

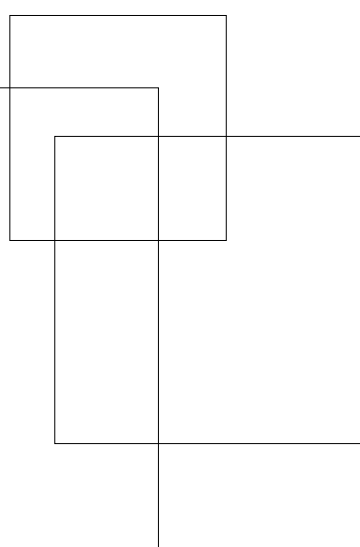


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What drives old age work in China?

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Abstract

The aim of this paper is to contribute to an understanding of the decisions of the near old and older Chinese to work, and how work characteristics vary across genders, localities, and within overall income and security situations as ageing advances. The results of this analysis suggest that the decision to work and the amount of work among older persons constitute key elements of coping strategies, and these continue to differ across four demographic groups: rural, urban, male, and female. These differences are associated with variations in government policies targeted towards older populations as well as with long established cultural and social norms.

A large share of the near old and older individuals, particularly in rural areas, continue to work at least part time and predominantly in non-regular employment. Much of the rural work is likely based on necessity rather than choice, since many of those with adequate sources of income, such as employment pensions, opt out of work by age 70. Those who continue to work well into old age report few alternative sources of income and security. Most put in long hours, and a small segment continue to do so up to a very old age. Women in rural areas appear to be the more vulnerable and more likely to work well into old age. Their informal work status, longer life expectancy, reliance on household agriculture, and likelihood to engage in care work all contribute to lower work-related old age security. For urban women, lower mandatory retirement ages translate into lower pension benefits and less opportunity to build savings.

For China to end the need to work in old age, more progress is needed in deepening social pensions for the vulnerable as well as extending relatively young mandatory retirement ages. Within this context, stronger incentives can be delivered to women to stay in the formal work force for longer durations. However, without a reconsideration of restrictions on *hukou* driven benefits packages affecting rural migrants, this aging group will miss out on accruing employment related social benefits associated with their urban work history.

Table of contents

Acknowledgements	v
Abstract	vi
Table of contents	vii
List of figures & tables	viii
1. Introduction	1
2. Context	3
2.1 China's old age demographics and dependency outlook	3
2.2 Rural poverty and vulnerability of older populations	4
2.3 Gender-based old age inequality.....	5
2.4 Pension and health insurance coverage.....	5
3. Data and methodology	7
4. Results: Factors influencing old age work	7
4.1 Whether to work: Descriptive results.....	7
4.2 Sources and levels of income	10
4.2.1 Family support	13
4.3 Determinants of old age labour participation: Multivariate results.....	13
4.4 Working time of older workers.....	15
4.5 Work activity	17
4.5.1 Multiple types of work.....	19
4.5.2 Care work.....	19
4.6 Determinants of old age working time: Regression results	20
5. Conclusion	21
References	23

List of figures

Figure 1: Main sources of individual income by age groups for China, 45+ years old	2
Figure 2: Chinese population distribution by age group, 2017, and projections for 2050	3
Figure 3: Labour participation rate of women and men by rural and urban status, age 45 and over	9
Figure 4: Mean annual work income by age group, gender and locality type	10
Figure 5: Reported income sourced from work, employment and social pensions, by age	12
Figure 6: Annual number of working days by age; urban and rural women and men who work	16
Figure 7: Levels of work reported by age, gender and locality, broken down by work types	18
Figure 8: Average share of household agricultural work as a share of total annual working days	19
Figure 9: Persons caring for grandchildren: Mean number of hours per year occupied	20

List of tables

Table 1: Labour participation rates, by age groups, gender disaggregated (2015)	8
Table 2: At what age do you plan to stop working?	9
Table 3: Respondent expectations regarding primary financial source for old age support	13
Table 4: Probit regression results on probability of persons over 45 working	15
Table 5: Total working days in a year by gender, age group, and current residence status	16
Table 6: Regression Table – OLS-2	21

1. Introduction

China is experiencing profound demographic changes on several levels that combine a rapidly aging population with the effects emerging from over three decades of one-child social policies.¹ These demographic forces call for new approaches to employment and social protection policies to address the needs of a burgeoning elderly population.

China has one of the highest labour force participation rates in the world, hovering at 80 per cent, although it has declined slightly in recent years. Women as well as men work for much of their adult lives.

