CHAPTER 2   LITERATURE REVIEWS

The relationship between efficiency and income equality is an old topic, but Lewis (1954) and Kuznets (1955) was the earlier literature that systemically discussed income inequality in the process of economic development.[7]   This chapter will review previous literatures and divide them into three categories: (i) the effect of economic growth on income inequality, (ii) the effect of income inequality on economic growth and (iii) the situation of China's inequality.

2.1 The Effect of Economic Growth on Income Inequality

Following Kuznets (1955) research, Ahluwalia (1976) and Papanek and Kyn (1986) estimated empirical model to confirm the existence of Kuzents' hypothesis, which said as an economy started to develop, the inequality level increased and then decreased while it became more mature.

Ahluwalia (1976) regressed a cross section model with 40 developing countries, 14 developed countries, and 6 socialist countries.   The result supported Kuzents' hypothesis and was not affected by a different explanatory variables setting.

Similar to the research purpose of Ahluwalia (1976), Papanek and Kyn (1986) used cross-section and time series data to estimate the Kuzents' hypothesis and the effect of growth.   Their cross-section estimate seems to support Kuzents' hypothesis, but growth did not affect income distribution significantly.   The time series regression only partially supports Kuzents' hypothesis, as the dependent variable is a

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[7] Lewis (1954) proposed a dual economy, which suggested labor-surplus in agriculture in a developing country would lead to increasing inequality because wage of agricultural labor could not increase with the industrial growth in urban.   Kuznets (1955) analyzed pretax income and distribution data from the United States, United Kingdom, and Germany.   He found that as an economy developed, the inequality level increased primitively and then decreased.   This result is well known as "Kuzents' hypothesis" or "inverted U-shaped curve".

Gini coefficient and shows the wrong signs whereby the dependent variable is the shares of the poorest 40%.

Although previous literatures did not emphasize the effect of economic growth on income inequality clearly, there were literatures that analyzed their relationship directly in recent years.   Psacharopoulos et al. (1995) analyzed how recession influenced income inequality in 18 Latin American countries in the 1980s by household data.   They found negative economic growth deteriorated income inequality and positive growth helped the reduction of inequality during the decade no matter inequality was measured by Gini index or the wealth share held by the bottom 20%.   They speculated recession put strong downward pressure on wages and employment of urban citizens and poorer people.   Workers were forced to accept wage reductions, unemployment, and work in the informal sector.   Similar to Psacharopoulos et al. (1995), Janvry and Sadoulet (2000) researched if growth influenced poverty and inequality in 12 Latin American countries,[8] from the period 1970~1994.   They estimated that under the condition of low-enough income inequality, economic growth would ease poverty efficiently.   But only in recession, could economic growth slightly mitigate income inequality.   That is to say, the worse the economy is, the higher the unequal level of income distribution will be.

To find if a trade-off effect existed, Ravallion and Chen (1997) tested the correlation between income inequality and economic growth with household data for 67 developing countries for the period 1981~1994.   The results showed significant growth and negatively influenced inequality.   However, the negative relationship became insignificant when removing the data from Eastern Europe and Central Asia.

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[8] Poverty and inequality are different. Former was measured by Headcount ratio; latter was measured by Gini coefficient.

They concluded that in growing economies income distribution could be improved or worsen, but negative growth was more likely to increase income inequality than positive economic growth.

Scully (2002) used advanced countries' and Asian newly industrialized countries' official data for the years 1975, 1980, 1985, and 1990 to test if there was trade-off relationship between income equality and economic growth. The dependent variable in the empirical model was the Gini coefficient or income shares of different income classes, and independent variables included growth rate of per capita GDP. It was found that a small trade-off relation indeed exists. Economic growth increased income shares of the richest class, but damaged income shares of the poorest class. That is to say, in some sense, economic growth could damage income equality.

Rather than test the cross-country model, Krongkaew and Kakwani (2003) investigated if economic growth was helpful for poverty and income equality in Thailand since the 1960s. They found growth brought rapid reduction in poverty but increases in income inequality. By using the Growth-Inequality Trade-Off Index rather than the econometric method,[9] they estimated poverty enjoyed a lower growth rate than did average people. They attributed the results to government's industrial policies. In order to promote industrialization, the Thai government protected internal industries from competition and exerted production subsidies. These policies created rapid growth at the expense of agricultural regions and farms most.

