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„The East Asian (Un)equal Growth Miracle:
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0.3 List of abbreviations

ADB	Asian Development Bank
BEPS	Base Erosion and Profit Shifting
CHIP	Chinese Household Income Project
CIT	Corporate Income Tax
CRI	Commitment to Reducing Inequality Index
CNY	Chinese Yuan
CV	Coefficient of variation
EU	European Union
DINA	Distributional National Accounts
DFI	Development Finance International
FDI	Foreign Direct Investment
GE	Generalised Entropy
HCR	Head Count Ratio
HIES	Household Income and Expenditure Survey
IDD	Income Distribution Database
IMF	International Monetary Fund
KDI	Korean Development Institute
KLIPS	Korean Labour and Income Panel Study
KOSIS	Korean Statistical Information Service
KOSTAT	Statistics Korea
KRW	Korean Won
LIS	Luxemburg Income Study
LM-WPID	World Panel Income Distribution
MLD	Mean Logarithmic Deviation
MOHW	Ministry of Health and Welfare (Korea)
MoF	Ministry of Finance (China)
NBS	National Bureau of Statistics (China)
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PIT	Personal Income Tax
PKU	Peking University
PPP	Purchasing Power Parities
PRC	People's Republic of China
ROK	Republic of Korea
SDGs	Sustainable Development Goals
SEDLAC	Socio-economic Database for Latin America and the Caribbean
SFLC	Survey of Household Finances and Living Conditions
SWIID	Standardised World Income Inequality Database
UK	United Kingdom
UN	United Nations
UNU-	United Nations University World Institute for Development
WIDER	Economics Research
US	United States
VAT	Value Added Tax
WID.world	World Inequality Database
WIID	World Income Inequality Database

I. INTRODUCTION

Both the People's Republic of China and the Republic of Korea (hereafter, China and Korea) have experienced high economic growth within roughly three decades. Despite the absence of a precise definition of growth “miracles”, Naughton (2018, 2–7) labels the time between 1978 and 2010 as China's “*miracle growth*” period which transferred China from low-income status to an upper-middle-income country. Another East Asian example for a completed growth “miracle” is Korea, a nation thriving from the 1960s to 1997 when the eruption of the Asian financial crisis brought Korea's growth “miracle” to an abrupt end (Naughton 2018, 7–10). Both China as well as Korea have experienced real average national income growth rates of more than 6% per year during their “miraculous” growth, increasing real per capita income by 7 and 9-fold, respectively (cf. section 3 (IV)).

However, despite these vast increases in average income in China and Korea, the two East Asian growth “miracles” did not grow identically equal. While Korea's vast economic growth in the past decades has been praised by scholars for achieving inclusive and shared growth across all parts of society (Jwa 2017; K. J. Sung 2010), China's economic growth “miracle” has been characterised by an unprecedented increase in income inequality (Naughton 2018, 246–47). Thus, at the beginning of the new millennium, when Korea's growth “miracle” had just ended, and when China's was about to commence its final decade of “miraculous” growth, both countries faced distinctive stages of income inequality. However, this picture of Chinese and Korean income inequality has changed substantially since then, manifesting in both income inequality indices as well as policy action in China and Korea.

This thesis is going to analyse income inequality in China and Korea since the start of the new millennium up until the present. The analysis consists of two major parts, first, an assessment of income inequality measures in a timeframe from 2000-2017, and second, an evaluation of current (2018-2019) government actions to reduce income inequality within the respective case studies. After this introduction, Part II of this thesis is going to provide a theoretical foundation, by reviewing the existing literature on income inequality as well as developing a

theoretical framework for the analysis of the two case studies, China and Korea in Part III. Part IV of this thesis compares income inequality in China and Korea and discusses this thesis' findings. Finally, Part V concludes.

II. THEORETICAL PART

1. Topic and research question

The topic of this thesis is analysing income inequality in China (PRC) and Korea (ROK). This analysis consists of two major parts, first, analysing and comparing income inequality measures across China and Korea, and second, investigating and contrasting the governments' policy actions to reduce income inequality by conducting a policy analysis. The observed timeframe for analysing income inequality starts at the beginning of the new millennium and reaches to the present. Thus, this thesis' research question is the following:

How does income inequality differ across China and Korea since 2000 and what policy actions do the respective governments adopt to tackle income inequality?

This thesis is going to collect data for a variety of income inequality measures from different data sources and compare these measures across China and Korea following a theoretical framework. In a further step, the governments' policy action to reducing income inequality will be evaluated in line with three pillars, social spending policy, tax policy and labour market policy. The analysis will reveal particularities in both the Chinese and Korean income distribution as well as in the development of income disparities within both case studies. Further, this thesis highlights how the Chinese and Korean government aim to tackle income inequality differently and compares recently established government actions.

There are clear limitations to this thesis. First, this thesis analyses *income* inequality (definitions and dimensions are outlined in section 3.3), meaning that inequality of wealth, such as property or assets are not going to be addressed. Additionally, even though income inequality exists on various levels of

aggregations, this thesis is going to focus on analysing income inequality on a national level. Thus, all measures of inequality, as well as the discussed government actions, apply to the entire country. There are two reasons for this limitation. First, a sub-national or regional analysis of income inequality would go beyond the scope of this thesis. Second, reliable and consistent regional inequality data is challenging to obtain (cf. section 5). Further data-related limitations of this thesis are going to be elaborated in section 5.

Moreover, the conducted policy analysis comes with limitations. Due to the scope of this thesis, only current and recently implemented policies are going to be analysed. What is crucial to note is that the governments' policy actions to reduce income inequality are also being referred to as *the governments' commitment*. This term is used entirely neutral, not suggesting an evaluation of income inequality nor its related policies and will be used throughout this thesis due to being regularly used in the underlying theoretical literature (cf. section 3.6). Finally, this thesis analyses the governments' commitment by their actions only; however, not by how government officials address income inequality in speeches, white papers or development plans. Even though such an analysis would allow valuable insights, it goes beyond the scope of this thesis. Therefore, this thesis is going to restrict its analysis to a measurement of government actions.

In the following, section 2 is going to outline the relevance of analysing income inequality, its relevance for economic development and the relevance of a cross-country comparison of income inequality as well as a policy analysis. Subsequently, section 3 provides an extensive literature review on income inequality and its measures. Section 4 is going to draw and summarise a theoretical framework.

2. Relevance

Many scholars argue that analysing income inequality is of high relevance because it has adverse effects on society, such as education, health, happiness, or criminality. For instance, Dynan and Ravina (2007), Schwarze and Härpfer (2007), Sanfey and Teksoz (2005), Luttmer (2005), Ferrer-i-Carbonell (2005) and

Alesina, Di Tella, and MacCulloch (2004)¹ found that income inequality has a negative impact on happiness within a society. Besides, further studies (Fajnzylber, Lederman, and Loayza 2002b, 2002a; Nilsson 2004; Brush 2007; Choe 2008; Machin and Meghir 2004) show that large income disparity can be associated with criminality. Furthermore, Weich et al. (2001, 2002) and Hildebrand and Van Kerm (2009) suggest a negative impact on health. Numerous scholars, such as Checchi (2003), Akee et al. (2010) and Acemoglu and Pischke (2001) have also attempted to demonstrate that income inequality affects education and find a negative impact. However, there exist also several studies which do not find adverse impacts of income inequality (Senik 2004; Lorant et al. 2001; Gerdtham and Johannesson 2004; Løken 2010). Nonetheless, there is broad consensus about the importance of analysing income inequality in academia for that matter. Also, these recurrent debates around the effects of income inequality demonstrate the relevance of researching income inequality as well.

There is not only an academic debate about the adverse effects of income inequality on society but also about its effects on economic growth. A large body of theoretical and empirical research in the past decades has pursued to demonstrate whether income inequality is favourable or harmful for economic growth. From a theoretical perspective, arguments go both ways. For instance, income inequality can lead to less economic growth through political instability and social unrest (Wilkinson and Pickett 2011), or through the channel of aggregate demand, as high-income earners tend to save more than low ones (Carroll 1998; Dynan, Skinner, and Zeldes 2004). The IMF (2012) also studies the importance of saving rates for economic growth alongside Berg and Ostry (2011) and Berg et al. (2012) providing further evidence that income inequality plays an essential role when it comes to economic growth. Their main finding is that long periods of economic growth are more likely to end in countries with more significant income disparities. Stiglitz (2012b) supports these claims by showing that income inequality is associated with unstable economies and unsustainable economic growth. However, there are also scholars who suggest that income inequality favours economic growth through higher incentives for people to make

¹ More details on these studies can be found in Table 22 in Appendix A

productive investments (Okun 2015). Also, Barro's (2000) results indicate that income inequality has a positive impact on economic growth within developed countries. However, within developing countries, income inequality affects economic growth negatively. Some less recent studies, in contrast, have found a positive relationship between income inequality and economic growth, such as Partridge (1997), and Li and Zou (1998). This evidence demonstrates the relevance of analysing income inequality within vastly growing economies (aiming to) transitioning from low-income to high-income countries, such as the two completed growth "miracles", China and Korea. Furthermore, the OECD (2012) reports that the relationship between income inequality and economic growth is significant but strongly depends on policy instruments used and could progress either way, in other words, income inequality can induce or reduce economic growth. As such, overall, it can be said that these findings emphasise the general relevance of analysing income inequality, particularly for nations aiming to maintain high economic growth rates, as well as policy actions related to income inequality and economic growth.

According to the World Inequality Report (2008), income inequality has increased in almost every world region in recent decades, however, at various speeds. The fact that income inequality levels vary so much within countries, despite facing similar stages of economic development, emphasises the relevance of comparing and analysing the dimensions of income inequality across different countries. Hence, an in-depth comparison of the characteristics of income inequality across certain case studies can offer insights of high relevance. Moreover, the large amount of variation in inequality across the world shows that inequality is not inevitable but rather a product of policy choices. Displaying the eminent role carried by national policies and institutions in shaping income inequality, a comparison thereof becomes even more relevant. Thus, monitoring government policy and not only the levels of income inequality is of great interest to provide an insightful analysis of income inequality. Additionally, investigating a government's policy actions related to tackling income inequality, mirroring their commitment to the topic, enables citizens to hold governments accountable for

their actions in reducing the gap between the rich and the poor, or the lack thereof (Lawson and Martin 2018).

Regarding the choice of case studies, comparing China and Korea is insightful since both countries have experienced high economic growth and per capita income growth in the past decades. However, the question arises whether this growth “miracle” has been equal and if it has led to a similarly (un)equal distribution of income in both China and Korea. Also, today, as economic growth rates have slowed down in Korea and start slowing down in China, investigating whether poverty and low incomes have remained and how the governments take action in different policy areas to reducing income inequality. Especially in authoritarian China, income inequality potentially leading to increasing social instability represents a threat to the Chinese government and its legitimisation. Given the two different kinds of political systems, it will be insightful to find out how the government responds to income inequality in China and Korea and how each country commits differently to reducing the gap between rich and poor. Another example of a former East Asian growth “miracle”, Japan, will not form part of this analysis, first due to going beyond the scope of this thesis and second, since Japan’s growth “miracle” is dating back to a time much less recent. As Korea’s economic growth has slowed down just before of the start of 2000 and China’s growth “miracle” ended in 2010, these two case studies represent an adequate choice of a comparison of income inequality across countries. To the author’s knowledge and backed by an extensive review of literature in the subsequent section, an analysis and comparison of such extent, particularly incorporating both an assessment of income inequality measures as well as policy action, has not been conducted before, adding to existing research on the topic.

Before reviewing the theoretical basis of the topic of income inequality, the imperative of tackling income inequality is going to be discussed briefly. This thesis does not aim to suggest that income inequality is necessarily a matter that ought to be reduced by any means. There are different approaches by countries facing different levels of income inequality. As such, some nations, such as Denmark, Austria and Germany face low inequality in income, however, show

high commitment reducing or maintaining these low levels. In contrast, case studies such as Singapore or the United States, facing significant income disparities, show minimal effort of reducing income inequality through their policy making (Lawson and Martin 2017, 2018). As this section has revealed several possible adverse effects associated to large income disparities within a country, as well as providing evidence for a negative link of income inequality and economic growth, government intentions to responding to income inequality are on the political agenda in numerous countries (Lawson and Martin 2018). On top of that, as the previous discussion implies that income inequality is subject to policy making and government actions, an assessment of such is relevant. However, policy actions per se are not to be suggested an imperative at any given level of income inequality. In fact, as the measurement of inequality in the income distribution is pretty much a relative assessment not suggesting being fair or unfair (cf. section 3.3.1), there exists no threshold of assessing when income inequality has reached a level requiring to be addressed by policy action, which as well emphasises the relevance of this thesis' comparative approach of analysing income inequality.

3. Literature Review

3.1 Aims of the literature review

This section provides an overview of the growing body of literature on income inequality. First, this literature review is going to discuss trends and shifts of focus in the literature on income inequality. Subsequently, definitions and dimensions of income and income inequality will be analysed, and measures of income inequality and their properties will be reviewed. This literature review aims to introduce the reader to the vast topic of income inequality and to provide an overview of major pioneering and ground-breaking theoretical studies, as well as, major recent empirical comparative studies on income inequality. Over the years, the amount of research on income inequality has increased vastly. Due to the availability of data, empirical studies on income inequality are mainly based on the past 50 years.

3.2 Main trends in global inequality research

3.2.1 *Pioneering work*

Major pioneering publications go back to Max Otto Lorenz (1905), who created a revolutionary graphical measure of inequality referred to as Lorenz curve (cf. section 3.4.4.1.1) and to Corrado Gini (1912) who derived the parametric inequality measure, known as the Gini index (cf. section 3.4.4.1.2). Another notable contribution by Dalton (1920) linked inequality to economic welfare and therewith conceived the concept of normative inequality measures, which was later build on by numerous scholars, such as Sen (1973) relating the theory of welfare economics to the study of economic inequality, or Atkinson (1970) pioneering the use of social welfare functions. After the first theoretical groundwork had been laid, a considerable amount of literature on the issue of income inequality emerged.

After the Second World War, publications in the field of inequality increased, as economic literature of the 1950s and 1960s set to focus on the impact of inequality on economic growth (Chenery 1960; Hirschman 1958; Kaldor 1957; Klein 1950; Kuznets 1955; Scitovsky 1964; Singer 1949). In his pioneering study, Simon Kuznets (1955) analysed the relationship between per capita incomes and income inequality in a cross-section of countries and claimed that with increasing per capita income, inequality first increased and later decreased. In other words, Kuznets (1955) suggested that the relation between per capita income and inequality behaves like an inverted U-shape.

Although the amount of research on inequality decreased during the 1970s to the 1990s, yet, critical academic contributions were made during this period. In particular, scholars contemplated measurement issues of inequality in the context of economic growth and the development discourse (Atkinson 1970; Atkinson and Harrison 1978; Ram 1979; Sen 1973; Shorrocks 1980; Theil 1979; Tobin 1970).

3.2.2 Shifts in research

Prior to the 1990s, literature mainly focused on economic growth, the identification of the determinants of economic growth and convergence in per capita incomes across countries (Barro 1991; Barro and Sala-i-Martin 1995; Islam 1995; Mankiw, Romer, and Weil 1992; Quah 1996). However, in the 1990s, academic literature shifted the focus on the analysis of distribution of income, its development over time and the identification of factors determining the distribution of income as well as poverty reductions (Atkinson 1997; Gottschalk and Smeeding 1997; Cornia and Kiiski 2001; Gottschalk and Smeeding 2000; O'Rourke 2001). These studies found a trend of growing disparities in a high number of countries. In contrast, Quah (2003), Ravallion (2003), Sala-i-Martin (2002a) found empirical evidence for convergence in income inequality.

Further, major publications (Bourguignon and Morrisson 2002; Milanovic 2002; Park 2001; Sala-i-Martin 2002a, 2002b; Schultz 1998) studied trends in global inequality and other works (Acemoglu 2002; Acemoglu and Ventura 2002; Jones 1997; H. Li, Squire, and Zou 1998; Caminada and Goudswaard 2001) set landmarks studying trends in international income inequality (cf. section 3.3.3.2). Another milestone in the research of income inequality was set by Deininger and Squire (1996) who present a new data set on inequality in the distribution of income, which founded the basis of much further research on income inequality later on. Using data on Gini coefficients and individual quintile groups' income shares, they find no systematic link between growth and changes in aggregate inequality, however, do find a strong positive relationship between growth and reduction of poverty.

Moreover, the collapse of communism during that time is reflected in the literature on income inequality. As such, Atkinson and Micklewright (1992) analyse inequality in Eastern Europe from a comparative perspective of economic transformation and the distribution of income under communism compared with the west. Likewise, Milanovic (1998) examines transition countries, their income, inequality, and poverty during the period of collapse of Communism and the

transition to capitalism in 18 formerly socialist countries. His study covers almost ten years, from 1987–88 to approximately 1996.

In the year 2000, the adoption of the United Nations Millennium Declaration (United Nations 2000) led to renewed interest in academia and the focus shifted to implications of economic and social policies and outcomes of development, in particular in regard to sustainable economic growth and development (Milanovic 2012; Piketty 2014; Stiglitz 2012a; United Nations 2013). In the past fifteen years, primary research has established a trend of analysing the long-run evolution of income inequality in top income shares (Atkinson and Piketty 2007, 2010; Atkinson, Piketty, and Saez 2011; Alvaredo et al. 2013). As such, also Piketty and Saez (2003) analyse long-run trends in top incomes in the US between 1913 and 1998, whereas Piketty (2003) looks at top incomes in France during the 20th century (cf. section 3.4.3.4 and section 3.5). Extending early works of income inequality, recent scholars have expanded the analysis to more countries and time frames, generating a large amount of data. Ever since the adoption of the 2030 Agenda (United Nations 2015a), which aims to address income inequality on a global scale, the academic interest has shifted the debate around the importance of tackling inequality in the centre of attention (Atkinson 2015; United Nations 2015b; World Bank 2016).

3.2.3 Overview of landmarks

The following table summarises this section’s literature review outlining main trends in global inequality research, as well as, listing the main focus and main contributions from the early 1900s until current times.

The subsequent section is going to review definitions, notions and dimensions of income and income inequality. Subsequently, existing literature on inequality metrics is going to be discussed.

Time-line	1900-	1950 - 60s	1970s	1990s	2000s	2010 - 2014	Since 2015
Trends	Pioneering work and growing literature in the aftermath of WWII		Decreasing trend in literature	Shift from determinants of economic growth and convergence to analysis of income distribution	Renewed interest due to UN Millennium Declaration	Sustainable economic growth and development, top income shares, long-run evolution of income inequality	Adoption of 2030 Agenda, addressing inequality on a global scale
Focus	First inequality measures	Impact of income inequalities on economic growth	Measurement issues of inequality in the context of economic growth and the development discourse	Focus shifted from purely economic issues to the development of income inequality, determining factors, poverty reduction, trends in global and international income inequality		Implications of social policies and outcomes of development	Debate about the importance of tackling inequality
Main contributions	Lorenz (1905) Gini (1912) Dalton (1920)	Singer (1949) Klein (1950) Kuznets (1955) Kaldor (1957) Hirschman (1958) Chenery (1960) Scitovsky (1964)	Tobin (1970) Atkinson (1970) Sen (1973) Ram (1979) Theil (1979) Atkinson and Harrison (1978) Shorrocks (1980)	Gottschalk et al. (1997) Acemoglu and Ventura (2002) Bourguignon and Morrison (2002) Milanovic (2002) Schultz (1998) Gottschalk et al. (2000) Caminada and Goudswaard (2001) Cornia and Kiiski (2001) O'Rourke (2001) Park (2001) Acemoglu (2002) Sala-i-Martin (2002b)		Milanovic (2012) Stiglitz (2012a) UN (2013) Piketty (2014) Piketty and Saez (2003) Piketty (2003) Atkinson and Piketty (2007, 2010) Atkinson et al. (2011) Alvaredo et al. (2013) Alvaredo et al. (2018)	UN (2015a) Atkinson (2015) UN (2015b) World Bank (2016)

Table 1: Main trends in global inequality research over time.
Source: Author's design.

3.3 Income inequality

3.3.1 Definitions of inequality

3.3.1.1 Economic and income inequality

According to the United Nations, “*economic inequality refers to how economic variables are distributed—among individuals in a group, among groups in a population, or among countries*” (United Nations 2015d, 1). It is essential to note

that the concept of inequality is distinct from that of poverty (cf. section 3.3.1.5) and fairness. *“When we say income inequality, we mean simply differences in income, without regard to their desirability as a system of reward or undesirability as a scheme running counter to some ideal of equality”* (Kuznets 1953, xxvii). In general, development theory has mainly been focused on inequalities in standards of living, such as inequality in income, wealth, education, health, as well as nutrition. The discussion about inequality can be distinguished into a debate between two perspectives, namely, inequality of outcome and inequality of opportunity (United Nations 2015d).

3.3.1.2 Inequality of outcome

Inequality of outcome is concerned with unequal possession of material wealth or overall living economic conditions. However, the variables economists are concerned about when looking at the inequality of outcome are typically income or consumption. In other words, inequality of outcome considers material dimensions of well-being which might be the result of circumstances beyond one's control, such as ethnicity, family background, gender, as well as, talent and effort. This perspective is ex-post or achievement-oriented (United Nations 2015d). As this thesis analyses inequality in a variable of the outcome, namely income (cf. section 3.3.2), inequality of opportunity will only be discussed briefly.

3.3.1.3 Inequality of opportunity

Societies can be regarded as providing equal opportunities when circumstances do not determine the differences in life outcomes (Ferreira et al. 2008). Practically speaking, equality of opportunity occurs when policies compensate individuals who face disadvantageous circumstances. In other words, equality of opportunity occurs when life outcomes depend solely on factors for which individuals can be regarded as responsible. Disadvantageous attributes outside of their control such as gender, ethnicity, family background, etc. should not determine outcomes (United Nations 2015d, 1). A famous advocate of (in)equality of opportunity is Amartya Sen who emphasises that equalising income is not to be the goal since not all individuals convert income into well-being and freedom in the same manner. It depends on the personal and social conditions,

encompassing the individual's age, gender, family background and disability, as well as, on climatic conditions, societal conditions (health care, education systems, the prevalence of crime, community relationships), customs and convention, and other factors. As a result, what is meant to be equalised is not the means of living but the real opportunities of living which enables individuals to pursue their own choices (Sen 1973, 1997).

3.3.1.4 Horizontal inequality

Another scholar, Frances Stewart, has coined the phenomenon of horizontal inequality. In contrast to vertical inequality, which examines inequality between individuals, she proposed that inequalities also arise between individuals due to the groups they identify with, which can be groups formed by culture, gender, age, et cetera, which might represent the cause of prejudice, discrimination, marginalisation, or advantage (Stewart 2005). By comparison to vertical inequality, horizontal inequality and its measurement have received rather less attention (Jayaraj and Subramanian 2006).

3.3.1.5 Distinction from poverty

Reducing poverty worldwide has been set as a significant goal by many large international organisations such as the United Nations and the World Bank (World Bank 2016; UNDP 2016; United Nations 2015a). The United Nations' definition of poverty, according to a UN statement in June 1998 and signed by all heads of UN agencies is the following: *“Fundamentally, poverty is a denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and clothe a family, not having a school or clinic to go to, not having the land on which to grow one's food or a job to earn one's living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living in marginal or fragile environments, without access to clean water or sanitation”* (Gordon 2005). In economic terms, income poverty occurs when a family's income does not meet a certain threshold, which is set differently across countries. Commonly, poverty is measured correspondingly to families and individuals.

Additionally, poverty is adjusted for the number of persons in a family (Smelser and Baltes 2001). Poverty is usually measured in absolute and in relative terms where the latter represents an index of inequality.

Absolute poverty, sometimes also referred to as extreme poverty, describes poverty as having to live under a certain threshold of income, for instance as set by the World Bank at 2011 PPP 1.90 US-dollars per day (World Bank 2016, 24). In contrast, relative poverty is concerned about one's relative position within the society. In other words, considering the standard of living, the relative approach creates a current poverty threshold for a distribution (Foster 1998, 336).

The measurement of poverty is based on a comparison of needs and resources. An individual or a family are regarded as absolutely poor if their resources are situated below a poverty threshold. There exist multiple approaches to defining such resources, thresholds and aggregating the produced data (Citro and Michael 1995; Ruggles 1990; Ravallion 2016). Measures of poverty, such as the absolute poverty line are a fixed group-specific cut-off level, which gets applied across all potential resource distributions (Foster 1998, 336). Even in the case of economic growth, they remain unchanged, though get adapted for changes in price levels. In order to compare poverty thresholds across countries accurately, an applicable exchange rate is required. The relative poverty line creates a current poverty threshold for distribution, such as the mean, median, or some quantile and then defines the cut-off as a certain percentage of this standard (Foster 1998, 336). Although the international definition of the poverty line exists, countries also determine their own poverty lines considering basic needs which are linked to a predefined consumption basket of essential goods and services, or relative to an predefined point along the distribution of income or consumption, such as for instance 60% of the median national household income (World Bank 2016, 24).

The poverty rate is the ratio of the number of people (in a given group) whose income falls below the poverty line. The OECD defines this threshold as half the median household income of the total population and additionally makes data of poverty rates available by broad age groups, such as child poverty (0-17 years

old), working-age poverty, as well as, elderly poverty, which exists for groups with individuals being 66 years old or more (OECD 2018d). This measure is also frequently referred to as the headcount ratio (HCR), which also represents the share of the population which lives below the poverty line (Klugman, 2002).

Another standard and frequently used poverty measure is the poverty gap, defined by the OECD as the following: *“The poverty gap is the ratio by which the mean income of the poor falls below the poverty line. [...] The poverty gap helps refine the poverty rate by providing an indication of the poverty level in a country. This indicator is measured for the total population, as well as for people aged 18-65 years and people over 65”* (OECD 2018c). In other words, the poverty gap describes, how far off households are from the poverty line. It provides information about income or consumption shortfalls relative to the poverty line across the population. It can also be regarded as the total amount of resources required to lift all individuals above the poverty line (Klugman, 2002).

The importance of considering different poverty measures comes from providing a broader picture. For instance, possibly, societies have a high headcount ratio but low poverty gap due to numerous members being located just below the poverty line, while potentially there are other groups, which have a low headcount ratio, however, a high poverty gap for those who are poor, meaning that these are cut far off from the rest of the population.

In this literature review, following the aim of this thesis, remains to consider only the previously discussed fundamental and quantitative measures of poverty. Qualitative indicators, such as human development indicators, the human poverty index, capability poverty measure, the subjective measurement of poverty, along with other non-monetary indicators, would go beyond the scope and the purpose of this thesis, which is to show that poverty and inequality are not the same, however, are quite related. Income inequality causes poverty, and its extent is indicative of poverty itself by pushing individuals and household to the low edge of the income distribution.

3.3.2 Definitions of income

According to Cowell (2011, 5), *“if you want to take inequality in a global sense, then it is evident that you will need a comprehensive concept of ‘income’—an index that will serve to represent generally a person’s well-being in society.”* Income can be accounted for individuals or households (cf. section 3.3.3). According to the OECD, household income is defined as *“household disposable income in a particular year. It consists of earnings, self-employment and capital income and public cash transfers; income taxes and social security contributions paid by households are deducted.”* (OECD 2018b). Inequality of income describes the extent to which income is distributed unevenly among a population.

Cowell (2011, 5) identifies income as an appropriate measure *“if income includes unearned income, capital gains, and ‘income in kind’ as well as earnings, then it can be claimed as a fairly comprehensive index of a person’s well-being at a given moment”*. Also, the variable income is measurable and comparable, and information on personal income is more widely available and interpretable more easily than other indicators such as wealth or lifetime income (Cowell 2011, 6).

Defining income as a variable in a practical sense results in several shortcomings and can therefore not be utilised uncritically. As such, Cowell (2007, 2011) points out questions of time, for instance systematically changing incomes over people’s lifetime, as well as the risk, such as people’s incomes changing erratically in the short run. Also, past income accumulations remain unconsidered. Cowell (2007, 2011) also states that with using more sophisticated income concepts these factors can be taken account for; however, practically speaking, it is harder to get reliable data to estimate them. Additional conceptual issues are whether disposable income includes imputed rents and in-kind income. Imputed rents refer to the relatively higher income for homeowners occupying their dwellings. Likewise, in-kind income is income other than monetary income. While these should be included in the underlying income concept, they are often not due to lack of estimates. Also, issues of comparability arise (UNU-WIDER 2018a, 2). Finally, it is crucial to note that in practice, the distinction in gross and net income can be challenging to make. For instance, there could be evidence, that

survey participants report take-home wages instead of requested gross income. Besides, in the informal sector, there is frequently no difference between gross and net income. In order to indicate this ambiguity, such income data are labelled as net/gross in the WIID database as well as in this thesis (UNU-WIDER 2018a, 10).

Piketty and Zucman (2015) claim that to conclude about the distribution of income, in the long run, the evolution of property rights across the generations must be considered as well, which will partly depend on how families are formed. Hence, Fernandez et al. (2005) and Liu and Lu (2006) treat questions such as do the rich predominantly marry the rich? Also, do the poor have more children? Moreover, state taxation plays a significant role in the formation of income (Cremer and Pestieau 2006). However, the choice of the variable of income is most often driven by the available information.

To properly analyse income inequality, Alvaredo et al. (2018, 32) state that it is crucial to decompose total income into two categories of income flows. First, income from labour and second, income from capital, as this category plays an essential role in the growth of inequality in recent decades. Numerous empirical studies decompose income with different methods and try to understand how different components of income impact income inequality. As such, an early study by Rao (1969) decomposed income sources into labour, capital and land for developing countries utilising the additive decomposition method, as such, disaggregating the Gini coefficient and weighting it by the share of the respective income source. Another critical study by Fei Ranis and Kuo (1978) examined the effect of different components of income in Taiwan showing that property incomes contributed most to income inequality whereas transfer incomes reduced it and wage income only contributed to a small extent. Fields (1979) showed that in Columbia, labour income is the primary source of income inequality. Subsequently, studies by Shorrocks (1982, 1983) and Lerman and Yitzhaki (1985) found new methods for the decomposition of income, forming the basis of later research on the issue. Jäntti (1997) used Shorrocks' (1982) decomposition method to investigate the drivers of income inequality for five countries discovering that

labour income is responsible for the greatest share of income inequality. Extending Jäntti's (1997) work and applied the approach of Shorrocks' (1982), García-Peñalosa and Orgiazzi (2013) found that wage and self-employment income varied a lot across the investigated countries and contributed a lot to income inequality. Also, capital income inequality explained increased household income inequality in Norway and Sweden to a large extent in the 1990s. After the global economic crisis, renewed interest in decomposing income arose. Worldwide empirical studies emerged, examining EU countries (Fuest, Niehues, and Peichl 2010), Latin America (Amarante 2016) as well as Asia (Asian Development Bank 2007).

3.3.3 *Definitions of the income-receiving unit*

3.3.3.1 Household income and equivalence scales

After discussing definitions and dimensions of *income*, another essential theoretical and practical question remains open. For each type of income, one needs to specify who or what the income receiver is. Data on income could refer to households, families, tax units, or individuals (Cowell 2007, 2011). Particularly when making international comparisons, special care must be taken when using data sources (Atkinson and Brandolini 2001). Databases on income consist almost exclusively of household surveys, as such, the household represents the income receiving unit in most studies (Alvaredo et al. 2018, 28–29). The definition of a household based on the United Nations Economic Commission for Europe is as follows, “A *private household is either (a) a person living alone in a separate housing unit or who occupies, as a lodger, a separate room (or rooms) of a housing unit but does not join with any of the other occupants of the housing unit to form part of a multi-person household or (b) a group of two or more persons who combine to occupy the whole or part of a housing unit and to provide themselves with food and possibly other essentials for living. The group may be composed of related persons only or of unrelated persons or of a combination of both. The group may also pool their income*” (Canberra Group 2011, 25).

Measuring income based on households, however, has shortcomings as well. As such, it does not reveal income distribution within the household, and if several

generations of adults live within one household, income inequality could be concealed. Apart from that, observing income at the household level does not mean that each household can be considered as one unit regardless of its size. As such, the income of a household may be corrected by an equivalence scale, which accounts for economies of scale within the household. However, that does not imply weighting the household by the number of equivalent units. Instead, it could be regarded as more adequate to weight them by the number of individuals. As a result, the total sum of income attributed to the households consisting of multiple people is more considerable (Atkinson and Bourguignon 2014, 2:xxxvi). Besides, Chiappori and Meghir (2015) claim that measuring income on a household basis assumes that the distribution of income is equal within them. *“Studies of inequality often ignore resource allocation within the household. In doing so they miss an important element of the distribution of welfare that can vary dramatically depending on overall environmental and economic factors. Thus, measures of inequality that ignore intrahousehold allocations are both incomplete and misleading”* (Chiappori and Meghir 2015, 1369).

Four general scales of household income are household per capita (household size), square root ($\text{Household size}^{0.5}$), OECD scale ($1+0.7*n$ of additional adults + $0.5*n$ of children), and the modified OECD scale ($1+0.5*n$ of additional adults + $0.3*n$ of children). Regardless of attributing household income to individuals equally (per capita) or according to an equivalence scale, suggesting economies of scale in consumption, the viewpoint of numerous database users suggests, that the variety of equivalence scales is somewhat distracting than a useful insight. Thus, the World Income Inequality Database (WIID) (cf. section 5), distinguishes scales only by per capita, equivalised or no adjustment of household income-receiving units (UNU-WIDER 2018a, 11).

The appropriate choice for both selecting income and the income receiving unit depends on the context and might differ across countries at distinctive stages of development. Additionally, the choice depends on the purpose of the analysis (Atkinson and Bourguignon 2014, 2:xxxiv). Much empirical evidence relates to

households, and surveys are typically conducted on a household basis (cf. section 3.5).

3.3.3.2 Levels of aggregation

Income distribution can be analysed on three different levels of aggregation, on the global, international and intra-national level. Global or world income inequality refers to inequality differences between all individuals in the world (Bourguignon and Morrisson 2002; Milanovic 2002; Park 2001; Schultz 1998; Sala-i-Martin 2002a, 2002b)². There exist relatively few studies which compare the world's individuals' distribution of income, as problems such as the availability and comparability of global income data occur. International income inequality refers to income disparities between countries (Acemoglu 2002; Acemoglu and Ventura 2002; Jones 1997; H. Li, Squire, and Zou 1998)³. Lastly, intra-national level income inequality refers to the distribution of income among people within individual countries. Most studies of income inequality focus on within-country inequality, which remains the level at which most policies operate (Heshmati 2004). Li, Squire and Zou (1998) investigate both income inequality between countries and within countries and find that country-specific effects explain more than 92% of the overall income variation. Also, Cornia and Kiiski (2001) advocate that from a policy perspective it is more important to focus on within-country inequality. Therefore, this thesis will look at intra-national or within-country inequality only.

3.4 Measures of income inequality

3.4.1 Definitions

Cowell (2011, 7) refers to inequality measures as “*a scalar numerical representation of the interpersonal differences in income within a given population.*” The extensive literature on the measurement of income inequality also refers to income inequality measures as income distribution measures, which are used to measure the distribution of income, and income inequality across the participants of an economy, such as that of a particular country or the

² For a more details on these studies refer to Appendix B

³ For a more details on these studies refer to Appendix B

entire world. Frank Cowell (1999, 2011) is one of the significant contributors to research on inequality measures, expounding and discussing theory as well as examining empirical evidence. Besides, Schutz (1951), and Atkinson (1970) provide early comprehensive studies on discussing income distribution and its measures. Likewise, Sen (1973) provides a systematic treatment of the conceptual framework of inequality measures, as well as, practical problems of the measurement of economic inequality. His work also evaluates alternative approaches of inequality measures in terms of their philosophical assumptions, economic content, and statistical requirements. Atkinson and Micklewright (1992), Champerowne and Cowell (1998), Silber (1999) along with Campano and Salvatore (2006) provide comprehensive handbooks on discussing the theoretical groundwork of inequality metrics as well as their applications. Lastly, one of the main contributors to research on inequality measures is Stephen Jenkins (2017) who discusses the minimal properties an income inequality measure should have and examines the properties of different measures used in the economic literature and also investigates what social values are implicit in inequality measures. After providing a brief preview of major scholars researching on inequality measures, the following sections are going to review major theoretical works of specific income inequality measures and their properties. Before that, the difference between positive and normative inequality metrics will be discussed.

3.4.2 Positive vs normative measures

Sen (1973) first classified income inequality measures into two categories, positive and normative measures. While the first quantify the extent of inequality objectively by utilising statistical measures of dispersion, the later are connected with a social welfare function, suggesting welfare loss with increasing inequality. This initial approach of normative inequality measures was introduced by Dalton (1920) and was further developed by Aigner and Heins (1967). Thereupon, Atkinson (1970) set off the utilitarian approach to this measure by assuming that the total social welfare is the sum of the individual utilities of income. Different examples of the use of this kind of normative approach for the measurement of inequality are Champerowne (1952), along

with Tinbergen (1970), Bentzel (1970) and Kolm (1976b), who claims that is essential to embody ethical properties into inequality measures. However, Sen (1973) states that since some positive measures are special cases of normative ones, it can be hard to draw a determined line between the two. Nonetheless, this thesis seeks to take into account positive measures and therefore the literature review proceeds focusing on positive income inequality measures refraining from using welfare functions.

The subsequent section is going to first review the literature on statistical measures, which are primary measures of dispersion. Secondly, regular measures of inequality are going to be outlined. Latter will further be divided into Lorenz curve related measures, entropy measures and other measures. These classifications ought to bring structure in the wide variety of inequality measures. Subsequently, properties and limitations of the discussed income inequality measures are going to be reviewed.

3.4.3 Statistical inequality measures

3.4.3.1 The variance

The variance is a measure of how far each value in the data set is from the mean (dispersion). In other words, the variance of income reveals how far individual/household income is from the average income. The variable n is the number of individuals/households (cf. Table 2). The variance has the disadvantage of not being income scale invariant, which expects the inequality level to remain constant if the income of everyone in the society is multiplied (cf. section 3.4.6). A further disadvantage is that the variance depends on the mean level of income, which can affect the comparability of the measures. For instance, it is possible that a less egalitarian distribution with lower average income and a more egalitarian with higher average income leads to the same variance (Cowell 2011, 27–28).

3.4.3.2 Coefficient of variation

The coefficient of variation (CV) is the square root of the variance (cf. Table 2) of the incomes divided by the mean income. As more equal income distributions

have smaller standard deviations, the CV adopts a lower value in more equal societies. Benefits of this measure are that the CV is mathematically tractable, its square is subgroup decomposable (cf. section 3.4.5.5), and it represents one of the most straightforward inequality metrics. However, it is not frequently used in the literature, mainly because of limitations, such as not having an upper bound, challenging adequate comparisons and interpretations, and also, the two components of the coefficient of variation are prone to be influenced by very high and minimal income values (Champernowne and Cowell 1998, 73–74; Campano and Salvatore 2006, 80–81).

Variance	Coefficient of Variation
$\sigma^2 = \frac{1}{n} \sum_{i=1}^n (y_i - \bar{y})^2$	$CV = \frac{\sqrt{\frac{1}{n} \sum_{i=1}^n (y_i - \bar{y})^2}}{\bar{y}}$

Table 2: Mathematical expressions of variance and coefficient of variation

Note: y_i is the individual/household income, $\bar{y}$ is the average income and n is the number of individuals/households. Source: cf. Cowell (2011, 28). Author's design.

Table 2 provides the mathematical expressions of the previously discussed statistical income inequality measures. The subsequent section is going to review ratios as a measure of income inequality.

3.4.3.3 Ratios

In general, there exist three kinds of ratios, namely, percentile, decile and quintile ratios, each representing different shares of the population. An accessible and straightforward measure of income inequality is the decile dispersion ratio, which expresses the ratio of the average income, for instance, of the wealthiest 10 per cent by that of the bottom 10 per cent, namely the 90/10 decile ratio. This ratio is interpretable easily and reveals the income of the rich as multiples of that of the poor. Limits, however, are that it leaves out information about incomes in the middle of the income distribution and ignores to use information about the distribution within the richest and most deprived deciles or percentiles of income. Likewise, the 80/20 quintile ratio compares the average income of the top 20% to the bottom 20% of the population. The p90/p50

percentile ratio represents the ratio of the average income of the 90th percentile, to the 50th percentile or median earnings. The higher this ratio is, the more unequal the income distribution (Cowell 2011, 31–34). Different percentile ratios, also referred to as interdecile ratios, such as p90/p10 or p80/p20 are used frequently by databases as well. In contrast to decile or quintile ratios, which relate two income shares, percentile shares relate upper bound values. For instance, the p90/p10 ratio is the ratio of the upper bound value of the ninth decile (i.e. the 10% of people with the highest income) to that of the upper bound value of the first decile. Further, p90/p50 is the ratios of the upper bound value of the ninth decile to the median income (OECD 2018b).

Likewise, the Palma ratio (Palma 2011) is the ratio of income shares of the top 10% of households to the bottom 40%. Palma's empirical observation claims that the difference in the income distribution of different countries is mainly the result of changes in the extremes of the distribution; in other words, between the poorest and the richest. As such, he suggested that the middle share tends to experience relative stability.

3.4.3.4 Income shares

Related to ratios, another measure of inequality are income shares, which are an expression of the percentage of national income a subpopulation accounts for. Income shares are especially useful for measuring fractions of income accruing to top income earners, such as the top 10%, 1%, 0.1%, 0.01%, and represents one of the most intuitive measures of income inequality. Further, this concept is similar to the Lorenz curve. Top income shares can be calculated easily, and their intuitive appeal makes them an appropriate choice of income inequality measures for many audiences (Alvaredo et al. 2018). A benefit of analysing changes in top income shares is that it might be crucial to understanding changes in the overall income distribution. This connection has been demonstrated empirically by Leigh (2007) and Smeeding and Thompson (2011) and is being examined more formally by Atkinson (2007) and Alvaredo (2011). However, a disadvantage is that top income shares, particularly above the 99th percentile, tend to be underestimated since they almost exclusively rely on

household surveys. Thus, several scholars amongst others, Alvaredo et al. (2018, 28), suggest using taxation data besides in order to provide complementary information. Also, income shares, ignore a large part of the distribution of income as well as the distribution of income within the chosen income share. Despite these facts, income shares, especially top income shares have been used widely in the literature, particularly in recent studies (cf. section 3.5).

Table 3 summarises the previously outlined income ratios and income shares as a measurement tool of income inequality.

Percentile Ratios	Decile Ratios 10%	Quintile Ratios 20%	Top income shares (fraction of income accruing to top earners)
p90/p10	90/10	80/20	10%
p80/p20			1%
p90/p50			0.1%
p50/p10			0.01%

Table 3: Summary of income ratios and income shares
Source: Author's design.

The subsequent section is going to review regular inequality measures by first outlining Lorenz curve related ones and further introducing entropy measures along with other inequality measures.