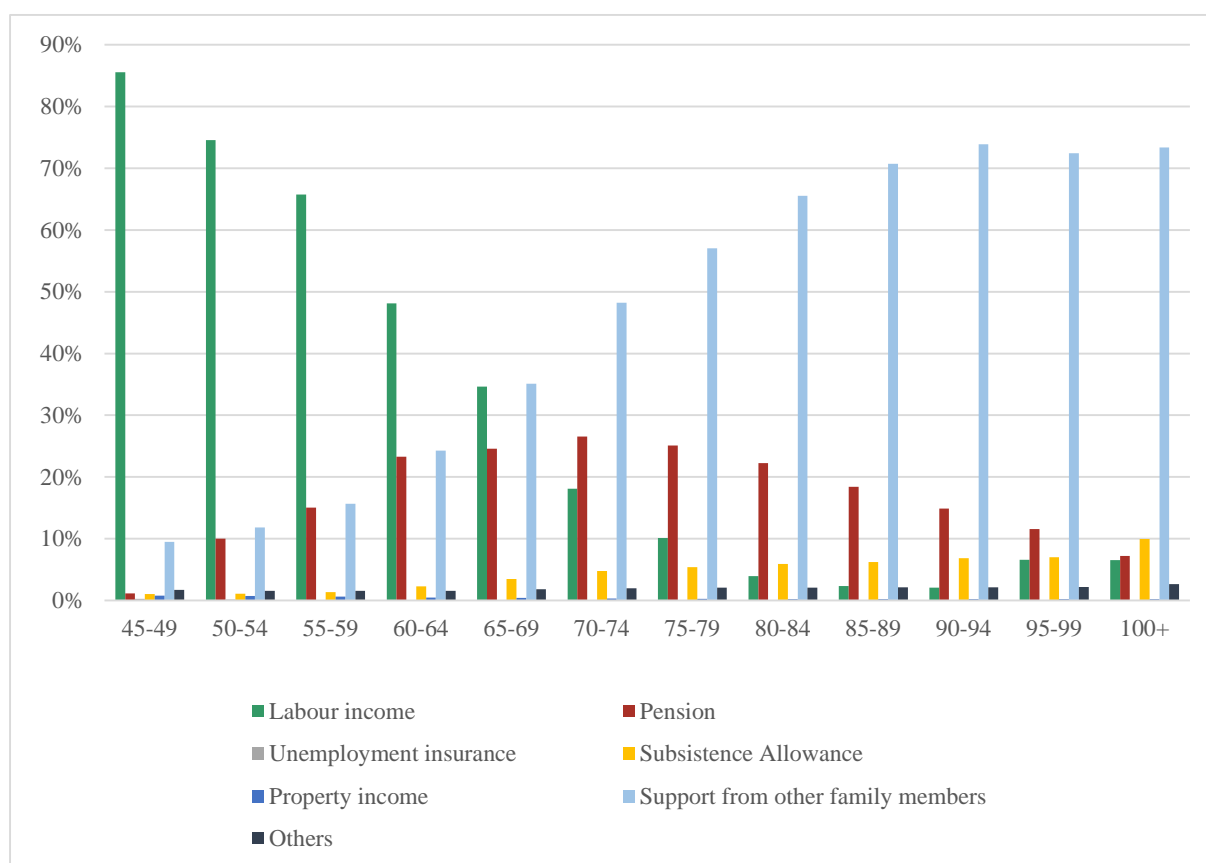
China also maintains relatively young statutory retirement ages, ranging from 45 to 60 years old, which differ based on gender, individual health status, job occupations, and sectors. Under the law, most women retire from formal employment five years younger than men. Within the informal economy, and particularly in rural areas, formal retirement is less common, and changes to work routines are believed to be more affected by deteriorating health and changes in family situations.

Despite the importance of employment in maintaining the welfare of the near old (45–59 years) and older (60 years and over) population in China, only a few studies have tried to understand the evolving labour choices of the elderly as part of their coping strategies. Cai, F. et al., 2012 have compared the labour supply of older workers across urban and rural China in the context of institutional differences. The authors note the strong association between employment pension eligibility and exit from employment, which is primarily an urban phenomenon. In rural areas, where employment pensions are largely absent, a stronger association was found between physical health and employment status. In a 2015 study (Giles et al., 2015) showing similar results, the authors call for the government to further develop and unify the Chinese old age support system, including delaying the formal retirement age and providing more attractive inducements for participation of the rural population in basic pension and health care old age security schemes. Noting that the care burden falls disproportionately on women, the authors also call for better ways to support care work, so that women can extend their employment periods to improve income and pensions during retirement.

Work practices of the older population can provide an insight into the extent to which older persons will in reality become economic burdens, irrespective of their actual age (Sanderson and Scherbov, 2015). China's 2010 census highlights the main sources of income for the near old and older population, who were found to continue to rely heavily on labour income until they reached their mid-sixties, after which support from other family members became their main source of income support (see Figure 1).

¹ China's one child policy, introduced in 1979, restricted the number of children a couple could have through legal, economic and administrative measures. It was strictly implemented mainly in urban areas, but more loosely applied in rural areas and less developed western regions of the country.

Figure 1: Main sources of individual income by age groups for China, 45+ years old



Source: China 2010 Census

The aim of this paper is to contribute to an understanding of the decisions of the near old and older Chinese to work, and how work characteristics change across genders and between rural and urban localities as ageing advances. Using 2017 survey data, this study updates previous findings on this issue. Section 2 reviews the major socio-economic contexts of old aged people in China. Section 3 profiles the data and methodologies used in this study. Section 4 summarizes the results regarding labour force participation and develops a profile of the characteristics of those persons who work and of those who do not, in part based on probit analysis. The section also examines the characteristics of the work in which older persons engage, including both formal and informal employment, under the categories of own agricultural work, wage work, and earnings from the household's family-run business. It illustrates the working patterns of the near old and older population and explores the determinants of working time to suggest evolving strategies used by the near old and older Chinese to support themselves as they age. Section five offers conclusions and suggests next steps to be taken.

