction and management | Scoring infrastructure of community (b16, 2015) | |
| | | Scoring social management (b16, 2015) | |

According to this index construction, the score of each province has been calculated as[65]:

*Table 3 The Score of Each Province's Community Governance Index*

| | Community Governance Index | Government's engagement | Resident's engagement |
|---|---|---|---|
| Beijing | 65.76 | 78.88 | 27.45 |
| Tianjin | 59.16 | 70.85 | 25.05 |
| Hebei | 22.93 | 7.00 | 69.40 |
| Shanxi | 27.20 | 11.94 | 71.72 |
| Inner Mongolia | 24.14 | 8.62 | 69.43 |
| Liaoning | 28.51 | 29.75 | 24.88 |
| Jilin | 19.96 | 10.78 | 46.76 |
| Heilongjiang | 22.29 | 17.99 | 34.85 |
| Shanghai | 70.99 | 86.45 | 25.89 |
| Jiangsu | 28.39 | 20.59 | 51.14 |
| Zhejiang | 26.11 | 10.26 | 72.38 |
| Anhui | 25.30 | 10.32 | 69.00 |
| Fujian | 19.36 | 7.86 | 52.92 |
| Jiangxi | 19.14 | 5.89 | 57.82 |
| Shandong | 35.56 | 20.43 | 79.72 |
| Henan | 22.94 | 9.47 | 62.24 |
| Hubei | 24.28 | 16.07 | 48.26 |
| Hunan | 21.85 | 8.63 | 60.45 |
| Guangdong | 27.07 | 28.49 | 22.91 |
| Guangxi | 31.18 | 20.70 | 61.75 |
| Hainan | - | - | - |
| Chongqing | 74.78 | 75.32 | 73.17 |
| Sichuan | 22.71 | 5.48 | 73.00 |
| Guizhou | 40.24 | 37.13 | 49.30 |

[65] The details of data collection and weighed calculation, see Appendix II.

| | | | |
|---|---|---|---|
| Yunnan | 30.84 | 24.10 | 50.50 |
| Tibet | - | - | - |
| Shaanxi | 23.55 | 9.23 | 65.34 |
| Gansu | 16.87 | 4.58 | 52.76 |
| Qinghai | 14.87 | 4.93 | 43.89 |
| Ningxia | 16.51 | 12.21 | 29.05 |
| Xinjiang | - | - | - |

#### *4.3.1.3 Summary*

Network governance in this thesis is conceptualized as governance mode relying on network for the information flow along its ties. Network is built up in two dimensions: cyberspace and physical world. Hence, network governance is correspondingly developed in both cyberspace and physical world, which are e-government and RC system (community governance). To measure network governance is to measure e-government and RC. The assessment on both e-government and RC system (community governance) can be used to measure the development level of network governance.

To calculate an index for each province in terms of network governance, the figures of e-government and community governance should be normalized firstly, and then given weight by Entropy Weight Method as well. (Also see Appendix II) The calculated outcome of network governance index is listed as below.

*Table 4 The Final Score of Each Province's Network Governance Index*

| | E-Government Final Score | Community Governance Index | Network Governance Index |
|---|---|---|---|
| Beijing | 67.66 | 65.76 | 88.82 |
| Tianjin | 52.64 | 59.16 | 64.97 |
| Hebei | 41.95 | 22.93 | 18.70 |
| Shanxi | 45.00 | 27.20 | 26.26 |
| Inner Mongolia | 39.83 | 24.14 | 17.32 |
| Liaoning | 51.23 | 28.51 | 34.84 |
| Jilin | 38.11 | 19.96 | 11.41 |
| Heilongjiang | 38.51 | 22.29 | 14.04 |
| Shanghai | 68.76 | 70.99 | 94.99 |
| Jiangsu | 53.38 | 28.39 | 37.26 |
| Zhejiang | 61.37 | 26.11 | 44.58 |
| Anhui | 40.81 | 25.30 | 19.55 |
| Fujian | 61.54 | 19.36 | 38.51 |

| | | | |
|---|---|---|---|
| Jiangxi | 36.91 | 19.14 | 9.23 |
| Shandong | 43.52 | 35.56 | 32.28 |
| Henan | 34.44 | 22.94 | 9.84 |
| Hubei | 41.83 | 24.28 | 19.81 |
| Hunan | 36.69 | 21.85 | 11.49 |
| Guangdong | 70.03 | 27.07 | 55.69 |
| Guangxi | 38.02 | 31.18 | 21.72 |
| Hainan | 41.99 | - | - |
| Chongqing | 43.14 | 74.78 | 68.26 |
| Sichuan | 37.85 | 22.71 | 13.66 |
| Guizhou | 40.41 | 40.24 | 32.96 |
| Yunnan | 32.95 | 30.84 | 15.42 |
| Tibet | 31.94 | - | - |
| Shaanxi | 41.78 | 23.55 | 19.07 |
| Gansu | 32.45 | 16.87 | 1.86 |
| Qinghai | 38.20 | 14.87 | 6.79 |
| Ningxia | 41.99 | 16.51 | 12.78 |
| Xinjiang | 33.62 | - | - |

### 4.3.2 Independent Variables

There are three independent variables awaiting test in three hypotheses, but the first step, still, is to make them measurable. Unlike network governance, these three variables have been the subject of multidiscipline studies for long. It means that the conceptualization and operationalization does not need to start from zero.

#### *4.3.2.1 External dependence*

Keohane and Nye develop a concept of “complex interdependence”. It refers to a state of world politics that more actors than mere sovereign states participate directly in global affairs, more issues become irresolvable under hierarchy and fewer military forces are used. (Keohane & Nye, 2017) Undoubtedly it indicates a world with higher interdependence between plural actors and the resulting higher complexity. They create this concept to explain the cooperation between states from a realist perspective. However, it is undeniable that we live in a world where being isolated from others has become much more difficult than ever before. I accordingly develop a concept of "complex dependence" from "complex interdependence", referring to the characteristic of actors that bolsters complex interdependence. Specifically speaking, a state with complex dependence benefits from complex interdependence because it can achieve goals through economic and social interactions with other actors while its military force is much less efficient in the sense of economy. For its own benefit, it will play a positive role in bolstering the complex interdependence. Therefore, a state characterized by complex dependence will not reduce the input from the external world if it does not intend to withstand the loss. In other word, a state will at least remain its openness if it benefits from its complex dependence (and the world with complex interdependence).

To measure how dependent an actor is on the external world, one indicator is its openness. The higher level of its openness, the higher cost in expectation if its interactions with others decrease. Firstly, extra cost will occur if it takes alternatives rather than continues to cooperate with the previous partners with whom it has lowered the transaction cost because of the mutual trust gained in a long term. Secondly, it pays extra cost to overcome the invisible obstacles resulting from path dependence in terms of institution. The institution must undergo systematic changes to adapt the environment that switches from open to closed. Hence, the assumption here is that an actor is more dependent on the external world if it is opener.

For the openness of each provincial region in China, there is an index constructed by a research group under the National Development and Reform Commission (NDRC) of China,

an empowered department of the State Council which leads decision-making in reform policies. It is the Regional Open-up Index supposed to reflect the "tightness of economic, technological, and social connections with foreign countries or regions" of provincial regions in China.(RGOICCNDRC[66], 2013) The research group argues that the open-up process of China is a complex synergized by forces in multidimensions. This index thus is constructed in three dimensions: economy, technology, and society. There are three first-level indicators: economic openness, technological openness, and social openness. They examine imports and exports, trade, foreign investment, labor flow, etc., for the indicator of economic openness. In terms of technological openness, they collect the data about academic conference attendance of foreign professionals, trade of technologies, International Patens, and so on. Social openness emphasizes the sociality of residents, including information flow through internet, foreign tourists and investors, fast food shops of McDonald's and Kentucky Fried Chicken, etc. Each indictor has three second-level indicators, and there are 26 third-level indicators in sum.

All the data could be obtained from official statistical yearbooks and reports, which makes annual data collection and index calculation possible and constant. In addition, it runs Principal Component Analysis (PCA) to have a weighed calculation for these various indicators. (RGOICCNDRC, 2016) The latest version of its yearly report has been outputted in 2018 with all statistical materials of 2017.(RGOICCNDRC, 2018)

*Table 5 China's Regional Opening-up Index (2017)*

| | Regional Open-up Index | Economic Openness | Technological Openness | Social Openness |
|---|---|---|---|---|
| Beijing | 50.93 | 45.52 | 57.84 | 50.10 |
| Tianjin | 26.09 | 36.61 | 16.09 | 24.25 |
| Hebei | 13.09 | 7.65 | 10.85 | 21.45 |
| Shanxi | 13.23 | 11.32 | 5.81 | 22.81 |
| Inner Mongolia | 11.08 | 6.07 | 4.95 | 22.83 |
| Liaoning | 18.63 | 15.45 | 11.09 | 29.76 |
| Jilin | 21.44 | 30.29 | 12.50 | 20.42 |
| Heilongjiang | 17.64 | 16.35 | 16.15 | 20.57 |
| Shanghai | 44.71 | 46.94 | 38.50 | 48.40 |
| Jiangsu | 34.01 | 25.80 | 44.62 | 32.64 |
| Zhejiang | 31.50 | 19.68 | 32.71 | 43.58 |
| Anhui | 18.19 | 17.56 | 18.24 | 18.85 |

[66] The full title of the research institute is Research Group on Opening up of International Cooperation Center of National Development and Reform Commission.

| | | | | |
|---|---|---|---|---|
| Fujian | 20.60 | 16.27 | 12.83 | 33.26 |
| Jiangxi | 15.70 | 15.38 | 14.51 | 17.25 |
| Shandong | 22.89 | 14.08 | 29.28 | 26.40 |
| Henan | 15.79 | 9.48 | 16.52 | 22.15 |
| Hubei | 19.65 | 12.55 | 25.67 | 21.60 |
| Hunan | 23.06 | 21.75 | 26.94 | 20.65 |
| Guangdong | 48.74 | 36.53 | 58.25 | 52.97 |
| Guangxi | 15.71 | 17.68 | 8.58 | 20.62 |
| Hainan | 11.96 | 10.15 | 3.94 | 22.03 |
| Chongqing | 15.40 | 12.31 | 12.51 | 21.78 |
| Sichuan | 17.70 | 11.03 | 18.09 | 24.81 |
| Guizhou | 8.50 | 3.96 | 5.40 | 16.72 |
| Yunnan | 13.83 | 12.44 | 4.97 | 24.24 |
| Tibet | 8.22 | 6.28 | 1.63 | 16.99 |
| Shaanxi | 18.65 | 10.26 | 20.96 | 25.79 |
| Gansu | 8.47 | 4.71 | 4.43 | 16.75 |
| Qinghai | 8.06 | 5.54 | 2.04 | 16.93 |
| Ningxia | 8.91 | 5.50 | 3.14 | 18.52 |
| Xinjiang | 10.81 | 9.42 | 4.02 | 19.16 |

#### *4.3.2.2 Strength of social network*

The strength of social network refers to the strength of ties between nodes that constitute a network of social relationship.[67] Research on the strength of social network in locality has fostered bountiful academic accomplishments. Social network is highly correlated with social capital, which has been a core concept in multidisciplinary studies for decades. However, the measurement of social network, or social capital, is still an issue to be discussed. Social Network Analysis (SNA) is one of the prominent approaches in measuring the key properties of social network in a limited scale, like in an organization, or a community. For example, the centrality of certain nodes, or the density of whole network, can be measured with different methods of SNA. (Borgatti, Everett, & Johnson, 2013) Compared with that of social network, the measurement of social capital is more controversial because social capital is more abstract as a constructed concept. (N. Lin, 2001) As for this thesis, it would aggravate the complication of problem in measurement that social capital is introduced as an indicator of the strength of

[67] One concern about this independent variable is that there will be a circulative relationship between dependent variable and it. Here it is reasonable to clarify that the relationship is not circulative but theoretically causal, because social network exists and develops much earlier than network governance.

social network. SNA, either is not qualified to reach the goal of measuring the strength of social network in a relatively large geographic space.

The social network in a provincial region of China consists of ten-millions of nodes and uncountable ties. To measure the strength of social network in such a scale, it is necessary to return to the classic definition of network. Network is constituted by nodes and ties. Here nodes refer to individuals in each region, and ties refer to the connections between them. Reasonably assumed, it is more possible for nodes to be connected if they have more opportunities to regularly gather in certain groups or spaces. The process of connecting not only occurs between strangers, also strengthens the existed ties between acquaintances. In the context of China, social groups[68] and working places[69] that both provide the opportunities of gathering can raise the accessibility of connecting between individual residents. Despite the accessibility of connecting, the strength of connection is also important. The degree at which individuals trust and seek help from each other, and the frequency at which they gather with each other reflect the strength of ties.

An index of social network can be accordingly constructed to measure the strength of social network:

*Table 6 The Construction of Social Network Index*

| First-level indicator | Second-level indicator | Third-level indicator | Data resource |
|---|---|---|---|
| Accessibility of nodes | Accessibility of nodes in social group | The number of social groups in ten thousand residents | National Bureau of Statistics |
| | | The number of social group employees in ten thousand residents | |
| | | Increase rate of social group number in five years (2013-2018) | |

[68] In official definitions by MCA (Ministry of Civil Affairs): social group refers to the organization registered by citizen or legal person (excluding the state-owned institute or administrative agency), required with minimum number of members, minimum account of capital, a fixed site as office, etc.; community service facility refers to the facility with functions of serving community residents in terms of education, employment, health care, entertainment, including community service center, community service station, information center for employment, community library, teenager and elder club, etc.

[69] The working place to which the individuals have access includes enterprises with legal person, public institutions (public hospitals, public schools, state-sponsored organizations, etc.), and private corporations. The accounting of employee number excludes self-employed businessperson who does not run business with many employees in usual.

| | | | |
|---|---|---|---|
| | Accessibility of nodes at workplace | The number of enterprise legal person per million residents | |
| | | The number of employees of public institutes per ten thousand residents | |
| | | The number of employees of private corporation per ten thousand residents | |
| Strength of ties | Strength of strong ties | The frequency of gathering with relatives (a30, 2017) | China General Social Survey (2015, 2017) |
| | | The frequency of gathering with friends (a30, 2017) | |
| | | The percent of seeking help from relatives when needing money (c8, 2017) | |
| | | The percent of seeking help from friends when needing job (c8, 2017) | |
| | | The degree of trust in relatives (b10, 2015) | |
| | | The degree of trust in coworkers (b10, 2015) | |
| | | The degree of trust in previous classmates (b10, 2015) | |
| | Strength of weak ties | The degree of trust in compatriots (b10, 2015) | |
| | | The degree of trust in acquaintances (b10, 2015) | |
| | | The degree of trust in co-participants in social activities (b10, 2015) | |
| | | The degree of trust in people generally (c11, 2017) | |

Through weighed calculation (also see Appendix II), the index of social network for 28 provinces (except Xinjiang, Hainan, Tibet, as they are not included in the CGSS) is listed in the table below:

*Table 7 Social Network Index of Each Province*

| | Social Network Index | Accessibility of nodes | Strength of ties |
|---|---|---|---|
| Beijing | 41.90 | 68.64 | 13.47 |
| Tianjin | 20.09 | 31.80 | 13.02 |
| Hebei | 18.03 | 27.80 | 13.39 |
| Shanxi | 15.31 | 23.46 | 12.81 |
| Inner Mongolia | 13.73 | 20.72 | 13.35 |
| Liaoning | 14.65 | 22.36 | 12.70 |
| Jilin | 7.72 | 10.69 | 12.99 |
| Heilongjiang | 8.62 | 11.99 | 12.88 |

| | | | |
|---|---|---|---|
| Shanghai | 20.25 | 32.17 | 12.18 |
| Jiangsu | 29.41 | 47.22 | 13.01 |
| Zhejiang | 31.95 | 51.63 | 13.09 |
| Anhui | 14.95 | 22.71 | 14.27 |
| Fujian | 25.67 | 40.48 | 13.06 |
| Jiangxi | 12.47 | 18.48 | 13.48 |
| Shandong | 21.57 | 34.02 | 14.34 |
| Henan | 13.06 | 19.80 | 13.36 |
| Hubei | 16.95 | 26.00 | 13.64 |
| Hunan | 10.62 | 15.30 | 13.03 |
| Guangdong | 28.21 | 45.47 | 12.84 |
| Guangxi | 15.29 | 22.85 | 13.17 |
| Hainan | - | - | - |
| Chongqing | 18.72 | 29.24 | 13.67 |
| Sichuan | 12.10 | 17.60 | 13.18 |
| Guizhou | 14.09 | 21.16 | 12.36 |
| Yunnan | 16.81 | 24.85 | 13.44 |
| Tibet | - | - | - |
| Shaanxi | 16.63 | 25.17 | 13.07 |
| Gansu | 8.32 | 11.53 | 13.66 |
| Qinghai | 14.60 | 22.13 | 12.52 |
| Ningxia | 18.56 | 28.12 | 13.34 |
| Xinjiang | - | - | - |

#### *4.3.2.3 Power of local government*

Power, by its classic definition in relational aspect, "resides implicitly in the other's dependence". (Emerson, 1962) One actor has power over the other actor in mutual relation means the resistance from the latter can be potentially overcome by the former. The power of *A* over *B* equals to the dependence of *B* on *A*. In this sense, "government has power over others" means that government could decide the mode of governance regardless of resistance because government possesses most resources and others have no alternatives but only comply. In some extreme cases, it can alter governance mode from network to command blatantly, including dismissing its redundant branches, replacing private sectors with public sectors, and cutting down the connections with other states. More commonly, it adheres to the old mode of governance while facing the unavoidable shift from the old to the new.

China's reform, as simply adumbrated in Chapter Three, has been a process of transforming a Leninist/Stalinist omnipotence to a government that withdraws its visible hands from market and society. To measure the power of government, it is necessary to place government in its

relationship with market and society. When there is no direct observation about the power of government, an alternative method is to observe its rivals. In China's case, the rivalry between government and market is observable because of the competition between state-owned enterprises and non-state-owned enterprises, as well as the conflict between the intervention from government and the expression of objection to the intervention. On the one hand, non-state-owned enterprises would have not flourished if the power of government had begotten the absolute monopoly of state-owned enterprises; on the other hand, the power of government has been more practiced in systematically intervening the resource allocation rather than only bolstering state-owned enterprises. Furthermore, the power of government under some circumstance intrudes into public sphere and represses the expression of objection. In all, the power of government, blighted or blooming, could be observed through the fluctuation of performance of market in two domains: a) the arena where the state-owned and the non-state-owned compete; b) the "greenhouse" where the non-state-owned get nourished with equality of opportunity and right in law.

