

## CHAPTER 1 INTRODUCTION

China's economic reform changed its economic and social institutions. At the same time the official statistical authority gradually published economic statistical data. The transition to a market oriented economy and accessible data had attracted many scholars to investigate China's economic situations. Like most literatures, this study will confine the research scope to post-reform China. This chapter will describe research background and purpose in advance, and then introduce methodology and illustrate research restrictions. Lastly, research framework will be displayed.

### 1.1 Research Background and Purpose

China began its economic reform in 1978, but before this time China was a command economy, with the central government controlling almost all production and consumption. Economic reform meant that the central government had to relax its control on economic plans and give local economies more opportunities to develop themselves, especially in the coastal provinces. One of the achievements of economic reform has been rapid economic growth. According to data provided by *China Statistical Yearbook (2003)*, per capita GDP went from 379 RMB in 1978 up to 2,424 RMB in 2002 (base year of price level is 1978); the average annual growth rates of GDP and per capita GDP during the same period were about 9.32% and 8.04%, respectively.

In addition to economic efficiency or growth, inequality is another issue worth studying. Differencing from the excellent situation of economic growth, the evolution of inequality in post-reform China was far from satisfactory. The

investigations of Tsui (1996) revealed that regional inequality dwindled in the early 1980s, and began to increase during mid-1980s. Cai et al. (2002) also found that the inequality level was even worse in the 1990s than it was in the 1980s, and there were no signs of alleviation. It is believed that growth is not the only economic goal of a government. Growth with deteriorating inequality will cause many problems. As a matter of fact, a severe situation of unequally-distributed income might cause unstable development in China's society and might further induce social turmoil.

Alesina and Perotti (1996) investigated the relationship between income distribution and political instability. They found that inequality was an important factor that increased political instability. Political instability further reduces investment, which is the primary engine of economic growth. Venieris and Gupta (1986) also pointed out that sociopolitical instability introduced a new element of uncertainty in the decision-making calculus of the economic factors. This is because it was usually perceived as a precursor to conceivable changes in the government regime, which might affect one's future level of accumulated wealth and income.

Although China has enjoyed remarkable economic growth since 1978, the increasing income inequality in the 1990s should not be ignored. If the inequality level continues to grow, social instability caused by income inequality will impede economic development in the future. Therefore, the relationship between income inequality and economic growth is an important topic, which is closely related to the results of economic reform and future development in China.

Previous papers on researching the relationship between economic growth and income inequality are fruitful. From the beginning when Kuznets (1955) hypnotized the inverted U-shaped curve relationship between income growth and inequality, earlier scholars started to study how economic growth influences income distribution.

After the endogenous growth theory was introduced in the mid-1980s, academic interests transferred to investigate the reverse influential direction; that is, how inequality influences growth. However, previous studies in the literature investigate only a uni-directional relation between inequality and growth. Unlike them, this study tries to test for a causality or bi-directional relationship between inequality and growth. Previous studies focus on confirming the theoretical existence by analyzing cross-country data, but this study will highlight the situation of a unique economy, China, during the post-reform period. The advantages of investigating an individual economy are that it can capture China's economic characteristics and makes the theoretical explanation of empirical results more correct.

The purpose of this study is an attempt to find if the relationship between economic growth and income inequality exists in post-reform China. Many previous studies have been discussed these relationships in China, but a few of them tested if they influenced each other directly. According to previous cross-country studies, the relationship between these two variables could be significant; and this study expects to find the same results in China. Finally, this study will explain the results of the empirical model and provide some policy implications. This study regards the best situation as that where the goals of growth and equity both can be achieved. If the growth is harmful for income distribution, then some policies should unavoidably be carried out to prevent any risks of a more serious recession caused by social instability.

## **1.2 Research Method and Restriction**

Before describing research methods, the ways of measuring inequality should be

determined first. The standard of measuring inequality is not as clear as growth because many inequality indices can be chosen to analyze inequality level in China and apply in an empirical model. Most literatures investigating China's inequality adopted the Gini Coefficient and Generalized Entropy. Some studies adopted coefficient of variation. This study will follow their methods of calculating China's inequality level.

Previous studies in the literature used cross-section or panel data to test if economic growth influences income inequality or vice versa. However, this study will use time-series data of an individual economy and test for the bi-directional relation. For that reason, the empirical methodology used here is the Granger-causality test.

This study will adopt the WALD procedure proposed by Toda and Yamamoto (1995) to test for Granger causality. Toda and Yamamoto (1995) showed that researchers can estimate a  $(k+d_{max})$ th-order VAR, where  $d_{max}$  is the maximal order of integration. Only the first  $k$  coefficients have to be jointly tested with chi-square statistics,<sup>1</sup> and the last  $d_{max}$  coefficients are ignored. This study adopts the augmented production function (see Shan and Sun (1998b)) and adds a proxy variable of inequality to test the causality between economic growth and income inequality. Dependent variables used here are economic growth and income inequality index; explanatory variables are labor numbers, exports, imports and energy consumption.