To summarize, most empirical studies, such as Psacharopoulos et al. (1995), Janvry and Sadoulet (2000), Scully (2002), Krongkaew and Kakwani (2003), found economic growth would negatively affect income inequality. Although the

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[9] Growth-Inequality Trade-Off Index describes the relationship between growth, inequality and poverty. See Kakwani and Son (2002) for more details.

cross-country test of Ravallion and Chen (1997) did not discover significant results, they thought economic growth could affect income inequality in an individual country.

2.2 The Effect of Income Inequality on Economic Growth

Although the effect of income distribution on economic performance has been discussed in old literature, such as Kaldor (1956), it did not attract much academic interest until the endogenous growth theory was introduced in the mid-1980s.   The studies of the effect of income inequality on economic growth were fruitful, despite theoretical or empirical studies.   The following reviews those studies.

From the viewpoint of an imperfect credit market, Galor and Zeira (1993) set an inter-generation mathematical model to explain the relationship between income distribution and macroeconomic variables, such as growth and investment, in the short run and long run.   Under the assumption of an imperfect credit-market, a borrower's interest rate is higher than the lenders', individuals who did not have enough initial bequests left by a previous generation would not invest human capital and could only do unskilled jobs.   While a country's income distribution was unequal – too many poor and too few rich, it would end up poor in the long run. Besides, as technology progressed, the rate of growth of output per capita would increase, but it also depended on the initial distribution of wealth.   If many people shared little initial wealth, the growth rate would be low and vice versa.   This model implied that distribution inequity would affect steady state per capita income, but would not be harmful for growth.

Political economy could be the most dominant theory on the issue of the effect of inequality on growth.   Persson and Tabellini (1994) used the median voter theorem

as a theoretical foundation of empirical evidence. The theory considers that tax rates were determined through a voting process.[10] If a society is unequal and the median voter is located on the poor side, government will tax a higher rate making economic growth decrease.

Their empirical study used 56 countries for the period of 1960~1985 in their dataset. They found that only in democratic countries was income inequality harmful for economic growth. The effect of income distribution on growth in a dictatorship was not significant. They thought it was because democratic countries were more responsive to inequality that they could exert distorted policies (eg. higher tax rate) to ease unequal levels. These policies would frustrate growth. Although Persson and Tabellini (1994) confirmed that income inequality would affect growth, their empirical test failed to find the influential channel because the regression results of OECD postwar data did not reveal significant relation between inequality and transfer expenditure.

Besides, Clarke (1995) used 1970~85 data to run cross-countries regression models. Empirical results showed that inequality was negatively, and robustly, correlated with growth. This result was not highly dependent upon the assumption about the form of the growth regression. Different from Persson and Tabellini's finding, the correlation between inequality and growth holds for both democracies and non-democracies. Clarke (1995) thought dictators would also worry about the social stability created by income inequality and therefore employed some distorted policy

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[10] The theory assumed an individual could live two- period. Individual utility was influenced by two-period consumption and constrained by income in the first period and post-taxed saving, government transfer expenditure (financed by tax revenue) and interest rate in the second period.   An individual's wage level was decided by individual skill (it could be higher or lower than average skill, but aggregate skills are zero), average skill and capital accumulation.   By aggregating all individuals' optimal choices, economic growth rate would by derived.   It had negative relation with tax rate.   Two kinds of individual high skilled and low skilled, had different preference for tax rate.   A poor or low skilled individual preferred a higher tax rate because tax cost is less than a benefit for him, but rich or high skilled one prefers low tax rate.

to release income inequality.   Alesina and Perotti (1994) said that the effect of voting on inequality should not be interpreted too literally.   They considered that numbers of poor not only affects elected representatives, but also dictators.   Deininger and Squire (1998) also found median voter theorem would be unlikely to explain why inequality negatively influenced growth.   Their cross section analysis with 44 countries for the period 1960~1992 displayed initial inequality, measured by land Gini Coefficient, insignificantly affected growth in democratic countries, but significantly in undemocratic countries.   In addition, they found inequality hurt growth through decreasing education investment.

Also based on political economic theory, Alesina and Perotti (1996) estimated on a cross-section of 71 countries for the period 1960~85 a two-equation system.   They attempted to find the relationship between political instability and income inequality, and the relationship between political instability and investment.   They found that countries with a larger middle class (more equal) had more stable politics, and political stability was a positive related to investment.   In other words, income inequality was a negative related to investment.   Because investment was helpful for economic growth, inequality disadvantages growth.   But they concluded that a country that exerted redistributive policies should take care about their net effect they could promote political stability, but also reduce the propensity to investment.