Some economists who played dual roles as both reformists and researchers of this reform in 1980s argue that the relationship between state and market is the ultimate issue of reform, and the key to success is marketization. (Fan, Wang, Zhang, & Zhu, 2003) Concerning themselves with freeing space for market, they keep monitoring the Leviathan which was once unchallengeable in the arena. A research group consisting of those economists from National Economic Research Institute (NERI) have output 8 reports about the process of marketization since 2000. They develop an index to reflect the level of marketization of each provincial region, which is called "Marketization Index" (MI).(Wang, Fan, & Hu, 2019) The construct of MI origins from the thinking that marketization in China starts from the restriction of government's power, hence the MI accentuates the development of non-governmental sectors, which indicates the process of marketization. There are 5 first-level indicators: the relationship between government and market, the development of non-state-owned economy, the development of product market, the development of factor market, the development of agency and rule of law. The proportions of two parts (the governmental and the non-governmental, or the state-owned and the non-state-owned) in the duality are measured in contrast. For example, one of the third-level indicators of the relationship between government and market is the proportion of the amount of fiscal expenditure from government in local GDP. Similarly, the development of non-state-owned economy is indicated by its proportions in gross output of industry, total fixed-asset investment, and urban employed population.

It is assumed that the power of local government is greater where the marketization level is more undeveloped. Because of this negative correlation, a figure could be calculated as the reciprocal of MI to indicate the power of government. For statistical convenience, the figure is turned into two digits.

*Table 8 China's Regional Marketization Index and Government's Power Index*

| | Marketization Index | Reciprocal of MI | Government's Power Index |
|---|---|---|---|
| Beijing | 9.14 | 0.109409 | 10.94 |
| Tianjin | 9.78 | 0.102249 | 10.22 |
| Hebei | 6.42 | 0.155763 | 15.58 |
| Shanxi | 5.66 | 0.176678 | 17.67 |
| Inner Mongolia | 4.8 | 0.208333 | 20.83 |
| Liaoning | 6.75 | 0.148148 | 14.81 |
| Jilin | 6.7 | 0.149254 | 14.93 |
| Heilongjiang | 6.14 | 0.162866 | 16.29 |
| Shanghai | 9.93 | 0.100705 | 10.07 |
| Jiangsu | 9.26 | 0.107991 | 10.80 |
| Zhejiang | 9.97 | 0.100301 | 10.03 |
| Anhui | 7.09 | 0.141044 | 14.10 |
| Fujian | 9.15 | 0.10929 | 10.93 |
| Jiangxi | 7.04 | 0.142045 | 14.20 |
| Shandong | 7.94 | 0.125945 | 12.59 |
| Henan | 7.1 | 0.140845 | 14.08 |
| Hubei | 7.47 | 0.133869 | 13.39 |
| Hunan | 7.07 | 0.141443 | 14.14 |
| Guangdong | 9.86 | 0.10142 | 10.14 |
| Guangxi | 6.43 | 0.155521 | 15.55 |
| Hainan | 5.28 | 0.189394 | 18.94 |
| Chongqing | 8.15 | 0.122699 | 12.27 |
| Sichuan | 7.08 | 0.141243 | 14.12 |
| Guizhou | 4.85 | 0.206186 | 20.62 |
| Yunnan | 4.55 | 0.21978 | 21.98 |
| Tibet | 1.02 | 0.980392 | 98.04 |
| Shaanxi | 6.57 | 0.152207 | 15.22 |
| Gansu | 4.54 | 0.220264 | 22.03 |
| Qinghai | 3.37 | 0.296736 | 29.67 |
| Ningxia | 5.14 | 0.194553 | 19.46 |
| Xinjiang | 4.1 | 0.243902 | 24.39 |

*Source: NERI Report 2018. (Wang, Fan, & Hu, 2019)*

### 4.3.3 Other Potential Independent Variables

#### *4.3.3.1 Economic structure*

Economic structure refers to the status of the different sectors' portions in an economy. The set of economic sectors generally contains primary, secondary, and tertiary sector. The primary and the secondary sectors rely higher on the natural resources in a limited space and distance than the tertiary and the quaternary sectors. Instead, the latter one depends more on the borderless circulation of capital, information, knowledge, and human resources with high tech expertise. Network has enormous advantages in facilitating the circulation of all necessary fuels that elevate the tertiary sector, as reviewed in the introduction. Accordingly, different sectors have different demands for the development of network. If a certain sector contributes a much larger portion than other sectors to the local economy, the local governing body should adapt to meet the demand of this sector. Network governance is an optimal choice for the governing body under the circumstance of the tertiary sector being the dominant sector in the local economy. Therefore, it is reasonable to hypothesize that the economic structure has effect on the development of network governance.

**Hypothesis 4: Where the tertiary sector contributes more to the local economy, where the network governance is more developed.**

It is not difficult to measure economic structure in this sense. According to the definition given by the NBS (National Bureau of Statistics) of China, tertiary sector refers to service sector, as commonly recognized in the world. The portion of tertiary sector's output contribute to the GDP of each province in the year of 2019 can be calculated.

*Table 9 Portion of Tertiary Sector in Local GDP of Each Province (in 100 million YUAN)*

| | Primary Sector | Secondary Sector | Tertiary Sector | GDP | Proportion of Tertiary Sector |
|---|---|---|---|---|---|
| Beijing | 113.69 | 5715.06 | 29542.53 | 35371.28 | 83.52% |
| Tianjin | 185.23 | 4969.18 | 8949.87 | 14104.28 | 63.45% |
| Hebei | 3518.44 | 13597.26 | 17988.82 | 35104.52 | 51.24% |
| Shanxi | 824.72 | 7453.09 | 8748.87 | 17026.68 | 51.38% |
| Inner Mongolia | 1863.19 | 6818.88 | 8530.46 | 17212.53 | 49.56% |
| Liaoning | 2177.77 | 9531.24 | 13200.44 | 24909.45 | 52.99% |
| Jilin | 1287.32 | 4134.82 | 6304.68 | 11726.82 | 53.76% |
| Heilongjiang | 3182.45 | 3615.21 | 6815.03 | 13612.69 | 50.06% |
| Shanghai | 103.88 | 10299.16 | 27752.28 | 38155.32 | 72.74% |
| Jiangsu | 4296.28 | 44270.51 | 51064.73 | 99631.52 | 51.25% |
| Zhejiang | 2097.38 | 26566.60 | 33687.76 | 62351.74 | 54.03% |

| | | | | | |
|---|---|---|---|---|---|
| Anhui | 2915.70 | 15337.90 | 18860.38 | 37113.98 | 50.82% |
| Fujian | 2596.23 | 20581.74 | 19217.03 | 42395.00 | 45.33% |
| Jiangxi | 2057.56 | 10939.83 | 11760.11 | 24757.50 | 47.50% |
| Shandong | 5116.44 | 28310.92 | 37640.17 | 71067.53 | 52.96% |
| Henan | 4635.40 | 23605.79 | 26018.01 | 54259.20 | 47.95% |
| Hubei | 3809.09 | 19098.62 | 22920.60 | 45828.31 | 50.01% |
| Hunan | 3646.95 | 14946.98 | 21158.19 | 39752.12 | 53.23% |
| Guangdong | 4351.26 | 43546.43 | 59773.38 | 107671.07 | 55.51% |
| Guangxi | 3387.74 | 7077.43 | 10771.97 | 21237.14 | 50.72% |
| Hainan | 1080.36 | 1099.03 | 3129.54 | 5308.93 | 58.95% |
| Chongqing | 1551.42 | 9496.84 | 12557.51 | 23605.77 | 53.20% |
| Sichuan | 4807.24 | 17365.33 | 24443.25 | 46615.82 | 52.44% |
| Guizhou | 2280.56 | 6058.45 | 8430.33 | 16769.34 | 50.27% |
| Yunnan | 3037.62 | 7961.58 | 12224.55 | 23223.75 | 52.64% |
| Tibet | 138.19 | 635.62 | 924.01 | 1697.82 | 54.42% |
| Shaanxi | 1990.93 | 11980.75 | 11821.49 | 25793.17 | 45.83% |
| Gansu | 1050.48 | 2862.42 | 4805.40 | 8718.30 | 55.12% |
| Qinghai | 301.90 | 1159.75 | 1504.30 | 2965.95 | 50.72% |
| Ningxia | 279.93 | 1584.72 | 1883.83 | 3748.48 | 50.26% |
| Xinjiang | 1781.75 | 4795.50 | 7019.86 | 13597.11 | 51.63% |

*Source: NBS*

#### *4.3.3.2 Demographic composition*

Generational difference has drawn the scholarly attention for a few decades. For example, generational replacement theory (Abramson & Inglehart, 1992) suggests that generational replacement leads to value changes, and value changes have political consequences. The values and the beliefs of different generations have been shaped in different political, economic, and social environments. Otherwise, value changes reshape political, economic, and social environment because the behaves and actions of the generations are differently prioritized or motivated under the guideline of their values and beliefs. According to this theory, the generation of industrial society and the generation of post-industrial society are distinguished. The former is more likely to emphasize the economic growth, while the latter pursues quality-of-life, environment protection, and self-expression. (Inglehart & Baker, 2000) Some values are universal because they are grounded in the basic physiological and psychological needs. (Schwartz, 2012) Ten of those universal values listed in Schwartz's theory of basic values are considered being conformed or conflicted in two dimensions of bipolar. One dimension is self-enhancement/self-transcendence, the other is openness-to-change/conservation. Specifically, the generations in China of which the values were shaped in certain social environment are categorized into four subsets: Pre-socialist Era (or Republic

Era) from 1911 to 1949, Socialist Era (or Consolidation Era) from 1950 to 1965, Cultural Revolution Era from 1966 to 1976, and Reform/Opening-up Era (or Social Reform Era) from 1978 to present.(Egri & Ralston, 2004; Hu & Scott, 2016) The study of Egri and Ralston finds that the generation of Reform Era has stronger inclination towards openness-to-change values significantly than other generations. However, the Confucian values as the cornerstones of Chinese morality differ from the Western conceptualization of values, as Matthews (2000) argue. The Chinese Value Survey (CVS) by Bond and his colleagues thus gains importance in providing a measurement complementing Schwartz's survey. Matthews points out that the modernization weakens the influence of traditional family relationships. The rise of individualism brings about people's engagement in voluntary associations as supplement of involuntary groups like family. A similar conclusion has been approached through China General Social Survey (CGSS). Examining the extent to which the traditional values regarding family and gender persist among different generations, Hu and Scott find that the generation of Reform Era is least traditional in terms of patrilineal beliefs and gender roles. In sum, the differences between values of different generations are revealed by the studies based on the mainstream surveys of value.

It is thus natural to hypothesize that the different generations value network governance differently. The young are adept at receiving and sending information through virtual network, as they have learnt how to interact within a cyberspace constructed by ICTs since they were young. In contrary, the social activities of the elder generation are refrained by face-to-face interactions with families, relatives, friends, and colleagues. The former becomes accustomed to communicating with unfamiliar others or governmental departments, while the latter feels comfortable in a small circle. The core of network governance is improving efficiency of collecting information from the dispersive individuals. The adeptness of the younger generation at processing information enhances the development of network governance in turn. In addition, the younger generation could adapt sooner to the shift of governance mode, because they are more openminded to changes.

**Hypothesis 5: Where the younger generation weighs more in demographic composition, where the network governance is more developed.**

The younger generation here refers to the generation at the range of age from 15 to 34, considering that the year of the international Internet being connected to China was 1994.

*Table 10 Proportion of the Younger Generation (15-34) in Total Population of Each Province*

| | Population of the younger generation (15-34) | Total population | Proportion of the younger generation (15-34) in total population |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Beijing | 7,907,459 | 19,612,368 | 40.32% |
| Tianjin | 4,858,591 | 12,938,693 | 37.55% |
| Hebei | 23,631,906 | 71,854,210 | 32.89% |
| Shanxi | 11,772,419 | 35,712,101 | 32.96% |
| Inner Mongolia | 7,776,286 | 24,706,291 | 31.47% |
| Liaoning | 12,495,374 | 43,746,323 | 28.56% |
| Jilin | 8,313,646 | 27,452,815 | 30.28% |
| Heilongjiang | 11,460,893 | 38,313,991 | 29.91% |
| Shanghai | 8,440,839 | 23,019,196 | 36.67% |
| Jiangsu | 24,587,879 | 78,660,941 | 31.26% |
| Zhejiang | 17,469,037 | 54,426,891 | 32.10% |
| Anhui | 17284518 | 59,500,468 | 29.05% |
| Fujian | 13,083,336 | 36,894,217 | 35.46% |
| Jiangxi | 14,076,712 | 44,567,797 | 31.58% |
| Shandong | 28,386,295 | 95,792,719 | 29.63% |
| Henan | 29,152,900 | 94,029,939 | 31.00% |
| Hubei | 18,328,971 | 57,237,727 | 32.02% |
| Hunan | 19,402,097 | 65,700,762 | 29.53% |
| Guangdong | 41,821,150 | 104,320,459 | 40.09% |
| Guangxi | 14,421,273 | 46,023,761 | 31.33% |
| Hainan | 3,038,489 | 8,671,485 | 35.04% |
| Chongqing | 7,416,470 | 28,846,170 | 25.71% |
| Sichuan | 21,961,459 | 80,417,528 | 27.31% |
| Guizhou | 9,717,648 | 34,748,556 | 27.97% |
| Yunnan | 15,281,048 | 45,966,766 | 33.24% |
| Tibet | 1,160,845 | 3,002,165 | 38.67% |
| Shaanxi | 12,642,503 | 37,327,379 | 33.87% |
| Gansu | 8,039,579 | 25,575,263 | 31.43% |
| Qinghai | 1,892,233 | 5,626,723 | 33.63% |
| Ningxia | 2,143,923 | 6,301,350 | 34.02% |
| Xinjiang | 7,487,909 | 21,815,815 | 34.32% |

*Source: Tabulation on the 2010 Population Census of the People's Republic of China (2012)*

### 4.3.4 Control Variable: Great Regional Division

All provinces of China have been clustered into six great regions for the purpose of national statistics, including North (Chinese: 华北; pinyin: huabei), Northeast (Chinese: 东北; pinyin: dongbei), East (Chinese: 华东; pinyin: huadong), Central South (Chinese: 中南; pinyin: zhongnan), Southwest (Chinese: 西南; pinyin: xi'nan), and Northwest (Chinese: 西北; pinyin: xibei). The six great regions, which have had no political or administrative relevance since

1980s, are commonly recognized and applied by the National Bureau of Statistics (NBS), and scholarly works as well. (Guo, 2013)

*Graph 1 Six Great Regional Divisions*


*Source: Guo, 2013: 16.*

These six great regions are titled according to their geographic locations on China's mainland. It at the first place emphasizes the geographic characteristics of each region. Analogically speaking, China's mainland is like a slope of which the altitude decreases from the west to the east. The mountainous west part has the richness of coal, minerals, and gas resource, while the plain east part realizes the potentiality in developing agriculture and commerce with the density of labor and the convenience of transportation on inland waterways. Reviewing the thousands-year history, it is easy to form the impression that the east, especially the southeast areas on the banks of the Yangzi River, enjoyed much longer duration of peace and prosperity than the west that suffered from the invasions of nomadic ethnics. In the more recent history, the gap between the west and the east has been enlarged. The imperial capitalism landed on the southeast coastline, knocked on the closed door of China's Qing Dynasty, and ultimately forced the Qing court to get involved in foreign trade in the middle of 19$^{th}$ century. Industries, as well as the accompanying modern financial system, firstly were founded in the cities with trading ports according to the treaties signed by the Qing court. The diversity of the six great regions has been stretched in the process of modernization ever since. For example, Russia and Japan, as the main beneficiaries in the Northeast, had invested enormously in the railway

construction because of the abundant coal and iron mines. By contrary, France, Great Britain, and the US made profits from textile industry and modern banks in the Southeast. Despite of the east, the west without any authorized trading ports merely had opportunities in developing any industrial sectors. During the Socialist Era (1950-1965), the central broad that executed the five-year plans to build up the centrally planned economy system put great emphases on heavy industry in the western regions where it was easier to receive material aid from the Soviet Union in a shorter distance.

After the Reform and Open-up began, regional specialization and geographic concentration become more and more noteworthy in the view of economists. Regional specialization means a certain industrial sector contributes to the majority of economic growth in a region. Geographic concentration means industries gather in a certain range of geography. The effects of these two phenomena are structural effect and spatial effect, respectively. They are both consistent within the process of the Reform and Open-up. (Y. Wang & Wei, 2013) It results from not only the legacy of the history of regional development, but also the strategies and policies taken by the central government in the late five-year plans. The emphases of regional development differ in different periods. For instance, the coastal regions were prioritized at the beginning of the reform. Realizing the inequality between regions, the central government initiated a national project of "Western Development" (Chinese: 西部大开发; pinyin: xibu dakaifa) in 1999. Although the geographic division serving to national projects with only four great regions is more simplistic than the usual division, the statistical data vividly carve a gap between the east and other parts. The Eastern region (10 provinces) in 2009 contributes 52.9% of industrial added value, 63.7% actually utilized FDI, and 87.4% exports. (Wei, 2013)

Given the internal diversity of the provinces, it is an important factor that should be controlled while making comparisons between provinces across great regions. Comparing between provinces in the same great regions is supposed to be less biased, as supplement of all-provinces comparison. Therefore, coding the provinces with the six great regions where they locate in is necessary.

*Table 11 Codes of Six Great Regional Divisions*

| Great Regions | Provinces | Code |
|---|---|---|
| North | Beijing | 1 |
| | Tianjin | 1 |
| | Hebei | 1 |
| | Shanxi | 1 |
| | Inner Mongolia | 1 |

| | | |
|---|---|---|
| Northeast | Liaoning | 2 |
| | Jilin | 2 |
| | Heilongjiang | 2 |
| East | Shanghai | 3 |
| | Jiangsu | 3 |
| | Zhejiang | 3 |
| | Anhui | 3 |
| | Fujian | 3 |
| | Jiangxi | 3 |
| | Shandong | 3 |
| Central South | Henan | 4 |
| | Hubei | 4 |
| | Hunan | 4 |
| | Guangdong | 4 |
| | Guangxi | 4 |
| | Hainan | 4 |
| Southwest | Chongqing | 5 |
| | Sichuan | 5 |
| | Guizhou | 5 |
| | Yunnan | 5 |
| | Tibet | 5 |
| Northwest | Shaanxi | 6 |
| | Gansu | 6 |
| | Qinghai | 6 |
| | Ningxia | 6 |
| | Xinjiang | 6 |

### 4.3.5 Summary

To test the three hypotheses, three independent variables, including the external dependence, the strength of social network, and the power of local government, are identified, conceptualized, and operationalized. [70] The China's special context is considered simultaneously in the whole process of making variables measurable. For example, the power of local government is measured in the horizontal relationship between government and market rather than the vertical relationship between the central authority and the local bureaus. In China, the reform is commonly acknowledged as a transformation from centrally planned economy to market-driven economy. It parallels the retreat of an omnipotent central authority from all domains of economy and society, as well as the local affairs.

[70] All the indicators for each variable have been listed in Appendix III.

Decentralization releases the motivation of the self-interest local governors to compete for their own benefit. The shift to network governance is a national campaign encouraged by the central, but the central has had no mandatory requirements for the performance of each province. Meanwhile, the shift to network governance involves the changes in the relationship between government with other sectors, like market and civil society. Under this circumstance, the extent to which the local government resists network governance depends on the power balance between government and market (since the civil society maintains underdeveloped in the comparison with these two).