It is inevitable that this study will suffer some weaknesses. The first restriction of this study is that sequence data is not long enough. According to the statistics principle, the longer the sequence data, the more accuracy does the time series

---

<sup>1</sup> The WALD statistics are asymptotically distributed as chi-square statistics.

analyze.<sup>2</sup> The official statistical yearbook had published most economic data prior to the economic reform, but some provincial data during the planned economy period cannot be found.<sup>3</sup> Without this data, this study cannot calculate the inequality level of the planned economy period. One way of solving this problem is to adopt quarterly data to expand observation numbers, but China's quarterly data is not available.<sup>4</sup>

Secondly, determining what price index should be used to deflate the nominal variables is another difficulty. The GDP deflator is the best price index, but it cannot be found in *China Statistical Yearbook* or *Comprehensive Statistical Data and Materials on 50 Years of New China*. For that reason, this study will adopt the consumer price index (CPI) as a deflator.<sup>5</sup>

Thirdly, this study does not access complete household inequality data although China's statistical authority had recorded household survey data. Much literature studying China's inequality also encountered this restriction. It is best to use household or individual data to estimate income inequality rather than provincial data because Herrmann-Pillath et al. (2002) had pointed out that the inequality level would be means away by using provincial data and characteristics of different provinces

---

<sup>2</sup> This study will use 25 annual data to deal with empirical investigation, but Shan and Sun (1998b) thought it was better to use more than 50 observations to run the VAR model. Annual data for the period 1978 to 2002 are not sufficient enough time to forecast future situations.

<sup>3</sup> For example, in *Hainan Statistical Yearbook* or other Statistical Yearbooks, the initial year of published Hainan's GDP data were 1978 and lack the data before 1978.

<sup>4</sup> The limitation of data length directly influences the model setting. The characteristic of original SUR form proved by Rambaldi and Doran (1996) was that all variables were endogenous. However, in order to ensure having enough degree of freedom, this study has to set all variables as exogenous except the growth and inequality. This makes this study unable to estimate the relationship between growth or inequality and other variables. Furthermore, some variables have to be dismissed from the model because some exogenous variables could affect an endogenous variable through affecting another endogenous variable, which could cause the problem of overidentity. This study will determine which variable should be given up or kept by reviewing previous studies.

<sup>5</sup> The shortcoming of CPI is that it fails to reveal the market price in China, because the government still controls prices of some commodities.

would be veiled. The advantages of household data are considerable.<sup>6</sup>

Finally, some literatures pointed out that China's statistical system was not dependable. Most of them focused on overestimating growth rate and inequality level. This study will adopt adequate price indices to deflate China's nominal output, which can partly remedy the problems of the growth statistic.

### 1.3 Research Steps and Framework

This section describe research framework of this study. Figure 1.1 summarizes the research steps. First, this study decides the research purpose, which questions if causality exists between economic growth and income inequality. Then reviewing the related literatures to research purpose. By reviewing this literature, this study can find the theoretic foundations of relationship between growth and inequality, and understand China's scenario of regional inequality. It is also necessary to look up some econometric textbooks to resolve problems about the Granger-Causality test and other time-series issues.

The next step is collecting data. The *China Statistical Yearbook* (various years) and *Comprehensive Statistical Data and Materials on 50 Years of New China* provide most of the data variables for the period 1978-2002. Some data of provincial GDP and population numbers missing in the statistical books described above can be found in the provincial Statistical Yearbook. With these data, this study can estimate provincial inequality levels and adjust economic growth rate. Then a simple statistical method, correlation coefficient, will be employed to test the

---

<sup>6</sup> For instance, it is consistent with the microfoundation theories that predicted the effect of inequality on growth. In addition, household data can be used to estimate interprovincial or interregional inequality by employing a decompose method, but the later cannot be used to estimate the former. It is in term of accessible limitation that this study has no choice but adopts provincial data.