Instead of estimating growth function, Venieris and Gupta (1986) used cross-country data to investigate the effect of instability on savings.   Their results were contrary to traditional viewpoints: the middle income group has a higher average propensity to save than the upper income group. They inferred that the upper income group has the most savings, but some of them are unrecorded.[11]   Because

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[11] According to the original literature, Recorded savings include buying precious metals and stones, foreign currencies, hoardings of local currency, etc.

only recorded savings could contribute to economic growth, they concluded that a redistribution of income favoring the middle at the expense of the upper income group would increase the ability of a country to save and grow. It implied that the trickle down theory should be questioned.

The reverse empirical result can also be found in some of the literatures, especially panel data analysis. Li and Zou (1998) used a panel and cross section model with 217 observations covering 46 countries to estimate the growth regression. The panel analysis revealed inequality positively and robustly influenced growth, but the cross section analysis revealed reverse results. They did not illustrate why their results were different from previous literature, but only admitted that the association between inequality and growth was a complicated matter. Barro (1999) used 1960-1995 data to estimate the relationship between growth and the Gini Coefficient. He found that the coefficient of inequality was not significant when overall countries' data was used. When countries were divided into rich and poor, the coefficient of inequality was significant. The results were that inequality retards growth in poor countries, but encourages growth in rich countries.

Unlike ambiguous explanations in Li and Zou (1998), Forbes (2000) argued that previous cross section studies had some problems: (i) a measurement error or inconsistency in data of income distribution ;(ii) results are not robust. She used improved inequality data (45 countries for the period 1960-1990) and a panel technique to run regression models. The results showed that inequality significantly increases growth in the short and medium term, and is not affected by different variables' definitions and model specifications.

In short, theories, like Galor and Zeira (1993), Persson and Tabellini (1994), both thought income inequality was harmful for economic growth. Some empirical

results support theoretic predictions, such as Persson and Tabellini (1994), Clarke (1995), Alesina and Perotti (1996), Venieris and Gupta (1986), and Deininger and Squire (1998).   However, Li and Zou (1998), Forbes (2000) found opposite effect of income inequality on economic growth.   Moreover, the empirical result of Barro (1999) was insignificant when using unclassified country data.

Besides, considering growth and inequality could not be mutually excluded, Lundberg and Squire (2003) tested how growth and inequality affected each other with OLS and 3SLS estimation.   Their data was from 38 countries since 1960.   The results of 3SLS revealed that inequality was helpful for growth, and growth would promote inequality.   They suggested government could use policy combinations to pursue goals of growth and equality according to their empirical results.

After reviewing the literature above, this study finds that the evident results were ambiguous.   Maybe different results were due to different methods and data characteristics.   According to these findings, this study predicts that economic growth and income inequality may influence each other although their influential directions were not certain.   The purpose of this study is to find a methodology to test if the two-way relationship occurs in post-reform China.

2.3 The Situation of China's Inequality

The studies of China's income inequality had lasted for a long-time, some even investigated distribution situation for the pre-reform period.   However, China's notable economic growth rate since 1978 has inspirited researchers to discuss China's economic growth.   Some literatures linked the issues of growth and inequality together and discussed their relationship.   This section will review these important

literatures and expect they will provide an overall situation of China's distribution and growth.

Tsui (1991) adopted Atkinson index, the Gini Coefficient, Generalized Entropy, and coefficient of variation to measure China's interprovincial inequality between 1952~1985.[12] Four indices revealed similar moving trends of inequality. The inequality level expanded during abnormal periods of the Great Leap and the Cultural Revolution. Although inequality levels decreased gradually in the early 1980s, it was still higher than it was in a normal year before 1978. However, the most important finding of this literature was that it discovered fiscal decentralization was detrimental to provincial inequality.

Besides, Tsui (1996) tried to estimate China's provincial per capita GDP inequality and its source from 1978 to 1989. Inequality indices, such as the Gini Coefficient, Generalized Entropy, and coefficient of variation, showed that inequality decreased in the first half of 1980s, but increased in the second half of 1980s. By decomposing total inequality into three components: primary, secondary and tertiary inequality, he found the secondary sector had a predominant influence on total inequality.[13] He conjectured it was the reorientation of the industrial policy from heavy industry, which was mostly located in richer provinces, to light industry that made inequality decline in the early 1980s, but non-state industries grew faster in richer coastal provinces in the second half of 1980s which led to inequality deterioration.