The three hypotheses are deduced from theoretical propositions on governance. Given the fact that there are huge disparities between provinces (great regions as well), it is necessary to have other potential independent variables and control variable as supplement. Two factors that represent the disparities (economic structure and demographic composition) are proposed to have correlation with network governance. The alternative hypotheses that the tertiary sector in the whole economic structure and the younger generation in the whole population have positive effect on the development of network governance therefore have been developed. Having the great regional division as control variable is supposed to further increase the accuracy of analysis after eliminating the potential biases brought up by a complex of geographical and historical factors that might have effects.

# Chapter Five:
# Analysis and Conclusions

This chapter aims to give conclusions on the theoretical hypotheses developed in the introduction. Statistical analysis provides the description of the variables for each province and the results of hypotheses test. The correlations with statistical significance between the dependent variable and the independent variables hint the causal relationships. To interpret the causal relationships, it is necessary to scrutinize the sequence of occurrences of variables on the timeline. In the context of China, the development of network governance as the dependent variable, is lately listed as one of the policy goals in the work plan published by the CCP. By contrast, external dependence, strength of social network, and power of local government, are all preceding the development of network governance. Considering the timeline, the causal relationships can be inferred from the correlations.

## 5.1 Descriptive Statistics

### 5.1.1 Dependent Variable

The overall status of network governance development is varied among all the provinces. (Figure 10) Defining development level by intervals of twenty (Figure 11), there are only four provinces above the medium level. (Very low: 1-20; low: 21-40; medium: 41-60; high: 61-80; very high: 81-100)

*Figure 10 Network Governance Score*

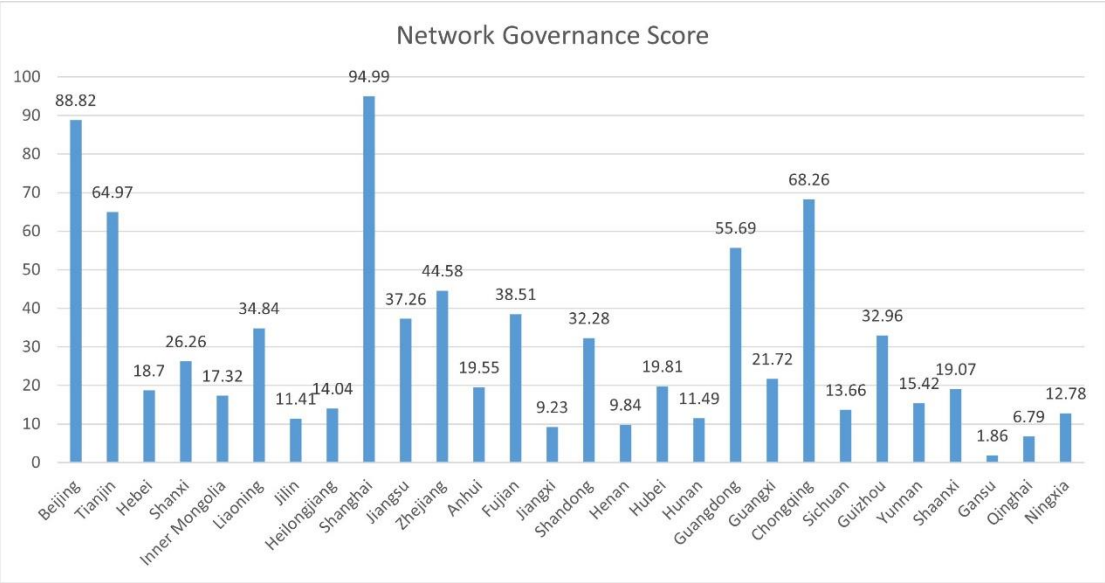
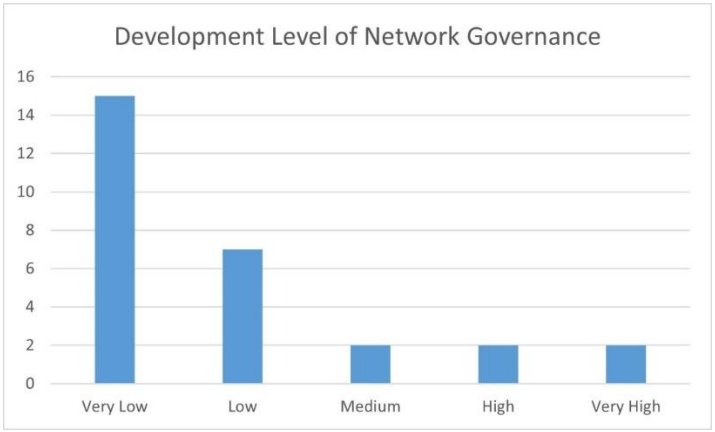



*Figure 11 Development Level of Network Governance*




There are more than half of the twenty-eight provinces are clustered in the score range from 0 to 20. The sample is not normally distributed; instead, it is left-skewedly distributed. (Figure 12)

Using hierarchical clustering method (Figure 13), it is not hard to find from the graph that Beijing and Shanghai are exceeding others in the ranks of twenty-eight provinces. Tianjin and Chongqing, as the other two municipalities directly under the central government, are also leading. Overall, the graph suggests that there are three classes. The first one class includes

Beijing and Shanghai. The second include Guangdong, Tianjin, and Chongqing. The rest are included in the third class.

*Figure 12 The Left-Skewed Distribution of Provinces' Network Governance Score*

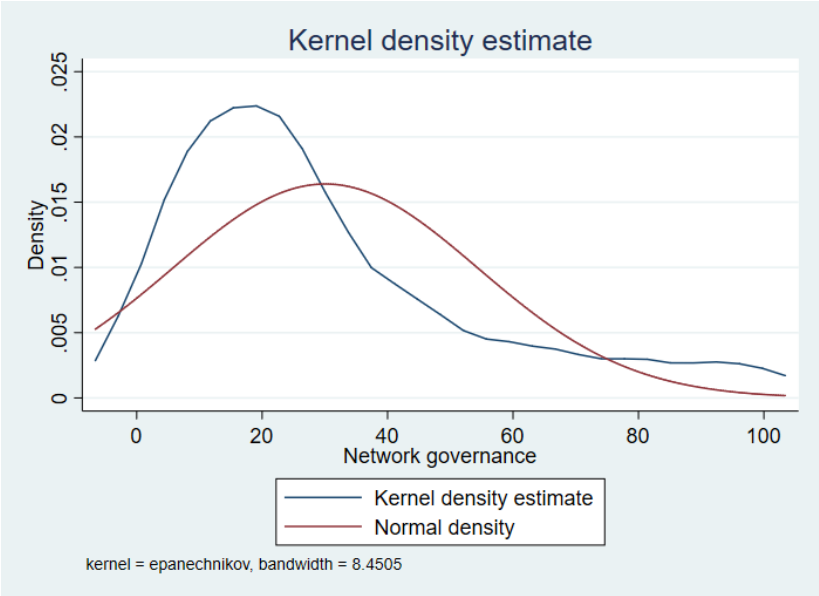
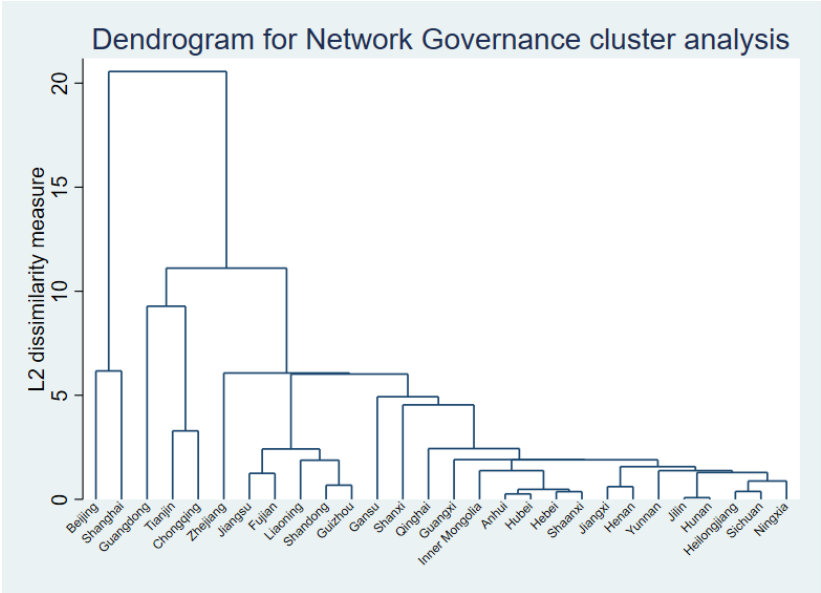



*Figure 13 The Cluster Graph of Provinces' Network Governance Score*

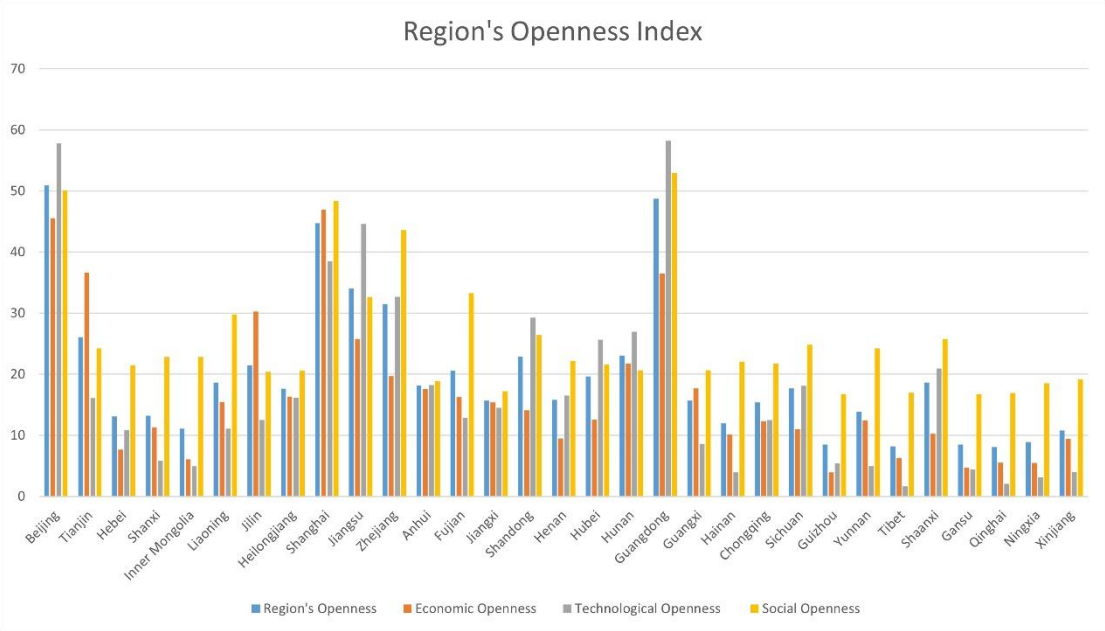


### 5.1.2 Independent Variables

#### *5.1.2.1 External dependence*

This independent variable is indicated by the Regional Openness Index (Figure 14). The graph show that Beijing, Shanghai, and Guangdong are the top three provinces which have the higher openness than other provinces. In other word, they depend on the external resources at a higher degree. Specifically speaking, Guangdong has higher dependence in terms of technology and sociality; Shanghai depends more on the economic interaction with the external world.

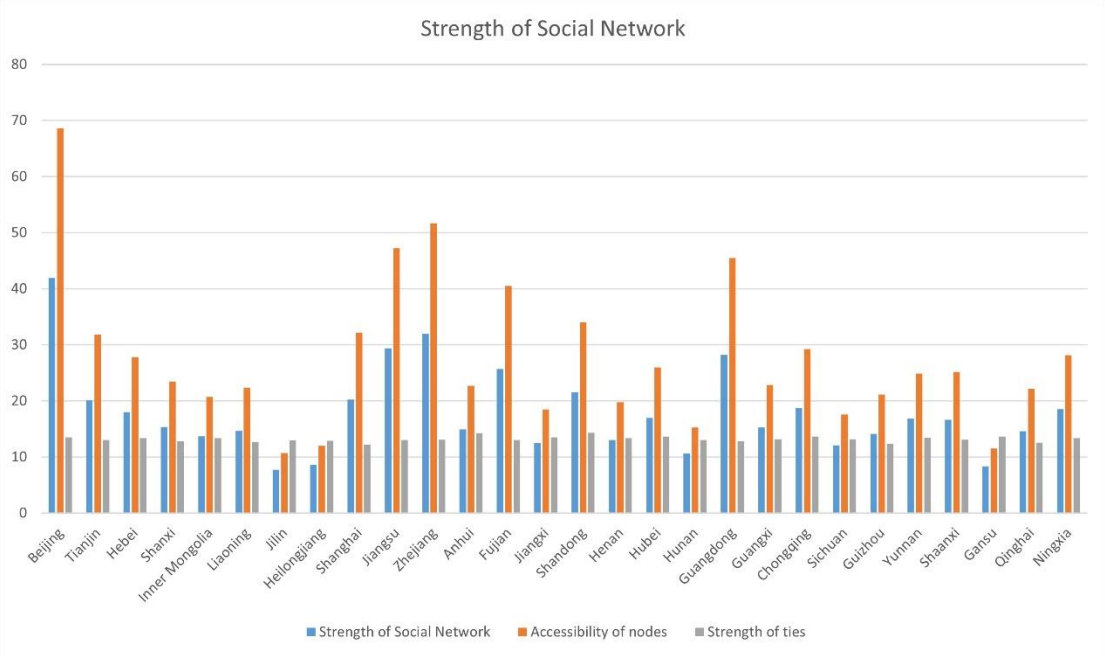
*Figure 14 Region's Openness Index*




#### *5.1.2.2 Strength of social network*

This independent variable is indicated by the Social Network Index (Figure 15). It is constructed on two second-level indicators, accessibility of nodes and strength of ties. The graph reveals that the provinces have more similarities in terms of strength of ties than accessibility of nodes. Beijing, Shanghai, and Jiangsu have the highest accessibility of nodes, while Shandong and Anhui have the strongest ties.

*Figure 15 Strength of Social Network*

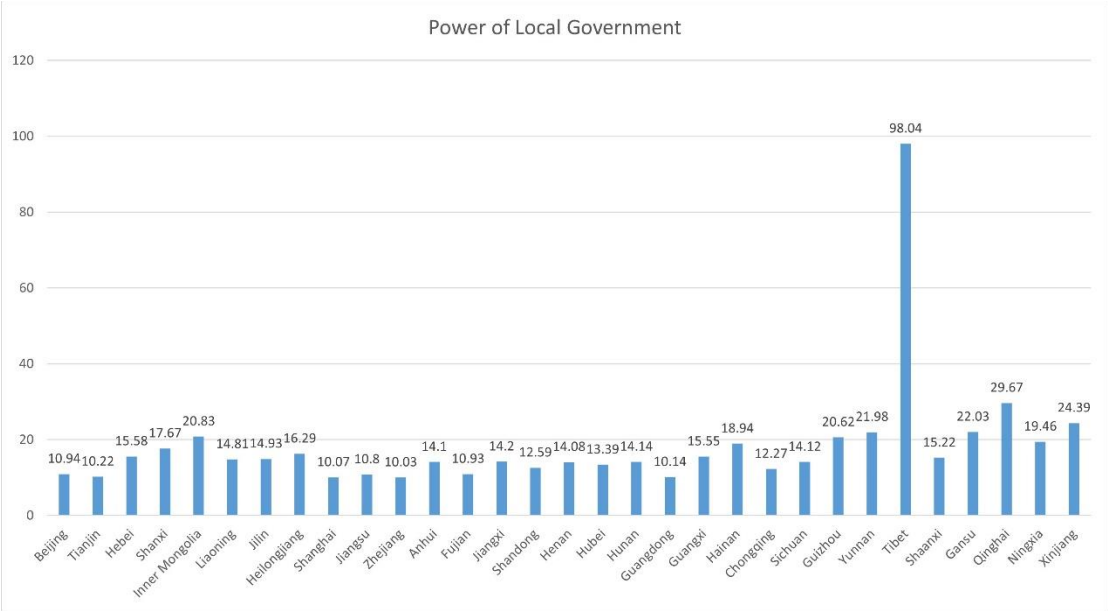



### *5.1.2.3 Power of local government*

This independent variable is indicated by an index calculated as the reciprocal of Marketization Index. It is assumed that where the market economy is more developed, where the power of local government is weaker. This index reflects the relationship between local government and local market, not the competition between government and government. From Figure 16, we can find that apparently the local government of Tibet has absolute superiority over the local market of Tibet because the market economy is much underdeveloped there. It does not mean that the local government of Tibet holds the strongest power among all local governments. “Power” is measured in relationship with market, instead of being measured as countable entity that can be possessed.[71]

[71] The detail explanation on the operationalization of “power”, see Chapter Four.

*Figure 16 Power of Local Government*



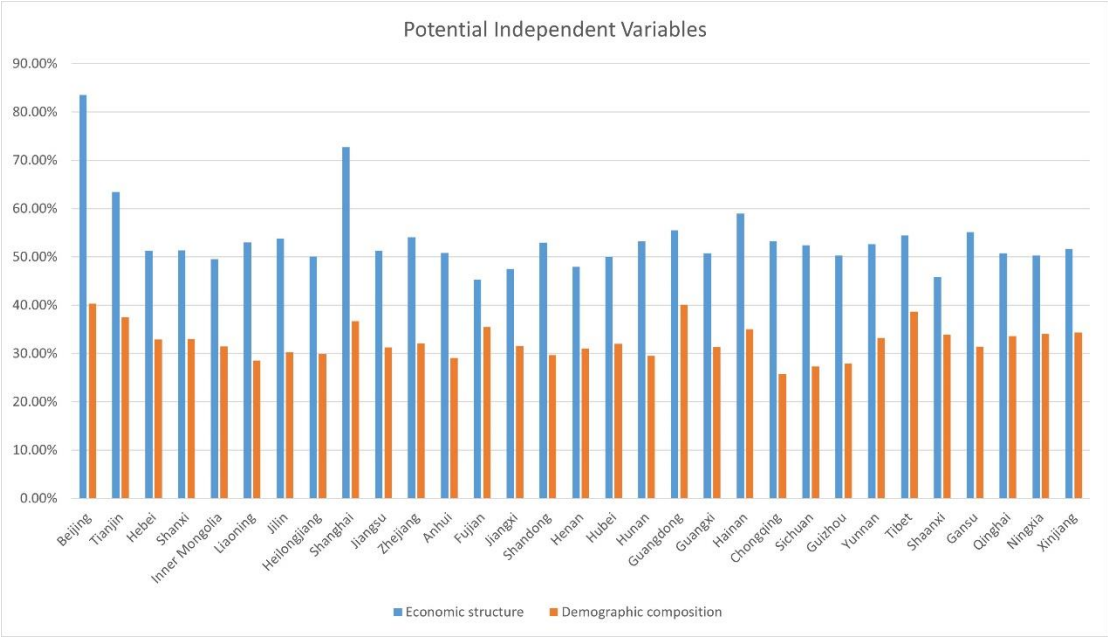

### 5.1.3 Potential Independent Variables

Economic structure and Demographic composition (Figure 17) are the two potential independent variables. Economic structure is indicated by the portion of tertiary sector in local GDP. Demographic composition is indicated by the proportion of younger generation (in the age range from 15 to 34) in total population.

