PLEASE TYPE

UNIVERSITY OF NEW SOUTH WALES

Thesis/Project Report Sheet

Surname or Family name: LI

First name: YONGPING Other name/s:

Abbreviation for degree as given in the University calendar: 1998

School: Economics and Management Faculty: University College

Title: Fiscal Decentralisation In China : 1978 - 1992

Abstract 350 words maximum: (PLEASE TYPE)

1978 - 1992 is a significant period in the history of modern Chinese public finance. During this period, China's fiscal system underwent fundamental changes as consequences of the implementation of fiscal decentralisation. This thesis focuses on examining the impacts of fiscal decentralisation on public sector size and regional income distribution.

This thesis has found that the diminution of the public sector size was gradual and moderate during 1978-1992. This study presents a first attempt to test Brennan-Buchanan decentralisation hypothesis in the context of a developing country. The empirical results provide fresh evidence in support of the hypothesis - fiscal decentralisation has an effect on the reduction in public sector size.

On the basis of empirical investigations, this thesis has obtained the following results regarding the effects of fiscal decentralisation on regional income distribution and related issues. (1) There existed a fiscal equalisation mechanism within the Chinese fiscal system prior to and during the economic reforms. The detected mechanism was closely associated with the previous central-provincial fiscal setting, which was gradually dismantled by fiscal decentralisation during the period under investigation. (2) This thesis provides a set of estimates of regional inequality through a number of new indexes utilising the latest available provincial GDP data covering the 1952-1995 period. The estimated RIIs (regional inequality indexes) have shown that China may pass its peak along the inverted-U path in the late 1970s at a much lower per capita income level comparing with the western countries. (3) This thesis also finds the causes of the problem left by previous studies which gave different conclusions on the declining trend of RIIs in the period from the late 1970s to the late 1980s. (4) Through a factor decomposition analysis, this thesis finds that fiscal decentralisation is a disequalising factor for regional income distribution.

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Fiscal Decentralisation In China:

1978 - 1992

Yongping Li

A Thesis Submitted in Fulfilment of the Requirements

for the Degree of Doctor of Philosophy at

The University of New South Wales

November 1998

Declaration

I hereby declare that this submission is my own work and to the best of my knowledge it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at UNSW or any other educational institution, except where due acknowledgment is made in the thesis. Any contribution made to the research by colleagues, with whom I have worked at UNSW or elsewhere, during my candidature, is fully acknowledged.

I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

Yongping Li

Acknowledgment

This thesis is the result of more than three years of research at the School of Economics and Management, University College, the University of New South Wales. It would never have completed without the encouragement and support from my supervisors, my colleagues and friends, and my family.

I wish to thank my principal supervisor, Professor On Kit Tam, for his continuous and invaluable guidance through out my candidature. I wish also to thank my co-supervisor A/Professor Abul Masih for his precious comments and suggestions.

I am grateful to Professor Wolfgang Kasper, A/Professor and Head of the School Peter Hall, A/Professors and former Heads of the School Paul McGavin and Paul Robertson, A/Professor Jeff Bennett, Dr Gary Manger, Dr Hock-Beng Cheah and Dr Stefan Markowski, for their valuable comments on some of my previous drafts and seminar papers. My thanks are also due to my fellow candidates and all academic and general staff in the School, for their support and friendship.

Financial assistance from the School (for my field trip expenses to China), the University College (for the final year PhD scholarship), and the University of New South Wales (for the Australian Postgraduate Award) are gratefully acknowledged.

Abstract

1978 - 1992 is a significant period in the history of modern Chinese public finance. During this period, China's fiscal system underwent fundamental changes as consequences of the implementation of fiscal decentralisation. Many of these changes have immense influences on the national economy. This thesis focuses on examining the impacts of fiscal decentralisation on public sector size and regional income distribution.

This thesis empirically examines the changes in China's public sector size with respect to both revenue and expenditure. It has found that the diminution of the public sector size was in fact gradual and moderate during 1978-1992. This thesis argues that the diminution should be viewed as not only expected but necessary.

In 1980, Brennan and Buchanan put forward their well-known decentralisation hypothesis. Since then, there has been some supporting empirical evidence from studies on industrialised economies. This study presents a first attempt to test this hypothesis in the context of a developing country. The empirical testing results provide fresh evidence in support of the Brennan-Buchanan decentralisation hypothesis, ie fiscal decentralisation has an effect on the reduction in public sector size.

On the basis of empirical investigations, this thesis has obtained the following results regarding the effects of fiscal decentralisation on regional income distribution and related issues.

1. China's pre-reform fiscal revenue and expenditure relationship between the central and provincial governments was gradually dismantled during the period under investigation. As a result, the reliance of Chinese central government on remittences from the provinces was curtailed. The central government began to depend more on its own revenue collection since the early 1990s.
2. There existed a fiscal equalisation mechanism within the Chinese fiscal system prior to and during the economic reforms. An econometric model has been developed to detect the existence of the mechanism and its evolution during the period of investigation. The detected fiscal equalisation mechanism was closely associated with fiscal remittences from the provinces to the central, with the wealthy areas remitting more and the poor areas remitting less. When fiscal decentralisation removed the old central-provincial fiscal setting, this mechanism eventually lost its effectiveness. This would have impacts on regional income distribution.
3. This thesis provides a set of estimates of regional inequality through a number of new indexes utilising the latest available provincial GDP data covering the 1952-1995 period. The estimated RIIs (regional inequality indexes) have shown that China may pass its peak along the inverted-U path in the late 1970s at a much lower per capita income level comparing with the western countries.

4. This thesis also presents an explanation for the causes of the problem left by previous studies which gave different conclusions on the declining trend of RIIs in the period from the late 1970s to the late 1980s.
5. This thesis finds an answer to yet another previously unresolved question on whether fiscal decentralisation is a disequalising factor for regional income distribution. It reveals through a factor decomposition analysis that fiscal decentralisation indeed is a disequalising factor.
6. This thesis develops a new theory to explain the determination of changes in regional inequality. According to this theory, the actual direction of the regional inequality movement (up or down) in any given period depends on the combined effect of all the equalising and disequalising factors. If the equalising force was greater in magnitude than the disequalising force in a particular period, the regional income gaps would be narrowed, and *vice versa*. This theory has the power to explain the actual movements of the estimated RIIs in the history of PRC over half a century from the early 1950s to mid-1990s.

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Glossary

CCP	The Chinese Communist Party
CPEs	centrally planned economies
GDP	gross domestic product
GNP	gross national product
IMF	International Monetary Fund
OLS	ordinary least square
NMP	net material product
PRC	The People's Republic of China
RIIs	regional inequality indexes
SOEs	state-owned enterprises

Chapter 1

Introduction

1.1. Aims of Study

A major feature of the Chinese fiscal reform is decentralisation. In practice, it takes the form of contracts between the central and provincial governments for revenue-sharing and contracts between enterprises and governments for profit-sharing.[1] This study focuses on examining the former by analysing the impacts of fiscal decentralisation on the national economy in terms of its effects on the reduction in public sector size, influences on central-provincial fiscal relations and contributions to the changes in regional income distribution.

Fiscal reform is an important part of the whole economic reform process.[2] The Chinese economic reform that began in the late 1970s has followed a gradual path with the major reform measures being implemented over a long period of time. Tentative reforms began in nearly all sectors of the economy in the late 1970s, but in the early years the pace of advance was much faster in agriculture. The people's communes were abolished and replaced by the Household Responsibility System which gave farmers increased autonomy in deciding the price and the product

[1] Contractual arrangements between enterprises and governments changed during the 1978-1992 period. This study will not focus on this issue. For references, see Byrd (1992), Jefferson and Rawski (1994), and Wong et al. (1995).

[2] For general discussions on the economic reform, see Brosseau et al. (1997), Ash and Kueh (1996), Tam (1995), Minami (1994), Fan and Nolan (1994), Chai (1994), and Riskin (1987).

composition of their output. The initial reform in agriculture was very successful. Along with agricultural reform, trials for state-owned enterprises (SOEs hereafter) reform, fiscal reform and foreign trade reform began in 1979 and 1980. The door for foreign investments into China was quickly opened wider and wider, from just a few special economic zones to 14 coastal cities and then to inland areas. Price reform also took several steps starting from adjusting relative prices to letting the market to decide prices. During the reform era, the non-state owned sectors grew rapidly. Their share in the gross value of industrial output rose from 22.4% in 1978 to 35.1% in 1985, 51.9% in 1992, and 71.5% in 1996.[3] Along with the gradual reform process, the national economy rapidly grew with indications of rising factor productivity.[4] The living standards of the Chinese people also rose significantly. However, while the national economy was making progress in the reform process, problems emerged. These included, for example, great fluctuations in growth rate, serious inflation, and huge losses made by SOEs. Actually, until the early 1990s, the Chinese economic system was still like an unfinished house renovation project, where problems existed in nearly every aspect. Some of these problems were the legacies of the previous central planning system, while others had newly emerged during the transitional process. These problems called for further reforms in fiscal management, financial system, social security system, foreign exchange management, and SOEs.

Fiscal reform should form an integral part of the whole economic reform process. Prior to the reforms, Chinese fiscal power was exclusively concentrated in

[3] State Statistical Bureau (1997).

the hands of the central government, with central government revenues relying heavily on fiscal remittences from the provinces.[5] The goal of fiscal reform was to raise the efficiency of fund allocation and utilisation while enhancing the aggregate capacity of mobilising financial resources by various levels of governments.[6] As a major reform measure starting in the early 1980s, fiscal decentralisation was however driven not only by economic consideration, but also by political calculation: the Chinese leadership gave provincial officials a vast interest in promoting and sustaining the reform drive by raising fiscal autonomy for provincial governments.[7] In practice, fiscal decentralisation took the form of revenue-sharing contracts in the sphere of central-provincial fiscal relation in the 1980s. This study focuses on examining the influences of fiscal decentralisation on the basic framework of the fiscal system and the national economy, in particular, its effects on the public sector size, central-provincial fiscal relation, and regional income distribution.

Fiscal reform began in 1980, one year after the rural reform started, before the emphasis of reforms shifted to urban economy. The so-called contract responsibility fiscal arrangement (*caizheng chengbao tizhi*) began in 1980 and formally ended in 1993.[8] However, this study mainly focuses on the period from 1978 to 1992. The year 1978 is chosen as the starting year because the whole economic reforms started

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[4]For references of studies on factor productivity changes in China's economic reform process, see Chen et al. (1988), McMillan et al. (1989), Jefferson et al. (1992), and Wen (1993).
[5] See Li (1997), and Xiang (1990).
[6] See Tam and Forster (1990), World Bank (1990), Wong (1992), Bahl and Wallich (1992), Shirk (1993), and Wong et al. (1995).
[7] See Shirk (1993), and World Bank (1990).
[8] See Li and Knight (1996).

in that year and the fiscal reform is an integral part of the whole reform process; while the ending year is chosen as 1992 for a couple of technical reasons.

(1). In mid-1993, when the Chinese leaders were planning for a new central-provincial fiscal arrangement which actually started from 1994, the central government originally planned to use the realised values of provincial budgetary flows of 1992 as the basis for calculating the sharing ratios between each province and the central government under the proposed new arrangement. However, the provincial governors strongly opposed the plan and insisted on using the up coming 1993 figures as the calculating bases;[9] in the end they succeeded in forcing the central government to back down and won several months of time to manipulate the 1993 figures.[10] Although the contract responsibility fiscal arrangement officially ended in 1993, the provincial fiscal figures of that year were extensively manipulated, making it difficult to estimate the true magnitudes of the changes. (2). The State Statistical Bureau (SSB hereafter) changed the definition of extrabudgetary revenue in 1993, therefore figures since 1993 are in fact not directly comparable with figures in previous years.[11]

The period 1978-1992 is particularly significant in the development of modern Chinese public finance, as the country's fiscal system went through fundamental changes. Many of the changes have immense, long-term ramifications for the national economy. Among them, the followings can be considered as the most important ones:

[9] In China, fiscal year is the same as calender year.
[10] Based on the author's interview with MOF (Ministry of Finance) officials in Beijing in July 1996.

a) the Chinese public sector size declined along with the fiscal decentralisation reform process; b) the decentralising reform overthrew the pre-reform basic setting of central-provincial fiscal relation in which the central government acted as the spender and the provinces as the revenue collecting agents for the centre; and c) the Chinese fiscal equalisation mechanism lost most of its power, with impacts on regional income distribution.

Several researchers both from inside and outside China have expressed concerns over the drop in public sector size.[12] For example, Wang and Hu (1993) strongly argued that the share of government revenue in national income should be raised dramatically, ie the size of public sector should be enlarged significantly. Their argument was based on their observation that the size of public sector had been dropping too quickly since the beginning of the reforms and becoming too small in the early 1990s. They argued that raising the public sector size would, a) promote more rapid economic growth, b) enhance the Chinese government's capacity over macroeconomic control, and c) speed the pace of the transition towards a market economy. Although these arguments have been criticised by other researchers,[13] they still have strong influence on Chinese policy makers.[14]

The drop in Chinese public sector size during 1978-1992 occurred along with the process of fiscal decentralisation. This fact raises another question about whether

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[11] Since 1993, funds held in the SOEs and their supervisory bureaus are no longer counted in the extrabudgetary revenue figures.
[12] See Bahl and Wallich (1992), and Wang and Hu (1993).
[13] For example, see Zhang (1996).
[14] The book on China's state capacity by Wang and Hu (1993) received a national award in 1994.

there exists a causal relation between fiscal decentralisation and the reduction in public sector size. In industrialised economies, very large public sectors are considered wasteful and inefficient, and decentralisation is believed by some researchers to have an effect on reducing the size of the public sector.[15] In this situation, fiscal decentralisation is desirable, if it can cut the size of public sector and lead to a more efficient national economy. The debate on the possibility of using fiscal decentralisation as a means to control the over expansion of government size started in the early 1980s, when Brennan and Buchanan (1980) put forward their fiscal decentralisation hypothesis.[16] Since then, several attempts have been made to test this hypothesis.[17] Most of these studies used data from industrialised countries. The Chinese practice of fiscal decentralisation during 1978-1992 period provides a rare opportunity to test this hypothesis in the context of a large developing country. This thesis will conduct an empirical test on this hypothesis, representing perhaps a first attempt to test the Brennan-Buchanan Decentralisation Hypothesis by using data from a developing country.

During the fiscal decentralisation process, the pre-reform revenue collection and spending relations between the central government and provincial governments changed. The central government could not rely on remittences from the provinces, and had to mainly collect its own revenue.[18] Although this change has been

[15] Brennan and Buchanan (1980), and Ehdaie (1994).
[16] Brennan and Buchanan (1980) hypothesised that fiscal decentralisation had effect on reducing the government size. For more detailed discussion, see Chapter 5 of this thesis.
[17] See Oates (1985), Nelson (1987), Marlow (1988), Joulfaian and Marlow (1990), and Grossman (1989, 1992).
[18] See Wong (1991), Bahl and Wallich (1992), and more recently, Oi (1995), Ma (1995, 1996), Chung (1995), Solinger (1996), and Li and Knight (1996).

extensively discussed by several authors, little effort has been made to investigate the possible influence of this change on fiscal redistribution other than Tam's (1990) paper, which raised a question about the possible existence of a fiscal redistributional function within the fiscal system.[19] This study will examine the evolution of the central-provincial fiscal relations during 1978-1992 to detect the possible existence of a fiscal equalisation mechanism within the fiscal system in the decentralising fiscal reform environment.

The relation between fiscal decentralisation and regional income disparities is a complex issue. Prud'homme (1995) asserted that fiscal decentralisation would push regional inequality up.[20] Not all previous studies on regional inequality in China provided supports for this assertion.[21] In fact, most of them reported that there was a downward movement in their estimated regional inequality indexes (RIIs) for most of the years during 1978-1992, especially in the first decade of the economic reforms from the late 1970s to the late 1980s. However, significant differences did exist among those authors who reported a drop in RIIs: Tsui (1991) and Chen and Fleisher (1996) only found a very weak decline, but Lyons (1991) and Jian et al. (1995) reported a quite strong decline.

Studies on regional income inequality in China have generally suffered from the lack of provincial GDP data (until the publication of historical provincial GDP data by the SSB at the end of 1997). This study incorporates an analysis utilising the

[19] See Tam (1990).
[20] See Prud'homme (1995).

latest available historical provincial GDP data issued by the SSB.[22] Although China's GDP data are still subject to some limitations, they are much superior to the NMP (net material product) figures.[23] This study will use the newly available data for detailed empirical investigation into the issue of regional inequality in China, in an attempt to,

a) get the true picture of the evolution of regional inequality,

b) test the validity of the Prud'homme's (1995) hypothesis,

c) find out where and how the different conclusions about the drop in RIIs come from, and

d) examine the possible relation between fiscal decentralisation and changes in regional inequality.

1.2. Hypotheses and Approaches

A basic objective of this study is to empirically investigate the impacts of fiscal decentralisation on the fiscal system as well as on the national economy, with emphasis on its influence on fiscal redistributional function. This study hypothesises that, fiscal decentralisation during the period 1978-1992, through transforming the pre-reform basic revenue collection and spending relations between the central government and provincial governments, has reduced the effectiveness of the fiscal equalisation mechanism and has impacted on regional income redistribution.

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[21] See Tsui (1991), Lyons(1991), Yang (1994), Jian et al. (1995), and Chen and Fleisher (1996).

[22] Department of National Economic Accounting, SSB (1997).

[23] Critics on GDP can be seen in many references, for example, see Samuelson and Nordhaus (1995). NMP is a major statistic used in the statistical systems in centrally planned economies. The most important differences between NMP and GDP are a) NMP does not include the value of depreciation, and b) NMP does not include the value of output of most tertiary industries. For detailed discussion on this mater see Li (1995a) and World Bank (1985).

In addition to this main hypothesis, this study will also attempt to test whether fiscal decentralisation has contributed to the decline in public sector size during the economic reform era. To test this, a simple three-step method will be employed. The first step is to statistically test whether there exists any correlation between the two variables: *FD* (fiscal decentralisation ratio - a measure for the degree of fiscal decentralisation) and *SIZE* (public sector size). If a correlation between the two variables can be detected, then the second step is to test whether there exists a causation between the two and whether *FD* takes the lead through a causality test. If the causal relationship can be established and *FD* takes the lead, the test will move to the third step to regress *SIZE* on a constant and *FD* and/or lagged *FDs* with various length. Through these regressions, how public sector size is affected by fiscal decentralisation will be shown.

For the main hypothesis, this study will conduct a comprehensive set of empirical tests. It will first examine China's central-provincial fiscal relations, from the revenue side and expenditure side separately, to analyse and determine changes in net fiscal transfers between the centre and provinces. This is followed by the testing of the existence of fiscal equalisation mechanism during the 1978-1992 period in the fiscal decentralisation reform environment. An econometric model will be applied to detect the existence of the mechanism and its change over time. If the test results from the model confirm the existence of the fiscal equalisation mechanism and show its changes over time, then further investigation will be carried out to see how the changes in the mechanism may affect regional income inequality.

In some respects, there are similarities between the fiscal redistributional effect on income distribution across provinces and the redistributional effect of taxation on income distribution among individuals. Taxation can have significant redistributional effect on inter-personal inequality. The redistributional effect of taxation is usually detected by a simple three-step procedure: a) estimating the before-tax income inequality index, b) estimating the after-tax income inequality index, and c) comparing the estimates of the before- and after-tax inequality indexes. A similar three-step procedure can be constructed to detect the effect of fiscal redistribution on regional income inequality.

A major task in the first step is to estimate the regional inequality indexes (RIIs) before-fiscal redistribution.[24] Once the RIIs are estimated, the changing trend and patterns will be revealed and analysed. Through detailed analysis, the reasons explaining why previous authors have reached different conclusions about the declining trend of RIIs during the first decade of the reforms may be found. In addition, a locational analysis will also be performed on the RIIs estimates to further reveal the coastal-inland income differentials.

[24] Six RIIs on different data sets and based on different prices will be estimated. For detailed explanation on the meanings and covering periods of them, see Section 7.3 in Chapter 7 of this thesis; and for the results of estimation, see Section 7.4.

The post-fiscal redistribution regional inequality index[25] will be estimated in the second step, followed by a factor decomposition analysis. This decomposition analysis is designed to reveal the individual contribution of each component of the provincial per capita post-fiscal redistribution GDP[26] to the overall changing trend and patterns of the post-fiscal redistribution RII. For each province, its post-fiscal redistribution GDP can be decomposed into four components: GDP produced by the primary sector, the secondary sector and the tertiary sector respectively, and the fourth one is an estimated proxy representing fiscal transfer from the central government to the province.[27] The factor decomposition analysis will, a) show the contribution of each factor to the overall changes in the post-fiscal redistribution RII; b) identify the main source of regional disparities; and more importantly, c) show the influence of fiscal redistribution on the trends and patters of the overall movement of regional income inequality in China.

Finally, in the third step, a comparison between the estimated pre- and post-fiscal redistribution RIIs, with reference to the contribution of fiscal transfer to the overall changes, will clearly show the impact of fiscal redistribution on regional income inequality. The estimates of pre- and post-fiscal redistribution RIIs are expected to show different changing trends and patterns. The differences between

[25] The post-fiscal redistribution RII will be estimated on the basis of provincial per capita nominal GDP data. The justification for doing so will be explained in Section 7.3 in Chapter 7 of this thesis; and the estimation results will be reported in Section 7.5.

[26] Provincial post-fiscal redistribution GDP will be renamed as provincial GDP incorporating fiscal transfer (in short provincial GDP_{TR}) in Chapter 7, after the term of fiscal transfer (TR) is formally defined. The same as post-fiscal redistribution RII, it will be renamed as RII based on provincial GDP_{TR}, and RII_{TR} in short.

[27] Fiscal transfer from the central government to each province might be positive for a poor province such as Guizhou, and negative for a rich province like Shanghai. For data sources, meaning of each component, and the estimation method, see Section 7.3 and Appendix C to Chapter 7 of this thesis.

them will, therefore, reflect the influences of fiscal redistribution on regional income disparities.

1.3. Structure of the Thesis

The rest of this thesis is organised as follows: Chapter 2 and Chapter 3 will discuss the key conceptual and theoretical issues of fiscal decentralisation in the Chinese context. Chapter 4 will examine the Chinese macroeconomic environment during the 1978-1992 period, providing a bridge between the theoretical chapters and the empirical chapters; Chapter 5 to 7 will be the three major empirical chapters, examining the impacts of fiscal decentralisation on public sector size, central-provincial fiscal relations, and regional income inequality in China respectively. The last chapter, Chapter 8, will summarise the findings and conclusions of this thesis.

Chapter 2 starts with an examination of the meaning and definition of fiscal decentralisation. It also addresses the question of how to measure the degree of fiscal decentralisation. This will be followed by examining the question of what factors determine the degree of fiscal decentralisation.

The basic theoretical arguments relating to fiscal decentralisation are discussed in Chapter 3. It starts with an introduction of the Decentralisation Theorem advanced by Oates,[28] then turns to its generalisations from public goods provision to other areas of public finance, and from its application in developed economies to developing

countries. It then examines the major arguments in support of the Decentralisation Theorem and the major counterarguments against it. The impacts of fiscal decentralisation on economic performance are discussed on the basis of both theoretical analyses and empirical evidences from previous studies.

Fiscal reform is an important part of China's economic reform process. Chapter 4 outlines the background macroeconomic environment prior to and during the economic reform. It examines how the fiscal system has changed in the whole economic reform process.

Chapter 5 studies the change in the size of public sector during the reform era to see how fiscal decentralisation affects the public sector size. This chapter starts with a discussion on the definition of public sector in China in order to decide what should be counted in the numerator when estimating the public sector size. This chapter then reviews the changes in China's public sector size during the 1978-1992 period from both revenue and expenditure sides. After assessing the actual changes in public sector size, an international comparison provides a useful basis for evaluation. Finally, this chapter presents empirical tests on the effect of fiscal decentralisation on public sector size.

Chapter 6 examines the changes in China's central-provincial fiscal relations and analyses the institutional reasons behind these changes. One striking feature of the Chinese fiscal system prior to the current economic reforms was the heavy

[28] Oates (1972).

reliance of the central government on transfers of funds from provinces for its budget revenues. This type of fiscal setting had changed by the end of the period. Another task of this chapter is to develop and apply an econometrical model to test the existence of a fiscal equalisation mechanism. The model is aimed at testing the existence/absence of the mechanism, as well as revealing its changes over time during the decentralising fiscal reform era.

The main objective of Chapter 7 is to review the evolution of regional income inequality in China, and examine its relation with fiscal policy in general and changes in fiscal redistributional function during the process of fiscal decentralisation in particular. This chapter starts with a review on the previous studies in this field. It discusses several issues regarding measurement, data availability and methodology. It presents an empirical investigation using the latest available provincial GDP data to estimate and analyse regional inequality indexes. Coastal-inland location and factor decomposition analyses are also undertaken and test outcomes discussed.

Chapter 8 provides the major conclusions of this study, summarising the theoretical and empirical findings and discussing some policy implications.

Chapter 2

Fiscal Decentralisation: Concept and Measurement

2.1. Introduction

Fiscal decentralisation has been an important topic in public sector economics for nearly forty years.[1] Nowadays, it has become a major concern around the world, not only among theoretical and applied economists, but also among policy makers in a vast number of countries, regardless of whether the government operates in a federal system or not. Bird (1993) remarked that economic theorists were theorising about fiscal decentralisation, applied economists were attempting to pin it in numbers, and policy economists were busily flying around the world dispensing advice about it.[2] Dillinger (1994) estimated that the central governments of sixty-three out of seventy-five transitional and developing countries[3] with population of five million or more had actually transferred or were in the process of transferring decision-making power to local governments.[4] On the other hand, some have cautioned that decentralisation is

[1] Gramlich (1993).
[2] Bird (1993).
[3] This study has adopted the method used by the United Nations to classify country groups. According to this method, there are three country groups: a) developing economies: Latin America and the Caribbean, Africa, Asia and the Pacific (excluding Australia, Japan and New Zealand), Cyprus, Malta, former Yugoslavia; b) economies in transition: Albania, Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia and the former USSR, comprising the Baltic republics, the Commonwealth of Independent States (CIS); and c) developed economies (developed market economies): North America, southern and western Europe (excluding Cyprus, Malta and former Yugoslavia), Australia, Japan and New Zealand. See United Nations (1996).
[4] Dillinger (1994).

no panacea for all the economic problems the countries are facing - it might be useful in some cases but harmful in other cases.[5]

Although many countries around the world are interested in fiscal decentralisation, different countries may have different reasons for their concern. In the developed world, efforts are made to reshape their intergovernmental fiscal structure so that those countries could be more in tune with the reality of the "postwelfare state" era.[6] The United States has, in the name of "new federalism", implemented a decentralisation strategy as it tried to cut its federal government budget deficit, largely by reducing state and local grants.[7] In Canada, fiscal decentralisation is tied closely with the Quebec issue, and in Germany, with the unification issue. New federal states are emerging in Europe (Spain and Belgium). Decentralisation issues have been discussed extensively even in countries as centralised as the United Kingdom[8] and France.[9] The European Union is working on fiscal decentralisation issues in connection with policy harmonisation - what policies and/or conventions should be harmonised and what need not be.[10]

Many developing countries have suffered from ineffective and inefficient governance, macroeconomic instability, and inadequate economic growth in recent years. Many are turning to various forms of fiscal decentralisation in trying to find a

[5] Prud'homme (1995) and Tanzi (1996).
[6] Bennett (1990).
[7] Gramlich (1993).
[8] King (1990).
[9] Prud'homme (1990).
[10] Gramlich (1993).

better way to manage their public sector to facilitate economic development.[11] Fiscal decentralisation issues are even more crucial for the transitional Eastern European countries as they are busily setting up new systems of local and intergovernmental finance in the process of transition from central planning to free market economies.[12] In East Asia, the strong Chinese economic growth along with its economic reforms has drawn attention from all over the world. The major feature of the Chinese fiscal reform, as an important part of the whole economic reform program, is decentralisation. In practice, it took the form of contracts: contracts between the central and provincial governments for revenue-sharing, and contracts between enterprises and governments for profit-sharing in its early stage. This form of fiscal system infused the Chinese economy with a measure of dynamism, but failed to equip the government with useful fiscal policy instrument for macroeconomic management.[13] More recently, the focus of fiscal reform has turned to reform on the tax system as the Chinese economic reformers begin to learn from the experiences of central-local fiscal grant system.[14]

Chapter 2 and Chapter 3 focus on the theoretical basis in this thesis. A main task is to examine the development of fiscal decentralisation theory, so as to build a theoretical framework for the empirical investigations in later chapters. Chapter 2 will mainly discuss the concept, measurement and determinants of fiscal decentralisation. Chapter 3 will starts with the discussion on the basic fiscal

[11] Bahl and Linn (1992).
[12] Bird and Wallich (1993).
[13] See Forster and Tam (1990), and Chapter 4 of this thesis.

decentralisation theorem and its generalisation, then turn to the impacts of fiscal decentralisation on economic performance, and examine the possibility of applying the basic fiscal decentralisation theory in China's situation.

In the rest of this chapter, Section 2.2 will discuss the definition of fiscal decentralisation. Section 2.3 will address the question of how to measure the degree of fiscal decentralisation. Section 2.4 will try to identify what factors determine the degree of fiscal decentralisation.

2.2. Concept of Fiscal Decentralisation

The term "fiscal decentralisation", as pointed out by Bird (1993), seems often to mean whatever the person using it wants to mean.[15] However, we can, following Wolman, start with a common-sense definition: to centralise is to concentrate by placing the fiscal decision-making power in a center, while to decentralise is to disperse or distribute power from the center.[16] In this study, fiscal decentralisation is defined as the process through which a part of the central government's fiscal decision-making power is transferred to the sub-national governments.

Fiscal decentralisation can be examined from different angles. The first angle is to see where the initial impetus is from: from the top down, or from the bottom up.

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[14] According to the author's interview with Chinese officials in Beijing in July 1996, the Chinese leaders are more interested in the Australian grant system, and have sent officials to study and work in the Australian system in resent years.
[15] Bird (1993).
[16] Wolman et al. (1991).

The top-down type fiscal decentralisation means the central government disperses or distributes some of its fiscal authority to sub-national governments in order to achieve its policy objectives. The goals of the central government may vary, from reducing pressure on budget deficits to increasing the level of national welfare. The Chinese case is an example of this top-down type fiscal decentralisation. In the early 1980s, reformers in China decided to take decentralisation measures before the commencement of urban reforms. They did so mainly out of political calculation - to give provincial officials a vested interest in promoting and sustaining the reform drive through an expansion of financial autonomy for provincial governments.[17] The bottom-up type fiscal decentralisation, in contrast, means that the sub-national governments seek more decision-making power from the center to achieve local autonomy and/or to improve local welfare. Examples of this type of fiscal decentralisation include several Latin American countries (such as Colombia), where the move toward decentralisation was initially sponsored by regional powers who sought greater control over government resources.[18]

Another generally accepted angle to examine fiscal decentralisation is to see the formation of government system - federal system or non-federal system. From this angle, there are two models of fiscal decentralisation: federal finance and fiscal federalism. Federal finance exists in truly federal states, such as the USA, Australia, Canada and Switzerland, where jurisdictional boundaries and the assignment of functions and finances for each level of governments are basically taken as fixed at

[17] Shirk (1993).
[18] Hommes (1996).

some early constitutional stage and not open to further discussion in normal circumstances.[19] Fiscal federalism, or multilevel finance, can be found in any country, federal or non-federal, where the public sector has both centralised and decentralised levels of fiscal decision-making.[20] In this sort of framework, in principle, everything - boundaries, assignments, the level and nature of transfers, etc. - is up for grabs.[21]

There are two basic conditions for the existence of fiscal federalism. The first one requires multilevel government; and the second one requires the sub-national level of government units to be responsive to the wishes of their constituencies instead of being simply the instrumentalities of the central authority. Most countries in the world, except for several tiny city or island states, meet the first condition. However, when we turn to the second condition, more countries join the exception list. In some developing countries and some former centrally planned countries, the sub-national governments are not so responsive to the local residents like their counterparts in industrialised countries.

Oates (1972) and King (1984) discussed the optimal size of sub-national government units. Unfortunately, economic theory so far cannot lead us to a firm conclusion about the optimal division of fiscal functions among levels of governments, that is, about optimal fiscal decentralisation. It can, however, suggest the considerations relevant in making the best fiscal assignments.[22] Musgrave's (1959) view of the stabilisation, redistribution and allocation roles of public finance

[19] Bird (1993).
[20] Oates (1972).

has long served as the traditional starting point for discussion of the appropriate division of taxing power and expenditure responsibility among different levels of governments.[23]

Although the theory of fiscal decentralisation has been developed with reference to industrialised countries, interest in fiscal decentralisation among developing countries has grown substantially in the past three decades. The general motivation is that fiscal decentralisation is helpful for the implementation of economic development policy. Wasylenko (1987) indicated that at least four themes appeared to motivate fiscal decentralisation in developing countries.[24] First, it can be used as a means of introducing more participation into the democratic process. During the process of decentralisation, local residents, as public goods consumers, will have an increased sense that they can change local public service delivery through voting; and as tax payers, they will become more aware of the connections between their tax payments and the delivery of public services. These will increase their motivation to participate in democracy process. Second, it can more efficiently deliver local services. Local preferences for public goods may vary across regions, so the decentralised public goods delivery may be more efficient than the centralised system. Third, it will allow more effective implementation of economic development projects. Public works, such as loads and water supply system are important local development projects. If these projects are designed and financed by local governments, they will pay more attention to the building and maintenance of these works. Fourth, local

[21] Bird (1993).
[22] Bahl and Nath (1986).

governments will more effectively implement fiscal operations than their central government counterparts. For example, tax on property is usually a good local source of revenue, because local authorities are in better positions to assess the value of property than the central governments.

However, Wasylenko (1987) also pointed out that the availability of trained personnel is a precondition for more efficient fiscal operation under decentralisation. Unfortunately, local governments in developing countries often lack trained personnel. This problem may pose limitations on the extent of fiscal decentralisation in almost all developing countries. Other authors have also expressed similar concerns about the applicability of fiscal decentralisation in developing countries.[25] According to Ebel and Hotra (1997), if fiscal decentralisation is done correctly, there are significant benefits in terms of enhanced economic efficiency and increased fiscal and political accountability; if implemented badly, the efficiency and accountability outcomes can be perverse.[26]

[23] Musgrave (1959).
[24] Wasylenko (1987).
[25] See Bahl and Nath (1986), Oates (1993), and Tanzi (1996).
[26] Ebel and Hotra (1997).

2.3. Measuring Fiscal Decentralisation

Fiscal decentralisation is a complex subject with many dimensions. As a variable factor in the design of governmental and administrative machinery, it needs to be measured. However, this is a complex task. According to Patsouratis (1990), the degree of fiscal decentralisation can be estimated by means of two criteria: qualitative measure and quantitative measure.[27] The qualitative one is to measure the degree of local autonomy which really lies at the heart of this sort of discussion.[28] Unfortunately, most of suggested qualitative measures are not easily operational in empirical studies. Many researchers then turn to quantitative measures.

Various operational measures have been used in the literature to express the degree of fiscal decentralisation or centralisation. Oates (1972) used what he called centralisation ratio (CR hereafter), a measure of the share of the central government expenditures (or revenues) in the total expenditures (or revenues) of all levels of governments.[29] A more widely used measure is decentralisation ratio (DR hereafter), which is defined as the share of sub-national governments revenues (or expenditures) in the total government revenues (or expenditures).[30] Obviously, the two measures can be related in the expression below:

$$DR = 1 - CR.$$

[27] Patsouratis (1990).
[28] Bird (1986).
[29] Oates (1972).

The quantitative measures, CR or DR, are based solely on government expenditure or revenue figures. They are only proxies for the degree of fiscal centralisation or decentralisation, and should be used with extreme caution.[31] In this thesis DR is used as the major index for measuring Chinese fiscal decentralisation during the reform era.

DR can be calculated on expenditure or revenue figures. Some researchers prefer the latter over the former. Musgrave (1969) argued that the revenue DRs are more useful than the expenditure DRs because "local governments which act as central expenditure agents do not reflect expenditure decentralisation in a meaningful sense just as centrally collected but shared taxes do not constitute true revenue centralisation".[32] To deal with this problem, one might recalculate local government expenditure data, separating what is called "spent by local but controlled by central" from the local expenditure figures. However, this is very difficult in practice because relevant detailed information is not often available. In this study, I have to mainly use expenditure DR, rather than revenue DR, to measure the degree of fiscal decentralisation in China. Because local governments in China, prior to the economic reforms, acted as central revenue collecting agents: they collected a very large share of the total government revenue, then passed part of their collections to the centre. Therefore, the high values of revenue DR estimates for those years did not reflect high degree of fiscal decentralisation in any meaningful sense. Although expenditure DR

[30] See Kee (1977), Marlow (1988), Grossman (1989), Joulfaian and Marlow (1990), and Grossman (1992). They all used DRs as the major measure in their empirical studies on various aspects of fiscal decentralisation issue.
[31] See Bird (1986).
[32] Musgrave (1969), Page 342.

is also subject to limitations, such as the fact that local expenditure plans had to be approved by the centre,[33] it is much better than revenue DR in reflecting local fiscal decision-making power.

There remain some more questions about how to measure fiscal decentralisation. How to treat intergovernmental grants is one of them. According to Oates (1972), two types of grants can be distinguished.[34] To the extent that the grantor has directed in some detail the purpose for which the funds are to be used, the presumption is that the grants should be counted in the expenditure of the grantor. On the other hand, some grants are unconditional, or in practice the grantor could not effectively control the use of the funds, then they should be included in the share of the level of government making the expenditure. For the same reason, on the revenue side, conditional grants should be kept in the central revenues, while unconditional ones should be calculated into local revenues. In practice, this sort of adjustment on fiscal data may not always be possible. Furthermore, as Wasylenko (1987) pointed out, conditional grants in some cases may not change local expenditure autonomy.[35] For example, if a local government receives a grant for building a school, it may switch its own funds from building school to another purpose, say, building road. In this case the conditional grant does not change the real local autonomy. Meanwhile, in some cases, when local expenditure plans require approval from the central government, the local government only enjoys some limited autonomy.

[33] According to this author's interview with MOF officials in Beijing in July 1996, in most cases, the central government would approve the local governments' expenditure plans.

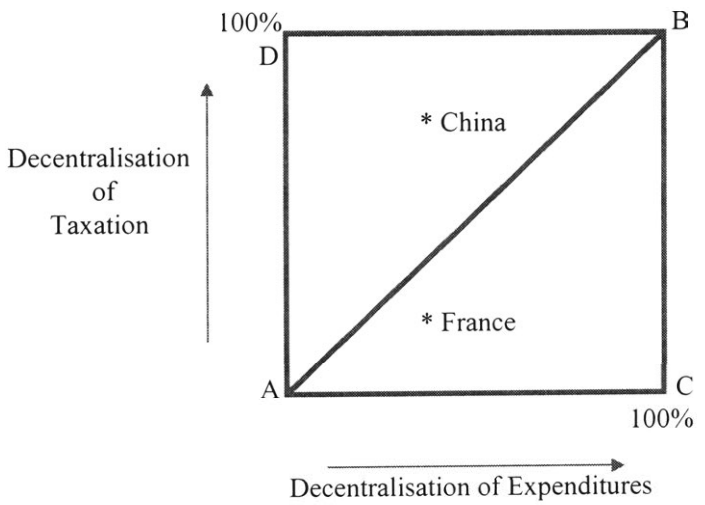
The number of tiers of a government system might also raise further complications and problems. In a two-level government system, the local-central distinction is clear. But in most cases, there exist more than two levels of governments, and things become more complicated. For example, in some studies on federal finance, state governments expenditures were added to the federal government expenditures as part of the central expenditures; in other studies, they were treated as non-central. The existence of national agents might raise similar problem, whether their spendings should be classified as centralised or decentralised remain unresolved.[36] Different treatments may lead to opposite conclusions in some cases. This current study on fiscal decentralisation in China focuses mainly on central-provincial fiscal relations. Fiscal relations between provinces and lower levels of governments are left for future studies[37].

If fiscal decentralisation is carried out symmetrically on both revenue and expenditure sides, then the calculated revenue DRs should be quite close to expenditure DRs. However, this is not alway the case. Prud'homme (1990) pointed out that a large part of fiscal decentralisation literature, especially those studies on the USA, is based on a common assumption that fiscal decentralisation is a joint transfer of fiscal responsibilities and resources from central to lower level of governments, that means the local governments can finance their additional expenditures by using

[34] Oates (1972).
[35] Wasylenko (1987).
[36] Bird (1980).
[37] There are four levels of fiscal authorities in China: central, provincial, county, and township. See Chapter 5 of this thesis for detailed discussion.

increases in their own revenues.[38] According to Prud'homme (1990), this assumption might make sense, to a certain extent, in the case of the USA; but, it may not be realistic for many other countries. For example, his study on France showed that the expenditure side DR is higher than the revenue side DR, suggesting part of the local spending is financed by fiscal transfers from the central. He employed the following diagram to treat the relationship between the revenue side DR and expenditure side DR.

Figure 2.1. Revenue and Expenditure Decentralisation



Let us start with the polar cases, although in reality none exists. Point A represents the case of complete centralisation of taxes and expenditures. There are hardly any local governments. There are, of course, no intergovernmental transfers. Point B represents the case of complete decentralisation of taxes and expenditures. There are no transfers and actually no central government at all. Point C represents

[38] Prud'homme (1990).

the case of complete centralisation of taxes and complete decentralisation of expenditures. In this case, the central government collect all the revenues and transfer all of them to the local governments, where they spend them all. Point D represents the case of complete decentralisation of taxes and complete centralisation of expenditures. In this case, the local governments collect all the revenues and transfer them to the central government, where it spends them all.

In the real world, all existing fiscal systems lie somewhere in between. The symmetrical fiscal decentralisation assumption places a country somewhere on the AB line, implying that the net transfer between the central and the local governments is zero. Most countries lie in the triangle area of ABC, with some transfers from the central to the local. There are a very small number of cases of countries represented by points situated in the ADB area, implying net transfer from the local to the central. Prud'homme asserted that this was the case of the Roman Empire and of pre-reform China.[39] Although Prud'homme's assertions might be arguable,[40] his method is useful for both cross-country and inter-temporal comparisons. Chapter 6 of this thesis will make use of this method in examining central-provincial fiscal relations in China.

2.4. Determinants of Fiscal Decentralisation

The major area of investigation of this section is about the relation between economic development and fiscal decentralisation. The basic questions are: a) what factors may

[39] Prud'homme (1990), Page 118.

determine the degree of fiscal decentralisation, and b) is the stage of economic development among the major determinants of fiscal decentralisation, and if it is, how does it work? The other side of the relationship, ie the impact of fiscal decentralisation on economic performance in general or on economic growth in particular will be discussed in Chapter 3 of this thesis.

Compared with the huge body of fiscal decentralisation literature, few published studies are on the effect of economic growth on the degree of fiscal decentralisation. A careful search of the literature by Wasylenko (1987) uncovered only seven published works.[41] This author's current search adds four more articles to the list. Only one (Giertz, 1983) out of the four new findings was published before Wasylenko's search published in 1987.

All of these published studies have employed basic multivariable econometric regression methods. The dependent variable is usually a measure of the degree of fiscal decentralisation (centralisation), ie DR (CR), based on expenditure or revenue figures from fiscal data. The choice of explanatory variables varies according to different model specifications based on different hypotheses. Various economic, political, social, and geographic factors have been considered relevant in explaining the variation in the degree of fiscal decentralisation. The major factors tested by the above studies as explanatory variables include some measures reflecting the level of

[40] In one of my PhD seminars, one member of the audience challenged Prud'homme's assertion by pointing out this phenomenon existed in several European countries in Middle Ages.
[41] Wasylenko (1987).

economic development, such as per capita GDP[42] and/or urbanisation ratio; some geographic factors, such as size of population, land area, cultural and racial diversities etc.; form of government system, federal or non-federal; and other variables, such as openness defined as the ratio of foreign trade to GDP, index of income inequality, etc. The justification of these specifications and the impacts of these factors on the variation in the degree of fiscal decentralisation, especially those reflecting the level of economic development, will be discussed in the rest of this section.

Researchers in this area usually choose main explanatory variables for their models based on the following theoretical hypotheses. Countries with higher per capita GDP are expected to be more decentralised. Fiscal decentralisation requires qualified personnel to carry out administrative and decision-making tasks at local level. Richer countries usually can provide such personnel much more easily than poor countries. On the other hand, people with higher income level may require more diverse public services, therefore, decentralised public goods provision becomes more attractive in satisfying people's wants.

Urbanisation ratio is also expected to have a positive influence on fiscal decentralisation. As population becomes more concentrated in the urban areas, the demand for local public goods, such as parks, museums, libraries, and so on, will certainly increase. The priorities of these demands across local communities may vary. For example, Community A may want a library, while Community B may

[42] There have been many arguments about how to measure the level of economic development. Per capita GDP is said not a good measurement. However, it is still widely used so far.

prefer a museum. The central government might assign more fiscal responsibilities to local governments to more effectively meet these diversified demands.

The size of a country, both in terms of population and land area, has a potentially positive effect on the degree of its fiscal decentralisation. This is, in certain ways, a fairly obvious point. A tiny country might adopt a single level government. Its DRs could therefore be equal to zero, since there is no lower level government at all. In a large country, there usually exists a multilevel government system. Even if the fiscal system is highly centralised, the DRs are greater than zero. Many types of public services have important economies of scale. In a small country, its local units might be too small to attain economies of scale. In such instances, a centralised public goods provision system might be more economical than decentralised system. In a large country, its local units may be large enough to effectively exploit the economies of scale. Therefore, fiscal decentralisation becomes more feasible.

Some researchers hypothesise that higher income inequality may lead to lower degree of fiscal decentralisation, because they believe that centralised fiscal activities are more effective than decentralised activities in the redistribution of income, especially in cross jurisdiction redistribution of income.

Among the eleven published studies, five are specifically related to the USA using cross-state data to examine the factors that determine the degree of fiscal

decentralisation across states in the USA.[43] Since state-local fiscal relation is not the major concern of this current study,[44] these US-specific studies are of limited relevance. Therefore, only the six remaining studies will be discussed below. Among the six, two used data set covering samples of developed countries only;[45] while the other four employed data from both developing and developed countries.[46] All six studies reported similar results on the effect of factors reflecting the level of economic development on the degree of fiscal decentralisation. Most of them identified a significantly positive impact. A summary of their key findings are given in Table 2.1 in this chapter.

Prommerehne (1977) found, on the basis of data from six industrialised countries, that countries with higher per capita GDP and larger population size were more decentralised, while countries with a more unequal distribution of income were more centralised. Patsouratis (1990) employed a data set containing time series data from 11 EEC (European Economic Community) countries covering the period 1960-1986. He found that in the majority of EEC countries, per capita income and population size were positively related to the degree of fiscal decentralisation, while the effect of population density was not significant.

Oates (1972) used mid-1960s data from 58 developed and developing countries in his study, and found that countries would be more decentralised if their

[43] See Pryor (1967), Giertz (1976), Mullen (1980), Giertz (1983), and Wallis and Oates (1988).
[44] As mentioned before, the major interest in this study is on the central-provincial fiscal relation in China, which is equivalent to the Federal-state fiscal relation in the USA or Commonwealth-state fiscal relation in Australia.
[45] Prommerehne (1977), and Patsouratis (1990).

per capita GDP were higher and population size larger. He also tested a set of dummy variables as proxies for some demographic, sociological and political factors, and found that geographical sectionalism and the federal form of government setting in a country contributed to more decentralisation.

Kee (1977) studied fiscal decentralisation issues in a cross-section setting of 64 countries in 1968. He examined the factors affecting fiscal decentralisation by using two samples: the first one was a 64-country sample containing both developed and developing countries; the other one was a sub-sample containing 45 developing countries only. He found that the factors which contribute to the explanation of the variation in fiscal decentralisation were somewhat different in developed group and developing group. From the whole sample, he found countries were more decentralised when they had higher intergovernmental transfers from central to local governments, more urbanised, higher per capita GDP, and when they were organised as federalist form of governments. From the developing-country-only sub-sample, the results were slightly different. The effects of intergovernmental transfers and urbanisation remained the same, and the degree of openness of an economy (defined as a share of total foreign trade value in GDP) was inversely related with decentralisation.[47] In contrast, the effect of per capita GDP became statistically insignificant. Kee noticed that there was a high correlation between the urbanisation

[46] Oates (1972), Kee (1977), Bahl and Nath (1986), and Wasylenko (1987).

[47] Kee(1977) did not include a "size" variable in his regression equation. However, he reported, in Footnote 11 on Page 95, that his "openness" was negatively correlated with population size. That implied, if population size was in the equation replacing openness, it would have derived a positive sign of its coefficient. According to this explanation, a negative effect of openness on the degree of fiscal decentralisation from his model is similar to a positive effect of population size from other researchers' models.

and per capita GDP in his developing-country-only sub-sample, and this problem might be the reason for the lack of statistic significance of the coefficient of per capita GDP. Bahl and Nath (1986), and Wasylenko (1987) also reported the same problem.

In order to correct the problem of multicollinearity, Bahl and Nath (1986) employed a factor analysis on the explanatory variables, by combining per capita GDP, urbanisation and a developed-country dummy into a factor reflecting "development" effect, while population size and a federal form government dummy into another factor reflecting the "size" effect. They used 1973 data from 57 countries, including 23 developed and 34 developing countries, and run regressions separately on the whole sample and two developed- and developing-country-only sub-samples. They regressed DR on the two factors along with three other variables: a share of defence spending in the total government expenditures, a low-income-country dummy, and a ratio of central government revenues to GDP. The results from the three samples were quite similar. The development and size factors exerted positive and significant effects on fiscal decentralisation for all the three samples. The share of defence spending showed negative and significant effect on fiscal decentralisation for the pooled sample and the developed-country-only sub-sample, and its effect from the developing-country-only sub-sample was still negative but not statistically significant. The low-income-country dummy gave negative coefficients, as they expected, but insignificant in either the pooled sample or the developing-country-only sub-sample. (Of course, there was no low-income country in the developed only group.) The last regressor, the ratio of central government revenues to GDP did not give significant effect on fiscal decentralisation in all three samples.

Wasylenko (1987) employed 49 countries (24 developed and 25 developing) data in 1980. In his regression, he chose six independent variables: per capita GDP, urbanisation ratio, federal government form dummy, openness of economy, population size, and land area. The results from his study suggested that per capita GDP and federal structure dummy had significantly positive effects on the degree of fiscal decentralisation, and openness of an economy have significantly negative effect. Different from most of other studies, he found that there was no significant effect of country size (population and land) on fiscal decentralisation. The effect of urbanisation was not significant in his regressions, as he explained, partly due to its collinearity with per capita GDP.

