

## Shifting Labor Income Age Profiles and its Implications for an Aging China

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### Abstract

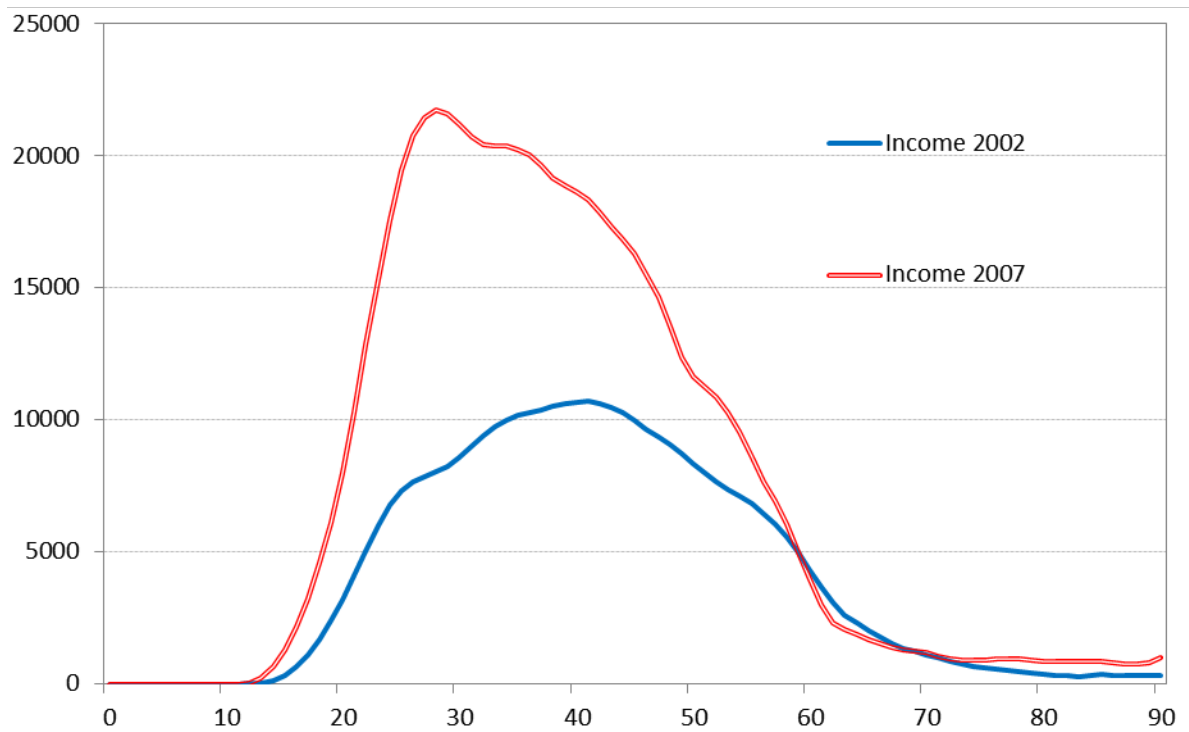
This paper examines the demographic and socioeconomic causes of a major shift in the age profile of labor income observed in China, with a particular attention to its implication for population aging. In the first decade of 2000, the peak earning years shifted downwards significantly, from around age 40 to around age 30. Moreover, in relative terms, income increase among older workers was at the lowest pace. We find that such a squeeze for older persons' income is a combined effect of three major demographic-economic changes in China: 1) a rapid rise of human capital, especially among the younger generations, 2) a structural change in economy driven by rapid industrialization, urbanization and globalization, and 3) a decline in labor force participation among older generations due to competition in the labor market, early retirement regime and the depressing effect of improving social security benefits. Comparing China with the historical experiences of the United States and Taiwan, we then assess the long-term trajectories in income age profile changes, and discuss their socioeconomic implications in aging societies, with a special focus on inequality.

## Long Abstract

The age patterns (profiles) of labor income reflect both the biological regime of human life and the social organization of human societies. The general timing and capacity of labor is determined by human biology, i.e. infants are totally dependent, and aging is associated with increasing frailty and disability. Everything being equal, improvement in population health and increase in life expectancy generally imply a longer span of labor activities, and a higher productivity. However, an individual's economic opportunity and activity depend more on the organization of a society. For example, a society can mandate school attendance to cut out child labor, can legislate maximum work hours to limit labor activities, and can regulate retirement age to affect labor force participation among the older members of a society.