The tertiary sector in Beijing, Shanghai, and Tianjin contributes more than 80%, 70%, and 60% to local GDP, respectively. Chongqing as the other one municipality directly under the central government, unlike these three municipalities, does not show the importance of tertiary sector at the same level. Even Hainan, of which the cornerstone of local economy is tourism, has a larger proportion of tertiary sector than Chongqing, while the GDP of Hainan province is less than Chongqing. There are only five provinces with less than 50% of GDP output from tertiary sector.

As for the demographic composition, the variance across provinces is not as significant as that of economic structure. More than 40% population in Beijing and Guangdong is the younger generation, while three provinces in Southwest including Chongqing, Sichuan, and Guizhou, have the smallest younger generation (less than 30%). There might be a correlation between proportion of younger generation and the labor mobility between provinces. The younger generation as the majority of labor is moving from the provinces with less work opportunities to those with more.

*Figure 17 Potential Independent Variables*



## 5.2 Statistical Findings

### 5.2.1 Statistical Test of Hypotheses

The hypotheses of this thesis are:

Hypothesis 1: Where the external dependence is higher, network governance is more developed.

Hypothesis 2: Where the social network is stronger, network governance is more developed.

Hypothesis 3: Where the power of government is weaker, network governance is more developed.

Hypothesis 4: Where the tertiary sector contributes more to the local economy, where the network governance is more developed.

Hypothesis 5: Where the younger generation weighs more in demographic composition, where the network governance is more developed.

Table 12 below shows all the Pearson correlations between variables. [72] Examining the correlations between network governance as dependent variable and other independent variables (also the potential variables), we can find that the values of *p* are all under 0.05. If the significant level is set as 0.05, then it means the correlations are statistically significant.

*Table 12 Correlations between Dependent Variable and Independent Variables*

| Variables | | network governance | external dependence | strength of social network | power of local government | economic structure | demographic composition |
|---|---|---|---|---|---|---|---|
| Dependent Variable | network governance | 1 | | | | | |
| Independent Variable 1 | external dependence | 0.7616<br>0.0000 | 1 | | | | |
| Independent Variable 2 | strength of social network | 0.6999<br>0.0000 | 0.7329<br>0.0000 | 1 | | | |
| Independent Variable 3 | power of local government | -0.6033<br>0.0007 | -0.3929<br>0.0288 | -0.5136<br>0.0052 | 1 | | |
| Independent Variable 4 | economic structure | 0.7667<br>0.0000 | 0.6602<br>0.0001 | 0.5370<br>0.0032 | -0.0725<br>0.6982 | 1 | |
| Independent Variable 5 | demographic composition | 0.4752<br>0.0106 | 0.4506<br>0.0110 | 0.5982<br>0.0008 | 0.2664<br>0.1474 | 0.5186<br>0.0028 | 1 |

To examine whether there is correlation between network governance and geographic location of province (the control variable), six dummy variables are created for the six great

[72] Using the statistical software STATA (ver. 15.1).

regional divisions. There are no values of *p* under 0.05, which means there are no statistically significant correlations. However, it is significantly correlated negatively with geographic location in Northwest if the confidence interval is set as 90% (which means the value of *p* is set as 0.1).

*Table 13 Correlations between Dependent Variable and Control Variable*

| | network governance | north | northeast | east | central south | southwest | northwest |
|---|---|---|---|---|---|---|---|
| network governance | 1 | | | | | | |
| north | 0.2563 | 1 | | | | | |
| | 0.1880 | | | | | | |
| northeast | -0.1446 | -0.1435 | 1 | | | | |
| | 0.4628 | 0.4411 | | | | | |
| east | 0.2273 | -0.2368 | -0.1768 | 1 | | | |
| | 0.2447 | 0.1996 | 0.3414 | | | | |
| central south | -0.1242 | -0.2148 | -0.1604 | -0.2646 | 1 | | |
| | 0.5290 | 0.2458 | 0.3888 | 0.1503 | | | |
| southwest | 0.0427 | -0.1923 | -0.1435 | -0.2368 | -0.2148 | 1 | |
| | 0.8292 | 0.3000 | 0.4411 | 0.1996 | 0.2458 | | |
| northwest | -0.3408 | -0.1923 | -0.1435 | -0.2368 | -0.2148 | -0.1923 | 1 |
| | 0.0760 | 0.3000 | 0.4411 | 0.1996 | 0.2458 | 0.3000 | |

It can be summarized from Table 12 and Table 13 that:

1. The development of network governance is positively correlated with external dependence.
2. The development of network governance is positively correlated with strength of social network.
3. The development of network governance is negatively correlated with power of local government.
4. The development of network governance is correlated with economic structure. It is positively correlated with the tertiary sector's portion in local GDP.
5. The development of network governance is correlated with demographic composition. It is positively correlated with the proportion of younger generation.
6. The development of network governance is negatively correlated with geographic location in Northwest within the confidence interval of 90%.

### 5.2.2 Further Examination

The summary of correlation between variables can be more accurate if we have a further examination.

#### *5.2.2.1 Independent variables*

Among the independent variables, strength of social network is measured by two first-level indicators. The one is accessibility of nodes; the other is strength of ties. In addition, the openness is respectively measured in three aspects of economy, technology, and sociality. It means that the variable of external dependence is also indicated by the openness index in these three aspects correspondingly.

*Table 14 Correlations between Dependent Variable and First-level Indicators of Independent Variables*

| | network governance | economic dependence | technological dependence | social dependence | accessibility of nodes | strength of ties |
|---|---|---|---|---|---|---|
| network governance | 1 | | | | | |
| economic dependence | 0.7551<br>0.0000 | 1 | | | | |
| technological dependence | 0.6199<br>0.0004 | 0.7691<br>0.0000 | 1 | | | |
| social dependence | 0.7603<br>0.0000 | 0.7547<br>0.0000 | 0.8378<br>0.0000 | 1 | | |
| accessibility of nodes | 0.7090<br>0.0000 | 0.5427<br>0.0028 | 0.7317<br>0.0000 | 0.7985<br>0.0000 | 1 | |
| strength of ties | -0.2205<br>0.2594 | -0.2317<br>0.2355 | -0.0111<br>0.9551 | -0.2482<br>0.2029 | 0.0296<br>0.8811 | 1 |

Apparently, external dependence in the three aspects is all correlated. Accessibility of nodes is also correlated; however, it suggests (by the underscored figure in Table 14) that network governance has no statistically significant correlation with strength of ties.

#### *5.2.2.2 Dependent variable*

Network governance is a two-dimensional concept as defined in this thesis. E-government is the system in the dimension of cyberspace, while RC is the system (indicated by community governance) in the dimension of physical world. It is expected that the development status of these two systems differs when we examine the correlations with independent variables.

*Table 15 Correlations between E-government's Development and Independent Variables*

| | e-government | external dependence | strength of social network | power of local government | economic structure | demographic composition |
|---|---|---|---|---|---|---|
| e-government | 1 | | | | | |
| external dependence | 0.8573<br>0.0000 | 1 | | | | |
| strength of social network | 0.8097<br>0.0000 | 0.7329<br>0.0000 | 1 | | | |
| power of local government | -0.3934<br>0.0286 | -0.3929<br>0.0288 | -0.5136<br>0.0052 | 1 | | |
| economic structure | 0.5554<br>0.0012 | 0.6602<br>0.0001 | 0.5370<br>0.0032 | -0.0725<br>0.6982 | 1 | |
| demographic composition | 0.4891<br>0.0052 | 0.4506<br>0.0110 | 0.5982<br>0.0008 | 0.2664<br>0.1474 | 0.5186<br>0.0028 | 1 |

*Table 16 Correlations between Community Governance's Development and Independent Variables*

| | community governance | external dependence | strength of social network | power of local government | economic structure | demographic composition |
|---|---|---|---|---|---|---|
| community governance | 1 | | | | | |
| external dependence | 0.4876<br>0.0085 | 1 | | | | |
| strength of social network | 0.4234<br>0.0248 | 0.7329<br>0.0000 | 1 | | | |
| power of local government | -0.4249<br>0.0242 | -0.3929<br>0.0288 | -0.5136<br>0.0052 | 1 | | |
| economic structure | 0.7195<br>0.0000 | 0.6602<br>0.0001 | 0.5370<br>0.0032 | -0.0725<br>0.6982 | 1 | |
| demographic composition | 0.1971<br>0.3147 | 0.4506<br>0.0110 | 0.5982<br>0.0008 | 0.2664<br>0.1474 | 0.5186<br>0.0028 | 1 |

The conclusion of correlations remains unchanged for e-government (Table 15), while it is slightly different for community governance (Table 16). There is no correlation between community governance and demographic composition with statistical significance (indicated by the underscored figure in Table 16).

Having a further examination on independent variables, we can find from Table 17 and Table 18 that community governance does not have a significant correlation in statistical sense with

technological dependence while e-government does have (if the confidence level is set as 90%, then community governance does have significant correlation with technological dependence). What is noteworthy, the correlation coefficient between e-government and social dependence reaches as high as 0.9231.

*Table 17 Correlations between E-government's Development and External Dependence in Three Aspects*

| | e-government | economic dependence | technological dependence | social dependence |
|---|---|---|---|---|
| e-government | 1 | | | |
| economic dependence | 0.7488<br>0.0000 | 1 | | |
| technological dependence | 0.7509<br>0.0000 | 0.7691<br>0.0000 | 1 | |
| social dependence | 0.9231<br>0.0000 | 0.7547<br>0.0000 | 0.8378<br>0.0000 | 1 |

*Table 18 Correlations between Community Governance's Development and External Dependence in Three Aspects*

| | community governance | economic dependence | technological dependence | social dependence |
|---|---|---|---|---|
| community governance | 1 | | | |
| economic dependence | 0.5748<br>0.0014 | 1 | | |
| technological dependence | 0.3600<br>0.0598 | 0.7691<br>0.0000 | 1 | |
| social dependence | 0.4237<br>0.0246 | 0.7547<br>0.0000 | 0.8378<br>0.0000 | 1 |

When controlling the variable of geographic location, the outcome (Table 19) shows that provinces in East region have higher development level of e-government than those in other regions. Meanwhile, there is no evident difference between provinces in the six great regions in terms of community governance. The negative correlation with geographic location in Northwest, however, is statistically significant on the confidence level as 90%. (Table 20)

*Table 19 Correlations between E-government's Development and Control Variable*

| | e-government | north | northeast | east | central south | southwest | northwest |
|---|---|---|---|---|---|---|---|
| e-government | 1 | | | | | | |
| north | 0.2011 | 1 | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0.2781 | | | | | | |
| northeast | -0.0562 | -0.1435 | 1 | | | | |
| | 0.7639 | 0.4411 | | | | | |
| east | 0.3934 | -0.2368 | -0.1768 | 1 | | | |
| | 0.0286 | 0.1996 | 0.3414 | | | | |
| central south | -0.0289 | -0.2148 | -0.1604 | -0.2646 | 1 | | |
| | 0.8774 | 0.2458 | 0.3888 | 0.1503 | | | |
| southwest | -0.2931 | -0.1923 | -0.1435 | -0.2368 | -0.2148 | 1 | |
| | 0.1095 | 0.3000 | 0.4411 | 0.1996 | 0.2458 | | |
| northwest | -0.2789 | -0.1923 | -0.1435 | -0.2368 | -0.2148 | -0.1923 | 1 |
| | 0.1287 | 0.3000 | 0.4411 | 0.1996 | 0.2458 | 0.3000 | |

*Table 20 Correlations between Community Governance's Development and Control Variable*

| | community governance | north | northeast | east | central south | southwest | northwest |
|---|---|---|---|---|---|---|---|
| community governance | 1 | | | | | | |
| north | 0.2610 | 1 | | | | | |
| | 0.1798 | | | | | | |
| northeast | -0.1549 | -0.1435 | 1 | | | | |
| | 0.4313 | 0.4411 | | | | | |
| east | 0.0471 | -0.2368 | -0.1768 | 1 | | | |
| | 0.8117 | 0.1996 | 0.3414 | | | | |
| central south | -0.1542 | -0.2148 | -0.1604 | -0.2646 | 1 | | |
| | 0.4333 | 0.2458 | 0.3888 | 0.1503 | | | |
| southwest | 0.2868 | -0.1923 | -0.1435 | -0.2368 | -0.2148 | 1 | |
| | 0.1390 | 0.3000 | 0.4411 | 0.1996 | 0.2458 | | |
| northwest | -0.3251 | -0.1923 | -0.1435 | -0.2368 | -0.2148 | -0.1923 | 1 |
| | 0.0914 | 0.3000 | 0.4411 | 0.1996 | 0.2458 | 0.3000 | |

## 5.3 Interpretation of Statistical Findings

### 5.3.1 Hypotheses Statistically Accepted

Findings suggest that the five hypotheses can be accepted in the sense of statistical analysis. As commonly known, statistical correlation does not necessarily indicate causation. The correlation between dependent variables and independent variables, either positive or negative, are proved to be statistically significant. However, it does not necessarily infer any significance in theoretical construction. It is time to interpret the correlations.

In fact, the development of network governance is later than the effect of other factors in time sequence. The correlations could imply causation in this sense. It is worth emphasizing that the development of network governance is a project, or a campaign, initiated by the central authority. The central authority itself in the first place has no explicit approaches and requirements for a new object in its work plan. The experience from the reform in the past proves that setting experimental zones under provincial level and encouraging the local governments to explore can raise the probability of success. It takes time to find out an optimal scheme, to complete a standard for the other provinces to follow, and for the central to assess the performance of provinces. To summarize, the development of network governance, including that of e-government and community governance, has been a new object for all the provinces. Nevertheless, the independent variables are different. External dependence has been a result of the Reform and Open-up since the end of 1970s. The strength of social network, given the index construction, primely depends on the activation of economic and social activities of local people. The power of local government is an indicator of the relationship between government and market, which only emerges after the beginning of the transformation from centrally planned economy to market economy.

Although the development of e-government system was advocated in a few years after the international Internet was introduced into China, the function of e-government to disclose information and deliver public services to residents was not developed until 2016. During the 9th National People's Congress in 2001, it was the first time that "e-government" (Chinese: 电子政务; pinyin: dianzi zhengwu) was mentioned in the Report on National Economy and Society Development Plan (2000) by Zeng Peiyan, the director of National Development Plan Commission[73]. The general offices of the Communist Party of China Central Committee and

[73] The National Development Plan Commission (retitled in 1998) was a department subordinate to the State Council. It was the result from the reform on National Plan Commission, which was the central planning board in the era of centrally planned economy. Instead of designing central plan, it nowadays takes more responsibility to make

the State Council jointly released a guideline to instruct the establishment of e-government system in 2002. However, the incongruity inside the bureaucratic Party-state makes it difficult to integrate resources and actions from different departments for the construction of a national platform. In contrast, the establishment of e-government system on the provincial level was launched earlier in some provinces. For example, Beijing government released a guideline to accelerate informatization and primarily built up an online platform for government departments in 2001. Unlike those in Beijing, Guangdong, and other advanced provinces, most of the official websites built by local government cannot meet the basic requirements in terms of utility and maintenance because of the lack of money and human resources. The unqualified websites have been shut down since 2017 by the State Council. In June 2019, the number of government websites has been reduced by 77%, compared with the number in December 2015. The models explored in Guangdong and Zhejiang have been taken as examples by the central to help other provinces imitate. (Huang, 2020)

Notwithstanding the RC system has been established early even before the Reform and Open-up, the awareness of "network" did not emerge until the recent years. The importance of RC system in the past did not reach a level as high as in these days when the rapid urbanization brings about enormous and heterogeneous blocks of community with large scale.(Wu, 2020) The complexity of administration surpasses the capability of the merely changed grassroot agencies of local government.[74] In 2007, the former General Secretary (namely the highest leader of CCP) Hu Jintao at the 17th CCP National Congress in the first time promoted "the system of self-governance at the primary level of society" to the position of basic political systems paralleling "the system of people's congresses, the system of multiparty cooperation and political consultation under the leadership of the CCP, the system of regional ethnic autonomy".(Xinhua News Agency, 2007) RC is the self-governance organization entitled in the Constitution of China. RC system thus has taken the responsibility in pivoting the community governance.

Community governance with RC as its core highly relies on network. At the 18th National Congress of CCP in 2012, Hu delivered the report as a tenet of CCP's work in the future. As he put it, "strengthen networks of community-level public services and social management" (Xinhua News Agency, 2012). It is part of the blueprint of a "moderately prosperous society" completed in 2020. Later, the Ministry of Civil Affairs (MCA) organized the National

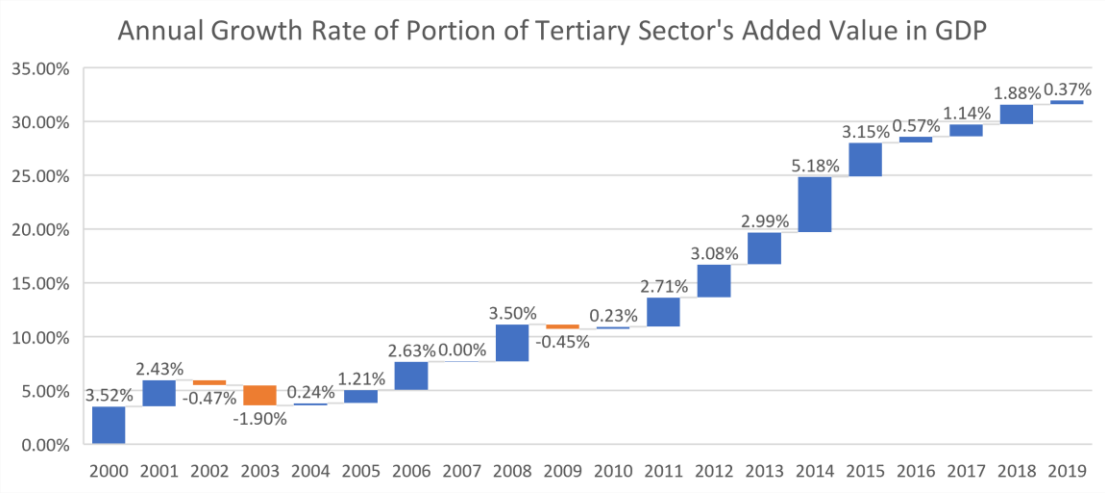
policies of macro-economic control in a rather broad range including industry, finance, employment, and monetary affairs, etc. It has been renamed as National Development and Reform Commission since 2003.

[74] There is a graph illustrating the change of Street Office and RC with time series data, see Chapter Three.