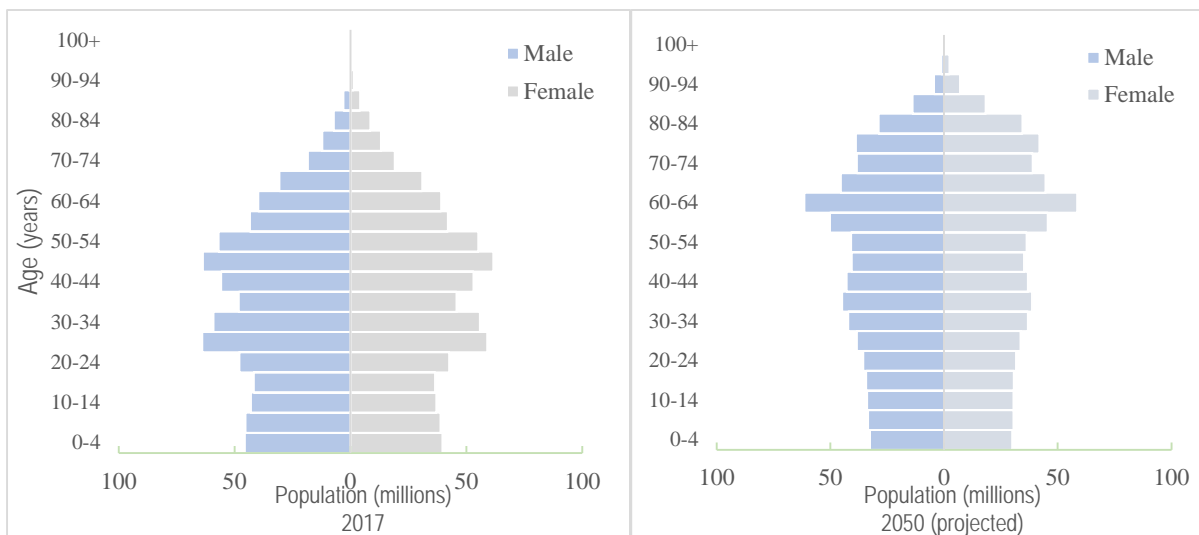
2. Context

2.1 China’s old age demographics and dependency outlook

China is in the midst of a long-term population trend regarding its age distribution. In 2017, an estimated 231 million people were aged 60 years and above. This number is projected to increase by 109 per cent by 2050, reaching 483 million.² At the same time, due to slowing population growth, low birth rates, and extended life expectancies, the percentage of the working age population is projected to decline. This in turn is expected to cause the old age dependency ratio to rise more than three-fold by 2050, hitting 44 per cent, according to United Nations projections.³

As Figure 2 shows, a large segment of China’s population is currently middle aged but is expected to expand drastically the share of near old and older in the overall population by 2050. A World Bank report also predicts that the old age dependency ratio will rise more rapidly in rural areas, in large part as a result of sustained outward migration of rural young adults and return migration of older workers (F. Cai et al., 2012).

Figure 2: Chinese population distribution by age group, 2017, and projections for 2050



Source: UN DESA / Population Division, World Population Prospects 2017

Family structures have changed radically over recent decades, particularly for urban areas, as a result of the one-child family policy. Today, the resulting configuration of four grandparents, two parents and one child has become commonplace. The extended family is deteriorating further through migration of grown children to find better work, usually in urban areas. It is also common for today’s elderly to sacrifice their own income opportunities so that their children can work and earn income. This may take the form of caring for grandchildren, which provides benefits to the household and the economy if it enables adult children to maintain employment. Older persons also may forego asset accumulation in favour of supporting investments for their children, such as building houses or buying durables, paying for education or marriages. As a result, net savings of the elderly are frequently too meagre to cover their own support. As they age, parents must rely on a dwindling number of children to provide for

2 UN DESA / Population Division, World Population Prospects 2017.
 3 Ratio of population aged 65+ over population aged 15-64, *ibid.*

them. (J. Song, 2017)

The *hukou* system, which restricts household registration to specific birth localities and ties social benefits to these, has been relied upon as a key means to restricting labour mobility from mainly rural areas to urban areas with better jobs.⁴ Most of those who migrate must forgo claims to education, pensions, and healthcare in their new locations. Despite these disincentives, migrant flows to urban areas has been considerable, with an estimated one third of the total labour force and half of urban employment consisting of migrants (Meng, 2012). The vast majority work in the private sector and informally. In addition to foregoing benefits, migrant workers earn just over half of urban workers (Lam et al., 2015; Meng, 2012).

Once retired, migrant workers often return to their place of origin but cannot claim entitlements that would have otherwise accrued to them based on their urban work history. For those working in the formal sector for a minimum period of 15 years, pension benefits are now made portable (Cho, 2016). China has experienced large-scale migration of rural youth to urban areas. By 2015, the total number of China's migrant workers was 277.5 million, with an average age of 38.6 years, of whom 68.8 per cent were male.⁵

2.2 Rural poverty and vulnerability of older populations

China is struggling to close a poverty gap that is widest in rural areas and among the elder population, who have not benefited from growth to the same extent as younger people and the urban elderly. Although average incomes in China have risen dramatically since the 1980s, concerns over the poverty and vulnerability of the rural elderly have been increasing (F. Cai et al., 2012). Unemployment and poverty have long been associated with one another, so it should be of little surprise that older persons are more vulnerable to poverty. A 2012 study identified characteristics associated with higher rates of old age poverty that included: being without pension, being illiterate, living alone, being female and over 70, or being in poor health. The same study pointed to the ameliorating effects of savings and public and private – mainly family – transfers (Park et al., 2012).

The proportion of China's agricultural employment in rural areas has fallen rapidly in recent decades, with roughly half of all rural workers active in non-agriculture (J. Song, 2017). Rural agricultural employment is primarily self-employment, with land belonging to the State and allocated through local leaders. Land leasing arrangements of these allocations remain largely informal and local.

Prior to the introduction of the household responsibility reforms in the late 1970s, rural work continued under the collective system well into old age. Collectives then provided security to those unable to work and without support from children. Access to land remains the backbone of rural work for the elderly, who have been found to farm and maintain small-scale household plots. However, access to adequate agricultural land is becoming more difficult for older rural residents. In many areas, urban encroachment has reduced the availability of arable land, which has tended to reduce the size of family plots within farming communities and also to contort established claims to land use rights (J. Song, 2017).

4 The *hukou* system is a classification system to keep record of all Chinese as either rural or urban citizens. It has been a means to limit rural migration to urban areas, where higher paying jobs and better social benefits are available. Many rural residents move to urban areas unofficially, while retraining their rural *hukou* status and associated social benefits.

5 http://www.stats.gov.cn/tjsj/zxfb/201604/t20160428_1349713.html.

Commercial investments in consolidated farmland holdings are becoming more widespread (Long et al., 2016).

Per capita, arable agricultural land is declining overall in China due to population growth and land conversion. Land allocations to rural persons are also growing less certain, as rural localities reduce the frequency of land reallocations, thereby increasing the risk of landlessness for more vulnerable persons. Rural women have slightly smaller average land allocations (Hare et al., 2007), and their access to land can be complicated by their marital status.