Multicollinearity has been a problem. Both per capita GDP and urbanisation are variables reflecting the stage of economic development. In certain stage of development, urbanisation is accompanied by per capita income rise. As a result, correlation between these two variables might be very high in some data, especially for developing countries. Wasylenko (1987) criticised Bahl and Nath (1986)'s factor analysis, as they put per capita GDP and urbanisation ratio into a combined factor, thus unable to obtain statistical result for each of them. But he invited even more criticism by putting the two problematic variables together in a single equation. In this author's view, if per capita GDP and urbanisation ratio are tested to be highly statistically correlated to each other, only one should remain in the regression equation, since both of them are reflecting the same thing - the stage of economic development. There is no need for putting them together to form a combined factor,

and it is inappropriate to put them side by side into a single regression equation. There might be another similar problem of multicollinearity in Wasylenko's model, where he put population size, land area, and openness together in one equation. Both population size and land area reflect the "size" effect, and are usually more or less positively correlated to each other, depending the sample composition. The possible negative correlation between a country's size and its degree of openness is well documented.[48] Obviously, the usefulness of his model is questionable, since five out of six of its explanatory variables are possibly problematic. If the model could be respecified, it might produce different results. More logical outcomes might be like this, a variable reflecting the stage of economic development, a variable reflecting country size, and a federal government structure dummy, all could have significantly positive effects on the degree of fiscal decentralisation. (If there was a variable reflecting the degree of openness instead of the size variable, it would probably have generated a negative coefficient.)

All the above mentioned empirical studies agree that the level of economic development of a country, measured by per capita GDP or urbanisation ratio, is an important determinant of the degree of fiscal decentralisation. This can be seen in Table 2.1 which summarises the major findings from the above discussed studies (excluding Bahl and Nath, 1986).

[48] For example, see Kee (1977).

Table 2.1. Key Results of Studies on the Determinants of Fiscal Decentralisation

	Per Capita GDP	Urbanisation Ratio	Population Size	Federal Dummy
Oates (1972)	+ve[a]		+ve	+ve
Kee (1977) I[b]	+ve	+ve		+ve
II[c]	insignificant[d]	+ve		insignificant
Prommerehne (1977)	+ve		+ve	
Wasylenko (1987)	+ve	insignificant[e]	insignificant[e]	+ve
Patsouratis (1990)	+ve		+ve	

Sources: Oates (1972), Kee (1977), Prommerehne (1977), Wasylenko (1987), and Patsouratis (1990).

Notes: a) The sign "+ve" in this table means positive and significant.
b) Kee's all country sample.
c) Kee's developing-country-only sub-sample.
d) According to Kee (1997), the insignificance might be caused by the correlation between per capita GDP and urbanisation ratio in this sub-sample.
e) There are some multicollinearity problems in this model. Per capita GDP might be positively correlated with urbanisation ratio, and population size might be positively correlated with land area and negatively with openness index. Land area and openness are not shown in the table, but were in Wasylenko's regression equations. The insignificant coefficients might be the results of the problems.

Although subject to some limitations of model specification, previous studies have shown that a country's degree of fiscal decentralisation may be higher, if a) its level of economic development is higher, b) its size is larger, and c) its government system takes federal form. Since the major purpose of this study is about the relation between fiscal decentralisation and the Chinese economic development, it pays more attention to the effect of level of economic development, especially level of per capita GDP, on the degree of fiscal decentralisation. The empirical tests on the samples

containing both developed and developing countries or developed countries only indicate that the effect of per capita income on the degree of fiscal decentralisation is positive and significant. The fact that more developed countries have more decentralised fiscal assignments, is widely documented.[49] Economic theory can explain why higher per capita GDP should lead to more fiscal decentralisation. This is because: a) higher level of economic development should mean that the local governments have a larger pool of skilled personnel to deliver local services; and b) a population with higher income would demand a more diverse mix of local public goods.

In some econometrical tests on the developing-country-only sample, such as in Kee (1977), the effect of per capita GDP on the degree of fiscal decentralisation becomes insignificant. The problem of sample sensitivity needs further investigation. There are three possible explanations. First, the problem of multicollinearity in the model should be better dealt with. Given that both per capita GDP and urbanisation ratio are variables for measuring the level of economic development, and that they are highly correlated to each other in some developing-country-only data, they should not be in the same regression equation. By dropping one problematic variable from the regression equation, the effect of the level of economic development on fiscal decentralisation would be better estimated. Second, there might be some threshold effect on fiscal decentralisation as suggested by Bahl and Nath (1986), that is, a country must reach a certain per capita GDP level before the demand for fiscal decentralisation begins to respond to increasing income level. If the level of the

[49] Oates (1993).

threshold is homogenous across countries, it will be easy to find. However, it is more likely to vary across countries, because of different historical and political institutions. This suggests the third reason, that is, different countries at the same per capita income level may make very different choices on the degree and pattern of fiscal decentralisation, based on their own historical, social and political situations.

In summary, the existing literature suggests that the determination of the degree of fiscal decentralisation in an economy is a very complicated issue. Not only does the stage of economic development have an effect, many other economic, political, social, and geographic factors also exert influences. Generally speaking, higher level of economic development (higher per capita GDP or higher urbanisation ratio), larger population size and land area, and greater cultural and racial diversities lead to higher degree of fiscal decentralisation; while higher regional income inequality contributes to higher degree of fiscal centralisation. In examining China's fiscal decentralisation, the above points should be borne in mind. If we check these factors in China, we will find that China is still at her early stage of economic development, whether measured in per capita GDP or urbanisation ratio; there exist significant regional income distribution differentials; China is one of the largest countries in term of land area; and finally, China has the largest population in the world with significant cultural and racial diversities across geographical regions. Some of these factors are in favour of decentralisation, but others in favour of centralisation. More discussions on the relevance and applicability of fiscal decentralisation theory in China will be presented in Section 3.7 of Chapter 3.

Chapter 3

Fiscal Decentralisation: Theory and Evidence

Fiscal decentralisation has become a contentious topic among economists around the world in recent years. Many countries, both developed and developing, have engaged in various decentralisation programs.[1]

In this chapter, Section 3.1 will start with an introduction of the basic fiscal decentralisation theory - Decentralisation Theorem. It will investigate its generalisation from a static setting to a dynamic context, and from applications in industrialised economies to all country groups including developed and developing countries. Section 3.2 and 3.3 will discuss several key theoretical arguments, in favour of or against the basic theory. Section 3.4 to 3.6 will turn to some policy related questions about possible consequences of fiscal decentralisation on macroeconomic performances, including its impacts on economic growth, its contribution to macroeconomic stability, and its effects on regional income distribution. And lastly, Section 3.7 will briefly discuss the relevance and applicability of fiscal decentralisation theory in China.

[1] The theoretical basis of many kinds of decentralisation programs can be found in the Decentralisation Theorem advanced by Oates in 1972. See Oates (1972).

3.1. The Decentralisation Theorem and Its Generalisation

Oates's Decentralisation Theorem is based on two considerations. First, not all public goods have similar spatial characteristics. Some public goods, such as defence, benefit the whole nation; while others, such regional transportation system and forestry services, benefit regions; still others, such as local bus and street lighting, benefit only cities or particular districts. Second, residents in different regions may have different preferences for public goods. Thus the supply of public goods should be differentiated to fit the different requirements of different regions. A centralised government might not be well informed about these diversified preferences, and would thus only supply a uniform package to all regions. For a particular service, this one-size-fit-all approach might cause trouble: in some regions it might be over supplied; while in other regions it might be in shortage. In both cases, welfare losses occur. By contrast, a decentralised system might produce much better results. The idea of the Decentralisation Theorem is that decentralisation is more efficient if it can deliver more diversified public goods to meet different preferences of resident groups living in different regions.

Oates's basic theoretical argument depicts the potential efficiency gain from decentralised public goods provision. It can be applied to stabilisation policy if the preferences for some macroeconomic variables of resident groups in different regions differ. For example, in some regions, people may be very concerned about inflation; while in other regions people would prefer priority be placed on lower unemployment rate. Similarly, this idea can be applied to redistribution policy as well. For instance,

in Australia, Queenslanders might prefer higher assistance for the long-term unemployed; while Canberrans might prefer higher assistance for the new starters. Although the basic theory was advanced with reference to the conditions in industrialised economies, it may be generalised to be applied to developing countries. Theoretically speaking, two more important questions need to be addressed.

The first question is about the generalisation of the Decentralisation Theorem from a static setting to a dynamic setting of economic growth. Oates believes that although the Theorem has been developed mainly in a static context, the trust of its basic argument should also have some validity in a dynamic setting of economic growth.[2] He strongly believes that, in principle, policies formulated for the provision of infrastructure and even human capital that are based on regional conditions are more effective in enhancing economic growth than those centrally determined policies that ignore some important interregional differences. So far, there has been no formalised theory of such a relationship between fiscal decentralisation and economic growth. This question remains an empirical one.[3]

The second question is closely related to the first one. The Theorem is originally developed with reference to developed market economies, is it applicable in developing countries as well? The Theorem is based on the premise that local governments are responsive to the welfare of their respective constituencies. This

[2] Oates (1993).
[3] See Oates (1996) and Davoodi and Zou (1996). Their preliminary results will be discussed in Section 3.4 of this chapter.

responsiveness requires a) politically, local governments are not corrupted[4] and local democracies are well-functioning, and b) economically, local governments have their independent sources of incomes and local revenues are mainly from some solid local taxes, such property tax and user fees. If any of these conditions cannot be met, then the potential gain from decentralisation may only be partially realised.

3.2. Other Arguments for Fiscal Decentralisation

There have been some other arguments in favour of fiscal decentralisation.

- Some public finance economists argue that a decentralised system can bring some allocative benefits to the public sector through competition among jurisdictions, similar to the fact that free market competition brings efficiency gains to the private sector.[5] Tiebout's famous "voting with their feet" model is an example.[6] In his model, each individual is assumed to be free to select a jurisdiction to live, according to his/her private preference, consume the public goods provided by the local government and bear the cost in terms of tax. Behind the movement of people, there is competition among local governments in providing better local public goods at lower costs (taxes). In an ideal condition, this will lead to a situation where the benefit from consuming the public goods equals the cost - an economic condition for a Pareto optimal solution.

[4]More precisely, this condition can be restated as that the local governments are at least not more corrupted than their central counterpart.

- A decentralised system makes it easier for policy changes. Under a centralised system all regions carry out a unified policy (say health care policy). It will be very difficult to change to a better alternative since there is little chance for experimentation. By contrast, under a decentralised system, different regions can carry out different policies; when some better alternatives appear, they can be experimented in a small number of regions first; if the experimentation is successful, the best policy can then be popularised to other regions. Thus, this kind of policy experimentation makes a policy shift easier, and the best policy can be chosen.

- Decentralisation can make the decision-makers closer to the outcomes of the decisions made by them, thus to have stronger incentive to perform better. As the direct bearer for the cost of providing local public services, a local authority will be more likely to seek a cost-efficient way to provide the services. The local officials will be praised for success and blamed for failure. Since they are elected by local residents, the success or failure will be linked to the future of their careers; they will therefore have a greater interest to do their best. This accountability brings more responsibility to local officials and motivates them to work harder.

- Decentralisation is believed by some public finance economists to have an effect on reducing the size of the public sector.[7] In many countries, very large public sectors are considered wasteful and inefficient.[8] Grossman (1992) pointed that between 1950 and 1984, the total public sector size in Australia increased by about

[5] For discussions on this point, see Israel (1992).
[6] Tiebout (1956).

50%; and this pattern of public sector size growth took place in most developed market economies.[9] In this situation, fiscal decentralisation is desirable, if it can cut public sector size and lead to a more efficient national economy.

3.3. Counterarguments

Since the Decentralisation Theorem was advanced in the early 1970s, there have been some counterarguments. The major arguments against fiscal decentralisation are outlined here.

- The quality of local officials and the level of public finance management skills of local authorities are very important conditions for the success of decentralisation programs. Lack of highly qualified individuals is a problem for many countries, especially for developing countries, where the central bureaucracies could offer better career opportunities than their local counterparts in attracting more qualified personnel. Lack of skilled staffs is one of the reasons decentralisation works less well in several African countries.[10] Fiscal decentralisation means that a larger part of public financial management is transferred to local authorities. Lack of public finance management skills of the local authorities may contribute to further reduction of potential gain from fiscal decentralisation. Although the local authorities can build up their skills from learning by doing, it takes time.

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[7] Brennan and Buchanan (1980), and Ehdaie (1994).
[8] See Chapter 5 of this thesis.

- Local democracies and the absence of corruption are also important for achieving a successful decentralised system. The basic presumption behind the decentralisation arguments is that local democracies are in place and working. If they are not in place or do not function well, the case of decentralisation becomes much weaker. Corruption is a related issue, since it is an important factor affecting the functioning of local democracies. Corruption is a problem at all levels of governments and more or less in almost any country. The question here is - is it more serious at local level than at national level? This question has not been answered by either theoretical nor empirical analysis. Some observers consider that corruption might be more common at the local level than at national level, especially in developing countries.[11] However, there is another question which is more difficult to answer - is the damage caused by a corrupted central government minister greater or smaller than the combined damages caused by several corrupted provincial governors? Nevertheless, the corruption issue could potentially affect the realisation of the economic gain from fiscal decentralisation.

- Increasing mobility of residents may cause some extrajurisdictional externalities. For example, a very good hospital financed by a local government might be too crowed with a large share of patients from other regions. This sort of spillover problem will be more serious when mobility is rapidly increasing due to the improvements in transportation and information technologies.

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[9] Grossman (1992).
[10] Such as Ethiopia, see Prud'homme (1995).

- Technological progress itself can shift people's needs for public goods and may change the spatial characteristics of some public goods. A classical example is the building of big clocks by city authorities in the past to provide information about time for city residents. This kind of public service is no longer needed nowadays. On the other hand, public needs for crime prevention and pollution control have become more important. In either of these two cases, intergovernmental cooperation and coordination are crucial.

3.4. Impacts on Economic Growth

Section 2.4 noted that the level of economic development is an important determinant of the degree of fiscal decentralisation. As pointed by Oates, the growth of the local public sector may be seen as largely the result of economic development.[12] When economies mature and incomes rise, the economic gains from fiscal decentralisation emerge. From this perspective, fiscal decentralisation is a "result" not a "cause" of economic development. This is from a historian's point of view. For the relation between fiscal decentralisation and economic development, this is only one side of the story. On the other side, from an economic policy maker's point of view, fiscal decentralisation as an important policy measure may have some effects on economic development. The whole story is more likely a complex outcome of the interplay of a variety of forces that accompany economic growth. Section 3.4 to 3.6 will examine the other side of the interplay, ie the possible impacts of fiscal decentralisation on

[11] See Tanzi (1996).
[12] Oates (1993).

economic growth, its contributions to macroeconomic stability, and its effects on regional income distribution.

According to Oates's Decentralisation Theorem, fiscal decentralisation can enhance allocative efficiency by providing a menu of local outputs that reflects the varying preferences and conditions in local jurisdictions. This is the economic rationale behind all the decentralising policy recommendations. However, the Theorem was originally set up in a static setting with reference to the conditions of industrialised economies. The basic theory might be generalised to become valid in a dynamic setting and applicable in developing countries. Since the issue of the impacts of fiscal decentralisation on economic growth is more important for developing countries, this section will discuss the validity of the Theorem in developing countries.

To investigate the question of the validity of the Decentralisation Theorem in developing economies, we need to discuss what the assumption of the Theorem is and what the conditions of the assumption are. The Theorem is based on the presumed responsiveness of local governments to the welfare of their respective constituencies. To ensure the existence of this responsiveness, certain conditions are essential. Political conditions are a) local governments should be not corrupted, or at least not more corrupted than their central counterpart, and b) local democracy should be well-functioning. Economic conditions are a) local governments should have their independent sources of revenues, and b) local revenues are mainly from "good" local

taxes, such as the property tax and local user fees.[13] Obviously, these political and economic conditions are not easily met in a developing country. If some of these conditions are not met, the case of fiscal decentralisation may become weaker. If these conditions are readily available in a country, then the potentially positive impacts of fiscal decentralisation on economic growth can be expected. In addition, to realise this potential, the decentralising program needs to be well designed and correctly implemented by qualified officials.

Although theoretical analyses lead to the conclusion that fiscal decentralisation may enhance economic growth through more efficient allocation of resources, systematic empirical evidence in support of this conclusion has been scarce. There have only been a couple of working papers reporting findings in this area.[14]

Some preliminary findings about a significant positive effect of fiscal decentralisation on economic growth were reported in an ongoing research performed by Sang Loh Kim (a Ph D candidate) and Professor Oates at the University of Maryland.[15] Their study extended the basic growth model of Barro and Sala-i-Martin (1992) [16] to incorporate measures of fiscal decentralisation and fiscal structure. The extended growth model included a measure of fiscal decentralisation (expenditure decentralisation ratio) and a measure of self-reliance of sub-national government (own revenue as a share of total sub-national public revenue) in the explanatory variables,

[13] The term of "good" local taxes means that those taxes are not subject to any sharing arrangement, and local authorities have enough information on and necessary means to collect them. See Bird (1986) and Oates (1993).
[14] Davoodi and Zou (1996), and Oates (1996).
[15] Oates (1996).

together with the usual contributors to growth, such as investment in physical capital, education (representing investment in human capital), labour input, and a measure of existing GDP (for testing the convergence hypothesis). Using a sample of forty countries, the study employed the extended growth model to explain the growth in GDP per capita over the 1974-1989 period. The basic results for the standard variables from this cross-section study were similar to other studies. What is interesting is the significant and robust positive influence of fiscal decentralisation on per capita economic growth revealed by the extended growth model. After controlling for the other standard variables in the equation, the model showed that countries with greater degree of fiscal decentralisation experienced significantly higher rates of per capita economic growth. The effect of the other new variable, the self-reliance ratio, was not significant, but its first difference yielded a significant coefficient, suggesting that countries where sub-national governments moved toward greater revenue self-reliance over the 1974-1989 period achieved a higher rates of economic growth. According to Oates, this is still a work in progress, but its message is clear, ie fiscal decentralisation can make a positive contribution to economic growth.

Davoodi and Zou (1996), however, reported some different results.[17] They found that in terms of enhancing economic growth, fiscal decentralisation might work well in some countries but less well in others. They also employed an extended growth model to incorporate a measure of fiscal decentralisation to test how the degree of fiscal decentralisation might affect the long-run economic growth. By using

[16] Barro and Sala-i-Martin (1992).
[17] Davoodi and Zou (1996).

the model on cross-country data, they found that whether fiscal decentralisation could enhance economic growth or not, to certain extent, depended on the structure of government system. They divided countries in their whole sample into two groups: a group of countries with two-tier government systems and another group of countries with three-tier government systems. In the two-tier-government sub-sample, they found a statistically insignificant negative relationship between fiscal decentralisation and economic growth. Their finding is consistent with the argument in Section 2.4 of Chapter 2 of this thesis that the potential efficiency gain from fiscal decentralisation might be affected by the size of an economy. Since a country with a two-tier government system is likely to be an economically small country where its sub-national units may be too small to exploit economies of scale, while a larger country is more likely to adopt a fiscal system with three tiers or more.[18] For the countries with three-tier government systems, Davoodi and Zou called the three tiers as the central government, the state governments, and at the bottom - the local governments respectively. In the three-tier case, they pointed out that fiscal decentralisation could be the result of more state fiscal activities or more local fiscal activities. In the three-tier-government sub-sample, they found that fiscal decentralisation might enhance economic growth, but the positive effects might differ for developed countries and developing countries. In developed countries, greater degree of fiscal decentralisation might lead to higher economic growth rates, if the greater degree of fiscal decentralisation was mainly achieved as the result of the increase in state fiscal activities. In developing countries, however, the situation was different: fiscal

[18] For example, as a very large country, China has adopted a four-tier fiscal system. See Chapter 5 of this thesis for details.

decentralisation might enhance economic growth if the decentralisation was mainly represented by increasing fiscal activities at the local level of governments, rather than at the state level of governments.

Comparing the results from the ongoing study conducted by Kim and Oates and those from the work of Davoodi and Zou, one conclusion can be drawn, ie there may be some positive effects of fiscal decentralisation on economic growth in a country if its sub-national units are large enough to attain economies of scale in a decentralised system. The theoretical inference about the positive effects of fiscal decentralisation on economic growth therefore is conditional, and still needs more empirical tests. Studies in this field has just started. As will be discussed in Chapter 4, this thesis has found that the process of fiscal decentralisation in China during the 1978-1992 period was accompanied by a rapid economic growth.

So far in this section, only the direct effects of fiscal decentralisation on economic growth have been discussed. There may be indirect effects as well. For example, fiscal decentralisation can enhance economic growth through curbing the expansion of public sector size. The expansion of public sector size has happened in many countries, and is considered to be wasteful and inefficient by many economists.[19] In these cases, decentralisation is desirable because it is likely to be associated with a smaller public sector and therefore a more efficient economy. This is the basic idea of the Decentralisation Hypothesis originally advanced by Brennan

[19] For example, see Forte and Peacock (1985).

and Buchanan in 1980.[20] Since then, there have been several published studies presenting empirically tests of this hypothesis. Some early studies failed to find any supporting evidence.[21] Later, by using improved methodology, other researchers reported empirical evidence in support of the hypothesis.[22]

The published studies on the relation between fiscal decentralisation and public sector size have only used data collected from developed countries. The Chinese practice of fiscal decentralisation during the 1978-1992 period has provided a rare opportunity for testing this relationship in the context of a large developing country. Based on Chinese data, this thesis has found some strong empirical evidences in support of the Decentralisation Hypothesis. Chapter 5 of this thesis will investigate this issue further.

3.5. Contributions to Macroeconomic Stability

Fiscal decentralisation is believed by some economists to have adverse impacts on macroeconomic stability, at least in the short run.[23] The discussions in this regard are usually focused on the impact of fiscal decentralisation on budget deficits. In the traditional literature on fiscal decentralisation, especially those US-specific studies, the possible problem of budget deficits associated with economic cycles has been

[20] Brennan and Buchanan (1980).
[21] See Oates (1985), and Nelson (1987).
[22] See Marlow (1988), Grossman (1989), and Joulfaian and Marlow (1990). For detailed discussion on their results, see Chapter 5 of this thesis.
[23] Prud'homme (1995) and Hommes (1996).

discussed intensively.[24] In the context of the US fiscal federalist setting, the following conditions are usually assumed to exist.

- The state governments with clear expenditure responsibilities have been given the exclusive use of a relative robust tax bases from which they can finance a large part of their expenditures. And, for those shared tax bases, the federal government provides the state governments with relevant information on taxpayers or other technical assistance so that the state governments can effectively exploit these shared tax bases.

- The state governments are run by officials who are democratically elected, thus responsive to the preferences of their constituencies.

- The state governments are required by law to balance their budgets annually.

In this context, the state governments can not take an active part in pursuing macroeconomic stabilisation. In contrast, because they have to balance their budgets annually, they must raise taxes and/or cut spending during a recession and cut taxes and/or raise spending during a boom.

Some economists, however, have argued that under certain circumstances, sub-national government might be able to conduct some stabilising role.[25] For

[24] For a review on this point, see Tanzi (1996).
[25] Gramlich (1987).

example, in a large country, where a) business cycles may be not strongly correlated across regions because some regional economies depend on the price of particular commodities or some other regions have close links with their trade partners that experience unsynchronised cycles; and b) different regions have different preferences for macroeconomic variables, some preferring less inflation, others preferring less unemployment. Eichengreen (1992) pointed out that in the context of fiscal decentralisation the balanced-budget restrictions on the state governments had been associated with improvements in state fiscal accounts (larger surpluses or smaller deficits) in the USA.[26]

The above arguments are more or less related to the Keynsian countercyclical idea. However, in most developing countries and an increasing number of industrial countries, the basic macroeconomic need is not to deal with cycles, but to correct noncyclical fiscal imbalances. In this context, the basic issue then becomes the relationship between fiscal decentralisation and structural, rather than cyclical, budget deficits.

Hommes (1996) indicated that the experiences of a number of Latin American countries suggested that the impact of fiscal decentralisation on aggregated fiscal accounts during the transition from centralised to decentralised systems was largely negative.[27] The main reason is that it will take some time to develop strong budget institutions. During the early stages of the transition , the absence of appropriate

[26] Eichengreen (1992).
[27] Hommes (1996).

institutions might create a lack of fiscal discipline at the lower levels of governments, resulting in large fiscal deficits in the aggregate public sector budgets. This is an undesirable but probable result of fiscal decentralisation that must be corrected when it occurs. The intergovernmental institutions and mechanism to guide coordination between the central and the local governments need to be developed so that intergovernmental fiscal policy coordination can be effective and timely.

Whether fiscal decentralisation will aggravate the problem of fiscal deficits depends on how the decentralisation program is designed and implemented. Decentralisation can be based on a comprehensive contract between central and sub-national governments that spells out the sub-national governments' obligations, assigns them necessary resources to fulfil their responsibilities, and makes it explicit that they will not receive any fund additional to those set in the contract from the central government. This contract is important, and it will make the budgets for sub-national governments hard. If there exists no such firm legal guidelines, or if they are not well enforced in practices, then the increased fiscal autonomy of sub-national governments due to fiscal decentralisation may contribute to the aggravation of fiscal deficits. Tanzi (1996) pointed out that because of this reason the net debts of sub-national governments in Argentina and Brazil had reached such a high level that they had to ask their central governments for rescue.[28]

During the fiscal decentralisation process in China, contracts between central and provincial governments were adopted for revenue-sharing. Contractual revenue-

sharing arrangements were aimed at increasing incentive of provincial officials to work harder in local development as well as to collect revenues. However, this type of contracts are significantly different from the above-mentioned ideal contract between central and sub-national governments in several aspects.

First, until 1992, contracts for central-provincial revenue-sharing in China were the result of bilateral negotiations between the central government and individual provincial governments. The lack of consistency and uniformity of rules made the costs of negotiations very high in terms of both human efforts and time.

Second, since the contracts were individually negotiated, the whole system became very complicated, resulting in several different types of arrangements between the central government and different provinces at any time. According to Wong et al. (1995), there had been four distinctive revenue-sharing regimes from 1980 to 1992.[29]

Third, the contracts were not enforced by court. That means any problem raised during the implementation of those contracts would cause endless bureaucratic negotiation.

Fourth, the last but the most important, there was no clear delineation between central and provincial governments regarding fiscal responsibilities and resources. The main contents in a contract were about setting a sharing percentage point for the

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[28] Tanzi (1996).
[29] See Wong et al. (1995), and Chapter 4 of this thesis.

province's collection, ie what proportion of the revenue collected by the province should be sent to the centre and what proportion to be retained by the province. Because there was no national tax collection organisation to collect the central government's revenue, the central government still relied on the provincial tax bureaus acting as its agents to collect revenue income. Under this situation, as pointed out by Tanzi (1996), local governments might move toward higher spending or lower taxes.[30] In China, provincial and lower level governments usually gave tax concessions to local enterprises to promote local development.[31] This would certainly contribute to aggregate budget deficits.

As pointed by Wong et al. (1995), the Chinese total consolidated budget deficits of 3% of GDP in the early 1990s were underestimated; and if the deficit spending of SOEs that was financed by state-owned banks was taken into account, the total budget deficit could be as much as 8%.[32] The shortcomings of the contractual revenue-sharing system made some contributions to the total fiscal deficits. However, this is not the only reason, there have been other factors contributing to the problem of budget deficits, for example, contractual arrangements between enterprises and governments, huge losses made by SOEs, and excessive investment spending. Each of them is an important reason for the budget deficits. However, detailed discussions on them are beyond the scope of this current study, therefore left for future studies.

[30] Tanzi (1996).
[31] Bahl and Wallich (1992).
[32] Wong et al. (1995).

In summary, the contractual revenue-sharing system during fiscal decentralisation process may contribute to the total consolidated public sector deficits because of shortcomings within the system. Those shortcomings should be overcome in further reform, and will be discussed in Chapter 4 of this thesis.

3.6. Effects on Regional Income Inequality

Decentralisation, done badly, can cause problems. The most serious ones include negative impact on economic growth, macroeconomic instability and worsening regional income inequality. Having discussed the first two, the third one is addressed below.

Regional income inequality is a problem that occurs everywhere in the world.[33] This problem, as many people believe, is more serious in developing countries than in the developed world. Fiscal decentralisation may have some effects on regional income disparities. The issue that should be addressed here is whether a decentralised system is likely to be more effective in reducing interjurisdictional income disparities than a centralised system?

Prud'homme's answer is "no".[34] He argues that central government budgets tend to reduce regional disparities; fiscal decentralisation, by definition, is to reduce the share of central budget in the total public sector budget; so it will cause more

[33] There might be some exceptions, such as several city countries and small island countries.
[34] Prud'homme (1995).

regional disparities. His logic seems reasonable in the first glance. However, there are some problems in providing support for this argument.

First of all, to try to prove Prud'homme's statement, one might conduct a cross-country regression, by using a variable representing the degree of regional income inequality of a country as dependent variable and a centralised country dummy among other explanatory variables.[35] However, the dummy variable for centralised country might obtain a positive or negative sign for its coefficient; and the coefficient might be statistically significant or insignificant. No matter what the results are, they may be meaningless. Why? Because they depend purely on the sample composition. A regression using a sample containing many countries with high degree of regional income inequality and highly centralised fiscal systems would give different result to another one using different sample containing many countries with low levels of regional income disparities and highly decentralised fiscal systems. In reality, a country with a centralised fiscal system might still have larger regional income gaps than another country with decentralised fiscal system.

Secondly, it could be argued that, theoretically, a country with larger regional income gaps may choose a centralised system in order to reduce the gaps, since the central government fiscal activities may be more powerful than the regional fiscal activities. However in the real world and in a dynamic context, a centralised system may enlarge rather than reduce regional income disparities, and a decentralised system may lead to a more even regional income distribution. China is an example. During

the period between the mid-1960s and the end of 1970s, under a highly centralised fiscal regime, regional income differentials increased; after that period, from the end of 1970s to the late 1980s, under a much more decentralised fiscal arrangement, regional income gaps narrowed.[36] Whether a central budget can reduce regional income disparities or not depends not on its share in the aggregate public sector budget, but whether it contains an equalisation mechanism and the effectiveness of that mechanism. Chapter 6 of this thesis will present an empirical test of the significance of the mechanism in China's fiscal decentralisation process. A poorly designed decentralised system may enlarge regional income gaps, and a centralised system may do the same thing. Meanwhile, a well designed and well functioning centralised system can produce better results, but so can a decentralised system. Almost every design for fiscal decentralisation contains measures to reduce regional income disparities, it takes time for the mechanism function well.

Finally, the negative effect of fiscal decentralisation on regional income distribution, if it exists, might be short-term. During the early stages of the transition from a centralised system to a decentralised fiscal system, before the equalisation mechanism becomes well-functioning, regional income disparities may rise temporarily but fall in the long run, if there is a well designed equalisation mechanism within the new system.

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[35] The multivariable regression might be similar to those mentioned in Section 2.4, see Table 2.1.
[36] The actual moving direction (up or down) of regional inequality in a particular period depends on the combined effect of several factors, fiscal decentralisation is only one of them. For detailed discussion and empirical testing, see Chapter 7 of this thesis.

In relation to the original question we asked in the beginning of this section, ie whether fiscal decentralisation leads to greater regional income disparities, there is no easy answer. The correct answer is complex and conditional. Fiscal decentralisation may or may not bring about problems in regional income distribution. The outcome depends on how the decentralising program is designed and implemented. And, if the short-term negative effect is not avoidable, it can be resolved in the long run. Chapter 7 of this thesis will empirically examine the evolution of regional income inequality in China, and provide analyses on the effects of fiscal policy on regional inequality in general, and the impact of fiscal decentralisation on regional inequality in particular. Regional income inequality may of course be also affected by other macroeconomic forces and policies. The actual movement of regional inequality in a particular period will be the combined outcome of all contributing factors.

3.7. Relevance of Fiscal Decentralisation Theory to China

In principle, fiscal decentralisation can improve resource allocation at least within the public sector, hence increasing efficiency of the national economy; it can cut the public sector size to reduce waste in the whole economy; and it can make policy experimentation easier - this is a very important advantage especially for a transitional economy where policy changes during the reform era are essential. As a large country with one of the largest land areas and the largest population, and with great geographical, cultural and racial differentials among different regions, the potential efficiency gain from fiscal decentralisation in China can be substantial.

It is, however, not easy to bring the potential efficiency gain of fiscal decentralisation into reality. Fiscal decentralisation is no panacea and must be accompanied by other fundamental reforms as well as measures to curb its side effects. Those measures should be able to enhance the central government's ability to conduct effective and timely coordination between the central and the provincial governments, to ease the excessive competition among regions over natural resources, domestic and foreign investments, and to set up a strong income equalisation mechanism and make it work to achieve horizontal equity. In this regard, China is still at an early point along a long learning curve.

In the case of China, some of the fiscal decentralisation theories might be relevant, while others might not. For example, the so called "voting with their feet" model is hard to apply in China's current situation, since population mobility is still extremely low in China compared with western countries.[37] Nevertheless, given the large size of the population and the significant differences across regions, a centralised one-size-fit-all system of public goods provision is unlikely to be efficient. Fiscal power in China was highly concentrated in the centre before the current economic reforms, the provincial governments had limited autonomy to make fiscal decisions.[38] In the early 1980s, Chinese leaders decided to take some fiscal decentralisation

[37] Due to the household registration system and the food rationing system. Both systems were implemented in China in the 1950s. The former prevents people from moving away from the registered residential place without permission from relevant authorities. The major purpose of this system is to prevent rural population moving into cities. The latter was only applicable to urban residents. Food ration of any urban resident was supplied by the food authority of the place where the people registered with. This made unauthorised movement nearly impossible in urban areas. Food rationing system was abolished recently. The household registration system still remains. As a result, nowadays Chinses people's mobility has increased than before, but still very low compared with western countries.

measures in order to make a breakthrough for the entire economic reform.[39] After nearly two decades, significant changes have taken place in the Chinese fiscal system. The provincial governments are not merely subordinate administrative units of the central government - they have the power to make expenditures and collect own revenues. Officials of provincial governments now pay more and more attention to the local interest because they are elected primarily by the local people, not appointed by the centre like their predecessors.[40] Today's Chinese fiscal system can be described as multilevel finance, or so-called fiscal federalism, since it meets the basic conditions for fiscal federalism as discussed before in Chapter 2 of this thesis.

One important aspect of fiscal decentralisation in China is the contractual revenue-sharing system between the central and provincial governments. Chapter 4 of this thesis will discuss its evolution. However, the focus of this study is not on the detailed measures of the contractual arrangements, but its impacts on the fiscal system as well as the national economy, such as the impacts on public sector size, central-provincial fiscal relation, fiscal redistribution of income across regions, and regional income inequality. These will be the major tasks of the three empirical chapter of this thesis (Chapter 5 to 7).

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[38] This will be discussed in details in Chapter 4. See also Wong et al. (1995), Bahl and Wallich (1992), and Oksenberg and Tong (1991).
[39] Xiang (1990).
[40] See Shirk (1993).

Chapter 4

China's Macroeconomic Environment and Fiscal Reform: 1978-1992

This chapter tries to bridge the theoretical chapters on fiscal decentralisation (Chapter 2 and 3) and the empirical chapters (Chapter 5, 6 and 7). It starts with a brief review on the pre-reform economic situation in Section 4.1. Section 4.2 outlines the main reform process in the 1978-1992 period. Section 4.3 tries to analyse the major achievements and problems of the economic reform program. Section 4.4 discusses the goal of the fiscal reform, which is an integral part of the whole reform program. Section 4.5 reviews the evolution of the so-called contractual fiscal sharing system that is the key feature of decentralising fiscal reform during the period in question. Section 4.6 provides a brief summary.

4.1. The Chinese Economy pre-1978

When the People's Republic of China (PRC) was established in 1949, after eight years of anti-Japanese invasion war (1937-1945) and four years of civil war (1946-1949), it was an agrarian society with more than ninety per cent of its population living in rural areas.[1] Although a huge labour force was concentrated in agriculture, the output was poor. Modern industry was no more than a few recognisable islands in a vast ocean of agriculture and small handicraft businesses, mainly located in the coastal areas. From

[1] For references on the economic situation in the early years of PRC, see Liu and Wu (1986), Riskin (1987) and Minami (1994).

1949 to 1952, the Chinese economy recovered from the ruins of continuous wars. However, in 1952, the per capita GDP was still as low as 119 yuan; and this very low level of per capita GDP was unevenly distributed among regions.[2]

The ruling Chinese Communist Party (CCP) monopolised control over state affairs. All main social and economic policies were decided by a small group of high ranking CCP leaders. The CCP penetrated deep into every aspects of socioeconomic life. The high degree of centralisation of decision-making power coupled with deep Party penetration of the economy meant that this system was able to effectively focus national efforts on key goals, such as to achieve rapid industrialisation or launch a satellite, but it produced the same economic problems as in other centrally planned economies (CPEs), such as low economic efficiency and poor living standards.[3]

Before 1978, the Chinese economy was highly centrally controlled. The central government, under the leadership of the CCP, through the State Council and its associated ministries, commissions and bureaus practised comprehensive central economic planning. The State Council took charge of guiding economic development by drafting economic plans and budgets and monitoring their implementation. The Chinese central planners tried to make most of the decisions concerning production, employment, income distribution, consumption and investment. In the economic plans, production targets were assigned directly to SOEs (state owned enterprises) and indirectly to COEs (collectively owned enterprises) and rural production units.

[2] For example, in 1952, the per capita GDP was 57 yuan in Guizhou, less than one tenth of Shanghai's 640 yuan. All figures in this chapter are from SSB sources, unless otherwise advised.

Production inputs were distributed according to the plans. Prices of goods and services were set by the central and lower levels of governments with no reference to their relative scarcities or costs of production. Incentives of individuals were eliminated by the assignment of jobs, the lifetime employment and strict restrictions on labour mobility, resulting in low labour productivity. Service sectors were neglected. The financial sector was underdeveloped as was transportation, communication and domestic commerce. The problems were greatly exacerbated by the attempts at self-sufficiency which led to an inward orientation of the economy. Foreign trade was conducted by a few state owned foreign trade companies according to the economic plans without any reference to comparative advantage considerations.

In line with comprehensive central planning, the Chinese fiscal system before the reform was highly centralised. Fiscal power was exclusively concentrated in the hands of the central government.[4] China had pursued a forced-drift industrialisation policy through an expanding public sector.[5] As a result, flows of financial resources were highly centralised and restricted. The monobanking system merely acted as a cashier for the government, while SOEs had limited need of and access to bank credits. The state budget, together with the cash and credit plans determined the level and composition of the whole country's savings and investment. The principle of this sort of fiscal system was called "unified leadership, level-by-level management" (*tongyi lingdao, fenji guanli*).[6] According to Shirk's explanation, "unified leadership"

[3] Discussions on the common economic problems of CPEs, see, for instance, Kornai (1992, 1986 and 1980).
[4] Xiang (1990).
[5] Forster and Tam (1990).
[6] Shirk (1993).

meant that the central government strictly controlled provincial fiscal activities. "Level-by-level management" meant that the profits of enterprises run by central ministries went to the central government, and the profits of enterprises run by a lower level of governments went to that level of governments. Revenue flows were determined by the quasi-ownership relations between different levels of governments and the enterprises. If the revenue of a province was insufficient to meet its expenditure as determined by the centre, then the province was given a subsidy from the central government. If revenue from the economic activities of a province exceeded its expenditure need as defined by the centre, then the province remitted a surplus to the centre. Most provinces remitted funds to the centre. Only several very poor provinces received subsidies. Under this system, the central government relied on the provinces to collect central revenue, while retaining nearly all of the major fiscal decision-making power.

The Soviet-type central planning resulted in gross economic inefficiency for nearly three decades. The average annual per capita GDP growth rate from 1952 to 1978 was estimated to be 4%. The growth rate was remarkable, but it was achieved largely as the result of increasing the amounts of labour, capital and land employed, with little or even negative growth in factor productivity.[7] By the end of 1970s, the Chinese economic planners had realised that this sort of growth was not sustainable. Even before that, problems inherent in this economic system were partially recognised but not resolved by two cycles of decentralisation and recentralisation of economic control. Occasional moves to decentralisation by transferring some decision-making

power from the centre to the lower levels of governments without greater reliance on market forces produced poorly managed economic activities and disorders across regions. Thus, the decentralisation drives started in the mid-1950s and the mid-1960s all ended with recentralisation.[8] These failed attempts gave some lessons to the Chinese reformers that the problems could not be resolved within the framework of the old central planning system, and in order to resolve them they should break away from the centralised planning system and allow a greater role for the market mechanism to work. However, admitting the defects of the Soviet-type central planning system and having a clear program of reform are different matters. The Chinese economic reforms started in the late 1970s were likened to a person crossing a river who moves forward from stone to stone without a clear idea where the next one is since it is hidden under water. The unifying theme to the reforms was the move away from the old Soviet-type economy, to which it seems inconceivable that China will return.

4.2. A Brief Outline of the Economic Reforms during 1978-1992

The Chinese economic reform that began in the late 1970s has been following a gradual path with the main reform measures being implemented over a long period.[9] Tentative reforms began in nearly all sectors of the economy in the late 1970s, but in the early years the pace of advance was the fastest in agriculture. The People's Communes were abolished and replaced by the so-called Household Responsibility

[7] See Byrd and Tidrick (1987), and Perkins (1988).
[8] See Wong et al. (1995), Forster and Tam (1990) and Hsiao (1987).

System (HRS) which gave farmers increased autonomy in deciding the price and the composition of their output. The HRS first appeared in Anhui province by the end of 1978, then had been popularised through out the country at the end of 1983. The initial reform in agriculture was very successful. Between 1978 and 1984, the output value of the agricultural sector grew at a rate of 7.4% annually, and grain output at 4.8%. Both rates were much higher than the growth rates of 2.9% and 2.4% achieved during the pre-reform 1952-1978 period.

Along with the agricultural reform, trials for SOEs reform, fiscal reform and foreign trade reform started in 1979 and 1980. Trials for SOEs reform first took place only in Beijing, Shanghai and Tianjin, soon extending to other major cities. In early 1980, the Chinese reformers implemented a new fiscal system, which is much more decentralised than the previous highly centralised arrangement. That is the so-called contractual revenue sharing system.[10] Since the beginning of the economic reform, there have been various system changes that took place in the Chinese financial system and a number of new financial institutions were set up. However, until 1992, fundamental reform of the financial system had not been significant and had not kept with the demands that came with the entire reform process.[11]

In certain respects, one of the greatest changes in China's political economy since the beginning of the economic reform was in the attitude towards foreign investment. The shift towards an open economic policy away from the previous

[9] For general discussions on the Chinese economic reforms, see Brosseau et al. (1997), Ash and Kueh (1996), Chai (1994) and Riskin (1987).
[10] See Section 4.5 of this chapter for more discussions.

isolation took a big step forward with the 1980 Law on Chinese Foreign Joint Ventures. This law and other related laws that followed were intended to encourage foreign investment. Initially, foreign direct investment was isolated from the rest of the economy in the four special economic zones (SEZs).[12] The door for foreign direct investment to China was quickly opened wider and wider. In 1984, the Chinese government designated a group of 14 open coastal cities. Following that, most inland areas were opened to foreign investment gradually. In 1980 China resumed its membership of the International Monetary Fund and the World Bank. These steps were important in terms of both wider access to foreign capital and flows of policy advice from these international institutions to the Chinese government.

A radical shift also occurred in China's attitude towards foreign trade, from treating it as a buffer of domestic production to recognising its enormous contribution to economic development. A number of measures were taken to enliven the over-centralised administration of international trade so that more direct linkage between domestic enterprises and foreign trading partners could be established. Alongside some degree of decentralisation in international trade administration, the Chinese government began to permit exporting enterprises to retain a proportion of the foreign exchange earned from exports.[13] Moreover, the increased role of market forces within the domestic economy encouraged enterprises to take advantage of opportunities to profit from international trade.

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[11] Tam (1995).
[12] They are Shenzhen, Zhuhai, Shantou and Xiamen.
[13] Before the reforms, they had to hand over all the foreign exchange to the government.

Reform of the industrial sector has proved more difficult than agricultural reform. When China's economic reform began in the late 1970s, nearly 80% of the value of industrial output was produced by SOEs,[14] so that improving their efficiency was of central importance to the overall success of the whole reform process. A series of reform measures were implemented during the 1978-1992 period. The overall objective of these measures was to increase autonomy of SOEs, and to raise the efficiency of SOEs through increased incentives from both enlarged autonomy and competition in the marketplace. During its early stage of the reform, the Chinese government adjusted internal organisations of SOEs, then allowed them to retain part of the profit they made and gave them certain decision-making power to increase their incentive, while making some adjustment in industrial relative prices in an attempt to bring prices closer in line with costs of production in different industrial sectors. The purpose of these measures was to increase incentives of SOEs so they could become more competitive in the market. However, partial adjustment in relative prices did little in this regard. The whole price system was so distorted that, before the fundamental price reform took place, profit was a poor indicator of enterprise performance. In reality, the profit retention scheme became the subject of protracted bargaining between an enterprise and its supervisory authority. The managers of SOEs paid more attention in the bargaining process to obtain a better contracted profit retention share than in the improvement of management to raise profit through cost-cutting.[15] Then in 1982 and 1983, several attempts were made to circumvent these difficulties by substituting a series of taxes for profit sharing. Again, these measures

[14] See Table 4.1.

[15] For discussions of issues relating to Chinese SOE management and corporate governance, see Tam (1995) and Child et al. (1994).

only brought about limited improvement, since enterprises faced unequal market conditions caused by the irrational price system. In practice, the crucial tax was the so-called adjustment tax which itself became the subject of protracted bargaining.

By the mid-1980s, the Chinese reformers had realised that the SOEs reform could not succeed without a thorough price reform. Price reform became the key to the success of the entire reform process. Actually, price liberalisation started earlier when the Chinese government first abolished the control over some minor commodities in 1982, then in 1983 and 1984 was gradually extended to most industrial consumer's goods. A considerable reduction in the extent of state price control occurred in 1985 when price liberalisation was applied to some important producer's goods such as steel and building materials. However, there were fears that an overnight elimination of price control in a system where prices were determined with little reference to supply-demand conditions would produce chaos. Accordingly, a "dual track" system was introduced. Firms were permitted to set prices according to market conditions for above-quota products, but had to sell products at regulated prices for within-quota outputs. This dual track pricing had both positive and negative effects on the national economy. On the one hand, it could stimulated production for some important commodities in shortage to improve the market balance. On the other hand, the Chinese practice proved that this system was very difficult to manage and illegal trading became inevitable. Along with the deepening of the entire economic reform, dual track pricing disappeared through the gradual and steady price reform. By 1992, the market mechanism played the major role in

determining commodity prices.[16] From 1978 to 1992, government mandatory pricing in retail sales had been reduced from 97% to 10%, in retail sales of agricultural and sideline products from 94.4% to 15%, and in sales of production materials from 99.7% to 20%.[17]

When the price reform was making progress, the SOEs reform went further. The emphasis has shifted to the separation of management from the state ownership. From the mid-1980s onwards an increasing number of small SOEs either contracted out or leased to collectives or individuals. There had been many trials on how to reform large and medium-size SOEs. Among them, the joint-stock company was a hopeful experiment. By the end of 1980s, a number of SOEs had been transformed into joint-stock companies, whose stock might belong to the state, other enterprises or individuals. In these companies, asset relations are no longer ambiguous, and each shareholder is responsible for profit and loss.[18]

Another very important aspect of the reforms was to make it easier for local government, collectives, and even individuals to set up their own firms. There was a rapid growth in the number of such firms in response to the new flexibility. The output of collective-owned enterprises (COEs) grew at an average annual rate of 19.3% from 1978 to 1992. As shown in Table 4.1, the share of COEs in the total industrial output rose from 22.4% to 38%, and the shares of individual-owned enterprises (IOEs) and the "others" rose from negligible to 6.8% and 7.11%

[16] Harrold and Lall (1993).
[17] By the end of 1992, dual track still existed, especially in factor prices, such as interest rates and foreign exchange rates.

respectively.[19] By putting the above three categories together, the share of non-state sector in the total industrial output rose from 22.4% in 1978 to 51.9% in 1992. In contrast, the share of SOEs declined steadily from 77.6% to 48.1%. Furthermore, the non-state owned sector became so important in the Chinese economy by 1992 that its contribution to the industrial growth already reached as high as 67.5%.

Table 4.1. Composition of China's Total Industrial Output by Ownership, 1978-92

Year	State	Non-State			
		Sum	Collective	Individual	Others
1978	77.63	22.37	22.37	n.a.	n.a.
1979	78.47	21.53	21.53	n.a.	n.a.
1980	75.97	24.04	23.54	0.02	0.48
1981	74.76	25.24	24.62	0.04	0.58
1982	74.44	25.56	24.82	0.06	0.68
1983	73.35	26.64	25.74	0.12	0.78
1984	69.09	30.91	29.71	0.19	1.01
1985	64.88	35.14	32.08	1.85	1.21
1986	62.27	37.73	33.51	2.76	1.46
1987	59.73	40.28	34.62	3.64	2.02
1988	56.80	43.21	36.15	4.34	2.72
1989	56.06	43.93	35.69	4.80	3.44
1990	54.60	45.39	35.62	5.39	4.38
1991	52.94	47.06	35.70	5.70	5.66
1992	48.09	51.91	38.04	6.76	7.11

Source: SSB: Statistical Yearbook of China, various issues.
Note: Shares are calculated on current prices.

[18] See Tam (1995).
[19] In Chinese statistics, the category of the "others" here refers to joint-venture firms and foreign owned firms. The ownership of the so-called joint-venture firms is complicated. Each partner of such a firm could be a foreign company, foreign individual, or a domestic SOE, a COE, an IOE, a family, or even an individual. Part of the capital of firms in this category is from the state. However, the joint-venture character makes them operate in the same way like COEs and IOEs subject to market conditions.

4.3. Consequences of the Economic Reforms

This section first outlines the major achievements of the economic reform program during the 1978-1992 period in Sub-section 4.3.1, then turns to the problems occurred during the same period in Sub-section 4.3.2.