Urban/Rural Community Construction Expert Committee in 2013. It has solicited the experts from research institutes, universities, and the State Council, to serve the purposes of policy consultancy and the complement of a standard for assessment. (MCA, 2013) Urban/rural community is identified as "the basic unit of governance" in the latest jointly released guideline in 2017 from the CCCCP and the State Council. For the improvement in the future, ICTs are to be introduced to equip the community facilities. (Xinhua News Agency, 2017) It is reasonable to infer that the local governments within the range of self-determination on financial allocation start to invest into community construction only after community governance was set as a new policy goal.

As for economic structure, we can calculate the annual growth rate of the portion of tertiary sector in GDP nationally by the annual data of the latest twenty years from 2000 to 2020. If it is assumed that network governance starts in the nearer ten years and it has effect on economic structure, then there will be a significant difference between two periods.

*Figure 18 Annual Growth Rate of Portion of Tertiary Sector's Added Value in GDP*




*Source: NBS*

Running t-test of two samples[75], we can find from Table 21 that there is no difference with statistical significance between the grow rates in two periods. Considering the positive correlation between economic structure and the development of network governance, this result implies that either there is any unknown factor that has negative effect on economic structure counterbalancing the positive effect from network governance, or there is any unknown factor that has positive effect on both economic structure and network governance.

[75] One sample consists of the growth rates before 2010, the other consists of the growth rates after 2010 (including 2010).

*Table 21 Indistinction between Annual Growth Rates Before 2010 and After 2010 (including 2010)*

| Variable | Obs | Mean | Std. | Err. | Std. Dev. | [95% Conf. Interval] |
|---|---|---|---|---|---|---|
| Before 2010 | 10 | 0.010697 | 0.005921 | 0.018724 | -0.0027 | 0.024091 |
| After 2010 | 10 | 0.021278 | 0.004998 | 0.015805 | 0.009972 | 0.032584 |
| diff | 10 | -0.01058 | 0.009016 | 0.028512 | -0.03098 | 0.009815 |
| mean(diff) = mean(Before2010 - After2010) | | | | | | t = -1.1736 |
| Ho: mean(diff) = 0 | | | | | | degrees of freedom = 9 |
| Ha: mean(diff) < 0 | | Ha: mean(diff) != 0 | | Ha: mean(diff) > 0 | | |
| Pr (T < t) = 0.1353 | | Pr (T > t) = 0.2707 | | Pr (T > t) = 0.8647 | | |

It might be concluded that the correlation between economic structure and network governance is not caused by network governance, but rather otherwise caused by economic structure, if we assume that there is no unknown factor.

Demographic composition has correlation with network governance. However, it is revealed in the further examination that demographic composition is primely correlated with the development of e-government rather than the development of community governance. (See Table 15 & 16) The causal relationship could be argued as that the larger proportion of younger generation in population facilitates the development of e-government, or the higher level of e-government development attracts more younger generation to move in. Otherwise, to be realistic, there is no direct causal relationship between these two variables. It is possible that there is a same factor that causes the changes of these two variables, or there is a mediating variable between them.

Fortunately, the relevant studies have provided adequate references. The variance in provinces' demographic composition is largely determined by the migrants.[76] The data from the sixth national census in 2010 show that 75% migrants' purpose of migration is working and doing business. Naturally, the majority of migrant population across provinces is labor

[76] The natural population growth rate hardly experiences significant fluctuation during the period (1979-1999) under the strict execution of One-child policy in national wide. (Hu, 2015) There is also evidence that the natural population growth rate is negatively correlated with the growth of GDP per capita after 1980. (Liu, 2016) However, the economic-advanced provinces have larger proportion of younger generation in demographic composition, as Figure 17 show.

force in the age range from 15 to 48, with the proportion being 84%. The occupation of 55.44% of the labor force population is operator of devices for production and transportation, followed by employee of business and service sector with the proportion being 27.64%. It means that the work opportunities in the secondary and tertiary sectors attract migrants. (Ma & Chen, 2012) A study on inter-provincial flow (Chen, Wang, Zhao, & Zhou, 2014) points out by doing a linear regression analysis that the lower GDP per capita and the larger population constitute the main driving force of population outflow. Therefore, the top five provinces in terms of population outflow are Anhui, Henan, Sichuan, Hunan, and Hubei. Correspondingly, the top five provinces in terms of population inflow are Guangdong, Shanghai, Beijing, Zhejiang, and Jiangsu.

It is clarified that the demographic composition is largely determined by the development of secondary and tertiary sectors. As already evidenced, where the tertiary sector is more developed, network governance, especially that of e-government in the dimension of cyberspace, is more developed. Hence, there is no direct causal relationship between network governance and demographic composition. The economic structure has causal relation with demographic composition.

### 5.3.2 Irrelevance or Relevance?

The hypotheses that have been accepted statistically based on the significant relevance are directly enhancing the explanatory power of this thesis, but the irrelevance between variables also reveal the need of further thinking.

Findings suggest that the strength of ties in social network is not correlated with other variables. However, the strength of ties is correlated with the residents' engagement in community governance.

*Table 22 Correlation between residents' engagement and strength of ties*

| | Residents' engagement | Strength of ties |
|---|---|---|
| Residents' engagement | 1 | |
| Strength of ties | 0.5384<br>0.0031 | 1 |

According to the index construction, strength of ties reflects the level of social interaction between residents and their relatives and friends (strong ties), as well as the level of trust in acquaintances, coworkers, and strangers (weak ties). Meanwhile, residents' engagement is

partly indicated by the level of social interaction between residents and their neighbors. It is reasonable to argue that strength of ties precedes residents' engagement, because the interaction with neighbors occurs later. Urbanization in the past thirty years brings up the rapid growth of communities, and communities bring up new neighborhood. Therefore, strength of ties might have positive effect on residents' engagement in community governance. It means that the residents who have more trust and connection with their relatives/friends will engage in community affairs more.

*Table 23 Correlation between community governance and strength of ties*

| | Community Governance | Strength of ties |
|---|---|---|
| Community governance | 1 | |
| Strength of ties | -0.0820<br>0.6781 | 1 |

The irrelevance between community governance and strength of ties (Table 23) is the result of the higher weight of accessibility of nodes in the construction of social network index and government's engagement in the construction of community governance index as well.

Geographic location as the control variable draws attention only when it comes to the significant correlation between e-government development and east region, as well as that between community governance development and northwest region, otherwise it shows irrelevance in both tables (Table 19 and Table 20). The e-government system is evidently more developed in the east region, while the community governance is evidently less developed in the northwest region. What causes these two special cases?

To put it in a broader sense, network governance, from its original conceptualization, is neither the sole enterprise of government, nor the indicator of economic development. It is enabled and at the same time constrained by the conditions of the different provinces. Both projects (e-government system building and community building) absorb resources from local government. As it is commonly recognized, the total amount of public expenditure from local government attributed into public service is largely limited by the total amount of government revenue. The revenue is positively correlated with the development level of local economy. The most noteworthy difference between the east region/northwest region and other regions is their economic development level. However, if economic development had been the only one influential factor on e-government building and community building, it is hard to explain

the irrelevance mentioned above. The irrelevance implies that these two projects (e-government system building and community building) are not simply decided by either economic factor, or the resources distributed by the local government.

For example, the Internet penetration is one of the two dimensions that constructs the index of e-government system. It, as the index reflects, depends on the infrastructure building of ICTs, the cost of maintaining and upgrading the current products and services, as well as the number of organizations, companies, and residents which can afford the price of using ICTs. Only in the east region the e-government system operates on a higher level than that in any other region. Firstly, the governments there are capable to consolidate infrastructure building by the state-owned ICT groups; secondly, a large number of consumers of ICT service sustain a prosperous ICT market and they thus have chance of making choices among services with different prices on the market; thirdly, market competition and profit encourage the private companies maintain and upgrade the current products and services without the government or the consumers taking the burden; fourthly, interaction and transaction in terms of science and technology in an open environment can decrease the barrier and cost of achieving the latest ICT products and services; last but not the least, the similarities among those provinces in east region overwhelm their disparities, hence the east region as a special case among other regions shows the relevance. By the same token, it can be proposed that those provinces in northwest region share more commonplaces regarding community building and community governance.

## 5.4 Conclusions

### 5.4.1 Causation

The three basic hypotheses developed in this thesis are statistically accepted. Specifically speaking, there are three conclusions:

1. External dependence is positively correlated with network governance development.
2. Strength of social network is positively correlated with network governance development.
3. Power of local government is negatively correlated with network governance development.

Considering that correlation does not refer to causation, it is necessary to examine the sequence of the occurrence of these variables. With the complementary analysis based on timeline, the causal relationship between variables can be confirmed. In China's context, network governance is constructed by two pillars. One is RC system; the other is e-government. RC system starts to be re-activated to assist governmental administration only after the rapid urbanization amplifies the inefficiency of government in tackling the increasing

complexity. Let alone the e-government system had not been applicable until ICTs become widely affordable and accessible to ordinary residents. Hence, network governance is a rather newly developed policy goal for local governments, as pointed in the chapter of Introduction. Otherwise, the three independent variables all occur much earlier than the dependent variable. External dependence occurs after the initiation of Reform and Open-up in 1970s. Social network experienced reconstruction during social and political revolution in 20$^{th}$ century, but its strength has been enhanced since the Reform and Open-up has enlarged the space of private sector. The power of local government itself becomes a variable only after the Reform and Open-up as well. Local governments rarely had autonomy in decision-making of their local affairs before the Reform and Open-up. The central government was privileged with absolute authority in making decision and delivering commands. In addition, market, as the other object in the dual relationship of power, has yet revived after the Reform and Open-up. The power of local government is measured as counterpart of marketization level, as constructed in the chapter of Methodology. In summary, the three independent variables in the core hypotheses all antecede the dependent variable.

According to the timeline analyzed above, it can be concluded that,

1. External dependence has positive effect on the development of network governance.
2. Strength of social network has positive effect on the development of network governance.
3. Power of local government has negative effect on the development of network governance.

### 5.4.2 Correlation

As for the potential independent variables, they are simultaneously changing along with the development of network governance. It is hard to identify a time sequence of the occurrence of each variable. Hence, it requires further study to explore the causal relationship and the concerning explanations. However, to realistically interpret the correlation will be helpful to make propositions for further study.

1. Economic structure, which is indicated by the portion of tertiary sector in local GDP, is positively correlated with the development of network governance.

In the sense of statistical analysis, there is positive correlation between economic structure and the development of network governance. It can be assumed that the development of network governance benefits from the policy incentive driven by the central authority on national level of developing network governance. As for the economic structure, its change is featured with the rapid growth of tertiary sector. If the development of network governance has positive effect on economic structure, the growth rate of tertiary sector will be increased

significantly after the initiation of policy incentive. To identify the causation, the policy incentive of developing network governance is hypothesized as independent variable (so that it is a binary variable with the value of one or zero), while the change of economic structure, which is indicated by the growth rate of tertiary sector (measured by the GDP it creates), is hypothesized as dependent variable. After testing between the growth rates of economic structure in the two ten-year periods with and without the policy incentive, the difference is found statistically insignificant. Three explanations are proposed according to this result: the first one is that the policy incentive of developing network governance has no effect on the change of economic structure, the second one is that there are unknown factors countering the effect of the policy incentive, and the third one is there is an unknown factor causing the both the changes of network governance and economic structure. These propositions could be the starting point for the further study. However, if it is assumed that there is no unknown factor, then it could be concluded that the economic structure has positive effect on the development of network governance.

2. Demographic composition, which is indicated by the portion of younger generation in population, has no causal relationship with the development of network governance.

Demographic composition is significantly correlated with the development of e-government rather than community governance. To interpret it realistically, it is still unclear whether the younger generation is more likely to utilize and prompt the development of e-government system, or the developed e-government system attracts more younger generation to move in. The relevant study has pointed out that demographic composition of one province is largely determined by its economic structure. Where there are more work opportunities in the second and the tertiary sectors, where it is more attractive to young migrant workers. The enormous flow of young migrant workers has changed the previous demographic composition of provinces. Therefore, if the conclusion achieved in the paragraph above is concrete, then demographic composition delivers the effect from economic structure onto the development of network governance.

3. Geographic location has correlation with the development of network governance.

Specifically speaking, the provinces located in the regional division of Northwest have lower development level of network governance (in further examination, the correlation is presented with community governance) than the provinces locating in the other divisions[77], while the provinces located in East have higher development level of e-government. The

[77] The correlation is statistically significant within the confidence interval of 90%, while it is not within the confidence interval of 95%.

higher level of e-government development implies that the advantages in the East provinces, such as resources allocated by government, the marketized environment, and the higher consumption of ICTs, etc., affluently breed the local e-government system. In other regions, these advantages disperse unevenly in different provinces and weaken the correlation between regions and e-government development. In stark contrast, there are no clear implications about the reason of that Northwest provinces are underperforming in terms of community governance. The discussion is limited in this thesis but could be expanded in future study.

## 5.5 Discussion: Further Study in the Future

### 5.5.1 Exploration on the Interconnected Variables

The theoretical hypotheses about network governance have been accepted, but it does not mean that the theory has been accepted. The statistical analysis provides evidence about correlation between variables; however, the mechanisms of network governance development worth further research. The inference about causation rests upon correlations and timeline on which the sequence witnesses the occurrence of each variable. Either realistically or theoretically, most variables are interconnected. The further research needs to take an exploration on the relationships between those variables.

According to the theory construction in Introduction, increasing complexity drives the shift to network governance. Government faces two options: one is to strengthen command governance, the other one is to adapt to the shift. Power of government intends to enhance command governance, while external dependence and strength of social network will deter the enhancement. In fact, these three factors are intertwined with each other in the mechanism of developing network governance. In the context of China, external dependence barely existed until the Reform and Open-up started from the end of 1970s. As introduced in Chapter Three, the experimental zones set in the provinces along the coastline (Guangdong and Fujian) around the year of 1979 played the role of exploring the model of open-up. Meanwhile, the reform on centrally planned economy in urban area following that in rural area triggered the marketization process. In some provinces where social network has been strong, the marketization process has been accelerated. For instance, the model of Wenzhou in Zhejiang taken as a successful example during 1980s was promoted and applied in national wide. Correspondingly, power of local government has been weakened where the Reform and Open-up has been intensified. It is not unexpected that there is a negative correlation between external dependence and power of local government with statistical significance. (See Table 1) Moreover, the tertiary sector's portion in local GDP is positively correlated with both external dependence and network governance. Although it is proved that the development of network governance does not affect the growth of tertiary sector in the last ten years, it is still unclear that either the tertiary sector's increasing portion has positively effect on network governance, or it is one of the results of the increasing external dependence. To summarize, the independent variables themselves are not independent from each other. It could make the correlations have statistical significance but no theoretical significance.

### 5.5.2 Improvement of Statistical Analysis

The prime method used in this thesis is quantitative method, especially statistical analysis. There are some improvements with which the statistical analysis could be perfected.

Firstly, with a precise model, the explanatory power of the hypotheses could be strengthened to a large extent. The variables measured in this thesis are all indicated by indices. Indices as continuous variable have advantages in statistical analysis, at the price of losing its direct relevance with the reality. Besides, there is apparently multicollinearity between independent variables. The indirect relevance and the multicollinearity make linear regression ineligible to complete a precise model for calculation and prediction. Further research has another option of using the data of original indicators if a model is desirable.

Secondly, the validity of indices could be enhanced by applying more indicators and weight methods. For example, the construction of community governance lacks the indicators of third party's engagement. The third party, which refers to private sector differentiated from government and residents, would be engaged in community governance. The National Development and Reform Commission[78] in 2014 released a guideline on the promotion of Public-Private Partnership (PPP) to encourage the investment from private sector to the domain of public sector. PPP serves to the purpose of relieving the financial burden on local government by introducing market competition to supply public goods and deliver public services. According to the disclosed data on the official website of Public Private Partnerships Center subordinated to Ministry of Finance[79], there are 10022 projects at present. Among all the projects, 4090 are categorized as Municipal Engineering including but not limited to the infrastructure construction of community (such as underground pipeline, sewage treatment, etc.).(China Public Private Partnerships Center, 2021) However, PPP is still progressed on the primary stage without evidence of either that the private sector becomes deeply engaged in community governance or that the residents have recognized the engagement of private sector. To have a further examination on the engagement of private sector, more empirical materials are required. Because of the inadequate indicators, the weight method is limited only to be Entropy Weight Method. Another usually used method, like Principal Component Analysis (PCA), is not appropriate either. While the weight method of PCA drops the indicators with tiny weights, it at the same time drops the social relevance of those indicators in index construction. Furthermore, subjective weight method, like Analytic Hierarchy Process (AHP),

[78] National Development and Reform Commission (renamed in 2003) was the previous National Development Plan Commission (retitled in 1998).

[79] By the date of March 30th, 2021.

could supplement the objective weight method. It manifests the social relevance of each indicator in a more meaningful way. These applicable methods could be considered in the further research when there come more available data.

Thirdly, the data collection could be pluralized with more time-series data and panel data. The cross-sectional data of each province can only reflect the status in certain year. Although the comparative study needs the cross-sectional data to make comparison between different provinces, the time-series data are dispensable to outline the process of the development of network governance. In fact, the time-series data have been proved useful in identifying the causal relationship between economic structure and the development of network governance, as shown above. Panel data, which cover the cross-sectional data and time-series data simultaneously, should be collected for the further study. With panel data, we can not only compare across provinces, but also trace the process of the independent variables affecting the dependent variable.

### 5.5.3 Completement With Qualitative Approaches

Qualitative approaches should be implemented after the correlations revealed by the statistical analysis, as elucidated in the section above. For instance, grounded theory as one of the qualitative approaches can be deployed to explicitly trace the process of developing network governance, from the government's decision-making to the engagement of residents. The firsthand narratives from the decision makers, the participants in community governance through RC system, and the residents who get more and more accustomed with e-government system can be collected with interview. The questions, like whether the demand from the frequent interactions with the external world raises the necessity of network governance, whether the local government with weakened power has to listen to the voice of market and society and meet the demand from them, and whether the strength of social network elevates residents' participation in community governance, can be answered to identify the causal relationship between variables.

Despite the qualitative approaches for accumulating more empirical materials, qualitative comparative analysis (QCA) can be considered when doing data analysis. It is assumed that the synthesis of the independent variables rather than one single independent variable separately affects the dependent variable. As shown in the section of findings, the independent variables are correlated with each other, which makes QCA eligible under this circumstance. QCA clusters the provinces into different groups by the presence or absence of some attributes. It means that continuous variables will be recoded as dummy variables with the value of 0 or 1, including dependent variable and independent variables. Each group

presents a configuration of the independent variables with different values. It is not the provinces but the configurations that are compared to find out the multiple conjectural cause. Certainly, QCA has its inherent drawbacks. It increases the risk of oversimplification of the information that variables could tell when the continuous variables are turned into dummy variables. Therefore, it should be prudently considered as a different and supplemental method for the quantitative analysis.