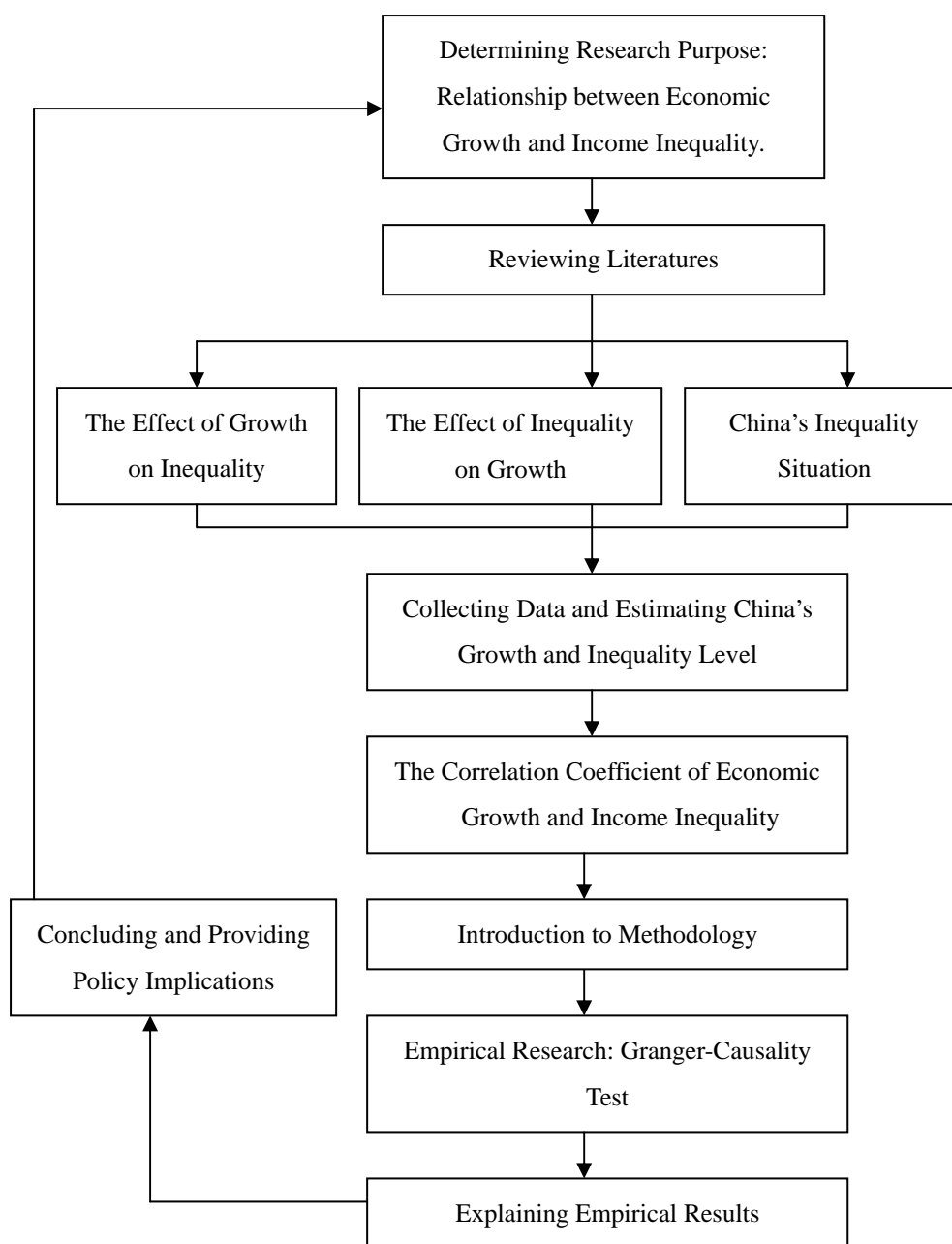


Figure 1.1 Process of Research

facile relationship between growth and inequality for period 1978~2002, but more formal methodology for testing their relationship will be carried out in the next step.

After collecting all data and calculating China's inequality level and growth, this study divides empirical research into three sections: (i) choosing the maximal order

of integration with a unit root test; (ii) testing the Granger causality; (iii) a test for robustness. Sections (i) can be employed in many econometric packages, such as Eviews.

Section (ii) and (iii) involve the special Toda and Yamamoto procedure, and so programming is necessary. Rambaldi and Doran (1996) showed how to use the SUR routines in SHAZAM, SAS, and RATS to obtain the MWALD test. This study follows their method of programming.

The next step is to explain the empirical results. This study will apply suitable theories reviewed in first step to empirical results. As the previous section has described, one of the interesting things about this study is that empirical results are related to policy applications. Finally, this study will provide some policy implications according to previous literatures and the empirical results.

The framework of this study are arranged as followings:

## Chapter 1. Introduction

### 1.1 Research Background and Purpose

### 1.2 Research Method and Restriction

### 1.3 Research Steps and Framework

## Chapter 2. Literature Reviews

### 2.1 The Effect of Growth on Inequality

### 2.2 The Effect of Income Inequality on Growth

### 2.3 The Situation of China's Inequality

## Chapter 3. Retrospective of Economic Growth and Inequality in Post-Reform China

### 3.1 Economic Growth for Period of 1978~2002

### 3.2 The Evolution of Inequality Level

### 3.3 Correlation Coefficient between Growth and Inequality



## Chapter 4. Methodology

### 4.1 Traditional Granger-Causality Test

### 4.2 Toda and Yamamoto's VAR Procedure

### 4.3 Empirical Model and Data Source

## Chapter 5. Empirical Results

### 5.1 Unit Root Test

### 5.2 Granger-Causality Test

### 5.3 Test of Robustness

## Chapter 6. Conclusions and Implications

## Appendix

## References