3.4.4 *Regular inequality measures*

3.4.4.1 Lorenz curve related measures

3.4.4.1.1 Lorenz curve

Named after Lorenz (1905), the Lorenz curve represents a ground-breaking graphical representation of inequality. The Lorenz curve maps the cumulative income share against the cumulative population share ordered from the lowest to the highest income (cf. Figure 1), which shows the percentage of total income earned by cumulative percentage of the population. In a perfectly equal society, 25% of the population earn 25% of the total income, 50% of the population would earn 50% of the total income, et cetera. If this is the case, the Lorenz curve

follows the 45° line of equality. As inequality increases, the Lorenz curve deviates from the line of equality (Campano and Salvatore 2006, 63–64).

3.4.4.1.2 Gini index

Derived from the Lorenz curve, and named after Gini (1912), the most common measure of inequality is the Gini coefficient or Gini index. The Gini index captures the area between the Lorenz curve and a completely equal distribution on the line of equality. If the area between this line and the Lorenz curve is A and the area below the Lorenz curve is B, the Gini coefficient is $A/(A+B)$. In a perfectly equal society, the Gini coefficient becomes 0, whereas, corresponding to complete inequality, the Gini coefficient reaches 1 (Campano and Salvatore 2006, 64–65). The following figure illustrates the Lorenz curve, as well as, the Gini coefficient.

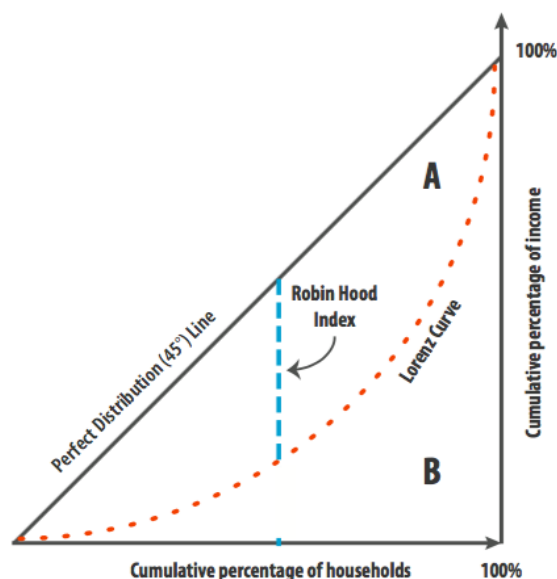


Figure 1: Geometrical representation of the Lorenz curve, Gini index ($A/(A+B)$) and Robin Hood index.

Source: (Development Strategy and Policy Analysis Unit of UN/DESA 2015, 2)

A limitation of the Gini index is that it attaches more weight to income transfers in the middle-income classes and neglects to put weight to income transfers within the extreme income classes. Moreover, looking at two societies with the same Gini index value, they could still be somewhat different in terms of income distribution. In other words, different shapes of the Lorenz curve could still

result in the same Gini coefficient because the area captured by the Lorenz curve might not change, although the distribution of income does. This issue can be a severe limitation if one is interested in analysing or comparing the structure of the income distribution in the different shares of the population (Cowell 2011, 27–28).

3.4.4.1.3 Robin Hood Index / Hoover index / Schutz index

The Robin Hood Index, also being referred to Hoover index, Schutz (1951) index or Pietra Ratio, expresses the income that would have to be redistributed, from those above the mean to those below the mean, in order to achieve an equal distribution of income. The Robin Hood index is based on the Lorenz Curve and geometrically speaking, it is equivalent to the maximum vertical distance between the Lorenz curve, and the perfect equality line (cf. Figure 1). As such, higher Robin Hood values indicate an unequal society, wherein a larger share of income needs to be redistributed to achieve equality. The Robin Hood index can reach values between 0, reflecting total equality and 100, reflecting total inequality. A major disadvantage is that it is not bounded because its upper limit is influenced by the number of components, which can be limiting if one compares income inequality across various small systems having a different number of components. Moreover, similar to previously discussed measures, the Robin Hood index only considers part of the distribution, hence lacks taking into account the full available information (Coulter 1989, 44–46). However, the Robin Hood index fulfils the property of income scale invariance (cf. section 3.4.5).

3.4.4.2 Entropy measures

3.4.4.2.1 Generalised entropy indices

Theil (1967) argues that the concept of entropy measures offers a useful tool for measuring inequality. The values of generalised entropy index measures vary between zero and infinity, with zero representing an equal distribution and higher values representing higher levels of inequality. A vital aspect of these measures is that they are fully decomposable, which means that inequality can be broken down by population groups or income sources as well as using other dimensions. Another key advantage is that one can choose a parameter α which

assigns a weight to distances between incomes in distinctive parts of the income distribution. For lower values of α , generalised entropy indices are more sensitive to changes affecting the lower tail of the distribution. In contrast, for higher values, it is more sensitive to changes in the upper tail. The most common values for α found in the literature of inequality metrics are 0, 1, and 2. When α is equal to 0, the index is called *Theil's L* or the *mean logarithmic deviation* measure. When α is equal to 1, the index is called *Theil's T* index or, more commonly, *Theil index* (Cowell 2011, 52–59; Jenkins 2017, 33–36). Lastly, when α is equal to 2, the index is called the *coefficient of variation* (cf. section 3.4.3). Theil's index and mean logarithmic deviation measure are outlined in the subsequent two sub-sections.

3.4.4.2.2 Theil's entropy measure

Henri Theil's work on information theory (Theil 1967) set a landmark in the development of the analysis of inequality measurement. According to Cowell (2003), Theil's book has provided both an introduction to a crucial tool of functional forms for modelling and analysing inequality, as well as, a method for thinking about the meaning of inequality. Similar to the Gini coefficient, the Theil index ranges from 0 to 1. However, a value of 1 reflects total equality (maximum entropy), and a value of 0 represents maximum inequality (maximum redundancy). In other words, the higher the difference between income shares and population shares, the higher will be the value of Theil index (Cowell 2011, 52–59; Jenkins 2017, 33–36). Taking this principle into account, Anand (1983) restated the Theil index as a general distance function which measures divergence between income and population shares. Although the Theil index is very commonly used for measuring income inequality, Sen (1973) pointed out, “*But the fact remains that it is an arbitrary formula, and the average of the logarithms of the reciprocals of income shares weighted by income shares is not a measure that is exactly overflowing with intuitive sense*” (Sen, 1973: 36). Following this, the Theil index lacks an intuitive and straightforward graph to represent it. However, the particular advantage of using the Theil index is that it is decomposable into sub-groups of the population, which means that the Theil index can decompose income inequality into within group and between group

components, which is useful in order to disaggregate income inequality for example by regional components, such as urban-rural income inequality (cf. section 3.4.5.5).

3.4.4.2.3 Mean logarithmic deviation

The mean logarithmic deviation (MLD) is represented by $GE(0)$ and measures the average deviation between the log income shares and the log shares which would represent perfect equality (Cowell 2011, 59). In contrast to Theil's index, MLD is more sensitive to changes affecting the lower tail of the distribution. Along with the Theil index, the MLD can be decomposed into subsets of the population. A disadvantage is, however, that it is not intuitive or easily computable and similar to the Theil index lacks a graphical representation. Despite being similar, the Theil index is more commonly used in the literature (cf. section 3.5, 3.7 and 3.8).

3.4.4.3 Other inequality measures: The Atkinson Measure

Atkinson (1970) has proposed another income inequality measure, which is used frequently in the literature, namely, the Atkinson measure. The theoretical range of Atkinson values ranges from 0 to 1, with 0 representing equal distribution. Moreover, it incorporates a sensitivity parameter, which varies in the weight attributed to inequalities in different parts of the income spectrum. Anthony Atkinson emphasised the importance of such a sensitivity due to being concerned with the inability of the Gini framework to assigning varying weights to different parts of the income spectrum (Atkinson 1970; Atkinson and Micklewright 1992). In another significant contribution to the field of inequality measurement (Atkinson 1975, 47), Atkinson emphasised that inequality “*cannot, in general, be measured without introducing social judgements. Measures such as the Gini coefficient are not purely ‘statistical’ and they embody implicit judgements about the weight to be attached to inequality at different points on the income scale*”. Atkinson's sensitivity parameter can range from 0, representing one is indifferent about the nature of the income distribution, to infinity, where one is concerned with the very bottom income group only. Atkinson argued that this index was a way to incorporate Rawls' (Rawls 1971) conception of social justice

into the measurement of income inequality. As such, when the sensitivity parameter is not equal to 0, the Atkinson index represents a normative measure of income inequality.

One benefit of the Atkinson measure is that an intuitive interpretation is possible because Atkinson values can be utilised to compute the proportion of total income that would be required to achieve an equal level of social welfare if incomes were equally distributed. For instance, an Atkinson index of 0.20 suggests that one could achieve the same level of social welfare with only (1–0.2 is 0.8) 80% of income (Cowell 2011, 50–52). A disadvantage, on the other hand, is that similar to the Theil index, the Atkinson index is difficult to calculate and lacks a graphical representation, in contrast to Lorenz curve related measures. Another issue is that it can be extraordinarily sensitive to very small incomes (Cowell and Victoria-Feser 1996, 78).

3.4.4.4 Summary of regular measures

The following table summarises the mathematical expressions of the previously discussed regular income inequality measures.

Gini index, x_i is a point on the X-axis, and y_i a point on the Y-axis, there are N equal intervals	$Gini = 1 - \frac{1}{N} \sum_{i=1}^N (y_i + y_{i-1}).$
Generalised Entropy Measures y - is the mean income	$GE(\alpha) = \frac{1}{\alpha(\alpha-1)} \left[\frac{1}{N} \sum_{i=1}^N \left(\frac{y_i}{\bar{y}} \right)^\alpha - 1 \right]$
Theil index GE (1)	$GE(1) = \frac{1}{N} \sum_{i=1}^N \frac{y_i}{\bar{y}} \ln \left(\frac{y_i}{\bar{y}} \right)$
MLD GE (0)	$GE(0) = \frac{1}{N} \sum_{i=1}^N \ln \left(\frac{\bar{y}}{y_i} \right)$
Atkinson Index weighting parameter ϵ which measures aversion to inequality	$A_\epsilon = 1 - \left[\frac{1}{N} \sum_{i=1}^N \left(\frac{y_i}{\bar{y}} \right)^{1-\epsilon} \right]^{\frac{1}{1-\epsilon}}, \epsilon \neq 1$ $= 1 - \frac{\prod_{i=1}^N (y_i^{1/N})}{\bar{y}}, \quad \epsilon = 1.$

Table 4: Summary of formulas of regular inequality measures
Note: Source: World Bank (2005)

3.4.5 Selection of inequality measures

3.4.5.1 Desirable properties

In order to be able to select several proper income inequality measures for the theoretical framework in section 4, this section is going to follow an axiomatic approach by outlining desirable properties of income inequality measures. Numerous scholars review common income inequality measures, such as Atkinson (1970, 252–57), Champernowne (1974, 805), Foster (1985) and Sen and Foster (1997, 24–26). Also, Kolm (1976a) analyses properties of income inequality measures from a theoretical approach and Cowell and Victoria-Feser (1996) analyse the robustness of inequality measures. Besides, Cowell (2011, 61–73) gives recent comprehensive guidance on how to select income inequality measures according to four formal principles, such as the transfer principle, income scale independence, the principle of population and decomposability. These desirable properties help to draw a shortlist of income inequality measures because, in accordance with these four formal criteria, unsuitable measures can be eliminated.

3.4.5.2 Principle of transfer

The principle of transfer goes back to Dalton (1920) and states that a transfer of income from a person in the upper part of the income distribution to a person on the bottom always reduces the measured inequality. *“Suppose the distribution of income in social state A could be achieved by a simple redistribution of income in social state B (so that total income is the same in each case) and the Lorenz curve for A lies wholly inside that of B. Then, as long as an inequality measure satisfies the weak principle of transfers, that inequality measure will always indicate a strictly lower level of inequality for state A than for state B”* (Cowell 2011, 62). The principle of *strong* transfers suggests how much an inequality measure should decrease when a transfer happens, proposing a stronger effect is desirable (Cowell 2011, 62). The variance, the coefficient of variation, the Gini index, MLD index, Theil’s index, Atkinson index all pass the test of the principle of transfers, the variance, and all generalised entropy indices fulfil the principle of strong transfer (Cowell 2011, 63).

3.4.5.3 Income scale independence

Income scale independence suggests that if everyone's income changes by the same proportion, the income inequality measure ought to remain the same because no essential change in the income distribution occurred. This property is satisfied by all the inequality measures discussed, except for the variance (Cowell 2011, 63).

3.4.5.4 Principle of population

When measuring inequality in an economy consisting of n people, and then merge this economy with another identical one, one gets a combined economy with a population of $2n$. The proportion of the population receiving any given income remains the same and inequality is the same for any such replication of the economy. If this is true, the inequality measure fulfils the principle of population. All previously discussed metrics of inequality satisfy this principle (Cowell 2011, 63–64).

3.4.5.5 Decomposability

Decomposability implies the existence of a coherent relationship between income inequality in the whole of society and income inequality in its constituent parts. Essentially, the property should be able to indicate a formula stating total income inequality as a function of income inequality within the constituent subgroups, as well as income inequality between the subgroups, which should allow expressing the within-group inequality as a sort of average of the income inequality in each subgroup. Some inequality measures, such as the Gini index, are not decomposable, in other words, it is not possible for them to reveal an increase in income inequality in every subgroup of the population simultaneously with a decrease in the overall income inequality. In such a case, it is not obtainable to express the total change of income inequality as some consistent function of inequality change in the component subgroups.

Out of the afore-discussed inequality measures, the variance and coefficient of variance, the Atkinson index and the generalised entropy measures, namely the Theil index and MLD are decomposable (Cowell 2011, 64–66, 74; Cowell and

Victoria-Feser 1996, 83–84). According to the World Bank (2005), “*The best-known entropy measures are Theil’s T and Theil’s L, both of which allow one to decompose inequality into the part that is due to inequality within areas (e.g. urban, rural) and the part that is due to differences between areas (e.g. the rural-urban income gap). Typically at least three-quarters of inequality in a country is due to within-group inequality, and the remaining quarter to between-group differences.*” (World Bank 2005, 95).

3.4.6 Benefits and limitations

After having discussed the most common income inequality measures, their advantages and disadvantages, as well as, desirable properties of inequality metrics in general, this section is going to summarise the benefits and limitations of the before analysed income inequality measures in the following table.

Measure of income inequality	Benefits	Limitations
Variance	Easy to compute and to understand Strong principle of transfer Principle of population Decomposability	No income scale independence Depends on the mean level of income
Coefficient of Variation (CV)	Relatively easy to understand Easy to compute Principle of transfer Income scale independence Principle of population Decomposability	no upper bound lacking adequate comparisons and interpretations prone to being influenced by very high and very small income values
Ratios	Easy to compute and to understand Widely used	Ignores all but two observations Leaves out information about the middle of the income distribution Ignores information about the distribution <i>within</i> the richest and poorest ratios
Income Shares	Easy to compute and to understand Widely used Popular in recent studies Changes in the top of the income distribution might explain overall changes in income distribution	Ignores parts of the distribution of income Ignores information about the distribution <i>within</i> the highest/lowest incomes Top incomes underestimated
Gini Coefficient	Widely used Intuitive interpretation Graphical representation	Not decomposable Gini index is the same for different shapes of the Lorenz

	Principle of transfer Income scale independence Principle of population	curve
Robin Hood Index	Easy to understand Graphical representation Principle of transfer Income scale independence Principle of population	Not bounded, the number of components influences upper limit Does not consider all parts of the population
Theil's Index	Strong principle of transfer Income scale independence Principle of population Decomposability More sensitive to income distribution on the upper tail	Not intuitive No graphical representation Not easily computable
MLD	Strong principle of transfer Income scale independence Principle of population Decomposability More sensitive to income distribution on the lower tail	Not intuitive No graphical representation Not easily computable Less common than Theil index
Atkinson's Measure	Intuitive interpretation Principle of transfer Income scale independence Principle of population Decomposability Can be used as positive and normative measure	No graphical representation Not easily computable Can be extraordinarily sensitive to very small incomes

Table 5: Summary of benefits and limitations of discussed inequality measures.
Source: Author's design.

This summary demonstrates that each measure of income inequality has benefits and limitations. Some of these are practical, such as easy computation, intuitive interpretation and graphical representation. Other advantages and disadvantages come from an axiomatic approach, fulfilling the four principles found in the theoretical literature. However, before choosing the appropriate income inequality measures for the analytical framework in section 4, major recent comparative studies of within-country inequality will be reviewed, which helps to justify the selection of criteria for the theoretical framework on a practical basis, adding an empirical perspective to this theoretical one.

3.5 Major comparative studies

Apart from building this thesis' theoretical framework on theoretical academic work and selecting measures of income and income inequality based on their

benefits and limitations, this section seeks to review major empirical studies and will therewith support the criteria selected for the analytical framework. Since this thesis aims to compare two case studies, the focus of this section is on comparative studies. The review focuses on fairly recent studies, starting from approximately the beginning of the new millennium up until the present. Moreover, an emphasis is put on reviewing what inequality measures these comparative studies incorporate.

Morelli, Smeeding and Thompson (2015) investigate post-1970 trends in poverty and income inequality, until 2010/2011 in most countries and provide measures of the levels and trends in each of the areas. Moreover, they discuss empirical choices made in the measurement of overall income inequality, and inequality among those with top incomes. For their comprehensive analysis, they mainly use the Gini coefficient and several other measures that have been applied to a vast range of countries using data covering recent decades. As such, they include Lorenz curves, the Atkinson Index and percentile ratios, namely the 90/50 and 90/10 ratio. Apart from that, they incorporate quintile shares 80/20 and the Palma index in their analysis. In a further part of their study, they examine top incomes for 21 countries since 1970. More contributions covering most countries are provided by Alvaredo et al. (2018) entirely relying on top income shares for analysing income inequality. One of their major findings is that since 1980, the top 0.1% of the global adult population has captured as much growth as the bottom 50%. Also, since 1980, the income of the poorest half of the population thanks to high growth rates in Asia grew significantly. Likewise, a landmark on the global analysis of top incomes has been done by Atkinson and Piketty (2010) and Alvaredo et al. (2013), who examined income distribution in the top 1% of the income share from a historical perspective. Another landmark by Cornia and Kiiski (2001) analyses changes in within-country inequality over the last twenty years in 73 countries accounting for over four-fifths of world population and GDP. Using the ratio of income shares, top and bottom deciles and the Gini index, the study finds that over the chosen time frame inequality rose in two-thirds of these 73 countries.

Comparing earnings and income between a slightly smaller amount of countries, the OECD countries, Gottschalk and Smeeding (1997) mainly use percentile ratios, mostly comparing the 90/10 ratios across countries during the 1980s and 1990s. Further, using the Gini index, they investigated trends in income inequality over 10 to 25 years. Similarly, Smeeding and Grodner (2000) compare income inequality across OECD countries between 1984-1997, using the Gini index and 90/10 ratio as an inequality measure. Gottschalk and Smeeding (2000) review the evidence on cross-national comparisons of annual disposable income inequality in over 20 wealthy nations based on the comparison of survey-based household income data. Their findings encompass both the level of inequality during the early to mid-1990s and inequality trends since 1970. While most comparisons are made in terms of relative incomes within nations, they also make income comparisons using purchasing power parities. Gasparini et al. (2011) compare income inequality across Latin American countries between the early 1990s and the late 2000s using the Gini index, as well as the development of mean and median per capita household incomes for comparison across countries.

Research on comparing income inequality across Europe has been done by Fredriksen (2012) who compares disposable household income and its growth rates across the countries of the European Union. For that, the study uses the comparisons of percentile ratios, particularly the 90/10 ratio as well as 75/25 ratio from the mid-1990s to the year 2008. Also, national Gini coefficients based on OECD, Eurostat and LIS (Luxembourg Income Study) data across these countries are compared. Likewise, Dauderstädt and Keltek (2011) analyse and compare income inequality across the EU25 countries as well as India, China, the US and Russia in the years 2005-2008. For measuring income inequality, they use the 80/20 ratio in PPP. Apart from that, Atkinson and Piketty (2007) show the contrast in top income shares between continental Europe and English-speaking countries.

Considering smaller sets of countries in comparative income inequality studies, Fritzell (1993) compares income inequality in Sweden, Canada, UK, US and Germany, using the CV, Gini index and Theil's index. Atkinson (2003) analyses

nine OECD countries and compares estimated Gini coefficients across countries from mostly end of the 1940s until the end of 1990s, depending on when income data was first available for the respective country. He further compares the distribution of disposable income coming from different sources in each case study. Aaberge et al. (2002) study income inequality and income mobility across Denmark, Sweden, Norway and the US over approximately ten years. They use three measures of income, namely earnings (income from labour) market income (adding income from capital, own business, real estate and farm income) and disposable income (adding up the income of both spouses) in order to calculate Gini coefficients. Further research conducted by Grabka and Kuhn (2012) compares income inequality in Germany and Switzerland from 2000 to 2009 using inequality measures, such as the MLD and the Theil index, as well as the Gini coefficient and the decile ratio 90/10 for household income. Chi and Kwon (2012) compare income inequality in Taiwan and South Korea using the Gini index and 80/20 ratio as measures and find that income inequality in Taiwan is higher than in Korea. However, the Taiwanese tended to put more considerable effort into policies reducing income inequality than the Korean government.

Generally speaking, it is essential to note that despite the vast amount of literature on income inequality, there are relatively few comparative studies focusing on overall income inequality within countries. Numerous recent studies focus on searching factors contributing to income inequality or associating income inequality to adverse effects on society (cf. Table 22). Also, many scholars focus on analysing inequality within one country or analyse income inequality on a distinctive level of aggregation, such as international or global income inequality. However, this review has shown that the Gini index is an essential part of analysing and comparing income inequality. Further, the 90/10 ratio and top income shares have been proven to be used widely in the literature. The variable income is mostly measured on a household basis; however, this largely depends on the available data of the country cases. What is more, several studies use comparisons of growth rates of disposable household income across different parts of the population in order to give an understanding of the development of income inequality. Another result of this part of the literature review is that

comparing income inequality measures, issues of the comparability of data arise. The more countries are considered in comparison, the more sights have to be lowered. This data issue is going to be addressed in section 5 of this part. After having reviewed measures of income inequality and their related literature, the subsequent section is going to review the literature on policy actions aiming to reduce income inequality.

3.6 Policy analysis: tackling income inequality

In order to answer the second part of this thesis' research question, namely what policies do the respective governments adopt in order to reduce income inequality within their country, this section is going to review how to measure a state's commitment to tackling income inequality.

The most comprehensive work on the commitment to reducing income inequality has been conducted by the Development Finance International Group (DFI) and Oxfam, creating the first index to measure a government's commitment to reducing income inequality. This index of the Commitment to Reducing Inequality (CRI) consists of a new database of indicators, including 157 countries and measures government policies in three areas, namely social spending, labour rights and taxes (Lawson and Martin 2017, 2018). These three pillars are found to be essential for reducing the gap between the rich and poor (Martinez-Vazquez, Moreno-Dodson, and Vulovic 2012; Lustig 2015; OECD 2015).

Social spending on education, health and social protection has a significant impact on closing the gap between the rich and poor, as has been demonstrated by numerous studies. As such, a study by Lustig (2015) analysed 13 developing countries and the reduction of their overall inequality levels. It resulted that 69% of this decrease in inequality was due to more spending on public services. Social spending is progressive to a large extent because it helps to reduce current levels of inequality with redistributing social resources (Lawson and Martin 2018, 4). Also, according to a study by the United Nations, social spending, by redistributing child care, elder care and healthcare, helps to reduce the amount

of unpaid work at home, which is often done by women and therefore closing the gap in income between men and women (United Nations 2015c).

Furthermore, progressive taxation has been found to impact income inequality. In a progressive tax system, corporations and better-off individuals are taxed more, representing a government's principal tool to redistribute public services and show commitment to reducing income inequality. This role of the state has been clearly shown in OECD countries (OECD 2015) as well as developing countries (Lustig 2018). In its October 2017 Fiscal Monitor, the International Monetary Fund (IMF), too, emphasises the fiscal role of the state in closing the income gap (International Monetary Fund 2017). Lawson and Martin (2018) also advocate considering harmful tax practices, which undermine progressive taxes and assist tax dodging, in order to identify a nation's commitment to reducing inequality.

The third big pillar of analysing a country's actions to reduce income inequality is the labour market. There exists substantial evidence that labour rights, in particular for women, the formation of labour unions and higher wages for workers have a major impact on tackling inequality (Jaumotte and Osorio 2015a). Also, as women are more likely to face discrimination on the labour market than men (International Labour Office 2018), governments have the power to enforce laws promoting equal wages for equal work for both men and women, parental leave and protection against discrimination and violence. Such actions reflect a government's effort to reducing income inequality (Lawson and Martin 2018).

These findings are also supported by Atkinson (2015) whose fifteen proposals for reducing inequality include, amongst others, a legal framework for labour unions and minimum wages, progressive income tax rates, as well as extended social insurance. Also, other scholars agree to the discussed measures by emphasising the role of progressive taxation and the avoidance of tax evasion, access to education and well-paid jobs as well as government spending on education, healthcare and environmental protection (Alvaredo et al. 2018, 248–86).

This section has identified three variables playing a significant role in government's willingness to reducing income inequality, namely action on social spending, progressive taxation and labour market conditions. These three pillars can arguably serve as indicators for a government's general commitment to reducing income inequality. In the following, substantial studies on income inequality in the People's Republic of China and the Republic of Korea are going to be reviewed. Both research on measuring income inequality as well as on government policies and actions to tackle income inequality will be discussed, which will demonstrate how empirical studies have assessed government actions against income inequality in the respective nation.

3.7 Income inequality in China

Since the early 1990s, income inequality in the People's Republic of China has been under close examination both within the country as well as abroad. The most extensive amount of research on income inequality has been conducted on the gap between rural and urban regions in China. This section is going to review the first computations of inequality measures in China, as well as major publications on regional inequality, reviewing notable studies on rural-urban and coastal-inland income inequality utilising different data sets. Furthermore, Chinese income data will be reviewed, and studies on policies tackling income inequality in China are going to be outlined.

Based on Chinese survey data collected by the Chinese Academy of Sciences in 1986, Hussain et al. (1994) conducted the earliest inter-household inequality estimates for the PRC, computing Theil indices for urban and rural China. Both indices were suggested to be dominated by the intra-provincial component. Based on another dataset, namely the Chinese Household Income Project (CHIP), Khan et al. (1992) produced the first comprehensive Gini estimates for China. Next to these nation-wide estimates, scholars pursued to measure inter-household income inequality at the subnational level, for instance, Zhao (2001) and Li et al. (2011) on rural income inequality and Khan et al. (2001), Demurger et al. (2002), and Li et al. (2011) on urban income inequality. Chotikapanich et al. (2007) estimated regional as well as national Gini indices from 1978 to 2002 by

combining grouped data and survey data. Apart from that, Chen, Pu and Hou (2018) discuss shortcomings of existing Chinese Gini estimates and conducted new estimates of rural, urban and nationwide Gini coefficients from 1978-2010. One of the significant outcomes is that their estimates are slightly lower than Gini indices indicated by the Chinese National Bureau of Statistics (NBS) (cf. section 2.1). Furthermore, there exists a large number of studies that have estimated isolated Gini indices for occasional years (Chotikapanich, Rao, and Tang 2007; Sutherland and Yao 2011; Mukhopadhaya, Shantakumar, and Rao 2013). A comprehensive data source for Gini indices is provided by Frederik Solt's Standardised Income Inequality Database (Solt 2019).

Concerning rural-urban income inequality in China, Nolan (1979) pioneered the study of urban-rural gaps, based on average income and consumption data from four Chinese provinces in 1955 and 1956. Zhao (1993) examined urban-rural income gaps from 1978 to 1990 and found a reduction of income inequality in the early 1980s, followed by a rapid increase afterwards. In accordance to this, numerous other studies agree that income inequality within rural and urban areas has gone up during the Chinese transition period (Khan and Riskin 1998; Kanbur and Zhang 1999; Bjorn Gustafsson and Li 2001; Zhao 2001; Knight and Song 2003; Benjamin, Brandt, and Giles 2005). Additionally, Dong (2005), Gustafsson and Li (2002), and Sicular et al. (2007) investigate differences in economic growth rates in Chinese urban and rural areas. A recent study by Li, Wan and Zhuang (2014) estimated national, urban and rural income inequalities by using the Gini index and Theil index based on CHIP data. Decomposing national inequality into between and within-group inequalities, they find that rural inequality in China is higher than urban inequality unlike in most developing countries where the opposite is the case.

This wide gap between urban and rural areas has also played an increasingly important role in income inequality in China as a whole. Several scholars conducted academic research on overall income inequality in China and associated it to inequality within and between urban and rural areas. As such, Yang (1999), by analysing Gini ratios and generalised entropy measures in two

provinces for four years between 1986 and 1994, showed that urban-rural inequality was responsible for approximately 80% of the overall inequality. Moreover, Tao Yang and Zhou (1999) discovered that urban-rural inequality was initially declining due to the success of Chinese policy aiming to narrow the rural-urban division, such as boosts in procurement prices for agricultural products, the endorsement of household responsibility systems, liberalising local markets, as well as the relaxation of restrictions on labour mobility towards cities. However, the income gap increased again after the year 1985 as a result of the higher labour productivity in urban state-owned industries than in rural industries and the agricultural sector (Tao Yang and Zhou 1999). Additionally, a major study by Wu and Perloff (2005) analysed income distribution between the years 1985 and 2001 and agreed that the urban-rural gap played an increasingly essential role in order to magnify income inequality. Moreover, Sicular et al. (2007) find by decomposing Theil indices that the urban-rural income gap contributed 37%, 41% and 46% to national income inequality in 1988, 1995 and 2002 respectively.

Also, recent major studies identify differences between rural and urban areas to be the key driver of increasing income inequality in China and the most crucial determinant of the level of inequality (T. Lin et al. 2010; Xie and Zhou 2014). Following this, Li, Wan and Zhuang (2014) suggest as well that the rural-urban income gap is the major contributor to national inequality in recent years. Wan, Ye and Zhuang (2012) compute Gini and Theil indices for overall, urban and rural China between 1990 and 2008 as well as urban-rural income ratios for the period 1980-2009. Furthermore, their decomposition results show that although the coastal, central, and western regions experienced a rise in income inequality during 1990-2008, the level of income inequality within the coastal area overtook that of the western area in 2008. They also found that during 1990-2008, income inequality within the coastal region contributed the most to national income inequality, accounting for 44.7% of the overall income inequality in the year 2008 (Wan, Ye, and Zhuang 2012, 178–79). Next to this, also Kanbur and Zhang (1999) investigate differences between inland and coastal areas. One of their main findings is that while the contribution of rural-urban income inequality is much

more substantial than that of inland-coastal income inequality in terms of levels, trends are distinct. While the rural-urban contribution to inequality has not varied much over time, the inland-coastal contribution has grown by folds. A different study by Fan, Kanbur and Zhang (2011) showed that income inequality attributable to income differences between the coastal and inland areas increased from 3% to 10% of the overall province-level income inequality between the years 1980 and 2007 (Fan, Kanbur, and Zhang 2011).

Concerning income data, shortcomings of consistent and nation-wide data are a current issue in the PRC. As such, much research on income inequality in China focuses on a particular segment of the population for isolated years, such as urban households (Meng, Gregory, and Wang 2005) or rural households (Björn Gustafsson and Li 2002). Numerous significant studies, such as Griffin and Zhao (1993), Khan and Riskin (1998, 2005), Gustafsson and Li (1998), Zhao (2001), Fleisher et al. (2004), Sicular et al (2007), and Li et al. (2011) are based on data conducted by the Chinese Household Income Project (CHIP), which covered income and expenditure information in five waves of household in the years 1988, 1995, 2002, 2007 and 2013 surveys. Tsui (1991) made use of the Gini, Theil, and CV indices in order to estimate regional inequality from 1952 to 1985. Kanbur and Zhang (2005) updated regional inequality estimates using consumption data from 1953 to 2000 as well as aggregate income data. Another ground-breaking study by Ravallion and Chen (2007) combines various sources of data in order to calculate poverty and income inequality measures over the period 1980-2001, which represented one of the most extended and most internally consistent series of national poverty and inequality measures. Lin et al. (2010) examine income inequality using extrapolated unit-level data from grouped household income data covering 85% of the Chinese population. They compute Gini and Theil indices for rural and urban China as well as investigating regional and provincial income inequality between 1990 and 2005. Finally, they decompose overall income inequality and compare their new findings to these of Ravallion and Chen (2007) discovering that most estimates came close or were slightly lower than those by Ravallion and Chen. In the same way as Ravallion and Chen, Lin et al. made a great contribution by generating data for various later studies, such as

Wan, Ye, and Zhuang (2012), Wang, Wan, and Yang (2014) and Zhuang and Li (2016). Besides, Piketty et al. (2017) study income and wealth inequality in China and provide an extensive analysis by combining data from five different sources. Based on that, they provide new estimates on Chinese top income shares, as well as other percentiles and their income growth.

Besides the previously mentioned research, there is a considerable amount of examinations on policies tackling income inequality in China. As such, Cai and Yue (2017) discuss the redistributive role of government social security transfers and find that government social security transfers have the effect that the Gini index decreases after the transfers. In contrast, they also suggest that government social security transfers increase income inequality if there is a universal increase in Chinese government social security transfers for all recipients. Lin and Yun (2016) investigate the effects of a minimum wage on earning inequality by using city-level minimum wage panel data as well as a Chinese household survey. They find that raising the minimum wage reduces inequality by decreasing the earnings gap between the median and the bottom decile in China between 2004 and 2009. Besides, Fan, Kanbur and Zhang (2011) analyse three types of government actions against income inequality, namely infrastructure strategies, social investment and governance reform. They also propose that these policies happen on an experimental approach in China which means gaining experience from small scale policies before scaling up. Analysing policies in order to combat income inequality in China, another recent study by the IMF finds that especially fiscal policies, both in the taxes and expenditure side, have high potential to close the income gap in China (Jain-Chandra et al. 2018). In addition, Li, Wan and Zhuang (2014) review recent Chinese government policies, such as social protection, tax reforms and labour market policies that seek to tackle the issue of growing income inequality. Li and Sicular (2014) examine recent trends in inequality and poverty in China as well as the effects of distributional policies by the government, such as the individual income tax, minimum wage policies, moderating restrictions on rural-urban migration and the elimination of agricultural taxes and fees. They claim that not all measures by the Chinese government have been equally effective in tackling

inequality and poverty. However, policies relaxing restrictions on rural-urban migration have alleviated inequality since 2008. Zhuang and Li (2016) investigate whether the decline of income inequality in China after 2008 indicates that the PRC's income inequality has peaked following the Kuznets hypothesis (cf. section 3.2.1). Furthermore, they emphasise the role of government policies in order to reduce income inequality in China as well as claiming that the recent downward trend in income inequality since 2008 was caused by government actions (Zhuang and Li 2016).

The literature review on income inequality in China has shown that first, there is a vast amount of literature on the topic, suggesting an increased interest for both Chinese and foreign scholars. Second, the most substantial amount of income inequality in China seems to be caused by regional differences, be it rural-urban or inland-coastal differences. Third, policies adopted by the Chinese government appear to have decreased income inequality after 2008. Finally, the literature review demonstrated the absence of long-term, consistent and comprehensive data on income in China and showed that despite numerous notable studies, the picture of income inequality in China is still incomplete.

3.8 Income inequality in Korea

In contrast to China, there exists far less research on income inequality in the Republic of Korea. It is established that from the 1960s to the 1990s, Korea's economic growth was high and accompanied by relatively equal income distribution. The World Bank (2004) and the OECD (2011) praised Korea as one of the remarkable examples for the achievement of economic growth with equity and therefore contradicting Kuznets' inverted-U hypothesis (cf. section 3.2.1). As most studies on income inequality in Korea are conducted by Korean scholars and Korean institutions, such as the Korean Development Institute (KDI), it is essential to note that this literature review on income inequality in Korea examines research published in English only. However, notable studies in Korean nevertheless have also been published in English.

Accounting for gaps in early Korean household survey data, Ahn (1997) was one of the first scholars who estimated an overall Gini index and showed that Korea's income inequality increased in the mid-1970s and again in the late 1980s. Alternative estimates for Gini coefficients are provided by Choo (1993) whose estimations claim that the Korean income distribution widened between the years 1965 and 1976, however, the gap was subsequently shrinking up until the 1990s. According to the estimates by Ahn (1997), a similar pattern of deterioration in the years prior to 1976 occurred. However, he reports that the subsequent narrowing of the income distribution ended in 1982 and that the estimated Gini index remained almost constant in the 1980s. A major contribution by Kwack and Lee (2007) reports a reduction in income inequality during the early 1990s, however, a modest increase during the period 1998-2005. Moreover, Kwack and Lee (2007) claim that income gaps between the top 10 per cent and the bottom 10% decile have been widening during the investigated time.

In their comprehensive assessment of income inequality in Korea, An and Bosworth (2013) compute empirical measures and document the change in income distribution in Korea over the past two decades. Their findings suggest a notable reduction in income equality up until the mid-1990s and a significant increase since the outbreak of the Asian financial crisis in 1998 and its continuation gave the subsequent economic recovery. Further, they present information on trends at the bottom of the income distribution by analysing measures of poverty and income inequality, such as the Gini index and income ratios. What is more, An and Bosworth (2013) assess the role of the public sector in Korea, investigating the effects of social welfare and tax systems on income inequality.

Shin and Kong (2014) examine the causes of the increasing family income inequality in Korea, identifying globalisation, population change, and family system change as important reasons for growing inequality. Another study by the OECD (2011) agrees in the point that income inequality and poverty are highest among the older generation as well as Lee, Kim and Cin (2013) who identify the rising age of the population being a significant driver of income disparities in

Korea. Further, Hong and Kim (2012) investigate income inequality among elderlies in Korea. Mah (2012) argues that the significant expansion of Foreign Direct Investment (FDI) inflows and a decrease in labour unionisation ratio have affected income inequality during 1982-2008. Another comprehensive study by Heshmati and Rudolf (2014) uses data from the Korean Labour and Income Panel Study (KLIPS) from the years 1999, 2001, 2005, and 2008. They explore determinants of household income and consumption levels and inequalities. The outcomes, specifying income inequality and poverty by subgroup, show that the most vulnerable groups in Korea are elderlies, women, divorced, widowed and those with health problems. Also, disposable income is found to be substantial whereas consumption inequality is less substantial in South Korea. These findings are supported by Sato and Fukushige (2009) who analyse both trends in income inequality and consumption inequality between 1975 and 1995 and found that income inequality increased in both the short and the long run. However, consumption inequality, as well as Kuznets' inverted-U hypothesis, are not significant.

Concerning regional income inequality in Korea, Kim, Hong and Ha (2003) have shown a trend of convergence in Gini coefficients of regional per capita income after 1986. Kim and Joeng (2003) find that half of their calculated income inequality can be attributed to income inequality between Seoul Metropolitan Area and the rest of the country, and two-thirds of inequality within the different regions were linked to the level of income disparities between sub-regions of the Seoul Metropolitan Area. Other scholars (H.-H. Lee, Lee, and Park 2014) confirm this evidence.

Notably, among research on income inequality in Korea, it appears to be common practice to investigate income by income sources (cf. section 3.3.2) for instance by decomposing Gini coefficients. As such, Kwack and Lee (2007) find that income inequality variations in Korea are found to be caused mostly from variations in wage inequality. Also, when analysing regional income inequality in Korea, Kim and Joeng (2003) decompose income into wages and salaries, business income

asset income and subsidies. Jung (2015) analyses wage inequality only, whereas Fields and Yoo (2000) assess labour inequality.

In order to study Korean government policies to reduce income inequality, Hyun and Lim (2005), and Sung and Park (2011) investigate the role of income tax policy for reducing income inequality in Korea. Hyun and Lim (2005) find that Korea's income tax system can have a more redistributive effect by increasing the level of horizontal equity, leading to the equal tax treatment of equal income groups. Yun (2009) argues that labour market policies affect income inequality and Mah (2012) finds that decreasing labour unionisation ratio has led to deterioration in income inequality. A study by Shin and Kong (2015) examines the influence of women's income on family income inequality in Korea. Hwang (2016) analyses the effects of public spending on pensions for reducing income inequality between 1998 and 2010.

Overall, it appears that income inequality in Korea is more determined by demographic factors such as age, gender (Fields and Yoo 2000; K.-Y. Shin and Kong 2015) or education (An and Bosworth 2013, 44–47) or by income source than by regional factors. This observation is being in sharp contrast to income inequality in China, which is determined mainly by rural-urban and coastal-inland discrepancies in incomes. Moreover, the literature review has shown that there is less research being conducted on income inequality in Korea than in China, especially interest from non-Korean scholars seems to be negligible, as Korean scholars largely dominate research in the field. Income inequality is being explored considerably less than in China, which is most likely due to it being less prevalent in Korea. Furthermore, most studies on income inequality in Korea focus less on measuring income inequality but tend to focus relatively more on the determinants of income inequality and analysing policies. Finally, concerning data on income, the picture in Korea and China are similarly incomplete. The subsequent section is going to develop an analytical framework based on this section's literature review.

4. Theoretical framework

This thesis' theoretical framework aims to provide an analytical tool in order to analyse income inequality within countries. The framework further intends to view income inequality from different angles, using a variety of measures to acquire a broad picture of the situation within a country. This section is first going to develop this analytical framework based on the literature review in the previous section. Subsequently, a summary and a table of the elaborated framework will be provided.

After reviewing the broad body of literature on income inequality, its dimensions, measurement and government actions in order to reduce it, this section is going to develop a theoretical framework for analysing income inequality. This thesis' literature review has shown that it is essential to consider a range of statistical and inequality measures in order to describe the distribution of income within a country accurately. Also, specific practical and axiomatic properties need to be met to assure the quality of the inequality measure (cf. Table 5).

When it comes to choosing a set of inequality measures, Cowell (2011, 67–73) suggests to first select families of income inequality measures and subsequently select a particular member of the family. He further claims that if one wants to achieve dealing with any and every possible kind of income distribution, it is best to choose a measure that satisfies a property such as the weak principle of transfers. Additionally, it is useful to consider measures that incorporates an inequality-aversion parameter, such as the Atkinson index, or a concept of distance between income shares, such as the generalised entropy measures (Cowell 2011, 72–73). In order to keep the following theoretical framework straightforward only the most suitable income inequality measures should be chosen, keeping in mind an appropriate selection for getting insights in all dimensions of a country's income distribution.

After defining income and the income receiving unit and discussing their benefits and limitations (cf. section 3.3.2 and 3.3.3), the variable *household incomes* will be chosen since it is the most commonly used in the literature, most surveys are

conducted on this basis and it is regarded as an appropriate income measure (cf. section 3.5, 3.7 and 3.8). As discussed in the literature review, considering income on an annual basis instead of a lifetime basis has certain advantages. Thus, the first indicator in the theoretical framework is *mean annual disposable household income*. To first obtain an impression on a country's general wellbeing and income standards, this variable will form a criterion of the analytical framework, before looking at its distribution across the population. Total household income usually gets attributed to the members living in the household. For this analysis, the income receiving unit *per capita* will be primarily considered. In other words, household income is divided by the household size, assuming equal sharing (cf. section 3.3.3). First, this data is the most straight forward to interpret, and second, there bias due to distinctive equivalising concepts across data is avoided (cf. section 3.3.3.1). However, if data on the per capita income scale is not available, such as in the case of Korea, a different equivalence scale will be indicated in this analysis as well. This exception allows a more complete analysis, even though comparability comes with limitations (cf. section 3.3.3.1).