2.3 Gender-based old age inequality

Early retirement ages for women, which are set at five years younger than those for men, are the first sign of major shifts in older age work, when urban women, in particular, are found to reduce or end wage work. Because women work fewer years and earn less than men, they also have less opportunity to contribute to pension funds, thereby limiting their pension benefits in later years. The retirement age for men drawing a public pension benefit receipt is 60. For women working in certain professions, it is also 60, but 55 for female managers and 50 for blue collar women workers, with a mandatory retirement age of 50 for most women. The difference between women and men in average eligible years of work is 7.5 years (Chen and Turner, 2015).

Women's life expectancy in China exceeds that of men by around four years (UN ESCAP, 2017). In addition, elderly women are less likely to be married – 56 per cent of women compared to 80 per cent of men. Women are more likely to transition from outside work to care of family members, including elderly parents, grown children, and grandchildren. As grown children migrate to urban areas, their own children are often left in the care of elder family members. Where previously older parents would move in with their grown children – traditionally with their sons – such practices are becoming less common.

2.4 Pension and health insurance coverage

China has established a social security system which, for many decades, has been based on social insurance, social assistance, and social welfare and has incorporated basic old age pensions and basic health care. Most of the protections disproportionately benefited urban resident workers, but, in 2008, the New Rural Social Pension was introduced to provide basic coverage to the rural elderly.

Over the past few years, a significant extension of coverage in both contributory and non-contributory pension schemes has been initiated by the Chinese government. In 2011, the Social Insurance Law included provisions for basic pension and health care benefits across different regions – both rural and urban – and the start of a nationwide unified personal social security ID system, as well as a national pooled fund for the basic pension scheme. These are to be supplemented with provincial pooled funds for other social insurance schemes (ISSA, 2013).

A shift from state-owned enterprise to private firms (from 65 per cent of all employment in 1995 to 24 per cent in 2012) has changed the pension portfolios of the working population compared to those now in retirement (Giles et al., 2015).

The current configuration of social pension schemes provides for a basic income support from age 60 on, but it also calls for contributions from members; these contributions form the basis for augmenting the base payouts after reaching the age of 60. However, many lower income individuals already close

to age 60 either cannot meet the criteria or afford lump sum contributions to qualify for future payouts. To achieve widespread coverage and participation, public financial contributions to the schemes have been augmented. Coverage under several social assistance schemes is limited to the elderly who cannot receive support from their children. China now is credited with having achieved near universal coverage of at least minimum pension protection for its older population (ILO, 2018). Although improving, non-contributory pension payouts have amounted to less than 40 per cent of the national poverty line (ibid., p. 24).

The Chinese government has also expanded its social health insurance system to include nearly all people through the establishment of the New Rural Cooperative Medical Scheme, NCMS (2003), and the Urban Resident Basic Medical Insurance, URMI (2007), which covers mainly those with urban *hukou*. NCMS contributes the most to China's universal coverage, with an estimated 95 per cent of the Chinese mid-aged and older rural people participating (Zhu et al., 2017). The Urban Employee Basic Medical Insurance (UEBMI), launched in 1998, is an employment based insurance programme covering those eligible through their employment situation. Both NCMS and URMI are heavily subsidized through government funding.

In 2011, government health expenditures accounted for 12.5 per cent of total government expenditures.⁶ This share is expected to increase as the population ages. High levels of subsidization may also account for the fairly modest levels of coverage. At the national level, the proportion of out-of-pocket expenditures to total national health expenditures was significantly reduced from 60 per cent in 2001 to 35 per cent in 2011.⁷ For lower income elderly, however, health care treatment continues to account for a major expense, particularly for rural migrants and rural residents Long, et al 2016). Pressure to subsidize will continue as alternative sources of support decline with the growing numbers of vulnerable elderly transitioning out of work.

⁶ Ibid.

⁷ Ibid.

3. Data and methodology

This paper reports the results of an analysis of the incidence of old age work and its determinants across urban and rural, male and female seniors in China. The analysis supports an improved understanding of the coping strategies of those over 45 as they transition from work to non-work.

The primary database used in this work is drawn from the China Health and Retirement Longitudinal Survey (CHARLS).⁸ These national samples of Chinese residents aged 45 and older are conducted by Peking University every two years. The fourth wave of CHARLS was fielded in 2015, which surveyed nearly 20,000 individuals, with data released in September 2017. Only data from this survey round were analysed, and weighting was applied to make the sample nationally representative. The data contained in the CHARLS datasets include demographic and family structure information, health status, employment status and pension, income and assets, and other related information about the respondents. Their rich information on employment and pension make them ideal for analysing labour force participation, type of work, working time and earnings of the near old and older population.

In addition to providing a descriptive analysis of differences between rural and urban, male and female populations, regression analysis is used in this paper to identify significant factors associated with the decision to work from age 45 and the working time of older persons still active in employment. A probit model is used to examine the factors that influence the decision to work or exit the labour market. Stepwise regression is subsequently applied to identify relevant factors in determining the hours worked per week for those reporting to work. To identify factors influencing the number of hours worked per week, an OLS regression is run, testing the same set of descriptors for explanatory significance.

4. Results: Factors influencing old age work

4.1 Whether to work: Descriptive results

This section considers trends in the decision to work or to exit the labour force for persons 45 years of age and older. It does not explicitly consider formal retirement status, because many of China's officially retired persons continue to work or return to work under new circumstances. The labour participation rate of survey respondents is defined as whether persons consider themselves to be working or to be looking for work during the survey period. The labour participation rate for each age group is shown in Table 1 below.

The total average labour participation rate for people aged between 45 and 85 is calculated to be 60.7 per cent, with the participation rates gradually decreasing for older age groups up to around age 70, at which age the share of those participating in work declines more rapidly. For all age categories, women's participation rates are lower than those of men, with the largest difference occurring between the ages of 50 and 59.