### 5.5.4 Tracking Updates in China

China's network governance, or the distinctive features of governance in China, has already been put under academic spotlight, especially during this very period of fighting pandemic. For example, a lately research on China's response to the Covid-19 pandemic points out that China's community mobilization ensures the manpower and the resources of enforcing confinement measures in communities to contain pandemic. There are two keys for community mobilization: one is the local party cadre, the other one is the grid management system. During the crisis period, local party cadre members are assigned to play the role of grid controller in the management system. The researchers also note that ICTs have been applied in the community enforcement. (He, Shi, & Liu, 2020) The so-called grid management system penetrated on grassroot level, apparently, is a concept approximating network governance defined in this thesis. It is the development of network governance that embraces the efficacy of China's confinement measures during Covid-19 crisis, compared with the circumstance during the SARS crisis in 2003. What remains unchanged, however, is the variation among provinces. The investigation on the various performance of provinces facing public health crisis would help us gain better understanding of China's network governance.

The measurement of network governance as the dependent variable is the most arduous work while bridging specificity and generalization. Given the ordeal, it would be more promising to keep adherence to the study focusing on China. The study on the specificity of China's governance will be productive as it can introduce a new perspective of governance for those who are interested in comprehensive knowledge of China's transformation. However, more empirical materials are to be accumulated in a larger scope for comparisons not only between provinces in China but also between different countries if a general theory is perceived around the corner.

### 5.5.5 Beyond China's Specificity

The social relevance of network governance should be more noticeable for those who have interest in the modernization in the post-industrial age. Globalization and digitalization interweaved increase the complexity of the world from which nobody can escape.

Government must make response to the challenges, either in a manner of being positive or in a position of being negative. Notwithstanding, government is not, and is not able to be the only one that must respond. It is the whole society that must recognize and adapt to the rapid changing reality. From the view of “traditional” modernists, democratic institution as one of the modern institutions, is the foundation of politics for the countries which are being modernized. However, it is proved by the experience in the past that democratic institution is not founded solidly in every country as a universal principle in the theory, let alone that the efficacy of democratic institution has been suspected and reflected in the most developed democratic countries. According to the theoretical construction in Chapter Two, democratic institution used to be a mechanism of collecting and processing information at relatively low cost but high efficiency from a perspective of information. Today, a doubt that whether there is also a law of diminishing return on democratic institution may have appeared. At the same time, it is worth thinking that whether democracy has not avoided to be trapped in involution as a sophisticated play only between parties and politicians.

Network governance, not as a substitute of democratic institution but as an alternative useful instrument in collecting and processing information, should be taken into consideration under this circumstance. The social relevance of network governance does not rest only on its utility or function, but also on its disentanglement of the role that people play in politics. The role of people play in politics has been institutionalized for long in the most developed democratic countries. It is the institutionalization that encounters most difficulties in the underdeveloped countries. Because of the difficulties, the democratic institution in a short term leaves an impression of being invalid and useless to the people in improving their current conditions. This impression, whether has been exploited by the opponents of democratization, worsens the situation in a vicious circle. By contrast, people can just return to the role of residents that they get used to when they engage in network governance. The improvement of the neighborhood, the community, and the district where they are living, is supposed to raise less opposition than the endless disputes on democratization. It is certain that China presents the advantages of network governance in its own style because pragmatism bolsters the Reform and Opening up as an underlying tenet. It remains unknown if network governance in China’s style can be applicable in other countries which also faces transformation in a much more complicated world of this post-industrial age, but it is undoubtedly worth study in the future.

# Appendix I:

# A Brief History of Complexity and Information

## The Demise of Communist Illusion

The unprecedented experience in the last century is the experiment on communism as the tenet of economic system, political system, and ideology. The radical expansion of capitalism in a manner of imperialism activated severe conflicts between states, nations, and visions about human's future in the beginning of 20th century. The creators of communism with romanticist rhetoric won the discursive battle against those whose commitment in laissez-faire has been shaken. The believers of communism, in Russia, with iron fist and will won the bloody battle against those who from a Marxist view represented the old, rotten, doomed world as landlords, emperors and even the new-born bourgeois. The ever highly centralization of power and resources under communist regime in Soviet Russia was proved being destructive weapon against any enemy of it, including Fascism and liberalism. The rapid industrialization under centrally planned economy, especially in military industry that can directly enhance national security by scaling modern army, was what the nations seeking for independence eagerly want. Soviet Russia not only exemplified how communism came into being as an integrated system of economy, politics, and ideology, but also exported it to other buyers. It eventually became the big brother uniting small nations around it and leading a communist bloc in a much wider range.

It is the realization of centrally planned economy in Soviet Russia that thoroughly altered the mind of western intellectuals. The design and expectation of a successful centrally planned economy at first was only a picture deposited by the priests of communism. Afterwards, it, like a ghost haunting over the papers written by economists and published by presses, gradually occupied the hollow mind of those intellectuals who lost faith in free market because they had been frustrated by anomies under the laissez-faire capitalism. Motivated by the regained zeal, they turned to demonstrate the feasibility of centrally planned economy. As the demonstrations were equipped with more "scientific" theories, centrally planned economy became more plausible to intellectuals. Besides, the Marxist belief in historical determinism that communism will replace capitalism determinedly as the productive force develops sounded so simple, clear, and understandable like any religious prophesy that it won popularity among ordinary people. Centrally planned economy promised to reconstruct the Noah's Ark that would be wrecked in the flood of the destined historical progress.

However, the failure of centrally planned economy was not unrealized and unpredicted before it became self-evident. A few economists, who were the minority at that moment, demonstrated the utopian nature of it. Ludwig von Mises fired at the public ownership of the means of production that has been the precondition of centrally planned economy and thus

the very core of any communist system. His insights, early in 1920, predicted the impossibility of economic calculation in such system. Without economic calculation will resources be misallocated and wasted to an extent which the whole society could not suffer. The inefficiency in allocation and distribution will cause the decline of productivity. Declining productivity in a long term only consumes the accumulated wealth without creating new wealth. The unavoidable consequence is the shortage of commodity and degrading living standard of people in general. In one word, any economy based on central plan instead of market is doomed to fail; the society bolstered by such economy is unable to sustain.

There are two conditions indispensable for economic calculation according to Mises. The first one is that both goods for production and goods for consumption come within the ambit of exchange. Although goods for consumption are exchangeable in the design by some communist theorists, it is still meaningless for complete calculation that excluding goods for production in exchange. Because the goods "of lower order" (for consumption) are determined by the goods "of higher order" (for production) in terms of valuation. The second one is the presence of a universally employed medium of exchange, namely, money. The objective exchange value of commodity is monetarily expressed in price without which the calculators find nowhere rest the judgments of value. However, "exchange relations between production goods can only be established on the basis of private ownership of the means of production." (Mises, 1990: 26) Only through exchange does the price reflect the value of commodity. Only based on the price of commodity does individual make rational choice in economic activities. Under the circumstance of public ownership of the means of production, economic calculation is logically impossible.

Without the objective exchange value of commodity expressed in price is the economic calculation still possible, so argue the communists. As long as someone or some organization masters all the information needed for calculation, including the preferences of consumers, the scarcity of any sort of commodities, the labor force in each sector, the necessary number of resources to produce certain commodity according to current level of productivity, etc., calculation is simplified to the largest extent. In addition, everyone is reporting his/her preferences without either concealment or dishonesty, doing exactly what the plan and the command order them to do. As a result, what has been produced precisely meet the demand for what consumers need. Between supply and demand there comes a perfect and still equilibrium at the point where market, price mechanism and money are no more necessary. Like Lenin ever envisaged for the first phase of communist society,

“All citizens become employees and workers of a single countrywide state ‘syndicate’. All that is required is that they should work equally, do their proper share of work, and get equal pay; the accounting and control necessary for this have been simplified by capitalism to the utmost and reduced to the extraordinarily simple operations--which any literate person can perform--of supervising and recording, knowledge of the four rules of arithmetic, and issuing appropriate receipts.” (Lenin, 1917)

Infinite information (mastered by a central authority) is one of the basic assumptions underpinning the theoretical model of centrally planned economy. It implies three preconditions as following: a) the marginal utility of information less than or equals to the marginal cost of collecting information; b) the cost of government bureaucracy is zero or lower than the cost of market transaction; c) the judgments of value of decision-maker, producer and consumer are completely same. (Mao, 1996) Only the fulfillment of these preconditions does ensure that the calculation made by a central authority instead of dispersed individual in market is economic. However, they have never been fulfilled in the real world. After only four years of Lenin’s fancies about ‘state syndicate’, he himself urged to “put 70 per cent of the members of the State Planning Commission to work 14 hours a day” (Lenin, 1921a), and “enable the necessary work to be continued” by cutting down other programs by the Central Statistical Board which requested for additional funds. (Lenin, 1921b) The insurmountable difficulty in statistical work and the accordingly plan-making omens the deviation from the theoretical model of centrally planned economy. This deviation thus triggered the chain reaction of systematic problems till the end of the whole system. For example, the commands that were generally based on outdated information aggregated the infeasibility of the central plan at the operational level. Operational units which were incapable to complete the assigned mission had to bargain with the central authority up through hierarchy, but the hierarchy distorted the information that the subordinates revealed about their incapability. Central plan consequently turned voided.(Ericson, 1991)

Just as Mises on the frontier against the public ownership of the means of production, Hayek (1945) leads the argumentation against the assumption of infinite information (or “knowledge” in Hayek’s argument). According to Hayek, centrally planned economy is not superior to free market economy not because the economy is planned but because the plan is made centrally. It is the random, tiny, and everyday changes and the corresponding adjustments instead of large aggregates reflected in statistics (of which the stability is favored by economists) that maintain the flow of goods/services and compose the grand theme of economy. Information about these changes and adjustments is so trivial that it is excluded from the statistical

information conveyed to a central authority. By contrast, disperse individuals in market who are most familiar with the relevant changes and the available resources can make better use of the existing knowledge, primarily the knowledge of particular circumstances of time and place. Price system, formed in the process of exchange that engages disperse individuals with rationality, functions as a mechanism of communicating information with a single kind of symbol (money) in an abbreviated form. It is certainly of lower cost than the futile effort to gather infinite information. However, it is neither the product of human design nor the mechanism under a single mind's control. Therefore, it would be misfortunately demolished by people's feeling of insecurity about things out of control.

## Dream of Mastering Infinite Information

In a world of soaring complexity, people naturally feel insecure. To feel secured, people need to either reduce the complexity by homogenizing the society or seize more information for extensive control. As Terry Curtis put it, "the larger the organization, the greater the need for information to control, for progress, for improvement, and for coordination – all functions that, in one view, tend toward the homogenization of society." (Curtis, 1988 : 95) The homogenization of society that reduces the complexity comforts the mass exhausted by insecurity on the one hand, assuages the difficulty in economic calculation on the other hand. In the early decades of the last century, the depression of macro economy, the devastating large-scale wars, and the destruction of traditional norms by no means could be handled by individual. As a result, the belief in statistical instruments, Fordist modern mechanical industry, and the prevalent ideologies (among which social Darwinism, nationalism, and Marxism fuse individual into ethnic, nation, and class respectively) propagated through mass media overwhelmingly surpassed the confidence in individual's rationality. The commonplace among statistical instruments, Fordist modern mechanical industry, and the prevalent ideologies is their oversimplification of reality. Individual is oversimplified to the extent of being a homogenous unit that has no subjectivity, no independent opinion, and no preexisting identity. The belief in oversimplification endorsed the process of homogenization.

Not only did the homogenization, but also did the overestimation of the ease of mastering infinite information lead to the triumph of centrally planned economy at that moment. The overestimation of the ease of mastering infinite information results from both the parochial concept of knowledge and the blind faith in science and technology. Early in 1937, an idea of a "permanent world encyclopedia" contributed by a biological graduate, also a scientific fiction writer from Britain, H. G. Wells, actually had considerable social and political resonance. (Robins & Webster, 1988 : 68) Wells (1937) envisions that a permanent world encyclopedia

functions as the “world brain”, “a unified, if not a centralized, world organ to ‘pull the mind of the world together’”. Firstly, it would be “a world synthesis of bibliography and documentation with the indexed archives of the world”. Secondly, a great number of workers are responsible for collecting and updating all indexed human knowledge. Thirdly, “there is no practical obstacle whatever now to the creation of an efficient index to all human knowledge, ideas and achievements” because of microfilm by the means of which nothing could escape from being recorded and copied. Although Wells calls for the development of the efficiency of knowledge dissemination on his primary purpose, he unconsciously advocates an authoritarian prospect for mastering and manipulating intelligence and knowledge. More importantly, his fantasy illustrates at least two characteristics of the intellectual mind during 1930s. The one is the parochial concept of knowledge which only refers to the knowledge that is indexed, structured, recordable, and in writing; the other is the conceit about the capability of human being to be omniscient along with the unreasonable exaggeration of advantages brought by science and technology. It was thus taken for granted that the totality of human knowledge that could be obtained and utilized by some central authority is superior to the pieces of wisdom of individual who has the best knowledge only about his/herself. The problem was how to master the infinite information, not whether it is realistic to do so. Armed with science and technology, human without doubt can solve this problem.

To master the infinite information - as if science and technology could make it realistic - is at an extremely high cost even in utopian fantasy. Besides the indexed knowledge, information of particular circumstances in Hayek’s sense especially needs to be updated from time to time. Therefore, the next step is to minimize the cost of monitoring and updating. A powerful center, direct watch-over, and the isolation of each one being watched over are eligible for this purpose. The delicate design of Panopticon provides an ideal model. Panopticon designed by Jeremy Bentham in 1785 has been influential as a concept on architecture, especially prison building, although it has been criticized and revised since then. The basic principle of the design is to put a maximum number of prisoners under surveillance at a minimum cost. Monitoring from a central watch tower, only a few guards are needed to ensure every prisoner who lives and works in a cell room without door surrounding the tower in a circular building to behave well. This model of architecture is not only applicable in monitoring prisoners, but also ideal as a mechanism of social control. Because of the “all-seeing” power from a center, every newly added person who is put under surveillance will not cause an increase in cost. In another word, the marginal cost of surveillance is zero. However, it also means that whoever

fancying a society with thorough security and certainty will end up in a Panopticon-alike society being a prisoner at a higher probability than being a guard.

Centralization of power, homogenization, and isolation of each unit (individual), and utilization of science and technology are supposed to be either the necessaries to enable centrally planned economy or the promising alternative to the increasing complexity that frustrates human rationality. Rather, both. The history of 20th century has proven that the experiment over centrally planned economy failed, and the alternative is not as promising as expected. There is deep malaise on human rationality, again. But it is neither possible to return to the old track of laissez-faire, nor sagacious to devalue what we have experienced. Some lesson must be learnt from the history, as long as we have to live with the increasing complexity.

## The Past Experience and The Prospect

The most important lesson is that all institutional arrangements based on the assumption of human's capability to reduce complexity and master the infinite information will be fruitless. Neither of these goals are reachable within the length of arms of human.

Reducing complexity requires homogenization and isolation of individual, but it will suffocate the vitality of the whole society. Living in social network and exchanging at market should be recognized as the most rational choice for both individuals and the society. In addition, media in a liberal model plays a role in nourishing information exchange and public opinion expression. Vitalizing and guarding the freedom of press thus is necessary for the purpose of decreasing cost in communicating information. Public sphere that is in an idealist way constructed through public opinion expression and formation by de-private citizens constitutes democracy informally vis-à-vis the formal periodic election. (Habermas, Lennox, & Lennox, 1964) Media as the bearer and leader of public opinion intermediates state and society. It has, of course, experienced a commercial turning since mass media develops based on the principle of economy of scale. However, it is still unreplaceable for either the state or the society because the accessibility of information and communication it provides is also turning to a marginal cost close to zero especially in the era of social media.

To master the infinite information, which has been proven unrealistic though, is the permanent pursuit of human to tackle complexity. Science and technology will be in priority utilized to update knowledge, convey information, and minimize the marginal cost at the same time. The utilization of it will lead to an obscure future due to its potentialities in fostering both decentralization and centralization. Decentralization potentiality will be gradually actualized in social and economic sphere, while centralization potentiality probably

finds its breeding ground in political sphere. Because social network in society and price system in market have already functioned well in conveying information, science and technology works as supplement like the icing on the cake. In an optimistic outlook (if not another fantasy), ICTs will contribute to a zero-marginal-cost society. Capitalist market will be replaced by collaborative commons if this ideal society descends.(Rifkin, 2014) However, in the hitherto political system we have not yet found a similarly functioning mechanism in conveying information. Representative democracy in this sense can be seen as the counterpart of social network in society and price system in market, but still, its expense is much higher because it is a product of human design, difficult to maintain, and unable to overcome the sophistication of hierarchy. Therefore, science and technology will play a more important role in political system. As mentioned, it could be used to digitalize and stretch public sphere in a way of pillaring social media.[80] Or it is led to a rather opposite direction towards authoritarianism. In contrary to the optimistic outlook, Kevin Robins and Frank Webster (1988) alarm us about the factual unfoldment of "communication revolution", that is, "the extension and the reconfiguration of Fordism". Considering the microphysics of power in Foucault's sense, they find it hard not to conjure up two images: the authoritarian prospect of "world brain" and the Panopticon design. They argue that ICTs overcoming spatial and temporal constrains are constituted to control through watching as panoptic techniques. Even decentralization as a surficial facet of the transition to the "information age" serves to the effective exercises of power.

However, it is too assertive to claim that science and technology will bolster either the enhancement of social network and market transaction or the apparatus for police state. It depends on the preexisting conditions. Roughly speaking, ICTs will enhance democracy, just like enhance social network and market transaction, where democracy functions well; while ICTs applied in governance will substitute democracy with its function in conveying information where democracy suffers from maldevelopment.[81]

China, as mentioned, has undertaken an experiment. **This** unique experiment is the response to **that** unprecedent experiment in 20th century. Or it is the second-order experiment since the first experiment has failed, namely, the falsification of communism as a theoretical design of economic system, political system, and ideology that was supposed to be the alternative to

[80] Strictly speaking, however, public sphere does not embed in political system but rather intercourse with it.

[81] By "enhance social network" I mean "weave more nodes into an enlarging network"; by "enhance market transaction" I mean "reduce the transaction cost"; by "enhance democracy" I mean "motivate civil participation with lower cost in public discussion and higher effectiveness in democratic procedure".

capitalism. What makes this experiment unique is not only that China continually resists Western democracy and its coherent value throughout these decades, but also that it manages to do so while getting engaged in globalization and proceeding in world market. It is, indeed, hard to image that China aggrandizes itself to a second-large economy with such a rocket speed on the basis of poverty, illiteracy, isolation, and the common suspicion about the future because the communist experiment paralyzed the country in virtually every aspect by the end of 1970s. Therefore, China's experiment is officially named "reform", but rather "reconstruction": reconstruction of the institution for China, and reconstruction of the classic modernist view that binds democracy and economic development. It is a vivid picture showing the multidimensions of the transformation that now everyone experiences: globalization, network society, and information age; more significantly, it is a bonanza waiting for the excavation by social and political scientists who want to break the single linear model used to explain the complicated reality.

The main body of this thesis will analyze the "reconstruction" along the path I have ever paved from a starting point of complexity and information. China has reconstructed market and social network in economic and social sphere respectively, but it insists on an alternative to democracy in political sphere - whatever it has to be – that is neither free expression in public sphere nor representative democracy with periodic election. Now, it is experimenting the governance through network with the enhancement from science and technology. This is – worth emphasis again - the very subject of this thesis.