4.3.1. Achievements

During the 1978-1992 period changes in China's economic institutions greatly increased competition, shifted resource allocation and facilitated the working of market mechanism. Although the transition to a full-scale market economy was still in process by the end of this period, the Chinese economy had moved away from the Soviet model to a position closer to a market economy. This movement was reflected in an accelerated overall growth rate and a much altered growth pattern. The average annual growth rate of per capita GDP rose to 7.86% (1978-1992) from previous 4.05% (1952-1978).[20]

In certain respects, changes in the growth pattern are more impressive than the overall acceleration in the growth rate. Compared with the pre-reform period, the growth in the reform years was more balanced. Under the influence of the Soviet strategy to develop heavy industry first, there were three key features in pre-reform

[20] GDP growth rates are from SSB sources. As pointed by Khan and Riskin (1998), they might be overestimated since the implicit GDP deflator is underestimated. This study will discuss this issue further to see its effect on regional inequality index estimation. As will be discussed in later chapters of this thesis, we can find the direction of the bias, but to find the magnitude of the bias is a huge project, beyond the scope of this study.

growth pattern: a) agricultural growth lagged far behind industry; b) service sector growth lagged behind overall growth; and c) within industry, heavy industry grew faster than light industry.[21] This growth pattern sharply changed in the reform years. Table 4.2 shows the comparison of major sectoral growth rates pre- and post-1978. During the reform years, industry grew at about the same rate as before. In contrast, agricultural grew at a remarkable average annual rate of 5.32%, nearly tripled the previous growth rate. The growth rates of construction, transportation and commerce were all much higher than the previous rates, resulting in significant tightening of the growth differentials between them and industry. Within industry, the pattern of heavy industry growing faster than light industry had reversed, reflected by the rise (fall) of shares of light (heavy) industrial outputs in the total industrial outputs in the reform years. Table 4.3 exhibits the changes in the shares of light and heavy industrial outputs in the total industrial outputs between 1978 and 1992. The share of light industrial output in the total industrial output rose from 43.1% in 1978 to 47.2% in 1992, while for heavy industry the share dropped from 56.9% to 52.8% during the same period. This trend clearly showed that market forces did drive the Chinese industry to produce more consumer goods than before. In fact, the output share of

[21] In the Chinese statistics, as pointed by Minami (1994), light industry refers to consumer goods production while heavy industry refers to producer goods production. However, this author suggests that these figures be used with caution. In reality, according to this author's experience, whether the output value of a factory goes to light industry or heavy industry is usually decided by which industrial bureau it belongs to, not the character of its products. Prior to the reform, a factory only produced what its supervisory bureau commanded it to produce. Things have changed. Since the beginning of the reforms, enterprises have been given more and more autonomy to decide what to produce according to market demands. In the 1980s, a lot of enterprises that formally belonged to heavy industry turned to produce consumer durable goods. Based on these facts, if one is interested in the structural changes within the Chinese industry during the reform years, he/she should bear in mind that for the years after 1978 the actual output figures of producer goods production would be lower than that represented by the heavy industrial output figures in the official statistics; while those of consumer goods production would be higher than that represented by the light industrial output figures.

consumer goods rose more than that showed by the above figures, because some consumer durable goods were produced by factories that were under the supervision of heavy industrial bureaus.

Table 4.2. China's NMP Growth by Major Sectors, 1952-1978 and 1978-1992[22]

	Average Annual Growth Rate (%)	
	1952-1978	1978-1992
Agriculture	1.85	5.32
Industry	11.46	11.07
Construction	6.95	10.59
Transportation	6.75	9.28
Commerce	4.27	7.95
Total NMP	5.99	8.85

Source: SSB: Statistical Yearbook of China, various issues.
Note: Growth rates are calculated on comparable prices.

[22] For explanation on NMP, see Footnote 23 in Chapter 1 of this thesis.

Table 4.3. Composition of China's Total Industrial Output by Type of Industry (%), 1978-1992

Year	Total	Light Industry	Heavy Industry
1978	100	43.1	56.9
1979	100	43.7	56.3
1980	100	47.1	52.9
1981	100	51.5	48.5
1982	100	50.2	49.8
1983	100	48.5	51.5
1984	100	47.4	52.6
1985	100	47.1	52.9
1986	100	47.6	52.4
1987	100	48.2	51.8
1988	100	49.3	50.7
1989	100	48.9	51.1
1990	100	49.4	50.6
1991	100	48.9	51.1
1992	100	47.2	52.8

Source: SSB: Statistical Yearbook of China, various issues.
Note: Shares are calculated based on current prices.

What do these changes in the growth pattern mean to the Chinese economy?

- First of all, they reflected the move of the Chinese economy away from the Soviet-type economy. China has extricated itself from the influence of the Soviet economic development strategy of developing heavy industry first, and moved towards much more balanced economic growth.
- Secondly, they suggested that the Chinese economy as a whole became more efficient because its growth no longer relied on a very high growth of capital goods production, ie, by using less capital goods it could achieve the same or even quicker growth. Economic growth can be achieved by mobilising large injections of new capital and labour into the productive process or by rising factor productivity through either institutional innovation or technological progress.

Prior to the reforms, Chinese economic growth was achieved mainly by increasing use of inputs. By contrast, increase in total factor productivity played a significant role in economic growth in the reform years.[23]

- Finally, the rapid growth of agriculture, light industry, construction, transportation and commerce could provide the Chinese people with more food, consumer goods, services and housing, ie, their living standards could rise significantly. Few nations in the world with comparable size have experienced such a great improvement in living standards in such a short period as that occurred in China in the reform years.

4.3.2. Problems

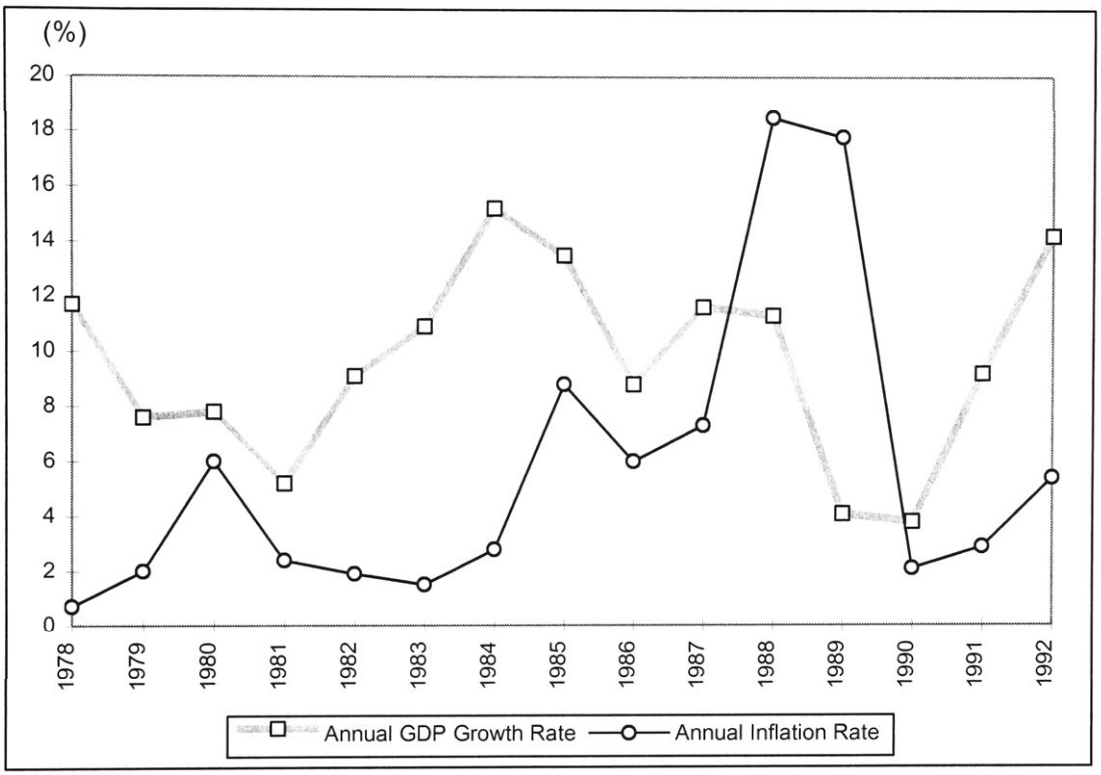
By the end of the 1978-1992 period, the reform and development of the Chinese economy was still an unfinished task, where problems existed in nearly every aspect. Among the problems, two were more important than others. These were macroeconomic instability and inefficiency of SOEs, since nearly all other problems were more or less related to them.

Macroeconomic instabilities are reflected by great fluctuations in economic growth and serious inflation. Figure 4.1 plots China's annual GDP growth rate and annual inflation rate in 1978-1992. The average annual GDP growth rate was 9.4%, but for each year the growth rate fluctuated from as high as 15.2% in 1984 to as low

[23] For references on studies on factor productivity, see Chen et al. (1988), McMillan et al. (1989), Jefferson et al. (1992), and Wen (1993).

as 3.8% in 1990. Inflation problem emerged in the mid-1980s and intensified later on. When annual inflation rate reaching 18.5% in 1988, panic purchasing took place in major cities all over the country.[24]

Figure 4.1. China's Annual GDP Growth and Inflation Rates, 1978-1992



Source: SSB: Statistical Yearbook of China, various issues.

The basic goal of the SOEs reform was to achieve efficiency. In this sense, it still had a long way to go as of 1992. Chinese data showed that 67.1% of the total Chinese fixed capital investment and nearly 80% of bank loans went to SOEs in 1992, and they employed 68% of the total industrial workforce, but they only produced

[24] Inflation rates in SSB sources are also problematic. This figure of 18.5% was obviously underestimated. The biases in inflation rate estimation are caused by both methodological problem and human intension. Detailed discussion on this matter is beyond the scope of this study.

48.09% of the total industrial output, while their contribution to the industrial growth was as low as 32.5%. Many of them were loss-making.

There were other problems as well. For example, during the reform years, regional income gaps firstly narrowed in the 1980s, but then widened in the early 1990s.[25]

All these problems could be classified as transitional problems. They had occurred because the old institutions had been broken while the new ones had not been set up or had just been set up but still not fully operational. This study will not focus on any particular problem to conduct detailed investigation into it. Instead, it will treat them as a bundle of transitional problems and try to find some general solution, rather than particular solutions. Several main reasons can be identified that may explain these problems.

- There was no clear model for the reforms of the Chinese economy, and accordingly there was no master blueprint for a coordinated reform program. This issue was addressed in the same way by the end of the 1978-1992 period when the Chinese leaders declared that the goal of the reform was to set up a market economic system in October 1992. Since then, a more coordinated reform program became possible.

[25] See Chapter 7 of this thesis.

- Political reform had lagged far behind the economic reforms until 1992. A large number of government and CCP bureaucrats became resistant forces because either they lost their pre-reform privileges or they were seriously corrupted.[26] Fundamental reform on government organisations was not introduced until recently. The functions of government organisations need to be transformed from direct administrative control to indirect economic management and services provision.

- Ideological barriers still existed, especially in the area of ownership reform. The experiment on using the form of joint-stock company to re-organise SOEs started in 1984, but a more "ideologically acceptable" form of contractual responsibility system became dominant in the late 1980s. It was only until recently, the Chinese leadership began to realise that the SOEs reforms could not by-pass the question of property rights.[27]

- There was no unified social safety net. Most of the existing social security and welfare were provided by SOEs. This was an important reason for their inefficiency. Under this situation, many loss-making SOEs could not go bankrupt and still operated under state subsidies even after the bankruptcy law took effect, because they had to look after their employees and retirees.

[26] See Shirk (1993).
[27] See Tam (1997).

- Since the beginning of the economic reform, the Chinses leaders had emphasised the shift from direct administrative interventions to macroeconomic management by using economic means. But in reality, when the macroeconomic problems appeared, they found themselves without suitable tools which could be used. Both fiscal policy and monetary policy were not as effective as expected.[28]

In order to equip the government with useful macroeconomic management tools, further coordinated reforms in fiscal and financial systems became the important tasks of further reforms. The rest of this chapter will turn to fiscal reform.

4.4. The Goal of Fiscal Reform

As discussed earlier, the most important feature of the pre-reform fiscal system in China was its high degree of centralisation. Accordingly, when fiscal reform began in the early 1980s, the Chinese government started with decentralisation. Fiscal decentralisation, that is the main concern of this current study, is therefore the major feature of the fiscal reform. In the 1978-1992 period, fiscal decentralisation was implemented in practice through the form of contracts: including contracts between the central and provincial governments for revenue-sharing, and contracts between enterprises and governments for profit-sharing.[29]

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[28] For the failure of fiscal policy, see Wong et al. (1995). For the failure of monetary policy, see Tam (1995a).

[29] Actually, contractual fiscal relations between the provincial governments and lower levels of governments also existed during that period. However, questions on fiscal relations at lower levels are left for future studies.

In both cases, fiscal contracts were introduced to increase incentives. Contracts between the central government and provinces encouraged greater tax efforts and rewarded higher level of revenue collections. Contracts between the governments and enterprises were aimed at promoting greater enterprise profitability. These incentives are absolutely desirable, since to increase efficiency really is the key purpose of the whole economic reform program.

The Chinese central government initially launched its fiscal decentralisation program in an attempt to make a breakthrough for the entire economic reform process, when they found that the reform in the rural area was quite successful, before they turned the focus of reform to the urban economy.[30] The major measure they took was the revenue sharing system.[31] The new system was implemented first in Sichuan Province in 1980 and then popularised to the whole country. The immediate aim of this reform was to change the rigid system of intergovernmental finance so as to give more flexibility and autonomy to provincial governments. The ultimate objective was to raise the efficiency of fund allocation and utilisation while enhancing the aggregate capacity to mobilise financial resources by various levels of governments.[32] However, the initial reform of China's fiscal system in the early 1980s was driven not only by economic considerations, but also by political calculations. By expanding the financial autonomy of provincial governments as part of the reform package, the

[30] See Xiang (1990).
[31] This system in its early years was popularly called as "eating from separate kitchens" (*fenzao chifan*). See Forster and Tam (1990), Wong (1991), and Wong et al. (1995). The evolution of this system will be briefly discussed in next section of this chapter.
[32] Forster and Tam (1990).

Chinese leadership gave provincial officials a vested interest in promoting and sustaining the reform drive.[33]

A system of fiscal revenue sharing contracts was the key feature of the fiscal decentralisation reform in the 1978-1992 period. This system was first introduced in 1980, which ended in 1993 and replaced by a new fiscal system in 1994. The following section will briefly outline the evolution of this revenue sharing system.

4.5. Evolution of Fiscal Revenue Sharing System: 1980-1992

When the fiscal revenue sharing system was introduced, the original intention was for the contracts to remain fixed for three to five years, but changes in the economic environment interfered. The price reform, SOEs reform, and reform on planning system had changed the economic environment dramatically and continuously. In order to suit the changing economic environment, the revenue sharing system itself kept changing during its existence until it was replaced by a new system of tax sharing (*fenshuizhi*) in 1994.[34] Actually, the experiment on the new system started in 1992 in Tianjin, Liaoning, Xinjiang, Zhejiang and 5 cities which were granted quasi-provincial status (*jihua danlie chengshi*): Chongqing, Dalian, Qingdao, Shenyang and

[33] See World Bank (1990) and Shirk (1993).

[34] The two terms of "revenue sharing" and "tax sharing" are similar but different. The similarity is that both of them are aimed at dividing the revenue income. The former, which was adopted in 1980-1993, means the central government and a provincial government shared the revenue collected by the provincial government. Part of the collection was retained by the province, while the rest was remitted to the central government. The latter was experimented in several provinces in 1992, and extended to the whole country in 1994. The major difference between the two fiscal systems is on how to divide the revenue income. The key item in a revenue sharing contract was the percentage retained by the province. While in a tax sharing arrangement, the key question is what taxes form the provincial income and what taxes go to the central government.

Wuhan.[35] The Ministry of Finance (MOF) had originally planned to extend this system to all provinces and quasi-provincial cities gradually. However, the pace was sharply accelerated by the top Chinese leaders in 1993. As a result, this new system replaced the old revenue sharing system nationwide in the beginning of 1994.

In the rest of this section, Sub-section 4.5.1 describes the initial introduction of the revenue sharing system in 1980; Sub-section 4.5.2 reviews the evolution of the system until 1992; Sub-section 4.5.3 then discusses the consequences of this system.

4.5.1. Fiscal Revenue Sharing System in 1980

When the fiscal revenue sharing system was first introduced in 1980, the new fiscal contractual arrangement was applied flexibly to 29 provincial-level governments which could be classified into five groups.[36]

1. Guangdong and Fujian, where the Chinese government was concentrating its efforts to attract foreign investment, were granted the most generous freedom. Almost all revenue resources were turned over to the two provinces. Guangdong would transfer 1 billion yuan to the centre per year, and Fujian would receive a subsidy of 150 million yuan per year. The amounts were fixed for 4-5 years. The two provinces could keep everything above these amounts.

[35] Quasi-provincial status were given to some big cities in the 1980s, such as Chongqing, Dalian and Xiamen. Each of them was given economic managing power similar to a province. By 1990, there were 14 such kind of cities. Among them, Chongqing was given a full provincial status in early 1997.

2. Metropolises of Beijing, Tianjin, and Shanghai, which provided the lion's share of the central revenue, were placed on the most restrictive plan: a percentage of total revenue were required to remit to the centre each year. In 1980, the percentages were: Shanghai 88.8%, Tianjin 68.8%, and Beijing 63.5%. Because the funds they generated were vital to the central government, their percentages were revised annually.

3. Jiangsu continued its experiment on "total revenue sharing", which started a couple of years before, with the percentage fixed for four years. Within the four year, all taxes and remitted profits were lumped together and then divided by an agreed percentage between the centre and the province. With the exception of centrally controlled enterprises, all their remitted profits and taxes continued to be channelled directly to the central treasury.

4. The largest group consisting fifteen provinces were put on another plan.[37] Revenue sources were divided into four categories: a) central fixed income which came mainly from the profits and taxes of centrally run enterprises; b) local fixed income which came mainly from the locally run enterprises; c) fixed-proportion shared income which came mainly from large enterprises that were previously run by the central government and were devolved to local government during the Cultural Revolution (the centre received 80%, the provinces 20%); and d)

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[36] For references, see Shirk (1993) and Wong (1992).
[37] The 15 provinces are Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, and Zhejiang.

adjustment income[38] including the industrial-commercial tax. The contracts fixed the sharing proportion for shared incomes and the local remittance to the centre for five years.

5. Eight national minority provinces and autonomous regions that had previously received subsidies from the centre to cover their deficits were put on a special plan similar to Group 4, but receiving subsidies from the centre instead of remitting to the centre.[39] Their basic subsidies were fixed for five years and increased annually by 10%. Additionally, they could retain any amount of revenue collected above the budgetary targets.

The dominant form of revenue sharing was the arrangement applied to Group 4 and Group 5 (including a total of 23 provinces). Under this arrangement, revenue collection of a province was distinguished by source and divided into four types of incomes, namely central fixed, local fixed, shared, and adjustment incomes. In order to examine the revenue sharing process, the following notations will be used.

For anyone of the 23 provinces, say Henan, we define

Y_T: total revenue collection of the province;

Y_1: central fixed income;

Y_2: local fixed income;

Y_3: shared income;

[38] The adjustment method will be explained in the following pages of this sun-section.
[39] They are Guangxi, Guizhou, Inner Mongolia, Ningxia, Qinghai, Tibet, Yunnan, and Xinjiang.

Y_4: adjustment income;

then we have

$$Y_T = Y_1 + Y_2 + Y_3 + Y_4,$$

ie the total Henan's revenue collection Y_T can be divided into four types: Y_1, Y_2, Y_3 and Y_4.

We also define

a_1, a_2, a_3, and a_4: retaining ratios for the four types of incomes Y_1, Y_2, Y_3 and Y_4 respectively, with $1 \geq a_i \geq 0$, i=1, 2, 3, 4;

Y_R: total revenue retained by the province;

thus we can express Y_R as

$$Y_R = a_1Y_1 + a_2Y_2 + a_3Y_3 + a_4Y_4.$$

Finally, we define

E: target for the province's expenditure. It was negotiated between the province (Henan in our example) and the central government on the basis of the actual provincial expenditure figure in 1979.

S: subsidy from the central government.

Now we can use the above notations to explain the revenue sharing process. Obviously, a_1 was equal to 0, since central fixed income was not subject to revenue sharing. And, a_3 was set at 0.2 for any province in all contracts as mentioned before. Therefore, the main task of the revenue sharing process was to set the values of a_2 and

a_4. There were 3 different cases for the 23 provinces under this arrangement in Group 4 and Group 5.

Case 1.

If $Y_2 \geq E$, then a_4 was set to 0, and a_2 was set such that

$$E = a_2 Y_2.$$

This means if the fixed income of a province was greater than its expenditure target, it would retain a part of its revenue collection according to the following formula

$$Y_R = a_2 Y_2 + 0.2 Y_3.$$

In this case, the province retained its shared income and part of its fixed income, but lost all of its adjustment income.

Case 2.

If $Y_2 < E$, but $Y_2 + Y_4 \geq E$, then a_2 was set to 1, and a_4 was set such that

$$E = Y_2 + a_4 Y_4 .$$

This means if the fixed income of a province was less than its expenditure target, but greater than the sum of its fixed income and the adjustment income, it would retain a part of its revenue collection according to the following formula

$$Y_R = Y_2 + 0.2 Y_3 + a_4 Y_4 .$$

In this case, the province retained its shared income and all of its fixed income, plus part of its adjustment income.

Case 3.

If $Y_2 + Y_4 < E$, then both a_2 and a_4 were set to 1. This means if the sum of the fixed income and adjustment income of a province was less than its expenditure target, it could retain its shared income, all of its fixed income and all of its adjustment income, plus a subsidy, according to the following formula

$$Y_R = Y_2 + 0.2Y_3 + Y_4 + S .$$

Table 4.4. Actual Revenue Sharing Ratios for Selected Provinces in 1980

Province	a_1	a_2	a_3	a_4
Anhui	0	1	0.2	0.581
Gansu	0	1	0.2	0.532
Hebei	0	< 1	0.2	0
Henan	0	1	0.2	0.759
Hubei	0	1	0.2	0.447
Hunan	0	1	0.2	0.420
Jilin	0	1	0.2	0.990
Shaanxi	0	1	0.2	0.881
Shandong	0	1	0.2	0.100
Shanxi	0	1	0.2	0.579
Sichuan	0	1	0.2	0.720
Zhejiang	0	1	0.2	0.130

Note: Here a_1, a_2, a_3, and a_4 are provincial retention ratios for central fixed, local fixed, shared, and adjustment incomes collected by a province.
Source: Wong (1992).

The actual 1980 revenue sharing ratios for twelve provinces of Group 4 are shown in Table 4.4. Among the twelve provinces, eleven belong to Case 2; only Hebei belongs to Case 1. According to Wong (1992), among the total 23 provinces, in 1980, there were 21 provinces with a_2 values equal to 1 and a_4 values greater than 0.

Within these 21 provinces, the eight Group 5 provinces had their a_4 values equal to 1 (each of them received a subsidy from the central government), and the rest thirteen provinces had their values of a_4 in the range greater than 0 while less than 1. Two provinces out of the total of 23 had their a_2 values less than 1, while their a_4 values were 0.

Comparing with the pre-reform fiscal system, the 1980 reform introduced three significant changes: the division of revenue by source, the recognition of local government's rights to some sources of revenues and the clear commitment to linking local revenue collection to local expenditures. These changes made the fiscal system significantly decentralised. The local governments were no longer acting solely as collection agents for the central government, but also collecting their own revenue incomes from the enterprises under their control. They enjoyed much more decision-making power in both revenue collection and expenditure than before over local fiscal matters.

4.5.2. Evolution of the Revenue Sharing System

Although the original intention was for fiscal arrangements to remain fixed for 4-5 years, the economic environment interfered. When prices of some goods changed, the provinces whose revenues were affected demanded and usually received an adjustment in fiscal sharing contracts. Not only did the price reform change the economic environment, other aspects of the economic reform, such as wage reform, interest rate adjustments, and the introduction of enterprise profit retention, all

impacted on the contractual sharing arrangements. By 1983 all provinces except Beijing, Shanghai, Tianjin, Guangdong and Fujian, were shifted to the Jiangsu "total revenue sharing" regime to make up the provincial revenue losses caused by changes in the economic environment.

Along with the process of the economic reforms, the revenue sharing system kept changing. In early 1983, the central government proposed to collect revenues from the enterprises in the form of taxes instead of profits (*li gai shui*). Provincial officials disliked the proposed tax-for-profit reform, because they wanted to maintain their financial rights over local enterprises.[40] The tax-for-profit reform was introduced into two stages. The first, beginning in 1983, required enterprises to pay only an income tax and allowed them to continue to retain and remit after tax profits to local governments at the same level as in 1982. The second stage began in 1984 and converted all profits to taxes. An adjustment tax was negotiated with individual enterprises in a seven-year contract granting one rate on current profit level and a lower rate for incremental profits. The State Council declared in 1985 that all provinces should follow the regime of "revenue sharing on the basis of dividing up tax revenues" which essentially replaced the Jiangsu "total revenue sharing" regime.

In practice, the "revenue sharing on the basis of dividing up tax revenues" regime itself kept changing. In 1988, formal fiscal contracting was introduced to most provincial or quasi-provincial cities.[41] To accommodate regional variations, there

[40] Shirk (1993).
[41] Actually, the revenue sharing system pre-1988 was also contract-based, but the contracts took informal form.

were 6 distinctive types of contracts applied to different groups of provinces and quasi-provincial cities. Among the 6 groups, 5 lasted until the end of the revenue sharing system, while the sixth was curtailed early because all of its members moved into the experimental tax sharing system in 1992. The 6 types of contracts were as follows.[42]

1. For the sixteen provinces where the provincial budgets were in red, such as Jilin, each received a fixed amount of subsidy from the centre. This type was called "fixed quota subsidies". In 1992, the number of provinces in this group dropped to 14, with Jilin, Jiangxi, and several remote provinces in the northwest and southwest regions remaining.

2. For the three provinces where the revenues exceeded expenditures, such as Shanghai, each remitted a fixed amount of funds to the centre. This type was called "fixed remitting quota" which was originally applied to Guangdong in 1980. This was considered the most favourable to provinces, since it fixed a nominal remittance quota, with no annual increase. This meant the provinces could retain all of the incremental revenues. In 1988, Shanghai, Heilongjiang and Shandong won fixed quota contracts. They were kept in this group until the end of the revenue sharing system. However, Guangdong was moved to a less favourable type of contract in 1988.

[42] For references, see Wong (1992), Wong et al. (1995), Bahl and Wallich (1992), and Shirk (1993).

3. Guangdong and Hunan each remitted a fixed amount of funds to the centre in the base year, then remitted the same amount plus a fixed growth rate in each following year. This was called "fixed quota with growth". These two provinces stayed in this group till the end of the system.

4. Tianjin, Shanxi and Anhui each remitted a fixed share of total revenue income to the centre. The percentage was calculated according to actual figures in previous years. For the three provinces, the retention rates were 46.5% for Tianjin, 87.6% for Shanxi and 77.5% for Anhui. This was called "basic sharing". In 1992, Tianjin moved to the tax sharing system, leaving only Shanxi and Anhui in this category.

5. For the ten province or quasi-provinces including Beijing, each of them was assigned a target for revenue increase according to actual figures in previous years. They then remitted a fixed share of revenue income within the target and kept the rest as an incentive for revenue collecting effort. This was called "basic sharing with growth". In 1992, some provinces and quasi-provincial cities moved to the tax sharing system, leaving four provinces and two quasi-provincial cities in this group.

6. For three quasi-provincial cities Dalian, Qingdao and Wuhan, each remitted a fixed share of total revenue income to the centre in the base year, then in the following years remitted the same share of total revenue income plus a share of the increments. This was called "incremental sharing". This type of contracts

disappeared in 1992 since all three cities had moved to the experimental tax sharing system.

4.5.3. Consequences of the Fiscal Revenue Sharing System

Since the revenue sharing system was introduced in 1980, it had undergone many changes until it was replaced by a new tax sharing system in the beginning of 1994. Several features of this system can be identified.

- First, this system was not a stable one. Although the original intention was for the fiscal arrangements to remain fixed for a longer time, they kept changing. This raised serious questions about mutual trust between the central and lower level governments. Whether the fiscal sharing contracts were formal or informal, they should be respected. The contracts were frequently broken up unilaterally, ending with high levels of dissatisfaction and distrust on both sides.[43]

- Second, this system lacked uniformity. During the whole period, the system had to take different forms to accommodate regional variations. This feature together with the previous one meant endless negotiations between the central government and provincial governments.

- Third, although there had been successive changes in the revenue sharing system, the central fixed revenues were not subject to sharing. The central revenues were

excluded from the pools of revenues to which revenue-sharing formulas were applied.

- Fourth, revenue incomes from enterprises, whether in the form of remitted profits or taxes, continued to be divided among levels of governments according to the subordination relations.

China's fiscal reform since 1980 has certainly contributed to developing a less rigid system of public finance. The contractual revenue sharing between the central government and provincial governments gave provincial officials the incentive to develop local economies.[44] This certainly enhanced the national economic growth, but it also caused problems. Among them, the followings are the major ones.

- Officials at provincial and lower levels had strong incentive to build new plants, especially high-profit processing plants, resulting in the expansion of the scale of investment which in turn created macroeconomic problems, such as overheating, inflation, and budget and trade deficits. The shift from government investment grants to bank loans and the decentralisation of bank administration also made it easier for local officials to finance their investment expansion.

- Contract-based revenue sharing fiscal system encouraged local officials to protect the local markets for their own factories by erecting administrative blockades.[45]

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[43] See Wong et al. (1995).
[44] For reference, see Wong (1992) and Shirk (1993).
[45] See Ma (1995).

The national market was segmented by these administrative barriers, resulting in loss of potential gains from interregional trade.

- Officials at provincial and lower levels were spurred by the revenue-sharing system to compete with one another for foreign trade and investment.[46] Local firms engaged in price-gouging competition for export market, and provinces tripped over one another to entice foreign investment by offering concessional terms ignoring the broader national interests.

- The revenue sharing system encouraged local officials to interfere in local enterprises operations, while the enterprise managers became more concentrated on rent-seeking rather than cost-cutting.[47]

- Since the beginning of the economic reforms, economic agents have become increasingly autonomous, and in order to preserve macroeconomic stability, the development of adequate instruments for indirect control has been necessary. Among these instruments, fiscal policy can play a crucial role, given its power in affecting both aggregate demand and resource allocation. Unfortunately, the contract-based intergovernmental revenue-sharing arrangements and enterprise responsibility system failed to provide the government with the capacity to use fiscal policy in any meaningful way to manage the national economy.

[46] See Wong (1991).
[47] See Shirk (1993).

- The contractual enterprise taxation and central-provincial revenue-sharing arrangement were accompanied by a certain degree of budgetary imbalance during the 1979-1992 period.[48] The state consolidated budgetary deficit became larger and larger, and more and more difficult to be financed.[49] Lack of buoyancy in the contractual revenue sharing system, and local governments tax concessions to local enterprises had certainly contributed to the budget deficit problem.[50]

- As mentioned before, the basis of the revenue sharing system were the contracts between the central government and provincial and quasi-provincial governments which were the results of negotiations. Since there had been successive changes during the implementation of the contracts, the costs of negotiations were very high in terms of both human efforts and time consumption. Therefore, reducing negotiability became desirable for the new fiscal arrangements.

4.6. Conclusions

Rather than attempting to provide a comprehensive summary of the above reviews on the Chinese macroeconomic environment and the fiscal reform during the 1978-1992 period, this section will conclude by reiterating three key questions raised in this chapter.

[48] According to the Chinese statistics, state budgetary balance was in red for every year except for 1985. However, in Chinese fiscal statistics the debt income was in the total revenue. If the Chinese data were adjusted according to international standard, then even for 1985, the state budget was in deficit. See Chapter 6 of this thesis for detailed adjustment.
[49] For an assessment of budget deficit in the early 1990s, see Wong et al. (1995).

1. The pre-reform fiscal system in China was highly centralised. That was the result of the adoption of the centrally planned economic system. The basic purpose of the economic reform is to transform the Chinese economy from a centrally planned economy to a market one. Therefore, fiscal decentralisation becomes the most important task of the fiscal reform. Fiscal decentralisation has changed the fiscal system significantly during the period under investigation. Decentralising fiscal reform, especially its key policy measure of revenue-sharing, has transformed the local governments from acting solely as collection agents for the central government to being independent revenue collectors. They now have the responsibilities to collect their own revenues to meet spending needs. They are able to enjoy much more decision-making power over their fiscal matters. Meanwhile, the central government has gradually loosened its control over provincial revenue collection and spending. These changes have significant effects on the national economy. Impacts of fiscal decentralisation on public sector size, central-provincial fiscal relations and regional income distribution will be empirically investigated in the rest of this thesis (Chapter 5, 6 and 7 respectively).

2. The whole economic reform program has been following a gradual path with the major reform measures implemented over a long period. On the one hand, this reform strategy has been successful in terms of avoidance of economic chaos, achieving high economic growth, and improvement in living standards. On the other hand, it has also caused some problems. As far as fiscal reform is

[50] For references, see Section 3.5 of Chapter 3 of this thesis and Tanzi (1996).

concerned, this means the fiscal system has to keep changing to suit the changing economic environment over a long period. During the existence of the revenue sharing system, it kept changing all the time, resulting in frequent breakups of contracts. That has caused immense dissatisfaction and distrust on all parties involved. By the end of the period under investigation, this problem of intergovernmental distrust had reached a state of crisis.[51]

3. There had been two key shortcomings which finally ended the contractual revenue sharing system in the early 1990s. First, the system was based on contracts which were the results of endless individual bilateral negotiations between the central government and provincial (quasi-provincial) counterparts. The cost of negotiations were so high that a large number of officials of Ministry of Finance had become "full-time negotiators".[52] Second, lack of buoyancy in the contractual revenue sharing system, coupled with excessive tax concessions to local enterprises by lower level governments, certainly contributed to the persistent fiscal deficit problem. Lack of buoyancy also seriously dampened the effectiveness of fiscal policy in macroeconomic control.

Facing these problems, the Chinese leaders have decided to further reform the fiscal system mainly by implementing a tax sharing system to replace the revenue sharing system. The new wave of reform started in 1994 covering several important aspects of the fiscal system. For the redistribution of central-provincial taxing power,

[51] See Wong et al. (1995).
[52] According to this author's interview with MOF officials in Beijing in July 1996.

taxes were divided into three groups. The first group of taxes belongs to the central government. These include customs duty, consumption tax, income tax from centrally controlled SOEs, income tax from banks and other financial institutions. The second group of tax revenue belongs to the provinces, including personal income tax, property tax, and various kinds of user fees. The third group is shared between the central and the provinces, including value added tax and resource tax. The central government gets 75 % and the provinces 25 %. For direct tax, the Chinese government set up a unified corporate income tax to replace the old separated taxes for SOEs, COEs, and IOEs; it set up a progressive personal income tax. For indirect taxes, the government further extended the value added tax (VAT), and set up consumption tax for luxury goods. The main objectives of the new fiscal reform were twofold. The first one was to reduce the negotiability of the previous revenue sharing system. And the second one was to increase the buoyancy of the central government revenue by grabbing a large share of VAT - the most buoyant type of tax.

Chapter 5

Fiscal Decentralisation and Public Sector Size in China

This chapter will examine the major changes in the position of public finance within China's national economy, focusing on the size of public sector.[1]

The size of the Chinese public sector dropped during the 1978-1992 period. Several researchers have expressed concerns over the drop of public sector size because they were worried about its impacts on economic growth and the government's capacity over macroeconomic control.[2] Among those authors, Wang and Hu (1993) strongly argued that the share of the government revenue in national income should be raised dramatically, ie the size of public sector should be enlarged significantly, in order to enhance the government's capacity to speed up the transition from a centrally planned economy to a full scale market economy. Their suggestion was based on their observation that the size of public sector had dropped extraordinarily since the beginning of the reforms and become so small that the government had lost control over the economy. Such suggestions have influence on Chinese policy makers.[3] However, counterargument did exist.[4] This thesis will present empirical evidence in support of the counterargument. During the reform

[1] Public sector size or government size is usually measured as the share of total government revenue or expenditure in GDP. See, for instance, Grossman (1992) and Marlow (1988).
[2] See Wong (1991), Bahl and Wallich (1992), and more recently, Wang and Hu (1993), Oi (1995), Ma (1995), Chung (1995), Solinger (1996).
[3] One example is that the book on China's state capacity by Wang and Hu (1993) received a national award from the Chinese government in 1994.
[4] For example, see Zhang (1996).

period, the size of public sector in China did drop, but the decline was gradual and desirable. Until 1992, after a continuous drop for fourteen years, the size of the public sector was in fact still quite large rather than too small.

This chapter is organised as follows. An examination of the scope of Chinese public finance is presented in Section 5.1. Section 5.2 and 5.3 investigate the trends in revenues and expenditures separately. An international comparison is conducted in Section 5.4. This is followed by an analysis of the relation between fiscal decentralisation and the size of public sector in Section 5.5. Section 5.6 summarises the findings of this chapter. Some further discussions on relations between the size of public sector and economic growth, government capacity on macroeconomic control and government's role in the transition from a centrally planned economy to a market economy will also be outlined.

5.1. The Scope of Public Finance in China

The Chinese fiscal institution has been closely linked to the country's system of government. Since the 1950s, China has employed a five-level administrative system, comprising the central, provincial-level, prefectural-level, county-level, and township-level governments. As of 1990, there were thirty provincial-level governments: 22 provinces, 5 minority nationality autonomous regions, and 3 municipalities, ie

Beijing, Tianjin and Shanghai.[5] There were 336 prefectural-level governments, including 151 prefectural governments and 185 city governments at prefectural level. There were 1,903 county governments, 273 city governments at county level, and 651 city district governments which were also ranked as county-level, bringing the total number of county-level governments to 2,833. There were 58,625 township-level governments. Under these five levels of governments, at the bottom, there were 743,278 village committees.[6]

Prior to the economic reform, China adopted a three-level fiscal system, ie, the central government, provinces, and counties. The expenditures of all these three levels of governments were funded through national budgets. Before the 1980s, governments at prefectural-level and township-level did not have their own fiscal authorities. In 1983, the Chinese government started to build up fiscal structures at township level. In May 1985 the Ministry of Finance promulgated the "Provisional Township Fiscal Management Act" which, for the first time, incorporated this level of governments into the national budget. This resulted in the current four-level fiscal system, comprising the central, provincial, county, and township.

The complexity of the Chinese fiscal system comes not only from its four-level setup, but also from its different sources of funding. Total funding from the central government down to the township level is made up of three main categories:

[5] In early 1997, Chongqing was given the same provincial-level status as Shanghai. The number of provincial-level governments has increased to 31 since then. In this study, these 31 provincial-level units are called "provinces".

[6] See SSB (1991). Since then, the numbers of each level of governments have changed slightly, but the basic structure remained.

budgetary funding, extrabudgetary funding, and self-generated funds. Of this total, only the first is counted as the official government budget. Statistically, this is the narrowest definition of Chinese public finance. In a broader sense, governments at all levels have access to the so-called extrabudgetary funds which include surtaxes and incomes from government services.[7] By adding extrabudgetary funding to the official budgetary funding, we can get a broader definition of Chinese public finance. In the broadest sense, Chinese public finance also includes a third category of public funding, namely the self-generated funds. For example, a local government could usually collect funds from local enterprises and individuals for building local projects, such as a school. Some Chinese economists call this the "off-system public funds", ie the public funds under sub-national governments control but collected out of the normal taxation system.[8] Data on budgetary and extrabudgetary revenues and expenditures are usually available in the Chinses fiscal statistics.[9] Unfortunately, data on the last category of public funding are not usually available in the Chinese statistical sources. The usual estimate used by Chinese economists is that each of the three categories of public funds is roughly equal to one third of the total.[10]

There are two more issues one has to address in examining Chinese fiscal conditions. The first is about the treatment of the finance of the state-owned

[7] For more detailed discussion on extrabudgetary funds, see Deng et al. (1990) and Section 5.2 of this chapter.
[8] See Zhang (1996).
[9] Except for the figures of extrabudgetary expenditures prior to 1983. Figures of extrabudgetary expenditures from 1978 to 1982 used in this study are this author's estimates. See Section 5.3. of this chapter.
[10] See Zhang (1996), page 169.
Since reliable data on self-generated funds are not available, they are excluded from this study. For certain fiscal issue, such as comparing the size of public sector across countries, the impact will be significant, then qualitative analyses will be used. See Section 5.4 of this chapter.

enterprises (SOEs). In principle, all capital of the SOEs from the county-level up is owned by the state,[11] so all fixed capital investments and working capital needs should be from the state budget expenditures, and all the profits they earn should be handed to the state revenue. In practice, however, this was not always clear, even before the economic reforms. Under a central planning system, almost all after-tax profits of the SOEs were turned over to the state, with only a tiny portion being retained under the enterprises' control. A significant change under the economic reform is that the portion retained by SOEs and their supervisory authorities has enlarged. Different treatments of SOEs finance could result in very different fiscal situations.[12]

The second problem comes from the special Chinese statistical treatment of certain items of budget revenues and expenditures. On the revenue side, in the official Chinese fiscal statistics, state borrowings were counted as part of the budget revenue, and state subsidies (for price subsidies and the losses of SOEs) were treated as negative revenue income. On the expenditure side, government subsidies to enterprises and other organisations were excluded. It is necessary to adjust official fiscal data in order to close the gap between the Chinese fiscal statistics and the international standard.[13] In this thesis, whenever relevant information is available,

[11] This is because before the 1980s the fiscal structure did not include the township level. After the township fiscal authorities were set up in the middle 1980s, most of capital of enterprises at township level and below have been not from the state budgets because the economic reforms have changed the pre-reform planning and investment systems.

[12] Obviously, the scale of state revenue will be affected by whether the profits of SOEs are handed to the state or not. For detailed explanation, see Kojima (1992). While on expenditure side, it will cause a significant change in the scale of fiscal expenditure, if a large amount of the fixed capital investments and working capital requirements of SOEs are financed by banks instead of directly from the state budget. See Section 5.3 of this chapter for detailed analysis.

[13] See IMF (1986).

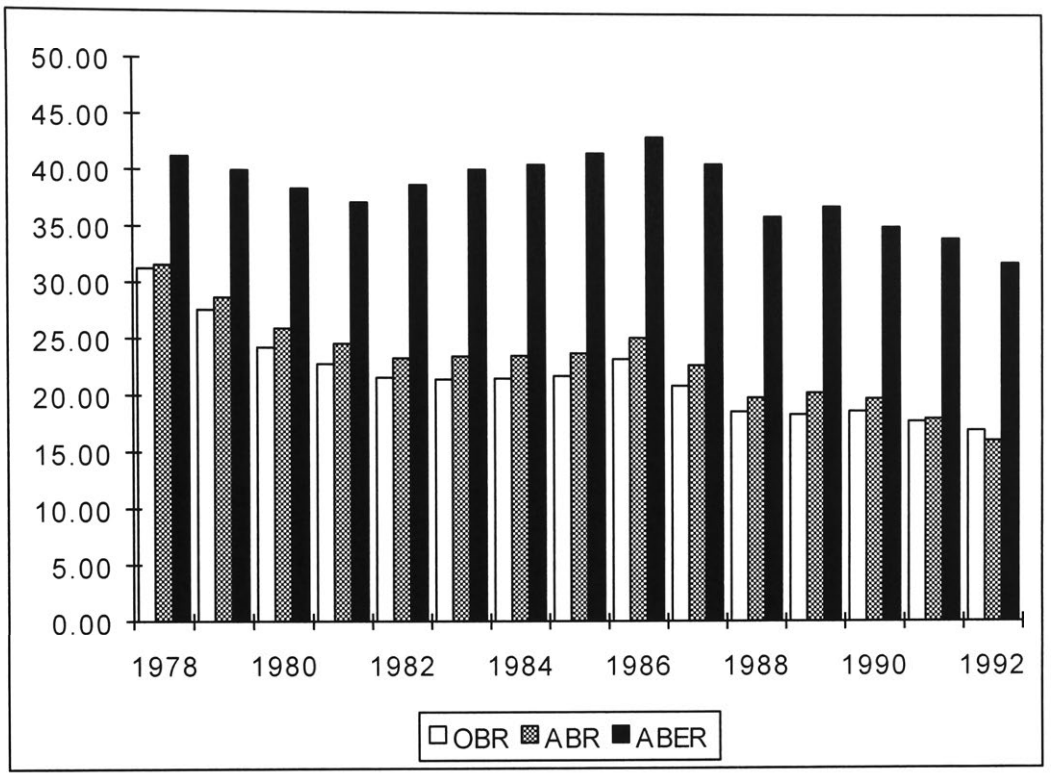
official data will be adjusted to obtain a true picture of the flows of budgetary revenue and expenditure.

5.2. Trends in Revenues

Figure 5.1 shows the changes in the shares of state consolidated revenue as a proportion of GNP from 1978 to 1992. During this period, the shares of the official budgetary revenue (OBR hereafter) as a proportion of GNP dropped by 45.45% (from 31.24% to 17.04%), and the shares of the adjusted budgetary revenue (ABR) [14] as a proportion of GNP dropped even more by 48.95% (from 31.56% to 16.11%). The shares of the sum of adjusted budgetary and extrabudgetary revenue (ABER) as a proportion of GNP also dropped, but much more moderately, by only 22.56% (from 41.23% to 31.93%). This is because extrabudgetary revenue (ER) actually increased rapidly during the same period. It can be seen in Table 5.1, from 1978 to 1992, the amount of ER actually increased by more than ten times.[15] Table 5.2 gives the composition of ER in the 1978-1992 period.

[14] ABR equals to OBR minus debt revenue income plus price subsidies or subsidies to the loss making SOEs whenever they are treated as negative income in the official fiscal statistics.
[15] This is partly the result of definition change. See Kojima (1992).

Figure 5.1. Shares of Revenue in GNP, 1978-1992



Sources: SSB (1994) and this author's calculation.

Notes: OBR stands for official budgetary revenue; ABR stands for adjusted budgetary revenue; and ABER stands for the sum of adjusted budgetary and extrabudgetary revenue.

Table 5.1. Extrabudgetary Revenues, 1978-1992

Year	ER (in 100 mil yuan)	ER as % of OBR	ER as % of ABR	ER as % GNP
1978	347.11	30.96	30.66	9.67
1979	452.85	41.05	39.47	11.33
1980	557.40	51.36	48.06	12.47
1981	601.07	55.17	51.12	12.59
1982	802.74	71.42	66.20	15.46
1983	967.68	77.48	70.79	16.66
1984	1188.48	79.13	72.34	17.07
1985	1530.03	81.98	75.06	17.88
1986	1737.31	76.86	71.00	17.92
1987	2028.80	85.64	78.76	17.95
1988	2270.00	86.38	80.97	16.14
1989	2658.83	90.19	81.69	16.62
1990	2708.64	81.77	77.04	15.31
1991	3243.31	89.82	88.62	16.03
1992	3854.92	92.82	98.13	15.81

Sources: ER data are from SSB (1994) and the percentage figures are this author's calculation.

Notes: ER stands for extrabudgetary revenue; OBR stands for official budgetary revenue; and ABR stands for adjusted budgetary revenue.

Table 5.2. Composition of Extrabudgetary Revenues, 1978-1992
(in 100 mil yuan)

Year	Total	Extrabudgetary Funds of Sub-national Governments	Extrabudgetary Funds of Non-profit and Administrative Organisations	Extrabudgetary Funds of SOEs and Supervisory Bureaus
1978	347.11	31.09	63.41	252.61
1979	452.85	39.94	68.66	344.25
1980	557.40	40.85	74.44	422.11
1981	601.07	41.30	84.90	474.87
1982	802.74	45.27	101.15	656.32
1983	967.68	49.79	113.88	804.01
1984	1188.48	55.23	142.52	990.73
1985	1530.03	44.08	233.22	1252.73
1986	1737.31	43.20	294.22	1399.89
1987	2028.80	44.61	358.41	1625.78
1988	2270.00	45.00	415.00	1810.00
1989	2658.83	54.36	500.66	2103.81
1990	2708.64	60.58	576.95	2071.10
1991	3243.31	68.77	697.00	2477.54
1992	3854.92	90.88	885.45	2878.59

Sources: SSB (1994).

Extrabudgetary funds are outside of normal state budgetary process, but they are at least partly managed and closely monitored by MOF (Ministry of Finance).[16] The amounts held by sub-national fiscal authorities, non-profit and administrative

[16] See Wong (1991), and Tam (1995).
For example, Tam (1995) pointed out that, in 1991, 42% of the total extrabudgetary funds were in fact controlled by central government ministries and other organisations; and the percentages of the total controlled by local government departments and other organisations, local fiscal authorities, and central and local SOEs were 38%, 2%, and 17% respectively.

organisations, or SOEs and their supervisory bureaus have to be reported to MOF. Extrabudgetary funds came into existence from the early years of PRC. Initially, its amount was small. Until 1957, it was less than 10% of the official budget revenue. Then, the ratio grew during fiscal decentralisation periods and reduced during recentralisation periods usually associated with certain items shifting between budgetary revenue and extrabudgetary revenue.[17] Since the beginning of the economic reforms, ER had expanded rapidly, reaching as high as 98% of adjusted budget revenue in 1992.[18]

The key question to be answered here is whether ER should be included in the determination of the size of China's public sector. For the purpose of analysis of the role of public finance in China's economic development, the answer is affirmative. IMF's Government Finance Statistics certainly include extrabudgetary accounts and SOEs finance when such data are available. World Bank's reports on Chinese fiscal issues also treated extrabudgetary revenue as part of public funds.[19] In China, a large

[17] For example, during the late 1950s fiscal decentralisation period, the ratio of extrabudgetary revenue to official budgetary revenue reached as high as 20.6% in 1960. During the fiscal recentralisation period of the early 1960s, the ratio dropped to 15.1% in 1963. Ratios of extrabudgetary revenues to official budgetary revenues are calculated based on budgetary and extrabudgetary revenue figures from SSB data.

For references on the changes in the definition of extrabudgetary funds over time, see Kojima (1992), and Deng et al. (1990).

[18] This figure dropped to about 30% in 1993, because MOF adjusted the definition of ER. Since 1993, funds held in the SOEs and their supervisory bureaus have been excluded from ER. Therefore, figures of ER before and since 1993 are not directly comparable.

The rapid expansion of ER occurred during the 1978-1992 period when the fiscal decentralisation took place. According to Wong (1991) and Tam (1995), although a significant part of extrabudgetary funds were still in the hand of the central government, a quite large part of the funds were under the de facto control of local authorities who collected and spent them. When more data on this issue become available, researchers can investigate this issue further.

[19] For examples, see Bird and Wallich (1993), and Bahl and Wallich (1992).

proportion of extrabudgetary funds are in fact in the hands of sub-national fiscal authorities, and central and sub-national ministries. According Tam's estimation, in 1991, the shares of the total extrabudgetary funds controlled by local fiscal authorities, local government departments, central government ministries, and SOEs were 2%, 38%, 42% and 17% respectively.[20] The fact that extrabudgetary funds are not planned within the formal budgetary process and that such SOEs and ministries may belong to the central or the sub-national governments does not diminish the publicness of such funds. Therefore, the sum of budgetary and extrabudgetary revenue should be used to measure the size of China's public sector, and its decline from 1978 to 1992 was gradual and moderate, rather than rapid and extraordinary.