⁸ <http://charls.pku.edu.cn/>

Table 1: Labour participation rates, by age groups, gender disaggregated (2015)

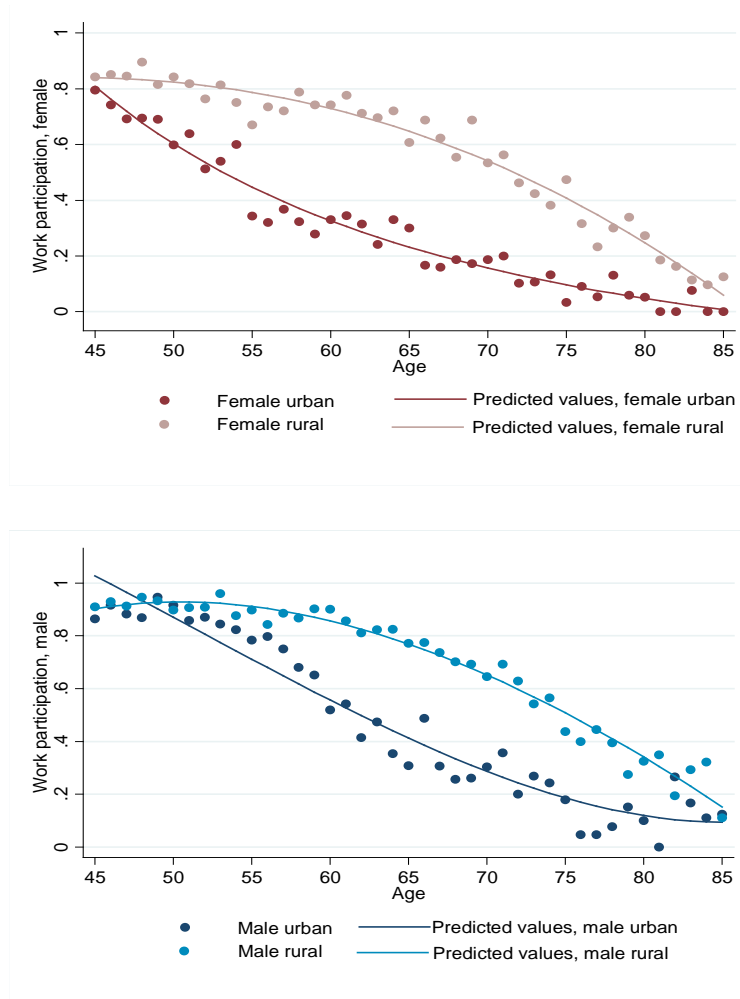
Age groups	Gender		Frequency
	Men	Women	
45–49	91.5%	80.6%	87,800,000
50–59	86.9%	67.5%	182,600,000
60–69	68.2%	56.1%	165,800,000
70–79	43.5%	33.2%	79,400,000
80 & above	20.9%	11.4%	29,900,000
Total	72.4%	58.7%	545,500,000

Source: CHARLS 2017; authors' calculations

Figure 3 shows the labour participation rate of women and men by rural or urban current residence address. Women living in rural residences show higher work participation rates than women living in urban residences, with the biggest gap appearing between the ages of 55 and 75 years old. At age 65, the average labour participation rate of rural women is 60 per cent, that of urban women 30 per cent. This difference in part reflects the effects of mandatory retirement ages for women in formal work, which is still primarily urban based. Beyond the age of 65, urban men's and women's labour participation rates show a similar steady downward pattern.

For men before the age of 55, the labour participation rate is just over 90 per cent. Men in rural residences exhibit somewhat higher work participation rates after 55, with a widening difference between 60 and 75, when most men in wage work reach their statutory retirement age. By age 65, nearly 60 per cent of urban based men have left work. In contrast, close to 70 per cent of rural women and 80 per cent of rural men still participate in work at age 65, and roughly one in four report still doing so at age 80.

Figure 3: Labour participation rate of women and men by rural and urban status, age 45 and over



Source: CHARLS 2017; authors' calculations

For those surveyed who report to be still in work from age 60 and older, 72 per cent of rural men and 73 per cent of rural women engaged in household agricultural work do not anticipate leaving work until they physically are no longer able to continue (see Table 2). This contrasts with half of men and 36 per cent of women in non-agricultural work in urban areas anticipating to stop work at a specific age.

Table 2: At what age do you plan to stop working?

	Urban Male	Urban Female	Rural Male	Rural Female
Of those who reported to engage in household agricultural work:				
Will stop at a certain age	27%	24%	28%	27%
Until physically not able to	73%	76%	72%	73%
Of those who reported wage work or non-farm self-employment and unpaid family business:				
Will stop at a certain age	50%	36%	42%	26%
Until physically not able to	50%	64%	58%	74%

Source: CHARLS 2017; authors' calculations

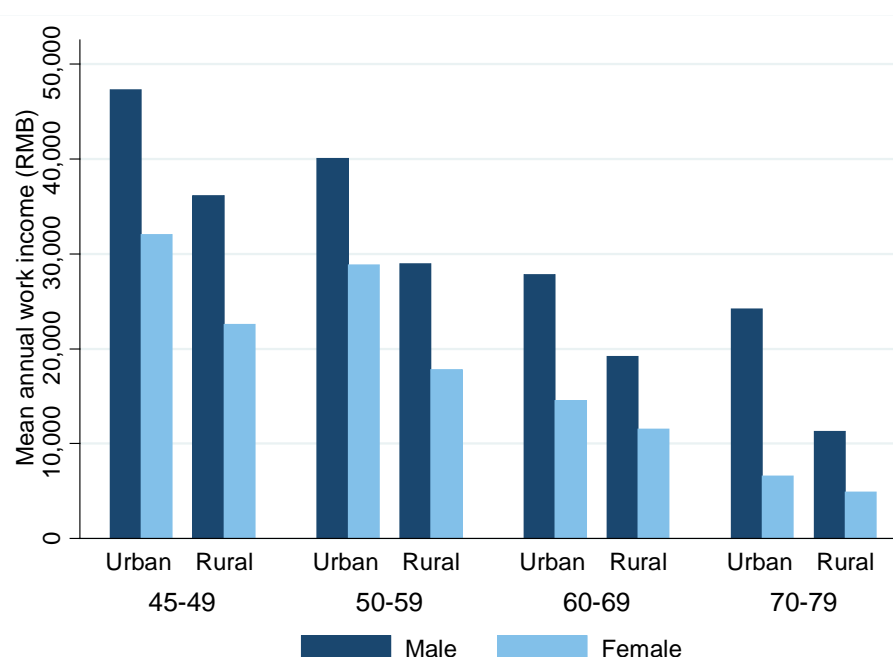
4.2 Sources and levels of income

For the purposes of this study, analysis of income as it corresponds with work patterns draws upon on four broad measures covered in the CHARLS survey. These include earnings from work or equivalent in-kind value of household consumption of products home-produced; pension payouts; transfer income; and income received from family.

