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Consumption inequality and its evolution in urban China

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ABSTRACT

Exploiting the variations in household income and consumption structure, this paper corrects the measurement errors of consumption expenditure reported by households in different income classes. By using the Urban Household Survey (UHS) data, empirical results demonstrate that consumption inequality in urban China increased by 67% during the sample period and it was much larger than 36%, which was obtained directly from the reported raw data. Precisely, from 1993 to 2007, the consumption inequality experienced a rapid increase, but began to decrease after 2008. Since 2002, underreporting of consumption expenditure was more evident for households with higher income. Furthermore, the consumption inequality in central and western regions, and that of the households with higher education levels were more serious and constituted important driving forces for the increase of consumption inequality.

1. Introduction

Inequality has long been a significant issue in both academia and government. However, researchers or politicians often focused on income or wealth inequality while few shed light on consumption inequality. Given that the latter concept is of great importance in terms of the following four aspects, a precise measurement of its evolution is necessary. Firstly, in micro-economics, income can only bring utility to a certain consumer if it is spent. Therefore, consumption inequality is more directly related to people's living quality. Besides, consumption can also be considered as a function of permanent (visible) or transitory (hidden) income, wealth and other social resources. So estimating consumption inequality is a more comprehensive way to measure social welfare. Secondly, from macro-economic point of view, consumption inequality helps to understand recovery of aggregate demand (Auclert & Rognlie, 2016) transmission of monetary policy (Auclert, 2017) and other political economic issues which have driven increasing attention since 2008. Thirdly, in reality, reported consumption data consists of hundreds of detail sub-items while total income typically only include wage, transfer, property and operational income. Hence, income inequality is much easier to be manipulated and always being controversial. But consumption has more structural and is statistically more stable (see our empirical part below). Last but not the least, in our society, creative entrepreneurs do contribute a lot to improve people's life which at the same time bring them abundant returns. Altogether, nowadays consumption inequality is absorbing more attention compared with other types of inequality (Attanasio & Pistaferri, 2016).

However, it is too difficult to reach a consensus on the evolution of consumption inequality due to data quality such as sample omission, underreporting and so on (Meyer, Mok, & Sullivan, 2015; Sabelhaus & Groen, 2000). And this naturally makes the following line of literature even more disputable worldwide, e.g. reasons of inequality, relationship between income inequality and consumption inequality, consequences of consumption inequality (Aguiar & Bils, 2015; Krueger & Perri, 2006). Unsurprisingly, China's micro-level consumption data is also widely discussed and get criticized (Huang & Wang, 2016; Li, Shi, & Wu, 2015; Reform Group,

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2012; Zhang & Zhu, 2015; Zou & Yu, 2015).

Although some studies (Bai, Tang, & Zhang, 2015; Jiang & Li, 2005; Li & Luo, 2011; Wang, 2010)¹ tried to correct the measurement error in estimating China's income inequality,² to the best of our knowledge, no studies have ever carefully dealt with measurement error by using micro-level data to estimate China's consumption inequality. Though lack of study, consumption data in China is believed to have notable measurement error. Reform Group (2012) pointed out that the original micro-consumption data of Urban Household Survey has several problems: Firstly, compared with daily consumption, large expenditure happened monthly or quarterly (such as tourism spending, etc.) was often recorded with errors. Secondly, some high-income households refuse to accept investigation. Even if they accepted, there were often under-report problem. Thirdly, some families only record some consumption expenditures to save trouble. Based on this, Xu (2013) compared several sources of consumption data and found that household consumption data in Urban Household Survey was underestimated. Because an accurate calculation of consumption inequality is the basis of understanding many important issues, and some errors mentioned above are difficult to solve by investigation, this paper argues that it is necessary to actively explore the above three types of measurement error indirectly. It also provides a general method for other database which consists of consumer spending information with measurement error.