The rapid and dramatic drop did happen, if the size of public finance is measured by the shares of OBR as a proportion of GNP. The most important reason is the reclassification of budgetary items by the Chinese government. Since 1980 many former budgetary items were transferred and incorporated into extrabudgetary categories.[21] If the size of public finance is measured by the shares of ABR as a proportion of GNP, it dropped even more rapidly and dramatically. The reason lies in the difference between ABR and OBR. OBR includes debt revenue income, which increased dramatically from 3.53 billion yuan in 1979 to 66.97 billion yuan in 1992.[22]

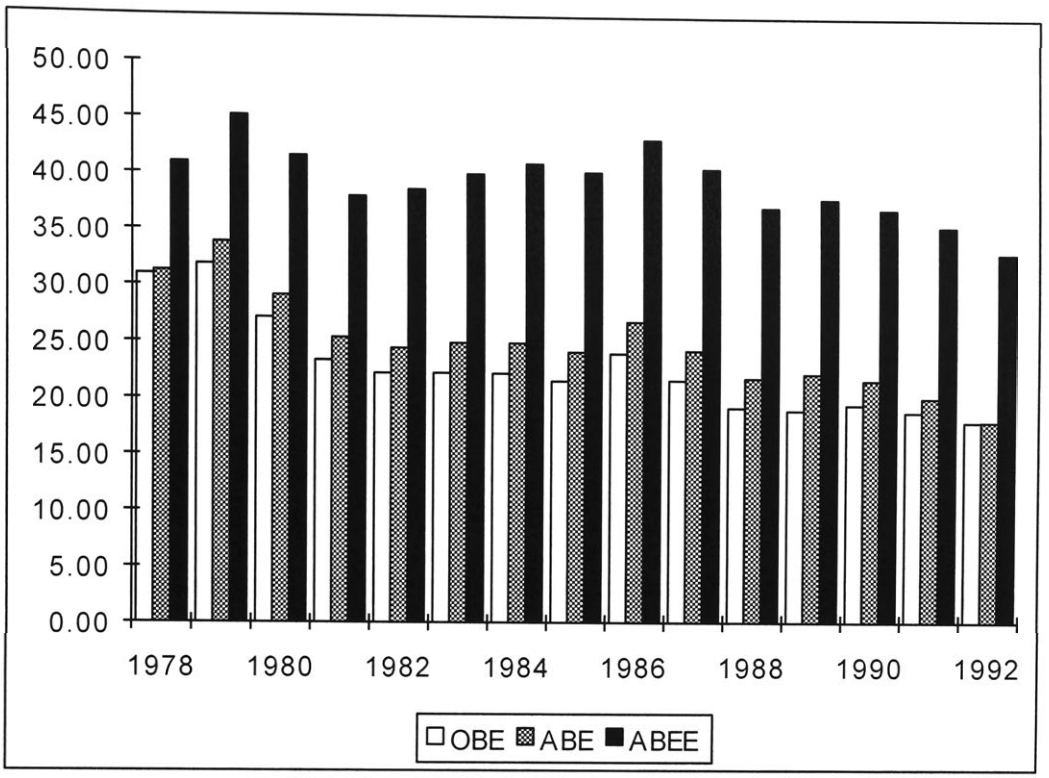
[20] See Tam (1995).
[21] See Kojima (1992).
[22] See SSB (1991 and 1994). The figure of debt revenue income in 1978 was zero.

5.3. Trends in Expenditures

Figure 5.2 shows the changes in public expenditure in relation to GNP. From 1978 to 1992, the shares of the official budgetary expenditure (OBE), the adjusted budgetary expenditure (ABE) and the sum of ABE and extrabudgetary expenditure (ABEE)[23] as a proportion of GNP dropped by 41.83% (from 30.96% to 18.01%), 42.34% (from 31.27 to 18.03%) and 19.41% (from 40.95% to 33.00%) respectively. Here, we get results similar to the trends in revenues, ie, the size of public sector measured by the shares of adjusted budgetary figures in GNP dropped most quickly, followed by its official counterpart, and the sum of adjusted budgetary and extrabudgetary figures gave the most moderate drop.

[23] The Chinese statistical authority has never published the figures of extrabudgetary expenditures prior to 1983. The extrabudgetary expenditure figures from 1978 to 1982 used here are the author's estimates based on the information from interviews conducted in Beijing with officials of Ministry of Finance in July 1996. The estimation is based on an assumption that the provincial extrabudgetary accounts during the 1978-1982 period were balanced. The officials told this author that the same estimates were used by MOF.

Figure 5.2. Shares of Expenditures in GNP, 1978-1992



Source: SSB (1994) and the authors' estimation.

Notes: OBE stands for official budgetary expenditure; ABE stands for adjusted budgetary expenditure; and ABEE stands for the sum of ABE and extrabudgetary expenditure.

More insights might be gained from a detailed look into the structure of changes in the expenditures. For the formal official budget, most of the reduction took place in capital outlays, with the share of official budgetary construction expenditure in GNP dropping from 12.60% in 1978 to 3.14% in 1992.[24] There are at least three reasons contributing to this change. The first one is that a larger share of profits retained by enterprises means a smaller need for the government financed investment through budget grants. The second one is that the rapidly rising extrabudgetary spending partly replaced some former budgetary capital expenditure.

[24] SSB (1994).

And the third one is the effect of "*bo gai dai*"- replacing budget construction spending with bank loans for the SOEs.

One striking feature of the structure of Chinese budgetary expenditure is that social security and social welfare spending is extremely small, with its share in GNP being 0.53% in 1978 and an even lower 0.27% in 1992.[25] This is not only the result of the backwardness of the social security system which basically only covers urban population, it is also because most of the spending in this regard comes directly from the enterprises, not the state budgets. When we compare the size of the Chinese public spending with other countries, this point must be borne in mind.

5.4. International Comparison

It is generally recognised that cross-country comparison of public sector size is usually problematic because each country has its own fiscal setting and uses its own statistical method. However, some international organisations, such as the World Bank and IMF, collect data on a uniform format. Table 5.3 presents some relevant data for an international comparison.

[25] SSB (1994).

Table 5.3. International Comparison of Public Sector Size

Country	Per capita GNP US $	Revenue as % of GNP	Expenditure as % of GNP
Low-income countries[a]	265	16.7	22.8
Middle-income countries[a]	1720	25	29.5
Industrial market economies[a]	11210	33.9	37.5
China			
1982	310[b]	38.8[c]	38.6[c]
1992	470[b]	31.9[c]	33.0[c]

Sources: Figures of public sector size in China are estimates based on SSB data; figures of China's per capita GNP are from The World Bank's World Development Report (1994 and 1984); and data for other countries are from Blejer and Szapary (1990).

Notes: [a] Countries are grouped according to the World Bank's method. These data do not necessarily refer to the same year for all countries, with most of them referring to 1985-1986.
[b] In terms of yuan (at fixed price), China's per capita GNP increased by 1.6 times from 1982 to 1992.
[c] Including extrabudgetary figures.

The size of public sector, whether measured as the share of revenue or expenditure as a proportion of GNP, was much higher in China than in countries with comparable per capita incomes.[26] It was even higher than industrial market economies

[26] According to The World Bank's classification based on per capita GNP, China is among the group of low income countries until the mid-1990s. According to the World Bank's World Development Report (1998), in 1996, China's per capita GNP was 750 US dollars (the highest in the low income countries group) ranked 103, while the PPP (purchasing power parity) based estimate was 3330 international dollars ranked 88. According to the PPP estimate, China could be placed in the group of lower middle income economies.

in 1982. After 10 years of continuous decline in 1992, it was still higher than middle-income countries and only slightly lower than industrialised countries.

Two important factors should be considered. The first one concerns the third category of public funding, ie, the so-called self-generated or off-system public funds. As mentioned in Section 5.1, these funds are collected by different levels of sub-national governments out of the normal taxation system, and spent by their collectors mainly on local public projects. If the estimate by Chinese scholars was correct, then the figures of size of China's public sector in Table 5.3 should be enlarged by roughly a half; and if it is measured as the share of revenue as a proportion of GNP it should be about as high as 48% in 1992. The second concerns social security and welfare expenditures, which constitute more than 10% and 35% of the total expenditures for middle-income countries and industrial market economies respectively,[27] but only about 1.5% for China.[28] If we put these two facts into account, then the comparison suggests that the size of public sector in China until the end of the 1978-1992 period be still very large compared with all market economies.

In modern economic theory, an exchange relationship between the government and the public is often postulated.[29] The government provides public services, such as national defence and social safety, to individuals; individuals pay taxes to the government in exchange. Thus, taxes are the prices paid by individuals for the public goods supplied by the government. The amount of tax, price of public goods, depends

[27] Blejer and Szapary (1990).
[28] SSB (1994).

on the amount and quality of government services. In a market economy, the most important service provided by the government is to maintain the basic rules that keep the market economy in order, including a) institutional rules on identification and protection of property rights, b) operational rules on market trading and competition. In this regard, the services provided by the Chinese government have so far been far from adequate and of very poor quality. Compared with the quantity and quality of government services received by the Chinese public, the tax burden might be very heavy, rather than light.[30] In a situation like this, it is not appropriate, and could even be harmful to enlarge the relative size of the public sector by collecting more taxes from the public. Instead, the government should try its best to provide more adequate and better quality services.

5.5. Effect of Fiscal Decentralisation on Public Sector Size

The drop in Chinese public sector size during 1978-1992 occurred in a period when the process of decentralising the fiscal system was in force. A question arises as to whether there exists a causal relation between fiscal decentralisation and the reduction in public sector size. Can fiscal decentralisation be used as a policy means to reduce the size of public sector? Very large public sectors are considered wasteful and inefficient in many industrialised countries, and decentralisation is believed by some researchers to have an effect on reducing the size of public sector.[31] In this situation,

[29]See, for example, Musgrave and Musgrave (1989) and Samuels (1988).
[30] Zhang (1996).
[31] Brennan and Buchanan (1980), and Ehdaie (1994).

fiscal decentralisation is desirable, if it can cut the size of public sector and lead to a more efficient national economy.

In many countries, especially in developed countries, people are usually more concerned about over expansion of the public sector. Grossman (1992) pointed out that between 1950 and 1984, the size of total government in Australia had increased by approximately 50%.[32] This pattern of growth in government size is recurrent in most major industrialised economies. This continuing expansion of public sector has become a major concern both in scholarly literature and in political debates. Oates (1990) noted that many conferences and volumes of papers exploring the causes and consequences of this growth had taken place, while in the political sphere, presidents and prime ministers had been elected on platforms of budgetary restraint.[33]

The debate on the possibility of using fiscal decentralisation as a means to control over expansion of government size started in the early 1980s, when Brennan and Buchanan (1980) put forward their fiscal decentralisation hypothesis,[34] which states that "total government intrusion into the economy should be smaller, *ceteris paribus*, the greater extent to which taxes and expenditures are decentralised." Since then, there have been several published studies testing this hypothesis.[35] Most of them have used US data. Some early studies, for example Oates (1985) and Nelson (1986), failed to find any supporting evidence. Marlow (1988) pointed out two major

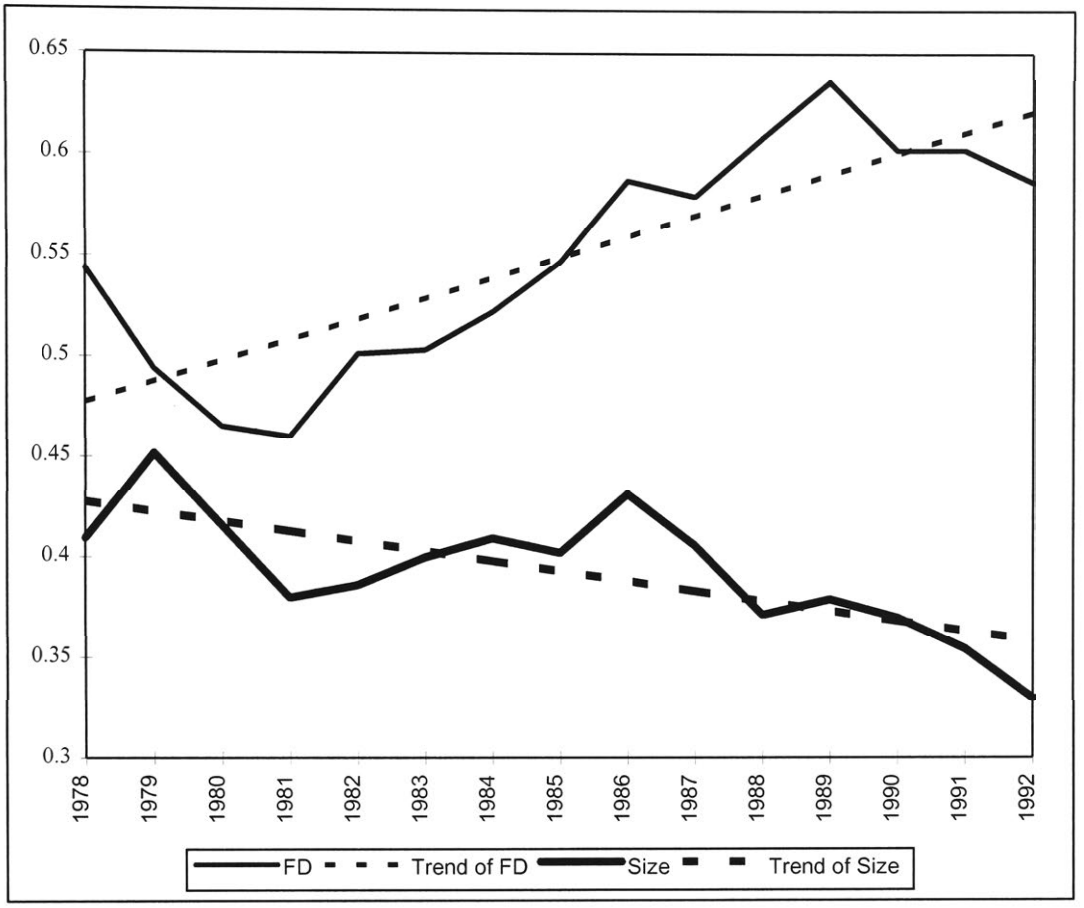
[32] Grossman (1992).
[33] Oates (1990).
[34] Brennan and Buchanan (1980).
[35] See Oates (1985), Nelson (1987), Marlow (1988), Grossman (1989), Joulfaian and Marlow (1990), and Grossman (1992).

problems in the early studies: one was they measured decentralisation at the state-local levels, thus over one-half of the US government expenditure activities conducted by the Federal government were excluded; the other was they measured government size in terms of tax receipts, which, according to Marlow, was underestimated because the Federal government had operated under persistent deficits since 1969. Then, Marlow (1988), Grossman (1989), and Joulfaian and Marlow (1990) reported empirical evidences in support of the decentralisation hypothesis.

All the above mentioned studies have made use of US data. Grossman (1992) examined the impact of fiscal decentralisation on the size of total government in Australia. However, Australian data for the period 1950-1984 offered no support for the fiscal decentralisation hypothesis. He gave some explanations for the different findings compared with his own study on US data: a) Australia has, relative to the USA, fewer low level government units; b) local governments (compared with the Commonwealth and State governments) in Australia are economically insignificant; and c) the geographical isolation results in low population mobility.

The Brennan-Buchanan decentralisation hypothesis still needs more empirical tests. The Chinese practice of fiscal decentralisation during the 1978-1992 period provides a rare opportunity for testing this hypothesis in the context of a large developing country. Figure 5.3 shows the trends of Chinese government size and fiscal decentralisation ratio from 1978 to 1992.

Figure 5.3 Fiscal Decentralisation and Public Sector Size in China, 1978-1992



Sources: SSB(1994) and the author's estimation.

Notes: 1) FD: fiscal decentralisation ratio, measured by the share of the summation of provincial and below governments official budgetary expenditures as a proportion of the total public sector official budgetary expenditures.

2) Size: size of public sector, measured by the ratio of ABEE to GNP. ABEE stands for the sum of adjusted budgetary and extrabudgetary expenditures. See Section 5.3 for detailed explanation.

3) Trend of FD (Size): a fitted line from a linear regression of FD (Size) on a constant and a time trend dummy.

As explained in the above notes, *SIZE* is measured as the ratio of ABEE to GNP. When estimating this variable, extrabudgetary expenditure figures are included. The reasons for doing so were explained in Section 5.1 and Section 5.3. *FD* is

estimated based on official expenditure figures only. This is because extrabudgetary spending figures for some provinces are not available. Since those figures, if available, should have been added to both the denominator and numerator of the ratio, their omission would not bring about a significant problem to the results in this case.

The trends of *FD* and *SIZE* in Figure 5.3 seem to suggest that the size of government is negatively related with the degree of fiscal decentralisation. Therefore, it is reasonable to assume that there exist some negative effects of fiscal decentralisation on the changes in the size of public sector on the basis of the way fiscal decentralisation has been introduced and implemented. It is also reasonable to assume that there is a time lag between fiscal decentralisation and its effects on the observable reduction of government size, because there must be certain institutional changes involved in the process that might take time to occur. These hypotheses can be tested empirically below.

Because the annual data set only contains 15 observations from 1978 to 1992, only very simple econometric models could be employed here.[36] The test involves three steps. The first step is to test the statistical relation between the two variables, and a negative correlation between *FD* and *SIZE* has been detected.[37] However, correlation does not necessarily imply statistical causation in any meaningful sense. The next step is to test whether there exists a causal relation between the two variables and which variable is the lead in the relation. The Granger approach to the question of

[36] Cointegration and error-correction models have been tried by this author. Because the small size of observations, the more advanced models could not generate any meaningful result.

whether Variable X causes Variable Y is to see how much of the current Y can be explained by past values of Y and then to see whether adding lagged values of X can improve the explanation.[38] Y is said to be Granger caused by X if lagged values of X do help in the explanation of current value of Y, or equivalently if the coefficients on the lagged values of X are statistically significant. It is important to note that the statement "X Granger causes Y" does not imply that Y is the result of X. Causality in the Granger sense is different to it is more commonly used in structural sense. Granger causality measures precedence and information content. In this sense, the statement "X Granger causes Y" means that the information contained in X can be used to improve the prediction of Y. Pairwise Granger Causality Tests have been conducted on *FD* and *SIZE*. Theoretically, there might be four possible outcomes: 1) *FD* Granger causes *SIZE*; 2) *SIZE* Granger causes *FD*; 3) *FD* Granger causes *SIZE* and *SIZE* Granger causes *FD*; and 4) *FD* does not Granger cause *SIZE*, neither does *SIZE* Granger cause *FD*. The testing results are reported in Table 5.4.

[37] The coefficient of correlation equals -0.449.

[38] See Granger (1969).

Table 5.4. Granger Causality Test Results

Testing Variables	*FD, SIZE*
Number of Lags	2
Sample	1978-1992
Number of Observations after Adjusting Endpoints	13
Null Hypothesis:	F-Statistic
SIZE does not Granger Cause *FD* [a]	2.15909
FD does not Granger Cause *SIZE* [b]	3.91722

Notes: a) H_o: b_j' s are jointly equal to zero in the following equation

$$(FD)_t = c_0 + \sum_{i=1}^{2} a_i (FD)_{t-i} + \sum_{j=1}^{2} b_j (SIZE)_{t-j} + \varepsilon_t \qquad (1).$$

b) H_o: b_j' s are jointly equal to zero in the following equation

$$(SIZE)_t = c_0 + \sum_{i=1}^{2} a_i (SIZE)_{t-i} + \sum_{j=1}^{2} b_j (FD)_{t-j} + \varepsilon_t \qquad (2).$$

The testing results reported in Table 5 suggest that the hypothesis of *SIZE* does not Granger cause *FD* is accepted, and *FD* does not Granger cause *SIZE* is rejected. These results should be considered as tentative subject to some limitations. However, they do provide some indications on the relationship between the two time series: in the causal relation between *FD* and *SIZE*, *FD* takes the lead, ie, ***FD* causes *SIZE* in the Granger sense**.

Accordingly, we can move to the third step of the testing procedure, and the question that should be answered is: how and to what extent does *FD* affect the changes in *SIZE*. A number of simple regression models are employed here. The results of seven OLS regressions of *SIZE* on an intercept, *FD* and/or lagged *FDs* with various length are reported in Table 5.5.

Table 5.5. OLS Regression Results

	Dependent Variable						SIZE	
	Number of Observations						15	
Regression	FD	FD(-1)	FD(-2)	FD(-3)	FD(-4)	FD(-5)	DW	LM
1	-0.2473 [1.81]						0.8957	7.6128
2		-0.2336 [1.66]					1.0041	8.3297
3			-0.3109 [2.28]				1.0213	5.3454
4				-0.4202 [3.46]			1.2091	4.8394
5					-0.5349 [4.03]		1.5401	4.4815
6						-0.5366 [3.95]	1.8391	3.8412
7				-0.2312 [1.71]		-0.3763 [2.257]	1.9496	1.5952

Notes: 1). Intercept terms are in the regressions but omitted in the table.

2). Numbers in square parentheses are absolute values of t-statistics corresponding to the regression coefficients.

Several interesting points can be observed from Table 5.5:

a) all coefficients of *FD* and lagged *FDs* are negative, indicating negative effects of fiscal decentralisation on government size;

b) lagged *FDs*, especially those with two to five years time length, have more significant effects than current *FD*;

c) DW statistics show that four out of the seven regressions have first order autocorrelation problems; and

d) Breusch-Godfrey LM tests have also been conducted to test higher order autocorrelation,[39] and only Regression 7 can pass the test. Therefore, Regression 7 can be interpreted as the preferred model which indicates that *FDs* with 3 years and five years lags have significantly negative effects on the changes in government size.

The above results from econometrical tests allow us to accept the hypotheses, at least tentatively, on the existence of a negative effect of fiscal decentralisation on government size and a time lag between the implementation of fiscal decentralisation measures and the actual reduction in government size. These results have provided new empirical evidence in support of the Brennan and Buchanan decentralisation hypothesis for the first time in the context of a developing country.[40] The implementation of fiscal decentralisation measures has an effect on the reduction in government size, but the effect needs some time to take place.

In China's case, the time lag is about 3 to 5 years. This might indeed be explained by the particular fiscal arrangement adopted in China during 1978-1992. As mentioned in Chapter 4, contractual fiscal arrangements between the central and provincial governments, the provincial governments and governments at lower levels, and between SOEs and various levels of governments, were dominant during that period. Under this type of fiscal system, any changes in revenue and expenditure

[39] See Johnston (1984).
[40] However, the reduction in Chinese government size during that period could be the result of the whole economic reform process. Fiscal decentralisation may be only one of the contributing factors. The other factors include reforms on the planning system, financial system, investment system and

arrangement required prolonged negotiations before they took effect. In this situation, if there was pressure on the reduction in government size caused by the implementation of certain fiscal decentralising measures or any other reasons, there would be a long process of negotiations, re-negotiations, adjustments and readjustments. These activities took time, resulting in the actual reduction in government size taking place 3 or 5 years later. Thus, certain time lag must be allowed for some institutional changes between the implementation of fiscal decentralisation measures and the actual reduction in government size.

Having examined the possibility of using fiscal decentralisation as a policy means in cutting government size, one might inquire into the goal of the Chinese leaders at the beginning of the economic reform. When they initiated the fiscal decentralisation program, did they realise that fiscal decentralisation would lead to a drop in government size at that time? This question is interesting but hard to answer. On the basis of Chinese research works on economic reforms conducted in the late 1970s and early 1980s, there was no such suggestion or record of discussion in this area. Of course, we cannot rule out the possibility that some people might have thought about it in their minds. However, it can be reasonably concluded that it was not a clear policy goal for the top Chinese leaders to use fiscal decentralisation as a measure to cut government size when they started the fiscal decentralisation process.

SOEs management system. More detailed theoretical and empirical studies are needed to identify the individual contribution of each factor. This task is beyond the scope of this current study.

5.6. Conclusions

This chapter has reviewed the changes in China's public sector size from both revenue and expenditure perspectives. It is found that if the size of the Chinese public sector is measured by the share of the sum of adjusted budgetary figure and extrabudgetary figure in GNP, the drop from 1978 to 1992 was gradual and moderate. Furthermore, this change over the reform years should have been not only expected but also necessary, as the result of decentralising reforms aimed at reducing the government's direct control over resources and as an important part of the transitional process from a centrally planned economy to a market economy.

Until 1992, after more than a decade of continuous decline, the size of Chinese public sector was still large compared with major market economies in the world. In this situation, the most important task for the Chinese government was to rationalise and transfer its functions from direct control to more adequate and better quality services provision, rather than to simply enlarge the size of public sector by collecting a larger share of nation income as state revenue.

Since Brennan and Buchanan put forward their fiscal decentralisation hypothesis in 1980, it has received some supporting empirical evidence, all from studies on developed economies, and mostly on US data. Using the Chinese experience in fiscal decentralisation during 1978-1992 represents a first attempt to test this hypothesis in the context of a developing country. Although the testing results are tentative, they have provided fresh evidence in support of the Brennan-Buchanan

decentralisation hypothesis. However, this thesis suggests that fiscal decentralisation as a policy means should be used carefully in an attempt to cut the government size in other countries.

Consider now the three related questions raised at the beginning of this chapter, namely, what the relations is between public sector size and economic growth, how changes in public sector size affect the government's capacity over macroeconomic control, and what the relation is between government size and its role in the transition from a centrally planned economy to a market economy.

1). Public sector size and economic growth. Table 5.3 shows that a country with higher per capita income seems to have larger size of public sector. Actually, the relationship between public sector size and economic growth has been a major subject of investigation in the public finance literature for more than a century.[41] Theoretical analyses could not reach a commonly accepted conclusion. It remains as an empirical question. Unfortunately, so far no empirical study has produced any firm conclusion in this regard, especially for developing countries.[42]

Martin and Lewis (1956) and Williamson (1961) reported a positive effect of public sector size on economic growth. In contrast, results from studies by Lall (1969) and Gandhi (1971) did not support this result. Gandhi pointed out that sample composition might have something to do with the cross-country findings on the effect

of public sector size on economic growth. If the sample covered both developing and developed countries, then there would be a significantly positive relation; and if the sample contained developing counties alone, then the relation might not be significant. Therefore, there is no solid ground to state that reversal of the declining trend in the size of public sector would necessarily boost economic growth in China.

2). Public sector size and macroeconomic control. Another concern over the size of public sector in China is about the macro control capacity of the government. In a mature market economy, fiscal policy is usually used to control aggregate demand, either from the expenditure side by controlling direct government spending, or from the revenue side by changing the tax level to indirectly control private sector spending. For example, when the government wants to conduct expansionary policy, it can either increase its direct spending to directly increase the level of aggregate demand, or cut taxes. A tax cut on personal income tax can boost personal consumption and investment, and a tax cut on corporate tax can boost firm investment and increase personal income of share holders. The impact of a tax cut is an increase in aggregate demand.

There are three pre-conditions to make this kind of fiscal policy work: a) personal income tax should account for a considerable share in the total tax revenue;

[41] Empirical studies on the effect of public sector size on economic growth can be seen in Martin and Lewis (1956), Williamson (1961), Thorn (1967), Lall (1969), Musgrave (1969), Gandhi (1971), Landau (1983), and Ram (1986).
[42] See Li (1995a).

b) corporate tax should be unified and simple;[43] and c) the whole tax system should be elastic. Before the 1994 tax reform, none of these conditions existed in China. To make fiscal policy work, further fiscal reform is needed. The most important task is to make tax revenue income elastic, that is, when the economy grows, revenue should grow accordingly. Otherwise, the fiscal deficit problem will worsen. When the government is facing recession, it will adopt expansionary fiscal policy, by increasing its direct spending and cutting taxes, to stimulate the economic growth. Then, the revenue losses during the expansionary periods can be recovered by increased revenue income after the economic boom. But, if the taxation system is inelastic, the revenue losses during the expansionary periods cannot be recovered for ever. This will result in ever enlarging budget deficits. And this is at least part of the story of the Chinese fiscal problem in recent years.

A new wave of taxation reform started since the beginning of 1994, emphasising the popularisation of value added tax (VAT) which is a highly elastic tax. For direct corporate tax, the Chinese government has unified and simplified its corporate tax system. So far, personal income tax is still insignificant. Further reform on the taxation system should not ignore this area. In an industrial market economy, more than a quarter of the total revenue usually comes from personal income tax. Further reforming the taxation system would equip the government with higher capacity over macroeconomic control.

[43] Before the 1994 tax reform, the corporate tax system in China was very complicated. There were many different tax rates, ranging from 15% to 55%, applied to different firms.

3). Public sector size and government's role in the transition towards a market economy. A drop in public sector size has occurred in nearly every transitional economy.[44] Before the transition took place, all former Eastern European central planning countries had very large public sectors, as high as 80% in some cases.[45] With no exception, a drop in the public sector size must occur for each of those economies during its transitional period. Given the stage of economic development, in the near future, further decline in the size of public sector in China should not be surprising, if this country is still on the reform track towards a full scale market economy. It may start to rise later on, when the national government begins to take direct responsibility of social security and social welfare expenditures like in other major market economies.

The role of government in the transition from a centrally planned economy to a market economy is a new topic in economics. There is no doubt that transition calls for a politically strong government. Because if the government is not strong enough, obviously, it could not break the huge resistance to carry out the social, political and economic reforms. However, a politically strong government does not mean an economically large government. The size of public sector in a market economy should be much smaller than in a centrally planned economy with a similar level of economic development. This is because they have different functions. The government in a centrally planned economy acts as the most important economic player, taking direct control over nearly all economic resources; while in a market

[44] See Bird and Wallich (1993).
[45] They are measured in the share of budget revenue in NMP. See Wanless (1985).

economy, the government's basic role in general is acting as a "referee" in the economic game.[46] During the transitional period, the size of government should be reduced. The reduction in government size should be accompanied by change in government function. In China, the basic question in the early 1990s was not that the size of government had become too small, but the function of government had changed far from enough.

[46] Of course, this is just a figure of speech. There is no metaphor which is one hundred percent correct. One could argue that the government may very well be the largest single player in a market economy compared with any private firm. However, one cannot contradict the fact that it cannot directly control as many economic resources as its counterpart in a centrally planned economy.

Chapter 6

Effects of Fiscal Decentralisation on Central-Provincial Fiscal Relations

6.1. Introduction

Changes in China's fiscal system between 1978 and 1992 provided a necessary condition that underpinned the economic reforms in the urban sector. Fiscal reforms transformed the central government's economic relationship with provincial governments. This chapter will analyse some important changes in the central-provincial fiscal relations during this period. Two major issues will be discussed here: first, changes in the previous revenue collection and spending relations between the central government and provincial governments; second, the existence and diminution of a fiscal equalisation mechanism during the 1978-1992 period. Although the first issue has been widely discussed,[1] it still remains open for debate. One striking feature of the Chinese fiscal system prior to the current economic reform was that the central government budget revenue relied heavily on remittences from provinces. This fiscal setting has been changing during the reform process. The second issue, initially raised by Tam (1990), can now be investigated further by using some newly available provincial level data. The Chinese style fiscal equalisation mechanism worked on the basis of the particular Chinese fiscal setting, with the richer provinces remitting more funds to the centre than the poorer areas. The empirical test

[1] See Wong (1991), Bahl and Wallich (1992), and more recently, Oi (1995), Ma (1995), Chung (1995), Solinger (1996), and Li and Knight (1996).

results in this thesis not only show the existence of the fiscal equalisation mechanism, but also indicate that it had been weakening since the beginning of the reform. In fact, it was very close to its end in the early 1990s. This might have an immense impact on Chinese regional income disparities before a new fiscal equalisation mechanism starts to work.

The pre-reform fiscal system in China shared two salient features with other Soviet-style fiscal systems: an overwhelming dependence on industry and a reliance on profit remittance and taxes from state-owned enterprises (SOEs) for state revenue.[2] These features are the results of Soviet-type forced industrialisation under the centralised system of economic planning and allocation of resources. The rapid industrialisation was mainly financed with forced savings extracted from the agricultural sector via the "price scissors."[3] This was realised by using administrative prices that systematically discriminated against agricultural and raw material producers in favour of manufacturing industry to transfer surpluses from agricultural and other extractive sectors to the industrial sector, where artificially high profits were created. The state then collected its major part of revenue from these industrial SOEs in the forms of taxes and profit remittance. There were two key features of the pre-reform fiscal system with "Chinese characteristics". The first one is the special central-provincial fiscal arrangement, ie, the central budget relied heavily on the transfer of funds collected by provincial governments. The second is the fact that social security and welfare spending took only a tiny share of the total budget

[2] Wanless (1985), and Wong (1992).
[3] For detailed discussion on this issue, see, for instance, Forster and Tam (1990), and Sheng (1993).

expenditures. This is because a) the social security and welfare program only covered urban population,[4] and more importantly, b) most of spending in this regard was made by SOEs outside the state budget.

Fiscal reform, as an integral part of the whole reform process, along with reforms in other areas, such as price, enterprise, monetary and foreign trade, has changed some of the basic pre-reform fiscal features. By the end of the period under investigation, the degree of reliance of state budget revenue on the industrial SOEs had reduced. The pre-reform basic fiscal setting, with the central government acting as a spender and provincial governments acting as the collecting agents for the centre, had changed so that the central government had to mainly collect its own revenues.

Since the beginning of the current reform, the Chinese leadership had increasingly become more prepared to allow some regions to "get rich first". Some researchers have expressed their concern over the regional income inequality problem and inequality issue at personal or household level in China.[5] Bahl and Wallich (1992) found that income inequalities appeared to have increased between rich and poor provinces, and might have been accentuated by fiscal decentralisation which benefited better-off provinces through increased local tax retention powers. However, some researchers have argued that this was not the case for the period till the end of 1980s.[6] Tong (1989) showed that widening regional disparities had not resulted from

[4] In 1978, the Chinese urban population only accounted for 17.9% of the total. See SSB (1990).
[5] For regional income inequality issue, see, for instance, Tsui (1991), and Bahl and Wallich (1992). And for household income inequality issue, see, for instance, Chai and Chai (1994), Khan et al. (1993), and Khan and Riskin (1998).
[6] See Tong (1989), and Tam (1990).

increasing provincial fiscal autonomy. Tam (1990) found that some fiscal arrangements might in fact have contributed to regional equalisation. In this chapter, an econometric test is used on provincial data to investigate this issue further. It is found that a fiscal equalisation mechanism did exist during the 1978-1992 period, but it was losing its power.

The rest of this chapter is organised as follows. Section 6.2 reviews the evolution of the central-provincial fiscal relations by examining changes in the shares of sub-national governments fiscal flows in the total state fiscal flows from revenue side and expenditure side separately; Section 6.3 provides an empirical test on the existence/absence of the fiscal equalisation mechanism. Finally, Section 6.4 presents some concluding remarks.

6.2. Changes in Central-provincial Fiscal Relations

This section will examine the trend in Chinese central-provincial fiscal relations during the reform years. It will first examine the shares of sub-national governments revenues in the total fiscal revenues and the shares of sub-national governments expenditures in the total fiscal expenditures. It will then turn to provincial level fiscal balances in order to discover changes in the pattern of fiscal remitting from the provinces to the centre. The following diagram will show the changes in central-provincial fiscal relations from both revenue and expenditure perspectives.[7]

[7] Because lack of information on sub-national extrabudgetary figures, only official budgetary figures are used in this chapter.

Figure 6.1. Shares of Sub-national Governments Fiscal Flows in the Total Government Fiscal Flows

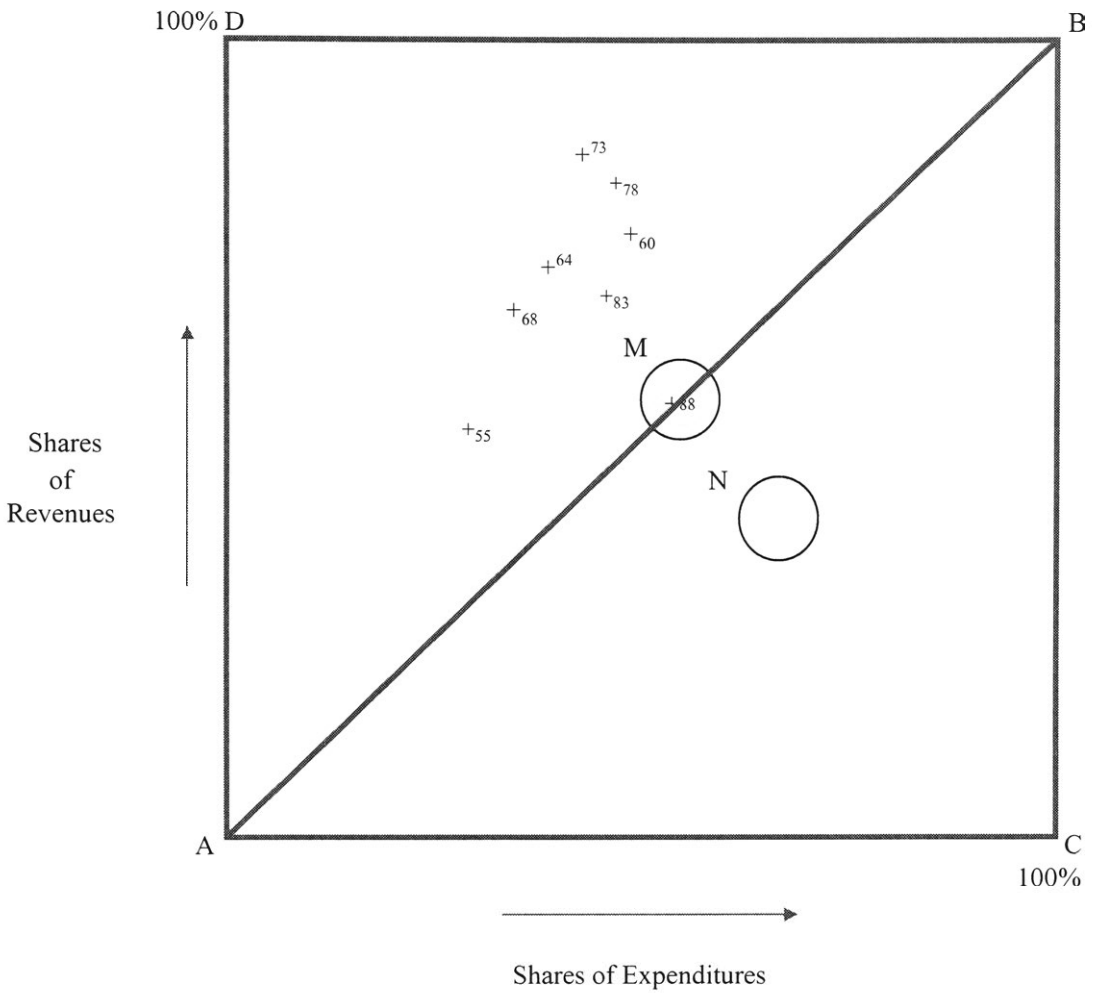


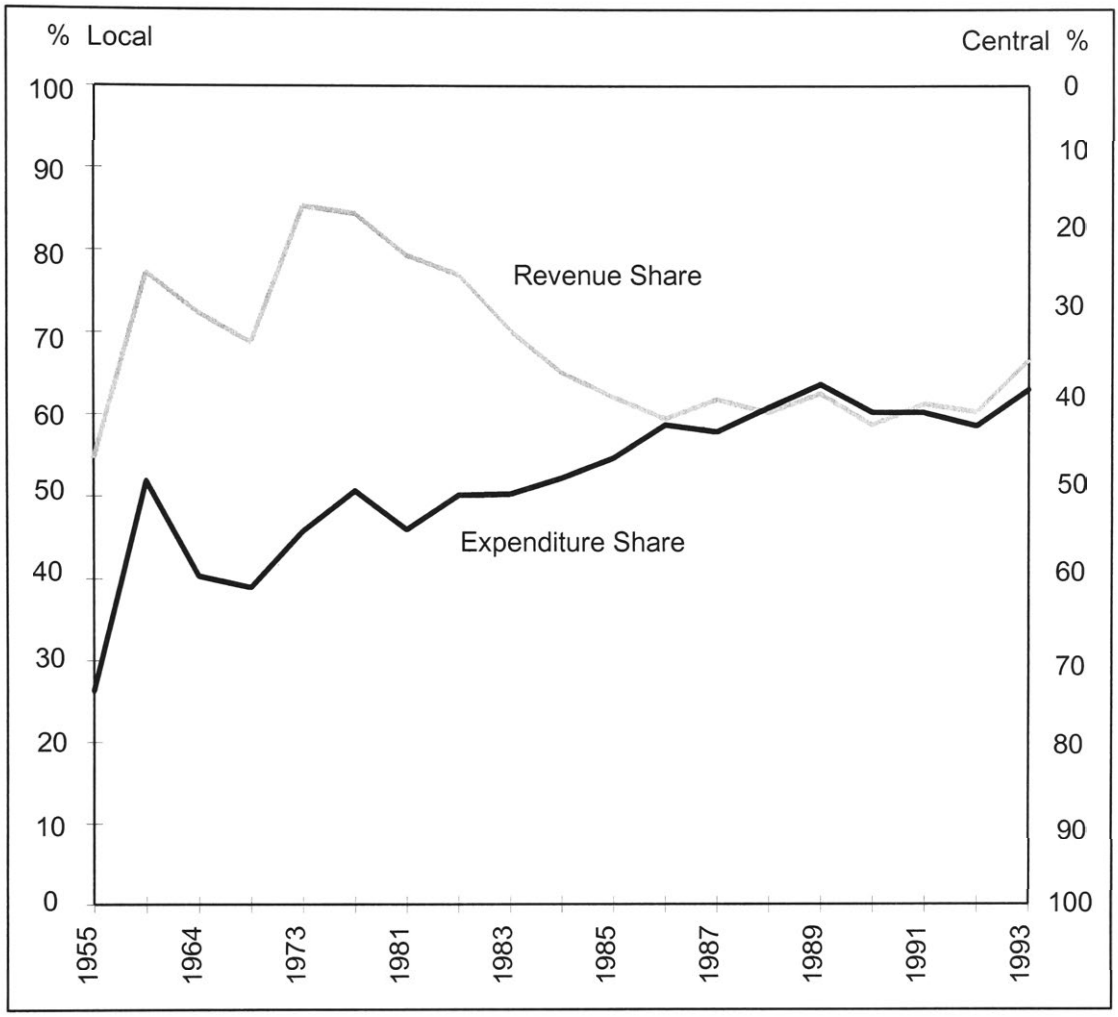
Figure 6.1 can be used to illustrate the shares of sub-national governments fiscal flows in the total public sector fiscal flows from revenue side and expenditure side separately.[8] The points, labelled from 1955 to 1988 in Figure 6.1, reflect the shares of sub-national revenues and expenditures in China's aggregate state budgets. They are averages of eight periods (1953-57, 1958-62, 1963-65, 1966-70, 1971-75, 1976-80, 1981-85 and 1986-90) corresponding to various Five-Year plans (except for 1963-65 which was a three-year readjustment period after the "Great Leap Forward"). We can see that before the mid-1980s (actually 1986), the points were all located in

[8] For explanation on this diagram, see Section 2.3 in Chapter 2 of this thesis.

the ABD area, indicating net fiscal transfers from the provinces to the central. In the mid-1980s, the points moved towards the AB line, and finally in the late 1980s and the early 1990s crossed the AB line into area ABC indicating net transfers from the central to the provinces. From 1986 to 1993, the points were all located around the AB line in the shaded area of M.[9] Detailed trends of the central and provincial shares of revenue and expenditure in the total official state budget are shown in Figure 6.2.

[9] After the 1994 tax reform, the point moved away from the AB line into interior area of ABC, such as the shaded area of N.

Figure 6.2. Central and Provincial Shares of Revenues and Expenditures in the Total Budgets



Sources: SSB (1994).

Notes: The shares prior to 1981 are averages of six periods (1953-57, 1958-62, 1963-65, 1966-70, 1971-75 and 1976-80) corresponding to the various Five-Year plans (except for 1963-65 which was a three-year readjustment period after the "Great Leap Forward"), and points since 1981 are plotted on a yearly basis.

Provincial expenditure share had been rising from about 30% in the mid-1950s to about 60% in the mid-1980s. Since then, it stabilised at around 60%. Provincial revenue share first raised from about 55% in the mid-1950s to a peak of about 85% in the mid-1970s, then dropped to about 60% in the mid-1980s, and then stayed around

that level. There was a big gap between local revenue and expenditure before the mid-1980s. This represented net transfers from provincial authorities to the central government. As explained in Chapter 2, the very large share of local revenue collection pre-1978 did not reflect a high degree of fiscal decentralisation, since local governments acted merely as the central government's collecting agents. Although subject to certain limitations, the share of sub-national expenditure reflects the changes in the degree of fiscal decentralisation which has increased significantly during the reform era.

Table 6.1 presents provincial data for a closer examination of the central-provincial fiscal relationship through examining the changes in **provincial fiscal remitting ratio** (PFRR), which is defined as the ratio of provincial fiscal balance to expenditure. Obviously, we have

$$PFRR_i = (PR_i - PE_i)/PE_i = PR_i/PE_i - 1$$

where i indicates the ith province, and PR and PE are provincial revenue and expenditure respectively.

Table 6.1. Provincial Fiscal Remitting Ratio (PFRR)

PROVINCE	1978	1985	1992
Beijing	1.48	0.59	0.12
Tianjin	1.71	0.79	0.36
Hebei	0.39	0.08	0.00
Shanxi	-0.07	-0.30	-0.10
Inner Mongolia	-0.63	-0.63	-0.46
Liaoning	2.06	0.50	0.02
Jilin	0.00	-0.37	-0.29
Heilongjiang	1.01	-0.16	-0.17
Shanghai	5.51	3.00	0.95
Jiangsu	1.15	0.74	0.21
Zhejiang	0.57	0.56	0.24
Anhui	0.24	-0.11	-0.26
Fujian	0.00	-0.18	-0.11
Jiangxi	-0.25	-0.30	-0.28
Shandong	1.01	0.32	-0.04
Henan	0.22	-0.01	-0.11
Hubei	0.05	0.15	-0.05
Hunan	0.14	-0.02	-0.06
Guangdong	0.46	0.08	0.01
Guangxi	-0.31	-0.32	-0.22
Hainan	-0.19	-0.46	-0.41
Sichuan	0.04	-0.08	-0.12
Guizhou	-0.49	-0.38	-0.22
Yunnan	-0.36	-0.25	-0.10
Tibet	NA	NA	-0.93
Shaanxi	0.08	-0.26	-0.22
Gansu	0.43	-0.31	-0.25
Qinghai	-0.57	-0.76	-0.56
Ningxia	-0.45	-0.68	-0.54
Xinjiang	-0.58	-0.70	-0.54

Sources: Statistical Yearbooks of each province.

Note: NA stands for data not available.

Data in Table 6.1 cover all 30 provinces for 1978, 1985 and 1992.[10] These three years are chosen in order to cover an important period from the late 1970s to the early 1990s, within which both the provincial shares and the net transfers between the central and the provinces changed dramatically. By definition, the PFRR figures show the extent of provincial budget surpluses/deficits compared to their expenditures. A positive figure means that the province in that year recorded a budget surplus remitted to the centre, while a negative figure means a deficit financed by a subsidy from the centre. For example, the figure of 5.51 for Shanghai in 1978 means that a surplus of 5.51 times its spending was recorded and remitted to the central government.[11]

Several interesting points about the central-provincial fiscal relations can be observed. First, major contributors to the central budget in 1978 were: Shanghai, Beijing, Tianjin, Liaoning, Jiangsu and Zhejiang. With Shanghai being the largest, remitted 551% of its own spending to the central government. From 1978 to 1992, all of the six major contributors decreased their remittances drastically. Second, during the same period, Hebei and Guangdong dropped their contributions to nearly zero. Furthermore, nine provinces changed from contributors to recipients (Heilongjiang, Anhui, Shandong, Henan, Hubei, Hunan, Sichuan, Shaanxi, and Gansu). Third, Table 6.1 shows 10 provincial-level governments with budget deficits in 1978. Among them, six provincial-level governments reduced their deficits during the period.

[10] Except Tibet, for which only 1992 figure is available.
[11] In terms of absolute amount, it was about 14 billion yuan.

However, the total number of provinces in the red increased to 20 in 1985 and 22 in 1992.

The above changes are the major factors behind the dramatic shifts in the central-provincial fiscal relations. There are a couple of reasons for these changes to take place. First, since the early stage of the reform, provincial leaders have been given more autonomy in developing their local economies. They need money to invest in local projects. Second, the contractual fiscal arrangement between a province and the central government allows the province to benefit more from local economic growth, because in the intergovernmental contract, the central government usually shares a fixed percentage of the provincial revenue income and a smaller percentage of the share of the above-contract revenue income so as to give the provincial government more incentive to promote local economic growth.[12]

Since the central government in the pre-reform period relied heavily on transfers of funds from provinces, the above changes must cause serious problem to the central budget. The Chinese central government has found it more difficult to finance the central budget in recent years.[13] Simply raising the fiscal share of the central government might mitigate the problem in the short run, but could not solve it in the long run. Because transferring more funds from provinces to the centre might make it easier to balance the central budget, but as mentioned before, there are now more than two third of provinces in deficits. To transfer more funds from provinces to

[12] See Section 4.5 in Chapter 4 of this thesis.
[13] See Tam (1995).

the centre would make more provinces in the red and make those already in deficits more difficult to balance their budgets. This would end up with more fiscal problems for the whole nation. It is clear that the long-term solution to this problem can only be found in further reforms on the fiscal and taxation systems.

In 1994, the Chinese government introduced a new wave of tax reform measures covering several aspects of the fiscal system. For indirect taxes, the government further extended the value added tax (VAT), and set up consumption tax for luxury goods. For direct tax, it set up a unified corporate income tax to replace the old separated taxes for SOEs, COEs (collected owned enterprises), and POEs (privately owned enterprises); it also set up a unified progressive personal income tax. For the central-provincial taxing power redistribution, all taxes are divided into three groups. The first group belongs to the central, including custom duty, consumption tax, income tax from centrally controlled SOEs, income tax from banks and other financial institutions. The second group of tax revenue belongs to the provinces, including personal tax, property tax, and various kinds of user fees. The third group is shared between the central and the provinces, including value added tax and resource tax. The central gets 75 % and the provinces 25 %.

This new wave of fiscal reform measures can be expected to bring about some fundamental changes in the central-provincial fiscal relation in China, but more time is needed to assess the actual results.

6.3. Fiscal Equalisation Mechanism

Now, we can turn to the issue of fiscal disparity. Unlike the usual situation in most market economies, the Chinese fiscal equalisation mechanism is closely associated with fiscal transfers from the provinces to the centre, rather than transfers from the centre to the provinces. In most market economies, the fiscal equalisation mechanism mainly works through the process in which the central government transfers more funds to the poor areas than to the rich areas. The Chinese case is different. It works mainly through the process of revenue collection, with the rich areas remitting more to the centre and the poor remitting less (even negative).

The distribution of the amount of budgetary revenues collected by provincial governments has been highly skewed. In 1978, the top five provincial-level governments accounted for 46.8% of the total revenues collected by all provincial-level governments, while the bottom five managed only 1.4% (Table 6.2). The situation improved marginally by 1992, with the top five collecting 35% and the bottom five 2.4%.

Table 6.2. Shares of Top 5 and Bottom 5 Provinces in Aggregate Provincial Budget Revenue Collections (%), 1978, 1985 and 1992

	1978	1985	1992
The Top 5	46.8	41.6	35.0
The Bottom 5	1.4	1.4	2.4

Sources: The percentage figures are calculated based on provincial revenue data from Statistical Yearbooks of each province.

Since the beginning of the reform, the Chinese leadership has allowed some regions to "get rich first". However, the expected rise in regional income disparities had not occurred until the end of 1980s. There must be some factors that had certain equalisation function.[14] The rest of this section will present a test on whether there existed a fiscal equalisation mechanism within the Chinese fiscal system.

The designed test should be able to detect the existence of the hypothesised fiscal equalisation mechanism. A cross-province regression may do the job. The dependent variable should reflect to what extent a province remitted funds to the central government. The independent variables should include a measure reflecting the relative degree of economic development of a province. In addition to the main independent variable, other variables that may have impacts on the capacity of a province to remit funds to the centre should also be included in the model. Several economic, social and geographic variables have been tried in preliminary tests. Two of them are significant.

As the result of the preliminary experiment, a simple econometric test based on provincial data is performed here to establish the existence/absence of a Chinese fiscal equalisation mechanism. The actual regression equation takes the following form:

$$PRER = \alpha + \beta\ GDPPH + \gamma\ URB + \delta\ POP + \mu\ .$$

[14] There will be a detailed discussion on this issue in Chapter 7 of this thesis.