Near old and older persons rely on multiple sources of income, which vary in importance as age progresses. Wage income is the dominant source of income for urban men until age 60, when employment pension income gradually replaces the income previously earned from wage work. A similar shift happens for urban women around age 55. Sources of income among the rural near old and older men and women derive to a large extent from work throughout all age groups.

Figure 4 shows reported average annual earnings from work for different old age groups, by urban and rural status.⁹ Reported income earned from work for women is lower than that for men in all age groups, and income earned from work for rural women is consistently lower than that for urban women. Average reported income among respondents suggests that earnings from work decline steadily, falling below minimum annual wage levels for rural and urban areas.¹⁰

Figure 4: Mean annual work income by age group, gender and locality type



Source: CHARLS 2017; authors' calculations

⁹ The quantity of work is calculated in the following way: Estimated hours worked per day is multiplied by days per week worked, then annualized by estimated months per year worked.

¹⁰ For comparison purposes, in 2017, the minimum wage for Shanghai was set at 27,600 yuan (US\$4000) a year, and for lower income rural counties in Heilongjiang, Hunan and Liaoning provinces, the minimum wages were as low as 12,000 yuan per year (Melnicoe, 2017).

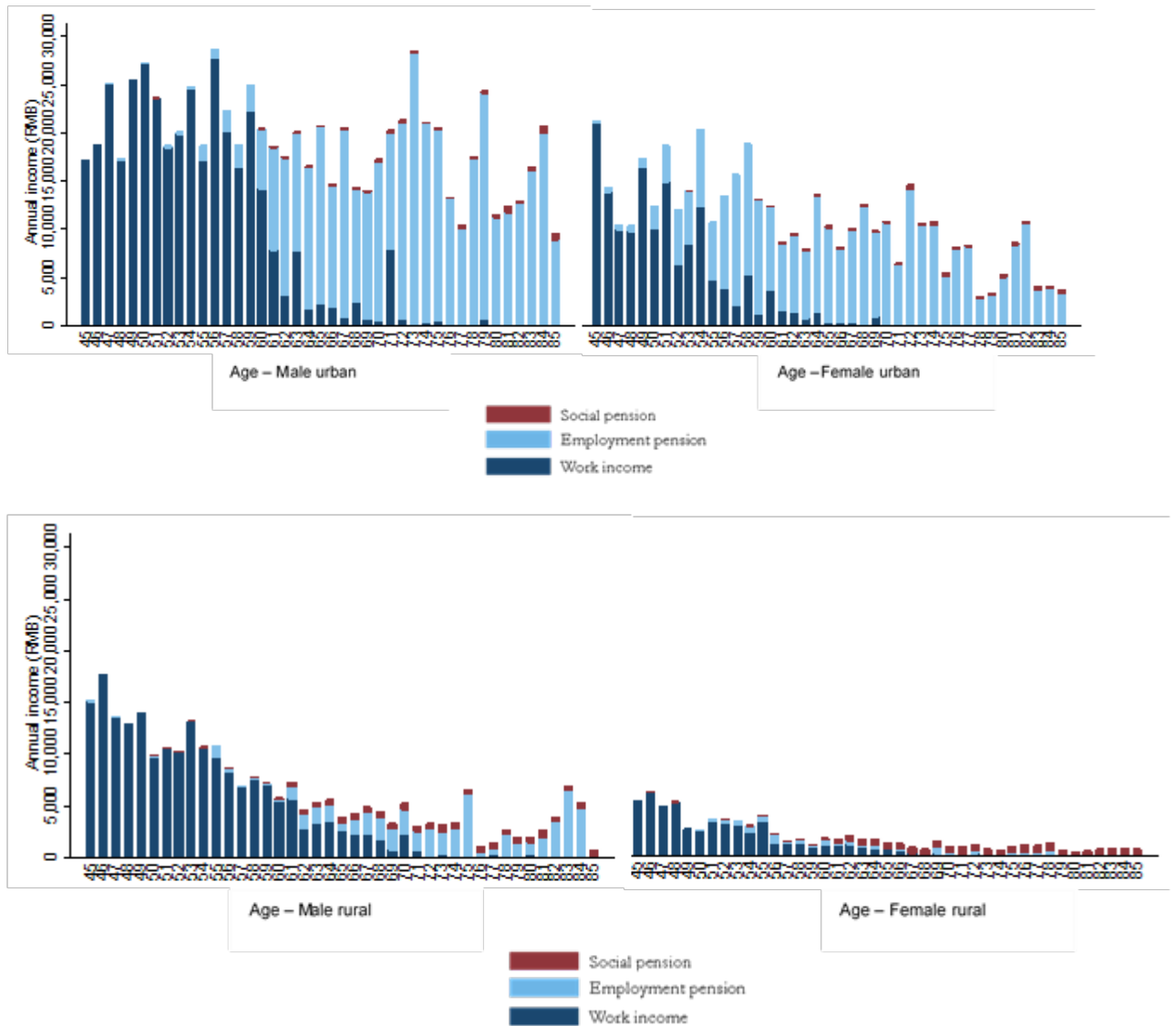
Figure 5 shows reported income sourced from work as well as employment and social pension payouts by age. According to the analysis, income from work and employment pension payouts are highest for urban men, and amounts do not drop greatly as age advances, in large part due to payouts from employment pensions replacing work income. For urban women, a similar pattern can be observed. However, combined income from the various sources is lower than that for urban men, and the transition from work to employment pension income begins earlier, at around age 55. Rural men and women report lower incomes from work and pensions. Rural women, in particular, show on average incomes from these sources that are at, or fall below, China's poverty line, as indicated in the fourth panel of Figure 5.¹¹

A breakdown of income by source also shows the limited protection that social pensions are providing to the old, particularly in rural areas, where incomes are lowest. Of those receiving social pensions, less than 4 per cent report payouts from employment pensions. For ages 60–79, median payouts from social pensions are low for urban and rural populations, averaging just over 900 yuan annually. Less than 10 per cent report supplementing this income through work, but over 65 per cent of urban recipients and nearly three out of four rural recipients report receiving support from their children. With the additional payments from employment and other pensions added, major differences in non-work payouts from the same sources emerge between urban and rural recipients; the average payouts for urban men approximate more than fifteen times the average payouts for rural women.