After a general overview of a country's income, the two main measures of poverty, namely the *poverty rate* and the *poverty gap* offer insights into the country's state of poverty, which is closely connected to analysing income inequality (cf. section 3.3.1.5). Then, in order to analyse the case study's distribution of income, incorporating inequality measures that are easily interpretable and give an impression of the nature of the distribution of income. Based on the literature review, the *income ratios of 90/10, 80/20 and 90/50* (percentile and decile/quintile ratios) form part of the framework since they are used widely, easy to compute and to understand. For the same reasons, this framework will incorporate *top income shares* as statistical measures for income inequality. The *Gini index* is chosen because it is the most commonly used inequality measure and brings about other advantages such as an intuitive interpretation and fulfilling the principle of transfer, income scale independence and the principle of population. As this thesis does not analyse sub-group income inequality, such as urban-rural income inequality and income inequality between provinces, states, counties or other administrative units, an inequality metric such as the Theil

index or MLD is not being chosen for the analytical framework, despite providing an essential tool for an in depth-analysis of income inequality. Another reason for not incorporating the Theil index into this analysis is the very limited availability of data on this index for the chosen case studies. Neither the World Bank, the OECD, nor the LIS data set provides data on the Theil index for China and Korea. The OECD provides Theil indices for some of their member states in a publication (OECD 2015); however, not for Korea. While the IMF (Jain-Chandra et al. 2018) use the Theil index to subdivide income inequality in China into within and between group inequality, no such analysis has been found to exist for Korea for the chosen timeframe. Following the literature review in section 3.8, which has shown that lesser studies on income inequality within Korea exist, there is also a gap in its decomposition with Theil indices or MLD. For this reason, none of these measures are going to be used. Properties and benefits adding to the ones discussed here have been outlined in section 3.4.6 in Table 5.

As a result of the literature review, some income inequality measures will not form part of the framework. The *Atkinson index* will not be included since it is frequently used in a normative way (cf. section 3.4.4.3). Also, the framework refrains from the *variance* and *CV* due to not fulfilling the four properties and not being commonly used in empirical studies (cf. section 3.4.6). The *Robin Hood index* will not be included because it is not as common as the other measures chosen and it further only considers certain parts of the distribution of income, which is already represented by ratios and income shares (cf. section 3.4.6). In the following, Table 6, summarises all quantitative criteria included in the theoretical framework and outlines their origin, function and pros and cons. In accordance with Cowell's (2011) suggestion to incorporate inequality measures of every family of metrics, this analytical framework includes ratios, top income shares, as well as the Gini index.

Criterion	Origin	Function	Pros	Cons
Mean annual disposable household income	Household income has advantages over other variables of income (cf. section 3.3.2 and 3.4.6)	Show general wellbeing and general income standard	Gives a quick general impression, easy to compute, easy to understand and to compare	Very one-dimensional, does not reveal anything about the distribution of income
HCR Poverty gap	Most common and functional measures of poverty (cf. section 3.3.1.5)	Reveal country's absolute poverty and get broader picture	Widely available, easy to compute, easy to understand	HCR: no information on degree of poverty; however, poverty gap shows distance to poverty line. Measure unit differs across countries, comparison more difficult
90/10 Ratio 80/20 Ratio 90/50 Ratio	Origins from several theoretical (cf. section 3.4.3.3) and empirical studies (cf. section 3.5)	Reveal discrepancy between the top and the bottom of a society	Easy to compute and to understand Widely used	Ignores all but two observations Leaves out information about the middle of the income distribution Ignores information about the distribution <i>within</i> the richest and poorest ratios
Top income shares Top 10%, 1%, 0.1%, 0.01%	Has become an increased trend in recent literature (cf. section 3.2.2 and 3.5)	Especially functional for displaying the existence and role of top income earners	Easy to compute and to understand Widely used Popular in recent studies Changes in the top of the income distribution might explain overall changes in income distribution	Ignores parts of the distribution of income Ignores information about the distribution <i>within</i> the highest/lowest incomes Top incomes underestimated

Gini index	Gini (1912), afterwards widely used in the literature (cf. section 3.5)	Easy measure to show overall income inequality in a country	Widely used Intuitive interpretation Graphical representation Principle of transfer Income scale independence Principle of population	Not decomposable Gini index is the same for different shapes of the Lorenz curve
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Table 6: Presentation of inequality measures forming the analytical framework.
Source: Author's design.

In order to analyse the government's commitment to reducing income inequality the three variables as discussed in section 3.6, public social spending via government budgets, taxes and labour market conditions form general criteria for the empirical analysis. Based on the literature review, the first variable, social spending, will be distinguished into *spending on education*, *spending on health* as % of total spending as well as *social protection* spending, which reflect the government's own commitment more adequately than social spending as % of GDP or per capita spending since these instead favour wealthier countries with higher capacities to spend. For instance, they might have higher budget revenue due to greater GDP (cf. Mariotti 2018).

According to the OECD, social protection expenditure involves cash benefits, direct in-kind provision of goods and services, as well as tax breaks with social aims. These benefits can be targeted at low-income households, the elderly, sick, unemployed, disabled, or young people. In order to be regarded as *social*, policies have to comprise a redistribution of resources across households or mandatory participation. To be classified as public social benefits, the general government either central, state, or the local government, including social security funds, command on the respective financial means. Social benefits not provided by general government are considered private. Indicators are measured as a percentage of GDP per capita by the OECD (OECD 2019d).

Regarding the second variable, tax policy, the progressivity of the tax system, by considering *tax rates* and *thresholds for different income brackets of the personal*

income tax (PIT) will be analysed. Also, *corporate*, the *value added taxes (VAT)* as well as *wealth, inheritance and gift taxes* will form specific analytical criteria. A lower VAT rate disproportionately benefits low-income households as they spend a larger share of their income on consumption. Moreover, wealth, inheritance and gift taxes have a redistributive effect, generating tax revenue from high-income earners. Besides, *harmful tax practices* are taken into consideration since this is a substantial measure of the government's commitment in the sense of undermining a tax system's capacity to generate and maintain their tax revenue (Mariotti 2018, 10).

The third variable, labour market policy, encompasses *labour unions, minimum wage* and *women's rights* on the labour market. The criterion labour unions can be further described as the government's efforts to protect workers in law and practice. Women's rights include laws on equal pay for equal work, laws against gender discrimination and violence as well as parental leave. Frequently, differences in market inequality explain income inequality to a great extent, which emphasises the importance of considering government action in this aspect. Particularly by establishing and protecting rights on the labour market as well as wages of workers at the bottom of the income spectrum, governments can intervene in market inequality. Also, there is strong evidence that labour unionisation of the workforce impacts the level of income inequality through increased bargaining power regarding wages (Mariotti 2018, 13; Jaumotte and Osorio 2015b). Likewise, minimum wages have been found to reduce income inequality and thus mirror governmental policy actions to reduce income inequality (Mariotti 2018, 16).

All of the here introduced criteria are based on the criteria chosen by Lawson and Martin (2018) for measuring the Commitment to Reducing Inequality Index (CRI) as explained in section 3.6. For this thesis, both, the incidence of spending on inequality as well as the incidence of tax on inequality will not be part of the framework as it is challenging to measure and goes beyond the scope of this thesis. Moreover, tax collection (tax productivity and tax effort compared with potential), as well as women's rights in practice, will not be considered due to

being used less in the literature as well as being too ample for this analysis. The following table, Table 7, summarises all in this thesis used analytical criteria, their measures and which question they are expected to answer.

Question	Variable	Measures	Indicators/Criteria
What is income and who receives it?	Income Income-receiving unit	Annual disposable income Households	Mean annual disposable household income
How is the distribution of income?	Poverty	Poverty indicators	Absolute poverty line/rate/HCR Poverty gap Relative national poverty lines
How is income inequality?	Income inequality	Statistical indicators Distributional measures	90/10 Ratio 80/20 Ratio 90/50 Ratio Top income shares, 10%, 1%, 0.1%, 0.01% Gini index
What is the government's commitment to reducing income inequality?	Policies adopted (based on CRI)	Social spending Tax policy Labour market conditions	Education spending Health spending Social protection spd. Progressivity (thresholds, corporate income tax rate, VAT rate, exemptions), harmful practices Labour union rights Minimum wage Women's rights on the labour market

Table 7: Summary of theoretical framework with indicators and measures.
Source: Author's design.

As the literature emphasises, it is essential to look at income inequality not only at one point of time but within a time frame. After having reviewed several

recent comparative studies on income inequality (cf. section 3.5), it has become apparent that most studies use a time frame of about 10 to 20 years. Thus, the timeframe selected for this thesis is going to encompass the years 2000-2017, as far as data reaches into the present, which allows analysing recent trends in income inequality. Considering 17 years also helps to avoid temporal biases in the income distribution, such as business cycles. For analysing government actions to reduce income inequality, only very recent current policies from the years 2018-2019 and possible changes in policies during this time will be assessed, as the aim is to demonstrate what the government is doing at the present day. Moreover, a longer period of policymaking would go beyond the scope of this thesis.

5. Income data and its limitations

After having discussed the theoretical groundwork of income inequality, this section is going to outline several limitations of income data in general as well as in China and Korea before proceeding to the empirical case studies. While comprehensible inequality measures are a necessary tool, what ultimately matters are trusted and reliable data sources. In the course of discussing benefits and limitations of income as a proxy for welfare in section 3.3.2 and of selected inequality measures in section 3.4.6, this section is going to review the limitations of income data generated through surveys, which will form the primary source of income data considered in this thesis.

One of the first and most comprehensive datasets of approximately 2,600 observations of Gini coefficients and quintiles shares for 135 countries has been conducted by Deininger and Squire (1996). Besides, they discuss methodological issues of secondary income databases. Further, Atkinson and Brandolini (2001) review Deininger and Squire's dataset as well as other secondary datasets on income inequality, illustrating their pitfalls, considering methodological issues as well as discussing implications for cross-country comparisons. Both Deininger and Squire and Atkinson and Brandolini suggest caution in the use and interpretation of income inequality data subjecting it to scrutiny.

To date, several world inequality databases exist. For instance, the World Bank's PovcalNet offers a large amount of data on poverty as well as inequality indices. Apart from this, the Luxembourg Income Study (LIS) is the most comprehensive available income database of harmonised microdata collected from approximately 50 countries containing household and person-level data (Luxembourg Income Study 2018). In addition, there exists the socio-economic database for Latin America and the Caribbean (SEDLAC) as well as the OECD (2019c) Income Distribution Database (IDD). Moreover, several datasets combine some of the previously mentioned databases in order to increase their coverage. One of the major ones is the World Panel income distribution (LM-WPID), which contains a balanced and unbalanced panel of country-decile groups covering twenty years between 1988-2008. The database allows comparisons of average incomes by decile both across time and across countries (Lakner and Milanovic 2013). Apart from that, UNU-WIDER has conducted the World Income Inequality Database (WIID), consisting of primary databases and individual research initiatives (UNU-WIDER 2018b). Also, Solt (2009, 2016) created the Standardised World Income Inequality Database (SWIID) by expanding and adjusting previous data sets, maximising comparability for the broadest possible coverage of countries and years (cf. Jenkins 2015). As Solt (2016, 14) states, the SWIID is ideal for broadly cross-national work, however, is not the best choice for all research on income inequality, as higher comparability can often limit one's scope of inquiry. Despite providing smaller coverage, the Luxembourg Income Study (LIS) offers superior quality, better comparability, and higher flexibility than the SWIID. Lastly, the WID.world (World Inequality Database) provides data on top incomes as well as income and wealth data for the entire distribution (WID.world 2019). However, these sources also almost entirely rely on household surveys, and it is crucial to note that they come with certain limitations.

As face-to-face interviews compile household surveys, they usually rely exclusively on self-reported information, which can be misinterpreted or wrongly reported. However, an advantage of surveys is that with these interviews more information about the amount of income can be assessed, such as socio-economic factors, which allows deeper insights and a broader picture of the situation.

Another obvious limitation with all surveys is their limited sample size. Considering the small number of affluent households or individuals, the chance of them being part of a survey is very low. Some surveys thus oversample the rich by selecting more individuals from the upper spectrum of the income distribution. However, still, it is challenging to obtain reliable information from the rich as they also tend to have high non-response rates.

What is more, some surveys correct for extreme values due to reporting errors. For all these reasons, surveys are said to severely underestimate income and wealth levels at the top of the income spectrum, which is mainly where the most extensive changes are said to have taken place in the past years. Overall, surveys tend to underreport income inequality (Alvaredo et al. 2018, 28–34). As such, numerous scholars call for combining surveys with administrative tax and national account data, providing a complete picture of income and wealth among the wealthy. For instance, the WID.world database does so by creating Distributional National Accounts (DINA)⁴ and therefore, for instance, finds that according to official survey data, the top 1% of Chinese earners possess 6.5% of national income in the year 2015, whereas correcting this survey data with tax data, the captured income by the top 1% goes up from 6.5% to 11.5% of national income (Alvaredo et al. 2018, 27). As a result, comparisons across countries might be unreliable if not adjusted for the top by incorporating fiscal and national account data. However, similar to surveys, administrative tax data are not free from measurement issues since they also tend to underestimate top incomes due to tax evasion. Hence, income inequality measurements need to be viewed mostly as lower-bound estimates (Alvaredo et al. 2018).

Furthermore, given that surveys are not held regularly, tax and national account data have the advantage of being available every year and cover long periods, partly reaching back into the 19th century in some countries. In contrast, a limitation of tax data is that not everybody pays taxes, thus only providing information for another subset of the population. Another disadvantage, especially when looking at long periods, is changing concepts of taxation over

⁴ (Alvaredo et al. 2016)

time and across nations, typically depending on if income components are subject to tax. Taking national income as measured in national accounts into consideration, it is always higher than shown by tax data. This issue arises due to tax-exempt income flows, for instance, imputed rents (cf. section 3.3.2) or undistributed profits by corporations that have not been allocated to individuals. For example, Alvaredo et al. find that once accounting for this, China's top 1% income share increases from 11.5% to 14% in 2015 (Alvaredo et al. 2018, 28–34). Overall, it is crucial to note that income data becomes most reliable when computed from various combined data sources.

Further, this section has introduced the most comprehensive income databases, which form the foundation of almost all previously discussed major empirical studies on income inequality. Data sets that contain both income data for the People's Republic of China as well as for the Republic of Korea are the LIS database, SWIID, WIID and WID.world. Further, the OECD IDD database provides data for Korea, however, not for China. The respective statistics bureaus of China and Korea are the National Bureau of Statistics (NBS) and Statistics Korea (KOSTAT), which provide national data on incomes and poverty.

Naturally, all income inequality data regardless of the quality of the source comes with limitations. In general, it is unrealistic to expect exact precision from most sets of data. However, that does not mean that an analysis of income inequality is insignificant (NSD Macro Data Guide 2019). The data aims for this thesis are thus to scrutinise the data used as well as their sources. Data is to be selected carefully and background information will be provided. Moreover, several data sources are being incorporated into this thesis, in order to gain insights into the range of variation of income inequality, as it is especially the case with Gini indices. As far as possible, the same data sources are used for cross-country comparisons of indicators as well as equal dimensions and definitions of income in order to assure comparability. Discrepancies are being pointed out as well discussed. Summarising, it can be said that inequality measures have crucial limitations and cannot be trusted without scrutinising the

data behind them, not only but mainly, when comparing several case studies. Part III of this thesis analyses income inequality in China and Korea.

III. EMPIRICAL PART

1. Introduction

The empirical part of this thesis is going to analyse income inequality measures as well as government actions in order to tackle income inequality in two case studies, namely China (section 2) and Korea (section 3). While income inequality measures are discussed within a timeframe from 2000-2017, policy actions are being analysed mainly in 2018, in order to provide insights into the current situation. All data on income inequality measures utilised in this thesis has been withdrawn as raw data from various databases as outlined in Table 8. Furthermore, the table summarises sources and surveys to the best of the author's knowledge and based on the information provided by the respective databases. One aim of this thesis is to provide a comprehensive dataset for China and Korea on income and income inequality indicators, according to the framework of this thesis. The WIID 4 version is the largest and most comprehensive data source and collects data on income inequality for a broad range of countries, including China and Korea. The latest version of this data set was published in December 2018. The previously mentioned SWIID data bank was updated as of February 2019 (Solt 2019). Some data sets will be expanded by the newest available data not yet included these data banks. Attention has to be paid to different definitions of income between different surveys as well as countries. As such, this thesis aims to consider data from the same data sources for comparisons across countries. The limitations of data have been discussed in section 5(II).

DATA SOURCE	CASE STUDY	VARIABLES USED	DEFINITION	DETAILS	SURVEY	SURVEY SIZE	YEARS USED
ADB	KOR	Gini	Household income	Per capita disposable income	ADB 2007 (WIID)	na	2004
LIS	CHN	Mean income, Relative poverty rates, Gini, Deciles, Income ratios	Household income	Disposable income equivalised & per capita	CHIP	Households 17890 (2013) 17124 (2002)	2002, 2013
	KOR	Mean income, Relative poverty rates, Gini, Deciles, Income ratios	Household income	Disposable income equivalised & per capita	Household Income and Expenditure Survey (HIES) and Farm Household Income and Expenditure Survey (FHES)	Households: 13075 (2012) 13317 (2010) 13655 (2008) 15532 (2006) (METIS 2019)	2006, 2008, 2010, 2012
WORLD BANK (World Bank 2018)	CHN	HCR, Poverty gap	1.9\$ a day 5.5\$ a day	2011 international prices	Development Research Group, Povcal Net	Estimates	1999-2015
	KOR	HCR, Poverty gap	5.5\$ a day	2011 international prices	Development Research Group, Povcal Net, LIS	Estimates	2006-2012
		Deciles	Household income	Per capita disposable income	LIS	cf. LIS	2006, 2008, 2010, 2012
		Gini	Household income	Per capita disposable income	LIS	cf. LIS	2006, 2008, 2010, 2012
OECD	KOR	Mean income, Gini Percentile ratios: OECD (2019c)	Household income	Disposable income, equivalised	OECD Database on Household Income Distribution and Poverty	na	2006-2015
WID. WORLD	CHN	Top income shares, Bottom 50%	Household income	Pre-tax income	Estimates combine surveys (Rural/Urban Household Surveys) and adapt it using income tax data on high-income taxpayers	Piketty, Yang and Zucman (2017)	2000-2015
	KOR	Top income shares	Household income	Pre-tax income	Estimates from tax data (National Tax Service) and national account data (Bank of Korea)	Kim (2018)	2000-2016
NBS	CHN	Mean income, Gini, Quintiles	Household income	Per capita, disposable income	Integrated Urban and Rural Household Survey (National Bureau of Statistics 2019)	more than 2 million households	2013-2017

KOSTAT / KOSIS	KOR	Mean income, Relative poverty rate, Gini, Quintiles, Deciles	Household income	Disposable	SFLC (KOSTAT 2019b)	20,000 households (2017)	2011-2017
		Gini	Household income	Disposable per adult equivalised	Household Income and Expenditure Survey (KOSTAT 2019a)	4,300	2006-2016
RESEARCH STUDIES	CHN	Gini	Household income	Per capita household income	Ravallion & Chen (2007), Rural/Urban Household Surveys	Urban: 35 235 households, Rural: 67000 households	2000, 2001
			Household income	Per capita net household income	Chotikapanich et al. (2007), Rural/Urban Household Surveys	Urban: 35 235 households, Rural: 67000 households	2000, 2003
			Household income	Disposable	Chen, Pu and Hou (2018)	Estimates	2000-2010
		Quintiles	Household income	Per capita net household income	Li (2005), Sample Survey by the Economics Institute of the Chinese	na	2002
PKU	CHN	Gini	Family income	Per capita net family income	China Family Panel Study (Institute of Social Science Survey 2015)	16,000 households	2010, 2012

Table 8 Summary of data sources for income inequality measures.

Note: All variables are accounted on an annual and nationwide basis. NA= not available, no further information found by the author.

Source: Author's design

Out of the data indicated in Table 8, the following raw data on income inequality measures have been withdrawn from the WIID 4 Version database as of December 2018: ADB, LIS (mean income, quintile and decile shares and ratios), OECD (mean income, Gini), World Bank (decile shares, Gini), NBS (except data for 2017 and before 2006), Ravallion and Chen (2007), Chotikapanich et al. (2007), Li (2005), and PKU. The other outlined data has been taken from the respective data sources indicated in Table 8. All data presented in this thesis are summarised in Table 25-48 in Appendix C.

2. China

2.1 Income inequality

This section is going to analyse income inequality in China according to the theoretical framework provided in Part II between the years 2000-2017. As several data sources within the timeframe exist, this thesis is going to provide data from different data banks in order to provide complete and valid results. Another reason for the variety of data presented in this section is to implement a solid basis for a comparison of the two chosen case studies.

Regarding mean annual disposable household income in China, Figure 2 shows that mean income in China has grown largely and steadily. Whereas annual disposable mean per capita income amounted to approximately 5,000 Chinese Yuan in 2002, the amount of income more than five-folded until the year 2017, when Chinese mean income was equal to about 26,000 Chinese Yuan. In the case of China, there is no comparable data in the WIID found for this variable between 2002 and 2013, which represent the two waves of the Luxembourg Income Study (LIS). For more recent years, the Chinese National Statistics Bureau (NBS) provides data for the years 2013-2017. Overall, it can be said that Chinese households experienced tremendous increases in their mean per capita incomes since the start of the millennium.

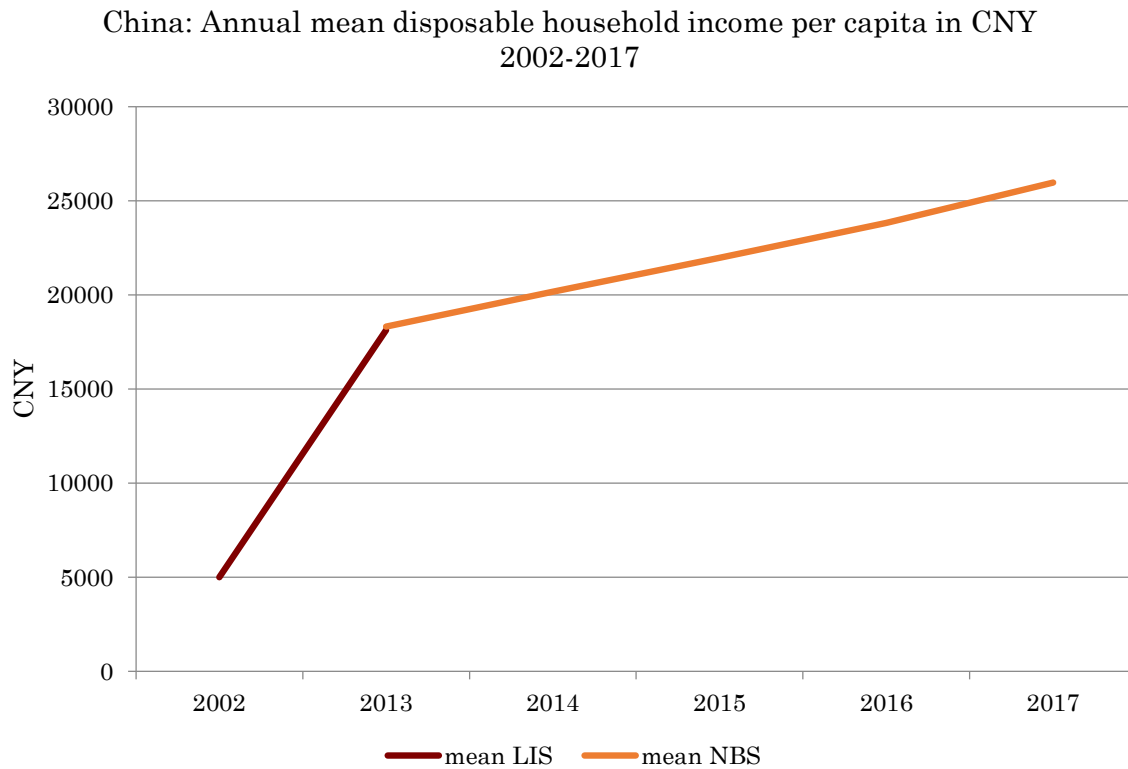


Figure 2: China: Annual mean disposable household income per capita in CNY 2002-2017.

Source: WIID (2018), NBS (2018). Author's design.

The World Bank provides a comprehensive data set for further chosen criteria, namely, absolute poverty measures, such as the headcount ratio and poverty gap. Figure 3 demonstrates that absolute poverty decreased vastly since the start of the new millennium. In 1999, 89% and 40.5% of the Chinese population were situated under the 5.5\$ and 1.9\$ a day (2011 international prices) poverty line, respectively. Until 2015, the headcount ratio fell to 27.2% and 0.2% for each poverty line. Furthermore, the poverty gap declined steadily and fell from 51.6% or 13.2% in 1999 to 7.8% or 0.7%, respectively. In other words, the gap for those under the poverty line surpassing the poverty line shrank dramatically. It can be said, that absolute poverty has almost been eradicated since the start of the millennium.

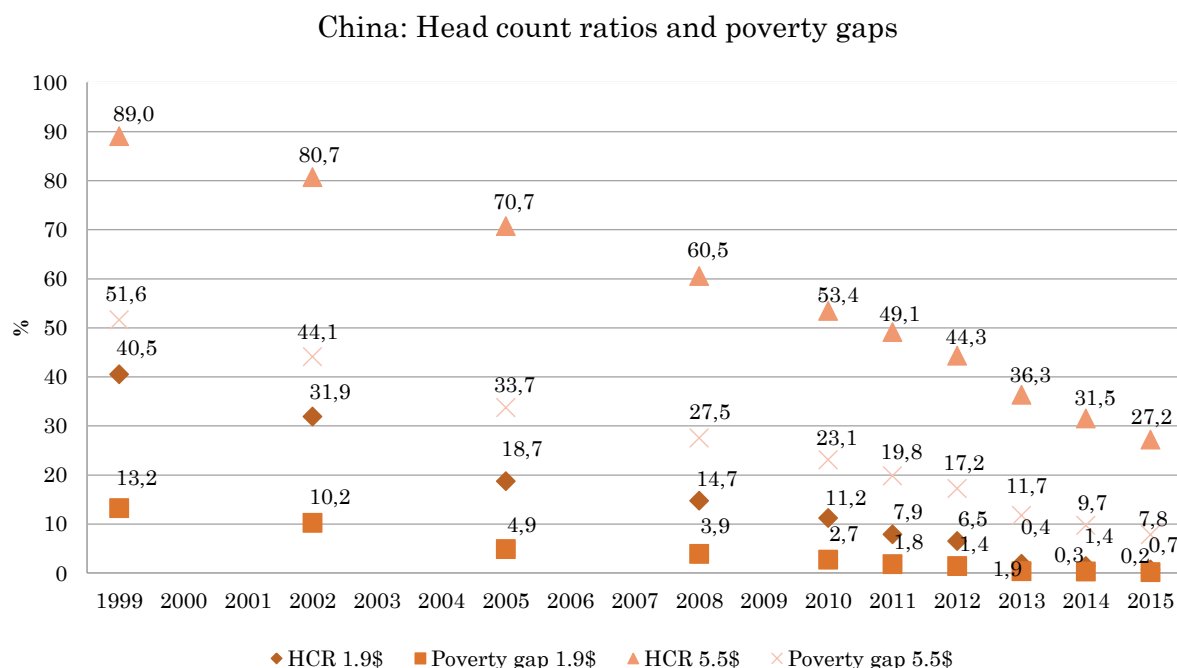


Figure 3: China: Absolute poverty measures, headcount ratio and poverty gap at 2011 international prices, 1999-2015. 2011 international prices.
Source: World Bank (2018). Author's design.

Moreover, the LIS project assessed relative poverty rates in China for 40%, 50% and 60% of median equivalised income, respectively (Figure 4). In contrast to Chinese absolute poverty rates according to World Bank standards, relative poverty rates in China show a slight increase from the year 2002 to 2013. While in 2002, 25.4%, 17.9% and 10.8% of the Chinese population fell under the respective poverty line of 40%, 50% or 60% of median equivalised income, in 2013, these poverty rates amounted to 26.9%, 19.9% and 13.7%, respectively. In other words, about 27% of the Chinese population earn less than 60% of the median Chinese equivalised household income. Likewise, approximately 20% of Chinese earn less than 50% of their fellow nationals' incomes. Being situated even further off the median, about 14% of Chinese earn less than 40% of the median income in 2013. Overall, it can be said that relative income poverty and income inequality according to the discussed relative poverty rates have increased during the observed time.

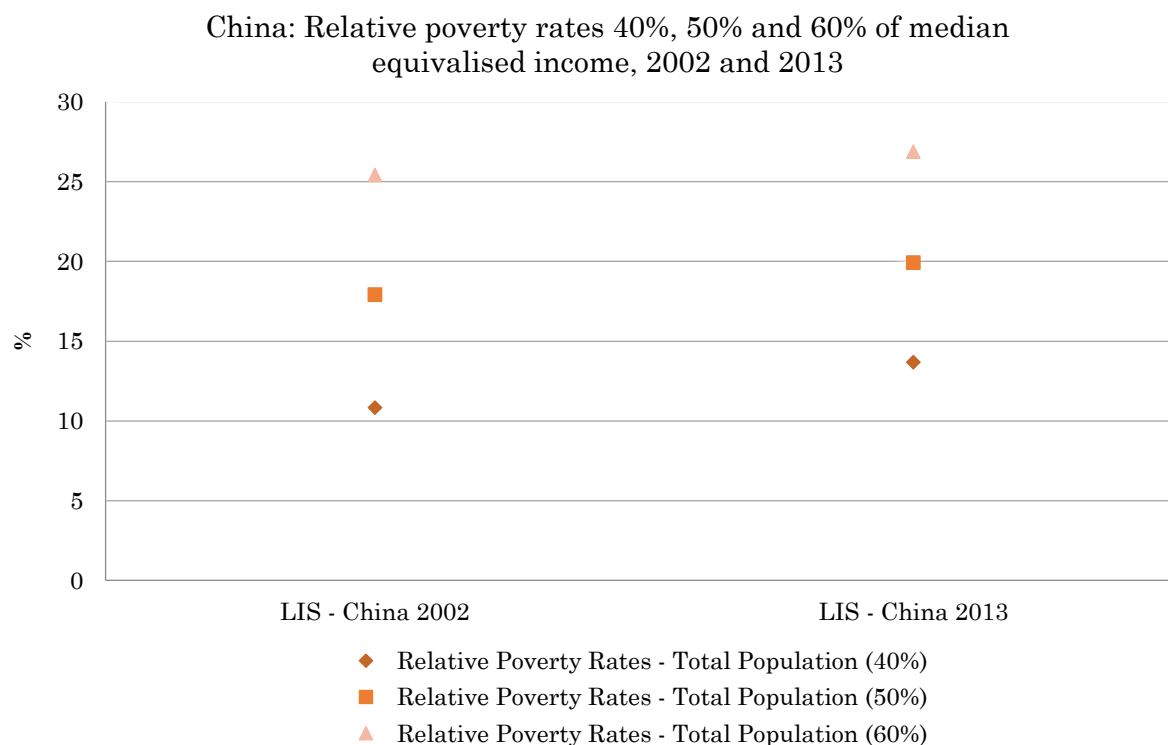


Figure 4: China: Relative poverty rates 40%, 50% and 60% of median equivalised income, 2002 and 2013.

Source: LIS (2018). Author's design.

Concerning the third group of analytical criteria, namely income ratios, LIS offers data for the years 2002 and 2013. While the 90/10 percentile ratio remained constant at approximately seven times the average income when comparing the two points of time (Figure 5), both the 80/20 and the 90/50 percentile ratio declined slightly. In 2013, the 80th percentile earned 3.6 times more in average income than the 20th percentile. In 2002, this ratio amounted to 3.8. Besides, the 90/50 ratio reveals that in 2002 and 2013, the upper bound of the 90th percentile earned 2.7 and 2.4 times more on average, respectively than the 50th percentile, the median. As such, it can be concluded that income ratios in China are high; however, they have not changed severely since the start of the new millennium.

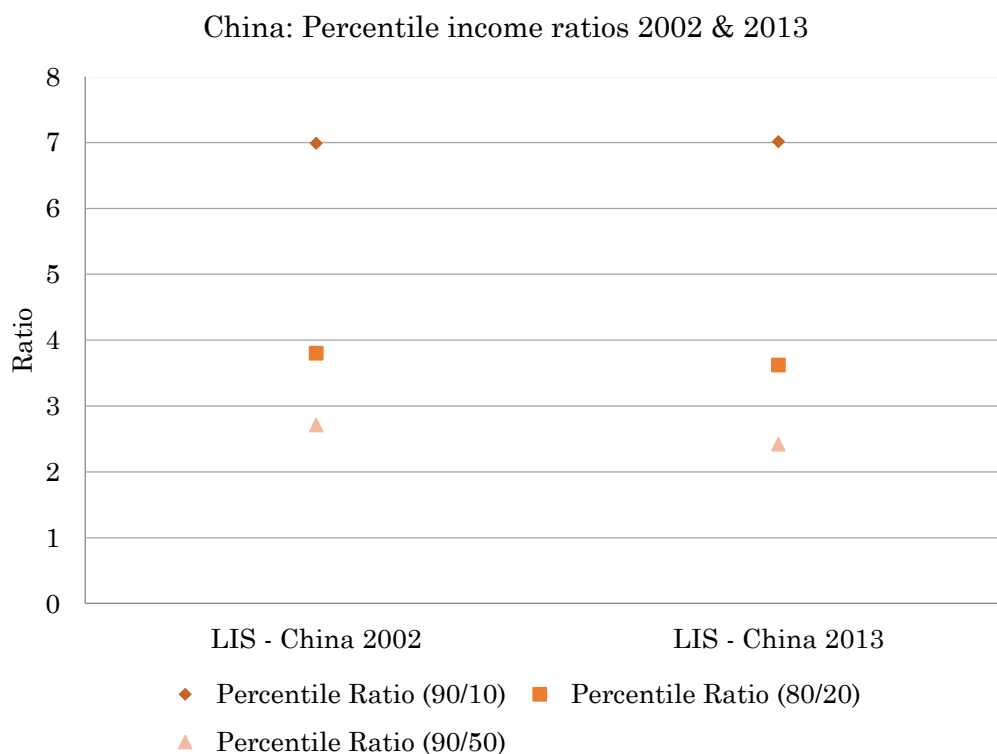


Figure 5: China: Percentile income ratios, 90/10, 80/20, 90/50, 2002 and 2013.
Source: LIS (2018). Author's design.

Concerning decile ratios, the LIS and NBS provide data on the 90/10 as well as the 80/20 decile income ratio as can be seen in Figure 5. Between 2002 and 2013 there was a substantial increase in the 90/10 income ratio, however, just a slight increase in the 80/20 quintile share. As such, in 2013, the top 10% of Chinese income earners captured about 20 times more income than the bottom 10%. The ratio of the top and bottom quintile amounted to approximately the 10-fold since 2002. In 2016, the top quintiles captured 10.72 more income than the bottom 20%, which is a higher value than in 2002 (Figure 6).

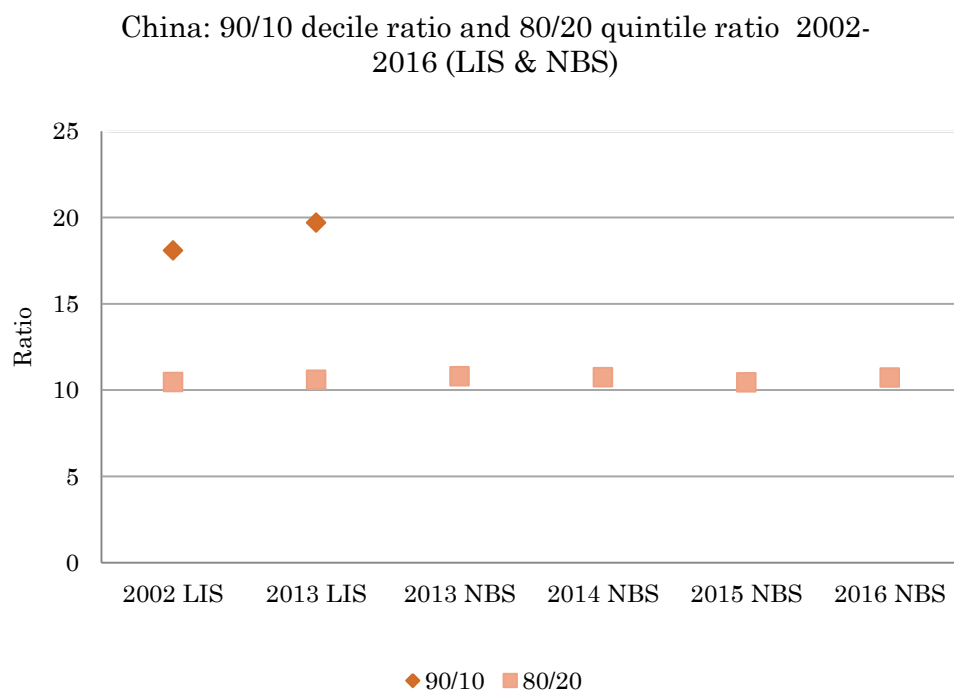


Figure 6: China: Decile income ratios 2002-2016.
Source: WIID (2018). Author's design.

Another related criterion is income shares. Since data on decile shares in China are only available for two points of times, namely 2002 and 2013, this section is first going to introduce quintiles shares of income in China between 2002 and 2016. According to 2002 LIS data, the fifth quintile, or the top 20% of the Chinese households captured approximately 50% of total income in China. This share decreased by the year 2013 both according to LIS and NBS data. Among the other quintile shares, there have only slight changes. The bottom quintile captured 4.7% of income in 2002 and 4.2% in 2016. For the second quintile (20th-40th percentile), income share increased from 8.8% to 9.9% between 2002 and 2016. Moreover, the middle-income share (3rd quintile) increased from 13.9% to 16% of total income in China. The 4th quintile captured 23% of the total income in 2002, which rose to 24.5% until 2016.

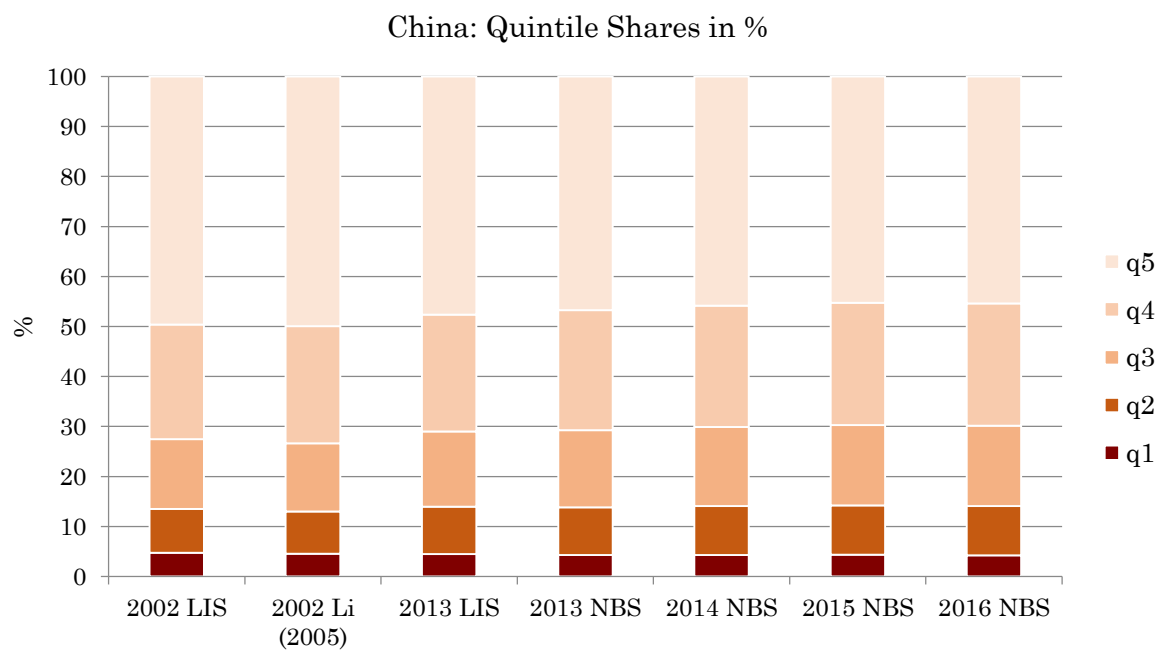


Figure 7: China: Quintile income shares 2002-2016.
Source: WIID (2018). Author's design.

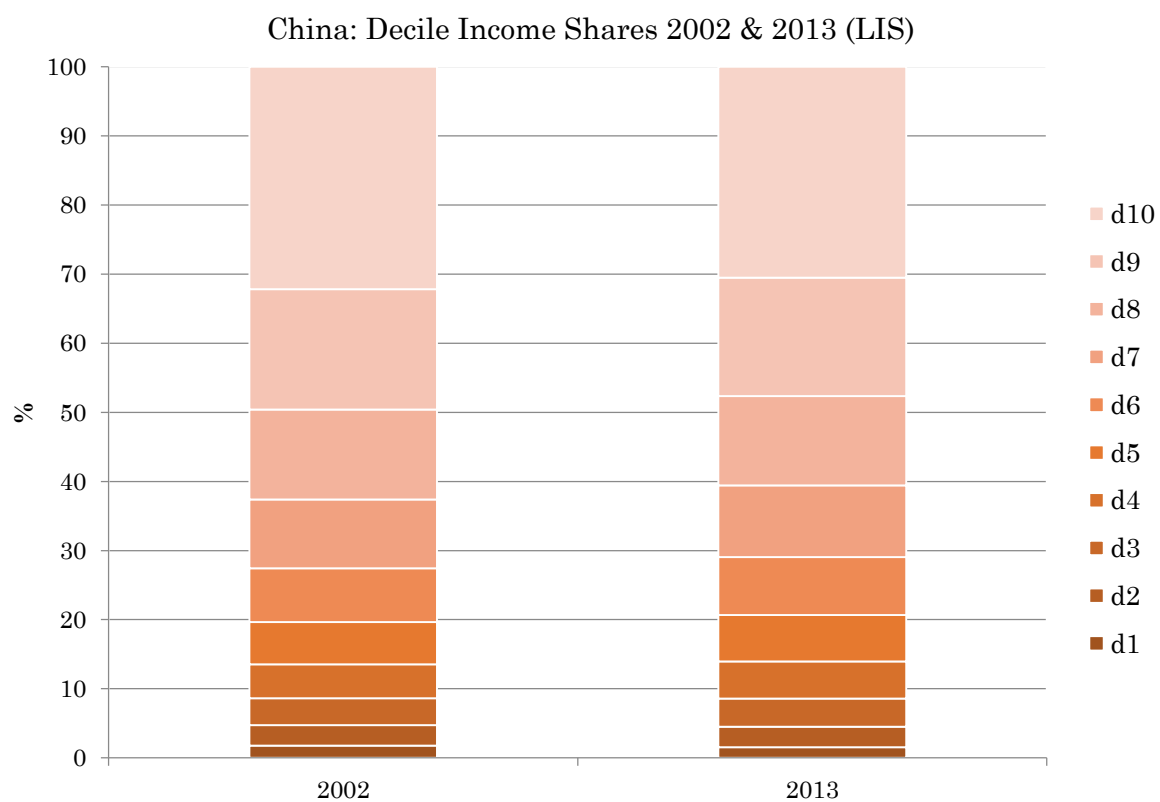


Figure 8: China: Decile income shares 2002 and 2013.
Source: WIID (2018). Author's design.