A regression is conducted on a cross-province basis for each year in the period under investigation. The period covers 15 years, there are therefore 15 regressions in total. The definitions of variables are as follows.

The dependent variable is **provincial revenue expenditure ratio** (PRER), which is defined as the ratio of revenue to expenditure of each province. By definition, we have

$$PRER_i = PR_i/PE_i ,$$

where i indicates the ith province, and PR and PE are provincial revenue and expenditure respectively. Recall that

$$PFRR_i = PR_i/PE_i - 1,$$

therefore, we have

$$PRER_i = PFRR_i + 1.$$

If $PRER_i > 1$, then it means that a budget surplus is recorded for that province and thus remitted to the centre. If $PRER_i < 1$, then it means that a budget deficit is recorded and thus that province gets subsidy from the centre.

There are three independent variables. Provincial per capita GDP (GDPPH hereafter) is expected to have a positive impact on PRER. If fiscal equalisation mechanism is working, then the economically more advanced high-income provinces tend to raise more revenues; and more likely to be capable of remitting surplus to the centre. The other two independent variables are the share of the population living in

urban areas in the province (URB hereafter),[15] and the total population of each province (POP hereafter). It is expected that POP would have a positive impact on PRER, because, even at the same level of income, more people means potentially more revenue that could be collected, and if economy of scale exists in public goods production, then larger POP implies higher PRER. As discussed earlier, it should be noted that Chinese social security and welfare only cover the urban population, and most of the funds do not come directly from the state budget but from the SOEs. They are mainly located in the urban area. Therefore, other things being equal (POP, GDPPH), the higher the URB in a province means less money in the forms of profits or taxes handed from enterprises to the provincial revenue, if the profits and taxes from SOEs still form an important part of the revenue of a province. That implies a negative impact of URB on PRER.

The objective of this test, as specified in this model here, is to find out how PRER can be "explained" by the three independent variables in general, and what is the contribution of provincial per capita GDP to the province's fiscal remittence to the central government in particular. This test does not directly deal with reducing/increasing regional income disparities.[16]

[15] Because there is no information on urban population for several provinces, we use non-agricultural population instead. According the Chinese statistics, most of the employees in the township and village enterprises are still classified as agricultural population, therefore not included in non-agricultural population.

[16] To measure and assess the changes in regional income inequality are the tasks of Chapter 7 of this thesis.

Panel data used in the test are from Statistical Yearbooks of each province. The data set includes 28 provinces out of the total number of 31.[17] This data set covers the whole period of this study. The regressions are designed not only to test the existence/absence of the fiscal equalisation mechanism, but also to capture its changes, if there is any, over time during this important stage of reform. If the regressions generate results as expected, namely, the regressions are overall significant and can pass major diagnostic tests, the major coefficients have signs as expected and are statistically significant, and especially, the coefficients of GDPPH in the regressions are significantly positive, then the existence of a fiscal equalisation mechanism can be established. Table 6.3 reports the OLS regression results.

[17] Hainan and Chongqing were set up in 1985 and 1997 respectively. And Tibet is also excluded because of lack of information.

Table 6.3. Results of Tests on the Existence of Fiscal Equalisation Mechanism

Dependent Variable				PRER		
Number of Observations				28		
Year	Intercept	GDPPH	URB	POP	F (3, 24)	Adjusted R^2
1978	-6.0918	1.5327	-0.5419	0.4123	63.6001	0.8743
	[11.560]	[9.827]	[2.734]	[5.756]		
1979	-6.7671	1.7530	-0.6701	0.3779	48.9642	0.8420
	[10.421]	[8.838]	[2.916]	[4.293]		
1980	-7.8919	2.0631	-0.9965	0.3792	46.5534	0.8350
	[10.644]	[9.177]	[3.783]	[3.760]		
1981	-9.5660	2.4626	-1.3190	0.4491	43.3756	0.8248
	[10.767]	[9.021]	[4.252]	[3.785]		
1982	-8.4925	2.1234	-0.9998	0.4440	55.5296	0.8583
	[12.638]	[10.341]	[4.443]	[3.794]		
1983	-7.9857	1.9356	-0.9034	0.4385	51.8113	0.8495
	[11.473]	[8.994]	[3.777]	[4.911]		
1984	-7.9281	1.8738	-0.7914	0.4454	67.6251	0.8810
	[13.452]	[10.982]	[4.428]	[6.112]		
1985	-6.7501	1.5684	-0.6937	0.3658	58.3235	0.8643
	[12.575]	[10.282]	[4.221]	[5.601]		
1986	-6.0773	1.4159	-0.6048	0.3039	47.5597	0.8380
	[11.386]	[9.339]	[3.720]	[4.686]		
1987	-5.4375	1.2778	-0.5429	0.2546	37.0369	0.8002
	[10.019]	[8.294]	[3.292]	[3.796]		
1988	-4.6524	1.0183	-0.3903	0.2546	29.8175	0.7620
	[8.884]	[7.032]	[2.541]	[4.177]		
1989	-4.0888	0.8928	-0.3411	0.2169	28.7280	0.7550
	[8.778]	[7.048]	[2.608]	[4.140]		
1990	-3.9219	0.8477	-0.3258	0.2038	19.5825	0.6737
	[7.068]	[5.624]	[2.112]	[3.546]		
1991	-3.4943	0.7495	-0.2530	0.1820	20.6628	0.6860
	[7.187]	[5.690]	[1.827]	[3.410]		
1992	-2.9748	0.6099	-0.1673	0.1686	16.0306	0.6255
	[6.894]	[5.757]	[1.504]	[2.947]		

Notes: 1). All variables are in logarithms except intercept term. PRER stands for provincial revenue expenditure ratio; GDPPH for per capita GDP; URB for the share of provincial urban population; and POP for provincial total population.

2). Numbers in square parentheses are absolute values of t-statistics corresponding to the regression coefficients.

3). The 15 regressions have all passed the heteroscedasticity tests. See Appendix to Chapter 6 for detailed testing procedure and results.

The 15 regressions give similar but slightly different results. All coefficients in the regressions get their signs as expected, and are statistically significant. Since cross-section data are used, heteroscedasticity tests have been performed. All 15 regressions have passed the tests. Actual testing results are reported in Appendix to Chapter 6 of this thesis.

Since both PRER and GDPPH are in logarithms, the regression coefficient of GDPPH therefore can be regarded as elasticity of provincial fiscal remitting ratio with respect to provincial GDP per capita. The coefficients of GDPPH from all 15 regressions are positive and statistically highly significant, indicating that a fiscal equalisation mechanism did exist. However, the magnitude of coefficients of GDPPH changed from 1.5327 in 1978 to 0.6099 in 1992, suggesting that the mechanism had been weakening. The elasticity of PRER with respect to GDPPH had been on a continuous decline since 1981, and since 1989 it had dropped consistently below unity. This is a strong indication that the old fiscal equalisation mechanism was losing its role. This could have significant impacts on changes in Chinese regional income distribution in the early 1990s.

All coefficients of URB have negative signs. However, the negative impact of URB on PRER had been reducing during the period, reflected by a significant drop in the absolute value of its coefficient from 1978 to 1992, especially in the last 5 years of this period, with 0.3903 in 1988 and 0.1637 in 1992. While its t-ratio had been dropping as well, being significant only at 10% level in the early 1990s. This might

be the result of some structural changes in the Chinese economy. The reliance of state revenue on SOEs has been reduced dramatically. Since the reform began in the late 1970s, the importance of SOEs in urban economy as well as in the whole national economy has been declining, so is their role in providing social security and welfare. Consequently, the impact of URB on PRER has been weakening, especially since the late 1980s.

All coefficients of POP from the 15 regressions are positive as expected and statistically significant, from 0.4123 in 1978 to 0.1686 in 1992.

The overall significance of regressions in the second half of the period is not as strong as in the first half, represented by the smaller values of F-statistic and adjusted R^2, although technically they are satisfactory for cross-section estimations.

In summary, the regression results suggest that there is a fiscal equalisation mechanism at work. Furthermore, these results indicate that the mechanism had been weakening during the 1978-1992 period and might be close to its end in the early 1990s. This is because the basic conditions for the effective functioning of the fiscal equalisation mechanism had been changing. The old mechanism could only work in such a fiscal setting within which the centre relied on the transfers from the provincial governments, with those provinces with higher incomes remitting more to the centre. Since the beginning of the economic reform, this basic fiscal setting has been changing. The changes took two forms. First, fiscal decentralisation has given more fiscal autonomy to the provincial governments, who have interests to minimise their

remittances to the centre. This resulted in the growth of net remittence of each province lagging behind the growth of its own GDP per capita growth.[18] Second, the central government has to change the system to collect its own revenue since it cannot rely on the remittence from provinces as before. The new wave of fiscal reform measures since 1994 were designed to change the old fiscal setting. In the new system, the central government collects more revenue than its spending need, and transfer part of its collection to provincial governments, with the poorer areas getting more. If this reform is successful, it will establish the basis for a new fiscal equalisation mechanism to replace the old one. The central government can then promote fiscal equalisation with a grant system similar to those widely used in other market economies.

6.4. Conclusions

Several conclusions can be drawn. Firstly, the most important feature of the pre-reform Chinese fiscal system was that the central budget relied heavily on the transfer of funds collected by provincial governments. During the decentralising fiscal reform years, this basic central-provincial fiscal setting changed. The amount of net fiscal transfers from the provinces to the centre declined quickly from 1978 to 1986, then stayed around zero for several years, and finally in the early 1990s became negative, ie, the direction of net fiscal transfer reversed to go from the centre to the provinces.

[18] Time series regressions were tried by regressing PRER on real GDPPH, URB, POP and intercept for several major provinces. In those regressions, real GDPPH exhibited negative impact on PRER.

Secondly, there existed a fiscal equalisation mechanism within the old fiscal setting. However, the mechanism had been losing its power. The econometric model in this chapter was developed to detect the existence of the mechanism and its evolution during the whole period under investigation. The results from the tests are robust and provide support to the theoretical analysis about the existence of this fiscal equalisation mechanism.

Thirdly, as discussed early in this chapter, the Chinese fiscal equalisation mechanism is totally different from its counterpart in other countries. The Chinese mechanism worked mainly through the process of revenue collecting, with the rich areas remitting more to the centre and the poor remitting less. Therefore, it could only work in the particular central-provincial fiscal setting, and when the fiscal setting was changing in the process of decentralising fiscal reform, power of the mechanism had been declining.

Finally, the decline in the effectiveness of the fiscal equalisation mechanism might have some impacts on regional income distribution. This will be the subject of investigation in next chapter of the thesis.

Appendix to Chapter 6

Heteroscedasticity Tests for the 15 Regressions in Section 6.3

All 15 regressions have passed the normal tests, especially the heteroscedasticity test which is more important since cross-section data are used. The tests are based on White's Heteroscedasticity Test method.[19]

If the original regression equation takes the form

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \mu \ ;$$

the argumented regression equation is

$$\mu^2 = \beta_0 + \beta_2 X_1 + \beta_3 X_1^2 + \beta_4 X_1 \times X_2 + \beta_5 X_1 \times X_3 + \beta_6 X_2 + \beta_7 X_2^2$$
$$+ \beta_8 X_2 \times X_3 + \beta_9 X_3 + \beta_{10} X_3^2 + \varepsilon \ .$$

The null hypothesis is that all βs except β_0 in the argumented regression equation are zero, ie, there is no heteroscedasticity in the original regression equation. White's Heteroscedasticity Test is a general test for model misspecification, since the null hypothesis underlying the test assumes that: a) the residuals from the original regression are homoscedastic, b) they are independent of the regressors, and c) the linear specification of the model is correct. Failure of any one or more of these three conditions would lead a significant value of testing F-statistic. By contrast, a non-significant F-statistic would be very reassuring since it implies that none of the three conditions is violated. The actual testing results are reported in Table 6.4.

Table 6.4. Results of Heteroscedasticity Tests

Year	F(9,18)
1978	0.4925
1979	0.4450
1980	2.5516
1981	1.9451
1982	1.9204
1983	1.7597
1984	1.3872
1985	2.1447
1986	1.6586
1987	1.6936
1988	1.5331
1989	1.8605
1990	2.8826
1991	0.9870
1992	1.2884

Notes: The tabulated value of F(9, 18) is 3.60.

Since all F-statistics from the 15 argumented regressions are smaller than the critical value, we can accept the null hypothesis, ie, there is no heteroscedasticity in the 15 original regressions. Furthermore, since the White's Heteroscedasticity Test is a strong test, there is assurance that the model's linear specification is correct.

[19] See White (1980).

Chapter 7

Regional Income Inequality and Fiscal Decentralisation

7.1. Introduction

For a large country like China, regional income disparity is always a problem.[1] Across different regions, geographical, cultural, racial, and levels of initial economic development gaps are substantial. Widening regional income inequality would increase the likelihood of social unrest, hence threaten to break the country apart. In order to maintain social stability, Chinese top leaders have kept an eye on changes in regional inequality. This is more important during the economic reform process. Economic reform is aimed at shifting the whole economy from a centrally planned one to a market one. The task is complex and difficult. Without firm support from the population, it could hardly be completed successfully. Social stability is an important condition for the reform to succeed.

The Chinese reformers face a dilemma. On the one hand, at the beginning of the reform, they were prepared to see regional differentials rise in order to push some regions to grow faster, hence speeding up national growth. On the other hand, they were also keen to keep regional inequality under control, because of worries about losing support from the grassroots. In this regard, the Chinese reformers had been lucky until recently.

[1] Income inequality at personal or household level is also an important issue in China. There have been several excellent studies on this issue, such as Khan et al. (1993), Chai and Chai (1994), and Khan and

From the late 1970s to the end of 1980s, high economic growth was accompanied with a downward movement of regional inequality,[2] providing a favourable environment for the reform. Things have changed since the early 1990s. Although economic growth was still high, regional inequality started to rise. High economic growth could cover up problems brought on by rising regional inequality, at least temporarily. Unfortunately, things keep changing. Recently, the reform process has moved to a stage when the reform must focus on SOEs. Some of the loss-making SOEs have to be closed, while others need to lay off workers to improve efficiency. Unemployment has been rising. Friction is inevitable, and labour unrest is already on the rise. The international environment has changed as well. Recent Asian financial crisis has made China face more severe competitions from her Asian neighbours. In a situation like this, the issue of regional income inequality should be addressed more cautiously. New challenges are ahead for the Chinese reformers.

Previous studies on regional income inequality in China have paid attention to the redistributional effects of fiscal policy. So will this current study. In particular, this thesis focuses on the relation between fiscal decentralisation and regional income inequality. Prud'homme (1995) asserted that fiscal decentralisation would push regional inequality up.[3] Tsui (1991) claimed that he found some evidence in support

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Riskin (1998). However, this thesis will focus only on regional inequality, especially the relation between fiscal decentralisation and changes in regional inequality.

[2] See Section 7.4 of this chapter.

[3] Prud'homme (1995).

of the positive relationship between fiscal decentralisation and regional inequality.[4] This study will empirically examine this issue further.

Chapter 6 shows that there existed a fiscal equalisation mechanism within the particular Chinese central-provincial fiscal setting, and that the mechanism lost its power gradually during the 1978-1992 period. This might have some implications for regional income distribution. This chapter will adopt the procedure described in Chapter 1 to estimate the RIIs (regional inequality indexes) based on both per capita provincial GDP and per capita provincial GDP_{TR} (provincial GDP incorporating fiscal transfer). It will examine their trends and changing patterns, and decompose the squared RII based on per capita provincial GDP_{TR} to reveal the contribution of fiscal redistribution to the changes in regional inequality.

The rest of this chapter is organised as follows. Section 7.2 will review previous studies on regional inequality in China to see what have been done and what need to be done. Section 7.3 will discuss measurement, data and methodological issues. Section 7.4 will present the construction of new estimates of regional inequality indexes based on per capita provincial GDP (hereafter RIIs in short). Section 7.5 will present estimates of regional inequality index based on per capita provincial GDP_{TR} (hereafter RII_{TR} in short) and the outcomes of a factor decomposition analysis. The results from the factor decomposition will indicate the main source of inequality, and reveal the influence of government redistribution through fiscal transfers on the changes in regional income inequality. Lastly, Section

[4] Tsui (1991).

7.6 will summarise the major findings of this chapter and their policy implications. There will be 5 appendices to this chapter. Appendix A will be a brief literature review of the general relationship between income inequality and economic growth. Appendix B will be a technical note on the statistical issue of provincial price indexes. Appendix C will explain the method of estimating fiscal transfer from the central government to each province. Appendix D will present a coastal-inland analysis to investigate the locational effect on regional income distribution by analysing income differentials within the coast, within the interior, and between the two regions. Since there is no suitable price index, the analysis in Appendix D will be based on nominal per capita GDP only. This will be complemented by Appendix E which will contain a variance decomposition analysis of the changes in income differentials, measured in both nominal and real terms, between the coastal and inland regions.

7.2. Studies on Regional Income Inequality in China

Studies on the issue of regional income disparity in China can be divided into three stages, determined primarily by data availability. The first stage started in the mid-1970s and lasted for about one and half decade.[5] The second stage started in the early 1990s and lasted till the end of 1997.[6] And the third stage should start in 1998 after the SSB published for the first time historical provincial GDP data at the end of 1997.[7]

[5] See Lardy (1975, 1976, 1978,1980), Paine (1981), and Riskin (1987).
[6] See Tsui (1991), Lyons (1991), Yang (1994), Jian et al. (1995), Hu and Wang (1996), Rozelle (1996), and Chen and Fleisher (1996).
[7] See Department of National Economic Accounting, SSB (1997).

During the first stage, Lardy's (1975) was the first to provide a systematic account of China's regional inequality. Since value-added data were not available at that time, he had to use provincial gross value of industrial output (GVIO) data instead. In Lardy's (1980) study, he calculated the population-weighted coefficient of variation on per capita provincial GVIO for 1952, 1957 and 1974. His estimated index exhibited a declining trend over time indicating decreasing regional inequality. Since then, several attempts, including Riskin's (1987) comprehensive work, were made to include agricultural output and to adjust gross output data in order to improve upon Lardy's work. However, as pointed out by Paine (1981), the basic problem caused by using gross value of output data could not be overcome until value-added data became available. Before the Chinese government started to release detailed provincial NMP statistics in the late 1980s, all studies on regional inequality were handicapped by the lack of information at the regional level. Despite many careful studies that had been undertaken, the picture of evolution of regional income inequality in China was not clear until the end of this stage.

The lack of statistical information at regional level has improved dramatically since the late 1980s. Equipped with newly available NMP data at provincial level, researchers moved into much better positions to conduct more detailed investigations into this question.[8] Tsui's (1991) and Lyons's (1991) papers made a turning point in the study of Chinese regional inequality, and pushed the studies into the second stage.

[8] See Tsui (1991), and Lyons (1991).

By using value-added based provincial NMP data for the 1952-1985 period, Tsui (1991) found: a) Chinese regional inequality showed, by several commonly used measures, an increasing trend in 1967-1976; followed by a decline during 1976-1985; and b) compared with pre-Great Leap Forward years, the level of regional inequality indexes were higher in the 1970s and the first half of the 1980s. Therefore, he concluded that the previous popular view that regional inequality declined over time should be revised. This conclusion has received support by Chen and Fleisher's (1996) study. However, as will be shown, this thesis does not completely agree with Tsui, and will show that his conclusion is due to his use of the implicit NMP deflator.[9]

Lyons (1991) extended the data set to 1987, so he could examine the changes in regional inequality from 1952 to 1987. He found that the time path of relative inter-provincial dispersion exhibited substantial oscillations: in the sub-period 1965-1984, the pattern of regional inequality yielded the classic inverted-U, but in the sub-period 1953-1976 it yielded an uninverted-U. Yang's (1994) study made use of provincial NMP data in 1952-1990 and found a similar changing pattern of inter-provincial inequality index.[10]

Jian et al. (1995) further extended the period of investigation to 1993. They used the standard deviation of log real per capita GDP across provinces to measure regional inequality and found: a) during the sub-period 1952-1965 there was some evidence for convergence, but it was weak; b) during 1965-1978 there was strong

[9] See Section 7.4 of and Appendix B to this chapter for details.
[10] Yang (1994).

evidence for divergence; c) during 1978-1990 there was strong evidence for convergence; and d) since 1990 inter-provincial disparities began to rise again.[11] They concluded that central planning had, if anything, the opposite effect on regional convergence, while marketisation and openness had positive effects on convergence.

Their time path of regional inequality from the mid-1960s to the end of 1980s is an inverted-U. However, their explanations for the changes in the periods before the mid-1960s and after 1990 were weak. For the slight convergence in 1952-1965, they assumed that there were two offsetting forces at work: one was a bias against agricultural regions, which tended to divergence, together with an additional, and unidentified force pushing towards convergence.[12] For the divergent trend since 1990, they pointed out that the major reason was the widening per capita GDP gap between the inland region and the coastal region, and the "floating population" might contribute to the upward trend as well.[13]

Hu and Wang's (1996) study, using coefficient of variation on provincial per capita NMP data from 1952 to 1992, found a similarly changing pattern of regional inequality, that is, it was widening in 1952-1978, narrowing in 1978-1991, and widening again since 1991.

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[11] See Jian et al. (1995). They employed two sets of data: the first one contains 15 provinces from 1952 to 1993, and the second one contains 27 provinces from 1978 to 1993. For both sets, they used yearly data since 1982 and bench mark year data before 1982.

[12] This study has found that the unidentified force may be the fiscal redistributional effect. For detailed discussion, see Section 7.5 and 7.6 of this chapter.

[13] Hu and Wang (1996) also noticed this point.

Chen and Fleisher (1996) estimated coefficient of variation for provincial real per capita NMP over the period 1952-1992 and real per capita GDP over the period 1978-1993. Their NMP-based inequality index showed that the overall trend in inter-provincial inequality after 1952 is evidently positive, despite the downward drift starting about 1980. They noted that the overall trend reported by Lyons (1991) is evidently attributable to his use of nominal NMP data.[14]

Despite some slight differences, these above mentioned results have shown that the time path of regional (inter-provincial) inequality indexes (RIIs) exhibited substantial oscillations: they all started to drop slightly from their levels in the early 1950s (Point A in Figure 7.1) to a turning point (Point B in Figure 7.1) in the early or mid-1960s,[15] then increased dramatically to their local maximum (Point C in Figure 7.1) in the late 1970s, after which some indexes dropped quickly and others slowly to their next local minimum (Point D in Figure 7.1) in the mid- or late 1980s or even in the early 1990s. The estimated RIIs in existing studies all exhibited ups-and-downs, but each has its own turning points and its changing magnitudes in different sub-periods. A comparison of the above results is given in Table 7.1a and Table 7.1b.[16]

[14] Chen and Fleisher (1996), Page 147.
[15] There is no doubt that the Chinese economic data for the Great Leap Forward period are of poor quality from which one could hardly draw any meaningful conclusion. For this reason, figures from 1958 to 1961 are ignored in this analysis.
[16] Results from Hu and Wang (1996) are excluded since their index is calculated on averages for each sub-period, not yearly based.

Figure 7.1. Time Path of Regional Inequality Index

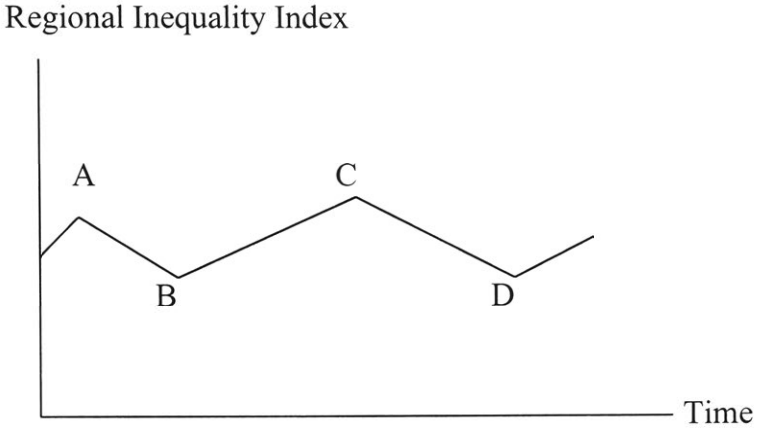

Table 7.1a. A Comparison of Major Turning Points

Author	Major Indicator	Covering Period	Major Turning Points			
			A	B	C	D
Tsui (1991)	Vw_nd[A]	1952-85	1953	1967	1976	1984
Lyons(1991)	Vuw_nn[B]	1952-87	1953	1967	1976	1984
Yang (1994)	Vw_nd[A] Vuw_nd[C]	1952-90	1953	1962	1978	.....
Jian et al. (1995)	SDL_gi[D]	1952-93	1952[E]	1965[E]	1978[E]	1991
Chen & Fleisher (1996)	Vuw_nd[C]	1952-92	1953	1962	1979	1990

Sources: Tsui (1991), Lyons(1991), Yang (1994), Jian et al. (1995), and Chen and Fleisher (1996).

Notes: A) Population-weighted coefficient of variation based on provincial per capita real NMP;
B) Unweighted coefficient of variation based on provincial per capita nominal NMP;
C) Unweighted coefficient of variation based on provincial per capita real NMP;
D) Standard deviation of log per capita real GDP.
E) Since benchmark years data before 1982 were used here, these three years might be not the exact turning points, but the benchmark years closest to the actual turning points.

Table 7.1b. A Comparison of Changing Patterns

Author	Major Indicator	Changing Pattern			
		A -- B	B -- C	C -- D	D --
Tsui (1991)	Vw_nd	1953 -- 67 down very weak	1967 -- 76 up very strong	1976 -- 84 down weak	.....
Lyons(1991)	Vuw_nn	1953 -- 67 down weak	1967 -- 76 up very strong	1976 -- 84 down strong	.....
Yang (1994)	Vw_nd Vuw_nd	1953 -- 62 down weak	1962 -- 78 up very strong	1978 -- down strong	.....
Jian et al. (1995)	SDL_gi	1952 -- 65 down weak	1965 -- 78 up very strong	1978 -- 91 down very strong	1991 -- up
Chen & Fleisher (1996)	Vuw_nd	1953 -- 62 down weak	1962 -- 79 up very strong	1979 -- 90 down weak	1990 -- up

Sources: Tsui (1991), Lyons(1991), Yang (1994), Jian et al. (1995), and Chen and Fleisher (1996).

In summary, most of the existing studies on regional income disparities in China show that the RIIs exhibited significant ups and downs. Compared with studies on other counties,[17] the evolution of regional (inter-provincial) inequality in the history of PRC for nearly half a century seemed to have more oscillations than other countries at similar economic development stages.

The whole period from the early 1950s to the early 1990s can be divided into four sub-periods:

1) from the early 1950s to the early or mid-1960s, the RIIs went down slightly;

2) from the early or mid-1960s to the late 1970s, there was a very strong upward movement of each RII, and this strong upward movement was closely associated with the "Cultural Revolution";
3) from the late 1970s to the mid- or late 1980s (the first decade of the economic reform process), after RIIs reached their peaks in the late 1970s, they started to drop again;
4) for those studies covering the early 1990s, the RIIs showed a new upward journey since the late 1980s or early 1990s.

In spite of these similarities in the estimated changing patterns, differences do exist. The most important one concerns the downward movement during the third sub-period: according to Tsui (1991) and Chen and Fleisher (1996), the drop was weak; but according to Lyons (1991), Yang (1994) and Jian et al. (1995) the drop was strong. Section 7.4 of and Appendix B to this chapter will investigate this issue to find out why different authors reached such different results on the downward movement of RII during the first decade of the economic reforms. It has found that the differences in the estimated magnitudes of decrease in RIIs in this sub-period were caused by using different price indexes in calculating provincial real per capita income figures. The estimates of RIIs will show a mild decline if they are estimated on the basis of provincial implicit deflators, or a rapid decline if they are estimated in nominal terms, or an even more rapid decline if they are estimated based on provincial retail price indexes.

[17] See Williamson (1965) for example.

Inter-provincial income inequality in China is closely linked to the rural-urban differentials and the coastal-inland disparities. Oi (1993) reported that rural-urban income inequality had narrowed since the advent of economic reforms in the late 1970s, because previously repressed agriculture and rural industry had been permitted to take advantage of benefits of competing in freer markets.[18] In contrast, Chai and Chai (1994) using SSB rural and urban household income survey data from 1978 to 1991 found that rural-urban income disparity fell before 1985 and increased since then.[19] Khan and Riskin (1998) pointed out that the Chinese official (SSB) household survey data underestimated both the level of per capita household income and the inequality of income distribution. They therefore conducted an independent survey with the help of a number of Chinese host institutions in 1988, and again in 1995. According to their international standard survey data, the estimate for per capita disposable real income annual growth rate for urban household was 4.48% from 1988 to 1995, while for rural household 4.71%. They concluded that the rural-urban income differentials reduced during 1988-1995.[20]

On coastal-inland income disparities, most researchers have reported similar results: the income gap between coastal region and inland region has widened, while the gap within either of the two groups has narrowed.[21] Appendix D and E to this chapter will check the validity of this statement by using newly available data, using different methods. It is found that inter-provincial inequality within the coastal region

[18] Oi (1993).
[19] Chai and Chai (1994).
[20] However, their overall picture of income distribution in China between 1988 and 1995 was not so bright. Their estimates of income inequalities for rural, urban and the nation as a whole all went up significantly during 1988-1995. See Khan and Riskin (1998).

has been the dominant source for nationwide regional inequality, especially for the significant downward movement in the economic reform era. Inter-provincial inequality within the inland region has been on a slight long-run decline from the early 1950s to the mid-1990s in spite of several small ups and downs. The long-run trend of income differentials between the two regions has shown a U-shape movement. It was on a decline from the early 1950s to the mid-1960s, then started to rise. Especially during the five years from 1989 to 1994, it was on a steep rise.

Some early studies on regional inequality in China focused on the effects of fiscal policy, especially the effect of inter-provincial transfer of funds through the state budgets. The famous Lardy-Donnithorne debate was focused on this issue.[22] In fact, both authors hypothesised a positive relationship between fiscal decentralisation and regional inequality. The difference between them was about the character of the fiscal decentralisation. According to Lardy's view, although the Chinese government had been harping on the theme of fiscal decentralisation since 1958, the alleged decentralisation since then was more apparent than real. Because of the unavailability of important statistics during the 1970s, Lardy had to make use of fragmentary information collected from newspapers and other official publications. He found no evidence of a drastic cut in budgetary investments and expenditures in some poor provinces. Donnithorne (1976) argued that Lardy's focus on budgetary funds might have underestimated the degree of fiscal decentralisation because of the rapid growth in extrabudgetary revenues. She put forward the cellular-economy hypothesis,

[21] See Yang (1994), Jian et al. (1995), and Chen and Fleisher (1996).
[22] See Donnithorne (1967, 1972, 1976) and Lardy (1975, 1976, 1978, 1980).

sometimes called the fragmentation hypothesis, whereby fiscal decentralisation since 1958 had resulted in declining inter-provincial flows of funds. Donnithorne's view has been further developed by some other China experts.[23] The natural and logical conclusion of the fragmentation hypothesis is that since fiscal decentralisation has a positive effect on regional inequality, the reduction in inter-provincial flows of resources will therefore raise regional inequality.

Tsui (1991) claimed that he found some evidence in support of the positive relationship between fiscal decentralisation and regional inequality.[24] However, his claim might be challenged on at least two fronts. First, his use of the share of extrabudgetary revenue in NMP as a measure of fiscal decentralisation is somewhat problematic. As discussed in Chapter 2, by definition, the degree of fiscal decentralisation should be a measure reflecting the extent to which fiscal decisions are made out of the centre. According to Wong (1991) and Tam (1995), a significant part of extrabudgetary funds were still under central control.[25] Therefore, the share of extrabudgetary revenue in NMP is not the best measure for the degree of fiscal decentralisation.

Second, fiscal decentralisation might reduce the amount of fiscal transfer, and therefore might affect the effectiveness of fiscal equalisation mechanism. However, as will be discussed later in this chapter, the direction of regional inequality movement (up or down) in any given period is determined by the combined effect of a

[23] Such as Wong (1985, 1987), Naughton (1987) and Lyons (1987).
[24] Tsui (1991).

number of influencing factors. Some are equalising factors, while others disequalising ones. Fiscal decentralisation is only one of the factors affecting the movement of regional inequality. Therefore, the asserted statistically positive relationship between fiscal decentralisation and regional inequality, even if it did exist, is not sufficient evidence for the positive effect of fiscal decentralisation on regional inequality. Further investigations are needed. Section 7.5 of this chapter will present a factor decomposition analysis to investigate this issue.

7.3. Data, Measurement and Methodology

There are several summary measures for quantifying the degree of income inequality used in empirical studies. Commonly used ones include the Lorenz Curve, Gini Coefficient, Standard Deviation, Coefficient of Variation, Theil's Entropy Measure, Atkinson Index, and Kakawani's Measure.[26] Since Williamson's (1965) work on regional income inequality, coefficient of variation has become the most popular measure in this area.[27]

Most studies on China's regional income inequality used the coefficient of variation as the major measure.[28] This might be because: a) as believed by most

[25] See Wong (1991), and Tam (1995).
[26] The merits and problems of each of those measures are summarised by Atkinson (1970), Sen (1973), Kakwani (1980), and Basmann, Hayes and Slottje (1993).
[27] The second most popular measure in regional studies is Gini Coefficient, see Liu (1969) and McGillivray and Peter (1991).
[28] See Lardy (1980), Paine (1981), Riskin (1987), Lyons (1991), Tsui (1991), Yang (1994), Hu and Wang (1996), and Chen and Fleisher (1996).

researchers, it is a reasonably good measure of income inequality;[29] b) being the most commonly used index, it has the merit of facilitating comparisons with previous studies; and c) it is easy to calculate. Some other measures have been tried by several researchers. Jian et al. (1995) used standard deviation of log per capita real GDP. Hu and Wang (1996) mainly used coefficient of variation and tried a simple measure as the ratio of maximum value to minimum value of per capita GDP across all regions.[30] Tsui (1991) pointed out that there is no sound theoretical reason to choose coefficient of variation over other alternative measures.[31] In fact, he employed coefficient of variation together with Gini coefficient, Theil's entropy measure, and the Atkinson index. However, his results showed that all the alternative measures gave similar changing patterns of regional inequality in China over time in terms of basic trend and major turning points. In this study, given the above, coefficient of variation will be used as the major measure for regional inequality index (RII). There are several more issues that should be discussed concerning the method of measuring regional inequality in China.

First, we have to choose the appropriate unit for designating the regions for the purpose of analysis, otherwise any calculated figure of RII might be meaningless. In the case of China, if we divide China into two regions, ie the coast and the interior, we might end up with the conclusion that regional inequality has been increasing since the inception of the reforms; but if we look at a more disaggregated level of regions,

[29] See Sen (1973).
[30] Obviously, this measure is not very useful, since it is too sensitive to what unit of region (province or county, for example) is used in the calculation. The smaller the unit is, the higher the value of the measure will be.
[31] See Tsui (1991), Page 6.

such as the province, the conclusion might be different. In view of the above, regional inequality in this study is defined as inter-provincial inequality unless stated otherwise. Skinner (1976) pointed out, as cited by Riskin (1987), that natural economic regions coincide imperfectly with provinces or groups of provinces.[32] The reasons for concentrating on inter-provincial inequality is because: a) relatively more provincial data are available; and b) one of the main goals of this thesis is to examine whether there is any effect of changes in the central-provincial fiscal relations on regional inequality. Therefore, province is chosen as the basic unit of analysis in this study. By the same token, the three big cities, namely, Shanghai, Beijing and Tianjin stand along as independent provinces in this study.[33]

Second, we have to choose between population-weighted coefficient of variation (Vw) and unweighted one (Vuw). Williamson preferred Vw, and many researchers followed him. However, Lyons (1991) argued that, in certain cases, Vuw may be more appropriate.[34] Chen and Fleisher's (1996) work showed that Vuw provided an almost identical picture as Vw did in examining the changes in Chinese inter-provincial inequality.[35] Preliminary estimation of this study has also confirmed this finding. Vuw is therefore chosen as the major regional income inequality measure in this study.[36]

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[32] Riskin (1987).
[33] Some researchers combine Beijing and Tianjin into Hebei, Shanghai into Jiangsu. For example, Tsui (1991) employed this method. However, if the primary interest is distribution of income across provinces, the three cities should stand along in the calculation. Actually, these three city provinces are large enough, for example, Shanghai itself has a population of 13.5 million which is larger than the total population of some countries in the world.
[34] Lyons (1991).
[35] Chen and Fleisher (1996).
[36] Except Appendix E to this chapter, where standard variation and variance of log per capita GDP are used.

Third, for measurement of provincial per capita income, we need to choose between GDP and NMP data. Previous researchers had very limited freedom in making any choice in this regard. Data availability is always a problem for studies in this area. Detailed provincial GNP or GDP figures were not available until the end of 1997. In the 1970s and the early 1980s, China experts were forced to use Gross Value of Output data to study Chinese regional inequality issues.[37] Despite many careful studies that had been done, the picture of evolution of regional inequality in China was not clear. The lack of information at regional level has improved dramatically in recent years. The most important change in this area took place recently, when SSB released at the end of 1997 a new publication, *The Gross Domestic Product of China: 1952-1995*.[38] This publication made available for the first time detailed provincial historical GDP data. Although GDP data are still subject to some limitations, they are much superior to the NMP figures.[39] This study will make use of these latest available provincial GDP data, containing all 28 provinces and covering the period from 1952 to 1995, for the first time,[40] in estimating RIIs. While NMP data are also used for comparison with previous studies.

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[37] See Lardy (1975, 1976, 1978,1980), Paine (1981), and Riskin (1987).
[38] Department of National Economic Accounting, SSB (1997).
[39] Critics on GDP can be seen in many references, for example, see Samuelson and Nordhaus (1995).
[40] Among all previous studies, only Jian et al. (1995) made use of provincial GDP data prior to 1978. They employed two sets of data: the first one contains 15 provinces from 1952 to 1993, and the second contains 27 provinces from 1978 to 1993. For both sets, they used yearly data since 1982 and bench mark year data before 1982. Chen and Fleisher (1996) employed two sets of data: one contains NMP figures of 28 provinces covering from 1952 to 1992; the other contains GDP figures of 25 provinces covering from 1978 to 1993.

Fourth, while figures of per capita GDP (or NMP) for each province provide the basic information in estimating RIIs, should they be in nominal or real terms? Most researchers have chosen per capita income in real terms. However, Lyons (1991) used both terms.[41] He argued that if changes in real income level are of concern, then fixed-price indexes are undoubtedly superior; and when the immediate impact of changes in output on redistributional policies are of concern, then nominal-price indexes are useful. In this study, inequality indexes in both nominal and real terms will be estimated, since the interest is not only in regional inequality on real income level, but also in the effects of government policies, especially the fiscal policy on regional income distribution.

Fifth, the last but not the least important, when we use income figures in real terms, we need to choose which price index to be used in deflating the nominal figures. For the whole 1952-1995 period, there are only two province-specific price indexes available, namely provincial retail price index (PRPI) and the so-called implicit GDP (or NMP) deflator (PGDP or PNMP hereafter).[42] Jian et al. (1995) employed the former and Chen and Fleisher (1996) used the latter. Although they are all province-specific, they did give different results. However, so far, there has been no systematic attempt to explain the differences in results caused by using different price indexes. This chapter will also try to provide some explanations. Detailed discussion on the differences between PRPI and PGDP or PNMP are beyond the scope of this study. However, Appendix B to this chapter will present a brief

[41] Lyons (1991).

explanation on this issue. As explained in Appendix B, both PRPI and implicit deflator have serious problems, they should be used with caution, and the derived results should be treated as tentative.

In summary, non-population-weighted coefficient of variation is chosen as the major indicator for measuring regional (inter-provincial) income inequality in this study. And in order to keep the computation task manageable, six indexes will be estimated in Section 7.4, namely Vgn, Vgi, Vgd, Vnn, Vni and Vnd. Table 7.2 gives their definitions.

Table 7.2. Definitions of Regional Inequality Indexes

Symbol	Covering period	Definition: Vuw calculated based on
Vgn	1952-1995	nominal provincial per capita GDP
Vgi	1952-1995	nominal provincial per capita GDP deflated by PRPI
Vgd	1952-1995	nominal provincial per capita GDP deflated by PGDP
Vnn	1952-1992	nominal provincial per capita NMP
Vni	1952-1992	nominal provincial per capita NMP deflated by PRPI
Vnd	1952-1992	nominal provincial per capita NMP deflated by PNMP

Notes: Vuw is population-unweighted coefficient of variation;
PRPI is provincial retail price index;
PGDP is provincial implicit GDP deflator;
PNMP is provincial implicit NMP deflator.

[42] Non province-specific price index was tried by some previous researchers without producing any

GDP based indexes (Vgn, Vgi and Vgd measured in different prices) cover the period of 1952-1995. Since the focus of this thesis is on the period of 1978-1992, the pre-1978 indexes are calculated for comparison purpose, and the post-1992 figures would help to make the changing pattern in the early 1990s become more visible.[43] NMP based indexes (Vnn, Vni and Vnd measured in different prices) cover the period of 1952-1992, because most provincial statistics bureaus ceased NMP calculation in 1993. For the purpose of investigation, all six RIIs are useful: if regional growth differentials are of major concern, then the PGDP and PNMP based RIIs are preferable; if regional inequality in consumption and living standards are of major concern, then the PRPI based RIIs are more useful; if inter-regional redistributional policy is of major concern, then the nominal price based RIIs are easy to use. In Section 7.4 of this chapter, all of them will be used to reveal the trends and changing patterns of RIIs; and Section 7.5 will investigate the effects of fiscal redistribution on regional inequality, only nominal price based RII will therefore be used.

The analysis in Chapter 6 has shown that there was a fiscal equalisation mechanism within the Chinese fiscal system through fiscal transfers between the central government and provincial governments. This chapter will investigate this question further to see how fiscal redistribution affects inter-provincial inequality. In a certain sense, there are some similarities between the effect of fiscal redistribution on income distribution across provinces, and the redistributional effect of taxation on

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meaningful results. For example, see Chen and Fleisher (1996).

[43] Studies by Jian et al. (1995) and Chen and Fleisher (1996) extended their studying periods to 1993 and found that RIIs went up again in the early 1990s. The new data set covers the period from 1952 to 1995, which allows this study to extend the period of investigation to the mid-1990s so that new developments that have emerged in the early 1990s can become more visible.

income distribution among individuals. Taxation is said to have significant redistributional effect on inter-personal inequality. This effect can be detected by a simple three-step method: a) estimating the pre-tax income inequality index, b) estimating the post-tax income inequality index, and c) comparing the calculation results from the first and the second steps.

A similar procedure can be used in detecting redistributional effect of fiscal transfer. First, the pre-fiscal redistribution regional inequality indexes (ie RIIs based on per capita provincial GDP, RIIs in short) need to be estimated. This will be done in Section 7.4. Second, an attempt will be made to estimate the amount of fiscal transfer from the central government to each province. The issue of how to estimate the amount of fiscal transfer for each province will be explained in Appendix C to this chapter. When fiscal transfer figures are available, the provincial GDP incorporating fiscal transfer (GDP_{TR}) for each province can be calculated. Then RII based on per capita provincial GDP_{TR} (ie, RII_{TR}) will be estimated. In the third step, the estimated RIIs will be compared with the estimate of RII_{TR} to see how fiscal redistribution affect inter-provincial income inequality. Furthermore, this study will push the investigation one step forward by employing a factor decomposition technique on RII_{TR} to see how each of the factor components affects the overall changes. The estimation results of RII_{TR} and the decomposition analysis will be presented in Section 7.5. As explained early, since redistribution policy is of major concern in this section, only per capita GDP data in nominal prices will be used in section 7.5.

For each province, the GDP_{TR} can be defined as the sum of GDP and fiscal transfer (TR hereafter), that is

$$GDP_{TR} = GDP + TR .$$

Provincial GDP data are available in SSB statistic sources and TR data can be estimated as described in Appendix C to this chapter.

Provincial GDP may be decomposed into its factor components so that

$$GDP = GDPF + GDPS + GDPT,$$

where GDPF, GDPS and GDPT stand for GDP produced by the primary sector, the secondary sector and the tertiary sector respectively. According to official Chinese statistics, the primary sector includes only agriculture; the secondary sector includes industry (mining, manufacturing, supply of water and electricity etc.) and construction; the tertiary sector includes all other economic activities not included in the primary and the secondary sectors.[44]

Accordingly, provincial GDP_{TR} may further be decomposed into four components, that is

$$GDP_{TR} = GDPF + GDPS + GDPT + TR .$$

Factor decomposition on a regional inequality index is useful. Through it, the contribution of each factor to the overall change of the index can be analysed. Shorrocks (1982) showed that under certain assumptions there exists a simple

[44] SSB (1992).

decomposition method that can be applied to any inequality index.[45] In the case of coefficient of variation, this method can be applied to its square, ie variance divided by the square of the mean. The decomposition formula can be derived as follows.

Suppose we have x_{ij} , a 28×5 matrix, representing a set of data for per capita GDP_{TR} and all factor components of per capita GDP_{TR} of all provinces in a year, with each of its elements representing a number of per capita GDP_{TR} or a factor component of per capita GDP_{TR} of a province, where

i = 1, 2, …, 28 (representing 28 provinces),

j = 0, 1, 2, 3, 4 (representing per capita GDP_{TR}, GDPF, GDPS, GDPT, and TR respectively).

For any year, we have

$$Var(x_{i0}) = \sum_{j=1}^{4} Cov(x_{ij}, x_{i0}).$$

Both sides multiplied by

$$\frac{Var(x_{i0})}{Var(x_{i0}) \times (Mean(x_{i0}))^2},$$

yields

$$\frac{Var(x_{i0})}{(Mean(x_{i0}))^2} = \sum_{j=1}^{4} \frac{Cov(x_{ij}, x_{i0})}{Var(x_{i0})} \times \frac{Var(x_{io})}{(Mean(x_{i0}))^2}.$$

Given the definition of coefficient of variation, the squared coefficient of variation is

[45] Shorrocks (1982).

$$\frac{Var(x_{i0})}{(Mean(x_{i0}))^2} .$$

Let us define

$$\frac{Cov(x_{ij}, x_{i0})}{Var(x_{i0})} \times \frac{Var(x_{i0})}{(Mean(x_{i0}))^2} = S_j ,$$

where S_j is the jth factor's contribution to $\frac{Var(x_{i0})}{(Mean(x_{i0}))^2}$,

then we have

$$\frac{Var(x_{i0})}{(Mean(x_{i0}))^2} = \sum_{j=1}^{4} S_j .$$

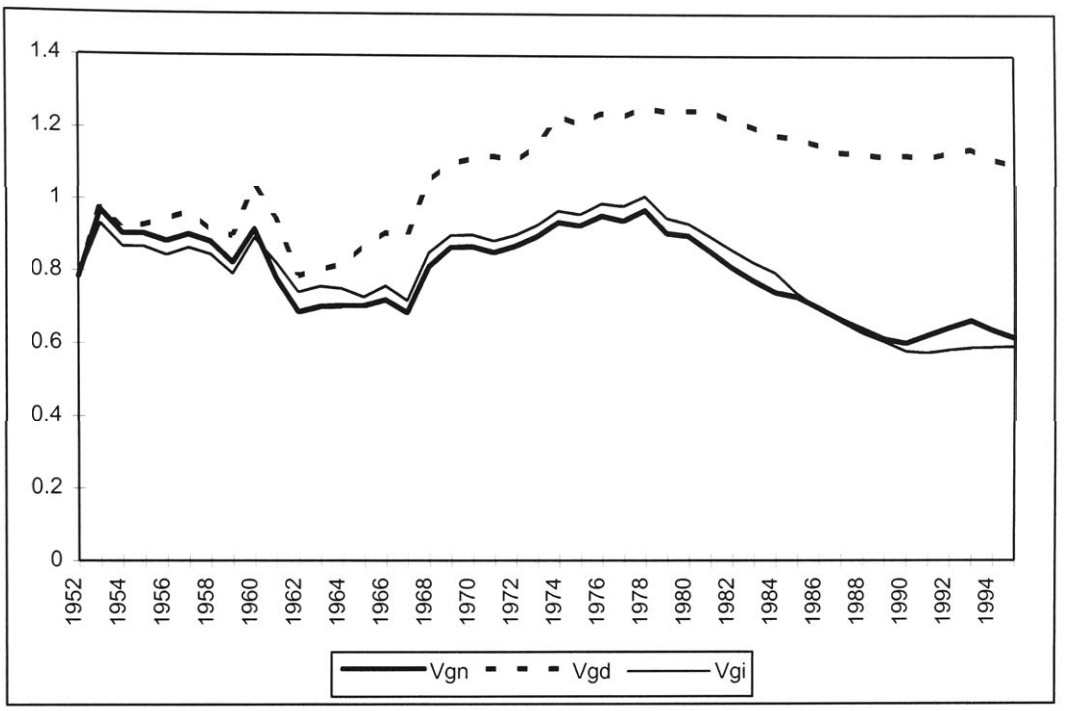
This formula can be applied to any year, and will be employed in Section 7.5 of this chapter to decompose estimated square of RII_{TR} of the whole period from 1952 to 1992.

7.4. Time Profiles of Regional Inequality Indexes

There are two basic questions to be answered. The first, how has regional (inter-provincial) inequality in China evolved over time? This is a generalised version of the question, and it can be readdressed as, is there any difference in the trend and pattern of regional inequality prior to and during the economic reform in particular? The second, what is the reason for the evolution of regional inequality in general, and what is the relationship between fiscal decentralisation and regional inequality in particular? This section will try to provide an answer to the first question. And the second question will be addressed in Section 7.5 and 7.6.

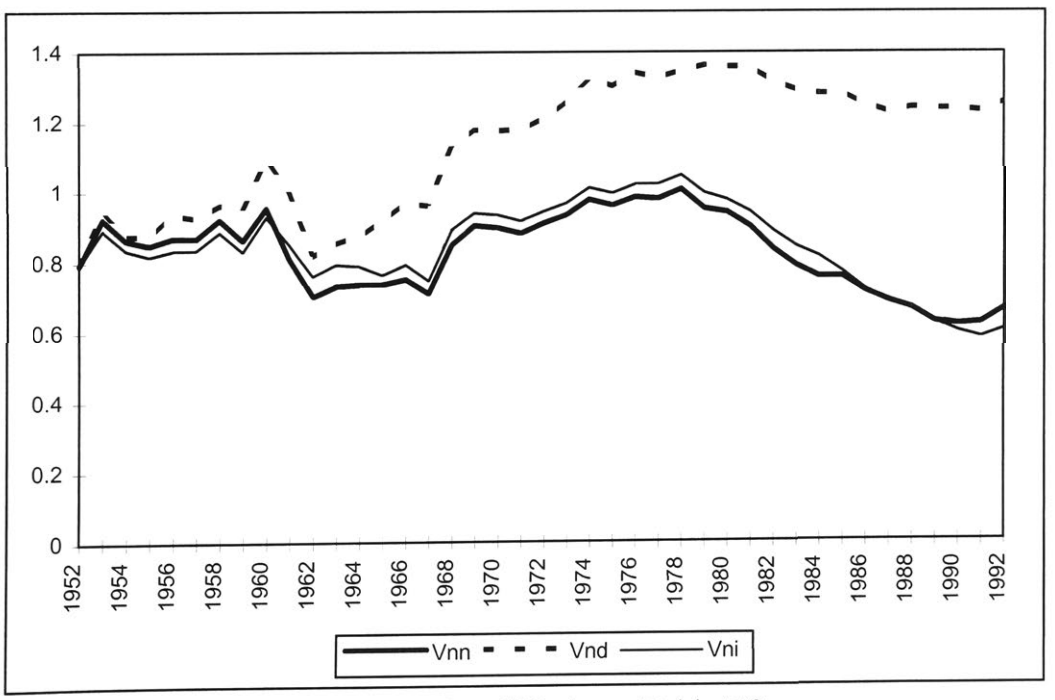
Using the methodology and data described in Section 7.3, six RIIs have been estimated. The results are reported here. Figure 7.2a shows the time profiles of the three GDP based RIIs, and Figure 7.2b shows the three NMP based ones. The major turning points and changing patterns of the six RIIs can be also seen in Table 7.3a and 7.3b in conjunction with Figure 7.3.