For the New Rural Social Pension, 52 per cent of rural respondents from age 60 on report receiving payouts, which average 105 yuan per month in rural areas. The old age subsidy payouts indicate far less coverage (15 per cent of rural respondents aged 70 to 79 years and 20 per cent of urban respondents report payouts). For those 80 and over, 44 per cent report receiving payouts. The average payout is 210 yuan in urban areas and 117 yuan in rural areas. The Urban and Rural Unified Resident Pension, launched in 2014, provides the largest payouts – an average of 981 yuan – but is reported to be received by only three per cent of the respondents aged 60 and over.

¹¹ In 2012, China's poverty line was set at 2,300 yuan (US\$360) per year. This level was valid through 2015.

Figure 5: Reported income sourced from work, employment and social pensions, by age



Source: CHARLS 2017; authors' calculations

4.2.1 Family support

Support from the family, and particularly from children, remains a major source of old age security for some. According to Table 3 below, 70 per cent of rural residents believe that they can rely on their children for future support. For urban residents, the share drops to 29.7 per cent, with another 60 per cent relying more on pensions. As the results suggest, only 6.1 per cent of urban residents and 4.7 per cent of rural residents feel they can rely on savings. These results contrast with long-held traditions of family caring for old age persons, at least in urban areas. Equally clear is that rural populations envision limited alternatives of support besides their children, indicating their ongoing old age vulnerability.

Table 3: Respondent expectations regarding primary financial source for old age support

	Urban	Rural
<i>On whom can you rely financially for old age support?</i>		
Children	29.7	70.0
Savings	6.1	4.7
Pension or retirement salary	60.0	20.1
Commercial pension insurance	1.1	0.4
Other	3.1	3.8

Source: CHARLS 2017; authors' calculations

4.3 Determinants of old age labour participation: Multivariate results

Models to capture determinants of labour market participation differ for developing and developed countries and also for prime age and old age people. In China's case, by age 60, most of those who were working in formal jobs have retired; some start new work. Personal characteristics and household characteristics can be significant determinants of whether to work. Age, health, gender, marital status and employment status or health status of a spouse, savings and assets, claim to pension, education and wealth of children, presence of children and grandchildren in the home, and sector or type of work can all influence old age labour participation. All of these explanatory variables were tested, but only some showed significance. Data on savings and assets, including land and home ownership, were not found to correlate with labour force participation among older persons. The education level of respondents and the income received from children instead can be considered as proxies for wealth in China. For education, the cut-off at the completion of middle school was found to capture significant differences between those working and not working, and it also reflects differences between rural and urban populations in older age groups.

To better understand the interplay between various factors that associate with older Chinese populations leaving work behind, a binary logistic regression analysis is used. In this case, a probit analysis is used to estimate the average change in probability of whether a person does or does not work (dependent variable y) when there is a 1 unit change in the each of the regressors.

Within the framework of the availability of data in the survey, the following explanatory variables are selected based on their expected influence and overall correlation with the dependent variable:

Married	dummy taking value 1 if individual is married
Spouse working	dummy taking value 1 if individual is married and spouse is working
Age	age of individual in years
Age squared	age ²
Rural	dummy taking value 1 if individual lives in rural area
Education	dummy taking value 1 if individual completed at least middle school
Health	self-assessed health, ranging from 1 to 10; the higher, the better health
Work pension	dummy taking value 1 if individual receives employment pension
Social pension	dummy taking value 1 if individual receives social pension
Income from children	dummy taking value 1 if individual receives supporting income from children
Own housing	dummy taking value 1 if individual owns the house in which he/she lives

A summary of the regression results is shown in Table 4 below. The ages range from 45 to 90+ years, with the lower age being roughly five years before official retirement begins in order to capture early retirements. Characteristics of spouse's employment and health status were not used to avoid large drops in sample size.

As noted in Table 4, rural or urban status, marital status, a spouse working, and gender are found to strongly associate with a higher propensity to work. The probability of older women working is 16 per cent lower than for men, and the probability of working is 17 per cent higher for rural individuals versus those in urban areas. The probability of working decreases by 7 per cent for those married, ranging from a decrease of 17 per cent for urban women to 9 per cent for rural women. Marital status was not found to be significantly associated with urban and rural males' decision to work. Age and age squared does not change the probability of working when other factors are taken into account.

Receipt of an employment pension is associated with an 18 per cent lower probability of working, strongly significant for men and urban women, but only at the 10 per cent level for rural women, among whom employment pensions are rare. Overall, receipt of a social pension is associated with a 7 per cent increased probability of working, possibly reflecting its poverty focus on vulnerable recipients.

The level of education attainment, which is higher among men and urban residents overall in China, associates with a slightly lower probability of working (2 per cent), if at least a middle school education has been achieved. However, within all groups but rural men, the association is not strong. There is – with education among urban respondents in particular – cross-correlation with pension status, as the better educated are more likely to have had formal employment. Better health is expected to positively correlate with labour force participation. A higher self-assessment of respondents' health associates with a 3 per cent increase in probability of working, with almost no variation across groups.