Considering decile income share in China in the years 2002 and 2013 allows an even closer insight into China's income distribution. Figure 8 reveals that the top percentile of households in China captured approximately 32% of total income, which decreased to 30.5% in 2013. Contrary to this, data also demonstrates that the bottom 10% of Chinese household only holds about 1.78% in 2002 and 1.55% in 2013. Concerning the other deciles, no significant shifts in income shares between the year 2002 and 2013 have taken place.

In order to investigate even smaller income shares, another database has to be queried. The WID.world contains data on top income shares, such as the top 1%, top 10% and bottom 50% for China as well as the top 0.1% or 0.01%. Their data is based on pre-tax household income per adult, which differs from the previously used income definitions in two aspects. First, household income is not attributed to all members in a household; however, only to those 20 years and older. Second, in contrast, to all other data used, the WID.world database only provides measures based on pre-tax income instead of disposable income. These are some essential limitations. The definitions of income are as follows: *"Pre-tax national income is the sum of all pre-tax personal income flows accruing to the owners of the production factors, labor and capital, before taking into account the operation of the tax/transfer system, but after taking into account the operation of pension system."* (WID.world 2019).

Figure 9 shows that the top 1% of Chinese adult income earners captured approximately 10% of total income in 2000. This number increased to 14% in 2015, however, peaked in 2006-2011 amounting to about 15%. At the same time, the income share of the bottom 50% had been declining from 18% in 2000 to 15% in 2015, reaching its low in 2010 with 14%. Thus, the bottom 50% of Chinese income earners captured less of the total income than the top 1% in 2010 (and being equal from 2006-2009 and 2011). Comparing this to the previously analysed data (Figure 8), it can be seen that the bottom 50% amount to approximately 20% of total income in 2002 and slightly more than this in 2013, which can be explained due to the different characteristics of the income data used for these calculations. While LIS data is based on disposable per capita

household income, the WID.world database uses pre-tax income per adult. Likewise, looking at the top 10% income share, WID.world data suggest it amounting to approximately 35% in 2000, peaking 2010 and 2011 with 43% and finally dropping to 41% in 2015. Previously shown data by the Luxembourg Income Study shows that the top 10% captured approximately 32% of total income, which decreased to 30.5% in 2013. Once again, different data leads to fairly distinctive outcomes.

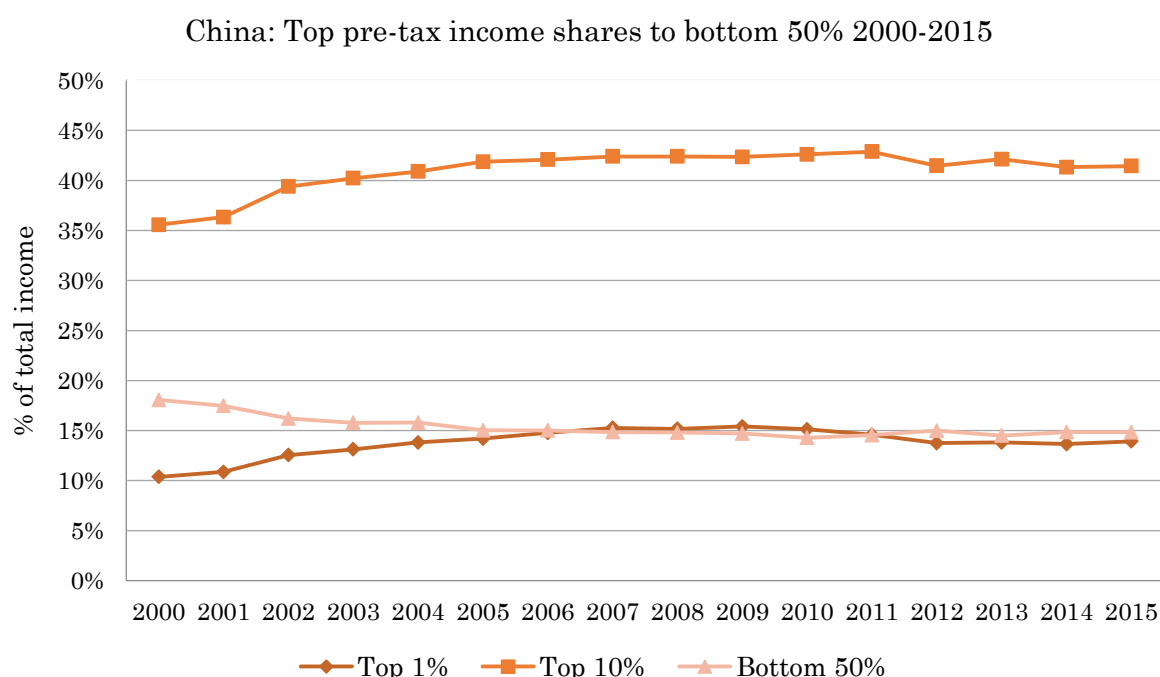


Figure 9: China: Top pre-tax income shares (1%, 10% and bottom 50%) 2000-2015.
 Note: Pre-tax per adult household income.
 Source: WID.world (2019). Author's design.

Moreover, even smaller top income shares provide insights into the Chinese income distribution (Figure 10). After rising strongly from 2001 to 2002, all income shares tend to decrease slightly from 2005. Whereas the top 10%, 5% and 1% follow similar trends, the top 0.5%, 0.1%, 0.05% and 0.01% are relatively constant, reflecting more resistance to potential external influences. In 2016, the top 0.01% captured about 3.2% of the total income next to the top 0.1% holding 6.3% of overall Chinese incomes.

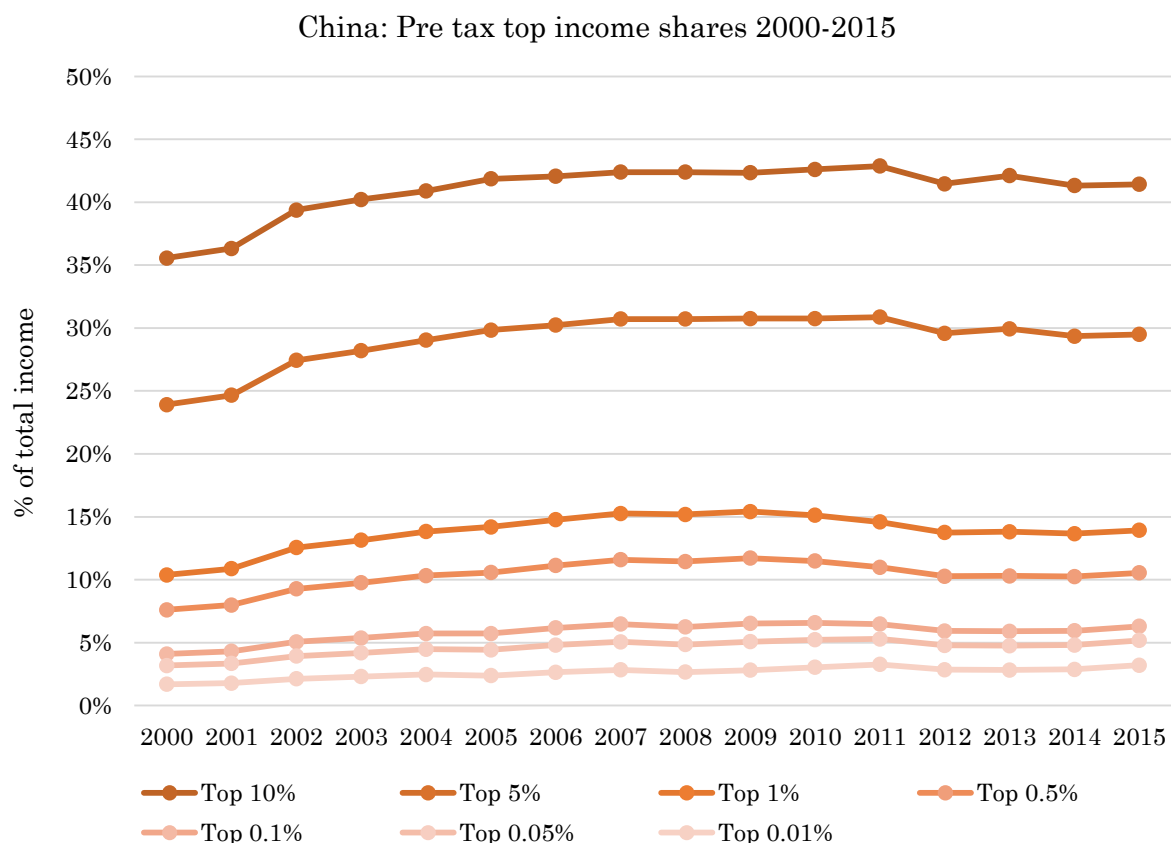


Figure 10: China: Top pre-tax income shares (10%, 5%, 1%, 0.5%, 0.1%, 0.05%, 0.01%) 2000-2015.

Note: Pre-tax per adult household income.

Source: WID.world (2019). Author's design.

Concerning the Gini index, the most acclaimed inequality measure, data for China is far from consistent or complete. Therefore, Table 9 summarises available nationwide Gini computations within the period 2000-2017, outlining data source (containing national and international surveys as well as research studies), resources, scales and sharing units. Gini indices assessed based on a sharing unit other than household or family have been removed. Also, all observations not scaling per capita but equivalising income within the sharing unit has been deleted as well (i.e. LIS Gini indices). This table aims to provide information behind the sole numeric index and demonstrate the limitations of comparing Gini indices across time without scrutinising the income data they are based on. Moreover, Table 9 shows relatively high variations in Gini indices by source.

Year	Gini	Resource	Scale	Sharing unit	Source
2000	39	Income (net)	Per capita	Household	Chotikapanich et al. 2005
2000	43.82	Income (net/gross)	Per capita	Household	Ravallion and Chen 2007
2000	43.21	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2001	44.73	Income (net/gross)	Per capita	Household	Ravallion and Chen 2007
2001	43.90	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2002	44.7	Income (net)	Per capita	Household	LIS 2018
2002	46.31	Income (net)	Per capita	Household	CHIP
2002	45.06	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2003	44.9	Income (net)	Per capita	Household	Chotikapanich et al. 2005
2003	47.9	Income (net)	Per capita	Household	NBS
2003	46.57	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2004	45.67	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2004	47.3	Income (net)	Per capita	Household	NBS
2005	45.73	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2005	48.5	Income (net)	Per capita	Household	NBS
2006	46.24	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2006	48.7	Income (net)	Per capita	Household	NBS
2007	48.4	Income (net)	Per capita	Household	NBS
2007	46.51	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2008	49.1	Income (net)	Per capita	Household	NBS
2008	46.30	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2009	49	Income (net)	Per capita	Household	NBS
2009	46.23	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2010	48.1	Income (net)	Per capita	Household	NBS
2010	52	Income (net)	Per capita	Family	PKU
2010	45.19	Disp. income	Per capita	Household	Chen, Pu and Hou 2018
2011	47.7	Income (net)	Per capita	Household	NBS
2012	47.4	Income (net)	Per capita	Household	NBS
2012	48	Income (net)	Per capita	Family	PKU
2013	43	Income (net)	Per capita	Household	LIS 2018
2013	47.3	Income (net)	Per capita	Household	NBS
2013	46.36	Income (net)	Per capita	Household	CHIP
2014	46.9	Income (net)	Per capita	Household	NBS
2015	46.2	Income (net)	Per capita	Household	NBS
2016	46.5	Income (net)	Per capita	Household	NBS
2017	46.7	Income (net)	Per capita	Household	NBS

Table 9: China: Summary of data on nationwide Gini indices, 2000-2016.

Note: Disp. Income = disposable income. Note: Income (net) refers to disposable income. Income (gross/net) refers to the ambiguity in income concepts (cf. section 3.3.3.1). Gini indices in this table are provided on a scale between 0 and 100 instead 0.00 and 1.00, maintaining original values of WIID raw data. Source: WIID (2018), NBS (2018), NBS (2013), Chen, Pu and Hou (2018)

Figure 11 presents the in Table 9 shown data in a graph, including all Ginis being based on disposable (or equally, net income) with more than one observation. Firstly, Chotikapanich et al. (Chotikapanich, Rao, and Tang 2007) assessed Gini indices for the years 2000 (39) and 2003 (44.9). Ravallion and Chen (2007) find Gini indices amounting to 43.82 and 44.73 for the years 2000 and 2001. Further, the CHIP survey assessed Gini indices for 2002 (46.31) as well as 2013 (46.36). The most consistent data on overall Chinese Ginis is provided by the NBS, starting in 2006 (48.7) as indicated in the World Income Inequality database, however, dates back to the year 2003 according to a press release of the Chinese National Bureau of Statistics (National Bureau of Statistics of China (NBS) 2013). The Chinese Gini index decreases slightly in 2007, rises again and hits the 49.0 margins in 2008 and 2009. Afterwards, the Gini index declined again until 2015, when it amounted to 46.2 and slightly increased to 46.5 in 2016, according to the NBS.

Two observations by the Institute of Social Science Survey at Peking University (PKU) measure the highest Gini indices, namely 52 in 2010 and 48 in 2012. Moreover, the Luxembourg Income Study found Gini indices equal to 44.7 and 43 for the years 2002 and 2013, respectively. Comprehensive estimates by Chen, Pu and Hou (Chen, Pu, and Hou 2018) provide a consistent estimate of Gini indices as well, however, ending in the year 2010. Their estimates are slightly lower than Gini indices reported by the NBS. Overall, it can be said that data on Gini indices in China are not homogenous despite using the same scale, resource and sharing unit. Within the same year, substantial differences in Gini indices can be observed, which results from first, research studies using different methodology for estimating nationwide Gini indices, and second, from different underlying surveys. This demonstrates how distinctive dimensions or definitions of income can drastically affect income inequality measures. Moreover, also differences in the properties of the different survey can lead to slightly different outcomes due to different methods in the data collection or the processing of the survey data. Another observation regarding Gini data in China is that again most data comes from domestic Chinese institutions. In general, it can be said that Chinese Gini data is inconsistent and scattered among various data sources and estimates by

research studies. Nonetheless, as this section has collected and displayed the majority of available reported Chinese Gini coefficients according to the definitions of this thesis, a general trend in patterns and developments in Chinese income inequality can be revealed as demonstrated in Figure 11.

China: Nationwide Gini index of disposable income 2000-2017

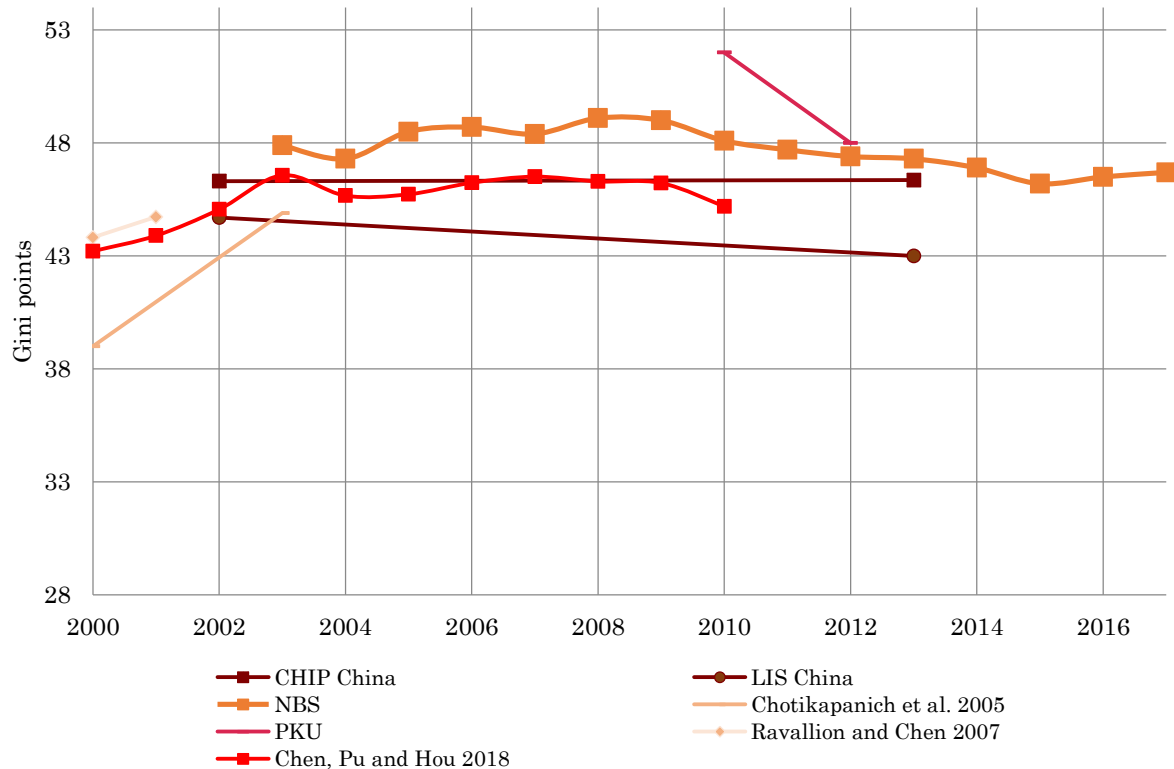


Figure 11: China: Gini index of disposable per capita household income 2000-2017.

Note: Resource and scale details cf. Table 9.

Source: WIID (2018), NBS (2018), NBS (2013), Chen, Pu and Hou (2018). Author's design.

2.2 Policy analysis

2.2.1 Spending policy

This analysis of Chinese government actions is going to elaborate Chinese spending policy following the theoretical framework. Despite only discussing current policies, the amount of social spending in China is going to be compared to data from the year 2007 (National Bureau of Statistics (NBS) 2008) in order to provide context and gain an impression if they have increased or decreased over

time. The year 2007 has been chosen because spending categories for government expenditure are the most similar for the most extensive period after 2000. The only difference in comparison to the latest available data from 2017 (National Bureau of Statistics of China (NBS) 2018) is the addition of family planning in 2017 as compared to 2007. This is indicated in Table 10, which as well summarises all criteria on spending policies. Alongside discussing the analytical criteria, this section is going to provide examples for specific Chinese policy actions regarding social protection spending, which are specifically targeted at reducing income inequality. This breakdown aims to embed the discussed social protection spending policy in a broader context, however, does not depict a complete investigation on social protection policy measures, as this goes beyond the scope of this thesis. Further, all outlined government actions are being implemented by the Central Government as no local policies form part of the analysis, which is in accordance with analysing income inequality measures on a national level only.

The first criterion, namely education spending as a percentage of total government expenditure, amounts to 14.31% in 2007 and 14.84% in 2017, staying almost stable during the past decade. In contrast, health spending has almost doubled between 2007 and 2017, accounting for 7.12% of total government expenditure in 2017. This surge might, however, have been caused by the category of family planning becoming a part of health expenditure. Also, social protection spending, namely social safety net and employment efforts, rose from 10.94% in 2007 to 12.12% in 2017. Based on the analytical framework, this data reveals China's increased commitment to reducing income inequality by social spending. Therefore, it can be said that the commitment to reducing inequality according to this pillar of chosen criteria is higher today than ten years ago in all three spending categories.

Spending policy	Indicator	2007	2017
Education	% total expenditure	14.31%	14.84%
Health	% total expenditure	4.00% (Medical and Health Care)	7.12% (Medical and Health Care, and Family Planning)
Social protection	% total expenditure	10.94% (Social Safety Net and Employment Efforts)	12.12% (Social Safety Net and Employment Efforts)

Table 10: China: Summary of spending policy.

Note: Shares are calculated by the author.

Sources: China Statistical Yearbook (2008) and China Statistical Yearbook (2018). Author's design.

In order to provide context to the increase in public social protection spending from 2007 to 2017, in the following, several social protection policies are going to be outlined. As such, the Chinese government has implemented a range of policies in order to reduce inequality and poverty such as the China Rural Poverty Alleviation and Development Programme (2011-2020). This programme provides water conservation, electricity supply, education infrastructure, transports connections, and medical hygiene. Moreover, there exists a policy providing financial means in order to relocate impoverished people to areas with better job opportunities (OECD 2017c, 111). By 2020, the Chinese government plans to additionally relocate about 10 million people (Central Committee of the Communist Party of China 2016). Moreover, by the year 2020, the Chinese administration aims to provide universal pensions coverage (cf. OECD 2017c, 126).

Further, China has implemented social assistance systems and managed to increase their coverage in recent years, which according to the OECD (2017c), is one of the main contributors to steadily reducing poverty rates. The most extensive safety net programme in China, as well as worldwide, is the dibao programme. The Chinese government introduced the dibao system in 1990, aiming to reduce poverty and inequality. It is implemented in both urban as well as rural areas and provides non-contributory cash transfers targeted to help the purchase of basic goods, such as food, clothing and shelter. The direct payments amount to the difference between the average income per person in a household and the minimum local income standard. The recipients are also determined

locally. As such, the dibao schemes differ across regions and are implemented by the local governments; however, have similar features. The coverage of the urban as well as the rural dibao programme has expanded significantly since the year 2000. The number of urban recipients increased from 11.7 million people in 2001 to its maximum at 23.5 million people in 2009. Also, the rural scheme increased its coverage from 3 million to a maximum of 53.9 million in 2013 (OECD 2017c, 104).

Apart from the dibao system, a large share of low-income households is eligible for subsidies from the government, offering income support, however, also serving to promote other goals, such as agricultural modernisation and grain self-sufficiency. Additional Chinese social assistance measures for instance offer cash and in-kind benefits for seniors, disables and minors, who do not have any dependents. These benefits also referred to as the *tekun* programme, are focused on providing basic necessities with eligibility assessed by the local governments and covered around 5 million people in 2016. Moreover, the Chinese local governments provide temporary assistance schemes, such as heating assistance, educational assistance and medical assistance to the poor and low-income families (OECD 2017c, 108).

Concerning unemployment benefits, China has implemented unemployment insurance, which pays benefits at a flat rate to workers if their employment was terminated involuntarily and if they have contributed to the scheme for more than one year. However, the OECD (2017c) reports that despite the coverage rate has increased over the years, it remains at a low level of about 43% of the urban employed, which might be caused by the fact that more people apply for the dibao system.

Overall, it can be said that public social spending has increased in the past decade in all three categories observed, namely education spending, health spending as well as social protection spending. Moreover, there are several social protection spending policies targeted at reducing income inequality by mainly providing cash transfers, basic goods and services to people. The dibao system

provides an unconditional basic income to the poor and aims to support them up to a level of the local minimum wage (cf. section 2.2.3). This policy-making further shows that China aims to fight income inequality by reducing poverty and by closing the income gap at the very bottom of the income spectrum. As the previous section has shown that absolute poverty is still a present issue in China, this section has provided evidence of how the Chinese government responds to this discrepancy.

2.2.2 Tax policy

After having reviewed social policy spending in China, this section is going to analyse tax policy in China as an indicator of the government's commitment to reducing inequality. First, different kind of taxes and their progressivity will be outlined. In a further step, harmful tax practices in China will be discussed. This section aims to show China's commitment to reducing inequality through its taxation according to the framework provided in the previous part of this thesis. Table 13 summarises this section's findings.

When investigating China's personal income tax, seven tax brackets can be found. Starting at a monthly taxable income from 0-3,000 Chinese Yuan (CNY), a tax rate of 3% is applied. For monthly incomes between 3,000 and 12,000 CNY, the tax rate amounts to 10%. Other personal income tax rates in the middle-income spectrum are 20% (12,000-25,000 CNY), 25% (25,000-35,000 CNY), 30% (35,000-55,000 CNY). The second highest tax rate is 35% and applies to the threshold between 55,000 to 80,000 CNY. Lastly, incomes over 80,000 CNY of monthly income are taxed with a rate of 45% (PWC 2019d). Besides this progressive tax on personal income, there is a flat rate of 20% is applied on several other sources of income, such as incidental income, rental income, interest income, dividends, and capital gains. This flat rate is imposed as indicated unless specifically reduced by the State Council.

In August 2018, the Amendment to China's Individual Income Tax Law was passed, incorporating numerous changes. One of them, for instance, is revising the criteria for determining tax residency status. Besides, amending the tax rates and taxable income brackets as well as introducing anti-avoidance rules formed

part of the 2018 amendment (PWC 2019b). Another change was redefining taxable income. As such, incomes for residents, employment income, remuneration for labour services, author's remuneration and royalties are combined and referred to as "comprehensive income". This comprehensive income provides the basis for annual aggregate tax calculation and has become effective from 1 January 2019. A specific goal of the personal income tax reform has been to lessen the tax burden for lower income earners (International Tax Review 2018). Under the new personal income tax scheme, the lower brackets have been widened, meaning that more people are eligible for lower personal income tax rates. The higher thresholds for the personal income tax remain the same. Thus, the tax structure has become more progressive after the year 2018. Table 11 compares the previous personal income tax rates and thresholds with the ones after 2018.

Before 2018		After 2018	
Monthly taxable income (CNY)	Tax rate	Monthly taxable income (CNY)	Tax rate
0-1,500	3%,	0-3,000	3%,
1,500-4,500	10%	3,000-12,000	10%
4,500-9,000	20%	12,000-25,000	20%
9,000-35,000	25%,	25,000-35,000	25%,
35,000-55,000	30%,	35,000-55,000	30%,
55,000-80,000	35%	55,000-80,000	35%
Over 80,000	45%	Over 80,000	45%

Table 11: China: Personal income tax rates and income bracket before and after 2018 on comprehensive income.

Source: PWC (2019d). Author's design.

The average annual household per capita disposable income in China amounts to approximately 26,000 CNY in 2016 (cf. section 2.1), which is equal to about 2,170 CNY a month. Despite this being disposable income, which has already been subject to taxes and transfers, it provides a point of reference for the mean Chinese income. Gross or market income on an annual per capita household basis for 2017 was not found in the discussed data sets, and after adjusting roughly for

taxes and transfers, this reference income would likely fall in the same tax bracket as fiscal income before taxes. Thus, before 2018, the average Chinese individual fell into the second income tax bracket of a 10% tax rate, however, at present, after the tax reform, is subject to a personal income tax rate of 3%, representing a quite high tax relieve.

In addition, another progressive tax system of personal income tax applies to business income, which is separated from comprehensive income in China. Table 12 demonstrates the changes in taxation after the tax reform in 2018. All five tax brackets have been substantially expanded, alleviating the tax burden for low and middle business incomes (International Tax Review 2018). The highest income tax rate now only applies for business incomes surpassing 500,000 CNY, signifying no change in taxation for these individuals. All incomes smaller than that are now subject to lower tax rates. Also, effectively, there has been no change for the income bracket 0-15,000 CNY, which are still subject to a tax rate of 5%. Further, business incomes of 80,000 CNY were taxed with a rate of 30% before 2018, and today are subject to a personal business income tax rate of 10%. Overall, the income tax on business income is less progressive than the one on comprehensive income.

Before 2018		After 2018	
Monthly taxable income (CNY)	Tax rate	Monthly taxable income (CNY)	Tax rate
0-15,000	5%,	0-30,000	5%,
15,000-30,000	10%	30,000-90,000	10%
30,000-60,000	20%	90,000-300,000	20%
60,000-100,000	30%,	300,000-500,000	30%,
Over 100,000	35%,	Over 500,000	35%,

Table 12: China: Personal income tax rates and income bracket before and after 2018 on business income.

Source: PWC (2019d). Author's design.

Another criterion, the corporate income tax, amounts to 25% in China. However, there are exceptional rates of 15% or 10% applying to small-scale (with annual taxable income of less than 1 million CNY) companies, research, key-software or high tech companies, or enterprises located in particular areas such as Qianhai Shenzhen-Hong Kong Modern Services Industry Cooperation Zone, Pingtan Comprehensive Experimental Zone or the Zhuhai's Hengqin New Area (PWC 2019c).

Tax policy	Details and progressivity	Rate in % 2019
Personal income tax	A flat rate of 20% is applied to incidental income, rental income, interest income, dividends, and capital gains	7 tax brackets with rates of 3%, 10%, 20%, 25%, 30%, 35%, 45%)
Corporate tax	Exception for smaller scale companies as well as research, high tech companies or enterprises in particular areas etc., which pay a reduced CIT of 10% or 15%	25%
VAT	10% for agricultural goods, transportation, postal services, communications, etc. 6% Value-added telecommunications services, financial services, etc. 0% exportation of goods and services	Maximum: 16% Minimum: 0% Reduced since May 2018
Inheritance/gift tax	None in China	None in China
Wealth tax	None in China	None in China
Harmful tax practices	OECD BEPS	Not harmful

Table 13: China: Summary of tax policy.

Source: (PWC 2019d), (PWC 2019c), (PWC 2019a). Author's design.

Concerning the value-added tax, in 2018, the Chinese Ministry of Finance and State Administration of Taxation issued a policy reducing VAT tax rates. The VAT rates of 17%, 11%, and 6% were lowered to 16%, 10%, and 6%, respectively, from 1 May 2018. Reduced VAT rates of 10% apply for instance to agricultural goods, transportation, postal services, communications, construction services, immovable property leasing services, sales of immovable properties, transfer of

land-use right. A 6% VAT is imposed on telecommunications services, financial services, modern services (except for leasing services), consumer services, and sales of intangible properties (except for land-use right). There is no VAT on the exportation of goods and services. In China, there is no inheritance or gift tax. Neither there exists a tax on wealth or worth at present (PWC 2019a).

Concerning harmful tax practices, the Chinese government commits to implement the OECD's recommendations under the base erosion and profit shifting (BEPS) project. These proposals contain new rules to restrict base erosion and profit shifting and therefore restrict the potential to impact the tax base (OECD 2019e). In their most recent publication as of the end of January 2019, the OECD has assessed China's tax system according to a framework consisting of different types of harmful tax practices. In general China's tax regime has been assessed as "not harmful". Also, peer reviews from the OECD (2018a) on the exchange and information on tax ruling, the so-called transparency framework, rate the People's Republic of China as a country meeting all aspects of the terms of reference for 2017, except for one, the timely exchange of information. Also, previous recommendations have been addressed. Overall, it can be said that China has implemented the BEPS Action 5 transparency framework as well as their preferential regime being assessed as not harmful (OECD 2018a, 100).

In total, it can be said that the recent income tax reform in 2018 showed commitment to enhancing tax progressivity to a great extent, designed to redistribute income and increase the tax revenue base. Also, the fact that no harmful tax practices could be detected reflects the Chinese government's commitment to creating a fair tax system. Further, large corporations apply to a corporate tax rate of 25% whereas exceptions for smaller ones exist and the VAT rate has been reduced since 2018, which benefits low-income households. All these changes mirror the Chinese government's commitment to reducing inequality. Nonetheless, there currently exists no wealth, gift or inheritance tax in China.

2.2.3 Labour market policy

After having analysed China's social spending and tax policy, this section is going to review the Chinese labour market in respect to labour union rights, women's rights and minimum wages, as all these variables, demonstrate the government's willingness to tackle income inequality. Table 14 summarises this section's findings.

Labour market policy	Description of criterion	Details and policies	Outcome in 2018/19
Labour rights in law and practice	Government efforts to protect workers in law and practice	28 violations were reported overall; 16 in law and 12 in practice Labour unions: limited role in China Changes in the hukou system Public employment services and programmes for marginalised groups	Worst score possible Range of labour market policies, however, effect questionable
Women's rights	Laws on equal pay for equal work	Article 13 of the Chinese Labour Law imposes non-discrimination based on gender in employment, elimination of discrimination in employment.	Law imposes equal remuneration for work of equal value (Labour Code, Article 46)
	Laws against gender discrimination and violence	Protection of Women's Rights and Interests Law, Article 38 Decree No. 619 of the State Council	Law in place but in practice, legal allegations are rare
	Parental leave	China's localities issue policies; the amount of benefits depends on the location	Labour Law gives a general rule: 90 days
Minimum wage	Existence and amount of minimum wage	Minimum wage is set on a regional level and differs across cities	Minimum wages in China appear in both hourly and monthly rates. Below OECD average.

Table 14: China: Summary of labour policies.
Source: Author's design.

First, concerning labour union rights, the Labour Rights in Law and Practice database (Kucera and Sari 2018) provides a wide range of numerical and textual data and information on violations of labour rights, assessed through 108 criteria. Data are comparable across countries and over time.⁵ Concerning fundamental civil liberties in China's law, China's national legislation allows arrest and imprisonment of trade unionists concerning their trade union activities. Also, in practice, infringement of trade unionists' basic freedoms, violent actions and lack of guarantee of process and justice occur. Moreover, a general prohibition of the right to establish and join the organisation and discriminatory measures towards workers are predominant. Furthermore, according to Labour Right Indicators (2019c), other union activities are being infringed in numerous aspects. Besides, China's law includes a general prohibition of the right to collective bargaining and shows violations of collective agreements and the exclusion of workers from the right to collective bargaining.

Moreover, Labour Rights Indicators reports a general prohibition of strikes in practice as well as acts of interference during strike action. Also, the law does not prohibit imposing excessive sanctions in case of legitimate strikes (The Labour Rights Indicators 2019c). In 2016, the latest data available, Labour Rights Indicators rates China's overall score on labour rights in law and practice as 10.00 in law and 10.00 in practice, which is the worst possible rating. Altogether, 28 violations were reported overall; 16 in law and 12 in practice. Overall it can be said that China received this low score due to the reported general prohibition of the right to establish and join organisations and collective bargaining in law and practice. The score had not changed since the year 2012 when it was equal to 10 in both categories as well.

According to the OECD Social Institutions and Gender Index, women's rights in China gain more attention from Chinese policymakers. The Chinese Constitution adopted in 1982 and amended in 2004 includes the prohibition of maltreatment of old people, women and children in Article 49. The Protection of Women's Rights and Interests Law, Article 38 further provides that "*the cruel treatment*

⁵ For methodology refer to (Kucera and Sari 2016)

causing bodily injury to or death of women by means of superstition or violence is prohibited” (OECD 2019a). Concerning sexual harassment of women, the issue is addressed by the Law on the protection of women’s rights and interests as well as Decree No. 619 of the State Council. The first specifies that “*sexual harassment against women is prohibited*” (article 49) along with the latter one stating that “*in the workplace, the employing unit shall prevent and stop sexual harassment of female workers*” (article 11) (OECD 2019a). Moreover, victims get empowered to file a complaint with their employer and with authorities. Employers can be fined if they do not take measures to prevent sexual harassment (OECD 2019a). However, because of the lack of a clear legal definition, in practice, legal allegations are rare and most of the time focus on harassment in the workplace (Lui 2016).

Regarding laws for equal pay for equal work, Article 13 of the Chinese Labour Law imposes non-discrimination based on gender in employment and calls for the elimination of discrimination in employment. Further, the law imposes equal remuneration for work of equal value (Labour Code, Article 46). However, the law prohibits women from entering certain professions such as working in mines (Labour Code, Article 59). What is more, women are allowed to work the same night hours as men and do not require permission from their husband or legal guardian to choose a profession or register a business (OECD 2019a).

For another criterion, namely parental leave, the Chinese Labour Law includes a general national rule providing maternity leave for mothers of 98 days. In the case of multiple births, the maternity leave gets extended by 15 days per child. Also, during maternity leave, the mother’s salary is not to be lowered nor can her position be adjusted without her consent (ICLG 2019a). The amount of benefits depends on the location in China. In case the mother and father are from two different regions, the couple may choose which regulations will apply. Since the implementation of the two-child policy in China in late 2015, numerous cities and provinces have established new rules of paternity and maternity leave. As such, Beijing has maternity leave; however, there exist no rules for paternity leave. Also, serving as a late birth incentive, a leave of 30 days can also be extended

from mothers to fathers. If the father chooses not to take these 30 days, he can receive an additional month wage according to the mother's basic salary (OECD 2019a). Paternity leave is regulated on the municipal or provincial level as well. However, most municipalities entitle fathers to paternity leave of seven to 30 days (ICLG 2019a).

In the People's Republic of China, the minimum wage is set on a regional level. Since 2004, different administrative entities may determine minimum wages. Within Chinese provinces, minimum wages differ across classes of cities (class A, B, C, et cetera). Minimum wages in China appear in both hourly and monthly rates. (Wageindicator 2019b). The lowest minimum wage is set in Guanxi province at county-level cities (class D) and amounts to 9.5 Chinese Yuan per hour (as of February 1, 2018). The highest minimum wage with 24 Chinese Yuan hourly is determined in Beijing since September 2018. Generally speaking, large coastal cities and cities of more prosperous provinces have higher set minimum wages (Shanghai: 21 CNY, Shenzhen: 20.3 CNY, Hangzhou: 18.4 CNY, Nanjing: 18.5 CNY, Guangzhou: 20.3 CNY per hour). In contrast, hourly minimum wages in Tibet (Lhasa: 16 CNY Shigatse 10.5 CNY), Tianjin (11.8 CNY) and Qinghai (Xining: 12.7 CNY) for instance are lower (Wageindicator 2019a). Overall, it can be said that there is a severe dispersion across different locally determined minimum wages. Besides, minimum wages in the vast majority of Chinese regions are below the OECD average (OECD 2017c, 116).

Major Chinese labour market policies further include various active programmes through public employment services, for instance, temporary work trial programmes, vocational guidance as well as self-employment schemes, which are specifically targeted at marginalised groups, such as disabled people, ethnic minorities, migrant workers or elderly. In recent years, the Chinese government has also implemented a range of measures in the hukou system in order to facilitate working circumstances to migrant workers in China. This includes gaining residency status as well as access to public services in the city they migrate to.

Overall, it can be said that Chinese performance regarding labour rights in law and practice are below average and at the bottom worldwide as rated by the Labour Rights Indicators. In China, trade unions represent a relatively unimportant role in China, as their role is very limited to instead advocate adherence to labour laws and provide support services instead of wage negotiations (OECD 2017c, 115). Concerning women's rights in the labour market, gender equality is gaining more attention from Chinese policymakers. Chinese law provides fundamental rights. Laws against violence and sexual harassment mandate equal rights to males and females. Additionally, equal payment for women and men is explicitly imposed and parental leave forms part of the Chinese Labour Code, despite differing from region to region.

3. Korea

3.1 Income inequality

This section is going to analyse income inequality in Korea according to the theoretical framework during the years 2000-2017. Similar to section 2 of this thesis' part, several data sources for the respective income inequality measures will be considered, which aims to provide complete and valid insights. Another reason for the variety of data presented in this section is to implement a solid basis for a comparison with the previous case study, China.

Regarding the first criterion, namely annual mean disposable per capita household income, the LIS dataset provides data for the years 2006, 2008, 2010, 2012. Figure 12 shows that during this time, the mean per capita household income had been rising steadily from approximately 9.86 million Korean Won in 2006 to 13.16 million Korean Won in 2012. This represents a total growth rate of about 25% in income within six years. Another noticeable issue is that Korean annual mean income data only started being conducted from 2006 in both data sets, which is in accordance with the findings in the literature review (section 3.8(II)) of income inequality in Korea, which also revealed that research is fairly scarce.

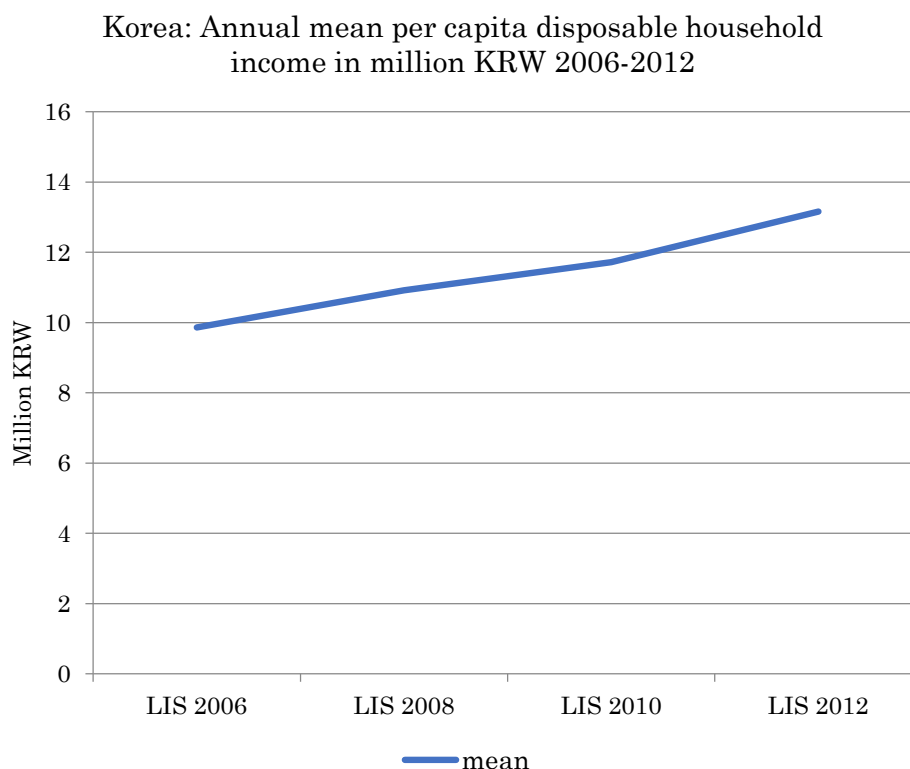


Figure 12: Korea: Annual mean per capita disposable household income in million KRW 2006-2012.

Source: WIID (2018). Author's design.

The Korean Survey of Household Finances and Living Conditions (SFLC) was started in 2012 and has since then been conducted every year. Some of its data get published in press releases, is available on the Korea Statistics (KOSTAT) or the Korean Statistics Information Service (KOSIS). Figure 13 shows annual mean household disposable income in million Korean Won according to this survey. By dividing the cumulated mean income by the average household size for the respective year, approximate per capita incomes were calculated. Comparing to LIS per capita mean household income, SFLC data is about one million KRW lower than LIS data in 2012 (12 and 13 million Korean Won respectively). This difference is likely to be caused by different methodology between the surveys underlying this measure or the imprecise calculation of per capita income made in this section. Differences in the SFLC 2017 and the SFLC 2018 arise from an adjustment to prices. In 2018, annual mean household disposable income per capita according to the SFLC amounted to about 16.7 million Korean Won (KOSIS 2019; KOSTAT 2019b).