Figure 7.2a. GDP Based Regional Inequality Indexes, 1952-95



Note: For definitions of Vgn, Vgi and Vgd, see Table 7.2.

Figure 7.2b. NMP Based Regional Inequality Indexes, 1952-92



Note: For definitions of Vnn, Vni and Vnd, see Table 7.2.

Figure 7.3. Time Path of Regional Inequality Index

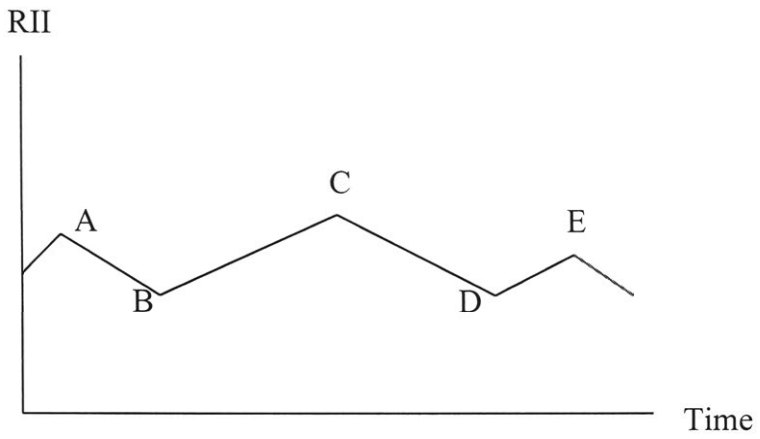


Table 7.3a. Major Turning Points of Regional Inequality Indexes

Indicator	Time Period	Major Turning Points				
		A	B	C	D	E
Vgn	1952-95	1953	1967	1978	1990	1993
Vgi	1952-95	1953	1967	1978	1991	...
Vgd	1952-95	1953	1962	1978	1991	1993
Vnn	1952-92	1953	1962	1978	1990	...
Vni	1952-92	1953	1967	1978	1991	...
Vnd	1952-92	1953	1962	1979	1987	...

Note: For definitions of Vgn, Vgi, Vgd, Vnn, Vni and Vnd, see Table 7.2.

Table 7.3b. Changing Patterns of Regional Inequality Indexes

Indicator	Changing Direction and Speed				
	A -- B	B -- C	C -- D	D -- E	E --
Vgn	1953-67 down -2.4%	1967-78 up 3.2%	1978-90 down -3.9%	1990-93 up 3.3%	1993-- down
Vgi	1953-67 down -1.8%	1967-78 up 3.1%	1978-91 down -4.2%	1991-- up ...	...
Vgd	1953-62 down -2.5%	1962-78 up 3.0%	1978-91 down -0.9%	1991-93 up 1.0%	1993-- down
Vnn	1953-62 down -3.0%	1962-78 up 2.2%	1978-90 down -4.0%	1990-- up ...	...
Vni	1953-67 down -1.3%	1967-78 up 3.1%	1978-91 down -4.4%	1991-- up ...	...
Vnd	1953-62 down -1.6%	1962-78 up 3.1%	1979-87 down -1.3%	1987-- up ...	...

Note: For definitions of Vgn, Vgi, Vgd, Vnn, Vni and Vnd, see Table 7.2.

From Figure 7. 2a, 7.2b, 7.3, Table 7.3a and 7.3b, the following points can be observed.

1) Rather than the simple inverted-U path, all six RIIs exhibited several oscillations, with local maximal points of A, C, and E, and local minimal points of B and D in Figure 7.3. From Point A through B to C, ie from 1953 to 1978 or 1979, they showed an uninverted-U pattern; and from Point B through C to D, ie from 1962 or 1967 to the end of 1980s, they showed an inverted-U path.

2) In the sub-period A to B, ie from the early 1950s to the early or mid-1960s, all six RIIs dropped, with annual change rates ranging from -1.3% to -3.0%.

3) In the sub-period B to C, ie from the early or mid-1960s to the late 1970s (1978 or 1979), significant increases took place in all six indexes, with annual change rates ranging from +2.2% to +3.2%.

4) The local maximal point of C (1978 or 1979) is also the global maxima in the whole period (from 1952 to 1995 or 1992) for each of the six RIIs. This implies that China may have passed its peak along the inverted-U path, although its per capita GDP level is still low.[46]

5) In the sub-period C to D, ie from the late 1970s to the late 1980s or the early 1990s, drops were reported by all six RIIs. However, the magnitudes of the decline were different. The RIIs based on nominal per capita income, ie Vgn and Vnn, reported annual decrease rates of about 4%; and the RIIs based on nominal per capita income deflated by PRPI, ie Vgi and Vni, showed even higher annual decrease rates, 4.2% and 4.4% respectively; but the RIIs based on nominal per capita income deflated by PGDP or PNMP, ie Vgd and Vnd, only showed some mild decreases, with annual decrease rates of 0.9% for Vgd and 1.3% for Vnd.

6) After the local minimal point of D in the late 1980s or the early 1990s, all six RIIs rose again. Two out of the three indexes covering the period from 1952 to 1995 showed another turning point of E in 1993, indicating that the latest upward movement was not long-lasting.

The above observations are significant. Particularly, the increases in all six indexes in the B to C sub-period, and the differences in the declining magnitudes of

RIIs in the C to D sub-period are by no means random. Table 7.4 gives a comparison of average annual changing rates of the six RIIs in periods 1966-76 and 1978-88. These two periods are chosen to represent two important periods in the modern history of PRC, ie the decade of Cultural Revolution and the first decade of the economic reforms.

Table 7.4. Average Annual Changing Rates of Regional Inequality Indexes: 1966-76 and 1978-88

Indicator	Average Annual Change Rates	
	1966 -- 1976	1978 -- 1988
Vgn	2.85%	-4.05%
Vgi	2.68%	-4.59%
Vgd	3.19%	-1.07%
Vnn	2.75%	-4.06%
Vni	2.56%	-4.50%
Vnd	3.33%	-0.81%

Note: For definitions of Vgn, Vgi, Vgd, Vnn, Vni and Vnd, see Table 7.2.

[46] This result is consistent with Oshima's (1992) results from a study on the trend of income distribution in Asian countries. The Chinese per capita GDP was 375 yuan in 1978 and 412 yuan in 1979, equivalent to 223 and 265 US dollar respectively.

In Table 7.4, the six RIIs exhibited a rapid increase during the decade of Cultural Revolution in spite of the equalitarian policy pursued by the Chinese leadership during that period. The six RIIs showed a declining trend in the first decade of the economic reforms, although some indicated a rapid drop, while others inferred a moderate decrease. At the beginning of the reforms, the Chinese leaders declared that they had adopted a policy to promote some advanced regions to grow faster in order to speed up the national growth, and they were expecting an increase in regional inequality. However, this did not occur. Instead of a rise, regional inequality decreased at least in the first decade of the reform era. Why? Section 7.5 and 7.6 of this chapter will try to provide an answer.

There is another related question, that is, although all six estimated RIIs showed a declining trend during the first decade of the reform era, why did some of them report a rapid drop, while others showed only a slight downward movement? As discussed earlier, the differences in the magnitudes of decreases in RIIs during this period[47] are caused by different price indexes used in the calculation on provincial real per capita income figures. When provincial retail price indexes (PRPIs) were used in the calculation, the drop in RIIs was sharp; but when implicit deflators were used, the decline was moderate. This may seem to present a technical problem, but, what is the economic rationale behind the "technical" problem? Appendix B to this chapter will provide a brief answer to this question. It is found that the implicit deflators are calculated on the basis of "comparable prices" used in the Chinese statistical system. The so-called comparable prices are biased upward for output of manufacturing

sectors. This bias will result in overestimation of the income level of advanced provinces, such as Shanghai and Liaoning, where the shares of manufacturing sector in the local economies are higher than the national average. Since these advanced provinces have per capita income higher than the national average, this bias will definitely inflate the estimates of RIIs when implicit deflators are used in the estimation process.

7.5. Factor Decomposition Analysis

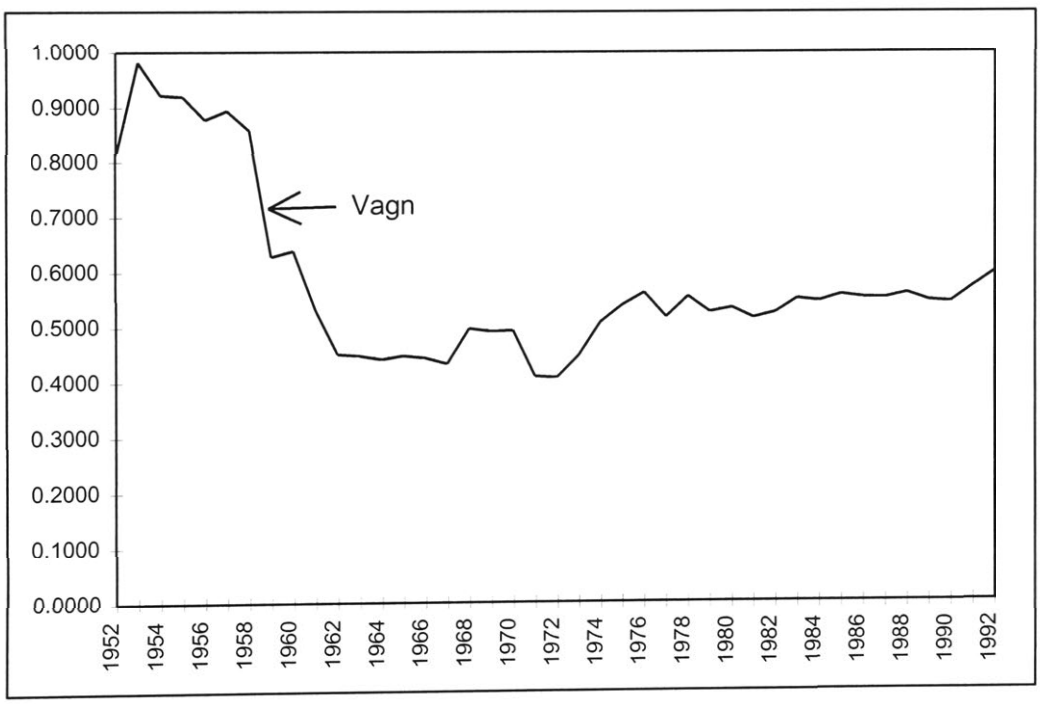
As explained in Appendix C to this chapter, the amounts of fiscal transfers (TRs) from the central government to all provinces for the period under investigation have been estimated. Based on the TR estimates and GDP data from SSB source, a new data set of GDP_{TR} has been generated.

For high income provinces, the TR estimates are negative, indicating that the central government takes away certain financial resources from them. For poor provinces, the estimates are positive, indicating financial inflows from the central. Table 7.6 in Appendix C to this chapter provides a comparison between Shanghai and Guizhou. Shanghai as the richest province, its TR figures are always negative. In the 1960s and the 1970s, more than half of its GDP was taken away through fiscal transfers. In 1972, each Shanghai resident's contribution was 1033 yuan. This amount was equal to 64% of Shanghai's GDP per head. In contrast, for the poorest province, Guizhou, its TR figures in most years are positive indicating financial

[47] This period is close to the sub-period C to D mentioned before.

inflows coming into the province. The figures in the same table clearly show that fiscal transfer may significantly reduce the inter-provincial income differentials. For example, in 1975, the pre-fiscal transfer per capita GDP was 1896 yuan for Shanghai and 123 yuan for Guizhou; and the difference between them was 1773 yuan; after fiscal transfer, per capita GDP_{TR} for Shanghai became 877 yuan and for Guizhou 146 yuan; the difference decreased from 1773 yuan to 731 yuan. This implies that RII_{TR} would show milder regional income differentials than its pre-fiscal transfer counterpart. Figure 7.4 plots the time profile of the estimated results of RII_{TR}.

Figure 7.4. Post-fiscal Redistribution Regional Inequality Index (RII_{TR})

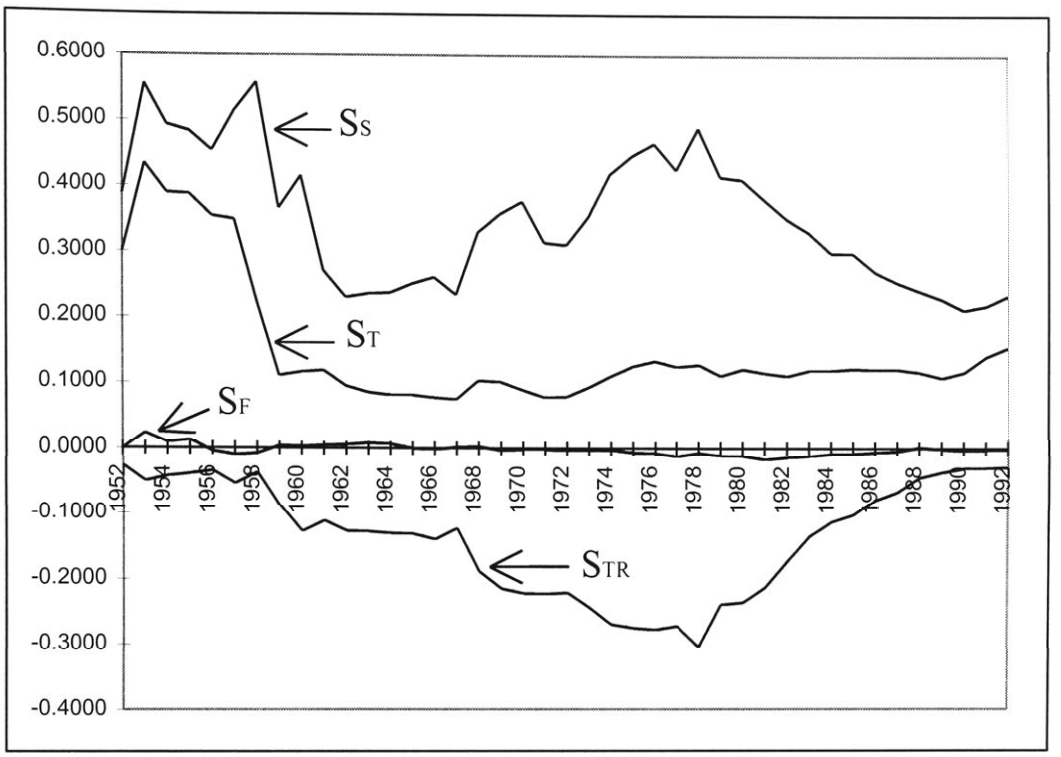


Note: Vagn = RII_{TR}, RII estimated on the basis of per capita provincial GDP_{TR}.

RII_{TR} (ie Vagn in Figure 7.4) exhibits different configurations from the pre-fiscal transfer RII (ie Vgn in Figure 7.3a). Vagn remained as high as 0.8 in the early

and mid-1950s. Then, it dropped quickly in the late 1950s and the early 1960s to a much lower value of about 0.44 and kept around that level until the early 1970s, in spite of a short-term rise in the late 1960s. It jumped to about 0.54 in the second half of the Cultural Revolution decade, ie from 1972 to 1976. Since then, it kept roughly flat for one and a half decade until the early 1990s, then it was on a rise again. The differences between Vagn and Vgn reflect the influence of fiscal transfer on regional inequality. In order to see how this has happened, a factor decomposition analysis is performed based on the method explained in Section 7.3. The decomposition results are reported in Figure 7.5 and Table 7.5.

Figure 7.5. Factor Decomposition Results



Notes: S_F, the contribution of the primary sector component;
S_S, the contribution of the secondary sector component;
S_T, the contribution of the tertiary sector component; and
S_{TR}, the contribution of the fiscal transfer component.

Table 7.5. Factor Decomposition Results

Year	S_F	S_S	S_T	S_{TR}
1952	-0.0003	0.3880	0.3000	-0.0258
1953	0.0229	0.5559	0.4349	-0.0496
1954	0.0085	0.4940	0.3903	-0.0418
1955	0.0125	0.4842	0.3880	-0.0386
1956	-0.0037	0.4544	0.3546	-0.0337
1957	-0.0097	0.5148	0.3489	-0.0537
1958	-0.0073	0.5583	0.2237	-0.0363
1959	0.0035	0.3664	0.1109	-0.0873
1960	0.0024	0.4161	0.1163	-0.1275
1961	0.0040	0.2708	0.1190	-0.1114
1962	0.0050	0.2299	0.0951	-0.1273
1963	0.0076	0.2356	0.0853	-0.1284
1964	0.0062	0.2369	0.0814	-0.1305
1965	0.0000	0.2506	0.0812	-0.1320
1966	-0.0016	0.2609	0.0771	-0.1398
1967	0.0017	0.2339	0.0744	-0.1231
1968	0.0027	0.3297	0.1030	-0.1887
1969	-0.0031	0.3583	0.1010	-0.2148
1970	-0.0013	0.3769	0.0890	-0.2219
1971	-0.0013	0.3140	0.0778	-0.2232
1972	-0.0029	0.3101	0.0787	-0.2207
1973	-0.0030	0.3531	0.0928	-0.2437
1974	-0.0018	0.4191	0.1096	-0.2696
1975	-0.0060	0.4468	0.1247	-0.2755
1976	-0.0072	0.4662	0.1331	-0.2776
1977	-0.0117	0.4256	0.1245	-0.2720
1978	-0.0066	0.4901	0.1275	-0.3043
1979	-0.0108	0.4148	0.1108	-0.2392
1980	-0.0108	0.4102	0.1208	-0.2362
1981	-0.0162	0.3800	0.1147	-0.2135
1982	-0.0128	0.3502	0.1103	-0.1733
1983	-0.0112	0.3292	0.1186	-0.1353
1984	-0.0079	0.2979	0.1188	-0.1128
1985	-0.0074	0.2970	0.1213	-0.1016
1986	-0.0056	0.2685	0.1195	-0.0787
1987	-0.0038	0.2523	0.1201	-0.0662
1988	0.0016	0.2395	0.1156	-0.0443
1989	-0.0009	0.2267	0.1069	-0.0359
1990	-0.0027	0.2101	0.1160	-0.0297
1991	-0.0020	0.2166	0.1395	-0.0292
1992	-0.0020	0.2322	0.1539	-0.0277

Note: For the variable definitions, see Notes for Figure 7.5.

The above factor decomposition results clearly show the individual contribution of each factor component of the GDP_{TR} to the overall changes in the estimated post-fiscal transfer regional inequality.

The primary sector component, S_F, seems to have no significant influence on the overall trend, since its absolute values are very small. Within the whole 41-year period, the values of S_F were negative in 28 years, and positive in 13 years. This implies that a higher share of GDPF in the total GDP would bring about more egalitarian, not inequality, if all other factors remain unchanged. In other words, the primary sector was an equalising factor.

The secondary sector component, S_S, is the most influential component in the sense that it has the largest values. S_S started at a high level of about 0.5 in the early and mid-1950s; it dropped dramatically in the late 1950s and the early 1960s; then it kept at a low level of about 0.2 until 1967; from that year it climbed up, despite some short-term decline, to its next peak at about 0.5 in 1978; afterward it turned to a long-term downward movement, reached as low as 0.2 in 1990, then went up slightly again. Compared with Vgn (RII based on nominal provincial per capita GDP) in Figure 7.2a, all the major turning points of Vgn seem to be determined by S_S . The above analysis leads to the conclusion that the secondary sector was the main disequalising source. Lardy (1980), Paine (1981) and Riskin (1987) all argued that regional inequality in China at least up to the early 1980s might be largely attributed to regional differentials

in industry.[48] Since industry constitutes the lion's share of the GDPS, the findings of this thesis have confirmed their conclusion by providing robust empirical evidence through the analytical framework presented here. Clearly, the dominant influence of the secondary sector on regional inequality remained up to the 1990s.

The tertiary sector component, S_T, its values in the whole period are positive, indicating that S_T makes positive contribution to the total regional inequality. It started at about 0.4 in the early 1950s, dropped dramatically to about 0.1 in the late 1950s; since then it kept at that low level until 1971; it increased slightly during 1971-1976, then kept at a marginally higher level until 1989; it was on a significant rise from 1989 to the end of the whole period. The contribution of the tertiary sector to total inequality was significant in the early and mid-1950s. But, in the next three decades, its importance had declined. This might be the result of the heavy repression on the growth of the tertiary industries under the central planning regime. During the economic reform era, the tertiary industries have been rapidly growing. If they grow more rapidly in the rich regions than in the poor regions, their contribution to the total inequality may increase. This may be the reason for what has happened since 1989. The tertiary sector was another disequalising factor. Indeed the gap between S_S and S_T may seem to be gradually closing by the mid-1990s. And if this trend continues, the tertiary sector may become the main source of regional inequality in the future.

[48] See Lardy (1980), Paine (1981) and Riskin (1987).

The fiscal transfer component, S_{TR}, its values are always negative indicating that fiscal transfers reduce inequality. Its contribution to the reduction of regional inequality was not very large in the early 1950s, then became more and more significant until the late 1970s; after its peak in absolute value in 1978 its absolute value has been on a continuous and rapid decline. In the whole period, TR was an important equalising factor. Fiscal transfers undoubtedly played a pivotal role in reducing regional disparities in China.

The empirical evidences from factor decomposition further confirm that the Chinese central government through fiscal transfers has continuously played an important role in the redistribution of income from the rich to the poor provinces. This effort had been quite successful at least until the end of 1980s. The rise of Vagn in the early 1990s needs to be monitored carefully. It seems, however, to be not a long lasting movement, because S_{TR} is still negative, and Vgn has turned down since 1993, as showed in Figure 7.2a.

7.6. Conclusions

By employing the analytical approach and procedures developed in Section 7.3 of this chapter and making use of the latest available statistical data, this study has provided new empirical evidences in revealing the evolution of regional income inequality in China. Several conclusions can be drawn.

1). As reported in Section 7.4, all six estimated RIIs (pre-fiscal transfer regional inequality indexes) exhibited several oscillations in the whole period. They started to decline from a high level in the early 1950s until the early or mid-1960s, then moved into a rapid rising period to the end of the 1970s reaching their peaks; after passing their peaks in 1978 (five out of the six) or 1979 (one of the six), they all entered a downward movement until the end of 1980s or even the early 1990s, then rose again. For the three indexes ended in 1995, two showed that the latest upward movement stopped in 1993.

2). Despite some short-term ups and downs, the estimated RIIs showed an inverted-U pattern between the mid-1960s and the early 1990s. Compared with previous studies on industrialised countries, China might pass its peak at a much lower per capita income level, at about 250 US dollars per head. According to Garnaut and Ma (1992), the official Chinese per capita GDP figures are underestimated.[49] However, even if the official per capita GDP figures in the late 1970s were multiplied by three, it would still be lower than most of the industrialised economies when they passed their peaks along the inverted-U path.[50]

3). Ironically, regional inequality actually worsened during the ten-year-period of the Cultural Revolution when egalitarianism was supposedly one of the guiding principles at that time. The six estimated RIIs increased rapidly during the period

[49] Garnaut and Ma (1992).
[50] See, for example, Oshima (1992).

1966-1976, with annual rates of increase ranging from 2.56% to 3.33%.[51] A logical explanation is that the egalitarianism was a factor which pushed RIIs down, while there were other factors that pulled RIIs up. There were some other guiding principles at that time, such as "self-reliance" and "heavy-industry-first". They might, as will be discussed later, work to pull RIIs up. If the disequalising force was larger than the equalising force in magnitude, then RIIs would move up.

The egalitarianism principle had influences on many policies, among them, fiscal redistribution was a major one. Fiscal transfers from the central government to provinces actually reduced regional income inequality. On the basis of the factor decomposition analysis performed in this chapter, the absolute value of S_{TR} (contribution of fiscal transfer to the reduction in squared RII_{TR}) during the 1966-76 period was actually increasing, not decreasing.[52] However, it failed to prevent regional inequality from increasing. That implies the opposite force was even stronger. Two factors could be identified to have significant disequalising effects. First, during the 1966-76 period, a rapid process of industrialisation occurred, especially in several advanced coastal provinces. As pointed out by Kuznets-Williamson, in certain stages of economic development, industrialisation itself might be an important factor pulling regional inequality up. Second, the dominant economic development strategy prior to the economic reforms was "heavy-industry-first". Under the influence of this strategy, several industrially advanced provinces enjoyed privileges in capital investment, material supply and access to new technologies, etc.,

[51] See Table 7.4.
[52] See Table 7.5 and Figure 7.5.

therefore, they grew faster than the national average. Because they were high income regions at the beginning of this period, their rapid growth widened the income gaps between them and other provinces. On the other hand, it could be argued that those industrially more advanced provinces did not receive larger-than-average capital investments during this period. If that was true, then the fact those provinces grew faster than average might be explained as the result of increasing return to scale.[53]

Additional to the above reasons, Dinnothere's fragmentation hypothesis may also be relevant in explaining the upward movement of RIIs in the 1966-1976 period.[54] She argued that the self-reliance policy in practice was more important than the egalitarianism principle. There is no doubt that the self-reliance policy is among those factors with disequalising effects. However, her argument concerning the decline in inter-provincial fiscal transfer did not receive empirical support from this study.

4). Regional income differentials narrowed in the first decade of the economic reforms which started in the late 1970s. The six estimated RIIs all trended down after passing their peaks in 1978 or 1979. Although four of them dropped rapidly, while the other two dropped mildly, they all shifted to a long-term downward movement until the late 1980s or the early 1990s. When the economic reforms were launched in the late 1970s, the Chinese leaders expected to see regional inequality to rise, but this did not happen. Instead of a rise, a decline took place. Following the arguments

[53] See Romer (1986).
[54] See Donnithorne (1967, 1972, 1976).

developed in the last three paragraphs, we can find some factors may have equalising effects, while others may have disequalising effects during this period. The actual downward movement in this period indicated that the equalising force was greater than the disequalising force in magnitude. The main change in this period was the rapid decline in fiscal transfer resulting from the changes in the fiscal relations between the central government and provincial governments. This caused the decline in the equalising force. If all other factors remained unchanged, the RIIs would move up. However, the downward movement of RIIs did not stop until the late 1980s or early 1990s. This fact implied that the combined equalising force was very strong in this period. Several factors can be identified to have equalising effects. First of all, the marketisation process has been a strong driving force pushing down regional inequality as discussed by Jian et al. (1995).[55] Secondly, the industrialisation process, when it passed certain stages and entered a phase of diffusion from several advanced provinces to some previous backward provinces, would reduce regional inequality. And thirdly, since the beginning of the reforms, the old "heavy-industry-first" strategy has been abolished and the self-reliance policy has been thrown away. These changes also have strong equalising effects.

5). Although all six estimated RIIs showed some similarities in the evolution of regional inequality, differences did exist. The most significant one was that they all decreased in the first decade of the economic reform, but four of them recorded a rapid decline while the other two recorded a mild drop. This difference was caused by using different prices in the process of estimating RIIs. Those RIIs based on implicit

[55] Jian et al. (1995).

deflators reported the mildest drop, those based on nominal prices reported much quicker reduction, and those based on provincial retail price indexes reported the most rapid decline.

6). All six estimated RIIs moved upward in the late 1980s or early 1990s. Although there were some indications that this upward movement was a short-term shift, it did show that the long-term decline since the beginning of the reforms had come to an end. This study has identified the following main factors responsible for the latest upward movement in RIIs.

- Results from the coastal-inland location analysis[56] show that, since 1990, the income inequality between the coastal and inland regions started a steep rise. The income gaps between the two regions have become a significant force driving the total movement of regional inequality.[57]
- Outcomes from the factor decomposition analysis indicate that some structural changes taking place in the economy since the late 1980s, especially in the more advanced provinces, made the tertiary sector an important source of regional inequality. The contribution of this sector to the overall inequality has been on a steep rise since 1989.

[56] See Appendix D and E to this chapter. Results from the coastal-inland location analysis show that, before 1990, the dominant force behind the changing pattern of the total regional inequality was the inter-provincial income differentials within the coastal region; and since 1990, the income gaps between the coastal and inland regions have become a significant force driving the overall movement of regional inequality.

[57] As explained in Section 7.2 of this chapter, the so-called "floating population" problem also made contribution to artificially enlarge the estimated values of income differentials between the coastal and inland regions, therefore inflate the estimated values of RIIs.

- The impact of the fiscal equalisation mechanism had dropped by the end of 1980s to a level so low that the fiscal transfer's equalising effect could not keep the post-fiscal transfer regional inequality index from moving up.
- The rapid growth of the southern provinces in the coastal region has become a driving force to pull the overall regional inequality index up since the late 1980s. The coastal southern provinces have been growing faster than the national average since the beginning of the reforms. Their per capita income levels were below the national average before the mid-1980s. Then, they gradually exceeded the national average in the mid- or late 1980s. Before they passed the national average, their rapid growth was an equalising factor, and after they passed the average, their continuous rapid growth became a disequalising factor.

7). Provincial GDP_{TR} can be decomposed into four components (GDPF, GDPS, GDPT and TR). The decomposition analysis allows us to detect each component's individual contribution to the overall changes in RII_{TR} (RII estimate based on provincial GDP_{TR}). The first three components show the structural features of the evolution of regional inequality, and the fourth component shows the contribution of fiscal transfer.

- This study has found that the primary sector only made very limited contribution to the overall changes in regional inequality, and in 28 years of the whole 41-year period, its negligible contributions were negative.
- For the secondary sector, this study has found that it is the main source of regional inequality.

- The tertiary sector is found to have made positive contribution to the overall regional inequality. Its contribution was quite significant in the early and mid-1950s. From the late 1950s to the late 1980s, the effect of tertiary sector was heavily repressed. Since 1989, its contribution moved to a steep rise. It is reasonable to predict that the tertiary sector will become the main source of regional inequality in future.
- Through examining the individual contribution of fiscal transfer to the overall changes in regional inequality, we can find that China's fiscal transfers are progressive. Fiscal redistribution would reduce regional inequality.

In summary, from the above analyses, we can find that the actual direction of the regional inequality movement in any given period depends on the combined effect of all the equalising and disequalising factors. The main equalising factors include: a) industrialisation in its diffusion stages; b) the rapid process of marketisation during the reform era; and c) fiscal equalisation mechanism through fiscal transfers. The key disequalising factors include: a) industrialisation in its early stages when it took place mainly in a few advanced provinces; b) the "heavy-industry-first" economic development strategy under central planning; and c) the self-reliance policy. If the equalising force was greater in magnitude than the disequalising force in a particular period, the regional income gaps would be narrowed, and *vice versa*. This theory may be applied in explaining the whole evolutionary process of regional inequality in China.

This theory can also resolve a contradiction left by previous studies. As mentioned early in this chapter, Tsui (1991) reported that he found a positive relationship between fiscal decentralisation and regional inequality. So far, the rapid and most important decentralisation took place in the reform years, especially in its first ten years, ie from the late 1970s to the late 1980s. However, it did not bring about a dramatic increase in regional inequality, at least until the end of 1980s. On the contrary, regional inequality dropped during this period. The co-occurrence of the drop in regional inequality and fiscal decentralisation needs more explanations.

During the first decade of the economic reforms, fiscal decentralisation changed the fiscal relation between the central government and the provincial governments, as a result the power of the old fiscal equalisation mechanism diminished, and in turn fiscal transfer reduced its contribution in reducing regional inequality. However, this did not mean regional inequality would definitely go up. The actual direction of its movement was decided by the combined effect of all the influencing factors. Fiscal equalisation mechanism is only one of them. There were several other factors at work, some in the same direction (equalising), some in the opposite direction. The determination of the moving direction (up or down) of regional inequality is a very complex process. In any given period, it is determined by the combined influence of all factors involved. In this sense, the statistically positive correlation between one single variable and the estimated regional inequality index may not necessarily mean that the variable has positive effect on regional inequality.

The main finding concerning the relationship between fiscal decentralisation and regional inequality can therefore be summarised as follows:

- During the economic reform process, especially in its first decade from the late 1970s to the late 1980s, fiscal decentralisation changed the fiscal relations between the central government and the provincial governments, from the central government relying heavily on fiscal remittences from the provinces to mainly collecting its own revenue.
- The changes in the fiscal relations between the central and the provincial governments removed the basis of the old fiscal equalisation mechanism, hence dramatically reduced its effectiveness.
- The reduction in the power of the fiscal equalisation mechanism reduced the contribution of fiscal transfers in reducing regional inequality.
- Through a complex process, fiscal decentralisation has positive influence on the rise in regional inequality, if all other factors remain unchanged. However, during the first decade of the economic reforms, regional inequality declined rather than went up. Obviously, there were other factors which worked in the opposite direction to push regional inequality down as discussed before.

Appendix A to Chapter 7

Income Inequality and Economic Growth: A Brief Review[58]

The main question to be addressed here is the link between economic growth and income inequality. Or alternatively, what is the relationship between the level of income and its distribution? Economists have long sought to understand the links between economic growth and income distribution.

Although the link between inequality and growth has preoccupied economists for centuries, modern research on this connection originated in a pioneer study by Simon Kuznets.[59] Kuznets (1955) advanced his famous theoretical hypothesis that as a country's per capita income grows, income inequality must initially rise, rather than fall, and it will fall only after the country's income has surpassed some threshold level. This is the well-known Kuznets inverted-U curve hypothesis. Initially, Kuznets's study was focused on income inequality at personal or household level, then Williamson (1965) extended this argument to regional income distribution.[60]

Following early studies conducted by Kuznets and Williamson, there have been a large number of economists taking part in this discussion, producing a rich literature in this field. Many of them reported evidences in support of the

[58] It is useful to review the broader theoretical development on the relation between income inequality (at both personal or household level and regional level) and economic growth, although the main body of this thesis focuses on regional inequality issue.
[59] Kuznets (1955).
[60] Williamson (1965).

hypothesis.[61] Another interesting development in this research concerns what will happen when an economy has completed an inverted-U process. According to the Kuznets-Williamson theory, regional inequality in a country is expected to rise during its early stages of development, then decline when the development reaches a certain level. However, the declining trend cannot continue for ever. It may stop when it reaches a certain low level. Then, what will happen? There are three possible outcomes: 1) it might stabilise at that level as shown by Panel (a) in Figure 7.6; 2) it might rise again as shown by Panel (b) in Figure 7.6; and 3) it might oscillate around a long-run stabilised trend level as shown by Panel (c) in Figure 7.6.[62] Some early studies assumed the first pattern implicitly or explicitly. Then, Amos (1986, 1988, 1989) found evidences in support of the second pattern by examining post-war US data.[63] Finally and more recently, McGillivray and Peter (1991) put forward the third pattern when they studied the Australian census data in the 1970s and 1980s.[64]

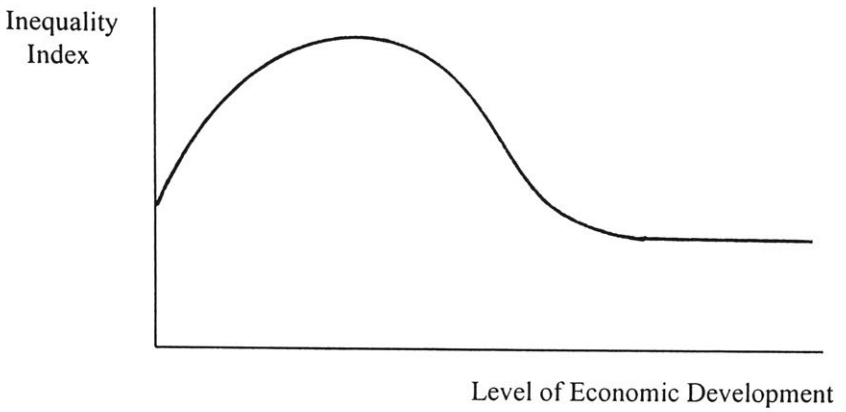
[61] Kuznets hypothesis has been a very active research area in development economics. For a survey on literature until the late 1980s, see Adelman and Robinson (1989), and for more recent development in this area, see Ram (1995).

[62] There might be more patterns for inequality-development relation. Oscillations might starts earlier before the inequality reaches the lowest point during the declining process, or even much more earlier before it reaches the long-run peak. These ideas came into the author's mind during his reading on the literature, and are confirmed by Chinese data. See Section 7.4 of this chapter.

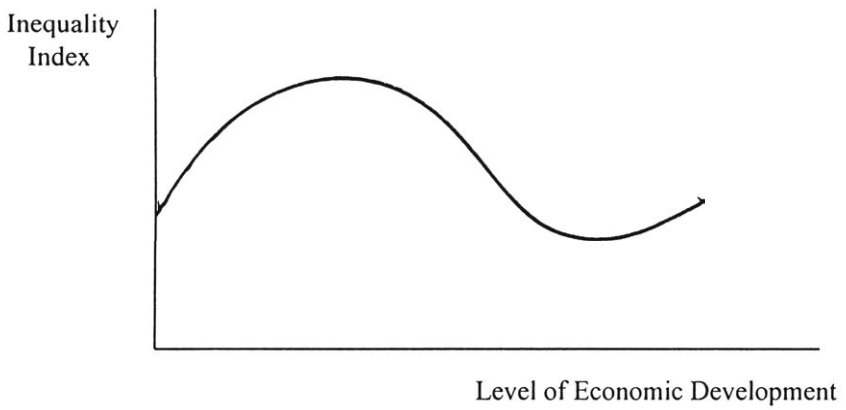
[63] See Amos (1986, 1988, 1989).

[64] See McGillivray and Peter (1991).

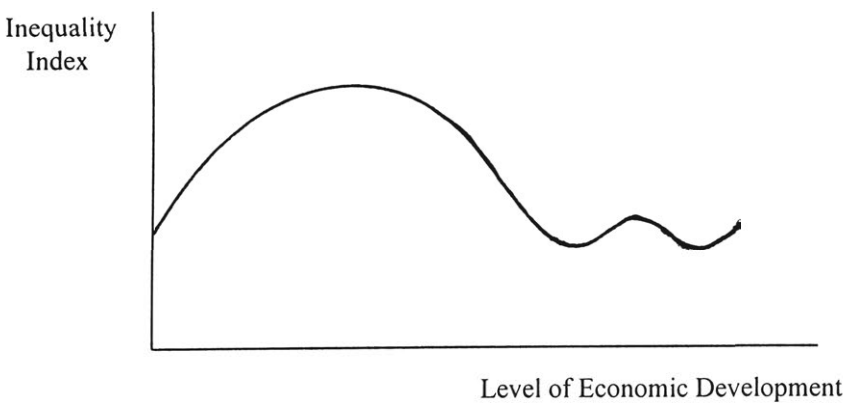
Figure 7.6. Argumented Inverted-U Inequality-Development Relation



(a)



(b)



(c)

The above mentioned scholars form the first group of economists - Kuznets school. They emphasise the effect of economic growth on income distribution and see changes in income inequality as the outcomes of the economic growth. In their model, income inequality is an endogenous variable, while economic growth is exogenous, not explained by the model, in particular not affected by income distribution. In their theory, growth affects income distribution but not *vice versa*. The causality in their model runs one way, from growth to income distribution. The implication of this theory is clear - a policy maker can justify redistribution policies on the basis of equity considerations, but the redistribution has no effect on enhancing growth.

The above mentioned school of economists dominated the discussion in this field for nearly three decades. Then, in the late 1980s and the early 1990s, some economists, using more advanced econometrical techniques, changed their model specifications, where the causality between growth and inequality runs both ways: growth affects income distribution, while inequality affects growth.[65] Meanwhile, the development of dynamic macroeconomic modelling technique and theory of long-run growth has made it feasible to incorporate distributional issues into long-run economic growth models. Finally, there came the second school of economists in the research area of growth-inequality relation in the 1990s.[66] In an important contribution in this area, Persson and Tabellini (1994) found that there existed a

[65] See Greenwood and Jovanovic (1990).
[66] For the latest studies in this area, see Persson and Tabellini (1994), Chang (1994), and Deininger and Squire (1997).

robust positive correlation between long-run growth rates of income and measures of income equality.

The original question has changed, from the relation between the level of income and the distribution of income to the relation between initial state of income inequality and subsequent long-run growth rate. The direction of causality between the two basic variables in the models has also shifted, from "growth⇒inequality" to "inequality⇒growth".

Persson and Tabellini's theory predicts a negative relation between ***wealth*** inequality and growth. The empirical relation between ***income*** inequality and growth is seen as an approximation of that "true" relation. Deininger and Squire's (1997) recent results confirm a weak negative link between initial ***income*** inequality and subsequent growth. By contrast, initial ***inequality of assets***, as measured by the distribution of land, exerts a significant negative effect on subsequent growth. This finding is more consistent with Persson and Tabellini's original theoretical prediction.

Appendix B to Chapter 7

Provincial Price Indexes

Section 7.4 estimated six regional inequality indexes (RIIs). They were estimated based on two different data sets (GDP and NMP), and three different prices (nominal, provincial retail price index, and provincial implicit GDP or NMP deflator).[67] The six estimated RIIs showed similar but slightly different changing trends and patterns.[68] The differences were mainly from using different prices, rather than using different data sets. This appendix investigate where the differences come from, focusing on the issue of different prices. First, there will be a note on the sources of these price indexes. Then, it will analyse what problems these price indexes have, with respect to their impacts on the estimated values of RIIs. Lastly, it will point out how to apply them in research on regional inequality and related issues.

For the whole 1952-1995 period, there are only two province-specific price indexes available, namely provincial retail price index (PRPI) and the implicit GDP deflator (PGDP, or implicit NMP deflator - PNMP).

Provincial retail price indexes can be obtained directly from provincial statistical sources. There are several different provincial price indexes in Chinese statistical sources, but most of them started from 1978 or later. For the period prior to

[67] For their definitions, see Table 7.2 in Section 7.3.

1978 only provincial retail price index (PRPI) is available. There are at least three problems with PRPI. First, since 1978, PRPIs of all provinces have been compiled in a standardised method,[69] but prior to 1978 there was no direct evidence in support of this uniformity.[70] Second, there are some missing figures for several provinces. For example, there are no data from 1968 to 1970 in the index for Jiangxi province. In such cases, averages of neighbouring provinces in the same period are used as proxies. During that period, because the inflation rates were generally very low, the error caused by this proximation should be small with no significant effect on the major outcomes. Third and the most serious shortcoming is that producers goods were excluded from the basket of goods for the construction of the PRPI.[71]

The implicit deflators, PGDP and PNMP, can be calculated based on official statistical figures. Here, let us use PNMP as an example to show the method of estimation. In Chinese statistical sources, two time series for each province can be used in the PNMP estimation. The first one is NMP at current prices, ie nominal NMP. The second one is NMP index (NMPI hereafter) which is based on

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[68] See Figure 7.2a and 7.2b in Section 7.4. In general, the values of estimated RIIs based on nominal prices and provincial retail price indexes are close to each other, but much lower than the values of estimated RIIs based on implicit deflators.

[69] See Jian et al. (1995).

[70] During an interview conducted in Beijing in 1996, senior officials of SSB told this author that, in principle each province should compile its PRPI in a unified way; this is true for data after 1978, but prior to 1978 there might be some problems; especially during the Cultural Revolution years, formal provincial statistical organisations at provincial level were dismissed, then the PRPIs were calculated by provincial economic planning committees in most provinces; and in the worst case, such as in Jiangxi province, there were no people doing this job at all for a couple of years.

[71] Since most of producers inputs were distributed by the state organisation not through the markets prior to the reforms. Only some farmers inputs were sold in the markets, so they were in the PRPI calculating basket. This problem continues even after 1978, because most of raw materials for production are sold in the whole sale markets not retail markets.

"comparable prices" (*kebi jiage*). Using these two series, PNMP can be easily inferred by the formula

$$PNMP_t = NMP_t / (NMP_{1952} \times NMPI_t) ,$$

where t indicates time: since annual data are used here and the study period starts at 1952, 1952 is the base year.

The calculating formula looks straight forward. However, there are some serious problems. The most important one is the formation of NMPI which is based on the so-called "comparable prices". In the Chinese statistics prior to the reforms, this term had its special meaning. A comparable price of a particular product was only an artificial accounting unit created by the price authority without any reference to its market value. Price (including comparable price) formation in China prior to the reforms was biased, in favour of manufacturing sectors. This fact has been well documented. Therefore, NMPI figures based on comparable prices in Chinese statistical sources were artificially overestimated for manufacturing sectors compared with agricultural and other raw material producing sectors. Thus, in the regional context, the values of NMPI (and GDPI as well) would be biased upward for the regions with higher shares of manufacturing sectors in the local economies. Now, we can analyse how the biases affect the values of RII estimates.

1). PGDP and PNMP are calculated on the basis of the comparable prices. In Chinese statistical system, as discussed above, these comparable prices are biased upward for output values of manufacturing sectors.

2). For several more advanced industrial regions, where the shares of manufacturing sectors in local economies are higher than the national average, such as Shanghai, Beijing, Tianjin and Liaoning,[72] their values of NMPI and GDPI (NMP index and GDP index) are artificially inflated.

3). Recall the calculation formula for PNMP

$$PNMP_t = NMP_t / (NMP_{1952} \times NMPI_t) ,$$

and for PGDP

$$PGDP_t = GDP_t / (GDP_{1952} \times GDPI_t) .$$

If the values of GDPI and NMPI were artificially inflated, then the calculated values of PGDP and PNMP would be underestimated. A comparison between PRPI and implicit deflators can be seen in Figure 7.7a through 7.7d. Each figure plots three price indexes, PRPI, PNMP and PGDP over the 1952-95 period for one of the four selected provinces. These four provinces can be divided into two groups. The first group contains two highly industrialised provinces -- Shanghai and Liaoning. And the second group contains two less industrialised provinces -- Guangxi and Sichuan.[73] For the first group, their implicit deflators are much lower than retail price indexes. For the second group, the gaps are much smaller.

[72] In 1978, the shares of industrial GDP in the total GDP of Shanghai, Beijing, Tianjin and Liaoning were 76%, 64.5%, 65.8 and 67.7% respectively, much higher than the national average of 44.3%. And in 1992, the shares changed to 57.1%, 41.3%, 51.1% and 44.9%, still higher than the national average of 38.6%.

[73] In 1978, the shares of industrial GDP in the total GDP of Guangxi and Sichuan were 30.7% and 33.1%, lower than the national average of 44.3%. And in 1992, the shares changed to 25% and 31.1%, still lower than the national average of 38.6%.

4). When the implicit price deflators were used in estimating the "real' income figures, the outcomes would therefore be artificially inflated for the first group of provinces. This would in turn affect the outcomes of RII estimation based on the "real" per capita income figures. Since the per capita income levels of these more industrialised provinces are far above the national average,[74] the bias will definitely end with the values of RIIs overestimated.

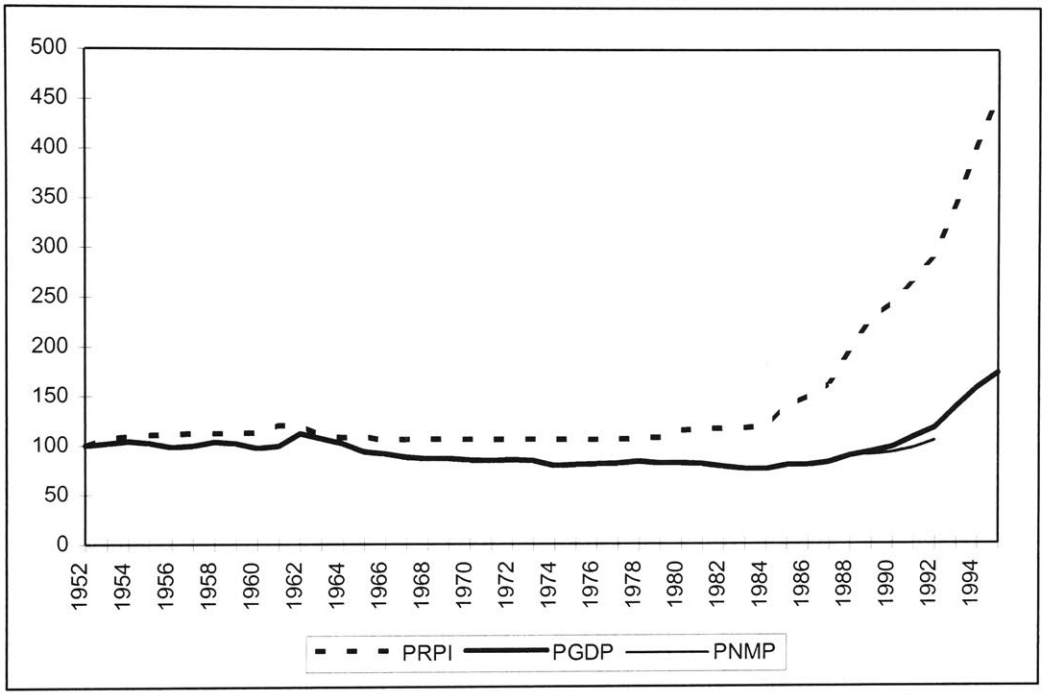
There have been several China experts pointing out that the implicit deflators are biased.[75] However, so far, there has been no attempt to investigate the influence of this bias on the estimation of regional inequality indexes. In order to fill up the gap, this study has extended the investigation two-step further: it first tried to find out its effects on different economic sectors; it then looked into its effects on different regions. Therefore, the influence of this bias on RII estimation has been revealed.

While the direction of the bias caused by using implicit deflators has been briefly analysed above, the magnitude of the bias is hard to estimate. As discussed before, PRPI is also problematic. Therefore, all calculated RIIs in "real" terms should be used with caution. For purpose of investigation, if regional growth differentials are of major concern, then the implicit deflators based RIIs are preferable; if regional inequality in consumption and living standards are of major concern, then the PRPI based RIIs are more useful; and if inter-regional redistributional policy is of major

[74] In 1978, per capita GDP of Shanghai, Beijing, Tianjin and Liaoning were 2498, 1290, 1160 and 680 yuan respectively, much higher than the national average of 379 yuan. And in 1995, their figures raised to 18943, 13073, 10308 and 6880 yuan, still higher than the national average of 4854 yuan.

concern, then the nominal price based RIIs are easy to use. In Section 7.5 of this chapter, nominal price based RII therefore was used to investigate the effects of fiscal redistribution on regional inequality.