Different from Tsui (1996), Yang (1998), Lee (2000) and Herrmann-Pillath et al.

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[12] Because of data limitation, Tsui (1991) used per capita net material product and national income utilized as proxy of national income. One defect of these two income data is that they excluded services output.
[13] The primary sector includes agriculture, forestry, livestock and fishery; the secondary sector includes industry and construction; the tertiary sector includes distribution and services.

(2002) explained China's regional income inequality from the side of regional gaps. Yang (1998) used a decomposed Gini Coefficient of household survey data of Sichuan and Jiangsu provinces as an example of how to explain how biased urban policies amplify rural-urban inequality. The result indicated that rural-urban inequality should assume more responsibility for total inequality than within rural and within urban inequality. He concluded that increased urban subsidies, investment and credit that benefited urban regions but harmed rural regions were dominant causes of inequality.

Lee (2000) carried out a decomposed Generalized Entropy with 2165 cities and counties for the year 1994 to investigate provincial, regional and rural-urban inequality. The results showed inter-provincial, interregional and intra-rural within most provinces were primary sources of total inequality. However, it could be proven biased that this literature used per capita gross value of industrial and agricultural as income because it suffers from the problem of double counting. Contrary to Lee (2000)'s result, Herrmann-Pillath et al. (2002) used prefecture data and found intra-provincial inequality level was little higher than inter-provincial inequality level in 1993 and 1998. But the latter tended to increase while the former tended to decrease.

To investigate regional growth and inequality, Chen and Fleisher (1996) used panel and cross section provincial data for period 1978~1993. By applying an augmented Solow growth model, they found convergence of per capita GDP across China's provinces was conditional. That is to say, convergence was occurring within coastal and inland regions, but not between them. Under the situation of conditional convergence, in comparison with actual inequality, measured by coefficient of variation, their simulated steady-state inequality level was only declining little over

5%. And the decreasing magnitude of inequality was larger within coastal regions than within inland regions.

Similar to Cai et al. (2002), which investigated growth differential between areas, Jones et al. (2003) used city-level data for the period 1989~1999 to research what factors made some cities grow faster than others. The panel data analysis indicated that preferential policies given by government were positively related to the growth rate because these policies created a competitive environment and encouraged foreign capital inflow. The growth rate of coastal cities with open status increased by 3 % on average annually, and that in special economic zones increased even more. Therefore, they emphasized government policy was a major reason for regional inequality.

Like Chen and Fleisher (1996), Cai et al. (2002) found that convergence occurred between provinces after controlling other variables. But what set Cai et al. (2002) apart was they focused on the effect of labor market distortion on provincial economic growth for the period 1978~1998. Consistent with expectation the empirical results showed the provincial GDP per capita grew lower in the more distorted labor market of that province.[14] They inferred labor market distortion led to growth differential and regional inequality. In addition, market labor distortion was less serious in the eastern region than other regions, and the worst in the western region.

Unlike above papers studying regional growth differential and linking it with regional inequality, Ravallion (1998) regressed the growth equation with inequality

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[14] Cai et al. (2002) used the ratio of agricultural productivity to industrial productivity as proxy variable of labor market distortion. When labor can move between two sectors (agriculture and industry) without any barrier, the marginal productivities of the two sectors will tend to equal. In other words, the lower the ratio, the more distorted the labor market.

directly. Arguing that aggregation data, such as country level data, did not reveal the true effect of inequality on growth, Ravallion (1998) used data from 6651 farm households for 131 counties in four provinces for the period 1985~1990 to run a simple OLS equation. The results showed that asset inequality,[15] measured by Generalized Entropy, negatively affect consumption growth.[16] When applying aggregation of 131 counties data in the same model, the effect of asset inequality became insignificant.

It is not surprising to find that most literatures investigating the issues of China's inequality used regional data, such as provincial, county or city level data, rather than household level data. Although Yang (1998) and Ravallion (1998) were exceptions, their data was confined to a limited region or shorter period of time. It is because this study does not access to household data for the period 1978~2002, it will adopt provincial for empirical research. The next section will illustrate in more detail provincial inequality data.

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[15] Assets included fixed productive assets, cash, deposits, housing, grain stock, and consumer durables.
[16] Ravallion (1998) thought output growth was nearly equal to consumption growth in underdeveloped rural China because of the existence of borrowing constraint.