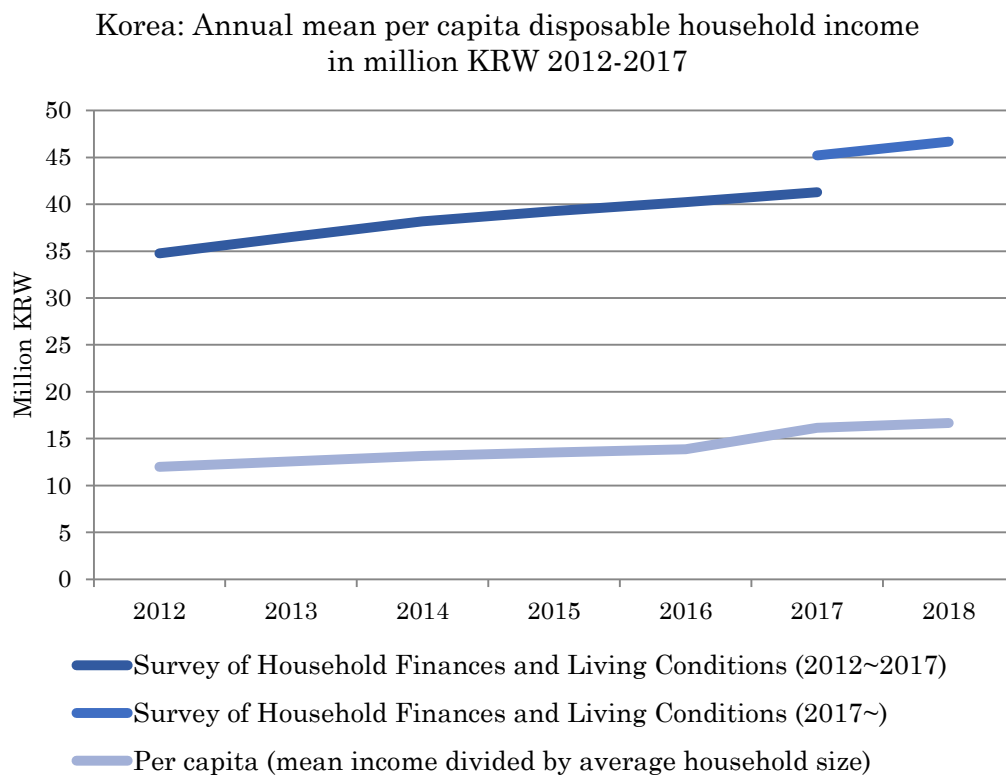


Figure 13: Korea: Annual mean per capita disposable household income in million KRW 2012-2017.

Note: Per capita income calculated by author (mean household income divided by average household size) and is thus an approximate estimate.

Source: KOSIS (2019). Author's design.

Apart from mean income, Figure 14 outlines absolute poverty measures in Korea. In contrast to China discussed in the previous section, for Korea, only poverty data for the World Bank poverty line at 5.5\$ a day will be provided. For all absolute poverty lines being lower than that, absolute poverty in Korea is equal to virtually zero. Even at a threshold of 5.5\$ a day, the headcount ratio amounts to about 0.5%. Also, the poverty gap is constantly fairly low at approximately 1.2% during the years 2006-2012. In 2010, a slight increase in both measures can be observed, possibly attributable to the Global Financial Crisis. Overall, it can be said that absolute poverty has been eradicated in Korea before the year 2006.

Korea: Head count ratio and poverty gap 2006-2012

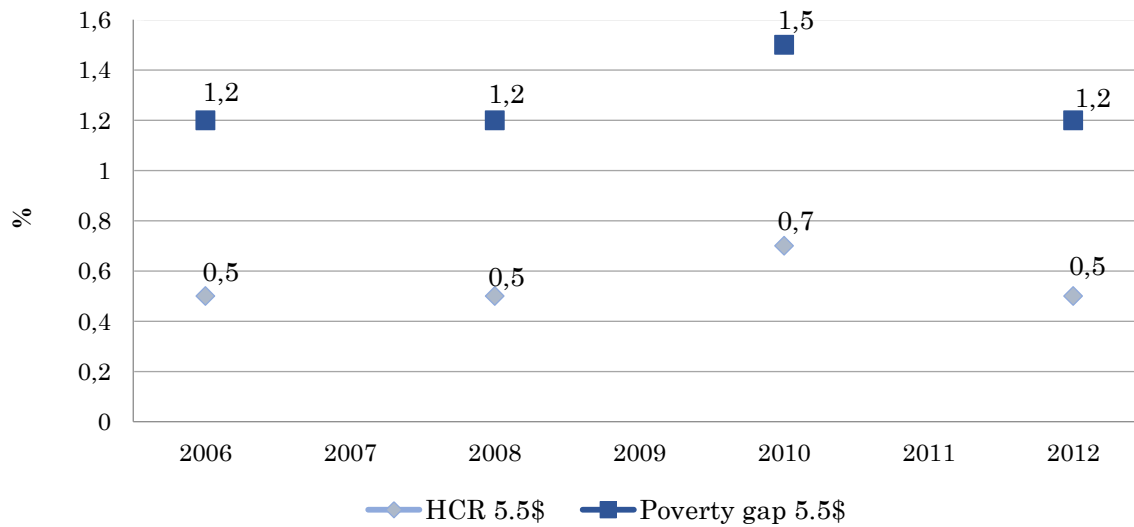


Figure 14: Korea: Absolute poverty measures, headcount ratios and poverty gap 2006-2012. Note: 2011 international prices.
Source: World Bank (2018). Author's design.

After analysing absolute poverty rates, Korea's relative poverty rates at 40%, 50% and 60% of median equivalised income are displayed in Figure 15. In general, no significant shifts in any of these relative poverty rates has occurred during the observed time, implying no major changes in the bottom of the income distribution. However, whereas, the relative poverty rate of 40% of median income has slightly grown since 2006, the 60% relative poverty rate is now lower than in 2006, suggesting a modest shift towards the middle of the income distribution. About 20% of the Korean population earn less than 60% of the median Korean equivalised household income. Likewise, approximately 15% of Koreans earn less than 50% of their fellow nationals' incomes. Being situated even further off the median, about 10% of Koreans earn less than 40% of the median income, which is about five percentage points lower than the comparable Chinese relative poverty rates (cf. Figure 4).

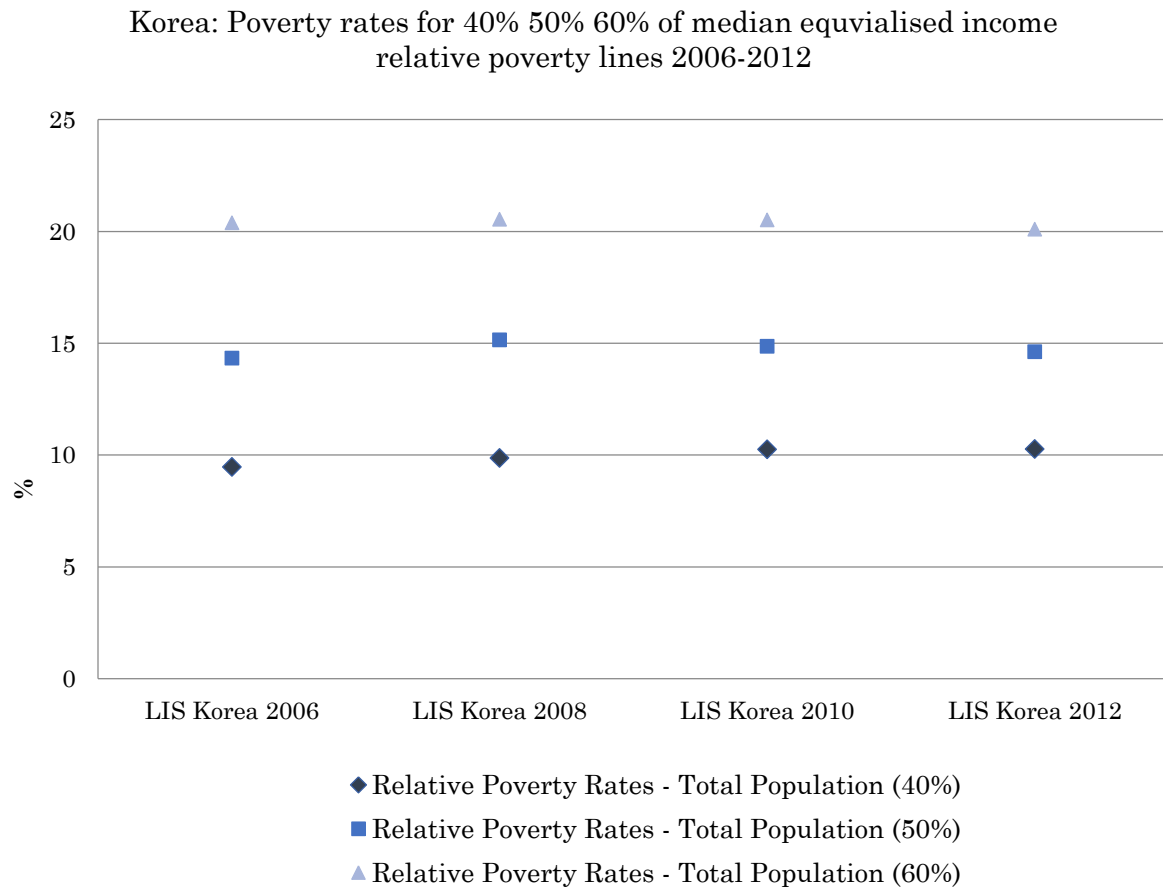


Figure 15: Korea: Relative poverty rates 40%, 50% and 60% of median equivalised income 2006-2012.

Source: LIS (2018). Author's design.

A further criterion being analysed are income ratios. Figure 16 shows 90/10, 80/20 and 90/50 percentile ratios in Korea between 2006 and 2015 according to OECD and LIS data. While the 90/10 percentile ratio consistently increased from approximately 4.5 to 4.8 and further to 4.4 times the average income when comparing 2006, 2012 and 2015, the 80/20 percentile ratio declined slightly to 2.52 in 2012. The 90/50 percentile ratio increased moderately, amounting to 1.89 in 2012 and then fell to 1.8 in 2015, revealing that 90th percentile earned 1.89 times more on average than the 50th percentile, the median.

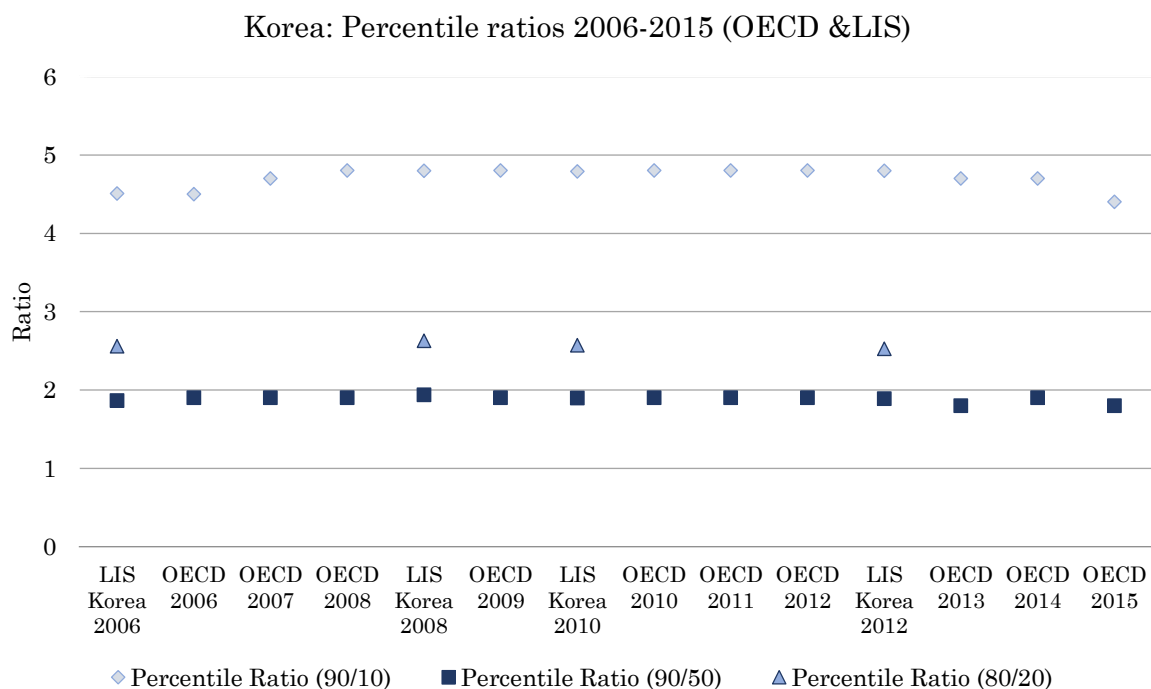


Figure 16: Korea: Percentile ratios 90/10, 90/50 and 80/20, 2006-2015.
Source: LIS (2018), OECD (2019c). Author's design.

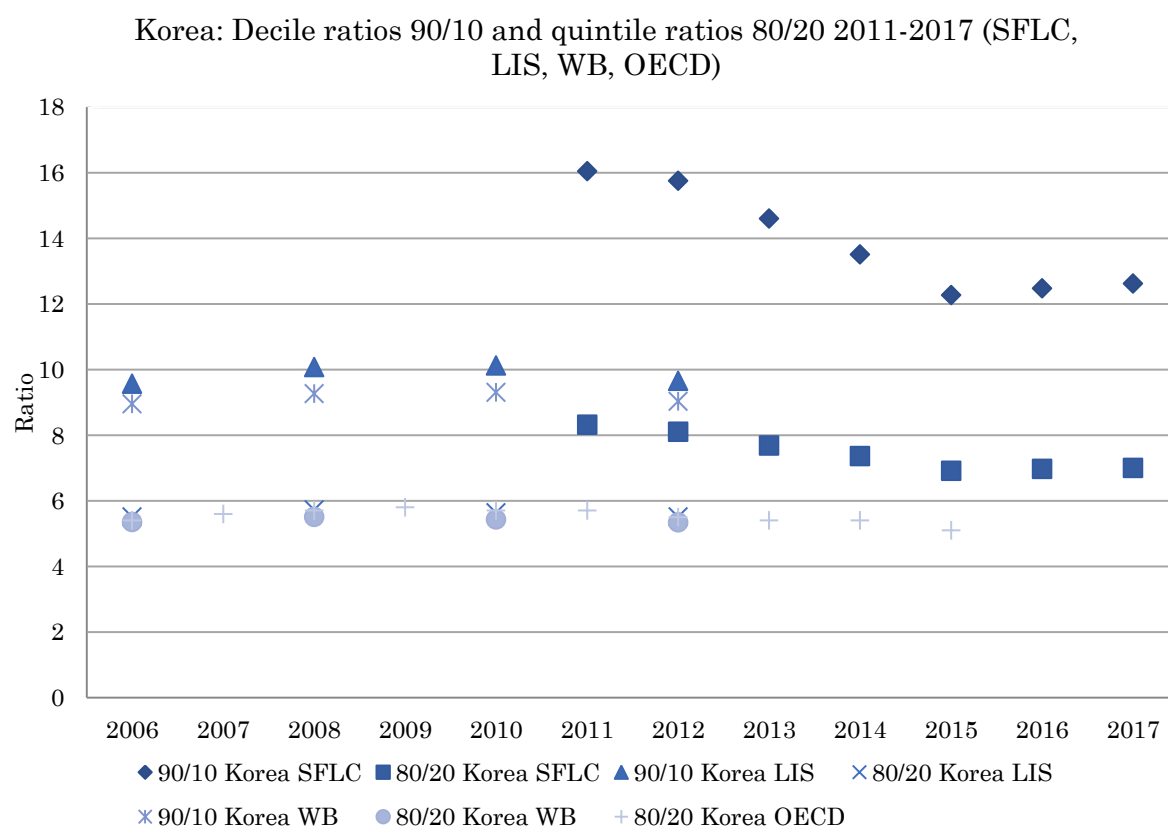


Figure 17: Korea: Decile income ratios and quintile income ratios 2006-2017.
Note: SFLC ratios calculated by author based on SFLC decile shares.
Source: WIID (2018), KOSIS (2019). Author's design.

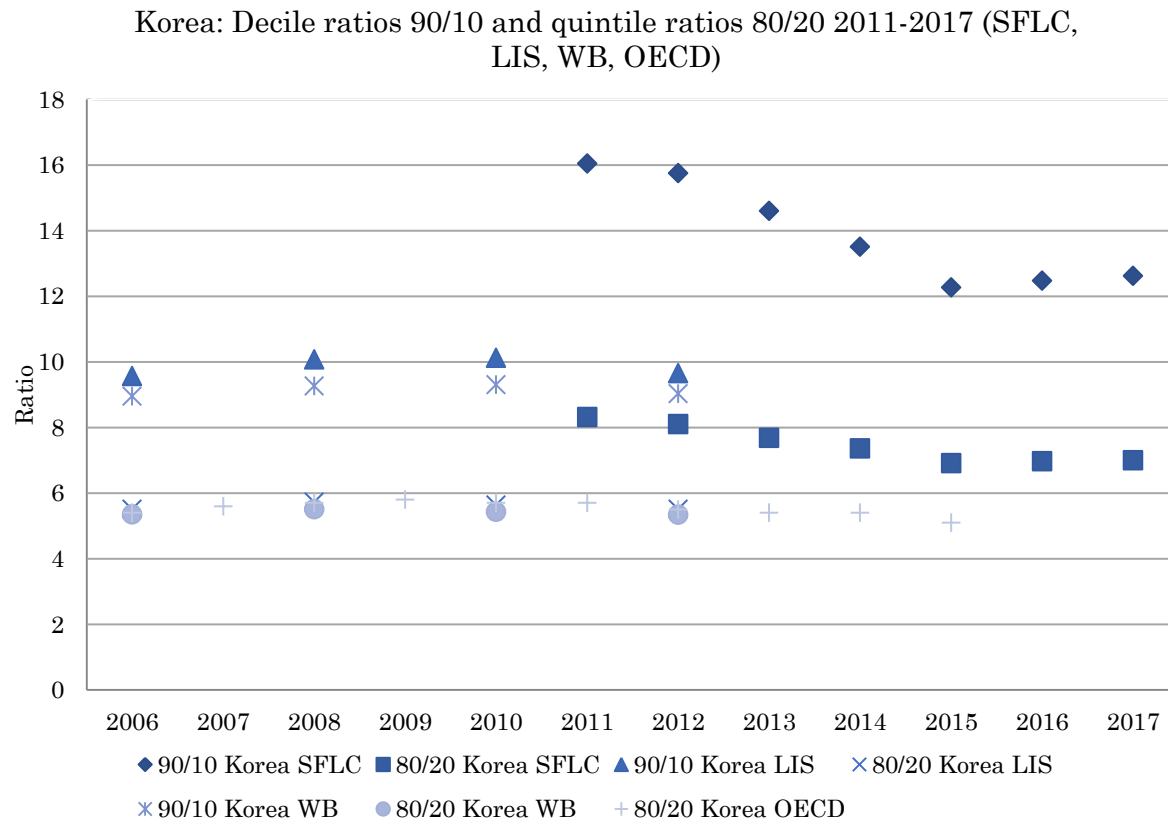


Figure 17 compares ratios of the top 10% to the bottom 10% and the top 20% and bottom 20%, respectively for the years 2011-2017 according to the SFLC. The 90/10 ratio decreased vastly from 2011 (16-fold) to 2015 (12-fold) and then started to rise again until 2017 (12.6-fold). The 80/20 quintile ratio has been more stable, amounting to 8.3 in 2011, to 6.9 at its minimum in 2015 and 7 in 2017. The large difference between the SFLC data and World Bank or LIS data is likely to be caused from the different scales of the income-receiving unit, as the SFLC reflects entire household income while the other two measures are based on a per capita scale. This shows how slight differences in data can lead to quite distinctive outcomes of the income distribution.

Regarding, income shares in Korea, Figure 18 demonstrates decile income shares from 2006 to 2012 from two different data sources, the LIS and OECD. As for Korea, decile income shares are available for several years; thus, in contrast to the previous case study, China, quintile shares will not be analysed separately. In general, it can be said that no major shifts in income shares appeared between 2006 and 2012. Data from LIS and OECD are congruent for all years observed.

D1 decreased slightly from 2006 to 2012 (2.52 to 2.47 LIS and 2.68 to 2.63 OECD), as did D10 from 24.11 to 23.85 LIS and 24 to 23.76 OECD. In between the top and bottom decile, changes in deciles income shares were even smaller. According to LIS and OECD data, Korea's top 10% capture about 24% of total income, in contrast, the bottom 10% capture approximately 2.5%. This is substantially more equally distributed in China.

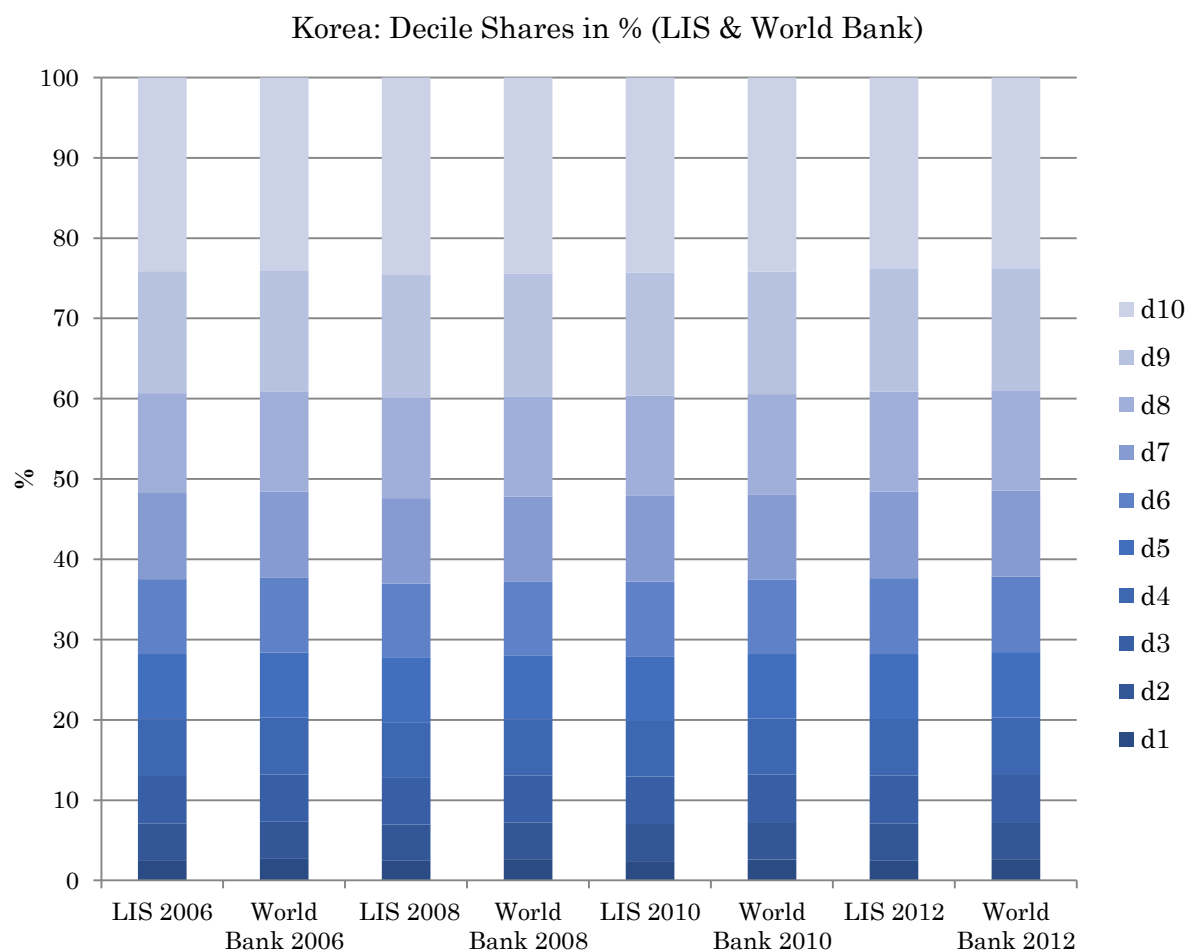


Figure 18: Korea: Decile shares 2006-2012.
Source: WIID (2018). Author's design.

For the years 2011-2017, SFLC data provides decile shares as in Figure 19, suggesting a far more unequal image of income shares. As such, in 2011, the top 10% captured 28.6% of the total Korean income. This amount decreased to 25.8% in 2017. The bottom decile captured about 2% during the observed period. The share of the bottom 50% increased slightly from about 23% to 25%. Compared to

China LIS data, the bottom 50% captured about 20% and the top 10% about 30% in 2013.

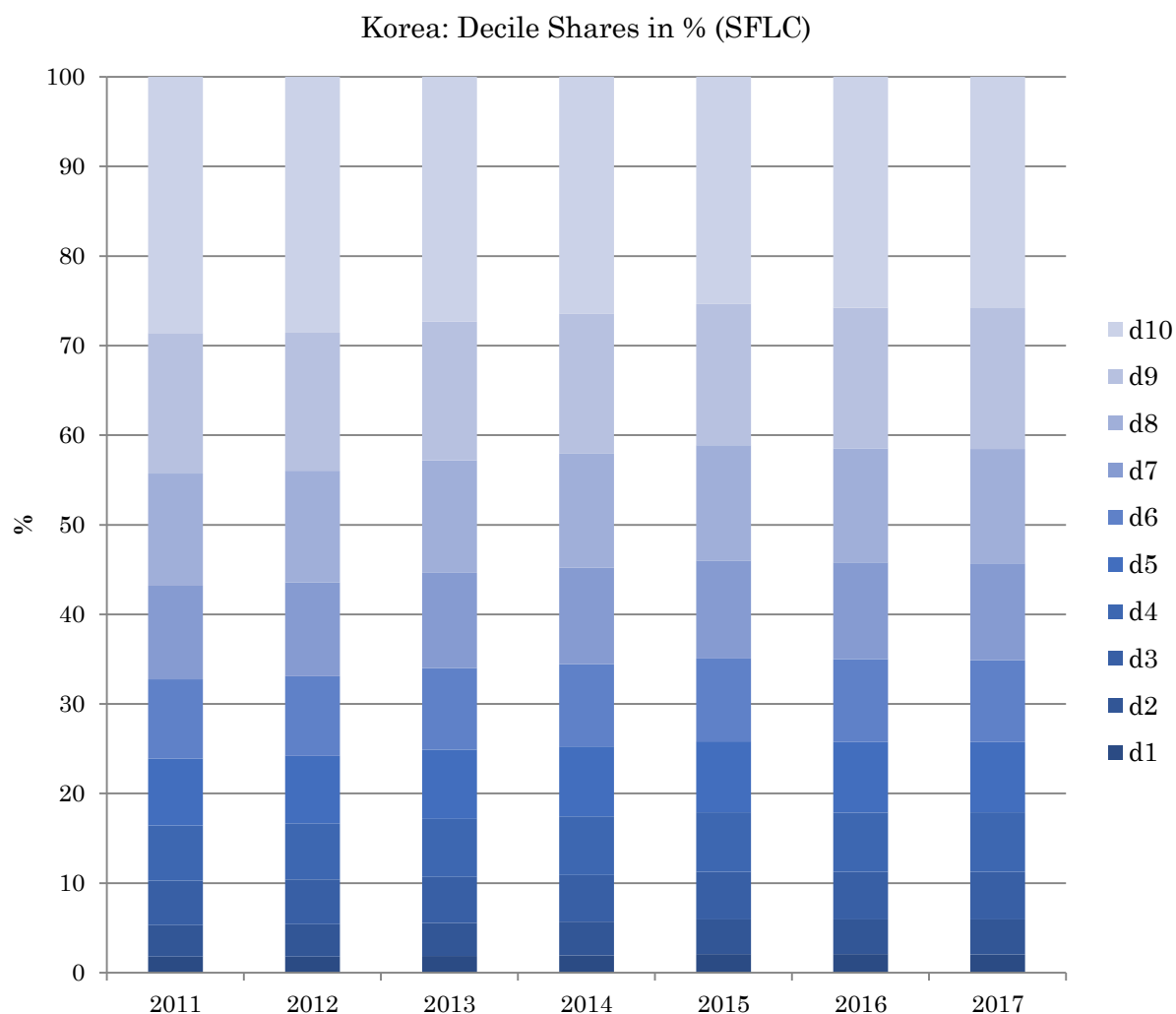


Figure 19: Korea: Decile shares 2011-2017.
Source: KOSIS (2019). Author's design.

Apart from SFLC, LIS and OECD, the WID.world database provides top income shares for Korea. While for China, the WID.world database provides data for the bottom 50% share, this data is not included in the data set for Korea. Figure 20 shows both top income shares for pre-tax and fiscal income in Korea from 2000 to 2016. Again, in contrast to the previously discussed income shares, WID.world data is assessed differently (cf. section 5(II)) as their data is based pre-tax household income per adult, which differs from the previously used income definitions in two aspects. First, household income is not attributed to all members in a household; however, only to these 20 years and older. Second, in contrast, to all other data used, the WID.world database provides measures

based on pre-tax income instead of disposable income. These are some essential limitations, which have to be considered when interpreting and comparing the results of Figure 20 to other data sources.



Figure 20: Korea: Top 10% and 1% pre-tax income shares 2000-2016.
Source: WID.world (2019). Author's design.

According to the WID.world data, top income shares in Korea show a steadily increasing trend between 2000 and 2016, except the year 2005, when the top 10% income share dropped significantly (from 39% to 37%) and then increased sharply to 42% in 2006. Interestingly, the top 1% was not affected, as it stayed the same in 2004 and 2005 and increased from 10% to 11% between 2005 and 2006. A potential change in policy thus must only have affected percentile 90-99. This irregularity is further discussed in the analysis of this thesis (section 1.3(IV)). Overall, it can be said that according to the WID.world dataset, the top 10% of Korean income earners capture between 36% (2000) and 43% (2016) of total income. The top 1% held 8% in 2000 and 12% in 2016. The results naturally differ from data from for instance the LIS or the SFLC database due to different measures and dimensions of income. While the first two stem from household surveys, the WID.world estimates their data from tax and national accounts (cf. section 5(II)). Korean WID.world top income data has recently (in 2018) been

estimated with improved methods and has first been assessed for the years after 2012 (N.-N. Kim 2018).

Looking at smaller shares of top incomes, the top 0.5%, 0.1%, 0.05% as well as the top 0.01% share of the Korean income earners has been growing between 2000 and 2011 and slightly decreasing afterwards. Similar to the top 1 %, smaller income shares have not been affected by the drop in the year 2005. While the top 0.01% income share accounted for 1.59% of total income, the 0.1% one amounted to 4.31% in 2016. The Korean top 0.5% per cent captured 8.77% of the total Korean income in the same year.

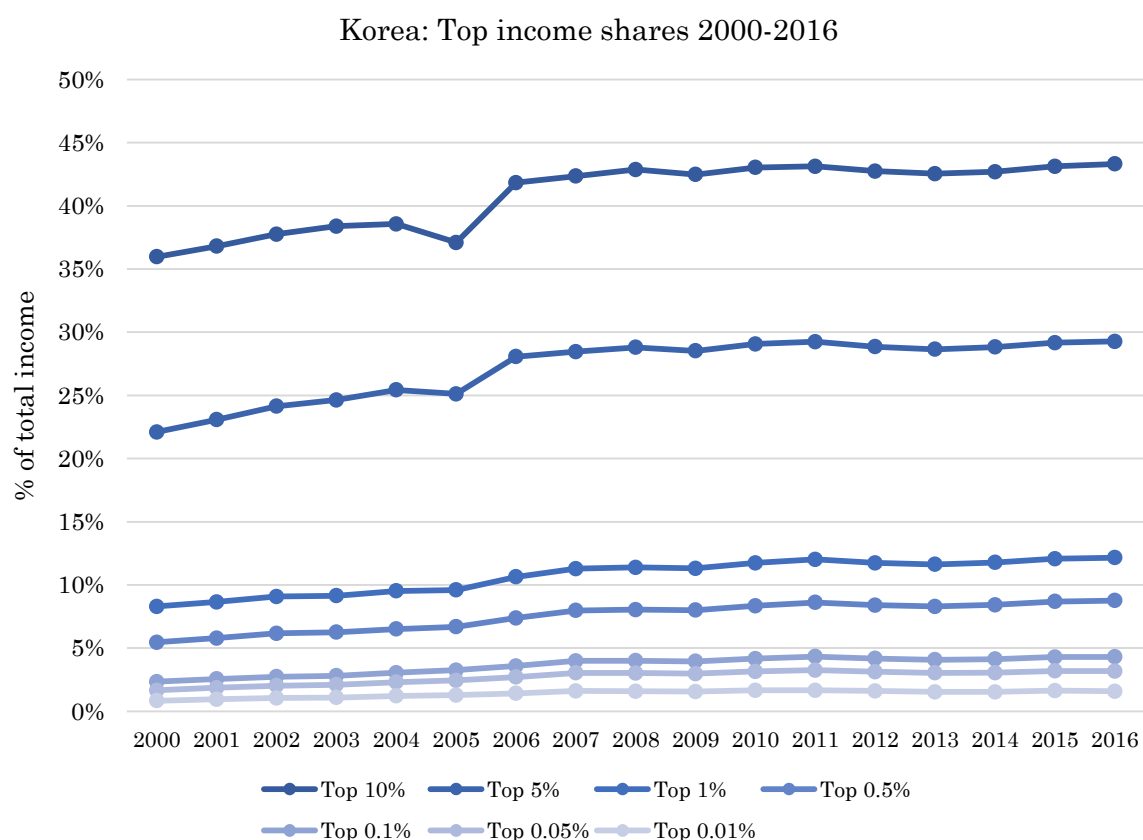


Figure 21: Korea: Top 1%, 0.5%, 0.1%, 0.05% and 0.01% pre-tax income shares 2000-2016.

Source: WID.world (2019). Author's design.

Comparing Korean top income shares to China, it results that Korea's 10% income share exceeds China's, which is a rather exceptional outcome due to income inequality being substantially lower in Korea than in China when looking at other income inequality measures. Chinese top 10% income share of pre-tax

income in the year 2000 amounted to approximately 35% and 41% in 2015 (cf. section 2.1), while Korea's accounted for 36% and 43%, respectively. This issue will be investigated in more depth in Part IV of this thesis, further taking into consideration the respective tax system being discussed in section 2.2.2 and 3.2.2 as the data outlined here is based on pre-tax incomes as mentioned above.

Concerning Korean Gini coefficients, Table 15 presents the data collected in the WIID database next to being expanded by most recent data. Similar to the case study of China, all available nationwide Gini computations within the period 2000-2016, outlining data source (containing national and international surveys as well as research studies), resources, scales and sharing units are being provided. Gini indices assessed based on a sharing unit other than household or family have not been included. Also, all observations using a resource other than net income, for example, such as market income, earnings or consumption, do not form part of the table. This table aims to provide information behind the sole numeric index and demonstrate the limitations of comparing Gini indices across time without scrutinising the income data they are based on. In contrast to China, Korean Gini indices show less variation among values from different sources. Additionally, it can be seen that data is missing entirely for the years before 2004 (unsteady data exists from before 1998). Moreover, data sources consist relatively more of international institutions or surveys than in China.

	Gini	Resource	Scale	Sharing unit	Source
2004	31.6	Income (net/gross)	Per capita	Household	Asian Development Bank 2007
2006	32	Income (net)	Per capita	Household	LIS 2018
2006	30.6	Income (net)	Equivalised	Household	LIS 2018
2006	30.6	Income (net)	Equivalised	Household	OECD 2018
2006	31.7	Income (net/gross)	Per capita	Household	World Bank 2018
2006	30.6	Disposable income	Adult Equiv.	Household	HIES KOSIS
2007	31.2	Income (net)	Equivalised	Household	OECD 2018
2007	31.2	Disposable income	Adult Equiv.	Household	HIES KOSIS
2008	32.7	Income (net)	Per capita	Household	LIS 2018
2008	31.4	Income (net)	Equivalised	Household	LIS 2018
2008	31.4	Income (net),	Equivalised	Household	OECD 2018

2008	32.32	Income (net/gross)	Per capita	Household	World Bank 2018
2008	31.4	Disposable income	Adult Equiv.	Household	HIES KOSIS
2009	31.4	Income (net)	Equivalised	Household	OECD 2018
2009	31.4	Disposable income	Adult Equiv.	Household	HIES KOSIS
2010	32.4	Income (net)	Per capita	Household	LIS 2018
2010	31	Income (net)	Equivalised	Household	LIS 2018
2010	31	Income (net),	Equivalised	Household	OECD 2018
2010	32.02	Income (net/gross)	Per capita	Household	World Bank 2018
2010	31	Disposable income	Adult Equiv.	Household	HIES KOSIS
2011	31.1	Income (net)	Equivalised	Household	OECD 2018
2011	38.8	Disposable income	Household	Household	SFLC 2018
2011	31.1	Disposable income	Adult Equiv.	Household	HIES KOSIS
2012	31.8	Income (net)	Per capita	Household	LIS 2018
2012	30.7	Income (net)	Equivalised	Household	LIS 2018
2012	30.7	Income (net)	Equivalised	Household	OECD 2018
2012	31.56	Income (net/gross)	Per capita	Household	World Bank 2018
2012	38.5	Disposable income	Household	Household	SFLC 2018
2012	30.7	Disposable income	Adult Equiv.	Household	HIES KOSIS
2013	30.2	Income (net)	Equivalised	Household	OECD 2018
2013	37.2	Disposable income	Household	Household	SFLC 2018
2013	30.2	Disposable income	Adult Equiv.	Household	HIES KOSIS
2014	30.2	Income (net)	Equivalised	Household	OECD 2018
2014	36.3	Disposable income	Household	Household	SFLC 2018
2014	30.2	Disposable income	Adult Equiv.	Household	HIES KOSIS
2015	29.5	Income (net)	Equivalised	Household	OECD 2018
2015	35.2	Disposable income	Household	Household	SFLC 2018
2015	29.5	Disposable income	Adult Equiv.	Household	HIES KOSIS
2016	35.5	Disposable income	Household	Household	SFLC 2018
2016	30.4	Disposable income	Adult Equiv.	Household	HIES KOSIS
2017	35.5	Disposable income	Household	Household	SFLC 2018

Table 15: Korea: Summary of data on nationwide Gini indices 2004-2017.

Note: Income (net) refers to disposable income. Income (gross/net) refers to the ambiguity in income concepts (cf. section 3.3.3.1). Gini indices in this table are provided on a scale between 0 and 100 instead 0.00 and 1.00, maintaining original values of WIID raw data. Source: WIID (2018), KOSIS (2019). Author's design.

As shown in Table 15, OECD Gini data has been equivalised and is lower than for example LIS and World Bank data, which is scaled as per-capita. Equivalised LIS data is entirely congruent with OECD data. As this thesis aims to adequately compare case studies, also in the case of Korea per capita and not

equivalised household income will form the basis of the comparison. Nevertheless, OECD and HIES (KOSIS) data are included in Figure 22 due to providing the most consistent stream of data. Also, SFLC disposable household income differs in the scale, being the entire household; however, reports the most recent data. The 2004 Gini index assessed by the Asian Development Bank (ADB) will be taken into consideration, since being the only available data point before the year 2006.

Figure 22 shows the development of Korean Gini indices from 2004-2015. Similar to China, the data situation is far from consistent, in particular, due to the non-existence of Gini indices from 2000-2003 and 2005. Nonetheless, a general trend in the data can be identified. Amounting to 31.6 in 2004 and peaking in 2008 (32.7), income inequality according to the Gini coefficient has been declining moderately to 31.8 in 2012. According to OECD data, the Gini index dropped from 31.4 at its peak in 2008 to 29.5 in 2015. HIES (KOSIS) data suggest a substantial increase in the Gini index to 30.4 in 2016. Gini data from the SFLC is substantially higher since income inequality based on disposable household income, which has not been attributed to the household members in the underlying data. As such, this series of Gini indices only reflects income disparities between overall households instead of approximate per capita measures, which shows how distinctive dimensions or definitions of income can affect the outcome drastically. Moreover, also differences in the properties of the different survey can lead to different outcomes due to slightly distinctive methods in the data collection or the processing of the survey data. Nevertheless, this Gini data has been included in this analysis as the SFLC offers the most recent data for once, as well as, providing insights in other indicators.

Korea: Nationwide Gini index of disposable income 2004-2015

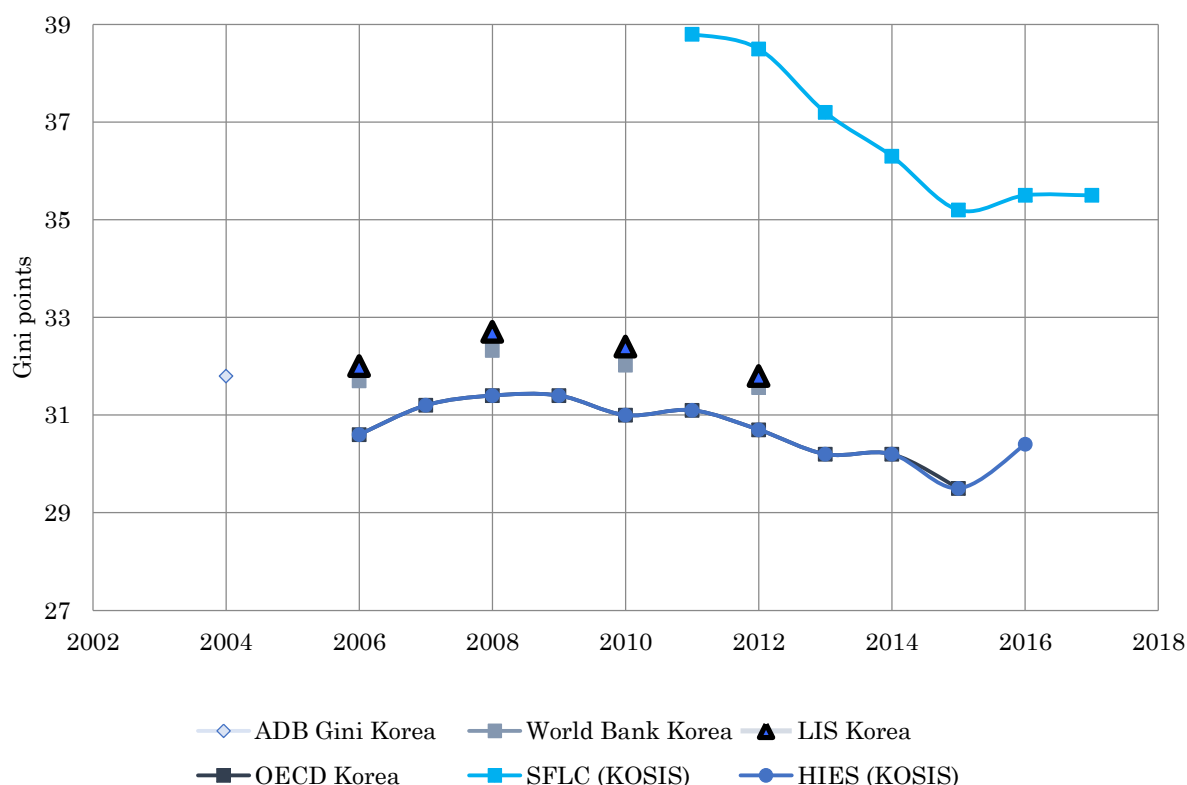


Figure 22: Korea: Gini index of disposable per capita household income 2000-2017.
 Note: Resource and scale details cf. Table 15.
 Source: WIID (2018), KOSIS (2018), KOSIS (2019). Author's design.