Figure 7.7a. Retail Price Index and Implicit Price Deflators: Shanghai



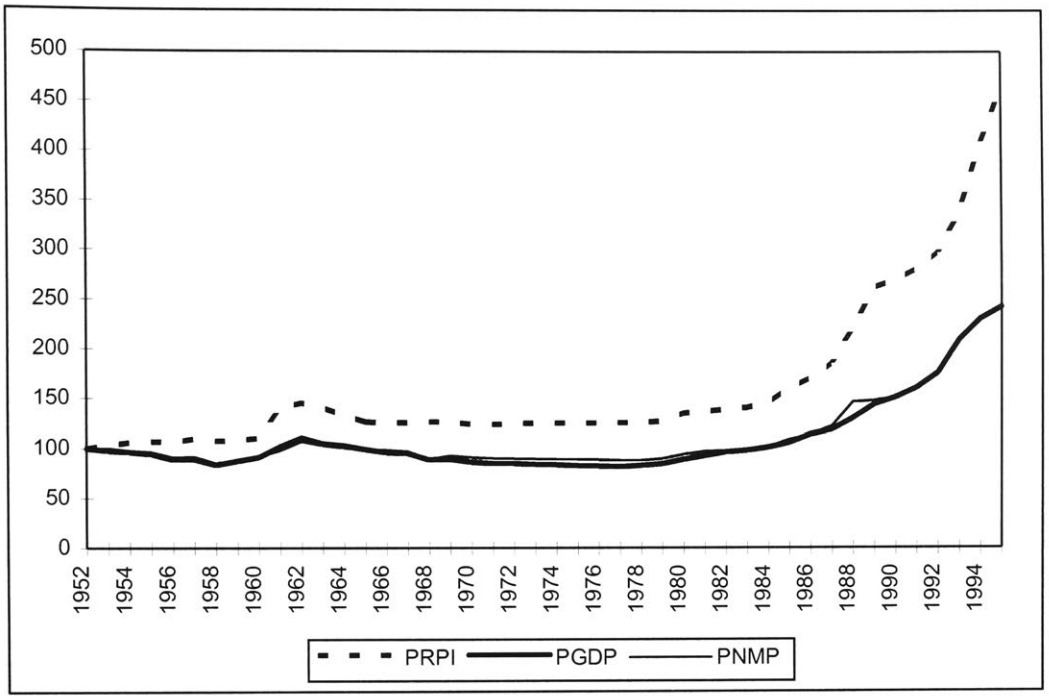
Notes: PRPI stands for provincial retail price index;

PGDP stands for provincial GDP deflator; and

PNMP stands for provincial NMP deflator.

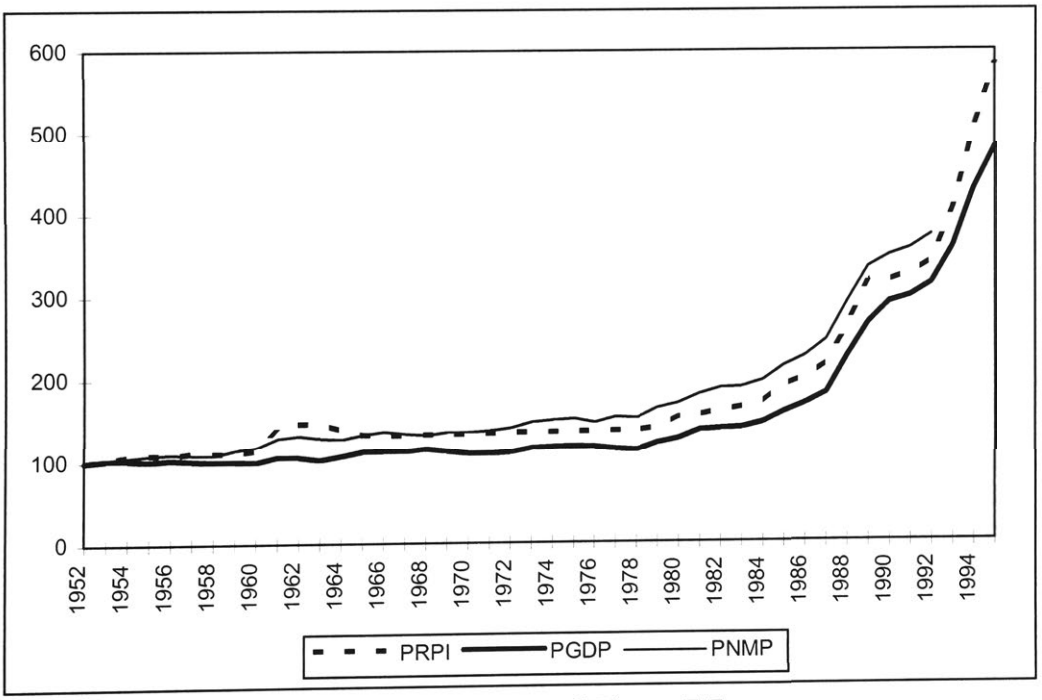
[75] However, most of them were interested in the effect of this bias on the estimation of growth rate. For example, Khan and Riskin (1998) pointed out that the price deflator is thought to be too low, resulting in overestimation of GDP growth rate.

Figure 7.7b. Retail Price Index and Implicit Price Deflators: Liaoning



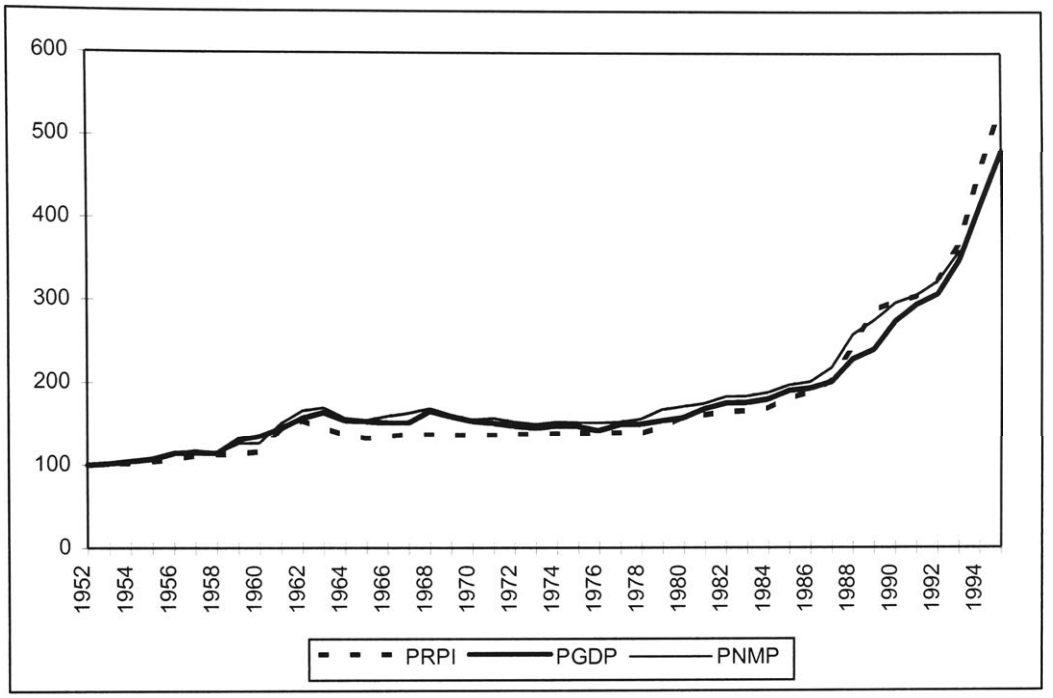
Note: For variable definitions, see notes of Figure 7.7a.

Figure 7.7c. Retail Price Index and Implicit Price Deflators: Guangxi



Note: For variable definitions, see notes of Figure 7.7a.

Figure 7.7d. Retail Price Index and Implicit Price Deflators: Sichuan



Note: For variable definitions, see notes of Figure 7.7a.

Appendix C to Chapter 7

Estimating Fiscal Transfers

For each province, its GDP_{TR} (GDP incorporating fiscal transfer) can be defined as the sum of GDP and fiscal transfer from the central government (TR), ie

$$GDP_{TR} = GDP + TR .$$

Provincial GDP data are available in the statistical source as described in Section 7.3, but TR data are not readily available, hence they need to be estimated. Tsui (1991) in his 1991 study on Chinese regional inequality used the difference between NIU[76] and NMP as a proxy for TR.[77] He argued that NIU by definition is the sum of consumption and accumulation, so the difference between NIU and NMP is theoretically equal to the inflow of financial resources, so that it might be used as a proxy of TR. In the NMP statistical system, based on Marxist *material production* theory, NMP only covers the net outputs of five *material production* sectors, while most of tertiary industries are excluded. However, NIU covers a slightly wider range of economic activities. It is therefore clear that the difference between NIU and NMP includes *not only* TR. Tsui (1991) also pointed out that it includes TR and an estimation error. The problem is the estimation error may be very substantial,

[76] It stands for national income utilised (*goumin shouru shiyong e*), which is a statistic used only in the Net Material Product statistical system. NIU may be roughly explained as NMP based on expenditure method. While NMP itself is based on production method. However, NIU covers slightly wider range of economic activities than NMP. NMP only covers five major *material production* sectors, including industry, agriculture, construction, material (excluding passenger) transportation, and commerce. NIU covers not only the five *material production* sectors, but also some other economic activities, such as public expenditures on salaries of public servants, government and private investments in schools, hospitals, hotels and restaurants.

[77] Tsui (1991), see Page 4.

especially since the late 1970s, because of changes in the economic situation brought about by the reforms. These changes include rapid growth of the tertiary industries, continuously significant budget deficits, increasing values of domestic and foreign debts, and increasing amount of foreign direct investment. Therefore, the difference between NIU and NMP is not the best proxy for TR. This study has adopted an alternative method to estimate TR for each province directly from provincial fiscal statistics.

Chapter 6 estimated the amount of provincial fiscal remittance (PFR) in the process of estimating provincial fiscal remitting ratio (PFRR). By definition we have

$$PFR = PR - PE ,$$

where PR and PE stand for provincial budget revenue and expenditure. From a province's point of view, PFR is the outflow of its financial resource. Here, what we need to estimate is just its opposite, ie financial inflow from the central government into the province. Therefore, we can have

$$TR = PE - PR ,$$

where all the variables are defined as before. If TR is positive for a province that means financial inflow coming into the province; and if TR is negative for a province that means financial resources going away from the province. Table 7.6 presents a comparison between Shanghai (the richest province) and Guizhou (the poorest province) on GDP, TR and GDP_{TR} in per capita terms.

Table 7.6. Shanghai and Guizhou: Per Capita GDP, TR and GDP_{TR}

Year	Shanghai			Guizhou		
	$GDP_{TR}PH$	GDPPH	TRPH	$GDP_{TR}PH$	GDPPH	TRPH
1952	632	640	-8	54	57	-4
1953	839	840	-2	64	66	-2
1954	820	825	-6	68	72	-3
1955	850	861	-11	69	73	-4
1956	992	1002	-10	88	90	-2
1957	997	1009	-13	94	97	-3
1958	1253	1273	-21	125	119	6
1959	581	1249	-668	138	135	3
1960	723	1499	-776	156	140	17
1961	482	961	-479	119	111	8
1962	418	801	-383	96	99	-4
1963	409	845	-436	98	99	0
1964	457	927	-471	111	113	-2
1965	532	1038	-506	136	134	2
1966	559	1139	-580	135	131	3
1967	543	995	-453	128	123	5
1968	592	1111	-519	109	105	4
1969	601	1301	-699	110	100	10
1970	649	1461	-811	140	130	9
1971	584	1545	-961	156	143	13
1972	574	1607	-1033	145	128	18
1973	665	1732	-1067	143	119	25
1974	771	1802	-1031	122	99	23
1975	877	1896	-1018	146	123	23
1976	895	1925	-1030	139	113	26
1977	919	2120	-1201	167	143	24
1978	1180	2484	-1304	196	174	22
1979	1244	2530	-1286	227	202	25
1980	1364	2720	-1357	238	217	21
1981	1457	2793	-1335	265	240	25
1982	1607	2855	-1248	302	276	26
1983	1824	2946	-1122	325	301	24
1984	2135	3244	-1109	405	369	36
1985	2701	3836	-1136	458	426	32
1986	3006	3983	-977	509	464	45
1987	3444	4365	-921	575	542	33
1988	4377	5135	-758	706	674	32
1989	4726	5457	-731	784	741	43
1990	5189	5894	-705	842	804	39
1991	6262	6944	-681	936	905	31
1992	7940	8642	-702	1070	1030	40

Note: $GDP_{TR}PH$, GDPPH and TRPH stand for per capita GDP_{TR}, GDP and fiscal transfer respectively. The counting unit is yuan.

Shanghai as the richest province, its TR figures have always been negative. In the 1960s and the 1970s, more than half of its GDP was taken away through fiscal transfers. In 1972, each Shanghai resident's contribution was 1033 yuan. This amount was equal to 64% of Shanghai's GDP per head. In contrast, for the poorest province, Guizhou, its TR figures in most years are positive indicating financial inflows coming into the province. The figures in Table 7.6 clearly show that the fiscal transfers may significantly reduce the inter-provincial income differentials. For example, in 1975, the pre-fiscal transfer per capita GDP was 1896 yuan for Shanghai and 123 yuan for Guizhou; and the difference between them was 1773 yuan; for the same year, per capita GDP_{TR} for Shanghai became 877 yuan and for Guizhou 146 yuan; the per capita income differential between the two provinces therefore reduced from 1773 yuan to 731 yuan.

Appendix D to Chapter 7

Coastal - Inland Income Differentials

Inter-provincial inequality in China is closely associated with coastal-inland income differentials. In this study, the coastal region is defined to contain 11 provinces - Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Guangxi. The inland region contains 17 provinces - Shanxi, Inner Mongolia, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang. Here, in contrast to some other studies,[78] Beijing is classified as coastal. The justifications are based on both geographical and economic reasons.[79] First, Beijing as the capital is geographically located in the middle of Hebei province which is of course a coastal province. Second, Beijing shares more common characters with the other coastal big cities like Shanghai and Tianjin in terms of basic economic structure and extensive overseas economic links.

Table 7.7 presents data on the population and per capita GDP of the two regions in comparison with the total of 28 provinces.

[78] For example, see Jian et al. (1995).
[79] Chen and Fleisher (1996) put Beijing into the coastal group without detailed explanation.

Table 7.7. Population and Per Capita GDP: Coast and Interior

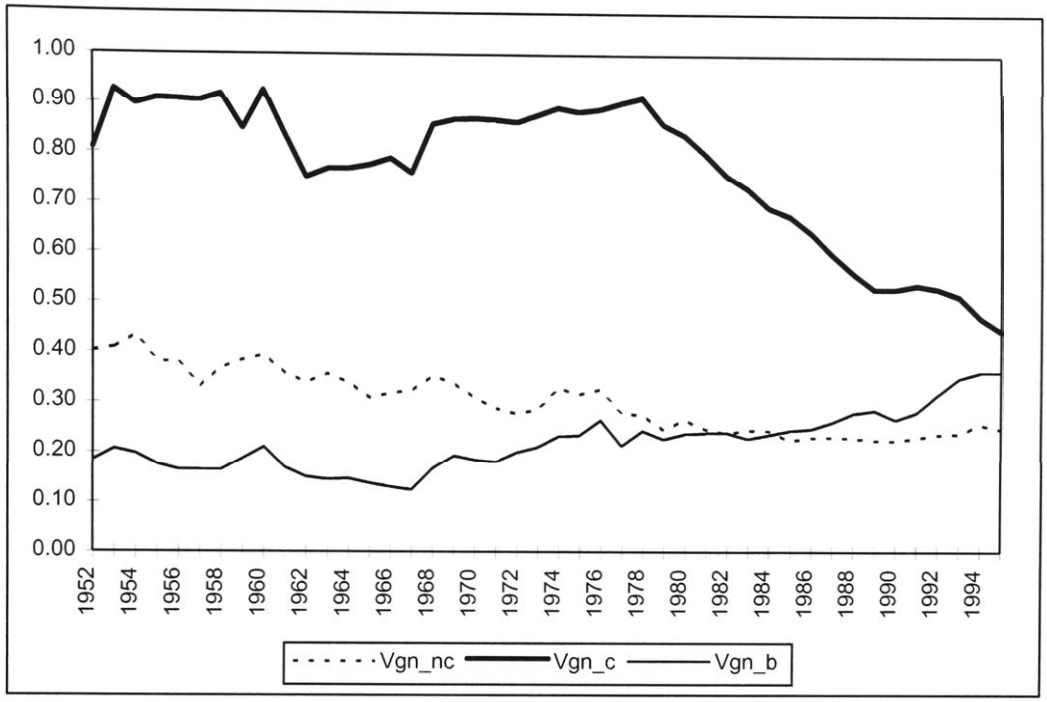
Year	Coast: 11 Provinces		Interior: 17 Provinces		Total: 28 Provinces	
	POP[a]	GDPPH[b]	POP[a]	GDPPH[b]	POP[a]	GDPPH[b]
1952	234	133	323	93	556	110
1953	240	158	331	106	571	128
1954	248	165	340	112	587	135
1955	253	171	348	122	601	142
1956	259	187	356	136	615	158
1957	266	196	366	143	632	166
1958	274	234	373	170	647	197
1959	280	271	378	188	658	223
1960	280	294	372	195	651	238
1961	281	208	370	149	650	174
1962	287	194	378	144	666	166
1963	295	200	388	150	683	172
1964	300	219	397	165	697	188
1965	308	244	409	186	717	211
1966	315	263	422	203	737	229
1967	322	238	434	186	755	208
1968	329	231	447	167	776	194
1969	336	264	461	181	798	216
1970	344	298	476	208	820	246
1971	351	312	491	220	842	258
1972	357	324	504	220	861	263
1973	364	343	518	228	881	276
1974	369	348	529	222	898	274
1975	374	375	539	239	913	294
1976	378	378	548	227	926	289
1977	383	407	526	269	908	327
1978	388	465	563	291	951	362
1979	393	514	571	332	964	407
1980	398	572	577	362	975	448
1981	404	616	585	388	989	481
1982	410	675	593	425	1004	527
1983	415	742	599	478	1013	586
1984	420	881	604	559	1024	691
1985	424	1064	610	664	1034	828
1986	429	1180	619	731	1048	915
1987	436	1396	628	844	1064	1070
1988	442	1762	639	1029	1081	1329
1989	449	1977	648	1141	1097	1483
1990	462	2122	663	1270	1125	1619
1991	467	2465	661	1430	1129	1859
1992	472	3056	678	1659	1150	2232
1993	476	4111	685	2094	1160	2921
1994	482	5432	697	2704	1179	3819
1995	487	6831	704	3401	1191	4803

Notes: a). POP stands for population measured in millions.
b). GDPPH stands for per capita GDP measured in yuan per head.

Data in Table 7.7 show that, in 1952, there were 234 million people living in the 11 coastal provinces with an average per capita GDP of 133 yuan; and in 1995, the population increased to 487 million (increased by 108%), and the per capita GDP increased to 6,831 yuan (increased by 5,036%). For the 17 provinces in the inland region, the population increased from 323 million in 1952 to 704 million in 1995 (increased by 118%), while per capita GDP increased from 93 yuan to 3,401 yuan (increased by 3,557%). The coast-interior per capita GDP ratio was 1.43 in 1952, increased to 2.01 in 1995, indicating the income gap between the two regions had widened.

The rest of this appendix and the next appendix will analyse the income inequality situations within and between the two regions by using different methods. This appendix will use coefficient of variation to measure inter-provincial inequality within each of the two regions and income gap between the two regions. Since there exists neither coast- nor interior-specific price index, only per capita GDP data in nominal terms are used in this appendix. The outcomes are reported in Figure A7.3. Appendix E will employ a variance decomposition technique which can be applied to provincial per capita GDP data in both nominal and "real" terms.

Figure 7.8. Income Inequality within and between Coastal and Inland Regions



Notes: Vgn_nc represents inter-provincial inequality index within the inland region estimated based on provincial nominal per capita GDP;

Vgn_c represents inter-provincial inequality index within the coastal region estimated based on provincial nominal per capita GDP;

Vgn_b represents income inequality index between the inland and coastal regions estimated based on nominal per capita GDP data of the two regions.

Changes within the inland region. In Figure 7.8, Vgn_nc shows a slightly downward long-run trend in spite of several small ups and downs. From 1952 to 1995, Vgd_nc was decreasing at an average annual rate of 0.67%.

Changes within the coastal region. Vgn_c exhibits a similar trend as Vgn (RII based on nominal GDP) did in Figure 7. 2a in Section 7.4. It increased from the mid-1960s to 1978, and then moved to a downward long-run trend until the end of 1980s.

Changes between coastal and inland regions. The value of Vgn_b started to drop in the early 1950s with an annual change rate of -3.54%. In spite of a small upward shift around 1959, the declining trend lasted for 14 years and came to an end in 1967. Then, it began to rise at an average annual rate of 4.04% until 1994. This long-term upward movement lasted over a period of 27 years in spite of a couple of small drops that took place in 1976-77 and 1989-90. From 1994 to 1995, there was a very small drop.

Within the long-term upward movement, there was a rapid rising period from 1990 to 1994, with an average annual increasing rate of 7.96%. Since Vgn_b is estimated on per capita GDP in nominal terms, it might be argued that the rapid rise was the result of uneven inflation in coastal and inland regions, ie the inflation rate in the coast might be higher than in the interior. However, the statistical data do not support this argument. The mean annual inflation rate for the 11 coastal provinces in 1990-94 was 11.47%, while for the 17 inland provinces it was about the same, or more precisely, even slight higher at 11.51%. We can therefore rule out the possibility that the rapid rise in Vgn_b in the early 1990s was caused by inflation differentials. Thus, the significant jump in Vgn_b reflected a real change in coastal-inland income differentials. This conclusion receives support from the variance decomposition analysis using per capita GDP data in both nominal and "real" terms. The results from the variance decomposition are reported separately in Appendix E to Chapter 7.

From the above analysis, two points should be noted. First, during the reform era, both within-region indexes (Vgn_c and Vgn_nc) were on downward trends, particularly the inequality index within the coastal region (Vgn_c) dropped rapidly; while income inequality between the two regions (Vgn_b) was on a significant upward trend. Second, prior to 1990, the dominant source of inter-provincial inequality was the income differentials within the coastal region. Since 1990, income gap between coastal and inland regions has become a significant force driving the movement of regional inequality in China.

The opposite movements of Vgn_c and Vgn_b in the 1980s need some explanations. One important reason is the rapid growth of coastal southern provinces -- Guangdong, Fujian and Zhejiang. These provinces have been growing at higher-than-national-average rates since the beginning of the reforms. As discussed in Section 7.6, this factor contributed to reduction in national income inequality before their per capita GDP passing the national average, and has pulled the inequality index up since then. This argument can be applied further in the coastal-inland analysis. Per capita GDP levels of coastal southern provinces were higher than the average of the inland region prior to the 1980s, but lower than the average of the coastal region in the early 1980s. They passed the coastal average in the late 1980s or early 1990s. The rapid economic growth of coastal southern provinces, therefore, became a factor that disequalising income distribution between the coastal and inland regions, while equalising income distribution within the coastal region in the 1980s.

The fact that the income gap between coastal and inland regions became a major source of regional inequality in the early 1990s has significant policy implications. The Chinese leadership has been facing the rising regional inequality problem. The income differentials between the coast and the interior which widened in the early 1990s should be treated as a warning signal. If the current Chinese leaders fail in dealing with this problem in five to ten years, they will have to pay a high price later on.

Appendix E to Chapter 7

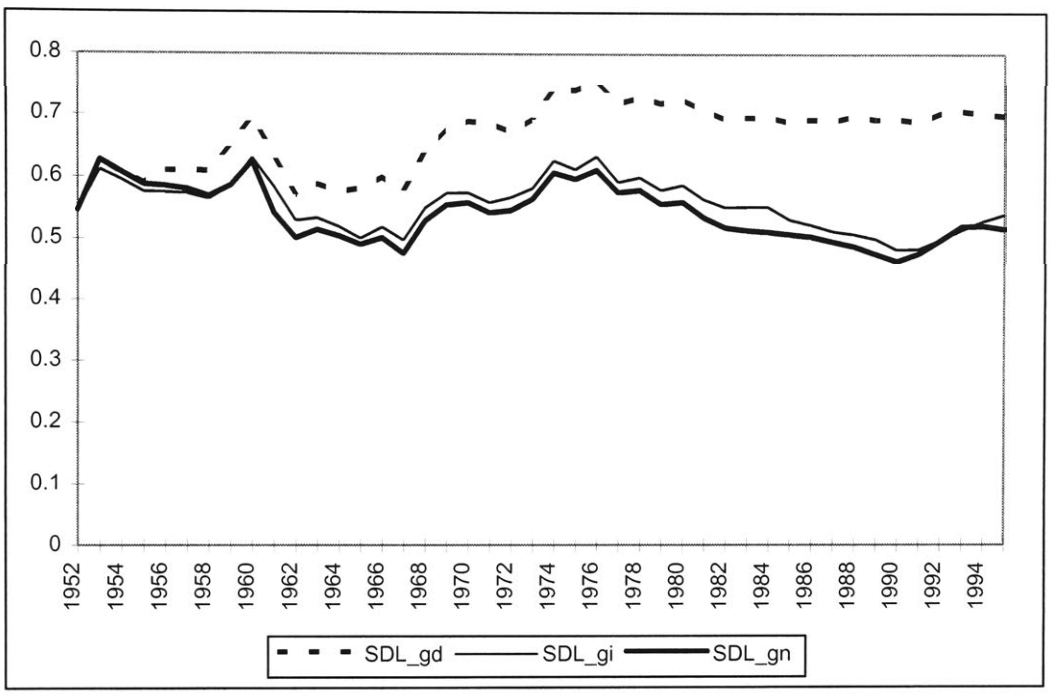
Variance Decomposition: Coast and Interior

Section 7.2 and Section 7.3 noted that the standard deviation of log per capita GDP across provinces could be used to measure inter-provincial inequality. Although this measure is not as widely used as the coefficient of variation, it does have a desirable feature - its square (ie variance) is easily decomposed. It is employed in this appendix to analyse income inequality between coastal and inland regions and within each of the two regions, in both nominal and real terms without using region-specific price indexes.

First, one index of the standard deviation of log per capita GDP in nominal terms and two indexes in real terms have been estimated and are reported in Figure 7.9a. Their squares are reported in Figure 7.9b. Comparing with the three indexes of coefficient of variation reported in Figure 7.2a (in Section 7.4), the newly estimated indexes of standard deviation and their squares are very similar in terms of the changing trends and turning points. They all declined in the period from 1953 to the early or mid-1960s, rose during the decade of Cultural Revolution, dropped again in the first decade of the economic reforms (from the late 1970s to the late 1980s), then increased again in the early 1990s. The implicit GDP deflator-based indexes showed a larger degree of inequality than those of the provincial retail price index and nominal price-based indexes. The newly estimated indexes peaked in 1976, slightly

earlier than those indexes of coefficient of variation showed in Figure 7.2a where they peaked in 1978.

Figure 7.9a. Estimations of Standard Deviation of Log Per Capita GDP

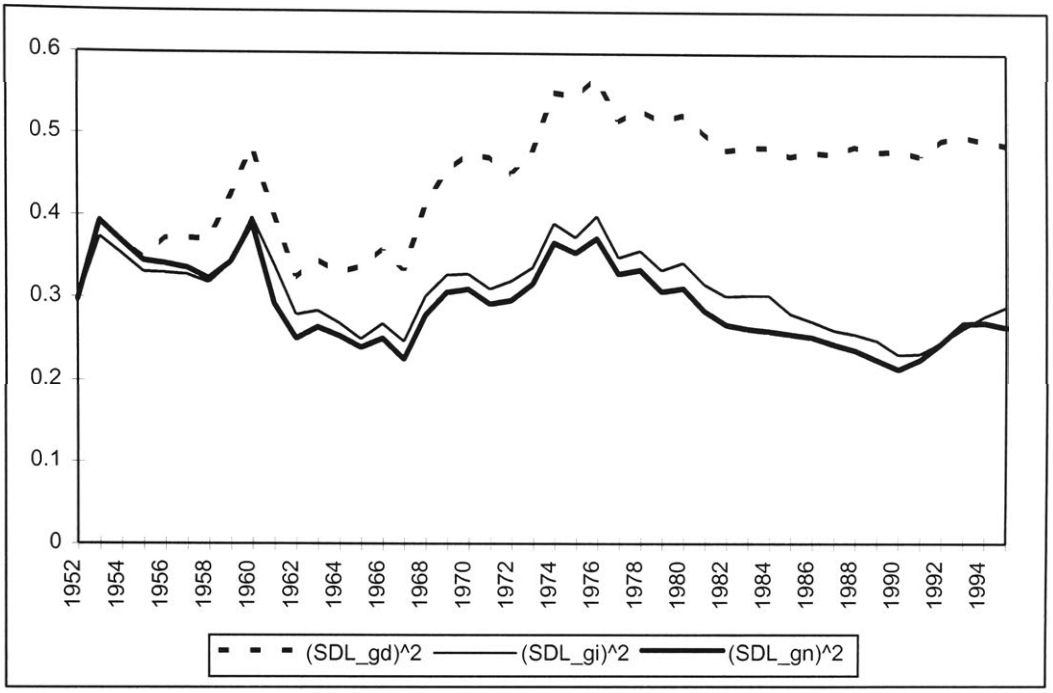


Notes: SDL_gd stands for the standard deviation of log per capita GDP deflated by implicit GDP deflator;

SDL_gi stands for the standard deviation of log per capita GDP deflated by provincial retail price index;

SDL_gn stands for the standard deviation of log nominal per capita GDP.

Figure 7.9b. Squares of Estimated Standard Deviation of Log Per Capita GDP



Note: For variable definitions, see Notes of Figure 7.9a.

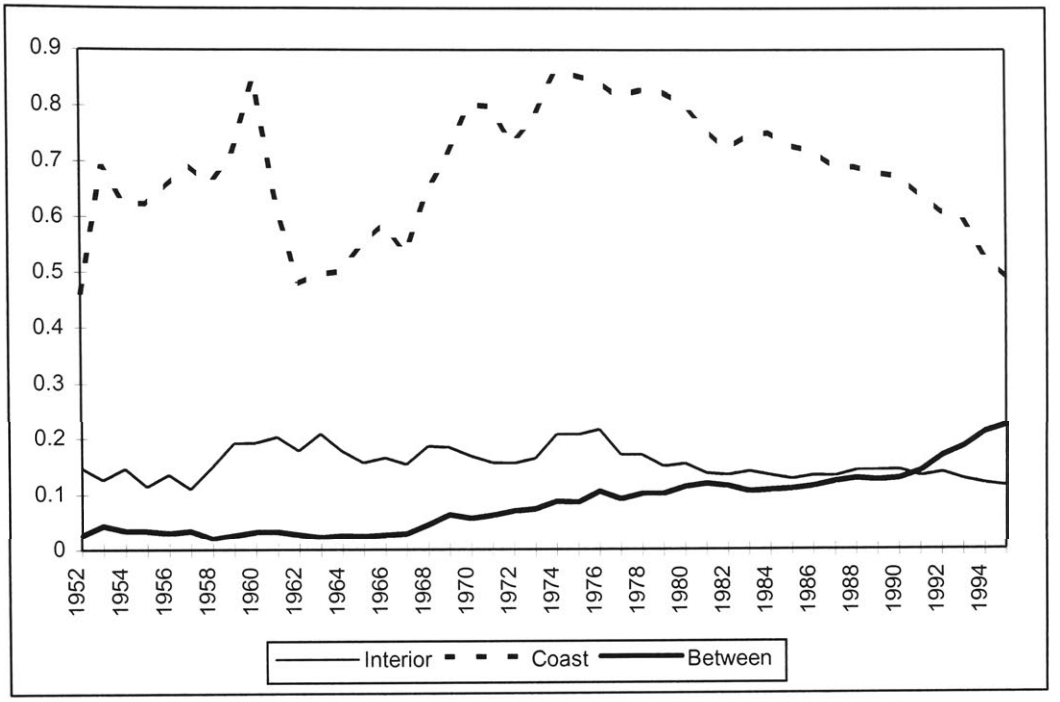
Now, the square of each of the three estimated standard deviation of log per capita GDP can be decomposed into three parts representing the inequality within the coastal region, the inequality within the inland region, and the inequality between the two regions.[80] The decomposition results are reported in Figure 7.10 a, b and c.

[80] The decomposition is according to the following simple formula:

$$Var(X) = a \times Var(X_c) + b \times Var(X_{nc}) + c \times (Mean(X_c) - Mean(X_{nc}))^2,$$

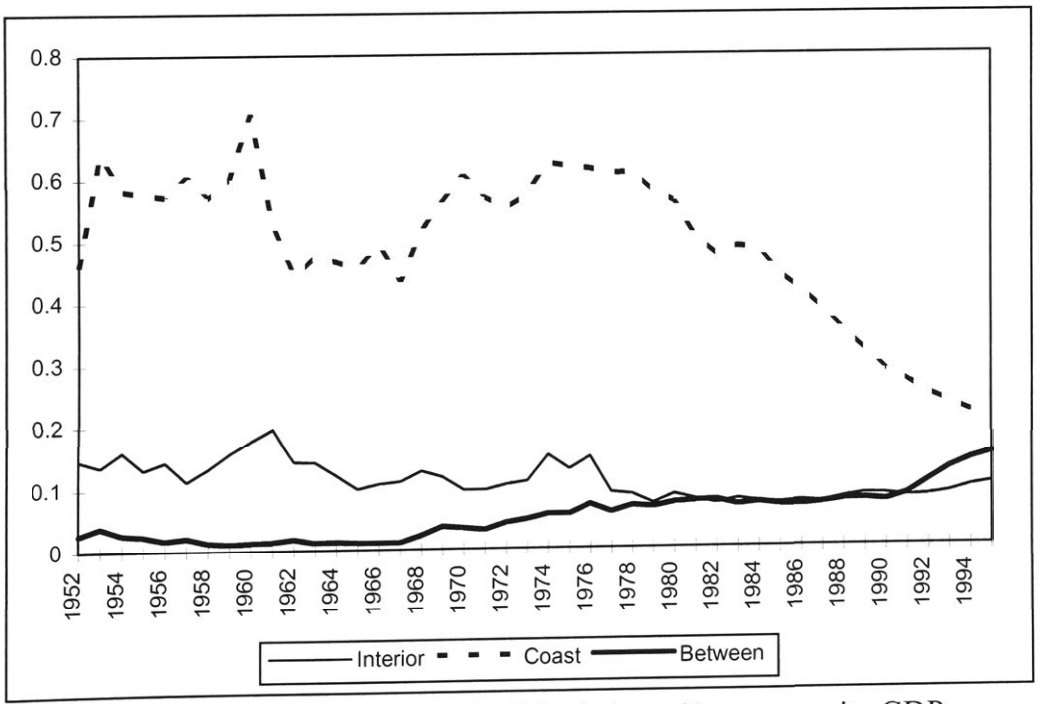
where X refers to the whole sample, X_c refers to the coastal region sub-sample, X_{nc} refers to the inland region sub-sample; and the constants a, b and c are weights that depend on the number of provinces in each of the two regions. See Jian et al. (1995), Page 30.

Figure 7.10a. Decomposition of Squared SDL_gd



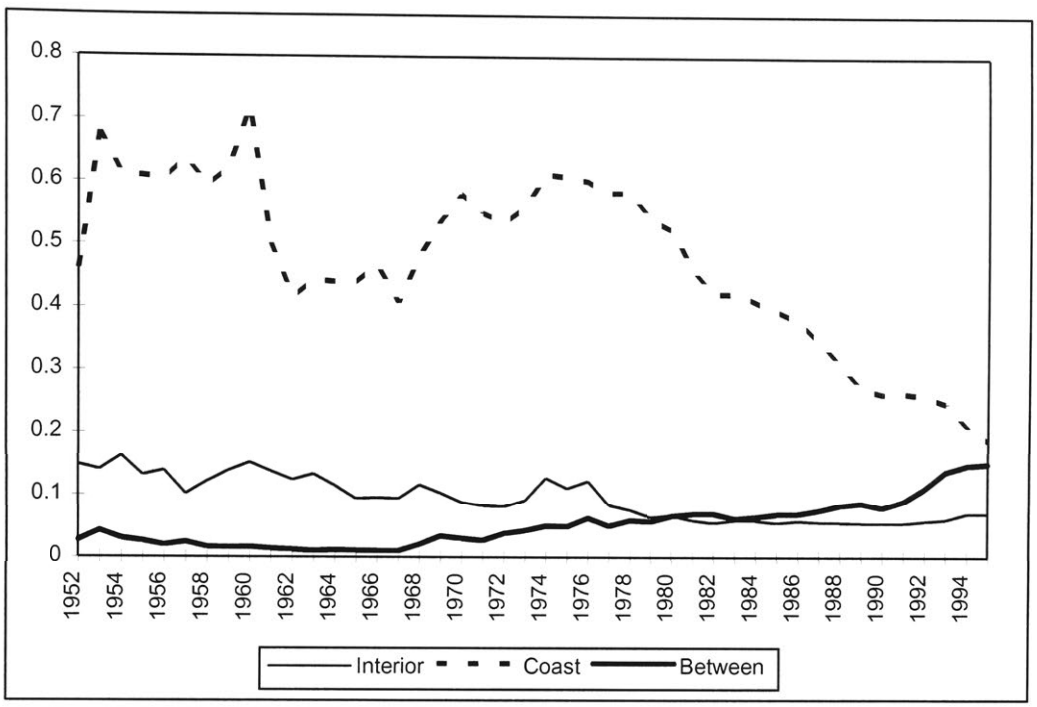
Note: SDL_gd stands for the standard deviation of log per capita GDP deflated by implicit GDP deflator.

Figure 7.10b. Decomposition of Squared SDL_gi



Note: SDL_gi stands for the standard deviation of log per capita GDP deflated by provincial retail price index.

Figure 7.10c. Decomposition on Squared SDL_gn



Note: SDL_gn stands for the standard deviation of log nominal per capita GDP.

In Figure 7.10 a, b and c, each of the three variances was broken down into three parts: the within-interior effect, the within-coast effect and the between-two-region effect. The following three observations can be noted.

1. In most years of the 1952-95 period (before 1990), the dominant force affecting the overall changing trend was the within-coast effect. In all three cases, this can be seen obviously in terms of the basic shape of its time profiles and magnitude compared with the other two effects.

2. The time profiles of the within-interior effect showed a slightly downward sloping line in spite of several short-term small ups and downs. Its influence on the overall trend was relatively insignificant.

3. The between-two-region effect, in all the three cases, showed similar changing trends and patterns. From the early 1950s to 1967, they dropped slightly; since 1967 they increased; and their speeds of increase accelerated in the early 1990s. These results have confirmed the major finding of Appendix D that the income differentials between the coastal and inland regions have become a significant force driving the movement of Chinese regional income inequality in the 1990s.

Chapter 8

Summary and Conclusions

This study has investigated the major economic ramifications of China's fiscal decentralisation during 1978-1992, a period that is particularly significant in the history of public finance of PRC.

At the beginning of this period, the Chinese fiscal system had five basic features:

a) public finance occupied a very significant position within the national economy, ie the public sector size was very large;
b) fiscal power was largely concentrated in the hand of the central government, ie the decentralisation ratio was low;
c) the central government budgets relied heavily on transfers of funds from the provincial governments;
d) there existed a fiscal equalisation mechanism which worked only in the province-collector-centre-spender style fiscal setting; and
e) most social security expenditures did not directly come under the state budgets.

By the end of this period, this study has found that the first four of the above features had changed: the size of public sector had dropped; fiscal decentralisation ratio had increased; the central government could no longer rely on transfers from the provinces and had to mainly collect its own revenues; the fiscal equalisation

mechanism had lost a large part of its power, so the effectiveness of fiscal redistribution had reduced. All these changes were the results of fiscal decentralisation during this period. Only the last feature remained largely unchanged until 1992. It began to change recently when the reform on SOEs deepened and the unemployment problem became more and more serious.

Empirical investigation in this study has confirmed the major hypothesis put forward in the introductory chapter. Fiscal decentralisation in China during the period 1978-1992, through transforming the pre-reform central-provincial revenue collection and spending relations, has reduced the effectiveness of the fiscal equalisation mechanism. This change has a potential impact on pushing the rise in regional income inequality, if other factors remain unchanged.

In addition to this main finding, this study has also found some fresh evidence in support of the Brennan-Buchanan hypothesis, ie fiscal decentralisation has an effect on the decline in public sector size, for the first time based on empirical test on data from a developing country.

In the rest of this chapter, the major theoretical and empirical findings of this study will be summarised in Section 8.1 and 8.2 respectively, and some policy implications will be examined briefly in Section 8.3.

8.1. Fiscal Decentralisation Theory and Chinese Practice

In this study, fiscal decentralisation is defined as the process in which a part of the central government's fiscal decision-making power is transferred to the sub-central governments.[1] Dillinger (1994) found that sixty-three out of seventy-five developing and transition economies with population of five million or more had actually transferred or were in the process of transferring decision-making power to local governments by the mid-1990s.[2] This thesis has shown that China is certainly one of them. During the period 1978-1992, the main feature of Chines fiscal reform was decentralisation.

The Decentralisation Theorem advanced by Oates in the early 1970s was originated from consideration of the public goods provision with reference to situations in developed economies. It argued decentralised public goods provision might produce better results than a centralised system. This argument can be generalised to other areas of public finance, such as stabilisation policy and distribution policy. Furthermore, it can be generalised to be applicable in developing economies as well.

Over the past two decades, various fiscal decentralisation programs have already been introduced in both developed and developing countries. In terms of the impacts of fiscal decentralisation on economic growth, some recent empirical studies

[1] The term of sub-central governments in this study indicates provincial governments.
[2] See Dillinger (1994).

reported inconsistent results.[3] Oates (1996) found that fiscal decentralisation had some significant positive effects on economic growth. However, Davoodi and Zou (1996) reported that in terms of enhancing economic growth, fiscal decentralisation might work well in some countries but less well in others. This thesis has found that the process of fiscal decentralisation in China during the 1978-1992 period occurred along with rapid economic growth.

Fiscal decentralisation is said to have negative effect on macroeconomic stability at least in the short run.[4] The problem of macroeconomic instability has been a persistent one in China during the 1978-1992 period. The problems of great fluctuations in economic growth and serious inflation were discussed in Chapter 4. The latter is more important than the former, because major drops in the growth rate were actually the results of the government's fiscal and monetary contractions adopted in dealing with high inflation. Of course, fiscal policy problem has been an important reason for inflation. However, monetary expansion is the more direct reason.

The relation between fiscal decentralisation and regional income inequality is a more complex issue. Prud'homme (1995) argued that fiscal decentralisation would definitely pull regional inequality up.[5] However, the results of empirical tests from this study do not support his argument: fiscal decentralisation process in China was associated with a diminution in regional income inequality at least in the first decade of the economic reforms from the late 1970s to the late 1980s.

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[3] See Oates (1996) and Davoodi and Zou (1996).
[4] See Prud'homme (1995) and Hommes (1996).

The theory of fiscal decentralisation indicates that the efficiency of the national economy can be raised through improvement in public sector resource allocation. Theoretical analyses and empirical investigations have revealed that for most countries in the world, higher level of economic development (measured in per capita GDP or urbanisation ratio), larger population size and land area, and greater cultural and racial diversities lead to higher degree of fiscal decentralisation; while larger regional income distribution gaps contribute to lower degree of fiscal decentralisation. Turning to China's situations, we can find that, on the one hand, some factors are in favour of decentralisation. For instance, China is one of the largest countries in term of land area, and she has the largest population in the world with significant cultural and racial diversities. On the other hand, some factors may work in favour of centralisation. For instance, China is still at her early stage of economic development, and there exist significant regional income distribution differentials.

Whether fiscal decentralisation can bring about efficiency gains in a country will depend not only on economic and geographic factors, but also on social and political factors. As discussed in Chapter 3 of this thesis, in the debate on whether fiscal decentralisation theory can be applied to developing economies, many social and political issues are raised. Among them, three are more relevant to China. Firstly, the quality of government officials and the level of public finance management skills of the local governments are important conditions for the success

[5] See Prud'homme (1995).

of any fiscal decentralisation program. Some researchers cautioned that the lack of skilled staffs was a major reason why decentralisation has worked less well in several African countries.[6] This problem seems not that serious in China.

Secondly, a basic premise of the decentralisation arguments is that local democracies should be in place and do work. If they are not in place or do not function well, the case of decentralisation becomes much weaker. This condition is another constraint for developing countries to apply fiscal decentralisation theory. In China today, the provincial governments are no longer merely subordinate administrative units of the central government; they have the power to make expenditures and collect own revenues; and officials of provincial governments are paying more attention to the local interest because local people's evaluation on their performance has much more impacts on their career perspective than prior to the reforms.

And thirdly, corruption may also raise some problems affecting the operation of local democracies. Corruption is a problem at all levels of governments with varying degree of seriousness in many countries. The question here is whether it is more serious at local level than at national level. Some observers consider that corruption might be more common at the local level than at national level, especially in developing countries.[7] However, there is another related question which is more difficult to answer - is the damage caused by a corrupted central government minister

[6] See Prud'homme (1994).
[7] Tanzi (1994 and 1996).

greater or smaller than the combined damage caused by several corrupted local officials? There is no doubt that corruption is a serious problem in China among officials at all levels of governments. However, more systematic investigations are needed to answer the question about whether corruption is more serious at lower levels of governments than at the central government or whether the damage caused by local corruption is greater than the damage caused by corruption in the central government. Therefore, whether fiscal decentralisation in Chine can bring about efficiency gain depends partly on further research for an answer to this important question.

8.2. Empirical Findings

Empirical investigations conducted in this study have supported the hypotheses of the possible impacts of fiscal decentralisation on the changes in regional income distribution and public sector size put forward in the introductory chapter. The empirical findings can be summarised briefly as follows.

1). This study has found that, if it is measured correctly, the size of public sector size did drop during the 1978-1992 period. However, it had dropped moderately and gradually until 1992, rather than dramatically and rapidly.[8]

[8] There have been several researchers, worrying that the Chinese public sector size had become too small in the early 1990s. For example, see Wang and Hu (1993).

2). This study has tested the effect of fiscal decentralisation on public sector size, and found that fiscal decentralisation with a three- or five-year-lag has significant effect on the reduction in public sector size. This may represent a first attempt to test the Brennan-Buchanan fiscal decentralisation hypothesis in the context of a developing country, providing some fresh evidence in support of the hypothesis.

3). The Chinese central government collected about a half of the total official public sector revenue in 1978, but it spent more than 80 % of the total official public sector expenditure. It spent more than its own collection with the gap mainly funded by the transfers of financial resources from provinces. In 1992, the situation had changed. The central government collected about 60 % of the total official public sector revenue, while spent about the same share of the total official public sector expenditure. Fiscal decentralisation in the fiscal reform process changed the pre-reform basic central-provincial fiscal setting completely.

4). On the basis of the model developed and tested in previous chapters, this study has detected the existence of a fiscal equalisation mechanism within the particular Chinese central-provincial fiscal setting. The panel data set used in the test includes 28 provinces, and covers the whole period from 1978 to 1992. The model is designed not only for testing the existence/absence of the said fiscal equalisation mechanism, but also for capturing the changes in its effectiveness over time during this important stage of reform. The test results provided evidence in support of the hypothesis that there existed a fiscal equalisation mechanism within the Chinese fiscal system during the fiscal reform era. Furthermore, they indicated that the mechanism

had been weakening since the early 1980s and had become quite insignificant in the early 1990s, as the conditions for its effective functioning had been changing rapidly. The existence and functioning of the fiscal equalisation mechanism is found to be highly related to the basic central-provincial fiscal setting. In contrast to practices in most market economies, the detected fiscal equalisation mechanism in China worked through fiscal transfers from the provinces to the centre, rather than transfers from the centre to the provinces. It worked mainly through the process of revenue collection, with the richer areas remitting more to the centre, and the poorer regions remitting less. When the basic fiscal setting changed during 1978-1992, the mechanism gradually lost its effectiveness.

5). Six regional inequality indexes (RIIs) were estimated in previous chapters based on two data sets (pre-fiscal transfer provincial GDP and NMP) and three different price terms (nominal, implicit deflator and provincial retail price index). The six estimated RIIs exhibited more oscillations than industrialised countries at a similar stage of economic development. Between the mid-1960s and the early 1990s, the estimated RIIs revealed a classical inverted-U changing path as predicted by Kuznets-Williamson with their peaks in the late 1970s.

6). Previous studies reported different results on the magnitude of changes in Chinese regional inequality during the first decade of the economic reforms: some found a rapid decline,[9] others referred a mild drop.[10] Although the differences have

[9] For example, see Jian et al. (1995).
[10] For example, see Chen and Fleisher (1996).

been observed by some researchers, there has been no systematic investigation into this issue. This study has tried to provide some explanations, and found that the differences in the results were caused by the uses of different price indexes in the estimation process: those RIIs based on implicit deflators reported the mildest drop, those nominal price based RIIs recorded much quicker reduction, and those provincial retail price index based RIIs referred the most rapid decline.

7). The six estimated RIIs all increased in the early 1990s, indicating the long-term decline in regional inequality since the beginning of the economic reforms had come to an end. This study has found several factors that have contributed to this change, including:

a) income gaps between the coastal and the inland regions started to widen rapidly since 1990;
b) coastal southern provinces have been growing at higher rates than national average since the beginning of the economic reforms; and after their per capita GDP levels passed the national average in the mid- or late 1980s, their continuous rapid growth became a factor pulling regional inequality up;
c) the tertiary sector's contribution to regional inequality started to rise significantly since 1989;
d) the fiscal redistributional effect on reduction in regional inequality had dropped to a very low level by the end of 1980s; and
e) the Chinese official statistics failed to account for some population movements that

have become more prevalent in the early 1990s; this statistical bias may cause overestimation of the values of RIIs.[11]

8). A decomposition analysis is employed in this study to show the contribution of each individual component of GDP_{TR} (provincial GDP incorporating fiscal transfer) to the changes in the square of RII_{TR} (RII estimate based on provincial GDP_{TR}). The primary sector only made very limited contribution to the changes in overall regional inequality. The secondary sector was the main source of regional inequality in China. The tertiary sector's contribution to the overall regional inequality was significant in the early years of PRC, then became insignificant since the late 1950s for three decades, and turned into a steep rise since 1989. The last component, representing fiscal transfers from the centre to the provinces, showed negative contributions to the overall regional inequality. This meant fiscal transfers had worked to reduce regional inequality. The results from factor decomposition analysis clearly showed that the Chinese central government had played an important

[11] There have been tens of millions of migrant workers form the inland provinces working in the coastal region since the late 1980s, but the official population statistics do not reflect this situation (See Chai, 1997). The migrant workers are still counted for population of the source provinces, rather than the recipient provinces in the official statistics. The Chinese population statistics are based on household registration. For example, there is a worker from Hunan working in a factory in Guangdong. If he cannot move his household registration from Hunan to Guangdong (it is very difficult for an ordinary worker to make such a move under current household registration rules), no matter how long he has been in Guangdong, he is still counted for the population of Hunan rather than Guangdong. For this reason, the population figures for the outflow provinces may be overestimated, while for the recipient provinces, their population figures may be underestimated. Consequently, the official per capita GDP figures for the coastal recipient provinces may be overestimated, while for the inland outflow provinces their per capita GDP figures may be underestimated, resulting in an artificially inflated estimate for the coastal-inland income differentials. As pointed by Khan and Riskin (1998), the "floating migrants" argument is also applicable in the analysis on the rural-urban income differentials.

role in redistribution of income from the rich to the poor provinces through fiscal redistribution.