Understanding the age patterns of labor income, as well as the social forces behind them, are critical for social policy making, especially in the general context of aging. Led by Ronald Lee and Andrew Mason, there is a global effort devoted to the understanding of economic lifecycles using a common framework called National Transfer Accounts. The project has produced an extremely rich pool of information on what Lee and Mason refer as generational economy, including plotting out the economic lifecycles in more than 40 countries. While its focus has been more on the descriptive side, some interesting and important patterns have emerged from the global comparisons and can be potentially used for constructing structural models (Lee and Mason 2011). Building on those findings, with proper data and care, causality is not only desirable, but also critical, especially for making policy recommendations.

This paper examines a major shift in China's income age profile observed in the first decade of the twentieth century, with a particular emphasis on the income changes among the older persons. Remarkable changes in income, both levels and age patterns, are clearly evident in Figure 1, which is based on Chinese household survey data of 2002 and 2007. In the short five years, average labor income increased by 82 percent, but such a change was very unequal across ages. Two most distinctive features shown in the income profiles are the declining age at which earnings peak and the stagnant earnings in older ages. The increases in labor income concentrated at young and middle aged groups. Moreover, peak income earning years moved down from around age 40 to around age 30, much younger than the other under-developed and developed countries. Shifting peak ages in labor income earning power occurred in both urban and rural China, but with somewhat different patterns (not shown). Cai et al. (2014) has provided some preliminary explanations for this major shift. In rural China, it's mostly associated with changes in economic sectors, employment types, and participation in a formal economy: young rural people moving out of the agriculture sector and into manufacturing and service sectors in cities. Higher non-farming wage income among the younger rural laborers, in comparison to the older laborers who rely on income from farming is one of the reasons for such a shift. In urban China, the change is more likely due to the rapid expansion of tertiary education and rise in human capital, which brings increased earning power among the younger urban employees in an economy moving towards high tech and services.



**Figure 1. Age Profiles of Labor Income, China, 2002 and 2007**

This paper examines the causes behind such a major change in China's income age profile in detail. Using individual level data from China Household Income Project, we use regression models to specify the contribution of different social, economic, and demographic factors in the variations of labor income. Main factors included as independent variables in our regression models are sex, age (and age squared), urban/rural residence, household registration status, education, employment type, working experience and occupation. Regression analysis suggests that there were some moderate increases in inequality across different spectrum of social stratification factors between 2002 and 2007.

We then perform Oaxaca-Blinder decomposition for income gap between 2002 and 2007. The decomposition output reports the mean predictions by groups and their differences. The income gap is divided into three parts: endowment effect, which amounts to the part of the differential that is due to group differences in the predictors, coefficient effect, which measures the contribution of differences in the coefficients (including differences in the intercept), and interaction effect, which accounts for the fact that differences in endowments and coefficients exist simultaneously between the two groups. We find that the coefficient effect is relatively small in comparison with the endowment effect, but there is also a very strong interaction effect. This suggests that the change in China is happening at two fronts of its macroeconomic structure: there is not only a major economic restructuring, i.e. shifting more towards service sectors, but also a major change in labor force allocation, e.g. service sectors now demand and attract more young and highly educated workers.

We find that the remarkable shift in China's income age profile is a result of combined effects of three major demographic and economic changes in China: a rapid rise of education, especially among younger generations, which has made significant increases in income for younger generations, a decline in labor

force participation among older generations due to intense competition in labor market, early retirement regime and the depressing effect of improving social security benefits, and a structural change in economy driven by rapid industrialization, urbanization and globalization. The share of the labor force population with college education doubled from 2.6% to 5.3% between 1990 and 2000, and more than doubled again to 12.5% by 2010. The increase in educational attainment is concentrated among the young, and especially among urban youths. China's 2010 census revealed that while among population aged 40 to 49 only about 7% received college education or more, among those aged 20 to 29, the share is three times as high, over 20%. In urban China, nearly 40% of those aged 20 to 24 in 2010, and nearly one third (32.5%) among those aged 25 to 29 are college educated. The corresponding numbers two decades earlier, in 1990, were only 9.8% and 8.5% respectively. At the same time, the general labor force participation in China has been on the decline, especially for females.

We conclude with a comparison between China and the United States and Taiwan, to project the effects of rising human capital, change in labor force participation, and shift in economic structure on the future of Chinese economy and society, especially on the implications for a rapidly aging society. Chinese elderly, having limited chance to improve their human capital, and facing unfavorable structural changes and fierce competitions in the labor market, will need more intergeneration transfers, both private and public, to protect their livelihood.

## References cited

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