3.2 Policy analysis

3.2.1 Spending policy

This analysis of Korean government actions is going to elaborate Korean spending policy following the theoretical framework. Despite only looking at the current situation, the amount of social spending in Korea is going to be compared to data from the year 2000 in order to provide context and gain an impression if they have increased or decreased over time. Table 16 summarises the chosen criteria for Korean spending policies. Alongside discussing the analytical criteria, this section is going to provide examples for certain Korean policy actions regarding social protection spending, which are specifically targeted at reducing income inequality. This breakdown aims to embed the discussed social protection spending policies, however, does not depict a complete investigation on social protection policy measures, as this goes beyond the scope of this thesis. Further,

all outlined government actions are being implemented on a national level, and no local policies form part of the analysis, which corresponds to analysing income inequality measures on a national level only.

Concerning education spending, the OECD (2017a, 77) states that Korea's total public expenditure on education as a percentage of total government expenditure and amounted to 16.3% in 2015, which is considerably higher than the OECD average amounting to 12.6%. Concerning trends in total public expenditure on education, OECD data indicates that since 2007, education spending has increased by 0.8 percentage points (p.p.). The Korean government indicates a budget of education of 16.4% of the overall budget in 2016 (Ministry of Education 2017). Korean public education spending as % total government expenditure when compared to other OECD countries reflects a high commitment to reducing income inequality in Korea in this aspect.

Korea's health spending by government schemes and compulsory health insurance as a share of total government expenditure amounted to 12.5% while OECD35 average was equal to 15.3% in 2015 (OECD 2017b, 137). However, according to the OECD (2017a, 77), health spending has increased by two percentage points since the year 2007. Moreover, the OECD reports that Korea has seen the most notable increase in the share of economic resources allocated to health over the time with a significant progression in the ratio over many years on the back of growing wealth and further increased health coverage for the population.

Concerning social protection spending as a share of total government spending, in 2015, it accounted for 19.4% in Korea, which is below OECD average (32.6%). Similar to education and health spending, social protection spending has increased since the year 2007. The raise was further the largest among different types of social spending and amounted to 4.2 percentage points (OECD 2017a).

Spending policy	Indicator	Change from 2007 to 2015	Latest available
Education	% total expenditure (OECD)	0.8 p.p.	16.3% (2015)
Health	% total expenditure (OECD)	2.0 p.p.	12.5% (2015)
Social protection	% total expenditure (OECD)	4.2 p.p.	19.4% (2015)

Table 16: Korea: Summary of spending policy.

Note: p.p. refers to percentage points.

Source: OECD (2017a). Author's design.

This increase in social protection spending is reflected by a range of newly introduced welfare policies in Korea. As such, the Ministry of Health and Welfare of Korea (MOHW) has implemented policies explicitly targeted at low-income households providing a range of measures, such as child and elderly care. Child benefits have been introduced for children aged 0-5 in households with two or more family members, including KRW 100,000 per month for each eligible child. Remarkably, the “wealthiest 10% of households are excluded” from this benefit as claimed on their website (Ministry of Health & Welfare 2019a). Furthermore, senior citizens in the bottom 70% income group are eligible to monthly benefits reaching from KRW 25,000 to 250,000 of monthly payments. Again, the top 30% income earners are expressly excluded from these benefits as stated on the website of the ministry (Ministry of Health & Welfare 2019b).

On top of that, a booklet published by the Korean Ministry of Health and Welfare (2018) outlines 50 Korean primary social protection and welfare programmes in the year 2018. In order to outline a few examples emphasised by the MOHW, there exists child care specifically aimed at low-income households, namely the Individual Development Account programme as well as Child Development Account offering cash payments and social benefits. Moreover, the Emergency Aid and Support programme aims to support low-income households with similar social benefits (Ministry of Health & Welfare 2019b, 2018).

Overall, it can be said that Korean public social spending has increased in all three criteria investigated. The most substantial increase in social spending

occurred in the area of social protection spending, reflected by a range of newly introduced welfare policies in 2018. However, while public social protection spending and health spending are below OECD average, public education spending surpasses most OECD countries, reflecting the high priority of education for the Korean government. Based on the considered indicators, it can be said that Korea's commitment to reducing income inequality has grown since 2007 and lies above average regarding education as well as being remarkable for introducing specifically at the bottom 90% or 70% targeted social protection policies. As the previous section has shown that top 10% income shares are high in Korea, these examples of policy actions provide evidence that the Korean government responds explicitly to this discrepancy.

3.2.2 Tax policy

After having reviewed social policy spending in Korea, this section is going to analyse tax policy in Korea. In the following, the Republic of Korea's tax system as an indicator of the government's commitment to reducing inequality is going to be investigated. First, different kinds of taxes and their progressivity will be outlined. In a further step, harmful tax practices in Korea are going to be elaborated. Table 17 summarises the main findings.

In regard to the first criterion, personal income tax rates and their progressivity, there are 7 tax groups in Korea since the tax reform in 2018, with rates of 6.6% (0-12 Mio KRW), 16.6% (12-46 Mio KRW), 26.4% (46-88 Mio KRW), 38.5% (88-150 Mio KRW) 41.8% (150-300 Mio KRW), 44% (300-500 KRW), 46.2% (>500 Mio KRW), respectively. In Korea, the Personal Income Tax (PIT) rate is a tax collected from individuals and is imposed on different sources of income, such as labour, pensions, interest and dividends. The tax base is the annual income and the minimum personal income tax rate of 6.6% applies to incomes between 0 and 12 million KRW. The maximum rate of 46.2% (including local income tax) applies to income earners who excess of KRW 500 million. The second top rate accounts for 44% and applies to incomes between KRW 300 million and up to KRW 500 million. Until 2017, the highest marginal income tax rate amounted to 44 per

cent including local income tax, which applied to tax bases over KRW 500 million. The second highest marginal income tax rate was 38 per cent (41.8 per cent including local income tax) which applied to tax bases in excess of KRW 150 million and up to KRW 500 million. The other income brackets remained the same after the 2018 tax reform. As compared to 2017, Korea's tax structure has become more progressive as of 2019, increasing taxation on the upper-income groups (PWC 2019f).

Also concerning Corporate Income Taxes (CIT), the Korean government has recently increased the top marginal corporate income tax rate from 22% to 25%. This rate applies to corporations with more than 300 billion KRW of taxable income within a year. Rates of 10%, 20% and 22% apply to tax bases of 0-200, 200-20,000 and 20,000-300,000 million KRW, respectively. In Korea, the CIT rate is a tax collected from companies, and its amount is based on the net income companies obtain through business activity, usually in one business year (Trading Economics 2019a; PWC 2019e).

The Value Added Tax (VAT) in Korea amounts to 10%; however, exempts farm products, health services, and government transactions (Trading Economics 2019b). Besides, Korea has an inheritance and gift tax, imposing progressive tax rates between 10% and 50% on the transfer of property. As such, for a transfer worth 100 million KRW or less, a rate of 10% is applied. The second highest rate applies to properties above KRW 1 billion to KRW 3 billion and requests taxes of KRW 240 million plus 40% of the excess above KRW 1 billion. For a value more than KRW 3 billion, KRW 1.04 billion plus 50% of the excess above KRW 3 billion will be the tax rate. The same rates apply for both the inheritance and the gift tax. There is no tax on wealth or worth in Korea at this time (PWC 2019g).

Tax policy	Details and progressivity	Rate in % 2019
Personal income tax	Until 2017, the highest marginal income tax rate was 40 per cent (44 per cent including local income tax) which applied to tax bases over KRW 500 million. The second highest marginal income tax rate was 38 per cent (41.8 per cent including local income tax) which applied to tax bases over KRW 150 million and up to KRW 500 million.	Min 6.6% (0-12,000 KRW) Max 46.2% (including local income tax) excess of KRW 500 million Since 2018: 7 tax groups, rates of 6.6% (0-12 Mio KRW), 16.6% (12-46 Mio KRW), 26.4% (46-88 Mio KRW), 38.5% (88-150 Mio KRW), 41.8% (150-300 Mio KRW), 44% (300-500 KRW), 46.2% (>500 Mio KRW), respectively
Corporate tax	2018: Increased from 22% to 25%	25%
VAT	Exemptions: farm products, health services, government transactions	10%
Inheritance/gift tax	There is one, one of the most progressive inheritance taxes as compared to many other nations	10% to 50%,
Wealth tax	No wealth tax in Korea	No wealth tax in Korea
Harmful tax practices	OECD framework of harmful tax practices	No harmful regime exists

Table 17: Summary of Korean tax policies.
Source: Author's design.

In order to provide a point of reference, the average Korean annual household per capita disposable income amounts to approximately 16.67 million KRW in 2018 (cf. section 3.1). Korean monthly household equivalised median market income was equal to about 2 million KRW in 2016 (KOSIS 2018), which amounts to an approximate market income of 24 million KRW for the median Korean income earner. Hence, since the tax reform in 2018, the average, as well as the median Korean individual, is subject to a personal income tax of 16.6%. As the 2018 Korean personal income tax reform was targeted at the top of the income distribution with the bottom income brackets remaining the same, neither the average nor the median Korean income earner was affected.

Concerning harmful tax practices, the Korean government commits to implement the OECD's recommendations under the base erosion and profit shifting (BEPS) project. These proposals contain new rules to restrict base erosion and profit shifting and therefore restrict the potential to impact the tax base (OECD 2019e). In their most recent publication as of the end of January 2019, the OECD has assessed Korea's tax system according to a framework consisting of different types of harmful tax practices. In general Korea's tax regime has been assessed as "not harmful". Also, peer reviews from the OECD (2018a) on the exchange and information on tax ruling, the so-called transparency framework, rate Korea as a country fulfilling the standards and recommendations in 2017. No further recommendations were made in 2018. Overall, it can be said that Korea implemented the BEPS Action 5 transparency framework as well as their preferential regime being assessed as not harmful.

Despite having one of the lowest tax rates in the OECD, the Korean government has shown willingness to impose more progressive taxes in various tax revision bills in 2017, 2018 and 2019. Also, by clearly stating to impose tax policies in order to "*bringing about redistribution of income*" (Ministry of Economy and Finance 2019) indicates a commitment to reducing inequality in this respect. Since the enactment of the new tax policies, tax progressivity has been increased to a great extent, designed to redistribute income and increase the tax revenue base. High-income earners, as well as big corporations, apply to higher tax rates as of the year 2018. Also, large and progressive inheritance and gift taxes reflect the Korean government's recent commitment to reducing inequality regarding tax policies.

3.2.3 Labour market policy

After having analysed Korea's social spending and tax policy, this section is going to review the Korean labour market in respect to labour union rights, women's rights and minimum wages, as all these variables, demonstrate the government's willingness to tackle income inequality. Table 17 summarises this section's findings.

Labour market policy	Description of criterion	Details and policies	Outcome in 2018/19
Labour rights in law and practise	Government efforts to protect workers in law and practice	Slight improvement since 2012	Numerous violations of labour rights in law and practice (Kucera and Sari 2018)
Women's rights	Laws on equal pay for equal work	Equal Employment Opportunity and Work-Family Balance Assistance Act	Equal pay for work of equal value
	Laws against gender discrimination and violence	Act on Equal Employment, 1987, as amended	Protect and support victims and related others of sexual assault
	Parental leave	2014 revision to the Labour Standards Act extended maternity	Since 2015, male and female public officials are allowed to take childcare leave for up to three years. Forbidden to dismiss pregnant workers and return to an equivalent position after their maternity leave
Minimum wage	Existence and amount of minimum wage	Increase by 16% since 1 January 2018 Hourly: 7,530 KRW	Since January 2019: Again, raised by 10.9% Hourly: 8,350 KRW

Table 18: Summary of Korean labour policies.
Author's design.

First, concerning labour rights, the Labour Rights in Law and Practice database (Kucera and Sari 2018) provides a wide range of numerical and textual data and information on violations of labour rights, assessed through 108 criteria. Data are comparable across countries and over time.⁶ Regarding fundamental civil liberties in labour rights, no violations in law have been found. In practice, violent actions against trade unionists and arrests, imprisonment, fining (about their trade union activities) and infringement of trade unionists' fundamental freedoms occurred. Concerning the right of workers to establish and join organisations in law, exclusions of other workers from the right to establish and join organisation have been reported.

⁶ For methodology refer to (Kucera and Sari 2016)

Moreover, dissolutions of legally functioning organisation and lack of adequate legal guaranteed against anti-union discriminatory measures were reported about in Korea. In practice, violations occurred as well, most prominently concerning acts of interference of employers or public authorities as well as anti-union discriminatory measures in relation to hiring and dismissal. Additional union activities face infringements in law and practice as well. Moreover, some workers in Korea are excluded from the right to collective bargaining and the right to strike. In practice, there have been acts of interference during strike actions and collective bargaining. Based on reported violations, the Republic of Korea registers 39 violations overall; 21 in law and 18 in practice. In comparison, to 2012, the violations have become slightly less (42 violations coded overall; 22 in law and 20 in practice, a score of 7.72). The score assessed by the Labour rights in law and practice (2019b) amounts to 7.16 out of 10 (with ten being the worst) for 2016, which makes Korea one of the countries with the poorest labour rights in law and practice worldwide (The Labour Rights Indicators 2019a).

Concerning laws against gender discrimination and violence, according to the OECD Development Centre (2019b), there is no specific law addressing mentioned cases for women as laws covering acts of violence, sexual assault and harassment are gender-neutral in Korea. Sexual harassment is addressed in the Act on Equal Employment and Support for Work-Family Reconciliation (Act on Equal Employment, 1987, as amended) as well as the Framework Act on Gender Equality (Framework Act, 2014). Moreover, the Government of the Republic of Korea (2015) has enacted the obligation to protect and support victims and related others of sexual assault (OECD 2019b).

Apart from that, the Korean Equal Employment Opportunity and Work-Family Balance Assistance Act prohibits discrimination in employment. Its scope incorporates both direct discrimination, in which *“the employer applies separate conditions for employment or work or other discriminatory measures to employees based on gender, marital status, family status, or pregnancy or childbirth, with no legitimate grounding”* as well as indirect discrimination in which *“although the*

employer applies equal conditions for employment or work to employees, the imbalance in the ratio of male and female employees who meet such conditions is severe, resulting in disadvantages to one gender and therefore making it impossible to justify the conditions” (Ministry of Government Legislation 1987 as amended). Additionally, it includes educational opportunities, recruitment and hiring, assignments and promotions, dismissal as well as retirement. The National Human Rights Commission Act further prohibits discrimination based on sex in employment, which includes areas such as recruitment, hiring, placement, training, promotion, wages, payment of commodities other than wages, loans, age limit, retirement, and dismissal (National Human Rights Commission of Korea 2011 as amended; OECD 2019b).

Apart from this, the Korean Equal Employment Opportunity and Work-Family Balance Assistance Act prescribes equal pay for work of equal value (Equal Employment Opportunity and Work-Family Balance Assistance Act, 1987, as amended). Through inspection and deliberation, the Korean government is entitled to impose fines up to two million KRW on employers practising wage discrimination. A fine of up to five million KRW can be imposed on those discriminating in terms of fringe benefits (OECD 2019b; Government of the Republic of Korea 2015).

Concerning parental leave in Korea, working mothers are entitled to 90 days of maternity leave, 60 of which are paid with the full income. The remaining 30 days are paid at a percentage of the mother's monthly income (ICLG 2019b). The 2014 revision to the Labour Standards Act extended maternity leave from 90 to 120 days for female workers who are pregnant with two or more fetuses. Moreover, under the Equal Employment Opportunity and Work-Family Balance Assistance Act, male workers with a new-born child may take three days of paid paternity leave. These have to be taken within 30 days of the birth of the child. Paternity leave is entirely paid by the employer and amounts to 100% of the wage and childcare leave may be taken by both parents, until the child is eight years old. Leave benefits are to be paid at 45% of the worker's monthly ordinary wage (OECD 2019b). In the case that two parents use childcare leave consecutively one after another, the benefit for the first three months of the leave

of the later leaving parent is raised to 100 % of the ordinary wage. The top ceiling for this policy is 2 million KRW. As this benefit is only offered when both parents take childcare leave, it represents a strong incentive to men (Government of the Republic of Korea 2015). Since 2015, male and female public officials are allowed to take childcare leave for up to three years. Furthermore, it is forbidden to dismiss pregnant workers and women are guaranteed by law to return to an equivalent position after their maternity leave (OECD 2019b; Government of the Republic of Korea 2015).

The Korean government has introduced a minimum wage from 1 January 2018 amounting to an hourly rate of 7,530 KRW, a daily minimum wage of 60,240 KRW as well as a monthly rate of 1,570,000 KRW (Wageindicator 2019c), which has been an increase in the minimum wage of 16% as compared to the years before. In November 2018, the Korean government announced to raise the minimum wage again starting from 1 January 2019. As such, Korea's minimum wage for 2019 has been set at 8,350 KRW per hour, which amounts to an increase of 10.9 per cent from the current rate of 7,530 KRW (Wageindicator 2019d).

Overall, Korea's performance concerning labour rights in law and practice is below worldwide average as rated by the Labour Rights Indicators. Regarding women's rights, there is a specific law for equal pay for equal work as well as against discrimination, assault and violence against women. Further, there exists protection and support for victims of sexual assault in Korea. Since 2015, male and female public officials are allowed to take childcare leave for up to three years. Moreover, it is forbidden to dismiss pregnant workers and return to an equivalent position after their maternity leave. Also, with respect to the third analysed criterion, Korea is showing commitment to reducing income disparities by increasing the minimum wage by 16% in 2018 as well as by 10.9% in 2019.

IV. ANALYTICAL PART

1. Comparing income inequality across China and Korea

1.1 Income and poverty rates

After having discussed two case studies, this part is going to compare China and Korea and will elaborate the similarities and differences in income inequality measures across both countries as well as the governments' commitment to reducing income inequality. Subsequently, this thesis' main findings and their relevance will be discussed. Finally, the remaining questions are going to be examined. At the end of this section, Table 19 compares the income inequality measures used in this thesis's analytical framework.

Concerning mean annual disposable household income per capita in China and Korea, average Korean household members earn about 3.76 times more in absolute terms than their average Chinese counterparts in 2017. Chinese mean per capita household income amounted to approximately 5,000 Chinese Yuan in 2002 and about 26,000 Chinese Yuan in 2017. Korean mean per capita disposable household income was equal to 9.86 million Korean Won and 16.67 million Korean one in 2006 and 2018, respectively. This amount equals to 3,441 Euros for China in 2017 and 12,940 Euros for Korea in 2018. In the year 2000, these amounted to 662 Euros in China and 7,655 in Korea (OeNB 2019).⁷

Further, absolute poverty has declined dramatically in China since the year 2000. While the headcount ratio of the 1.9\$ a day poverty line amounted to 40.5% and the 5.5\$ a day to 89% at the beginning of the millennium, these numbers dropped to about 27% and 0%, respectively in 2015. As these absolute poverty measures are almost equal to zero in Korea, Table 19 only indicates the highest of the World bank absolute poverty rates of 5.5\$ a day poverty line. Despite China's HCR dropping steadily during the observed timeframe, still, 27% of the Chinese population lived below a poverty line of 5.5\$ a day in 2015. Likewise, the poverty gap suggests a massive decline in the depths of poverty in China since 2000. As such, in the year 2000, the average Chinese living below the poverty line earned

⁷ Exchange rate to Euros as of 8th April 2019: CNY 7,5561 and KRW 1,288.11

an income equal to 52% of the 5.5\$ poverty line. Later, in 2015, this indicator shrank to about 8%, meaning that poverty in China has become less severe as people living in income poverty earn an income much closer to the defined 5.5\$ poverty line.

In contrast, Korea's absolute poverty has practically been eradicated before the start of the new millennium. As such, the HCR amounted to 0.5% in 2000 and had the same value in 2015. In between, there was a slight peak in 2010 of 0.7%, presumably due to the global financial crisis. Similarly, the poverty gap amounted to 1.5% in 2005 and 2012; in other words, the intensity of absolute poverty in Korea is much lower than in China. Overall it can be said that in China absolute poverty is, despite being reduced to a great extent, still a present issue as of 2015 and therefore much higher than in Korea.

Concerning relative poverty rates, in both China and Korea, relative poverty rates of 40% and 50% of average income have been increasing since 2000, suggesting raising income inequality. China's relative poverty rate of 40% of the average income has increased from 10.8% to 13.7% between 2002 and 2013. In Korea, this rate amounted to 9.5% and 10.3% for 2006 and 2012, respectively. Also, China's relative poverty rate of 50% of average income has risen from approximately 18% to 20% from 2002 to 2013, and the one in Korea grew from 14.3% to 14.6%. The relative poverty rate of 60% of average national income amounted to 25.4% in 2002 and increased to 27% in China in 2013. In contrast, in Korea, this rate amounted to 20.4% in 2004 and declined to 20.1% in 2012. While this rise has been stronger in China than in Korea, also the amount of the percentage share is higher in China than in Korea. Increasing relative poverty rates of 40% and 50% of average income suggest growing disparity at the bottom of the income distribution in Korea and China.

1.2 Income ratios

Apart from poverty rates, this thesis has analysed income ratios as a measure of income inequality. Similar to the previous measures of income disparity, income ratios are substantially higher in China than in Korea. Section 2.1(III) and

3.1(III) have shown that 90/10, 80/20 as well as 90/50 percentile ratios in both China and Korea have not undergone any significant changes or fluctuations since they year 2000. This might result from the fact that percentile shares relate two bounds of income only, which in contrast to decile or quintile share ratios covers a far smaller share of the income spectrum. China's 90/10 percentile ratio has remained at about 7 from 2002 to 2013, whereas in Korea, it amounted to approximately 4.5 in 2006 and 2015, with a small increase in between. Similarly, the 80/20 percentile ratio has stayed at approximately 2.5 in Korea and to 3.6/3.8 in China. When looking at the 90/50 income ratio, it decreased slightly in China from 2.7 to 2.4 and remained the same at 1.8 in Korea as compared to the beginning of the millennium.

Apart from percentile ratios, decile and quintile income ratios reveal insightful information about the Chinese and Korean income distribution. At the beginning of the 2000s, the 90/10 decile income ratio amounted to 18.1 in China and 9.58 in Korea, which was almost twice as high. At present, this ratio is still significantly higher in China (19.7) than in Korea (12.6). However, Korea has experienced higher growth of this indicator. In other words, in 2013, the top 10% of Chinese households almost earn 20 times more than the bottom 10%. In Korea, the top 10% of Korean households captured about 13 times more income than the bottom 10% in 2017. Figure 23 shows income ratios from different data sets in China and Korea during the observed time frame. As the National Bureau of Statistics of China only provides data for quintile shares of income, the latest 90/10 ratio for China dates to 2013.

Concerning quintiles shares, China's are substantially higher than Korea's. In 2016, the Chinese 80/20 ratio amounted to almost 11 whereas the Korean one was equal to about 5 in 2015. Both the Chinese as well as the Korean 80/20 ratio have remained relatively stable during the observed timeframe. NBS data appears to be following previous LIS data, which stands in sharp contrast to Korean income data, which varies strongly by the data source. As such, SFLC data from the Korean Statistics Information Service indicates substantially higher income ratios, which is due to the distinctive scale of household income as

compared to the other data used, which demonstrates that Korean income inequality is substantially higher when being measured across entire households instead of individuals. Additional income inequality measures, such as income shares and Gini indices are based on this definition of income as well for what reason they are likely to overestimate income inequality as compared to the utilised Chinese definitions. Comparing income ratios in China and Korea also brings different developments in both nations to light. While income ratios have not experienced significant fluctuations in China, in Korea, the 90/10 ratio has dropped dramatically between 2011 and 2015 before increasing slightly up until 2017. Data from the OECD and LIS suggest a peak in income ratios between 2008 and 2010 and show no drastic changes in their development.

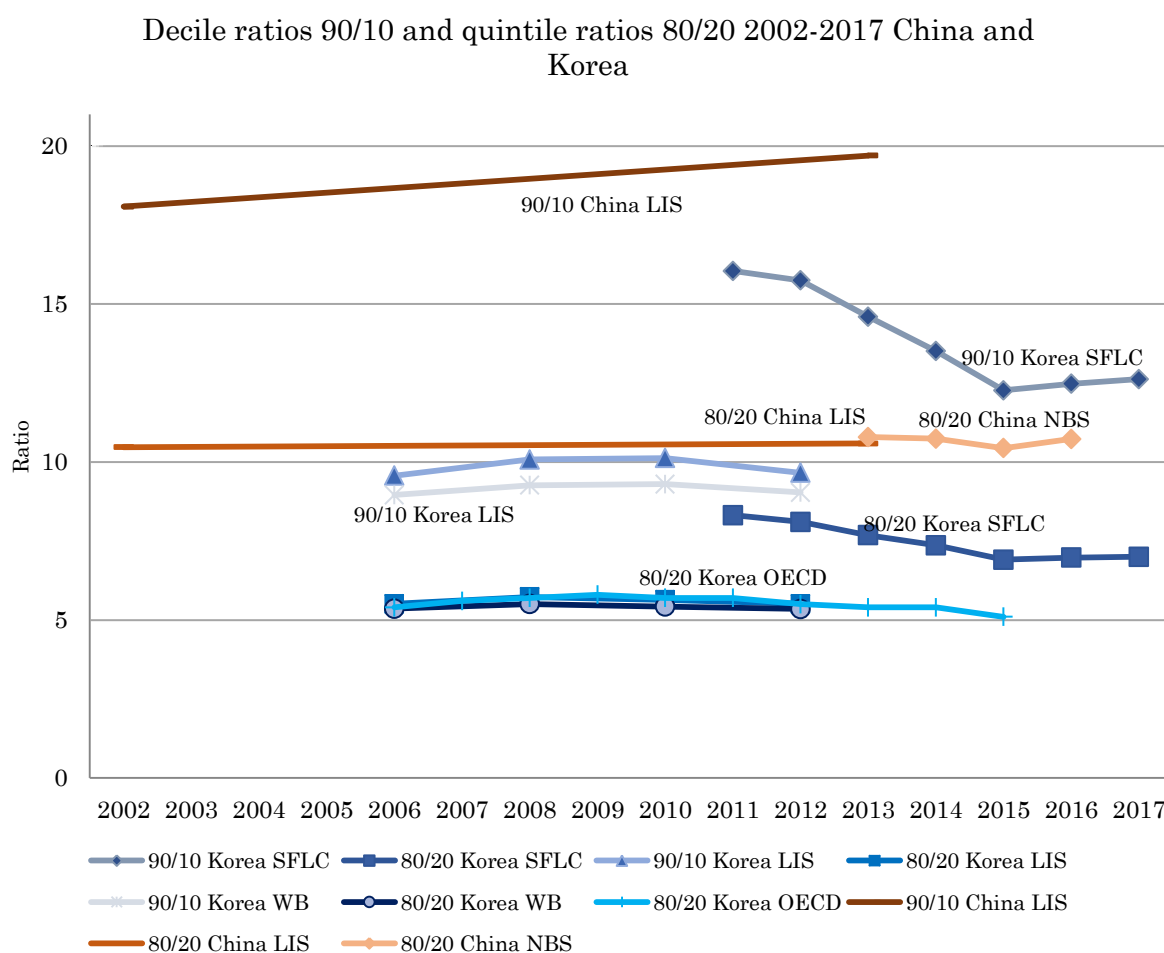


Figure 23: Comparison of Chinese and Korean 90/10 and 80/20 income ratios, 2002-2017. Note: Data points for LIS data (China) have been connected despite missing data for the years between 2002 and 2013 in this graph.

Source: Various sources as indicated in Table 9 and Table 15. Author's design.

1.3 Top income shares

This section is going to assess and compare income inequality in China and Korea based on top income shares. Chinese and Korean top income shares from two different kinds of data sources have been discussed in Part III of this thesis. First, survey data, such as from the LIS, SFLC or the NBS show that the Chinese top decile captures more of the total income than the Korean. In the year 2013, LIS data reports a Chinese D10 share of about 31%, whereas the SFLC reported a Korean share of 27% in 2013. More recent Chinese data is not provided by neither the LIS nor the NBS (cf. section 2.1(III)). Another shortcoming of this comparison is that it compares two different data sources with distinctive surveys underlying. As such, when contrasting 2012 Korean and 2013 Chinese LIS data, the top deciles amount to 24% and 31%, respectively. Second, WID.world data provides estimates of both Chinese as well as Korean top income shares. Next to additionally providing more recent data, the WID.world further allows cross country comparisons of smaller than top 10% income shares, such as top 1%, 0.1% and 0.01% shares. Moreover, the data bank estimates top income shares more accurately due to accounting for the shortcoming of survey data of not reaching top income households and therefore systematically underreporting top incomes (cf. section 5 (II)). Whereas the first, namely survey data, indicates higher income inequality in China than in Korea, the second, WID.world suggest higher income inequality in Korea than in China (top 10%).

Thus, in the following, top pre-tax income shares are going to be compared across China and Korea. Once again, it is crucial to note that these income inequality measures do not correspond to the definitions of underlying income data as the other used indicators do (cf. section 5(II)). As pre-tax incomes are going to be compared, the Chinese and Korean tax system has to be taken into consideration. As outlined in section 2.2, personal income tax rates within the top income brackets are quite similar in China and Korea, amounting to 45% and 46.5% in 2018, respectively. Before 2018, these personal income tax rates amounted to 45% and 44%, respectively. As such, it can be argued that as taxation of top incomes in China and Korea is relatively similar.

However, taxes on other types of income differ across China and Korea. As such, there exists a different income tax on business income in China as discussed previously. Also, other factors, such as the efficiency of tax collection and the distributional effect of the tax system play a crucial role, as both variables affect the top income share negatively by increasing the relative income share of the rest of the population. Section 2.2 is going to show that the distributional effect of Korea's and China's income tax has been almost equally low in 2015 (cf. section 2.2). Likewise, social spending policies such as cash transfers, which are accounted for in disposable income; however, not in pre-tax income, affect the top income shares negatively. Korea's social spending as a share of total expenditure is higher than that of China as section 2.2.1(III) 3.2.1(III) have revealed, however, pension transfers are already included in the definition of pre-tax income. In order to provide a point of reference from other countries, in Sweden, the top 10% pre-tax income share is below 30% despite the existence of a tax system with relatively high personal income tax rates, sizeable distributive effect and relatively high transfers (Lawson and Martin 2018). Also, in Denmark and Germany these amount to 31.9% and 35% in 2016, respectively. In contrast, the US' top 10% income share amounted to 47% when last reported for 2014 (WID.world 2019). To a certain extent, this shows that pre-tax top income shares are not just results of distinctive tax systems even though the variable measured is pre-tax income. In fact, Alvaredo et al. (2018, 19) argue that progressive tax rates do not only diminish post-tax inequality, they also reduce pre-tax inequality by giving top earners less incentive to capture higher shares of growth by aggressive bargaining for pay rises. In other words, pre-tax and post-tax top income shares are suggested to be somewhat related. Moreover, Alvaredo et al. (2018) claim that income inequality according to top income shares reflects overall income inequality, which follows the above-stated examples. Additionally, they conduct multiple cross-country comparisons using top 10% and 1% income shares. Therefore, pre-tax top income shares will be compared across China and Korea.

According to the WID.world database, the top 10% income share is the first and only income inequality measure, which suggests higher income inequality in Korea than in China. Taking into consideration that other Chinese income inequality measures, such as income ratios and Gini indices, clearly surpass that of Korea, this finding is particularly unexpected. As the top 10% income share has been higher in Korea (43.3%) than in China (41.4%) in 2015, this suggests a specifically high concentration of income in the top decile as compared to the bottom 90% in Korea. Despite high overall income inequality in China according to various data sources and indicators, the top 10% income share was lower in the year 2015 as well as at the beginning of the millennium, however, exceeded Korea's top 10% income share between 2002 and 2007. In contrast to the top 10% income share, the Korean top 1% income share is lower in Korea than in China. Hence, within the top decile, there exist particular structures of disparities across China and Korea. In other words, before 2002 and from 2005-2010, Korea's top 10% of income earners have captured more income than their Chinese counterparts, however, the top 1% of Chinese income earners held more income than the respective Korean top percentile, which implies a different income distribution within the top decile of both countries, namely a relatively income-richer p90-p99 in Korea and more concentration of income at the very top of China's income distribution. Therefore, among the Chinese top 10%, the highest percentile still captured relatively more income and the 90-99th percentile relatively less than in Korea. In short, among the income-rich (10%), the top 1% in China has been particularly rich as compared to Korea during most of the observed time frame. Nevertheless, over time, Korea's top 1% income share has been converging towards China's. Figure 24 compares the top 10% and 1% income shares in China and Korea.

However, not only higher top income shares in Korea than in China but also their distinctive development throughout the past 15 years raises questions. First, concerning the 10% top income share, Korea has surpassed the one of China during the years 2000-2001, however, from 2002 to 2006, China's top 10% income share has been higher than Korea's. After 2006, Korea has surpassed China, and since then the gap between Korea's and China's top 10% income shares have

tended to diverge. Second, while China's 10% top income share has peaked at about 40% in 2005, Korea's has peaked at present in 2016, amounting to more than 43%. Third, Korea's top 10% share has dropped sharply between 2004 and 2005 and then increased by 4.7 percentage points in 2006. However, the top 1% income earners were not affected. As these are shifts in pre-tax (and pre-transfer) incomes, changes in tax policy as well as spending policy cannot serve as a reason for this observation. Thus, no explanation aside from economic fluctuations could be found.

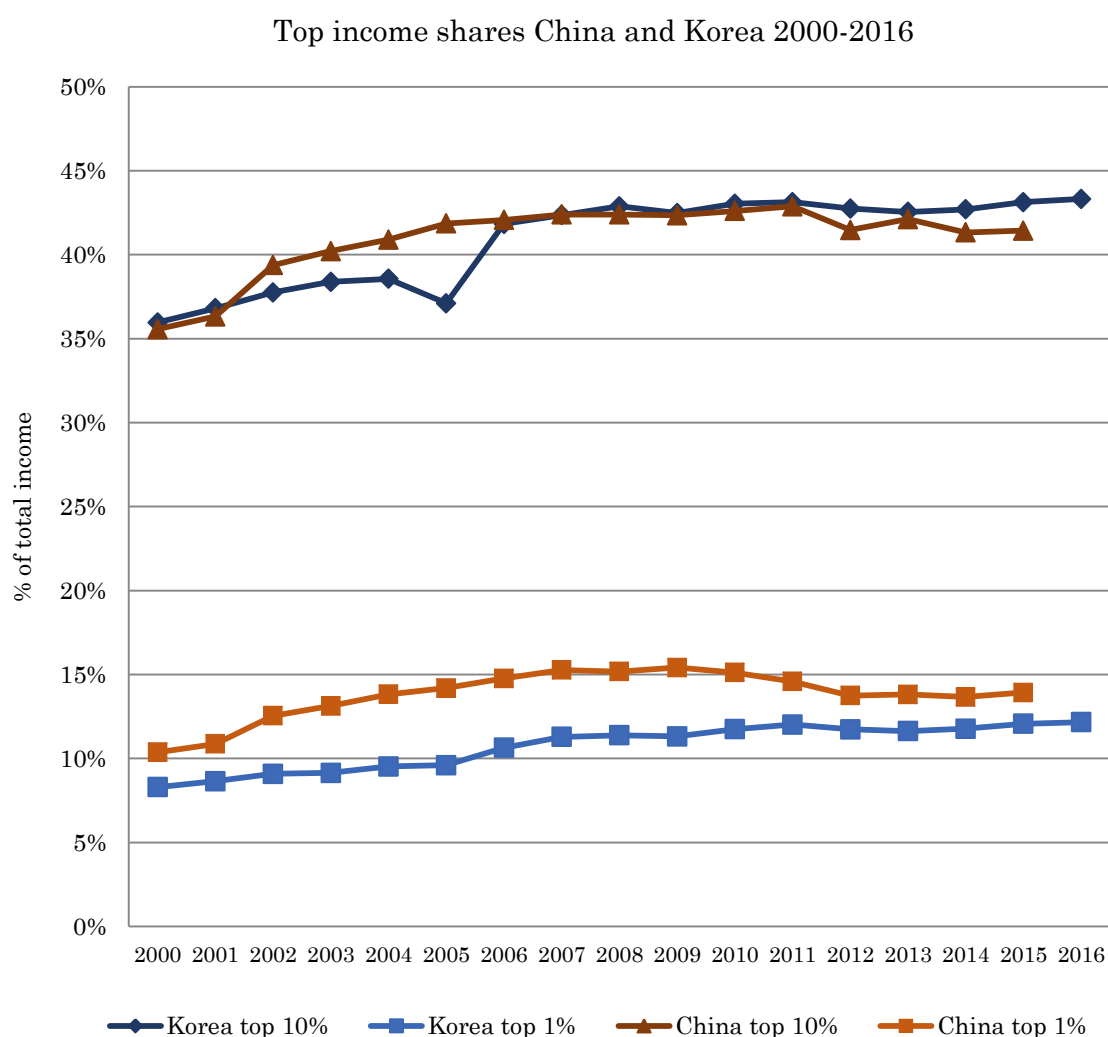


Figure 24: Comparison of top income shares of 1% and 10% pre-tax income per adult in China and Korea 2000-2016.

Source: WID.world (2019). Author's design.

Besides the top 10% income share, the top 1% income share as well reveals relevant characteristics when being compared across China and Korea. First, the

top 1% income share has been less affected by fluctuations since the year 2000 suggesting that the top 1% of income earners are less vulnerable to possible economic influences as compared to the p90-p99 income earners, which is especially true for the case of Korea between the years 2004 and 2006. Nevertheless, particularly in China, both the top 1% as well as the top 10% curve show similar trends.

Overall, it can be said that among the income-rich (10%), the top 1% in China has been particularly rich as compared to Korea during most of the observed time frame. This particularity becomes evident when observing even smaller shares of income in China and Korea. Figure 25 demonstrates the development of China's and Korea's top 1%, 0.1% and 0.01% income shares. Korea's top 0.1% income share grew by two percentage points between 2000 and 2016. Besides, Korea's top 0.01% income share almost doubled during this time. The same is true for China's top 0.1% and 0.01% income shares, which are similar to the top 1% income share substantially higher than that of Korea. Also, they peaked around 2005/2006, whereas Korean 0.1% and 0.01% top income shares have reached their highest in 2011.

Interestingly, China's top 10% and 1% income shares peaked during the same time, whereas in the case of Korea, the top 10% income share has peaked in the most recent observation, in 2016. As of 2016, the Korean top 1% income share is about reaching the same level as its 2011 peak. Still, Korean top income shares of 0.1% and 0.01% are smaller than in China. Similar to the top 1% before 2011, the Korean top 0.1% and 0.01% capture less income than their Chinese counterparts despite the income share of the entire 10% of the top income earners being substantially higher in Korea than in China. Also, the massive drop in the top 10% Korean income share from 2004 to 2005 is mirrored by neither the top 0.1% nor the 0.01% income share.

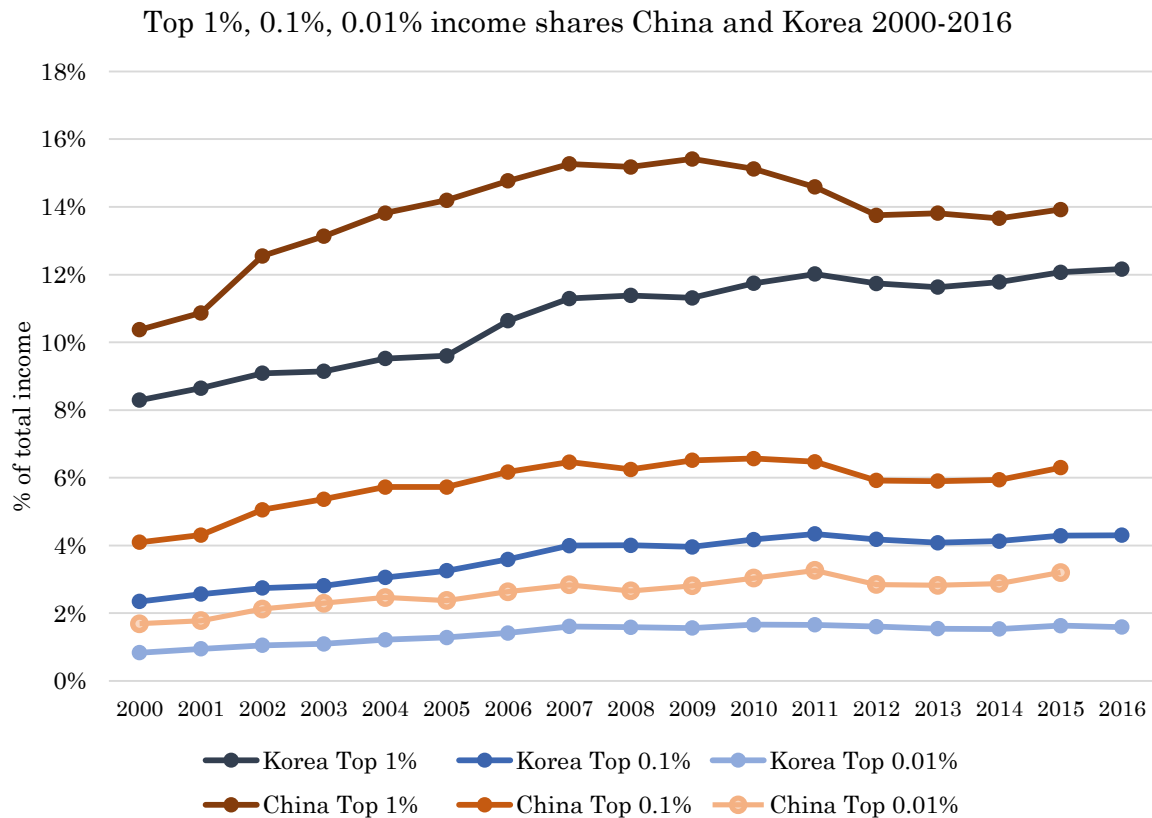


Figure 25: Comparison of top income shares of 1%, 0.1% and 0.01% pre-tax income per adult in China and Korea 2000-2016.
Source: WID.world (2019). Author's design.

Overall, it can be said that the analysis and comparison of top income shares in China and Korea have revealed particularities in the Chinese and Korean income distribution. In contrast to the other analysed income inequality measured, income inequality resulted in being higher in Korea according to the top 10%, however, lower according to 1% income share. Also, income earners at the very top of the income spectrum, namely the top 0.1% and 0.01%, capture more income in China than in Korea. This finding suggests two major outcomes of high relevance. First, it shows the importance of analysing income inequality from a variety of perspectives, and second, it demonstrates the relevance of comparing income inequality across case studies. Additionally, these results provide an opportunity for further research on this particular issue, as these opposing characteristics of income inequality across China and Korea have not been found to being addressed in the existing literature on income inequality.

1.4 Gini index

The Gini index is the most widely used of all inequality measures, taking into consideration the entire income distribution. Nevertheless, data on consistent estimates of the Gini coefficient are inconsistent for both China and Korea. As such, Figure 26 summarises relevant Gini data found for both countries. It is crucial to note that only Gini indices conforming to the definitions of income and the income receiving unit as discussed in Part II of this thesis have been taken into consideration. Hence, solely Ginis reflecting disposable income inequality across households on an overall *national* level can be found in this graph. A comprehensive overview of most other Gini indices, including measures of market income, earnings and consumption inequality across individuals, families or adults as well as urban and rural income inequality, can be accessed through the SWIID data set, newly published in February 2019 (cf. Solt 2019). However, also these data series are not more consistent in the case of China and Korea than the ones according to the definition used in this thesis. Despite being based on a slightly different scale of the income-receiving unit, the SFLC data provides essential information on recent Korean disposable household income inequality as well as its recent development over time. Moreover, as Korean Gini and income share data are scarce, the SFLC measures will still be provided and discussed in this thesis.