Based on the basic logic introduced by Browning and Crossley (2009) and Aguiar and Bils (2015), this paper uses the Urban Household Survey micro-expenditure data from years 1993 to 2010 to remeasure the urban consumption inequality and its evolution. Our correction strategy is that when total expenditure on consumption could not be accurately estimated (or only partial consumption information is available), the Engel curve could be used to compare the differences between expenditure structures of high and low income group so as to generate the consumption inequality by backward induction. Engel curve method is a two-stage econometric model to detect and correct the measurement errors of the raw consumption data. In particular, it estimates relative consumption growth of all income groups by observing how they have shifted their expenditures toward luxuries versus necessities over time (Aguiar & Bils, 2015). Intuitively speaking, if the ratio of luxury goods to necessities grows faster for high-income households compared with low-income group, we can expect that consumption inequality expands.³ Note that in doing so, four advantages arise: Firstly, we control the difference between income groups, and corrects the measurement error caused by a certain class (for example the rich tend to under-report their expenditures); secondly, we can take group specific measurement errors into account (for instance the misreports of private goods); Thirdly, this paper is able to control the errors of a specific period of time (such as changes in social attitudes and habits, measurement caliber, accounting adjustments, etc.); Fourthly, non-systematic errors across individual households. After adjustment, we find that 1, high-income group severely under-report their expenditures;⁴ 2, the revised inequality of consumption is much larger than that measured directly and even exceeds the unrevised income inequality; 3, consumption inequality keep increasing since year 1993 until the global finance crisis; 4, consumption inequality is more severe with higher-education group and less developed areas.

As mentioned above, the contributions of this paper are as follows: First, we formally take various types of measurement error of the Urban Household Survey Data into consideration to reasonably correct consumption inequality, which provides a solid foundation for further extensions. Second, although the under-reporting of high-income groups' expenditure and income have been widely discussed, this paper is the first one that quantifies its size by an econometric model. Third, since our data show a long span, wide coverage, continuity and rich demographic characteristics, we are able to depict the dynamic evolution as well as cross-regional and cross-group distributional characteristics of consumption inequality for a wider time window of 18 years. The rest of this paper is organized as follows, Section 2 reviews most related studies on consumption and income inequality, Section 3 describes the data and the corresponding econometric model, Section 4 presents empirical analysis, Section 5 gives robustness checks and Section 6 provides concluding remarks.

2. Related literature

Studies on consumption inequality were initiated by Cutler and Katz (1992) and subsequently evolved into four directions. First, some studies measure the dynamics of consumption inequality and income inequality (Aguiar & Bils, 2015; Blundell & Preston, 1998; Brzozowski, Gervais, Klein, & Suzuki, 2010; Jappelli & Pistaferri, 2009). Second, some researchers decompose it into subclasses based on consumer goods (Yang, 2013). Finally, some paper studied the causes of consumption inequality from viewpoints of economic and social changes, such as aging, migration, education, economic growth, monetary policy, credit market development, labor and social security, household registration system (Blundell, Pistaferri, & Preston, 2008; Brzozowski et al., 2010; Deaton & Paxson, 1994; Krueger & Perri, 2006; Li & Yao, 2013; Qu & Zhao, 2008). For simplicity, we only summarize the most relevant literature.

Attanasio, Hurst, and Pistaferri (2012) compared CEX (Consumer Expenditure Survey) and PSID (Panel Study of Income Dynamics) on consumption inequality and proved that the latter was more accurate. Battistin (2003) and Attanasio, Battistin, and Ichimura (2004) adopted data from the journal-level CEX of the United States to invert the quarterly frequency of face-to-face data. By conducting a double check, they found that interview data seriously underestimated the increase in the US consumption inequality in the 1990s.

¹ In fact, when they measured the hidden income of the UHS individuals, their measurements were also based on the premise that the consumption data is accurate.

² Due to the lack of data, research on wealth inequality is few.

³ Take cultural and recreational activities (luxury goods) and vegetables, meat, poultry, fruits (daily necessities) as a concrete example. Fig. 2 shows that between 1993 and 2010, the ratio of the two kinds of consumption expenditure for high-income groups increased rapidly, while that for low-income groups decreased slightly, indicating that consumption inequality has worsened.

⁴ Also concluded by Cai, Du, and Wang (2010) and Yang (2013).

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