# Appendix II:

# The Calculation of Three Indices

## Entropy Weight Method

The indicators of the index construction have been listed as in the methodology section. The weighting method is entropy weight method.

Here is the detail of calculation of entropy weight method. If the number of samples is $m$, the number of indicators is $n$, then $a_{ij}$ is the value of indicator $j$ of the sample $i$ in original data.

Firstly, the figures of original data have been normalized. Given all indicators are positive, the formula is (1).

$$\chi_{ij} = \frac{a_{ij} - min\{a_{ij}\}}{max\{a_{ij}\} - min\{a_{ij}\}}, (i = 1, 2, \dots, m; j = 1, 2, \dots, n) \quad (1)$$

Secondly, if the proportion of value $i$ of the indicator $j$ is $p_{ij}$, then it is determined by (2).

$$p_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}} \quad (2)$$

Thirdly, the entropy $e$ of indicator $j$ is calculated through (3).

$$e_j = \frac{1}{\ln m} \sum_{i=1}^{m} (p_{ij} \ln p_{ij}), e_j \in [0, 1] \quad (3)$$

Fourthly, the entropy weight of the index $i$ is the calculated result of (4).

$$w_j = \frac{1 - e_j}{n - \sum_{j=1}^{n} e_j}, \sum_{j=1}^{n} w_j = 1, (j = 1, 2, \dots, n) \quad (4)$$

Ultimately, the final score of the sample $i$ is $H_i$.

$$H_i = \sum_{j=1}^{m} w_j x_{ij} \quad (5)$$

Using the software R (ver. 4.0.2), the weight of each indicator can be calculated.

According to the index construction, the final scores and ranks of each province are listed in the tables below. (The indexes of both second-level indicators and the final score are processed as the product by multiplying with 10 or 100 for the convenience of review.)

## Network Governance Index

*Table 24 Weight Calculated through Entropy Weight Method*

| First-level indicator | Weight |
|---|---|
| Community Governance Index | 0.556 |
| E-government Final Score | 0.444 |

*Table 25 Score and Rank of Each Provinces with Network Governance Index*

| Provinces | Network Governance Index | | Community Governance Index | | E-government Final Score | |
|---|---|---|---|---|---|---|
| | Score | Rank | Score | Rank | Score | Rank |
| Beijing | 88.82 | 2 | 65.76 | 3 | 67.66 | 3 |
| Tianjin | 64.97 | 4 | 59.16 | 4 | 52.64 | 7 |
| Hebei | 18.70 | 17 | 22.93 | 19 | 41.95 | 13 |
| Shanxi | 26.26 | 12 | 27.20 | 11 | 45.00 | 9 |
| Inner Mongolia | 17.32 | 18 | 24.14 | 16 | 39.83 | 18 |
| Liaoning | 34.84 | 9 | 28.51 | 9 | 51.23 | 8 |
| Jilin | 11.41 | 24 | 19.96 | 23 | 38.11 | 21 |
| Heilongjiang | 14.04 | 20 | 22.29 | 21 | 38.51 | 19 |
| Shanghai | 94.99 | 1 | 70.99 | 2 | 68.76 | 2 |
| Jiangsu | 37.26 | 8 | 28.39 | 10 | 53.38 | 6 |
| Zhejiang | 44.58 | 6 | 26.11 | 13 | 61.37 | 5 |
| Anhui | 19.55 | 15 | 25.30 | 14 | 40.81 | 16 |
| Fujian | 38.51 | 7 | 19.36 | 24 | 61.54 | 4 |
| Jiangxi | 9.23 | 26 | 19.14 | 25 | 36.91 | 24 |
| Shandong | 32.28 | 11 | 35.56 | 6 | 43.52 | 10 |
| Henan | 9.84 | 25 | 22.94 | 18 | 34.44 | 26 |
| Hubei | 19.81 | 14 | 24.28 | 15 | 41.83 | 14 |
| Hunan | 11.49 | 23 | 21.85 | 22 | 36.69 | 25 |
| Guangdong | 55.69 | 5 | 27.07 | 12 | 70.03 | 1 |
| Guangxi | 21.72 | 13 | 31.18 | 7 | 38.02 | 22 |
| Hainan | - | - | - | - | - | - |
| Chongqing | 68.26 | 3 | 74.78 | 1 | 43.14 | 11 |
| Sichuan | 13.66 | 21 | 22.71 | 20 | 37.85 | 23 |
| Guizhou | 32.96 | 10 | 40.24 | 5 | 40.41 | 17 |
| Yunnan | 15.42 | 19 | 30.84 | 8 | 32.95 | 27 |
| Tibet | - | - | - | - | - | - |
| Shaanxi | 19.07 | 16 | 23.55 | 17 | 41.78 | 15 |
| Gansu | 1.86 | 28 | 16.87 | 26 | 32.45 | 28 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Qinghai | 6.79 | 27 | 14.87 | 28 | 38.2 | 20 |
| Ningxia | 12.78 | 22 | 16.51 | 27 | 41.99 | 12 |
| Xinjiang | - | - | - | - | - | - |

## Community Governance Index

*Table 26 Weight Calculated through Entropy Weight Method*

| First-level indicator | Weight | Second-level indicator | Third-level indicator | Weight on second level | Weight in final score |
|---|---|---|---|---|---|
| Government's engagement | 0.745 | Community construction | The number of community service facilities per RC | 0.130 | 0.097 |
| | | | The government fund on community construction from government on regional level | 0.306 | 0.228 |
| | | | The government fund on community construction from government under regional level | 0.019 | 0.014 |
| | | Administrative management | The general public budget expenditure on community construction from government on regional level | 0.046 | 0.061 |
| | | | The general public budget expenditure on community construction from government under regional level | 0.399 | 0.297 |
| | | | The number of street offices per RC | 0.085 | 0.063 |
| Resident's engagement | 0.255 | Participation in community governance | The number of RC employees in ten thousand residents (2015) | 0.241 | 0.061 |
| | | | Whether have participated in RC voting | 0.136 | 0.035 |
| | | Interaction with neighbors | The percentage of visiting neighbors in leisure time | 0.108 | 0.028 |
| | | | The frequency of having entertainments with neighbors | 0.173 | 0.044 |

| | | | | | |
|---|---|---|---|---|---|
| | | | The degree of being familiar with neighbors | 0.170 | 0.044 |
| | | Satisfaction on construction and management | Satisfaction on infrastructure of community | 0.085 | 0.022 |
| | | | Satisfaction on social management | 0.086 | 0.022 |

*Table 27 Score and Rank of Each Provinces with Community Governance Index*

| Provinces | Community Governance Index | | Government's engagement | | Resident's engagement | |
|---|---|---|---|---|---|---|
| | Score | Rank | Score | Rank | Score | Rank |
| Beijing | 65.76 | 3 | 78.88 | 2 | 27.45 | 24 |
| Tianjin | 59.16 | 4 | 70.85 | 4 | 25.05 | 26 |
| Hebei | 22.93 | 19 | 7.00 | 24 | 69.40 | 7 |
| Shanxi | 27.20 | 11 | 11.94 | 15 | 71.72 | 5 |
| Inner Mongolia | 24.14 | 16 | 8.62 | 22 | 69.43 | 6 |
| Liaoning | 28.51 | 9 | 29.75 | 6 | 24.88 | 27 |
| Jilin | 19.96 | 23 | 10.78 | 16 | 46.76 | 20 |
| Heilongjiang | 22.29 | 21 | 17.99 | 12 | 34.85 | 22 |
| Shanghai | 70.99 | 2 | 86.45 | 1 | 25.89 | 25 |
| Jiangsu | 28.39 | 10 | 20.59 | 10 | 51.14 | 16 |
| Zhejiang | 26.11 | 13 | 10.26 | 18 | 72.38 | 4 |
| Anhui | 25.30 | 14 | 10.32 | 17 | 69.00 | 8 |
| Fujian | 19.36 | 24 | 7.86 | 23 | 52.92 | 14 |
| Jiangxi | 19.14 | 25 | 5.89 | 25 | 57.82 | 13 |
| Shandong | 35.56 | 6 | 20.43 | 11 | 79.72 | 1 |
| Henan | 22.94 | 18 | 9.47 | 19 | 62.24 | 10 |
| Hubei | 24.28 | 15 | 16.07 | 13 | 48.26 | 19 |
| Hunan | 21.85 | 22 | 8.63 | 21 | 60.45 | 12 |
| Guangdong | 27.07 | 12 | 28.49 | 7 | 22.91 | 28 |
| Guangxi | 31.18 | 7 | 20.70 | 9 | 61.75 | 11 |
| Hainan | - | - | - | - | - | - |
| Chongqing | 74.78 | 1 | 75.32 | 3 | 73.17 | 2 |
| Sichuan | 22.71 | 20 | 5.48 | 26 | 73.00 | 3 |
| Guizhou | 40.24 | 5 | 37.13 | 5 | 49.30 | 18 |
| Yunnan | 30.84 | 8 | 24.10 | 8 | 50.50 | 17 |
| Tibet | - | - | - | - | - | - |
| Shaanxi | 23.55 | 17 | 9.23 | 20 | 65.34 | 9 |
| Gansu | 16.87 | 26 | 4.58 | 28 | 52.76 | 15 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Qinghai | 14.87 | 28 | 4.93 | 27 | 43.89 | 21 |
| Ningxia | 16.51 | 27 | 12.21 | 14 | 29.05 | 23 |
| Xinjiang | - | - | - | - | - | - |

## Social Network Index

*Table 28 Weight Calculated through Entropy Weight Method*

| First-level indicator | Weight | Second-level indicator | Third-level indicator | Weight on second level | Weight in final score |
|---|---|---|---|---|---|
| Accessibility of nodes | 0.564 | Accessibility of nodes in social group | The number of social groups in ten thousand residents | 0.171 | 0.096 |
| | | | The number of social group employees in ten thousand residents | 0.147 | 0.083 |
| | | | Increase rate of social group number in five years (2013-2018) | 0.068 | 0.038 |
| | | Accessibility of nodes at working place | The number of enterprise legal person per ten thousand residents | 0.170 | 0.096 |
| | | | The number of employees of public institution per ten thousand residents | 0.257 | 0.145 |
| | | | The number of employees of private business per ten thousand residents | 0.186 | 0.105 |
| Strength of ties | 0.436 | Strong ties | The frequency of gathering with relatives (a30, 2017) | 0.138 | 0.060 |
| | | | The frequency of gathering with friends (a30, 2017) | 0.106 | 0.046 |
| | | | The percentage of seeking help from relatives when needing money (c8, 2017) | 0.072 | 0.032 |
| | | | The percentage of seeking help from friends when needing job (c8, 2017) | 0.082 | 0.036 |
| | | | The degree of trust in relatives (b10, 2015) | 0.061 | 0.027 |
| | | | The degree of trust in coworkers (b10, 2015) | 0.089 | 0.039 |
| | | | The degree of trust in previous classmates (b10, 2015) | 0.075 | 0.033 |

| | | | | | |
|---|---|---|---|---|---|
| | | Weak ties | The degree of trust in compatriots (b10, 2015) | 0.083 | 0.036 |
| | | | The degree of trust in acquaintances (b10, 2015) | 0.097 | 0.042 |
| | | | The degree of trust in co-participants in social activities (b10, 2015) | 0.130 | 0.057 |
| | | | The degree of trust in people generally (c11, 2017) | 0.067 | 0.029 |

*Table 29 Score and Rank of Each Provinces with Social Network Index*

| Provinces | Social Network Index | | Accessibility of nodes | | Strength of ties | |
|---|---|---|---|---|---|---|
| | Score | Rank | Score | Rank | Score | Rank |
| Beijing | 61.81 | 1 | 75.59 | 1 | 23.72 | 7 |
| Tianjin | 54.70 | 17 | 20.90 | 14 | 20.61 | 16 |
| Hebei | 50.41 | 18 | 10.38 | 26 | 23.70 | 8 |
| Shanxi | 49.51 | 21 | 15.69 | 18 | 18.59 | 20 |
| Inner Mongolia | 48.27 | 23 | 20.09 | 15 | 17.39 | 21 |
| Liaoning | 43.06 | 28 | 14.79 | 20 | 12.48 | 26 |
| Jilin | 41.28 | 25 | 10.57 | 25 | 17.34 | 23 |
| Heilongjiang | 40.51 | 27 | 8.16 | 28 | 15.89 | 24 |
| Shanghai | 40.04 | 15 | 56.80 | 2 | 6.44 | 28 |
| Jiangsu | 39.89 | 4 | 45.04 | 4 | 21.43 | 13 |
| Zhejiang | 39.17 | 5 | 45.18 | 3 | 21.84 | 12 |
| Anhui | 39.06 | 12 | 13.93 | 22 | 30.45 | 2 |
| Fujian | 37.27 | 3 | 44.08 | 5 | 22.91 | 10 |
| Jiangxi | 35.25 | 13 | 16.35 | 17 | 24.49 | 5 |
| Shandong | 34.22 | 2 | 32.57 | 7 | 34.79 | 1 |
| Henan | 33.20 | 19 | 9.04 | 27 | 23.63 | 9 |
| Hubei | 32.74 | 10 | 22.07 | 13 | 25.71 | 4 |
| Hunan | 31.60 | 24 | 10.83 | 24 | 19.89 | 18 |
| Guangdong | 30.58 | 8 | 39.67 | 6 | 17.36 | 22 |
| Guangxi | 30.45 | 16 | 17.90 | 16 | 20.60 | 17 |
| Hainan | - | - | - | - | - | - |
| Chongqing | 29.88 | 6 | 26.67 | 11 | 27.45 | 3 |
| Sichuan | 29.75 | 20 | 14.58 | 21 | 20.79 | 15 |
| Guizhou | 29.13 | 26 | 15.47 | 19 | 11.42 | 27 |
| Yunnan | 28.62 | 9 | 22.52 | 12 | 23.87 | 6 |
| Tibet | - | - | - | - | - | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Shaanxi | 25.09 | 11 | 30.10 | 10 | 19.01 | 19 |
| Gansu | 23.06 | 22 | 11.19 | 23 | 22.83 | 11 |
| Qinghai | 22.38 | 14 | 31.56 | 8 | 12.83 | 25 |
| Ningxia | 21.41 | 7 | 30.34 | 9 | 20.84 | 14 |
| Xinjiang | - | - | - | - | - | - |

# Appendix III: The Indicators of Each Variable

| Variable | Measurement | Indicator | First-level indicator | Second-level indicator | Third-level indicator |
|---|---|---|---|---|---|
| Network Governance Development | Network Governance Index | E-Government Index[82] | Effectiveness of Online Service | Establishment of the Assessment System | The establishment progress of the Assessment System |
| | | | | | Whether the Assessment System is listed as indicator for performance check of department |
| | | | | Standardization of the Assessment System | The level of the standardization of assessment in the Assessment System across different platform, including PC, SMS, App, etc.) |
| | | | | | The cover range of the Assessment System online and also its connection with offline data |
| | | | | Usage of users | The number of individuals as registered user in all the permanent residents |
| | | | | | The number of legal persons as registered user in all the registered legal persons |
| | | | | | The proportion of administrative licenses issued through online service on provincial level in all the cases |
| | | | | Convenience of service | The accuracy and eligibility of online service in terms of search, guidance, AI customer service, etc.. |
| | | | | | The degree of user-friendly experience, such as the number of pages clicked before approaching the service page |
| | | | | Satisfaction on service | The proportion of the time saved by online service in the time promised statutorily of issuing administrative license |
| | | | | | The proportion of the necessarily submitted documents reduced by the data sharing across online and offline in all the documents required |

[82] The variable is actually measured by E-Government Final Score in this thesis, which is the result of E-Government Index multiplied by Internet Penetration.

| | | | | | |
|---|---|---|---|---|---|
| | | | | | The optimization of procedure for examination and approval of projects, investment, registration of real estate, etc. |
| | | | | | The average times of applicants needed to contact with department for administrative license issue |
| | | | | | The proportion of no-delay service items |
| | | | | Coordination of transaction | The degree of coordination across different districts in data sharing and procedure tracing |
| | | | | Featured Innovation | The eligibility of service package for the most commonly demanded service issues of residents and legal persons |
| | | | | | The technical innovation designed for local specialties |
| | | | | Extension of service items | The extension of information disclosure |
| | | | | | The extension of preview of materials for application approval |
| | | | | | The extension of examination of materials for application approval |
| | | | | | The extension of transactions executed entirely online |
| | | | Maturity of Online Transaction Procedure | Unified management of service items | The establishment progress of service database |
| | | | | | The degree of unification of service code according to government service list published by central government |
| | | | | | The optimally minimization of guidance for conducting procedure |
| | | | | | The promptness of database updates according to the documents published by superior office |
| | | | | Unified identity authentication | Whether the platform has established registration and authentication online system for identification of both natural persons and legal persons |
| | | | | | The proportion of service items accessible to national registration and authentication online system |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | The reduction of redundant registration and authentication scattered on different platforms by the unified system |
| | | | | Unified search and consultancy | Whether there is a unified search entrance |
| | | | | | Whether there is a unified channel for complaint and suggestion |
| | | | | | Whether there is a unified hotline number for consultancy |
| | | | | Unified digital certificate | The number of the unified certificates and licenses (with formal data) submitted to national database |
| | | | | | The number of the unified certificates and licenses (with electronic seal or digital signature) submitted to national database |
| | | | | | The number of provincially acknowledged certificates under national standard |
| | | | | Supportive APPs (applications) | The number of provincial APPs eligible in national APP store for e-government service |
| | | | | | The quality of user experience with provincial APPs |
| | | | | | The number of provincial electronic seals recorded in national database |
| | | | | | The number, quality, and range of the unified data of service items submitted to national database |
| | | | | | The effectiveness of supervision from provincial government through the Assessment System |
| | | | | | The eligibility of online payment |
| | | | | | The quality of user's personal homepage and service management, including the function and content of subscription, banner push, etc. |
| | | | Completeness of Service Modes | Establishment of integrated "One-Net" service | Whether there is repeat and redundancy of service items because of data from different sources |
| | | | | | The cover range of service item unification on province, prefecture, |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | county, township (street), and village (community) level |
| | | | | | The number of departments that integrate their service items into the One Net according to the lately published national service item list |
| | | | | | The number of departments that apply a unified entrance for e-government service |
| | | | | Service on mobile terminals | Whether the e-government service is eligible on mobile terminals |
| | | | | | The number of service items eligible on mobile terminals, especially in terms of public security, social security, education, health care, civil affair, housing construction |
| | | | | | The number of service items eligible via national APP on mobile terminals, especially in terms of public security, social security, education, health care, civil affair, housing construction |
| | | | | | The quality of user experience with provincial APPs on mobile terminals |
| | | | | Unified source of information and data | Whether there is a mechanism for data source unification across different districts, levels, and channels |
| | | | | | Whether there is a mechanism for data source unification across government departments and directly affiliated institutions |
| | | | | | Whether there is a mechanism for data source unification up down through superior and subordinate departments |
| | | | Cover Range of Service Items | Disclosure of item list | The number of lists disclosed by the authority, including mandate list, fee list, agency list, etc. |
| | | | | | The number of lists disclosed by the authority about the public services in terms of education, health care, housing, social security, civil affair, and poverty alleviation, etc. |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | The number of lists disclosed by the authority about the service items without users being present or with users being once present at most |
| | | | | Publishment of service guideline | The number of service guidelines published by the provincial government |
| | | | | | The number of service guidelines published by the provincial government about the public services in terms of education, health care, housing, social security, civil affair, and poverty alleviation, etc. |
| | | | | | The number of types of service items covered in the range of online service (e.g., administrative licensing, administrative punishment, administrative imposition, administrative examination, etc.) |
| | | | | | Whether the service guidelines about administrative licensing and the mandate lists are associated by unified source of information |
| | | | | Standardization of service items | The degree of corresponding with the national list about service items |
| | | | | | The degree of association between basic information and service items |
| | | | | | The number of requirements met according to the national list about the requirements for service guideline |
| | | | | | Whether the basic information (including title, code, legal basis, type, etc.) of service items are unified through the three-level hierarchy of province, city, and prefecture |
| | | | Accuracy of Service Guideline | Basic information | Whether the type of service item (e.g., service with promising due, no-delay service) is marked on the page |
| | | | | | Whether the service code is marked on the page |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | Whether the statutory time limit (with either workday or natural day) is marked on the page |
| | | | | | Whether the promised time limit (with either workday or natural day) is marked on the page |
| | | | | | Whether the workplace providing service (e.g., the address with street name, office number, etc.) is marked on the page |
| | | | | | Whether the office hour is marked on the page |
| | | | | | Whether the contact telephone number is marked on the page |
| | | | | | Whether the titles, articles, and regulations as the legal basis are marked on the page |
| | | | | | Whether the necessary information on special procedure (e.g., third-party assessment, site investigation, etc.) is marked on the page |
| | | | | Materials required for application | Whether the required materials are articulated clearly without ambiguity and misinformation |
| | | | | | Whether the required information about source of material and the issuing authority is marked on the page |
| | | | | | Whether the required number of material copies is marked on the page |
| | | | | | Whether the required medium of material is marked on the page, e.g., original document, copy, electronic form, etc. |
| | | | | Transaction procedure | Whether the transaction procedure covers acceptance, examination, approval, complete, delivery |
| | | | | | Whether the requirements are detailed on the webpage with the information about time limit, staff, standard, etc. |
| | | | | | Whether the frequency necessary of being present is marked on the requirement page |