9). The results from factor decomposition analysis were consistent with the results from the econometrical tests on the fiscal equalisation mechanism, showing that the basic trend in the fiscal redistributional function was on a decline in the decade from the late 1970s to the late 1980s. This change itself was a factor which had the potential to pull regional inequality up. However, the detected regional inequality trend during that period was going down rather than going up. There must therefore be some downward-pushing factors at work during the same period. As discussed in Chapter 7, major downward-pushing factors include rapid marketisation process and opening to the rest of the world, industrialisation entering its diffusion stage, and giving up pre-reform "heavy-industry-first" and "self-reliance" policies.

8.3. Conclusions

This section will, first of all, conclude the findings on the relation between fiscal decentralisation and regional income inequality from previous chapters. Then, it will turn to two policy related questions: a) what the policy implications of the rise in regional income inequality in the early 1990s are; and b) how to improve the government's capacity for macroeconomic control.

1. Impact of fiscal decentralisation on regional income distribution

Through a set of comprehensive empirical investigations, this study has reached the following two key conclusions concerning the impact of fiscal decentralisation on the changes in Chinese regional income inequality.

The first conclusion is that fiscal decentralisation had potentially positive influence on the rise in regional inequality, if all other factors remain unchanged. During the economic reform process fiscal decentralisation changed the fiscal relations between the central government and the provincial governments, from the central government relying heavily on fiscal remittences from the provinces to it mainly collecting its own revenue. This change in central-provincial fiscal relations removed the basis of the particular fiscal equalisation mechanism, hence dramatically reduced its effectiveness, resulting in a decline of fiscal redistributional function in reducing regional income inequality.

However, the estimated regional inequality indexes have shown that the actual movement of these indexes in the period 1978-1992 was going downward rather than upward. This fact, revealed by empirical results, has lead this study to reach the second conclusion concerning the relation between fiscal decentralisation and regional income distribution. That is the actual direction of regional inequality movement (up or down) in any given period is decided in a complex process. In that process, many factors may have influences: some pushing it down, while others pulling it up. The actual moving direction will be determined by the combined effect of all influencing

factors. In fact, as demonstrated in previous chapters, this theory can explain the changing trends and patterns of the estimated Chinese regional inequality indexes from the early 1950s to the mid-1990s in general, and their long-run downward movement during the first decade of the economic reforms and their short-term upward journey in the early 1990s in particular.

2. Regional income inequality in the early 1990s

At the beginning of the economic reforms in the late 1970s, the Chinese leaders declared that they had adopted a policy to promote some advanced regions to grow faster in order to speed up national growth, and they were expecting to see an increase in regional inequality. However, the expected rise in regional inequality actually did not occur. Instead of a rise, regional inequality declined for quite a long period from the beginning of the economic reforms in the late 1970s through to the end of 1980s. The longer than a decade decline in regional inequality finally came to an end in the early 1990s, reflecting some significant changes within the Chinese economy emerging at around that time. These changes are as follows.

- First, the old fiscal equalisation mechanism had almost lost its power.[12]
- Second, the fiscal redistributional effect on reduction in regional inequality had dropped to a level so low that the estimated RII_{TR} (RII based on provincial GDP incorporating fiscal transfer) started to rise since 1990.[13]

[12] See Section 6.3 in Chapter 6.
[13] See Section 7.5 in Chapter 7.

- Third, the contributions of the tertiary sector to the overall regional inequality turned to a steep rise since 1989.[14]
- The fourth, income gaps between the coastal region and the inland region significantly widened since 1990.[15]

The above mentioned changes in the economy have significant policy implications. They have caused many concerns, not only economic ones, but also political ones. For example, the diminution in the effectiveness of fiscal equalisation mechanism may cause significant political concern among Chinese leaders. The history of PRC has shown that the Chinese government has been always keen to use progressive regional fiscal policy to keep regional income differentials under control. In the early 1990s, the effectiveness of the old fiscal equalisation mechanism had dropped to a very low level, which must upset the Chinese leaders. This is the background reason for why they sent officials to western countries in recent years to learn their experiences of using grant system in promoting horizontal equalisation.

The issue of widening income gaps between the coastal and inland regions may also cause political concerns for the top Chinese leaders. As analysed in the previous chapters, the Chinese leadership needs nationwide support to carry out the reform tasks. Under current Chinese political regime, the top central CCP leader sometimes needs to win support from provincial governors/party bosses in

[14] See Section 7.5 in Chapter 7.
[15] See Section 7.4 in, and Appendix D and E to Chapter 7.

confrontation with opposition force within the CCP central committee.[16] There are 12 provinces in the coastal regions, and 19 provinces in the inland regional.[17] Votes from inland provinces may become critical in some cases during power struggles. This is an important political reason for the Chinese leadership to always put an eye on the development in income gaps between the two regions. This becomes more important now for the current Chinese leadership, since most of current top leaders are from the coastal provinces.[18] The lack of power basis in inland provinces may be a problem for their survival in a future power struggle.[19] And if the CCP dictatorship remains, power struggles are inevitable.

The Chinese leadership has been facing the problem of rising regional inequality since the early 1990s. The rise of regional inequality in the early 1990s should be treated as a warning signal. It has called for a more balanced regional economic development policy, and for more effective functioning of the fiscal equalisation mechanism within the decentralised fiscal system.[20]

[16] This type of power struggles took place several times in the past. See Shirk (1993).
[17] The numbers of provinces used in Appendix D to Chapter 7 were 11 for the coastal region and 17 for the inland region. By adding Hainan into the coastal region, Chongqing and Tibet into the inland region, the numbers become 12 and 19.
[18] They have received a nick name - "the Shanghainese gang", since most of them were born in Shanghai, or studied and grew up there, or worked there before came to the central government or party central committee.
[19] Mao Zedong was from Hunan, and Deng Xiaoping from Sichuan. Both of them were from inland provinces.
[20] The new mechanism is similar to the grant system being used in Australia.

3. Government's capacity over macroeconomic control

This study has found fresh empirical evidence in support of the hypothesis that fiscal decentralisation has an effect on the reduction in government size.[21] It is commonly believed in market economies that a reduction in government size is desirable since it can improve the efficiency of the public sector. However, Wang and Hu (1996) expressed their strong reservation and worry about the drop in the Chinese government size.[22] They argued that the drop in government size might harm national economic growth, and reduce the government's capacity over macroeconomic control. However, theoretical analysis and empirical investigation conducted in previous chapters lead this thesis to reach different views.

Firstly, on the relation between government size and economic growth, this study has found that, in the existing literature, over expansion of government size is harmful. Empirical findings in Chapter 5 have shown that the size of public sector in China until 1992 was still very large compared with other market economies. Therefore, the reduction in government size may enhance, rather than obstruct, Chinese economic growth.

Secondly, the relation between the government size and its capacity for macroeconomic control requires more explanations. In mature market economies, governments can conduct macroeconomic control through monetary policy and fiscal

[21] See Section 5.5 in Chapter 5 and Section 8.2 in this chapter.

policy. Until 1992, effective monetary policy in China basically did not exist,[23] while fiscal policy was not effective either. Fiscal policy is usually used to control the level of aggregate demand, by directly controlling government own total spending, or by changing the tax level to indirectly control the private sector demand. For example, when the government needs to conduct expansionary policy for counter-recession purpose, it can either increase its direct spending to directly increase the level of aggregate demand, or cut taxes. A tax cut on personal income tax can boost personal consumption and investment; while a tax cut on corporate tax can boost firm investment and increase personal income of share holders. The impact of a tax cut is an increase in aggregate demand. When the government is facing economic overheating, it may adopt a contractive fiscal policy in order to reduce the aggregate demand, such as cutting government direct spending and increasing taxes.

There are three pre-conditions to make the above mentioned indirect control work: a) personal income tax should take a considerable share in the total tax revenue; b) corporate tax should be unified and simple[24]; and c) the whole tax system should be elastic. Before the 1994 tax reform, all of these conditions did not exist in China. To make fiscal policy work, further fiscal reform is needed. The most important task is to make tax revenue income elastic, that is, when the economy grows, revenue grows accordingly. Otherwise, when the government increases its direct spending and cuts

[22] See Wang and Hu (1996). Their research report was awarded National Prise by the Chinese government recently, reflecting that their views were appreciated by at least some of Chinese leaders.
[23] Major financial sector reform started since 1993. Before that, the Chinese government could only use some administrative means, such as switching on or off the money printing machine, and setting the total credit targets for the banking system.
[24] Before the 1994 tax reform, the corporate tax system in China was very complicated. There were many different tax rates, ranging from 15% to 55%, applied to different firms.

taxes during the expansionary fiscal policy periods, its revenue does not increase after the economic booming. This will cause serious fiscal imbalance problem, and is at least partly responsible for the fiscal deficit problem in China during 1978-1992.

As discussed in previous chapters, a new wave of tax reform measures started in 1994, covering several important aspects of the fiscal system. The new measures included central-provincial taxing power redistribution, improving existing taxes and setting up new taxes. One remarkable measure was to extend the VAT (value added tax) and put 75% of VAT under the central government direct control. The VAT is believed to be a highly elastic tax. This measure would increase the elasticity of the whole taxation system. However, the collection of the VAT has proven to be quite difficult. The collecting method needs to be improved. So far, personal income tax is still insignificant in the Chinese tax system. Further reform on the taxation system should not ignore this area. In industrial market economies, more than a quarter of the total revenue comes from personal income tax. There is another related problem, that is, there are many "fees" collected by taxation authorities and other government organisations out of normal taxation. In some places, individuals and enterprises have to pay very high fees. This problem has become so serious that it already caused many social unrests. The current taxation system needs further reforms. There is still a long way to go for China to make the fiscal policy work efficiently. In this situation, what China should do is not to simply enlarge the size of government size, but to further reform its fiscal system.

Meanwhile, in order to increase the government's capacity for macroeconomic control, financial reform should speed up.

By the end of the 1978-1992 period, the Chinese economic reforms had gone a long way. However, a full scale market economy still seemed faraway. Fortunately, it looked not as far as in the beginning of this period. Until 1992, the Chinese economy was still like an unfinished house renovation with many problems, some were left by the old central planning system, others were newly emerged during the transition. There was only one way that China could resolve the problems, and that was to further reform its fiscal system, financial system, SOEs and other related areas. The most important achievement China made during 1978-1992 was that it had ruled out the possibility of going back to the centralised planning system.

References

Adelman, I. and S. Robinson (1989), "Income Distribution and Development", in H. Chenery and T. N. Srinivasan (eds.), *Handbook of Development Economics*, Amsterdam: North-Holland, 1989, pp. 949-1003.

Afxentiou, P. C. (1982), "Economic Development and the Public Sector: An Evaluation", *Atlantic Economic Journal*, 10 (4), 1982, pp. 32-8.

Amos, O. M. Jr. (1989), "An Inquiry into Causes of Increasing Regional Income Inequality in the United States", *Review of Regional Studies*, 19 (2), 1989. pp. 1-12.

Amos, O. M. Jr. (1988), "Unbalance Regional Growth and Regional Income Inequality in the Latter Stages of Development", *Regional Science and Urban Economics*, Vol. 18, 1988, pp. 549-66.

Amos, O. M. Jr. (1986), "Substate and SMSA Personal Income Inequality and Regional Development", *Review of Regional Studies*, Vol. 16, 1986, pp. 23-30.

Aoki, M., H. Kim, M. Okuno-Fujiwara (1992), *The Role of the Government in East Asian Economic Development: Comparative Institutional Analysis*, Oxford, England: Oxford University Press, 1992.

Ash, R. and Y. Y. Kueh (ed.) (1996), *The Chinese Economy Under Deng Xiaoping*, Oxford: Clarendon Press, 1996.

Atkinson, A. B. (1970), "On the Measurement of Inequality", *Journal of Economic Theory*, Vol. 2, pp. 244-63.

Auerbach, A. and M. Feldstein (ed.) (1985), *Handbook of Public Economics (Vol. 1)*, Amsterdam: North-Holland, 1985.

Auerbach, A. and M. Feldstein (ed.) (1987), *Handbook of Public Economics (Vol. 2)*, Amsterdam: North-Holland, 1987.

Bahl, R., C. K. Kim and C. K. Park (1986), *Public Finances During the Korean Modernization Process*, Published by Council on East Asian Studies, Harvard University, Distributed by Harvard University Press, Cambridge, Massachusetts and London, England, 1986.

Bahl, R. and C. Wallich (1992), *Intergovernmental Fiscal Relations in China*, WPS 863, Washington D.C.: World Bank, 1992.

Bahl, R. W. and J. F. Linn (1992), *Urban Public Finance in Developing Countries*, Oxford; New York; Toronto and Melbourne: Oxford University Press, 1992.

Bahl, R. W. and S. Nash (1986), "Public Expenditure Decentralization in Developing Counties", *Environment and Planning C: Government and Policy*, Vol. 4, 1986, pp. 405-18.

Barro, R. J. and X. Sala-i-Martin (1995), *Economic Growth*, New York: McGraw-Hill Inc., 1995.

Barro, R. J. and X. Sala-i-Martin (1992), "Convergence", *Journal of Political Economy*, Vol. 100, April 1992, pp. 223-51.

Basmann, R. L., K. J. Hayes and D. J. Slottje (1993), *Some New Methods for Measuring and Describing Economic Inequality*, Greenwich and London: JAI Press Inc., 1993.

Bennett, R. J. (ed.) (1990), *Decentralization, Local Governments and Markets: Towards a Post-Welfare Agenda*, Oxford: Clarendon Press, 1990.

Bird, R. M. (1993), "Threading the Fiscal Labyrinth: Some Issues in Fiscal Decentralization", *National Tax Journal*, 46 (2), June 1993, pp. 207-27.

Bird, R. M. (1990), "Intergovernmental Finance and Local Taxation in Developing Countries: Some Basic Considerations for Reformers", *Public Administration and Development*, 1990, Vol. 10, pp. 277-88.

Bird, R. M.(1986), "On Measuring Fiscal Centralization and Fiscal Balance in Federal States", *Environment and Planning C: Government and Policy*, Vol. 4, 1986, pp. 384-404.

Bird, R. M. (1984), *Federal Finance in Comparative Perspective*, Toronto: University of Toronto, Department of Economics and Institute for Policy Analysis, Working Paper Series, No. 8422, June 1984.

Bird, R. M. (1980), *Central-local Fiscal Relations and the Provision of Urban Public Services*, Canberra: ANU, Centre for Research on Federal Financial Relations, Research Monograph No. 30, 1980.

Bird, R. M. (1971), "Wagner's 'Law' of Expanding State Activity", *Public Finance*, 26 (1), 1971, pp. 1-26.

Bird, R. M. and C. Wallich (1993), *Fiscal Decentralization and Intergovernmental Relations in Transition Economies: Towards a Systematic Framework of Analysis*, WPS 1122, March 1993, Washington D.C.: World Bank, 1993.

Blejer, M. and G. Szapary (1990), "The Evolving Role of Tax Policy in China", *Journal of Comparative Economics*, 14 (3), September 1990, pp. 452-72.

Brennan, G. and J. M. Buchanan (1980), *The Power to tax: Analytical Foundations of a Fiscal Constitution*, Cambridge: Cambridge University Press, 1980.

Brosseau, M., H. Kuan, and Y. Y. Kueh (eds.) (1997), *China Review: 1997*, Hong Kong: Chinese University Press, 1997.

Brown, C. V. and P. M. Jackson (1990), *Public Sector Economics (4th ed)*, Oxford, UK; Cambridge, USA: Blackwell, 1990.

Byrd, W. (ed.) (1992), *Chinese Industrial Firms under Reform*, Oxford; New York; Toronto; and Melbourne: Oxford University Press for the World Bank, 1992.

Byrd, W.(1991), *The Market Mechanism and Economic Reforms in China*, New York and London: Sharpe, 1991.

Byrd, W. and G. Tidrick (1987), "China's Industrial Reform: Factor Allocation and Enterprise Incentives", in G. Tidrick and J. Chen (eds.) *China's Industrial Reform*, Oxford: Oxford University Press for The World Bank, 1987.

Chai, J. (1994), "Transition to a Market Economy: The Chinese Experience", *Communist Economies and Economic Transformation*, 6 (2), 1994, pp. 231-45.

Chai, J. and K. Chai (1997), "China's Floating Population and Its Implications", *International Journal of Social Economics*, 24 (7-8-9), 1997, pp. 1038-51.

Chai, J. and K. Chai (1994), "Economic Reforms and Inequality in China", *Rivista Internazionale di Scienze Economiche e Commerciali*, 41 (8), 1994, pp. 675-96.

Chang, R. (1994), "Income Inequality and Economic Growth: Evidence and Recent Theories", *Federal Reserve Bank of Atlanta Economic Review*, 79 (1), July/August 1994, pp. 1-10.

Chen, K., H. Wang, Y. Zhen, J. Gary and T. Rawski (1988), "Productivity Change in Chinese Industry: 1953-1985", *Journal of Comparative Economics*, No. 12, 1988, pp. 570-91.

Chen, J. and B. M. Fleisher (1996), "Regional Income Inequality and Economic Growth in China", *Journal of Comparative Economics*, No. 22, 1996, pp. 141-64.

Child, J. and L. Markoczy (1994), "Host Country Managerial Behaviour in Chinese and Hungarian Joint Ventures : Assessment of Competing Explanations", in

M. Boisot (ed.), *East-West Business Collaboration: The Challenge of Governance in Post-socialist Enterprises*, London and New York: Routledge, 1994, pp. 127-50.

Chotikapanich, D. (1994), *Techniques for Measuring Income Inequality: An Application to Thailand*, Aldershot, Brookfield USA, Hong Kong, Singapore and Sydney: Avebury, 1994.

Chung, J. H. (1995), "Studies of Central-Provincial Relations in the People's Republic of China: A Mid-Term Appraisal", *The China Quarterly*, No. 142, June 1995, pp. 487-508.

Cowell, F. A. and S. P. Jenkins (1995), "How Much Inequality Can We Explain? A Methodology and An Application to the United States", *The Economic Journal*, No. 105, March 1995, pp. 421-30.

Davoodi, H. and H. Zou (1996), "Fiscal Decentralization and Economic Growth: A Cross-Country Study", *WCCS Papers*, Washington Centre for China Studies, 6 (7), 1996.

Deng, Y. T., G. Yao, X. B. Xu and Y. W. Xue (1990), *On Chinese Extrabudgetary Funds*, Beijing: People's University Press, 1990.

Deininger, K. and L. Squire (1997), "Economic Growth and Income Inequality: Reexamining the Links", *Finance & Development*, March 1997, pp. 38-41.

Dillinger, W. (1994), "Decentralization and Its Implications for Urban Service Delivery", *Urban Management Programme Discussion Paper*, 16, Urban Development Division, World Bank, Washington, D.C., 1994.

Division of National Economic Accounting, SSB (1997), *The Gross Domestic Product of China: 1952-1995*, Dalian: Dongbei University of Finance and Economics Press, 1997.

Donnithorne, A. (1976), "Centralization and Decentralization in China's Fiscal Management", *The China Quarterly*, No. 66, 1976, pp. 328-54.

Donnithorne, A. (1972), "China's Cellular Economy: Some Economic Trends since the Cultural Revolution", *The China Quarterly*, No. 52, 1972, pp. 605-19.

Donnithorne, A. (1967), *China's Economic System*, New York: Praeger, 1967.

Easterly, W. and S. Rebelo (1993), "Fiscal Policy and Economic Growth", *Journal of Monetary Economics*, 32 (3), 1993, pp. 417-58.

Ebel, R. and K. Hotra (1997), "World Bank Supports Fiscal Decentralization", *Transition*, August 1997, pp. 11-12.

Ehdaie, J. (1994), "Fiscal Decentralization and the Size of Government: An Extension and Evidence from Cross-Country Data", *Policy Research Working Paper*, No. 1387, Policy Research Department, Public Economics Division, World Bank, Washington, D.C., 1994.

Eichengreen, B. (1992), "Regional Evolution: Comments", *Brookings Papers on Economic Activity*, No. 1, 1992, pp. 65-70.

Fan, Q. and P. Nolan (ed.) (1994), *China's Economic Reforms*, London: MacMillan, 1994.

Fields, G. S. (1979), "Decomposition LDC Inequality", *Oxford Economic Papers*, 31 (3), 1979, pp. 437-59.

Fisch, O. (1984), "Regional Income Inequality and Economic Development", *Regional Science and Urban Economics*, No. 14, 1984, pp. 89-111.

Fleisher, B. M. and J. Chen (1997), "The Coast-Noncoast Income Gap, Productivity, and Regional Economic Policy in China", *Journal of Comparative Economics*, 25 (2), October 1997, pp. 220-36.

Forster, K. and O. K. Tam (1990), "Chinese Fiscal Reform: Introduction", *Chinese Economic Studies*, 24 (1), Fall 1990, pp. 5-14.

Forte, F. and A. Peacock (1985), "The Political Economy of Public-Sector Growth and Control", in F. Forte and A. Peacock (eds.), *Public Expenditure and Government Growth*, Oxford and New York: Blackwell, 1985, pp. 1-10.

Gandhi, V. P. (1971), "Wagner's Law of Public Expenditure: Do Recent Cross-section Studies Confirm it?" *Public Finance*, 26 (1), 1971, pp. 45-54.

Garnaut, R. and G. Ma (1992), *Grain in China*, Canberra: Australian Government Publishing Service, 1992.

Garnaut, R. and G. Ma (1996), "China's Grain Demand: Recent Experience and Prospects to the Year 2000", in R. Garnaut, G. Shutian and G. Ma (eds.), *The Third Revolution in the Chinese Countryside*, Cambridge: Cambridge University Press, 1996, pp. 38-62.

Giertz, J. F. (1983), "State-local Centralization and Income: A Theoretical Framework and Further Empirical Results", *Public Finance*, 38 (3), pp. 398-408.

Giertz, J. F. (1976), "Decentralization at the State and Local Level: An Empirical Analysis", *National Tax Journal*, 29 (2), pp. 201-09.

Gramlich, E. M. (1993), "A Policymaker's Guide to Fiscal Decentralization", *National Tax Journal*, 46 (2), June 1993, pp. 229-35.

Gramlich, E. M. (1987), "Subnational Fiscal Policy", *Perspectives on Local Public Finance and Public Policy: A Research Annual*, No. 3, 1987, pp. 3-27.

Granger, C. W. J. (1988), "Some Recent Developments in A Concept of Causality", *Journal of Econometrics*, Vol. 39, 1988, pp. 199-211.

Granger, C. W. J. (1986), "Developments in the Study of Co-integrated Economic Variables", *Oxford Bulletin of Economics and Statistics*, Vol. 48, 1986, pp. 213-28.

Granger, C. W. J. (1969), "Investigating Causal Relations by Econometric Models and Cross-spectral Methods", *Econometrica*, Vol. 36, 1969, 424-38.

Greenwood, J. and B. Jovanovic (1990), "Financial Development, Growth, and Distribution of Income", *Journal of Political Economy*, Vol. 98, 1990, pp. 1067-107.

Grewal, B. S., G. Brennan and R. L. Mathews (ed.) (1980), *The Economics of Federalism*, Canberra: Australian National University Press, 1980.

Grossman, P. J. (1992), "Fiscal Decentralization and Public Sector Size in Australia", *Economic Record*, 68 (202), September 1992, pp. 240-46.

Grossman, P. J. (1989), "Fiscal Decentralization and Government Size: An Extension", *Public Choice*, 62 (1), July 1989, pp. 63-69.

Harrold, P. and R. Lall (1993), *China: Reform and Development in 1992-1993*, World Bank Discussion Papers, No. 215, Washington, D.C.: World Bank, 1993.

Hendry, D. F. (1986), "Econometric Modelling with Cointegrated Variables: An Overview", *Oxford Bulletin of Economics and Statistics*, 48 (3), 1986, pp. 201-12.

Herber, B. P. (1975), *Fiscal Federalism in the United States of America*, Canberra: ANU, Centre for Research on Federal Financial Relations, Research Monograph No. 10, 1975.

Hommes, R. (1996), "Conflicts and Dilemmas of Decentralization", *Annual World Bank Conference on Development Economics 1995*, Washington, D.C.: The World Bank, 1996, pp. 331-50.

Howes, S. (1993), *Income Inequality in Urban China in the 1980s: Levels, Trends and Determinants*, London: London School of economics, 1993.

Hsiao, K. (1987), *The Government Budget and Fiscal Policy in Mainland China*, Taiwan: Chung-Hua Institution for Economic Research, 1987.

Hu, A. and S. Wang (1996), "Changes in China's Regional Disparities", *Washington Centre for China Studies Papers*, 6 (9), September 1996.

Huang, Y. P. (1997), "How Successful Were China's State Sector Reforms?" *Journal of Comparative Economics*, 24 (1), February 1997, pp. 65-78.

Hunter, J. S. H. (1977), *Federalism and Fiscal Balance: A Comparative Study*, Canberra: ANU, Centre for Research on Federal Financial Relations, 1977.

Hussain, A., P. Lanjouw and N. Stern (1993), "Income Inequalities in China: Evidence from Household Survey Data", London School of Economics, *Working Paper*, CP 18, November 1991.

Ikemoto, Y. (1987), "Income Inequality and Regional Disparity in Thailand, 1962-81", *Developing Economies*, 25 (3), 1987, pp. 249-69.

IMF (1997), *World Economic Outlook-October 1997*, Washington, D.C.: IMF, 1997.

IMF (1986), *A Manual on Government Finance Statistics*, Washington, D.C.: IMF, 1986.

Israel, A. (1992), *Issues for Infrastructure Management in the 1990s*, World Bank Discussion Papers No. 171, Washington, D.C.: World Bank, 1993.

Jefferson, G. H. and T. G. Rawski (1994), "Enterprise Reform in Chinese Industry", *Journal of Economic Perspectives*, 8 (2), 1994, pp. 47-70.

Jefferson, G. H., T. G. Rawski, and Y. Zheng (1992), "Growth, Efficiency, and Convergence in China's State and Collective Industry", *Economic Development and Cultural Change*, 40 (2), January 1992, pp. 240-66.

Jenkins, S. P. (1995), "Accounting for Inequality Trends: Decomposition Analyses for the UK, 1971-86", *Economica*, No. 62, 1995, pp. 29-63.

Jian, T., J. Sachs, and A. Warner (1995), "Trends in Regional Inequality in China", *Development Discussion Paper*, No. 518, Harvard Institute for International Development, Harvard University, October 1995.

Johnston, J. (1984), *Econometric Methods*, London: McGraw-Hill Book Company, 1984.

Joultaian, D. and M. Marlow (1990), "Government Size and Decentralization: Evidence from Disaggregated Data", *Southern Economic Journal*, 56 (4), April 1990, pp. 1094-102.

Kakwani, N. (1980), "On a Class of Poverty Measures", *Econometrics*, 48, pp. 437-46.

Karni, E. and I. Zilcha (1993), "Technological Progress and Income Inequality: A Model with Human Capital and Bequest", *Working Papers in Economics*, No. 308, Department of Economics, The Johns Hopkins University.

Kasper, W. (1995), "Competitive Federalism for the Era of Globalization", in G. Radnitzky and H. Bouillon (eds.), *Values and the Social Order*, Aldershot, Brookfield USA, Hong Kong, Singapore, Sydney: Avebury, 1995.

Kee, W. S. (1977), "Fiscal Decentralization and Economic Development", *Public Finance Quarterly*, 5 (1), January 1977, pp. 79-97.

Khan, A. R. and C. Riskin (1998), "Income and Inequality in China: Composition, Distribution and Growth of Household Income, 1988 to 1995", *The China Quarterly*, June 1998, No. 154, pp. 221-53.

Khan, A. R., K. Griffin, C. Riskin and R. Zhao (1993), "Household Income and its Distribution in China", in K. Griffin and R. Zhao (eds.), *The Distribution of Income in China*, London: MacMillan, 1993, pp. 25-73.

King, D. (1990),"Accountability and Equity in British Local Finance: the Poll Tax", in R. Bennett (ed.), *Decentralization, Local Governments, and Markets*, Oxford: Clarendon Press, 1990, pp. 116-30.

King, D. (1984), *Fiscal Tiers: The Economics of Multi-Level Government*, London: George Allen & Unwin, 1984.

Kojima, R.(1992), "The Growing Fiscal Authority of Provincial-level Governments in China," *The Developing Economies*, 30 (4), December 1992, pp. 315-46.

Kornai, J. (1992), *The Socialist System*, New Jersey: Princeton University Press, 1992.

Kornai, J. (1986), "The Soft Budget Constrain", *Kyklos*, 39 (1), pp. 3-30.

Kornai, J. (1980), *Economics of Shortage*, Amsterdam: North-Holland, 1980.

Krasnick, M. (Research Coordinator) (1986), *Fiscal Federalism*, Toronto; Buffalo; London: University of Toronto Press, 1986.

Kuznets, S. (1955), "Economic Growth and Income Inequality", *American Economic Review*, 45, 1955, pp. 1-28.

Lall, S. (1969), "A Note on Government Expenditures in Developing Countries", *Economic Journal*, June 1969, pp. 413-7.

Landau, D. (1983), "Government Expenditure and Economic Growth: A Cross-Country Study", *Southern Economic Journal*, Vol. 49, January 1983, pp. 783-92.

Lardy, N. R. (1980), "Regional Growth and Income Distribution in China", in R. F. Dernberger (ed.), *China's Development Experience in Comparative Perspective*, Cambridge, MA: Cambridge University Press, 1980, pp. 153-90.

Lardy, N. R. (1978), *Economic Growth and Distribution in China*, New York: Cambridge University Press, 1978.

Lardy, N. R. (1976), "'Replies' to Donnithorne (1976)", *The China Quarterly*, No. 66, pp. 340-54.

Lardy, N. R. (1975), "Centralization and Decentralization in China's Fiscal Management", *The China Quarterly*, No. 61, pp. 25-60.

Li, S. and J. Knight (1996), "Stimulative and Redistributional Effects of the Chinese Contractual Fiscal System", *Economic Research (Jingji Yanjiu)*, May 1996, pp. 29-37.

Li, Y. (1997), "Impact of Fiscal Decentralisation on Central-Provincial Fiscal Relations in China", *Seminar Paper*, School of Economics and management, University College, University of New South Wales, May 1997.

Li, Y. (1995a), "Fiscal Decentralisation and Economic Development: A Literature Review", *Working Paper*, School of Economics and management, University College, University of New South Wales, 1995.

Li, Y. (1995b), "Fiscal Decentralisation and Chinese Fiscal Reform", *Working Paper*, School of Economics and Management, University College, University of New South Wales, 1995.

Liu, B. C. (1969), "Regional Income Inequality and Federal Government Expenditures, 1948-63", *Quarterly Review of Economics and Business*, Winter 1969, 9 (4), pp. 67-76.

Liu, S. and Q. Wu (1986), *A Brief History of the Chinese Socialist Economy*, Beijing: Beijing Review Press, 1986.

Lyons, T. P. (1991), "Interprovincial Disparities in China: Output and Consumption, 1952-1987", *Economic Development and Cultural Change*, 39 (3), 1991, pp. 471-506.

Lyons, T. P. (1987), *Economic Integration and Planning in Maoist China*, New York: Colombia University Press, 1987.

Ma, J. (1996), *Intergovernmental Relations and Economic Management in China*, London: MacMillan, 1996.

Ma, J. (1995), "Defining the Limits of Local Government Power in China: The Relevance of International Experience", *The Journal of Contemporary China*, No. 10, Fall 1995, pp. 3-22.

McGillivray, M and M. Peter (1991), "Regional Income Inequality in a Developed Nation: A Cross-sectional Study of Australian Sub-state Regions", *Review of Regional Studies*, 21 (2), 1991, pp. 137-51.

McGuckin, R. H., S. V. Nguyen, J. R. Taylor and C. A. Waite (1992), "Post-reform Productivity Performance and Sources of Growth in Chinese Industry: 1980-85," *Review of Income and Wealth,* 38 (3), September 1992, pp. 249-66.

McLure, C. E. Jr. (1995), "Comment on 'The Dangers of Decentralization' by Prud'homme", *The World Bank Research Observer*, 10 (2), August 1995, pp. 221-26.

McMillan, J., J. Whalley and L. J. Zhu (1989), "The Impact of China's Economic Reforms on Agricultural Productivity Growth," *Journal of Political Economy*, 97 (4), 1989, pp. 781-807.

Marlow, M. L. (1988), "Fiscal Decentralization and Government Size", *Public Choice*, 56 (3), March 1988, pp. 259-69.

Martin, A. M. and W. A. Lewis, (1956), "Patterns of Public Revenue and Expenditure", *Manchester School*, 24 (3), 1956, 203-32.

Masih, A. M. M. and R. Masih (1996), "Bivariate and Multivariate Tests of Money-Price Causality: Robust Evidence from A Small Developing Country", *Journal of International Development*, 9 (6), 1996, pp. 803-25.

Mathews, R. (1980), *Revenue Sharing in Federal Systems*, Canberra: ANU, Centre for Research on Federal Financial Relations, Research Monograph No. 31, 1980.

Mathews, R. L.(ed.) (1975), *Responsibility Sharing in a Federal System*, Canberra: ANU, Centre for Research on Federal Financial Relations, Research Monograph No. 8, 1975.

Mathews, R. L.(ed.) (1974), *Fiscal Federalism: Retrospect and Prospect*, Canberra: ANU, Centre for Research on Federal Financial Relations, Research Monograph No. 7, 1974.

Mathews, R. L.(ed.) (1974), *Fiscal Equalisation in a Federal System*, Canberra: ANU, Centre for Research on Federal Financial Relations, Research Monograph No. 4, 1974.

Minami, R. (1994), *The Economic Development of China*, London: MacMillan Press, 1994.

Mullen, J. (1980), "The Role of Income in Explaining State-Local Fiscal Decentralization", *Public Finance*, Vol. 35, pp. 300-308.

Musgrave, R. A. (1969), *Fiscal Systems*, New Haven and London: Yale University Press, 1969.

Musgrave, R. A. (1959), *The Theory of Public Finance*, New York: McGraw-Hill Book Company, 1959.

Musgrave, R. A. and P. B. Musgrave (1989), *Public Finance in Theory and Practice (5th ed)*, New York: McGraw-Hill Book Company, 1989.

Naughton, B. (1987), "The Decline of Central Control over Investment in Post-Mao China", in D. M. Lamptom (ed.), *Policy Implementation in Post-Mao China*, Berkeley, CA: University of California Press, 1987, pp. 51-80.

Nelson, M. (1987), "Searching for Leviathan: Comment", *American Economic Review*, Vol. 77, March 1987, pp. 198-204.

Nolan, P. and F. R. Dong (1990), *The Chinese Economy and its Future*, Cambridge, MA: Polity Press in association with Basil Blackwell, 1990.

North, D. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge, England: Cambridge University Press, 1990.

Oates, W. E. (1996), "Comment on 'Conflicts and Dilemmas of Decentralization' by Rudolf Hommes", *Annual World Bank Conference on Development Economics 1995*, Washington, D.C.: The World Bank, 1996, pp. 351-53.

Oates, W. E. (1993), "Fiscal Decentralization and Economic Development", *National Tax Journal*, 46 (2), June 1993, pp. 237-43.

Oates, W. E. (1991), *Studies in Fiscal Federalism*, Brookfield: Edward Elgar, 1991.

Oates, W. E. (1990), "Decentralization of the Public Sector: An Overview", in R. J. Bennett (ed.), *Decentralization, Local Governments and Markets: Towards a Post-Welfare Agenda*, Oxford: Clarendon Press, 1990, pp. 43-58.

Oates, W. E. (1985), "Searching for Leviathan: An Empirical Study", *American Economic Review*, Vol. 75, September 1985, pp. 748-58.

Oates, W. E.(ed.) (1977), *The Political Economy of Fiscal Federalism*, Lexington, Massachusetts; Toronto: Lexington Books, 1977.

Oates, W. E. (1972), *Fiscal Federalism*, New York: Harcourt Brace Jovanovich, Inc., 1972.

Oi, J. C. (1995), "The Role of the Local State in China's Transitional Economy", *The China Quarterly*, No. 144, December 1995, pp. 1132-49.

Oi, J. C. (1993), "Reform and Urban Bias in China", *Journal of Development Studies*, 29 (4), July 1993, pp. 129-48.

Oksenberg, M. and J. Tong (1991), "The Evolution of Central-Provincial Fiscal Relations in China, 1971-1984: the Formal System", *The China Quarterly*, No. 125, March 1991, pp 1-32.

Oshima, H. T. (1992), "Kuznets' Curve and Asian Distribution Trends", *Hitotsubashi Journal of Economics*, 33 (1), June 1992, pp. 95-111.

Owens, J. and G. Panella (ed.) (1991), *Local Government: An International Perspective*, Amsterdam; New York; Oxford; Tokyo: North-Holland, 1991.

Oxley, L. (1994), "Cointegration, Causality and Wagner's Law: A Test for Britain, 1870-1913", *Scottish Journal of Political Economy*, 41 (3), 1994, pp. 286-98.

Paine, S. (1981), "Spatial Aspects of Chinese Development Issues, Outcomes and Policies 1949-1979", *Journal of Development Studies*, 17 (2), 1981, pp. 133-95.

Park, A., S. Rozelle, C. Wong and C. Ren (1995), "Distributional Consequences of Reforming Local Public Finance in China", *Working Paper*, Food Research Institute, Stanford University, December 1995.

Patsouratis, V. A. (1990), "Fiscal Decentralization in the EEC Countries", *Public Finance*, 45 (3), 1990, pp. 423-39.

Peacock, A. and J. Wiseman (1961), *The Growth of Public Expenditure in the United Kingdom*, Princeton, NJ: Princeton University Press, 1961.

Pei, M. (1998), "The Political Economy of Banking Reform in China, 1993-1997", *Journal of Contemporary China*, 7 (18), pp. 321-50.

Perkins, D. H. (1988), "Reforming China's Economic System", *Journal of Economic Literature*, 26 (2), June 1988, pp. 601-45.

Persson, T. and G. Tabellini (1994), "Is Inequality Harmful for Growth?" *American Economic Review*, 84 (3), June 1994, pp. 600-21.

Prommerehne, W. W. (1977), "Quantitative Aspects of Federalism: A Study of Six Countries", in W. Oates (ed.) *The Political Economy of Federalism*, Luxington, Mass.: D.C. Heath and Co., pp. 275-355.

Prud'homme, R. (1996),"Comment on 'Conflicts and Dilemmas of Decentralization' by Rudolf Hommes", *Annual World Bank Conference on Development Economics 1995*, Washington, D.C.: The World Bank, 1996, pp. 354-59.

Prud'homme, R. (1995), "The Dangers of Decentralization", *The World Bank Observer*, 10 (2), August 1995, pp. 201-20.

Prud'homme, R. (1994),"On the Dangers of Decentralization", *Policy Research Working Paper*, No. 1252, Washington, D.C.: The World Bank, 1994.

Prud'homme, R. (1990), "Decentralization of Expenditure or Taxes: The Case of France", in R. Bennett (ed.), *Decentralization, Local Governments, and Markets*, Oxford: Clarendon Press, 1990, pp. 116-30.

Pryor, F. L. (1967), "Elements of a Positive Theory of Public Expenditures", *Finanzarchiv*, 26 (3), pp. 405-30.

Raj, B. and D. J. Slottje (1994), "The Trend Behavior of Alternative Income Inequality Measures in the United States form 1947-1990 and the Structural Break", *Journal of Business and Economic Statistics*, October 1994, 12 (4), pp. 479-87.

Ram, R. (1995), "Economic Development and Income Inequality: An Overlooked Regression Constraint", *Economic Development and Cultural Change*, 43 (2), January 1995, pp. 425-34.

Ram, R. (1986), "Government Size and Economic Growth: A New Framework and Some Evidence form Cross-section and Time-series Data", *American Economic Review*, Vol. 76, March 1986, pp. 191-203.

Rietveld, P. (1989), "Regional Income Inequality and Economic Development: A Comment", *Regional Science and urban Economics*, No. 19, 1989, pp. 637-44.

Riskin, C. (1990), "Where Is China Going?" in P. Nolan and F. R. Dong (eds.), *The Chinese Economy and Its Future: Achievements and Problems of Post-Mao Reform*, Cambridge: Polity Press, 1990.

Riskin, C. (1987), *China's Political Economy*, Oxford: Oxford University Press, 1987.

Romer, P. M. (1986), "Increasing Returns and Long-Run Growth", *Journal of Political Economy*, 94 (5), 1986, pp. 1002-37.

Rondinelli, D., J. R. Nellis and G. S. Cheema (1984), *Decentralization in Developing Countries: A Review of Recent Experience*, World Bank Staff Working Paper, No. 581, Washington D.C.: The World Bank, 1984.

Rosen, H. S. (ed.) (1988), *Fiscal Federalism: Quantitative Studies*, Chicago: University of Chicago Press, 1988.

Roy, J. (ed.) (1995), *Macroeconomic Management and Fiscal Decentralization*, EDI Seminar Series, Washington D. C.: The World Bank, 1995.

Rozelle, S. (1996), "Stagnation without Equity: Patterns of Growth and Inequality in China's Rural Economy", *The China Journal*, January 1996, No. 35, pp. 63-92.

Rubinson, R. (1977), "Dependence, Government Revenue, and Economic Growth, 1955-70", *Studies in Comparative International Development*, 12 (2), Summer 1977, pp. 3-28.

Sakashita, N. and O. Kamoike (1973), "National Growth and Regional Income Inequality: A Consistent Model", *International Economic Review*, June 1973, 14 (2), pp. 372-82.

Samuels, W. J. (ed.) (1988), *Institutional Economics*, Aldershot, UK: Elgar, 1988.

Samuelson, P. A. and W. D. Nordhaus (1995), *Economics (15th ed.)*, New York: McGraw-Hill, 1995.

Scott, I. (1993), "Economic Growth, Income Distribution and Poverty in China, 1978-88", *Occasional Papers in Economic Development*, No. 51, 1993, Faculty of Economic studies, University of New England, Australia.

Sen, A. (1973), *On Economic Inequality*, Oxford: Clarendon Press, 1973.

Sewell, D. O. (1996), "'The Dangers of Decentralization' According to Prud'homme: Some Further Aspects", *The World Bank Research Observer*, 11 (1), February 1996, pp. 143-50.

Sheng, Y. (1993), "The Capital Sources of China's Industrialisation", *Developing Economies*, 31 (2), June 1993, pp. 173-207.

Shirk, S. L.(1993), *The Political Logic of Economic Reform in China*, Berkeley and Oxford: University of California Press, 1993.

Shleifer, A. (1996), "Government in Transition", *Discussion Paper*, No. 1783, Harvard Institute of Economic Research, Harvard University, Cambridge, Mass., 1996.

Shorrocks, A. F. (1982), "Inequality Decomposition by Factor Components", *Econometrica*, 50 (1), 1982, pp. 193-211.

Slemrod, J. (1995), "What Do Cross-Country Studies Teach about Government Involvement, Prosperity and Economic Growth?" *Brookings Papers on Economic Activity*, No. 2, 1995, pp. 373-431.

Smith, B.(1979), "The Measurement of Decentralisation", *International Review of Administrative Sciences*, 45 (2), 1979, pp 214 - 22.

Smith, J. (1992), *Fiscal Federalism in Australia: A Twentieth Century Chronology*, Canberra: ANU, Federalism Research Centre Discussion Papers, No. 23, November 1992.

Solinger, D. J. (1996), "Despite Decentralization: Disadvantages, Dependence and Ongoing Central Power in the Inland - the Case of Wuhan", *The China Quarterly*, No. 145, March 1966, pp. 1-34.

SSB of PRC, *Statistical Yearbook of China*, Beijing: China Statistical Publishing House, various issues.

Stiglitz, J. (1990), "Keynote Address: The Role of Government in Economic Development", *Annual World Bank Conference on Development Economics*, Washington, D.C.: The World Bank, 1996, pp. 11-23.

Tam, O. K. (ed.) (1997), *Corporate Governance Issues in Economic Reform*, Beijing: Economic Press of China, 1997.

Tam, O. K. (1995), "Corporate Governance in China's Listed Companies", *Corporate Governance*, 3 (1), January, 1995.

Tam, O. K. (1995a), "Monetary Management and Financial Reform", in O. K. Tam (ed.), *Financial Reform in China*, London and New York: Routledge, 1995.

Tam, O. K. (ed.) (1995), *Financial Reform in China*, London and New York: Routledge, 1995.

Tam, O. K. (1990), "Fiscal Reform and Fiscal Policy Issues in China", *Working Paper*, School of Economics and management, University College, University of New South Wales, 1990.

Tam, O. K. (1987), "The Development of China's Financial System", *Australian Journal of Chinese Affairs*, No. 17, January 1987.

Tam, O. K. and K. Forster (1990), "Chinese Fiscal Reform: Introduction", *Chinese Economic Studies*, 24 (2), Winter 1990, pp. 5-9.

Tanzi, V. (1996), "Fiscal Federalism and Decentralization: A Review of Some Efficiency and Macroeconomic Aspects", *Annual World Bank Conference on Development Economics 1995*, Washington, D.C.: The World Bank, 1996.

Tanzi, V. (1994), "Corruption, Governmental Activities, and Markets", *IMF Working Paper*, 94/99, Washington DC: IMF, 1994.

Theil, H. (1967), *Economics and Information Theory*, Amsterdam: North-Holland, 1967.

Thorn, R. S. (1967), "The Evolution of Public Finances during Economic Development", *Manchester School*, 35 (1), 1967, pp. 19-51.

Tiebout, C. M. (1961), "An Economic Theory of Fiscal Decentralization", in National Bureau of Economic Research, *Public Finance: Needs, Sources, and Utilization*, Princeton: Princeton University Press, 1961.

Tiebout, C. M. (1956), "A Pure Theory of Local Expenditures", *Journal of Political Economy*, October 1956, pp. 416-24.

Tong, J. (1989), "Fiscal Reform, Elite Turnover and Central-Provincial Relations in Post-Mao China", *Australian Journal of Chinese Affairs*, No. 22, July 1989, pp. 1-28.

Truelove, M. (1993), "Measurement of Spatial Equity", *Environment and Planning C: Government and Policy*, Vol. 11, 1993, pp. 19-34.

Tsui, K. Y. (1991), "China's Regional Inequality", *Journal of Comparative Economics*, 15 (1), March 1991, pp. 1-21.

United Nations (1996), *World Economic and Social Survey*, New York: United Nations, 1996.

UNDP (1997), *Human Development Report 1997*, New York: Oxford University Press, 1997.

Wallich, C. (ed.) (1994), *Russian and the Challenge of Fiscal Federalism*, Washington, D. C.: The World Bank, 1994.

Wallis, J. J. and W. E. Oates (1988), "Decentralization in the Public Sector: An Empirical Study of State and Local Government", in H. S. Rosen (ed.), *Fiscal Federalism: Quantitative Studies*, Chicago and London: The University of Chicago Press, 1988.

Walsh, C. (1992), *Fiscal Federalism: An Overview of Issues and a Discussion of Their Relevance to the European Community*, Canberra: ANU, Federalism Research Centre Discussion Papers No. 12, February 1992.

Walsh, C. and N. Thomson (1994), *Federal Fiscal Arrangements in Australia: Their Potential Impact on Urban Settlement*, Canberra: Federal Research Centre, ANU, 1993.

Wang, S. and A. Hu (1993), *Report on National Capacity*, Shenyang: Liaoning People's Press, 1993.

Wanless, P. T. (1985), *Taxation in Centrally Planned Economies*, London: Croom Helm, 1985.

Wasylenko, M.(1987), "Fiscal Decentralization and Economic Development", *Public Budgeting and Finance*, 7 (4), 1987, pp 57 - 71.

Wen, G. (1993), "Total Factor Productivity Change in China's Farming Sector: 1952-1989", *Economic Development and Cultural Change*, 42 (1), October 1993, pp. 1-42.

White, H. (1980), "A Heteroskedasticity-Consistent Covariance Estimator and a Direct Test for Heteroskedasticity", *Econometrica*, Vol. 48, 1980, pp. 817-38.

Williamson, J. G. (1965), "Regional Inequality in the Process of National Development", *Economic Development and Cultural Change*, 17 (4), July 1965, pp. 3-84.

Williamson, J. G. (1961), "Public Expenditure and Revenue: An International Comparison", *Manchester School*, 29 (1), 1961, pp. 43-56.

Wolman, H., M. Goldsmith and P. Kousgaard (1991), "Local Government Fiscal Condition: The Capacity for Action", in J. Fox-Przeworski, J. Goddard and M. de Jong (eds), *Urban Regeneration in a Changing Economy: An International Perspective*, Oxford: Oxford University Press, 1991.

Wong, C. P. W. (1992), "Fiscal Reform and Local Industrialization: The Problematic Sequencing of Reform in Post-Mao China", *Modern China*, April 1992, pp. 197-227.

Wong, C. P. W. (1991), "Central-Local Relations in an Era of Fiscal Decline: The Paradox of Fiscal Decentralization in Post-Mao China", *The China Quarterly*, No. 128, December 1991, pp. 691-715.

Wong, C. P. W. (1987), "Between Plan and Market: The Role of the Local Sector in Post-Mao China", *Journal of Comparative Economics*, 11 (3), 1987, pp. 385-98.

Wong, C. P. W. (1985), "Material Allocation and Decentralization: Impact of the Local Sector on Industrial Reform", in E. J. Perry and C. Wong (eds.), *The Political Economy of Reform in Post-Mao China*, Cambridge, MA: The Council on East Asian Studies/Harvard University, 1985, pp. 253-80.

Wong, C. P. W., C. Heady and W. T. Woo (1995), *Fiscal Management and Economic Reform in the People's Republic of China*, Hong Kong: Oxford University Press, 1995.

Woo, W. T., G. Fan, W. Hai, and Y. Jin (1993), "The Efficiency and Macroeconomic Consequence of Chinese Enterprise Reform", *China Economic Review*, 4 (2), 1993, pp. 153-68.

World Bank, *World Development Report*, New York: Oxford University Press, various issues.

World Bank (1997), *China 2020*, Washington, D.C.: World Bank, 1997.

World Bank (1990), *China: Macroeconomic Stability and Industrial Growth under Decentralized Socialism*, Washington, D.C.: World Bank, 1990.

World Bank (1989), *China: Revenue Mobility and Tax Policy Issues and Options*, Washington, D.C.: World Bank, Report No. 7605-CHA, 1989.

World Bank (1986), *Poverty and Hunger: Issues and Options for Food Security*, Washington, D. C.: The World Bank, 1986.

World Bank (1985), *China: Long-term Development Issues and Options*, Baltimore: Johns Hopkins University Press for World Bank, 1985.

Xiang, H. (1990), "A Review of the Reform of the Fiscal System and Overall Projections for the Future", *Chinese Economic Studies*, 24 (1), Fall 1990, pp. 15-39.

Yang, K. J. (1994), "Changes in Chinese Regional Inequality", *Economic Research*, December 1994, pp. 28-33.

Zhang, S. (1996), *Economics Book Reviews of Zhang Shuguang*, Beijing: China Financial and Economic Press, 1996.