The first observation is clearly that several data sources are providing Gini data and that some of these differ widely within the same year. For instance, the OECD Gini in 2011 amounts to 31.1 whereas according to the SFLC the Gini index is equal to 38.8. Also, in China, the PKU estimated a Gini index of 52 in 2010. However, Chen, Pu and Hu determine one of 45.2 in the same year. Moreover, data series are not consistent, and several only offer data on individual years, such as the ADB in the case of Korea or the PKU and LIS in the case of China. Additionally, calculations of national Gini indices in Korea only really start after the year 2006. In contrast, estimates for China cover the entire observed time. Despite these data inconsistencies, a general trend of Gini indices can be observed in both countries that allow careful interpretations.



Figure 26: Comparison of nationwide Chinese and Korean Gini indices based on disposable household income, 2000-2017.

Note: Data points of two observations only are connected by lines for reasons of clarity and comprehensibility in this graph. OECD Korea and HIES (KOSIS 2018) are congruent. Source: WIID (2018), Chen Pu and Hou (2018), NBS (2018), KOSIS (2018), KOSIS (2019). Author's design.

The second observation is that Gini indices are substantially higher in China than in Korea. In the available last year, 2016, the Gini index in China amounted to 46.5 and to 35.5 in Korea, which represents an enormous difference of more than 10 Gini points. Also, during the 2000s and the rest of the 2010s, Gini indices in Korea have been much lower than in China, regardless of the data source used.

Third, income inequality according to the Gini index peaked in 2008 in China at 49.1 (NBS will be taken into consideration here due to being the most consistent and most recent data series). Korea experienced a peak of Gini indices (LIS: 32.7) in the year 2008 as well. Nevertheless, in the case of Korea, the SLFC study starting in 2011 indicates much higher Gini coefficients, the largest amounting to

38.8 in 2011, however, assuming a trend similar to the other Korean Gini data series, 2011 would have been not the peak in Korean income inequality.

Forth, despite having reached a peak about in the middle of the observed time, in 2008, income inequality according to the Gini index is currently higher than at the beginning of the millennium. In 2000, the Chinese Gini index amounted to 43.82 whereas in 2016 it was equal to 46.5. Similarly, in Korea, it grew from 31.8 to 35.5 between 2004 and 2017. Both of these comparisons are made throughout two different data sources, however, in the case of China, all data available at the beginning of the new millennium (Chotikapanich, Ravallion and Chen, CHIP, LIS, Chen Pu and Hou) suggest lower Gini indices than those measures in 2016. This assertion is a bit trickier to support in Korea, as Gini data is scarcer. First, the earliest observation comes from the year 2004, and also, is an individual one only. Comparing Gini coefficients within the KOSIS data series, income inequality even decreased slightly from 30.6 to 30.4 between 2006 and 2016. However, this period only covers ten years as there is a wide gap in data before 2006. Evidence from urban Gini indices or market income Gini indices reaching back to the year 2000 (available at Solt 2019) suggests substantially lower inequality at the very beginning of the new millennium as compared to 2016 as well as 2006. For this reason, it could be argued that between 2000 and 2017, the Korean Gini index presumably increased; however, it decreased slightly from 2006 to 2016. Interestingly, national Gini coefficients in Korea peaked shortly after first being reported, implying that possibly the interest in these measures only came about when income inequality had started to rise or that the government had reacted with quite fast policy action reducing income inequality as soon as it was measured to having increased.

Fifth, in recent years, namely between 2015 and 2016, income inequality, subject to the Gini index, increased again in both China and Korea, which is remarkable, as the trend of the Gini index had been declining since 2008 in China and since 2011 in Korea. This is a crucial finding in order to provide a future outlook on the development of income inequality in China and Korea (cf. section 4). Still, the level of income inequality is very different across the two nations.

1.5 Synopsis of comparing income inequality

Overall, the analysis of income inequality in China and Korea and the comparison of the two suggests that income disparities are much higher in China than in Korea. Not only Chinese Gini indices but also relative poverty rates and income ratios surpass the ones of Korea. Moreover, absolute poverty measures are substantially higher in China than in Korea. Outstandingly, there is one income inequality measure indicating higher income inequality in Korea than in China, namely the top 10% income share. Both in 2000, as well as today, the top 10% of Korean income earners capture more of the total Korean income than their Chinese counterparts. However, when looking at even smaller shares of the population, such as the top 1%, 0.1% as well as the top 0.01%, this picture turns around again, suggesting higher income inequality in China.

When comparing income inequality across the beginning of the millennium with the latest data available, an increase in most indicators can be observed since the year 2000. One exemption, however, is the Korean Gini coefficient, which decreased slightly from 30.6 to 30.4 when comparing the two data points. Nevertheless, Korean nationwide Gini indices are not available between 2000 and 2004. Thus, the observed timeframe is shorter. Furthermore, when analysing the peaks of income inequality across the discussed measures, some conclusions can be drawn. According to top income shares and Gini indices, China's income inequality peaked around 2005, whereas Korea reached the highest disparities later, between 2008 and today. Different developments of income inequality in China and Korea over a more extensive period are going to be analysed further in section 3.

Indicator	Year	CHINA	Change	Year	KOREA	Change	Peak China	Peak Korea
Mean disp. per capita household income in €	2000	662		2000	7,655		2017	2018
	2017	3,441		2018	12,940			
HCR at 5.5\$ poverty line	2000	89.0%		2005	0.5%		2000	2008
	2005	70.7%		2012	0.5%			
	2015	27.2%						
Poverty gap at 5.5\$ poverty line	2000	51.6%		2005	1.5%		2000	2008
	2015	7.8%		2012	1.5%			
Relative poverty rates	40% 2002	10.83%		40% 2006	9.47%		2013	2012
	2013	13.69%		2012	10.27%			
	50% 2002	17.92%		50% 2006	14.33%		2013	2010
	2013	19.91%		2012	14.62%			
	60% 2002	25.40%		60% 2006	20.39%		2013	2008
	2013	26.89%		2012	20.10%			
Income ratios	D90/10 2002	18.08		D90/10 2011	16.04		2013	2010/11
	2013	19.70		2017	12.62			
	Q80/20 2002	10.47		Q80/20 2006	5.51		2013	2008
	2016	10.73		2017	7.00			
Top income shares	Top 10% 2000	35.56%		Top 10% 2000	35.96%		2005	2016
	2015	41.43%		2016	43.13%			
	Top 1% 2000	10.37%		Top 1% 2000	8.29%		2005	2016
	2015	13.92%		2016	12.16%			
	Top .1% 2000	4.09%		Top .1% 2000	2.35%		2005	2011
	2015	6.30%		2016	4.31%			
	Top .01% 2000	1.69%		Top .01% 2000	0.83%		2005	2011
	2015	3.20%		2016	1.59%			
Gini index	2000	43.82		2004	30.6		2008	2008
	2017	46.7		2016	30.4			

Table 19: Comparison and summary of Chinese and Korean income inequality measures 2000 and 2017. Source: as outlined in Table 8. Author's design.

Table 19 summarises this thesis' findings on the analytical criteria of poverty and income inequality measures. When comparing income inequality according to different measures across China and Korea, peculiarities within the Chinese and Korean top income distribution raise the question, how most income inequality indices can measure substantially lower income inequality in Korea than in

China and top income shares can suggest the opposite. The answer might lay in distinctive structures of the Chinese and Korean income distribution. Lower income shares in China than in Korea suggest that at the bottom of the Chinese income spectrum, income earners are much further off than their Korean counterparts. Higher relative poverty rates in China support this evidence. Fundamentally, approximately 14% of Chinese earn less than 40% of the average Chinese income, suggesting a relatively large income gap towards the bottom of the income distribution. Moreover, absolute poverty is still a present issue in China, leaving many Chinese with minimal incomes as compared to the high-income earners in the top decile. A headcount ratio (5.5\$ a day) of 27% and a poverty gap of 8% speak for this premise.

In contrast, Korea's bottom decile is suggested to be less apart than China's, as supported by lower relative poverty rates as well as virtually no absolute poverty and a very small poverty gap. Also, the bottom 10% of the Korean income earners capture relatively more income than their Chinese counterparts. Therefore, China's and Korea's income distributions reveal different characteristics. While China still faces vast disparities at the bottom of the income distribution, Korea's income disparities are somewhat explained by a concentration of income at the top of the income spectrum. As such, Korea has experienced a vast increase in top income share, especially the top 10% of Korean income earners capture more of the total income than their Chinese counterparts. Hence, a Korean Lorenz curve (cf. section 3.4.4.1(II)) possesses a higher slope at the bottom of the population, whereas the bottom of the Chinese Lorenz Curve would show a relatively lower slope. At the top of the income spectrum, the Korean Lorenz Curve would show a higher slope. As Chinese top income earners capture slightly less income, the incline would be somewhat smaller. However, the overall Chinese Lorenz curve would still embody higher convexity, reflecting a higher Gini coefficient.

This remarkable characteristic of the comparison of the Chinese and Korean income distribution has not been found to being addressed by the literature yet, as such, there is an opportunity for more research on this finding. Moreover, this outcome highlights the importance of incorporating different income inequality

measures into the analysis and supports the created theoretical framework. By using various measures of income disparities, this thesis found distinctive characteristics in the Chinese and Korean income distribution that a one-dimensional analysis could not have captured.

Besides these findings, this thesis' analysis of income inequality measures has also revealed research gaps. For instance, more investigation in the field of analysing regional income inequality could be done. Especially in the case of Korea, there are still numerous gaps in research on regional income inequality as the literature review has demonstrated. Moreover, the author has not found any data on Theil indices for Korea nor related studies for the selected timeframe, indicating a research gap in within-group and between group regional income inequality in Korea. In general, income inequality is not a widely examined topic in Korea, which stands in sharp contrast to China. Increasing political interest in Korea as suggested by a swiftly growing commitment by the Korean government possibly precedes an increased interest in scholarship on Korean income inequality in the future as well. The subsequent section compares policy action to reduce income inequality across China and Korea.

2. Comparing government actions

2.1 Spending policy

In order to not only measure a country's position on income inequality based on numerical inequality measures but also grounded on its government's policy actions to tackling income inequality, this section is going to compare spending policy, tax policy and labour market policy across China and Korea. As discussed before, this analysis focuses on currently implemented policies and thus reviews government actions in China and Korea as of 2018 and the beginning of 2019.

When comparing Chinese and Korean public spending on education, both countries are above OECD average, with an education spending rate of 14.84% and 16.3% as a share of total expenditure, respectively. Also, since the empirical part of this thesis has compared spending policy to the year 2007, it can also be

said that both countries have increased their education spending as a share of total government expenditure slightly since 2007. Korea's education spending has been increased a little more than China's. Therefore, it can be said that Korea's commitment to reducing income inequality through education is slightly higher than that of China.

Concerning public health spending, Korea's share of health spending as a share of total expenditure is substantially higher than China's, accounting for 12.5% and 7.12%, respectively. However, the public health spending share has almost doubled in China as compared to Korea, where it grew by two percentage points. Based on the criteria chosen, Korea's commitment to tackling income inequality is higher than China's. Nonetheless, China's commitment has increased more since 2007.

However, Korean out-of-pocket payments for health care are still relatively high, as lying above the OECD average (OECD 2017b). As a result, Korean households tend to invest a relatively large share of private spending on health care, which can be a burden for the lower income brackets. Aiming to address this issue, Korean president Moon Jae-in introduced the Moon care health plan. Two main goals are to "complete control of non-reimbursables" and "revolutionary relief of the burden of medical expenses for low-income households". In order to implement Moon care, the Korean government plans to invest 30.6 trillion KRW by 2022 and has established a position for Director General of Healthcare Security in the Korean Ministry of Health and Welfare. The new responsibilities include expanding insurance coverage, reimbursements and improving public and private health insurance (S. J. Lee and Kim 2018). Additionally, stronger health care coverage, such as lower ceilings in out-of-pocket payments specifically for low-income households have been established starting from January 2018 (Ministry of Health & Welfare 2019a). In China, out-of-pocket health payments have decreased in the past years due to rising government subsidies. Still, comparing China internationally, they amount to approximately 30% of total expenditure on health, which is twice the OECD average. Compared to Korea (about 37%), yet they are lower in 2015 or latest available. In December 2016, the

Chinese State Council announced a planned reduction of out-of-pocket payments to 28% and coverage of health insurance of 90% of the Chinese population by 2020 as part of the 13th Five Year Plan (OECD 2017c, 123).

Regarding social protection spending, Korea surpasses China again with a public social protection spending rate of 19.4% as a share of total expenditure. Meanwhile, China's public social protection spending rate amounts to 12.12%. In this respect, also the increase in public social protection spending has been higher in Korea amounting to 4.2 percentage points, while in China public spending grew by approximately one percentage point since 2007. As a result, this comparison shows that Korea's commitment to reducing income inequality as measured by social protection spending is higher than China's.

Outstandingly, when analysing Korean social protection policies, some of them being prominently placed on the MOHW's website, directly stated to be "*excluding the wealthiest 10%*" in child benefits as well as elderly support for the "*bottom 70 percent income group*" (cf. section 3.2.1(III)) (Ministry of Health & Welfare 2019a). While this a fairly remarkable wording, it further brings the question to mind how Korean policy-making excludes the top 10% (or 30%) of the income-richest families in practice. In order to apply for these social benefits, both the state as well as the person or household applying have to be aware of their relative location on the income spectrum. Evidence from the Korean welfare booklet (Ministry of Health & Welfare 2018) shows that in practice eligibility for these social protection programmes are oriented on the median income of either individuals or multiple persons households. However, the dimension of income is not clarified; in other words, there is no indication whether income refers to gross, net or disposable income. Similar to relative poverty rates as discussed in sections 2.1(III) and 3.1(III), numerous of the social benefits are eligible to individuals or households falling below 50% or 60% of median income. However, when aiming to exclude the top 10% of households in the child benefits programme, the income threshold is set at 14.36 million KRW for a 4-person household. With the median Korean 4-person household income amounting to 4.519 million KRW as claimed in the booklet, this indicated threshold is equal to

the 3.178-fold of median income. However, when comparing this result to percentile ratios as discussed in section 3.1(III), the OECD reports a 90/50 percentile ratio of 1.8 in 2015. However, this inequality measure is based on disposable and per capita income within the household and thus lower. As a result, the Korean government links benefits excluding the top 10% to income thresholds being estimated to representing the 90th percentile. Concerning the basic pensions programme for elderly in Korea, the Korean Ministry of Health and Welfare states to be available for “*senior citizens aged 65 or above and in the bottom 70 per cent income group*” (Ministry of Health & Welfare 2019a). The conditional income threshold is set at 2.096 million KRW for a senior living alone. With the median income per capita determined at 1.67 million KRW by the Korean government for 2018, the basic pensions threshold is situated at approximately 125% of the median income. As there is no data on a 70/50 percentile ratio, it is difficult to determine whether 125% of the median income indeed represent the bottom 70% of Korean income earners.

Summarising Chinese and Korean commitment to reducing income inequality through their spending policy, it can be said that both China and Korea have increased their commitment in the recent past. However, Korea’s commitment can be assessed as higher than that of China because Korean public spending is higher than China’s in all three investigated areas, namely, education, health and social protection spending. Furthermore, both China and Korea have implemented particular social policies in order to tackle income inequality. While China has realised the dibao system, a social programme providing direct, unconditional cash transfers to low-income earners, Korea has, amongst others, carried out policies specifically excluding top income earners. Both Korean as well as Chinese policymaking are profoundly insightful and tend to tackle income inequality from different angles. While China leans towards reducing income inequality with policies targeting the very bottom of the income distribution, Korea inclines to reduce income inequality through the exclusion of top income earners from social benefits. In order to gain more insights into these strategies for tackling income inequality, more research on this perception should be conducted.

2.2 Tax policy

When comparing tax policy across China and Korea, it becomes evident that there have been several changes in each tax system in the recent past. Both China and Korea carried out income tax reforms in 2018, increasing progressivity of their tax systems. Income tax rates for the upper-income brackets increased in Korea, the highest amounting to 46.6%, which is slightly higher than in China (45%). China's second-highest income tax rate amounts to 35%, whereas in Korea, there are several tax brackets in between that, such as the second highest of 44% or after that 41.8% as well as 38.5%. However, the three smallest income tax rates are lower in China than in Korea, amounting to 3%, 10% and 20% in China as opposed to 6.6%, 16.6% and 26.4% in Korea. Both the Chinese as well as the Korean average income earner fall into the second lowest tax bracket. However, the average and median Korean is subject to a tax rate of 16.6% whereas Chinese pay 3%, more than 5-fold, of personal income tax on average. Both countries restructured their personal income tax rates as well as income brackets in 2018. However, Korea's tax reform has increased taxes on the top of the income spectrum, whereas that of China has relieved the tax burden for the bottom of the income distribution. Again, the strategy of China and Korea tackling income inequality from the two different sides of the income spectrum becomes evident.

Moreover, both China and Korea employ a corporate income tax of 25%. Korea has demonstrated commitment by raising the top corporate tax rate from 22% to 25% in 2018. Both China and Korea, provide progressive corporate tax rates for smaller-scale companies. Furthermore, China has taken action to tackling income disparities by reducing the VAT in May 2018. The maximum VAT rate is equal to 10% in Korea and 16% in China. Also, while the Korean government has introduced a progressive inheritance and gift tax, there is no such tax in China. Both nations do not employ a tax on wealth nor have harmful tax practices been detected.

However, it has to be said that in practice, both the Korean as well as the Chinese tax system had little redistributive effect. As such, the OECD (2017c) reports a limited reduction of Gini index percentage points after redistribution.

China is situated at the very bottom with the impact being close to zero despite facing relatively high market income inequality. Also, when comparing a reduction of Gini index percentage points after redistribution in Korea, the nation is situated instead at the bottom with the impact being about two percentage points. Only China, India and Colombia reach lower performance. As a point of reference, large redistribution effects are reached by Ireland and Sweden, reducing their Gini indices by about 25 percentage points. Possibly the tax reforms in 2018 in China and Korea will indeed bring about a broader tax base and a more effective redistribution of income. At least the aim of Korea's 2018 tax reform bill advocates fair taxation and "*strengthening social welfare and bringing about redistribution of income*" (Ministry of Economy and Finance 2019).

Overall, both the Chinese and Korean government demonstrate a willingness to reducing income disparities by their respective tax policies. Based on the criteria analysed, Korea's performance on reducing income inequality through its tax system is slightly higher than that of China. First, Korea's value-added tax rate is lower, benefiting low-income households. Second, Korea introduced a progressive inheritance and gift tax and increased its corporate income tax, which shows commitment to tackling income disparities. Nonetheless, by implementing a personal income tax reform in 2018, both China and Korea have increased their commitment to reducing income inequality to a great extent.

2.3 Labour market policy

The last pillar of analysing China's and Korea's commitment to tackling income inequality, namely, labour market policy, considers three criteria. The first, labour market rights in law and practice, suggests that both China and Korea could perform better when compared to international standards as there have been numerous violations of labour rights in law and practice. While Korea has been assessed of scoring low with 7.16, the labour market situation in China is even lower at a score of 10 out of 10, representing the poorest possible score in 2016. Compared to the year 2012, Korea has improved its labour market rights in law and practice, yet, China's has remained equally low.

Second, concerning women's rights in the labour market, both China and Korea provide a legal foundation for equal pay for equal work between women and men. Moreover, there exists law against violations, discrimination and sexual assault of women in both countries. Also, parental leave is allowed in both China and Korea. In both countries, maternity leave is about 90 days, and both allow extended maternity leave in case of multiple births. The amount of payment during maternity leave is regulated on a regional or municipal level in China and thus varies within the country. In contrast, Koreans are entitled to 60 days of fully paid maternity leave, and the rest are paid at a percentage of the mother's monthly income. All laws concerning parental leave apply on a national level in Korea. Regarding paternity leave, both in China and Korea fathers have the right to take paternity leave. In Korea, male workers with a new-born child may take three days of paid paternity leave, which is entirely paid by the employer and amounts to 100% of the salary. Paternity leave in China is regulated on the municipal or provincial level as well. However, most municipalities entitle fathers to paternity leave of seven to 30 days.

Third, there exists a minimum wage in both China and Korea, yet, in China, it is set at a local level whereas in Korea the same minimum wage applies to the entire country. Regarding the minimum wage, Korea has proven vast commitment to tackling income inequality as it rose the minimum wage substantially two years consecutively in 2018 as well as in 2019. China's highest minimum wage amounts to 2,120 CNY monthly is determined in Beijing. The lowest minimum wage is set in Guanxi province at county-level cities and amounts to 1,000 CNY per month (Wageindicator 2019b). The national average monthly disposable household income per capita is equal to about 2,170 CNY a month (cf. section 2.1(III)). Thus, the minimum wage in Beijing almost reaches the average income in China. In contrast, the minimum wage in Guanxi province is equal to about 46% of the average income in China. In Korea, the monthly minimum wage amounts to 1,570,000 KRW, which is equal to 18.84 million KRW when calculated for one year (12 months). Interestingly, this amount already falls into the second personal income bracket and is hence taxed by a rate of 16.6%

(cf. section 3.2.2(III)). Also, the new Korean minimum wage, when accounted for a year, is higher than the annual mean household disposable income per capita, which is equal to 16.67 million KRW in 2018 (cf. section 3.1(III)). However, as this disposable income accounts for all household members, also children and elderly with no or low income, it is naturally lower when calculated per capita. Nevertheless, it can be concluded that the minimum wage is relatively higher in Korea than in China when compared to average incomes.

Overall, both Korea, as well as China, could improve their commitment of reducing inequality in respect to the labour market. First, Korea has established more labour rights in law and practice than China. Second, women's rights are protected both in Korea and China and parental leave is stipulated in both countries as well. Parental leave offers more benefits to mothers in Korea than in China, and more benefits to fathers in China than in Korea. Third, Korea has demonstrated willingness to reducing income inequality by repeatedly increasing the minimum wage to a large extent. In China, the rate of the minimum wage depends on the region one resides in, which has the potential to reinforce disparities between Chinese regions or localities. Also, as a share of the average income, the minimum wage is higher in Korea. As a result, despite many flaws, and based on the criteria discussed, Korea's commitment to tackling income disparities through labour market policy can be assessed as higher than China's.

2.4 Synopsis of government actions

After having discussed China's and Korea's commitment to reducing income disparities in three different areas of policies, namely, spending policy, tax policy and labour market policy, Table 20 summarises the outcomes of the governments' commitment to tackling inequality.

	China	Korea	Evaluation
Spending policy	-High education spending, however, lower than Korea's -Large increase in health spending -Relatively low social protection spending -Numerous policies addressing the very bottom of the income spectrum	-High education spending -Much higher health spending than China -Much higher social protection spending than China -Several policies addressing the very top of the income spectrum	→ Apart from education spending, both governments' public spending is below average. Korea's commitment to reducing income inequality is higher
Tax policy	-Progressive personal income tax reform in 2018: relieving bottom income brackets -Equal CIP 25% -Higher VAT than Korea, no inheritance, gift or wealth tax	-Progressive personal income tax reform in 2018: higher taxation of high-income brackets -Equal CIP 25% -Lower VAT -Progressive inheritance and gift tax, no wealth tax	→ Both governments have increased their commitment through a PIT reform in 2018. Korea's commitment to reducing income inequality is slightly higher
Labour market policy	-Lowest possible labour rights in law as well as in practice -Women's rights on the labour market exist, parental leave is stipulated -Different, at regional levels set minimum wages exist, relatively lower than in Korea	-Relatively low labour rights in law as well as in practice -Women's rights on the labour market exist, parental leave is stipulated -High minimum wage and several recent increases	→ Both governments perform low regarding labour rights. However, Korea has repeatedly increased the minimum wage. Korea's commitment to reducing income inequality is higher

Table 20: Comparison of Chinese and Korean government actions.
Source: Author's design.

In total, Korea's commitment to reducing income inequality is higher than China's. First, Korea's public spending as a share of total public expenditure is higher in Korea than in China. Second, Korea's tax policies are slightly more progressive. Third, due to Korea's recent substantial increases in the minimum wage, also the willingness to reducing income disparities on through the labour

market is higher in Korea than in China. Nonetheless, increases in all three categories of spending policy as well as implementing progressive tax reforms in 2018 in both China and Korea result in an increase in policy action to reducing income inequality today than in the past years. In particular, Korea has surged its commitment to reducing the country's income gap by increasing public spending, raising the minimum wage considerably, and implementing a more progressive income tax reform as well as increasing the corporate tax rate. Also, the Korean government has implemented a range of newly established social benefits in 2018.

Besides assessing the governments' commitment, this analysis has also revealed evidence for different strategies in order to tackle income inequality pursued by the Chinese and Korean government. China aims to address income inequality rather at the bottom of the income spectrum through support programmes for the poor as well as lowering taxes and expanding bottom income brackets in the personal income tax reform. Korea tends towards tackling income inequality at the top of the income spectrum, for instance by implementing social policies excluding top income earners as well as by increasing tax rates for corporations and high personal incomes. These findings seem to be in line with China's as well as Korea's income inequality measures as discussed in section 1 of Part IV, as high concentrations of income at the top of the Korean income distribution and the bottom of the Chinese income spectrum have been revealed. As such, the top 10% of Korean income earners capture 43% of the total income, more than their Chinese counterparts. In China, absolute as well as relative poverty rates are still relatively high; 27% of Chinese fell below a poverty rate of 5.5\$ a day, and 13.7% of the population earn less than 40% of the median Chinese income. This section has provided evidence that both governments tend to address precisely these disparities through their policymaking. However, a more in depth-analysis of government actions tackling income inequality has to be conducted in order to underpin this evidence. Moreover, an analysis of the public opinion on the implemented government policies would be of great interest, especially in the case of Korea, whose recent measures of for instance directly excluding top income earners from social benefits are likely to raise some kind of debate among

the Korean top income earners due to presumably not representing a popular policy action.

What is more, as the measurement of the commitment to reducing inequality in the form of the CRI index has just been published first in 2017 and been reviewed as of 2018, more research on the topic of the commitment of governments might emerge in the future. Also, assessing a government's performance by its commitment instead of its level of income inequality might become a growing trend (perhaps following those discussed in section 3.2(II)) as data limitations (cf. section 5(II)) are prevailing.

Overall, this section has assessed similarities and differences across China's and Korea's policy actions, providing insights into each nation's position of income inequality, additional to the mere analysis of income inequality measures in the previous section. Moreover, such an analysis of how governments respond to the current situation of income inequality serves as a possible strategy, which can be adopted by other policymakers facing different stages of income inequality. Further, this analysis provides context to the discussed income inequality measures and thus built the ground for giving a future outlook of income inequality in China and Korea, as follows in section 4. These aspects mainly display the relevance of this section's findings. In the following, section 3 is going to link this thesis' analysis of income inequality to the East Asian (un)equal growth "miracles" as introduced in Part I.

3. The East Asian (un)equal growth "miracle"

After having analysed income inequality in China and Korea, and before concluding, this section is going to forge a bridge by placing income inequality into the context of economic growth over time. The aim is to detect temporal similarities and differences in the course of Korea's and China's growth "miracles" regarding income inequality. This section does not intend to suggest any causal relationship between the two variables, however, to examine patterns of (un)equal economic growth. As an indicator aiming to reflect economic growth in terms of an increase in real per capita well-being, average national income per

adult in 2017 € PPP has been chosen. Besides, both the Gini index as well as the ratio between average national income and average top income (a similar concept to percentile ratios as discussed in section 3.4.3.3) will serve as a measure of income inequality.

Generally speaking, Figure 27 shows that both China and Korea have experienced enormous economic growth since the beginning of the 1950s. China's average national income rose from 690€ to 15,265€ (2017 prices) per adult in PPP between 1950 and 2016, which is an increase by 22-fold. Also, in the case of Korea, income grew from 1,342€ to 29,873€ (2017 prices) per adult in PPP from 1950 to 2016, which is 22-fold as well. However, while Korea's national income grew vastly in the 1960s already, China's ample economic growth started two decades later, in the 1980s. In the course of their "miraculous" growth, both China and Korea have experienced an increase in real per capita national income by 7 and 9-fold, respectively (cf. Figure 27).

Table 21 outlines the average annual growth rates in China and Korea during the indicated periods. All Gini coefficients used are taken from the SWIID data bank (Solt, 2019). The average annual growth rates are calculated from the national income data by the WID.world data bank as displayed in Figure 27. In the case of China, all Gini indices are based on disposable per capita income, however, in the case of Korea, Gini data is more scarce and hence based on urban estimates in the 1990s. Besides, the average calculated Gini for the entire period is based on multiple scales of disposable income, such as per capita, equivalised and household disposable income (cf. 3.1(III)). This needs to be taken into consideration when comparing Chinese and Korean average Ginis, however, serves the purpose of this particular analysis.

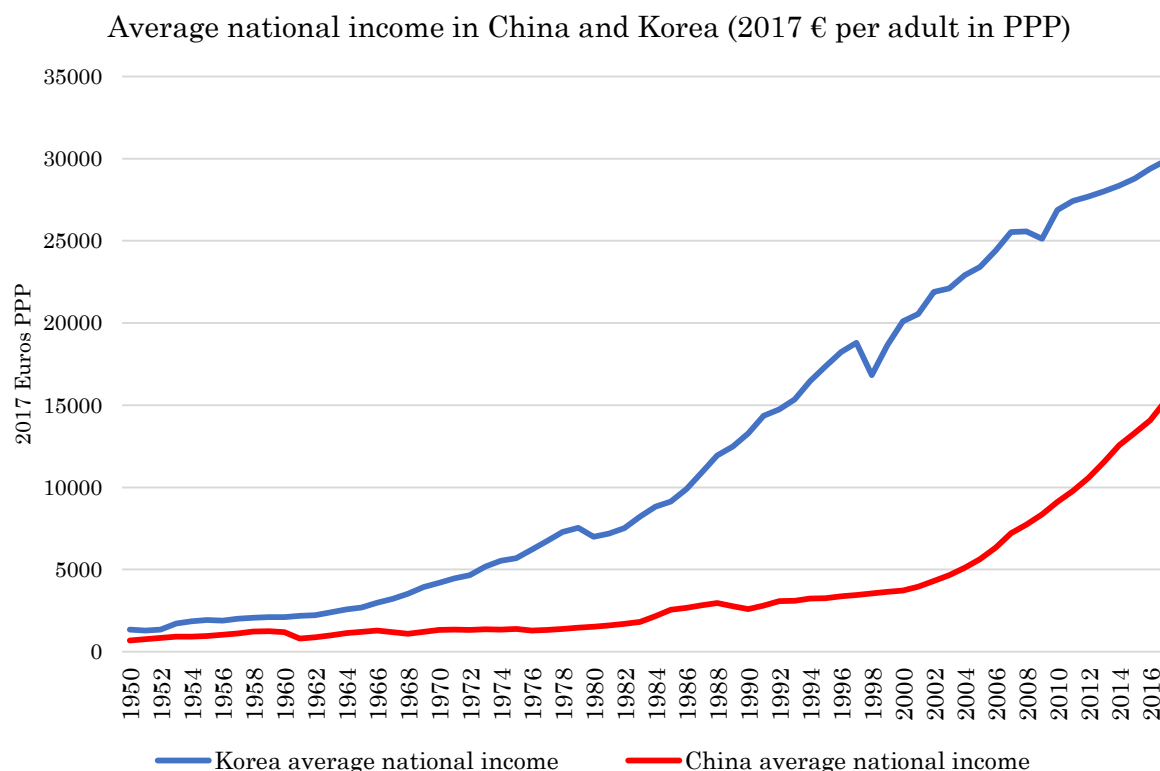


Figure 27: China and Korea: Average national income per capita in 2017 Euro PPP, 1950-2016. Source: WID.world (2019). Author's design.

	Average Gini China	Average annual Chinese NI growth %	Average Gini Korea	Average annual Korean NI growth %
1961-1970	-	1.075889	-	7.150081
1971-1980	31.00	1.381817	-	5.270088
1981-1990	31.94	5.456514	33.02**	6.602566
1991-2000	38.56	3.724221	25.97*	4.233703
2001-2010	46.18	9.366612	31.45	2.946485
2011-2017	46.45	7.629287	32.61	1.525795
Growth "miracle"	39.04 (1978-2010)	6.051092 (1978-2010)	28.19 (1981-1997)	6.102231 (1960-1997)

Table 21: Average nationwide Chinese and Korean Gini indices compared to average annual national income growth 1960-2017. Notes: Average annual average national income growth calculated by author from WID.world (2019) data as displayed in figure 27. NI=national income. China: Average Ginis calculated from Ginis based on disposable per capita income available in the SWIID (Solt 2019) database, no of Ginis = 76, Korea: Average Ginis calculated from the SWIID (Solt 2019) Ginis, however, due to the lack of data, both per capita and equivalised scales used, no of Ginis (2001-2017) = 41. *Urban estimates n=10, scale=adult equivalent, data from SWIID, **n=4 scale=household or adult equivalent. Average Ginis only indicated when more than three observations. Source: WID.world (2019) and Solt (2019). Author's design.

The comparison of average annual income growth and Gini data across China and Korea suggests that income inequality in Korea was relatively low during the Korean growth “miracle”, amounting to 28.19 on average between 1981-1997. In contrast, income inequality in China started rising at approximately the same time as the overall Chinese economy started to grow. The average Gini during the growth “miracle” was equal to 39.04, more than ten Gini points higher than Korea’s. Thus, according to this analysis, it can be said that the Korean growth “miracle” has developed more equally relative to the Chinese growth “miracle”, which based on the data discussed here, can be characterised as rather uneven. Both the Korean (1960-1997) as well as the Chinese (1978-2010) growth “miracle” reached an average annual national income growth rate of approximately 6.1%.

After the Korean growth “miracle” in 1997, when growth rates started to drop, income inequality started to rise steeply in Korea up until 2008. In the 1990s, the Korean average Gini amounted to approximately 26. However, it rose to 31 and 33 between 2001-2010 and 2011-2017, respectively. In contrast, China’s income inequality had been growing vastly during the economic growth “miracle”, from an average Gini of 31 in the 1970s to an average Gini of 46 during the 2010s. Between 2011 and 2017, the data indicates an equally high average Gini index for China (46) next to a relatively high average annual income growth rate of 7.6%.

In order to add to this observation from a different angle of analysing income inequality, namely top income shares, the following graphs plot average national income together with an average income of the top 10% between 1950 and 2017. The variable of average top income is only available from the late 1970s. Figure 28 and Figure 29 show on the one hand, how average income and top income have developed over time, diverging trends suggesting increasing income inequality, and on the other hand, reflect real economic growth in income terms over time. For a point of reference and more straightforward interpretation, the following figures additionally display the ratio between average national income and average top income for the years 1976/78-2015/16.

In China, average national income amounted to approximately 1,400€ along with average top incomes accounting for about 2,400€ in 1978 (2017 € PPP). As such, income inequality was situated at a relatively low at the end of the 1970s, which follows the other considered income inequality measures. Up until 1983, both average national income, as well as the average income of the top 10%, showed parallel trends. However, from 1984, the two started to diverge, meaning that the average income of the top 10% was growing faster than the average. In other words, the more affluent were getting rich faster than the average Chinese income earner. As such, also the top 10% income share grew to about 29% until 1989. However, in the 1990s Chinese average national income and the average income of the top 10% keep diverging. From the mid-1990s, both average national, as well as average top incomes, accelerate. However, disparities within the two grew further up until the year 2003, when the gap reached its peak. From 2003 on, average national income and average top incomes started a converging trend.

Likewise, other income inequality measures started to decline around that time as the analysis of income inequality in China has shown. Generally speaking, it can be said that as the Chinese economy started growing, so did income disparities in China, first moderately and later vastly up until the mid-2010s, when average incomes still showed ample growth, but the national average started catching up with the top 10% average. Thus, the Chinese growth “miracle” has developed unevenly with income inequality measures sharply rising as income was growing. However, high income disparity within the unequal Chinese growth “miracle” has been partly reversed. As such, income inequality, as measured by most discussed income inequality measures, has been declining for over a decade and has now reached a similar level as in the year 2000.

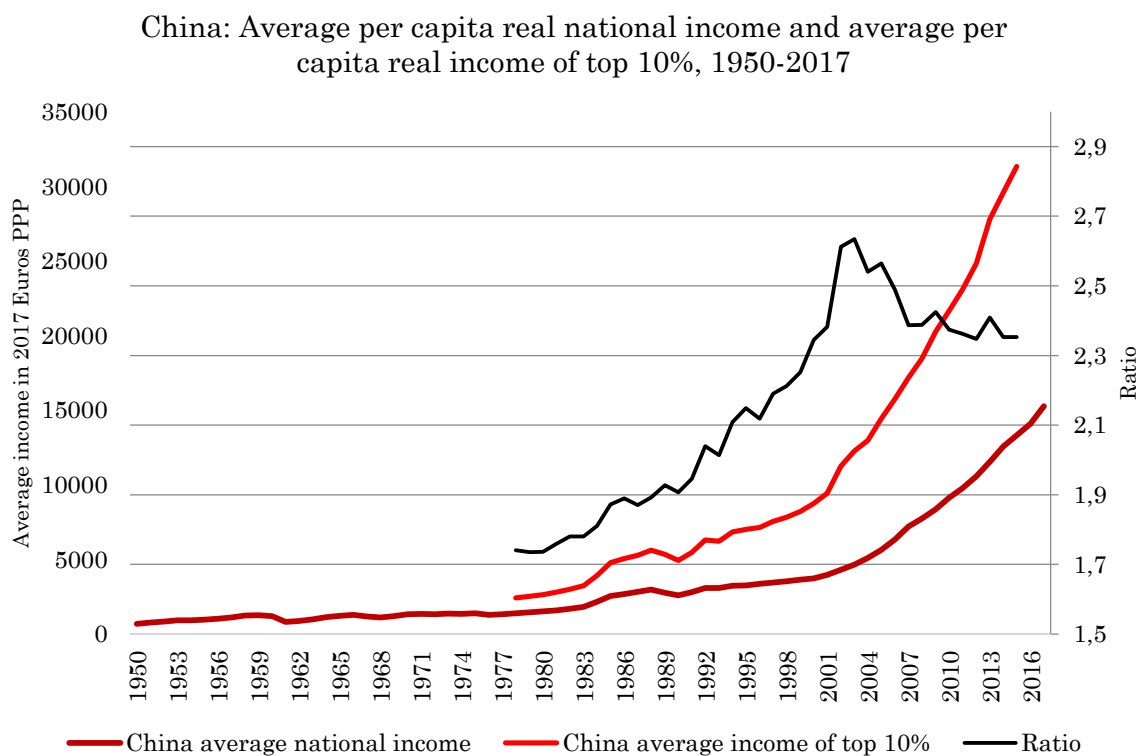


Figure 28: China: Average national per capita income and average per capita income of top 10%, 1950-2017. Source: WID.world (2019). Author's design.

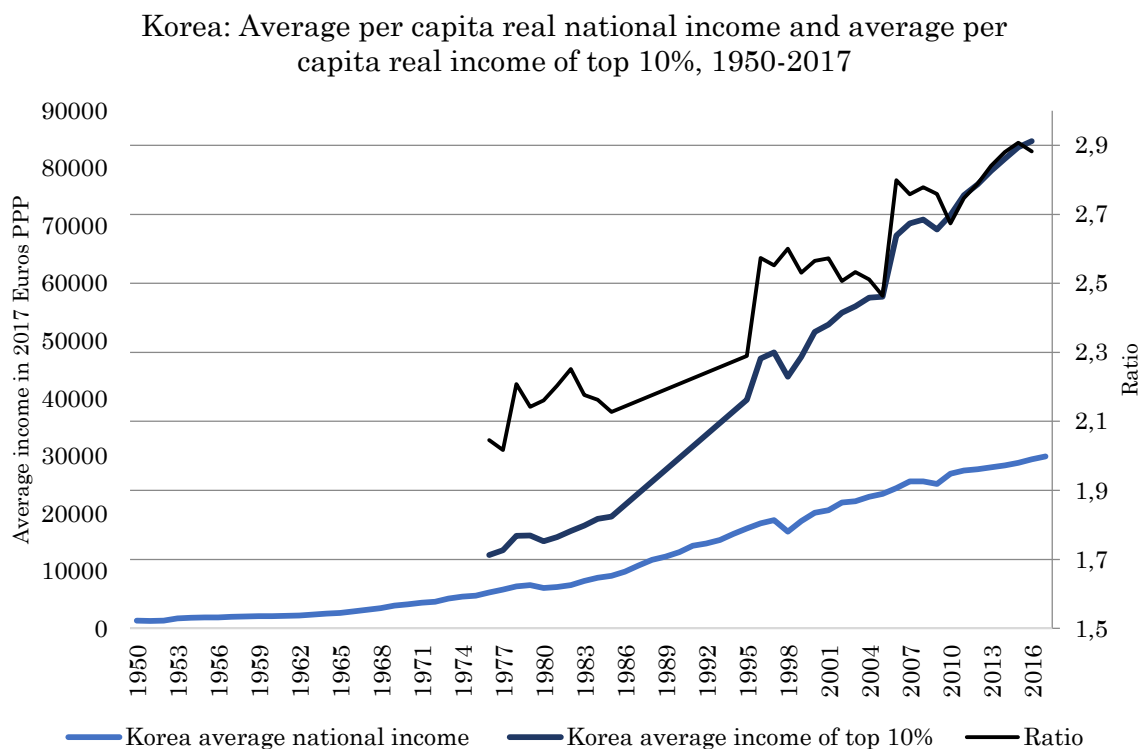


Figure 29: Korea: Average national per capita income and average per capita income of top 10%, 1950-2017. Source: WID.world (2019). Author's design.

In Korea, the ratio of average income and top 10% average income amounted to about 2 in the 1970s, which is slightly higher than in China. Still, similar to China, income inequality in Korea was relatively low in the 1970s with average top incomes only amount to 2-fold of average national incomes. As such, Korean average national income amounted to about 6,200€ in 2017 PPP while the average top 10% income was equal to approximately 12,700€ in 1976. Nevertheless, in Korea, the chronology of economic growth and income inequality was different than in China. In contrast to China, Korea's development of average income was relatively equal to income growth of the top 10% throughout the 1970s, 1980s and the beginning of the 1990s, when the income ratio rose slightly from 2 to 2.28. However, in the mid/late 1990s, average national and average top incomes promptly started diverging. The income ratio jumped up to 2.6 and since then increased to a level of 2.9. Thus, since approximately the Asian Financial Crisis in 1998, average top incomes have grown more than the average national income, which has been paralleled by generally slower economic and (average national) income growth. Hence, it can be said that Korea's economic growth "miracle" has indeed developed relatively equal in the 1970s-1990s. As "miraculous" growth slowed down in the late 1990s, income inequality started to rise, leading to today's relatively higher income inequality.