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| | | | | Download service | Whether there is download service of blank document for applicants |
| | | | | | Whether there is download service of sample document for applicants |
| | | Community Building Index | Government's engagement | Community construction | The number of community service facilities per RC |
| | | | | | The government fund on community construction from government on regional level |
| | | | | | The government fund on community construction from government under regional level |
| | | | | Administrative management | The general public budget expenditure on community construction from government on regional level |
| | | | | | The general public budget expenditure on community construction from government under regional level |
| | | | | | The number of street offices per RC |
| | | | Resident's engagement | Participation in community governance | The number of RC employees per ten thousand residents |
| | | | | | The percent of having participated in RC voting |
| | | | | Interaction with neighbors | The percent of visiting neighbors in leisure time |
| | | | | | The frequency of having entertainments with neighbors |
| | | | | | The level of being familiar with neighbors |
| | | | | Satisfaction on construction and management | Scoring infrastructure of community |
| | | | | | Scoring social management |
| External Dependence | Regional Openness | Regional Opening-up Index | Economic Openness | Trade exchange | Import dependence |
| | | | | | Export dependence |
| | | | | | The ratio of foreign exchange income from international tourism to local GDP |
| | | | | Investment exchange | The ratio of actual use of foreign capital to local GDP |
| | | | | | The ratio of non-monetary direct investment abroad to local GDP |

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|---|---|---|---|---|---|
| | | | | | The proportion of foreign (& Hong Kong, Macau, and Taiwan) invested companies in all companies |
| | | | | | The ratio between industrial output of foreign (& Hong Kong, Macau, and Taiwan) invested companies and all companies in or above regional scale |
| | | | | Flow of production factors | The number of labor population out of locality at the end of year in ten thousand people |
| | | | | | The ratio of the turnover of overseas contracted projects to local GDP |
| | | | | | Foreign currency deposit balance |
| | | | Technological Openness | Knowledge attainment | The number of university students in ten thousand people |
| | | | | | The number of published papers on international academic conferences |
| | | | | Innovation capability | The number of professionals in high-tech sector |
| | | | | | The expenditure of Research and Development (R&D) in high-tech sector |
| | | | | | The numbers of invention patent authorizations in ten thousand people |
| | | | | Industrialization level | The amount of foreign exchange generated by exports of high-tech companies |
| | | | | | The proportion of industrial output value of high-tech companies in local GDP |
| | | | | | The expenditure of high-tech applications in industrial production |
| | | | Social Openness | Tourist flow | The number of arrivals from international tourism |
| | | | | | The level of convenience for overseas airflight |
| | | | | Information flow | The number of international Internet users in ten thousand people |
| | | | | | The number of mobile phone owners in ten thousand people |
| | | | | | The volume of online search for cities' English name by Google |

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|---|---|---|---|---|---|
| | | | | Cultural sharing | The proportion of local residents having registered marriage with foreigners (& citizens from Hong Kong, Macau, and Taiwan) in ten thousand people |
| | | | | | The number of venues for art performance |
| | | | | | The average number of books in collection of public libraries (each resident) |
| Strength of Social Network | | Social Network Index | Accessibility of nodes | Accessibility of nodes in social group | The number of social groups in ten thousand residents |
| | | | | | The number of social group employees in ten thousand residents |
| | | | | | Increase rate of social group number in five years (2013-2018) |
| | | | | Accessibility of nodes at workplace | The number of enterprise legal person per million residents |
| | | | | | The number of employees of public institutes per ten thousand residents |
| | | | | | The number of employees of private corporation per ten thousand residents |
| | | | Strength of ties | Strength of strong ties | The frequency of gathering with relatives |
| | | | | | The frequency of gathering with friends |
| | | | | | The percent of seeking help from relatives when needing money |
| | | | | | The percent of seeking help from friends when needing job |
| | | | | | The degree of trust in relatives |
| | | | | | The degree of trust in coworkers |
| | | | | | The degree of trust in previous classmates |
| | | | | Strength of weak ties | The degree of trust in compatriots |
| | | | | | The degree of trust in acquaintances |
| | | | | | The degree of trust in co-participants in social activities |
| | | | | | The degree of trust in people generally |
| Local Government's Power | Government's Power Index | *Marketization Index[83] | Relationship Between Government and Market | Allocation of economic resources by market | *The ratio of fiscal expenditure of local government to Gross Regional Product (GRP) |

[83] The indictors with a mark of "*" in front are negative indicators.

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| | | | | *Intervention from local government to enterprises | The assessment score on the convenience of administrative affairs dealt with local government by the enterprise managers in survey |
| | | | | *Scale of local government | The proportion of employees of public institutes, party agencies, and government departments in total local population |
| | | | Development of Non-State-Owned Economy | Development of non-state-owned economy in second sector | The proportion of industrial output value of non-state-owned enterprises in total value |
| | | | | Development of non-state-owned economy in all economic sectors | The proportion of investment in fixed assets of non-state-owned enterprises in total investment |
| | | | | Development of non-state-owned economy in all economic sectors on labor market | The proportion of employees of non-state-owned enterprises in all urban employees |
| | | | Maturity of Product Market | Decisive influence from market on product price | The proportion of market price in the price of total retail sales of consumer goods |
| | | | | | The proportion of market price in the price of production means |
| | | | | | The proportion of market price in the price of agricultural productions |
| | | | | *Regional trade barriers | The ratio between the number of reported cases by enterprise managers about local protectionism in selling and the proportion of GRP in national GDP |
| | | | Maturity of Factor Market | Marketization of banking | The proportion of non-state-owned bank assets in total assets of all banks |
| | | | | | The proportion of non-state-owned enterprise debts in total debts of all enterprises |
| | | | | Supply of human resource | The assessment score on the supply of technical staffs by the enterprise managers in survey |

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| | | | | | The assessment score on the supply of managers by the enterprise managers in survey |
| | | | | | The assessment score on the supply of skilled workers by the enterprise managers in survey |
| | | | | Marketization of technological achievements | The ratio between the sum of market turnover of technological exchange and the number of local technical staffs |
| | | | Legal Environment for Market Intermediary Organization Development | Maturity of market intermediary organization | The assessment score on the market intermediary organization (including lawyer office and accounting firm) by the enterprise managers in survey |
| | | | | | The assessment score on the help offered by industry association to enterprises by the enterprise managers in survey |
| | | | | Legal environment of maintaining market order | The assessment score on justice and efficiency of local judiciary and administration by the enterprise managers in survey |
| | | | | Intellectual property protection | The ratio between the number of approved parent applications of three types and the number of technical staffs |

# Appendix IV: Summary of Findings (En/De)

## (English Version)

This thesis attempts to transfer the spotlight upon the political issue about democratization in China to something else that has not been spared enough attention yet. Here it refers to the transformation of governance mode. The rather rapid industrialization and urbanization in the process of modernization in China does not aggravate the swelling of bureaucratic system to the extent that largely increases financial burden, internal disorder, and inefficiency. The maintenance of a stable and controllable government on both national and local level benefits from the transformation of governance mode from command mode to network mode.

It is natural to take the perspective of information and communication to scrutinize governance mode, since social surveillance and control has been academically recognized as one of the most important dimensions of modern society. Network, either as the technological base or the substantial mechanism for information and communication, pivots the transformation of governance mode. In a country where had just derived from the communist regime and centrally planned economy, network governance under this circumstance has been unavoidably both nourished and constrained by the institutional factors. The transformation in China not only has taken advantages of the legacy from the past, which was a mechanism for social surveillance and control, but also has been driven by the wave of digitalization. The former is Residents' Committee system, while the production of the latter is E-Government system. They together constitute networks, including personal network and virtual network, weaving the state and the society on individual level. The one living in a community and holding a mobile digital device with official applications installed is capable to receive message and service from the government regardless time and space.

This is the first time to take a close examination on network governance in China. This thesis on the one hand reviews the institutional changes during forty-year reform to provide hints of the institutional enablers and constraints on the selection of governance mode, on the other hand elaborates completed conceptualization and operationalization methods to measure the development of network governance. Firstly, the institutional changes during forty-year reform grants greater space for the governing units under central authority to make their own decisions and policies; secondly, the governing units for either economic development purposes or personal promotion of governors along the bureaucratic ladder are competing in the tournament among the competitors on the same level; thirdly, the ultimate decision power is still hold by the central, which means the goals in the tournament, and the

criteria for assessing provincial performance are decided by the central. All these legitimatize a comparative method.

It is also the first time in relevant research to set a reliable quantitative base, therefore, the index construction and data collection should be emphasized. The data are collected from not only the CGSS (China General Social Survey), the officially published statistics from national bureau, which are relatively easier to access, but also the annual reports disclosed by provincial governments. These reports have been scattered on webpages of official websites of provincial governments, which are not always well categorized or documented. In addition, there are missing data for several years or items of the variables to be investigated. They were obtained via official communication channel, such as inquiry email, phone and so on, and now become accessible and completed only in this thesis. The indices are constructed upon the valid base of accessible and completed data set.

The hypotheses on the development of network governance raised from the theorization in the introduction have been tested by making a horizontal comparison between different provinces. The statistical analysis confirms the correlations between variables; more importantly, the interpretation based on the timeline of the reform draws conclusions on the causal relationship. In other words, the explanatory power of the theory concerning network governance are embraced by the conclusions. Where the external dependence is higher, the social network is stronger, and the local government is less powerful, the network governance is more developed.

This thesis contributes a new perspective to not only the study on China's reform, but also the study on globalization and information society, especially in the special period of a worldwide pandemic. Globalization rockets complexity, while it is not all the governments that have been well prepared for the high risk. Facing the external risk alongside globalization, the governments should realize or re-realize the importance of local issue that might lead to unpredictable reaction to globalization. In the current context, the rising popularism omens a worrisome prospect. The transformation of governance mode (to network mode) should not be merely considered as an instrument to simply improve the efficiency of problem solving. Information network would accomplish its greater value if trust were accumulated along the information flow through time and space.

(Deutsche Version)

In dieser Arbeit wird versucht, den Blick von der politischen Frage der Demokratisierung in China auf etwas Anderes zu lenken, dem bisher nicht genügend Aufmerksamkeit geschenkt wurde. Gemeint ist der Wandel der Regierungsform. Die rasche Industrialisierung und

Urbanisierung im Zuge der Modernisierung Chinas lässt das bürokratische System nicht in dem Maße anschwellen, wie es die finanzielle Belastung, die innere Unordnung und die Ineffizienz erhöht. Die Aufrechterhaltung einer stabilen und kontrollierbaren Regierung sowohl auf nationaler als auch auf lokaler Ebene profitiert von der Umwandlung der Regierungsform vom Kommando-Modus zum Netzwerk-Modus.

Es ist naheliegend, die Art und Weise des Regierens aus der Perspektive der Information und Kommunikation zu betrachten, da die soziale Überwachung und Kontrolle als eine der wichtigsten Dimensionen der modernen Gesellschaft wissenschaftlich anerkannt ist. Das Netzwerk, entweder als technologische Basis oder als wesentlicher Mechanismus für Information und Kommunikation, ist der Dreh- und Angelpunkt für die Umgestaltung der Regierungsform. In einem Land, das gerade vom klassischen kommunistischen Kurs und seiner zentralen Planwirtschaft abgewichen ist, wurde die Netzwerk-Governance unter diesen Umständen unweigerlich durch institutionelle Faktoren sowohl genährt als auch eingeschränkt. Die Transformation in China hat sich nicht nur das Erbe der Vergangenheit zunutze gemacht, das ein Mechanismus zur sozialen Überwachung und Kontrolle war, sondern wurde auch durch die Welle der Digitalisierung vorangetrieben. Ersteres ist das System der Einwohnerausschüsse, letzteres das E-Government-System. Zusammen bilden sie Netzwerke, einschließlich persönlicher und virtueller Netzwerke, die Staat und Gesellschaft auf individueller Ebene miteinander verweben. Wer in einer Gemeinde lebt und ein mobiles digitales Gerät besitzt, auf dem offizielle Anwendungen installiert sind, ist in der Lage, unabhängig von Zeit und Raum Nachrichten und Dienstleistungen von der Regierung zu erhalten.

Dies ist das erste Mal, dass die Netzwerk-Governance in China einer genauen Untersuchung unterzogen wird. In dieser Arbeit werden zum einen die institutionellen Veränderungen während der vierzigjährigen Reform untersucht, um Hinweise auf die institutionellen Voraussetzungen und Beschränkungen für die Wahl des Governance-Modus zu geben, und zum anderen Konzeptualisierungs- und Operationalisierungsmethoden zur Messung der Entwicklung der Netzwerk-Governance ausgearbeitet. Erstens gewähren die institutionellen Veränderungen während der vierzigjährigen Reform den Regierungseinheiten unter der zentralen Autorität einen größeren Spielraum, um ihre eigenen Entscheidungen und Politiken zu treffen; zweitens konkurrieren die Regierungseinheiten entweder zum Zwecke der wirtschaftlichen Entwicklung oder der persönlichen Beförderung der Gouverneure auf der bürokratischen Leiter im Wettbewerb zwischen den Konkurrenten auf derselben Ebene; drittens liegt die letztendliche Entscheidungsgewalt immer noch bei der Zentrale, was

bedeutet, dass die Ziele im Wettbewerb und die Kriterien für die Bewertung der Leistung der Provinzen von der Zentrale festgelegt werden. All dies legitimiert eine vergleichende Methode. Es ist auch das erste Mal in der einschlägigen Forschung, dass eine gültige quantitative Grundlage geschaffen wird, daher sollten die Indexkonstruktion und die Datenerhebung besonders hervorgehoben werden. Die Daten stammen nicht nur aus dem CGSS (China General Social Survey) und den offiziell veröffentlichten Statistiken der nationalen Behörden, die relativ leicht zugänglich sind, sondern auch aus den von den Provinzregierungen veröffentlichten Jahresberichten. Diese Berichte sind auf den offiziellen Webseiten der Provinzregierungen verstreut, die nicht immer gut kategorisiert oder dokumentiert sind. Darüber hinaus fehlen für die zu untersuchenden Variablen Daten für mehrere Jahre oder Positionen. Sie wurden über offizielle Kommunikationskanäle wie E-Mail-Anfragen, Telefon usw. eingeholt und werden erst in dieser Arbeit zugänglich und vervollständigt,. Die Indizes werden auf der gültigen Grundlage der zugänglichen und vervollständigten Datensätze erstellt. Die in der Einleitung aufgestellten Hypothesen zur Entwicklung der Netzwerk-Governance wurden durch einen horizontalen Vergleich zwischen verschiedenen Provinzen überprüft. Die statistische Analyse bestätigt die Korrelationen zwischen den Variablen; noch wichtiger ist, dass die Interpretation auf der Grundlage der Zeitachse der Reform Rückschlüsse auf die kausale Beziehung zulässt. Mit anderen Worten: Die Erklärungskraft der Theorie zur Netzwerk-Governance wird durch die Schlussfolgerungen untermauert. Wo die externe Abhängigkeit höher, das soziale Netzwerk stärker und die lokale Regierung weniger mächtig ist, ist die Netzwerk-Governance stärker entwickelt. Dies deutet darauf hin, dass das Entwicklungsniveau der Netzwerk-Governance aufgrund der interprovinziellen Unterschiede variiert, obwohl es sich um ein nationales Pendant für bestimmte politische Ziele handelt, die stark von der Zentralbehörde gesteuert werden.

Diese Arbeit trägt nicht nur zur Untersuchung der chinesischen Reformen bei, sondern auch zur Untersuchung der Globalisierung und der Informationsgesellschaft, insbesondere in der besonderen Zeit einer weltweiten Pandemie. Die Globalisierung treibt die Komplexität in die Höhe, aber nicht alle Regierungen sind auf das hohe Risiko gut vorbereitet. Angesichts des externen Risikos, das mit der Globalisierung einhergeht, sollten die Regierungen die Bedeutung lokaler Probleme, die zu unvorhersehbaren Reaktionen auf die Globalisierung führen können, erkennen oder wiederentdecken. Im gegenwärtigen Kontext ist der zunehmende Populismus ein besorgniserregender Vorbote. Die Umwandlung der Regierungsform (zum Netzwerkmodus) sollte nicht nur als ein Instrument zur einfachen Verbesserung der Effizienz der Problemlösung betrachtet werden. Ein Informationsnetzwerk

würde seinen größeren Wert entfalten, wenn entlang des Informationsflusses durch Zeit und Raum Vertrauen aufgebaut würde.

# Appendix V: References

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## Chapter Three

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## Appendix I

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