However, next to the development of income ratios between average and top incomes, it is somewhat surprising that the level of income ratio is higher in Korea than in China throughout most of the observed time. In 2016, the Chinese ratio amounted to approximately 2.35 whereas the Korean one accounted for 2.88. Again, this outcome contrasts the previously discussed income inequality measures. Also, regarding the level of income, China's average national income is still substantially lower than that of Korea. China now has an average income per adult in Euro PPP that Korea had 1993, about 25 years ago. In 2017, Korean average income PPP per capita is almost two-fold than the Chinese one, and the Chinese average income of the top 10% has reached Korea's average national income not until the year 2013. Hence, the Korean and the Chinese growth "miracle" are not (yet) to be considered as having achieved similar levels of income.

Nonetheless, this section has revealed considerable differences in the Korean and the Chinese growth “miracle”. While the Korean growth “miracle” was characterised by high relatively equal income growth, China’s growth “miracle” has been quite the opposite. As China’s national income started increasing, similarly, income disparities did, along with creating wide income gaps. However, for about a decade, China’s income inequality has been decreasing, whereas Korea’s has been rising since the end of the 1990s. These mostly distinctive developments of the two discussed East Asian (un)equal growth “miracles”, first, imply that there is no one of a kind East Asian growth “miracle”. Second, the Chinese and Korean (un)equal growth “miracles” suggest that economic growth can both go along with equal as well as with unequal distribution. Thus, these findings suggest that income inequality is shaped by policy-making rather than being a natural process accompanied by the course of economic growth, which once again emphasises the importance of examining government action.

4. Outlook

After having assessed income inequality and related government action in China and Korea, this section is going to provide an outlook on the topic. The analysis suggests that income inequality is likely to have peaked already in China due to two outcomes of this thesis. The first one being the trend of decreasing indicators of income inequality as well as poverty according to a variety of poverty and income inequality measures. In China, income inequality is relatively lower today than ten years ago. However, from 2015 to 2016 and subsequently from 2016 to 2017, the Gini index has been increasing again for the first time after its peak in 2008. Nonetheless, China is currently not being close to reaching the extremely high level of income inequality of a Gini amounting to 49.1 (NBS) or 52 (PKU) again. Moreover, according to the Gini index, income inequality is still lower in 2017 (46.7) than in 2003. Second, the analysis of government actions suggested increasing efforts to reducing income inequality. The major ones include increases in public spending and the 2018 tax reform. Hence, the outlook, based on this thesis’ findings, suggests that China’s highest income inequality level has been reached and it is not likely to be exceeded in the near future.

In the case of Korea, this prognosis is similar; however, supported by different reasons. Korea's income inequality has been substantially lower than that of China according to most income inequality indicators. Especially at the bottom of the income spectrum, lower disparities have been found. Also, Gini coefficients indicate far lower income inequality in Korea than in China. As such, when taking into consideration the entire Korean income distribution by looking at Gini coefficients, it becomes clear that income inequality is lower today (30.4) than at its peak in 2008 (32.7). Notwithstanding, Gini indices have been rising again since the year 2015 according to both the SFLC and the HIES. A few measures go as far as suggesting that income inequality is now higher in Korea than at the beginning of the millennium, as top income shares and relative poverty rates. However, mainly underpinned by Korea's substantial increase in government actions towards reducing income inequality, the outlook for Korea is similar to China's; the peak has been already reached. Thus, also when looking at 10% top income shares as an indicator of inequality; income inequality is likely to have peaked in the last observed year, 2017. Korea has implemented a range of government actions specifically targeting the redistribution from the top 10% towards the rest of the income distribution, as a comprehensive redistributive tax reform in 2018 as well as specific social spending policies. Also, by increasing the minimum wage, Korea is outstanding in an international comparison in increasing their commitment to tackling income inequality (Lawson and Martin 2018). Thus, also in Korea, income inequality is likely to have reached its maximum, which in contrast to the example of China, is less supported by income inequality measures but more reinforced by government actions.

V. CONCLUSION

This thesis has analysed income inequality across two case studies by using a comparative approach. Adding to the literature, income inequality in China and Korea and related government actions have been compared according to an analytical framework. To the author's knowledge and backed by an extensive literature review, such a comprehensive comparison of income inequality

measures combined with an assessment of government actions across China and Korea has not yet been conducted. Besides, this thesis' analysis aiming not only to measure income inequality but also government actions to reducing it, adds value to the analysis by providing context to inequality indices as well as allowing a new perspective on the topic.

This thesis has contributed to the existing literature by first, generating an extensive literature review on the topic of income inequality. Besides reviewing the literature on the dimensions of income inequality, this thesis has contributed to through elaborating major trends in the history of research on inequality. Second, this thesis provides a substantial collection of data on income inequality measures incorporating and comparing data from numerous data sources. Income inequality data has not just been reviewed and scrutinised, but also existing data sets, such as the World Income Inequality data set have been expanded by the most recent national income inequality data, published as of late 2018 and early 2019. As such, this thesis provides the latest available data, allowing insights into the current situation in Korea and China. Additionally, this thesis revealed the shortcomings of income inequality data in general as well as the inconsistencies of data in China and Korea.

In order to answer the research question, comparing income inequality across China and Korea has demonstrated that most indices demonstrate much higher income inequality in China than in Korea. As such, the latest Gini index (2017) amount to 46.5 and 35.5 in China and Korea, respectively, suggesting an enormous difference of more than 10 Gini points. However, this picture turns around when examining top income shares. In 2000, the top 10% of the Korean population captured more of the total income than their Chinese counterparts. While in 2000, the top 10% Korean income earners held 36% of total income, this income share amounted to 35.6% in China. This gap has widened and accounted for 43.3% and 41.4% in Korea and China, respectively. Therefore, overall, China's and Korea's income distributions were found to showing different characteristics. While China still faces vast disparities at the bottom of the income spectrum, Korea's income disparities are somewhat explained by a concentration of income

at the top of the income spectrum according to this thesis' analysis. This remarkable characteristic of the comparison of the Chinese and Korean income distribution has not been found to be addressed by the literature yet. Thus, there is an opportunity for more research on this finding.

Moreover, this outcome highlights the importance of incorporating different income inequality measures into the analysis and supports the created theoretical framework. Thus, this thesis has shown that income inequality is not a one-dimensional issue, which can be explained by single indices. Instead, it has to be analysed from a variety of perspectives pointing out different characteristics of the income distribution.

Overall, this thesis has also shown that income inequality has increased in both countries between 2000 and 2017, according to the used income inequality measures, namely, relative poverty rates (except Korea's 60% relative poverty rate), income ratios, top income shares, and the Gini coefficient. In contrast, absolute poverty has declined sharply in China and remained equally low in Korea during the observed time.

This thesis' analysis of policies reducing income inequality added to existing literature insofar that, similar to the previous analysis of income inequality measures, Chinese and Korean government actions have not been found to being compared profoundly yet. According to the framework used, it can be said that Korea's government actions to reducing income inequality have increased to a large extent. Also, the Chinese government has increasingly implemented policies to reduce income inequality. Nonetheless, Korea's willingness to reducing income inequality through government actions has found to be higher than China's. Alongside with the level of commitment, this thesis found evidence of different strategies to reducing income inequality among the two governments.

As such, China commits more to fighting income poverty, which as elaborated in this thesis, plays a crucial role in reducing income inequality, as poverty and income inequality go hand in hand. In contrast to China targeting the lower

income spectrum, Korea pursues quite the opposite strategy. As such, the Korean government has adopted concrete measures by actively directing social spending and tax policies toward the top 10%. In this regard, Korea is a quite outstanding case study to examine. Overall, it can thus be said that both China and Korea actively respond to their distinctive characteristics of the income distribution. China tends to target the bottom more intensively, whereas Korea is inclined to direct policy action to the very top of the income spectrum. However, in order to support this evidence, more in-depth research on government strategies of tackling income inequality has to be conducted.

Finally, in order to forge a bridge from the analysis of income inequality to East Asian growth “miracles”, this thesis has briefly set income inequality in the context of economic or national income in growth, revealing considerable differences in the Korean and the Chinese growth “miracle”. While the Korean growth “miracle” was characterised by rather equal income growth in the course of economic growth, China’s growth “miracle” has evolved quite contrastingly. As China’s national income started increasing, similarly, income disparities raised, along with creating relatively wide income gaps. However, China’s income inequality has decreased for over a decade now, whereas Korea’s has been rising since the end of the 1990s. These mostly distinctive developments within the two discussed East Asian (un)equal growth “miracles” imply two conclusions. First, there is no single kind of East Asian growth “miracle” regarding income inequality. Second, the Chinese and Korean (un)equal growth “miracles” suggest that income inequality is shaped by policy-making rather than being a natural process accompanied by economic growth.

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VII. APPENDICES

Appendix A – Literature on impacts of income inequality

Study, Year	Data, Sample size	Measures	Method	Main findings
Impact of income inequality on happiness				
Dynan and Ravina (2007)	US, individuals, 1979-2004	Relative income measure: own group income - other people's income Happiness	Pooled OLS	Negative impact: Happiness is higher if income of the own group is higher than the income of other people
Schwarze and Härpfer (2007)	West Germany, individuals 1985-1998	Gini, Theil and Atkinson index, income quintiles Life satisfaction	Ordered probit, region and time fixed effects and individual random effects, robust standard errors	Negative impact on life satisfaction, but only when measured with Gini or Theil, not for Atkinson Relative income position (income quintile): no impact on life satisfaction
Grosfeld and Senik (2008)	Polish individuals, 1992-2005	Gini index, reference group income Life satisfaction and private expectations of the future	Ordered logit, year and region dummies, clustered standard errors	Positive impact up until 1997 for both satisfaction and expectations of the future. Afterwards, inequality does not affect expectations and hurts satisfaction. Similar results when the income of the reference group is used.
Sanfey and Teksoz (2005)	19 European countries 1981-84, 1990-93, 1995-97, 1999-2002	Gini index Life satisfaction	Ordered probit, country dummies	Negative effect: High inequality is associated with lower life satisfaction for transition countries. Positive effect for non-transition countries.
Luttmer (2005)	US, individuals, 1987-1988, 1992-1994	Reference income in the neighbourhood Happiness	Pooled OLS, state, survey wave, and individual fixed effects	Negative impact: Higher reference earnings are associated with lower levels of happiness
Senik (2004)	Russian individuals, 1994-2000	Reference group income, Gini index Life satisfaction	Ordered probit	Positive effect: Reference group's income on satisfaction. No effect: Inequality indices on individual satisfaction.
Ferrer-i- Carbonell (2005)	Germany, individuals, 1992-1997	Reference group income, distance between the individual's own and the reference group	Ordered probit, fixed time effects and individual random effects	Negative effect: Reference group on happiness. Individuals are happier the larger their income is in comparison to the reference group.

		income Life satisfaction		
McBride (2001)	US, individuals 1981-1996 12 European countries, individuals, 1975-1992	Gini index Happiness or life satisfaction	Ordered probit, state and year dummies, robust standard errors	Negative impact: Overall inequality decreases happiness, but strong differences between US and Europe.
Impact of income inequality on criminality				
Fajnzylber et al. (2002b)	Panel data: cross country and time series 40 countries 1970-1994	Gini index Homicide and robbery rates	Dynamic specification System GMM estimator in order to deal with the endogeneity of inequality	Positive effect: Inequality increases homicide rates and robbery rates
Fajnzylber et al. (2002a)	Panel data: cross country and time series 40 countries 1970-1994	Gini index, 80/20 ratio, index of income polarisation Homicide and robbery rates	Dynamic specification System GMM estimator in order to deal with the endogeneity of inequality	Positive effect: Crime rates and inequality are positively correlated
Nilsson (2004)	Sweden, counties, 1973-2000	Proportion of the population with an income below 10%, 20% or 40% of the median income, Gini index, 90th/10th percentile Overall crime rate and burglary, auto theft and robbery.	County fixed effects, county-specific time trends	Positive effect: Low-income shares have on property crime; however, not on assault. No impact: other inequality measures on criminal behaviours
Brush (2007)	US, counties, 1990 and 2000	Gini index, per cent in poverty and per cent with an income over 100,000 USD Overall crime, violent and property crimes	Cross-sectional estimates based on 2000 data First-differences estimates: estimates based on within county variations	Positive effect: income inequality and reported crime rates, both for violent and property crimes (cross-sectional estimates). Negative or no impact: First difference estimates
Choe (2008)	US1995-2004	Gini index Overall violent crime, murder, rape, robbery, assault, overall property crime,	State fixed or random effects estimates.	Positive effect: State fixed or random estimates: inequality on overall violent and property crimes. Among violent crime, only rape is associated with inequality. Positive effect: Inequality on

		burglary, larceny, motor		robbery and burglary
Kelly (2000)	US, urban counties, 1991	Gini index Violent and property crimes	Cross-sectional estimates including a set of urban specific variables	No effect: Inequality on property crime Positive effect: violent crime
Machin and Meghir (2004)	UK, 1975-1996, area level	25th or 10th percentile of the real hourly wage distribution Property and vehicle crimes	Area-fixed effects and additional covariates	Positive effect: The lower the 25th percentile wage is, the higher the probability of criminal activities
Impact of income inequality on health				
Lorant et al. (2001)	Belgium, municipalities, 1985-1993	Gini index Mortality and morbidity variables	Weighted least squares model and simultaneous autoregressive model	Positive effect: Higher income inequality is linked to lower mortality rates
Osler et al. (2003)	Denmark, individuals, 1964, 1992	Median share of income in municipality Ischaemic heart disease	Cox's proportional hazard regression models	No effect between income inequality and Ischaemic heart disease
Gerdtham and Johannesson (2004)	Sweden, individuals, 1980-1986	Gini and Robin Hood index, median income, variance of income Survival time in years (mortality)	Cox's proportional hazard regression models	No effect: Income inequality on mortality rates
Weich et al. (2001)	UK, individuals, 1991	Gini index Prevalence of mental disorder	Logistic regression, with clustered standard errors	Negative effect: Mental disorders more common where income inequality higher
Weich et al. (2002)	UK, individuals, 1991	Gini index Self-rated health	Logistic regressions, with clustered standard errors	Negative effect: Income inequality on self-rated health
Hildebrand and Van Kerm (2009)	Austria, Belgium, Denmark, Finland, France, Greece, Italy, Ireland, Portugal, Spain and the UK, 1994-2001	Gini index, Theil index, mean log deviation, CV, ratio of 90/10 Self-reported health status	Panel fixed effects estimation	Negative effect: Income inequality on self- rated health status, however, the effect low
Impact of income inequality on education				
Acemoglu and Pischke (2001)	US, 1972, 1988	Family income, quartiles College	Instrumental variable regression	Negative effect: 10% increase in family income predicts a 1.1% rise in chance of enrolling in college. Effects not bigger for

		enrolment		poor. Possibly higher for families in the richest quartile
Akee et al. (2010)	US	Family income Educational attainment at age 19 and 21, high school graduation	Natural experiment	Negative effect: Additional income for families tends to improve the overall child educational outcomes
Løken (2010)	Norway, 1960, 1970 and 1980	Family income Years of education	Natural experiment: Norwegian oil shock in the 1970s affecting some areas is used as an instrument for family income	No effect: parent income on child educational attainment
Carneiro and Heckman (2002)	USA, 1979	Non-parametric nonlinear measures of parental income (quartiles) measured in adolescence College enrolment	Linear and instrumental variable regressions	Negative small effect: Parental income on college enrolment. Higher effect for upper quartiles
Cameron and Taber (2004)	US, 1979	Family earnings Years of schooling	Schooling attainment models; instrumental variable wage regressions; structural economic models	Effects not statistically significant
Checchi (2003)	108 countries, 1960–1995	Gini index Primary, secondary and tertiary enrolment rate	Panel fixed-effects regression	Negative effect: income inequality on secondary enrolment. Stronger effect for primary and tertiary education enrolment for women

Table 22: Literature on impacts of income inequality
Source: adapted from d'Hombres, Weber, and Elia (2012).

Appendix B – Literature on levels of aggregation

Author(s), Year	Measure of distribution	Measure of income	Period of study	Number of countries	Outcomes
Global inequality (distribution of income among world individuals)					
Bourguignon and	Gini, Theil, Mean log	GDP per capita in PP,	1820-1992	33 single and various	IQ increased until WWII, then

Morrisson (2002)	deviation, Std dev. Of log.	population, 9 decile and 2 vintile		groups of countries	stabilised or rose
Milanovic (2002)	Gini	Disposable income or expenditure per capita, Based on household surveys and adjusted for PPP	1988 and 1993	Three groups, total 91 countries	Inequality increased driven by between-country mean income
Park (2001)	Gini	GDP per capita, deciles of the world income distribution	1960-1992	133 countries	IQ increased 1960-1968, volatile decreased 1976-1992
Sala-i-Martin (2002a)	Gini, Var. log income, Atkinson's, MLD, Theil, CV	GDP data combined with within-country income share	1970-1998	Three groups, total 125 countries	Decrease in global IIQ during the 1980s and 1990s Unless Africa starts growing, inequality increases again
Sala-i-Martin (2002b)	Gini, Var. log income, Atkinsons, MLD, Theil, CV, 2 ratios of decile distribution	GDP data combined with within-country income share (29 countries)	1970-1998	Three groups, total 125 countries	Decrease in global IIQ during the 1980s and 1990s
Schultz (1998)	Variance of log income, Theil entropy index, Gini concentration ratio	Real income (GDP) converted to USD (1985) by foreign exchange rates in PPP	1960-1989, 1994	120 countries	World inequality increased from 1960 to 1968 and decreased from mid-1970s. Two-thirds of inequality is inter-country and one-third intra-country
(Alvaredo et al. (2018)	Top income shares	Combination of sources used at the national level, including tax receipts, house- hold surveys and national accounts, WIID consistent inequality data	1980-2018	USA, Western Europe, China, India, Brazil, Russia, Middle East, estimates for the rest of the world population	Despite high growth in incomes of the bottom 50%, incomes of the top 0.1% have grown as much. At the global level, inequality has risen sharply since 1980, despite strong growth in China.

Table 23: Summary of major studies on global income inequality
Source: adapted and expanded from Heshmati (2004).

Author(s), Year	Measure of distribution	Measure of income	Period of study	Number of countries	Outcomes
International inequality					
Acemoglu (2002)	Growth model	Real income	Unbalanced (2-4) periods, 1979-1997	12 OECD countries	Heterogeneous increase in wage inequality in US and UK than others
Acemoglu and Ventura (2002)	Log GDP 1965 vs 1985 Growth model	Log GDP	1965 and 1985	79 countries	International trade lead to stable world income distribution
Jones (1997)	GDP per worker relative to US 1960 vs 1988	GDP per worker relative to US	1960 and 1988	121 countries	Fast growth, rapid growth in China and India new phenomenon
Li, Squire, and Zou (1998)	Gini	Expenditure or income	1947-1994 5-year averages	49 countries	Inequality stable over time and vary across countries
Sala-i-Martin (2002a)	Gini, Var. log income, Atkinson's, MLD, Theil, CV	GDP data combined with within-country income share	1970-1998	Three groups and a total of 125 countries	Reduction in global income inequality, between country drive inequality 1980-1998

Table 24: Summary of major studies on international income inequality

Source: adapted from Heshmati (2004).

Appendix C – Data

CHINA	1999	2002	2005	2008	2010	2011	2012	2013	2014	2015
HCR 1.9\$	40,5	31,9	18,7	14,7	11,2	7,9	6,5	1,9	1,4	0,7
Poverty gap 1.9\$	13,2	10,2	4,9	3,9	2,7	1,8	1,4	0,4	0,3	0,2
HCR 5.5\$	89,0	80,7	70,7	60,5	53,4	49,1	44,3	36,3	31,5	27,2
Poverty gap 5.5\$	51,6	44,1	33,7	27,5	23,1	19,8	17,2	11,7	9,7	7,8

Table 25: China: Absolute poverty measures.

Source: World Bank (2018). Author's design.

KOREA	2006	2008	2010	2012
HCR 5.5\$	0,5	0,5	0,7	0,5
Poverty gap 5.5\$	1,2	1,2	1,5	1,2

Table 26: Korea: Absolute poverty measures.

Source: World Bank (2018). Author's design.

CHINA	LIS - China 2002	LIS - China 2013
Relative Poverty Rates - Total Population (40%)	10,826	13,685
Relative Poverty Rates - Total Population (50%)	17,916	19,908
Relative Poverty Rates - Total Population (60%)	25,404	26,886

Table 27: China: Relative poverty measures.

Source: LIS (2018). Author's design.

KOREA	LIS - Korea 2006	LIS - Korea 2008	LIS - Korea 2010	LIS - Korea 2012
Relative Poverty Rates - Total Population (40%)	9,47	9,877	10,251	10,269
Relative Poverty Rates - Total Population (50%)	14,328	15,15	14,866	14,62
Relative Poverty Rates - Total Population (60%)	20,389	20,544	20,518	20,095

Table 28: Korea: Relative poverty measures I.

Source: LIS (2018). Author's design.

KOREA	2011	2012	2013	2014	2015	2016	2017
Relative poverty rate 50% of median income (%) SFLC	18,6	18,3	18,4	18,2	17,5	17,6	17,4

Table 29: Korea: Relative poverty measures II.

Note: Estimated from equalised disposable household income SFLC, after revision 2018

Source: KOSIS (2019). Author's design.

QUINTILES CHINA	2002 LIS	2002 Li (2005)	2013 LIS	2013 NBS	2014 NBS	2015 NBS	2016 NBS
q1	4,74	4,55	4,50	4,33	4,27	4,34	4,23
q2	8,79	8,45	9,46	9,50	9,79	9,88	9,88
q3	13,91	13,65	15,07	15,46	15,86	16,04	16,02
q4	22,95	23,41	23,32	23,98	24,23	24,45	24,49
q5	49,62	49,96	47,64	46,72	45,85	45,30	45,37
Total	100,01	100,02	99,99	99,99	100,00	100,01	99,99

Table 30: China: Quintile shares.

Source: WIID (2018). Author's design.

DECILES KOREA	LIS 2006	World Bank 2006	LIS 2008	World Bank 2008	LIS 2010	World Bank 2010	LIS 2012	World Bank 2012
d1	2,52	2,68	2,44	2,64	2,40	2,60	2,47	2,63
d2	4,61	4,63	4,53	4,58	4,63	4,67	4,63	4,66
d3	5,88	5,90	5,80	5,82	5,89	5,91	5,95	5,95
d4	7,05	7,04	6,96	6,97	6,96	6,98	7,05	7,06
d5	8,15	8,14	8,06	8,04	8,06	8,03	8,12	8,15
d6	9,32	9,31	9,18	9,18	9,28	9,26	9,44	9,38
d7	10,72	10,70	10,63	10,59	10,68	10,66	10,77	10,75
d8	12,45	12,43	12,48	12,45	12,47	12,45	12,47	12,45
d9	15,17	15,16	15,32	15,29	15,33	15,27	15,26	15,22
d10	24,11	24,00	24,59	24,45	24,30	24,18	23,85	23,76

Table 31: Korea: Decile shares.

Source: WIID (2018). Author's design.

DECILES KOREA (SFLC)	2011	2012	2013	2014	2015	2016	2017
d1	1,7826427	1,8128808	1,8735867	1,9541875	2,0663613	2,0669754	2,0445559
d2	3,5457389	3,61081	3,696924	3,758053	3,8844796	3,8789343	3,8930144
d3	4,9296325	4,9863567	5,1398012	5,2040086	5,3249886	5,3016576	5,3267753
d4	6,1688819	6,2535043	6,4606439	6,5282749	6,6221461	6,6136501	6,6255184
d5	7,4433151	7,5356035	7,7527727	7,8024338	7,9123108	7,8987987	7,8599672
d6	8,8663018	8,9036744	9,0843832	9,2018611	9,2724031	9,251057	9,161925
d7	10,457389	10,496019	10,638527	10,75519	10,912206	10,801289	10,785354
d8	12,521501	12,421037	12,555185	12,716535	12,894654	12,727334	12,772045
d9	15,684128	15,430045	15,451707	15,67645	15,75819	15,680156	15,726364
d10	28,600469	28,550069	27,34647	26,403006	25,35226	25,780149	25,804481

Table 32: Korea: Decile shares.

Note: Equivalised household income. Unit of reference is household.

Source: KOSIS (2019). Author's design.

KOREA QUINTILES (SFLC)	2011	2012	2013	2014	2015	2016	2017
Sub Summary	100	100	100	100	100	100	100
q1	5,30	5,40	5,60	5,70	6,00	5,90	5,90
q2	11,10	11,20	11,60	11,70	12,00	11,90	12,00
q3	16,30	16,40	16,80	17,00	17,20	17,20	17,00
q4	23,00	22,90	23,20	23,50	23,80	23,50	23,60
q5	44,30	44,00	42,80	42,10	41,10	41,50	41,50

Table 33: Korea: Quintile shares.

Note: Equivalised household income. Unit of reference is household.

Source: KOSIS (2019). Author's design.

DECILES CHINA	2002	2013
d1	1,78	1,55
d2	2,96	2,95
d3	3,89	4,10
d4	4,90	5,36
d5	6,14	6,71
d6	7,77	8,36
d7	9,95	10,39
d8	13,00	12,93
d9	17,44	17,11
d10	32,18	30,53
Total	100,01	99,99

Table 34: China: Decile shares.

Source: LIS (2018). Author's design.

INCOME RATIOS CHINA	LIS - China 2002	LIS - China 2013
Percentile Ratio (90/10)	6,986	7,012
Percentile Ratio (90/50)	2,713	2,419
Percentile Ratio (80/20)	3,798	3,619

Table 35: China: Percentile income ratios.

Source: LIS (2018). Author's design.

INCOME RATIOS CHINA	2002 LIS	2013 LIS	2013 NBS	2014 NBS	2015 NBS	2016 NBS
90/10	18,079	19,697				
80/20	10,468	10,587	10,790	10,738	10,438	10,726

Table 36: China: Income ratios.

Source: WIID (2018), NBS (2018). Author's design.

INCOME RATIOS KOREA	LIS Korea 2006	OECD 2006	OECD 2007	OECD 2008	LIS Korea 2008	OECD 2009	LIS Korea 2010	OECD 2010	OECD 2011	OECD 2012	LIS Korea 2012	OECD 2013	OECD 2014	OECD 2015
Percentile Ratio (90/10)	4,505	4,5	4,7	4,8	4,797	4,8	4,79	4,8	4,8	4,8	4,797	4,7	4,7	4,4
Percentile Ratio (90/50)	1,865	1,9	1,9	1,9	1,936	1,9	1,898	1,9	1,9	1,9	1,887	1,8	1,9	1,8
Percentile Ratio (80/20)	2,56				2,629		2,571				2,524			

Table 37: Korea: Percentile income ratios.

Source: WIID (2018), LIS (2018). Author's design.

INCOME RATIOS KOREA	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
90/10 SFLC						16,04	15,75	14,60	13,51	12,27	12,47	12,62
80/20 SFLC						8,32	8,10	7,68	7,37	6,91	6,98	7,00
90/10 LIS	9,57		10,08		10,13		9,66					
80/20 LIS	5,51		5,73		5,64		5,51					
90/10 WB	8,96		9,26		9,30		9,03					
80/20 WB	5,36		5,50		5,43		5,35					
80/20 OECD	5,40	5,60	5,70	5,80	5,70	5,70	5,50	5,40	5,40	5,10		

Table 38: Korea: Income ratios.

Source: WIID (2018), KOSIS (2019). Author's design.

MEAN INCOME KOREA (KOSTAT)	2012	2013	2014	2015	2016	2017	2018
Survey of Household Finances and Living Conditions (2012~2017)	34,76	36,51	38,19	39,27	40,21	41,28	
Survey of Household Finances and Living Conditions (2017~)						45,20	46,68
Per capita (mean income divided by average household size)	11,99	12,59	13,17	13,54	13,87	16,14	16,67
Average size of household	2,9	2,9	2,9	2,9	2,9	2,8	2,8

Table 39: Korea: Mean income SFLC.

Note: Per capita income calculated by author.

Source: KOSIS (2019). Author's design.

MEAN INCOME KOREA (LIS)	LIS 2006	LIS 2008	LIS 2010	LIS 2012
mean	9,863007	10,920479	11,715465	13,160277

Table 40: Korea: Mean income.

Source: WIID (2018). Author's design.

MEAN INCOME China	2002	2013	2014	2015	2016
mean LIS	5004	18123			
mean NBS		18310,8	20167,1	21966,2	23821

Table 41: China: Mean income.

Source: WIID (2018). Author's design.

Nation	Year	Resource	Resource detailed	Scale	Sharing unit	Reference unit	Mean	Median	Currency	Source
China	2002	Income (net)	Income, net	Per capita	Household	Person	5004	3447	Chinese yuan	LIS 2018
China	2002	Income (net)	Income, net	Per capita	Household	Person	5912	3986	Chinese yuan	Li 2005
China	2010	Income (net)	Income, net	Per capita	Family	Person	8699	5600	Chinese yuan	Institute of Social Science Survey of Peking University
China	2012	Income (net)	Income, net	Per capita	Family	Person	10965	7497	Chinese yuan	Institute of Social Science Survey of Peking University
China	2013	Income (net)	Income, net	Per capita	Household	Person	18123	13479	Chinese yuan	LIS 2018
China	2013	Income (net)	Income, net	Per capita	Household	Person	18310,8		Chinese yuan	NBS
China	2014	Income (net)	Income, net	Per capita	Household	Person	20167,1		Chinese yuan	NBS
China	2015	Income (net)	Income, net	Per capita	Household	Person	21966,2		Chinese yuan	NBS
China	2016	Income (net)	Income, net	Per capita	Household	Person	23821		Chinese yuan	NBS
Korea	2006	Income (net)	Income, net	Per capita	Household	Person	9863007	8585108	Korean won	LIS 2018
Korea	2006	Income (net)	Income, net	Equiv.	Household	Person	17607659	15995150	Korean won	LIS 2018
Korea	2006	Income (gross)	Income, gross	Per capita	Household	Person	10635120	9214107	Korean won	LIS 2018
Korea	2006	Income (gross)	Income, gross	Equiv.	Household	Person	19015383	17016438	Korean won	LIS 2018
Korea	2006	Income (net)	Income, net	Equiv.	Household	Person	17599646	15988008	Local currency units, at current prices	OECD 2018
Korea	2006	Income (net/gross)	Income, net/gross	Per capita	Household	Person	12820,44	11152,92	US\$2011PPP	World Bank 2018
Korea	2007	Income (net)	Income, net	Equiv.	Household	Person	18503634	16702998	Local currency units, at current prices	OECD 2018
Korea	2008	Income (net)	Income, net	Per capita	Household	Person	10920479	9359398	Korean won	LIS 2018
Korea	2008	Income (net)	Income, net	Equiv.	Household	Person	19374623	17410208	Korean won	LIS 2018
Korea	2008	Income (gross)	Income, gross	Per capita	Household	Person	11837117	10020528	Korean won	LIS 2018
Korea	2008	Income (gross)	Income, gross	Equiv.	Household	Person	21034980	18535974	Korean won	LIS 2018
Korea	2008	Income (net)	Income, net	Equiv.	Household	Person	19364685	17410005	Local currency units, at current prices	OECD 2018
Korea	2008	Income (net/gross)	Income, net/gross	Per capita	Household	Person	13248,96	11379,72	US\$2011PPP	World Bank 2018
Korea	2009	Income (net)	Income, net	Equiv.	Household	Person	19580276	17703999	Local currency units, at current prices	OECD 2018
Korea	2010	Income (net)	Income, net	Per capita	Household	Person	11715465	10090060	Korean won	LIS 2018
Korea	2010	Income (net)	Income, net	Equiv.	Household	Person	20751292	18838479	Korean won	LIS 2018
Korea	2010	Income (gross)	Income, gross	Per capita	Household	Person	12771027	10880549	Korean won	LIS 2018
Korea	2010	Income (gross)	Income, gross	Equiv.	Household	Person	22661883	20278852	Korean won	LIS 2018
Korea	2010	Income (net)	Income, net	Equiv.	Household	Person	20744939	18829002	Local currency units, at current prices	OECD 2018
Korea	2010	Income (net/gross)	Income, net/gross	Per capita	Household	Person	13432,32	11576,88	US\$2011PPP	World Bank 2018
Korea	2011	Income (net)	Income, net	Equiv.	Household	Person	21890584	19988000	Local currency units, at current prices	OECD 2018
Korea	2012	Income (net)	Income, net	Per capita	Household	Person	13160277	11481326	Korean won	LIS 2018

Korea	2012	Income (net)	Income, net	Equiv.	Household	Person	23237855	21255420	Korean won	LIS 2018
Korea	2012	Income (gross)	Income, gross	Per capita	Household	Person	14400681	12464784	Korean won	LIS 2018
Korea	2012	Income (gross)	Income, gross	Equiv.	Household	Person	25478108	23051466	Korean won	LIS 2018
Korea	2012	Income (net)	Income, net	Equiv.	Household	Person	23232459		Local currency units, at current prices	OECD 2018
Korea	2012	Income (net/gross)	Income, net/gross	Per capita	Household	Person	14179,92	12387,36	US\$2011PPP	World Bank 2018
Korea	2013	Income (net)	Income, net	Equiv.	Household	Person	23827365		Local currency units, at current prices	OECD 2018
Korea	2014	Income (net)	Income, net	Equiv.	Household	Person	24612774		Local currency units, at current prices	OECD 2018
Korea	2015	Income (net)	Income, net	Equiv.	Household	Person	25192802		Local currency units, at current prices	OECD 2018

Table 42: China and Korea: Mean and median income and resource details.
Source: WIID (2018). Author's design.

Korea	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Top 10%	35,9 6%	36,8 0%	37,7 5%	38,3 9%	38,5 6%	37,1 0%	41,8 3%	42,3 5%	42,8 7%	42,4 7%	43,0 3%	43,1 3%	42,7 4%	42,5 5%	42,6 9%	43,1 3%	43,3 2%
Top 5%	22,1 1%	23,0 8%	24,1 4%	24,6 4%	25,4 3%	25,1 2%	28,0 7%	28,4 6%	28,8 0%	28,5 2%	29,0 7%	29,2 5%	28,8 5%	28,6 5%	28,8 3%	29,1 7%	29,2 7%
Top 1%	8,29 %	8,65 %	9,09 %	9,14 %	9,52 %	9,60 %	10,6 4%	11,2 9%	11,3 8%	11,3 1%	11,7 4%	12,0 2%	11,7 4%	11,6 3%	11,7 8%	12,0 7%	12,1 6%
Top 0.5%	5,46 %	5,79 %	6,17 %	6,26 %	6,51 %	6,69 %	7,38 %	7,99 %	8,05 %	8,01 %	8,36 %	8,62 %	8,39 %	8,30 %	8,43 %	8,69 %	8,77 %
Top 0.1%	2,35 %	2,56 %	2,74 %	2,81 %	3,06 %	3,26 %	3,59 %	4,00 %	4,01 %	3,96 %	4,18 %	4,34 %	4,18 %	4,08 %	4,13 %	4,29 %	4,31 %
Top 0.05%	1,66 %	1,86 %	2,03 %	2,10 %	2,31 %	2,45 %	2,71 %	3,05 %	3,04 %	2,98 %	3,16 %	3,26 %	3,13 %	3,04 %	3,06 %	3,19 %	3,18 %
Top 0.01%	0,83 %	0,95 %	1,05 %	1,09 %	1,22 %	1,28 %	1,42 %	1,61 %	1,59 %	1,56 %	1,66 %	1,66 %	1,61 %	1,54 %	1,54 %	1,64 %	1,59 %

Table 43: Korea: Top pre-tax top income shares.
Source: WID.world (2019). Author's design.

China	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Top 10%	35.5 6%	36.3 2%	39.3 8%	40.2 1%	40.9 0%	41.8 6%	42.0 7%	42.3 9%	42.3 9%	42.3 4%	42.6 1%	42.8 8%	41.4 7%	42.1 2%	41.3 2%	41.4 3%
Top 5%	23.9 1%	24.6 7%	27.4 3%	28.2 0%	29.0 4%	29.8 5%	30.2 4%	30.7 1%	30.7 2%	30.7 5%	30.7 5%	30.8 7%	29.5 9%	29.9 4%	29.3 6%	29.5 0%
Top 1%	10.3 7%	10.8 7%	12.5 5%	13.1 3%	13.8 2%	14.2 0%	14.7 7%	15.2 7%	15.1 8%	15.4 1%	15.1 2%	14.5 9%	13.7 5%	13.8 1%	13.6 6%	13.9 2%
Top 0.5%	7.60 %	7.98 %	9.27 %	9.75 %	10.3 3%	10.5 7%	11.1 3%	11.5 8%	11.4 4%	11.7 2%	11.4 9%	10.9 9%	10.2 8%	10.3 0%	10.2 4%	10.5 5%
Top 0.1%	4.09 %	4.31 %	5.06 %	5.37 %	5.72 %	5.73 %	6.17 %	6.47 %	6.25 %	6.52 %	6.57 %	6.47 %	5.92 %	5.90 %	5.94 %	6.30 %
Top 0.05%	3.17 %	3.34 %	3.93 %	4.19 %	4.47 %	4.42 %	4.81 %	5.06 %	4.84 %	5.08 %	5.22 %	5.29 %	4.78 %	4.75 %	4.81 %	5.17 %
Top 0.01%	1.69 %	1.78 %	2.13 %	2.30 %	2.47 %	2.38 %	2.64 %	2.84 %	2.66 %	2.81 %	3.04 %	3.27 %	2.85 %	2.82 %	2.88 %	3.20 %

Table 44: China: Top pre-tax top income shares.
Source: WID.world (2019). Author's design.

China pre-tax income	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Top 1%	10,37 %	10,87 %	12,55 %	13,13 %	13,82 %	14,20 %	14,77 %	15,27 %	15,18 %	15,41 %	15,12 %	14,59 %	13,75 %	13,81 %	13,66 %	13,92 %
Top 10%	35,56 %	36,32 %	39,38 %	40,21 %	40,90 %	41,86 %	42,07 %	42,39 %	42,39 %	42,34 %	42,61 %	42,88 %	41,47 %	42,12 %	41,32 %	41,43 %
Bottom 50%	18,07 %	17,48 %	16,21 %	15,78 %	15,80 %	15,03 %	15,01 %	14,85 %	14,81 %	14,71 %	14,27 %	14,54 %	15,00 %	14,50 %	14,86 %	14,83 %

Table 45: China: Pre-tax top income shares.

Source: WID.world (2019). Author's design.

Korea pre-tax income	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Top 10%	35,96 %	36,80 %	37,75 %	38,39 %	38,56 %	37,10 %	41,83 %	42,35 %	42,87 %	42,47 %	43,03 %	43,13 %	42,74 %	42,55 %	42,69 %	43,13 %	43,32 %
Top1%	8,29 %	8,65 %	9,09 %	9,14 %	9,52 %	9,60 %	10,64 %	11,29 %	11,38 %	11,31 %	11,74 %	12,02 %	11,74 %	11,63 %	11,78 %	12,07 %	12,16 %

Table 46: Korea: Pre-tax top income shares.

Source: WID.world (2019). Author's design.

GINIS KOREA	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ADB	31,8													
World Bank			31,7		32,32		32,02		31,56					
LIS			32		32,7		32,4		31,8					
OECD			30,6	31,2	31,4	31,4	31	31,1	30,7	30,2	30,2	29,5		
SFLC								38,8	38,5	37,2	36,3	35,2	35,5	35,5
HSIE			30,6	31,2	31,4	31,4	31	31,1	30,7	30,2	30,2	29,5	30,4	

Table 47: Korea: Gini indices 2004-2017.

Source: WIID (2018), KOSIS (2018), KOSIS (2019). Author's design.

GINIS CHINA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
CHIP China			46.31											46.36				
LIS China			44.7											43				
NBS				47.9	47.3	48.5	48.7	48.4	49.1	49	48.1	47.7	47.4	47.3	46.9	46.2	46.5	46.7
Chotikapanich et al. 2005	39			44.9														
PKU											52		48					
Ravallion and Chen 2007	43.82	44.73																
Chen, Pu and Hou 2018	43.21	43.9	45.06	46.57	45.67	45.73	46.24	46.51	46.33	46.23	45.19							

Table 48: China: Gini indices 2000-2017.

Source: WIID (2018), Chen, Pu and Hou (2018), NBS (2018). Author's design.

Abstract

This thesis' analysis of income inequality in China and Korea since the start of the new millennium consists of two major parts. First, it includes a comprehensive discussion and comparison of income inequality measures, demonstrating that China and Korea not only show differences in their levels of income inequality but also in their structure. While China still faces large disparities at the bottom of the income distribution, Korea has experienced a vast increase in top income shares, as the top 10% of Korean income earners have captured more of the total income than their Chinese counterparts for the past decade. Second, this thesis analyses both Chinese and Korean government policies to reducing income inequality in 2018 and 2019. Both governments have increased their policy actions, particularly in regard to progressive taxation and social spending, however, Korea's commitment to reducing income inequality can be assessed as slightly higher than that of China. Also, evidence for distinctive strategies by the two governments in order to tackle income inequality has been provided. Finally, when considering income inequality in the context of economic growth, distinctive patterns in the Chinese and Korean growth "miracle" have been shown. Overall, this thesis provides a comprehensive elaboration of income inequality in China and Korea as well as government actions in order to tackle income inequality within both countries.

Zusammenfassung

Diese Masterarbeit untersucht Einkommensungleichheiten in China und Korea im Zeitraum von 2000-2017 anhand zweier Analysen. Zunächst zeigt ein Vergleich, basierend auf einer Vielzahl von Indikatoren, dass sich Chinas und Koreas Einkommensungleichheiten nicht nur in ihrem Ausmaß, sondern auch ihrer Struktur weitgehend unterscheiden. Während China große Disparitäten im unteren Einkommensspektrum aufweist, ist Koreas Einkommensungleichheit von besonders einkommensstarken obersten 10% der Gesellschaft geprägt. Diese 10% der Koreanerinnen und Koreaner verdienen, gemessen am Gesamteinkommen, mehr als die 10% der chinesischen Spitzenverdienerinnen und Spitzenverdiener. Zudem analysiert diese Masterarbeit den Einsatz der jeweiligen Regierungen, Einkommensungleichheiten durch politische Maßnahmen zu reduzieren. Die Untersuchung zeigt, dass beide Nationen vor allem durch wachsende Sozialausgaben und progressive Steuerreformen Einkommensungleichheiten in Angriff nehmen. Basierend auf den Ergebnissen dieser Arbeit hat Korea in den Jahren 2018 und 2019 mehr Bereitschaft zur Reduktion von Einkommensungleichheit als China gezeigt. Außerdem legen die Ergebnisse dieser Masterarbeit unterschiedliche Strategien Chinas und Koreas nahe, Einkommensungleichheiten zu bekämpfen. Auch in Anbetracht des Wirtschaftswachstums, haben sich Chinas und Koreas Einkommensdisparitäten verschieden entwickelt. Zusammenfassend lässt sich sagen, dass sich diese Masterarbeit mit einer umfassenden Analyse von Einkommensungleichheit und zugehörigen politischen Maßnahmen in China und Korea auseinandersetzt.