Variables reflecting children and grandchildren numbers, whether living at home or not, and children's dependency status were not found to change the probability of working, despite the established belief that family care responsibilities and later family support often replace reliance on work income. A factor that was also not found to differentiate whether one worked was the type of work, including agriculture, which in rural areas becomes nearly the only form of work for those of very advanced age. The receipt of income from children (dummy) likewise did not show significance related to the probability of working, with a larger decrease for urban men and women (5 per cent and 4 per cent, respectively), but

near zero effect for rural residents. These intergenerational transfers may partially reflect differences in earning capacities between rural *hukou* and urban *hukou* children.

Table 4: Probit regression results on probability of persons over 45 working

Dependent variable = Work participation					
Explanatory variables	Urban		Rural		All
	Male	Female	Male	Female	
Married (yes=1)	0.03 (0.9)	-0.17*** (-5.2)	-0.02 (-0.9)	-0.09*** (-4.2)	-0.07*** (-5.4)
Spouse working (yes=1)	0.17*** (6.0)	0.20*** (6.4)	0.17*** (14.9)	0.24*** (14.4)	0.19*** (17.8)
Age	-0.03** (-2.0)	0.02 (1.0)	0.02** (2.2)	0.03*** (3.4)	0.01* (1.8)
Age squared	0.0 (0.7)	0.0** (-2.1)	0.0*** (-3.8)	0.0*** (-5.0)	0*** (-4.5)
Gender (Female=1)	-	-	-	-	-0.16*** (-17.5)
Rural / Urban (Rural=1)	-	-	-	-	0.17*** (14.7)
Education	-0.03 (-1.2)	-0.03 (-1.0)	-0.02* (-1.8)	-0.02 (-0.8)	-0.02** (-2.0)
Health	0.02*** (4.2)	0.02*** (2.5)	0.03*** (10.0)	0.03*** (7.0)	0.03*** (10.9)
Receives employment pension (yes = 1)	-0.15*** (-5.5)	-0.15*** (-5.2)	-0.13*** (-4.8)	-0.10* (-1.7)	-0.18*** (-11.4)
Receives social pension (yes =1)	0.12*** (3.2)	0.15*** (4.6)	0.04*** (3.0)	0.04*** (2.7)	0.07*** (7.0)
Receives supporting income from children (yes=1)	0.03 (1.2)	0.01 (0.4)	-0.01 (-0.8)	0.0 (0.7)	0.01 (1.2)
Own housing (yes=1)	0.04 (0.8)	-0.05 (-1.6)	0.0 (-0.4)	-0.02 (-1.3)	-0.02 (-1.2)
Number of obs.	1,830	2,050	4,589	5,094	13,563
Adjusted R-squared	0.38	0.25	0.25	0.17	0.30

Notes: Average marginal effects are reported; t-statistics in parentheses.
 ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

4.4 Working time of older workers

Work as a source of income remains critical to a large share of China’s older people as they advance in age. For those who participate in work, the analysis of hours worked does not suggest a widespread winding down of the number of hours worked as people age but instead a steady exit from work as age advances. Even at advanced ages, the small share who continue to work report working relatively long hours.

Figure 6 and Table 5 below show the average number of working days per year by locality type and

gender for those who work. In general, women participating in work and living in rural areas report working an average of 190 days per year, which does not decline until advanced age (e.g. 80+ years).¹² Urban working women show a steady decrease in days worked as age progresses. Men's total equivalent working days also fall in the same range as those of women, with urban men averaging slightly more work days. Table 5 also shows the declining sample size of those who work as age progresses.

Figure 6: Annual number of working days by age; urban and rural women and men who work

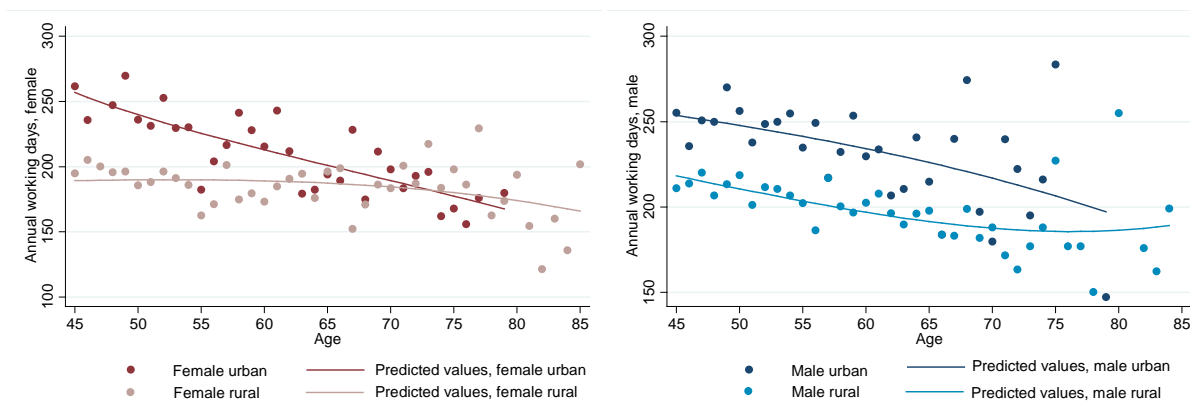


Table 5: Total working days in a year by gender, age group, and current residence status

	Male		Female		Total	
	Days worked	Obs.	Days worked	Obs.	Days worked	Obs.
<i>For urban residences</i>						
45–49	262	455	268	380	265	835
50–59	240	804	227	453	236	1,257
60–69	226	338	198	229	214	567
70–79	207	80	203	38	206	118
80 & +	198	8	336	1	209	9
Subtotal	242	1,685	236	1,101	240	2,786
<i>For rural residences</i>						
45–49	214	815	197	876	206	1,691
50–59	210	1,773	188	1,581	199	3,354
60–69	197	1,568	188	1,308	193	2,876
70–79	179	498	194	337	185	835
80–89	165	60	173	42	169	103
Subtotal	203	4,714	190	4,144	197	8,858
Total	217	6,416	203	5,268	211	11,684

¹² The data show a high variability that increases with age. This is in part due to the steady decline in sample size as greater shares leave work altogether.

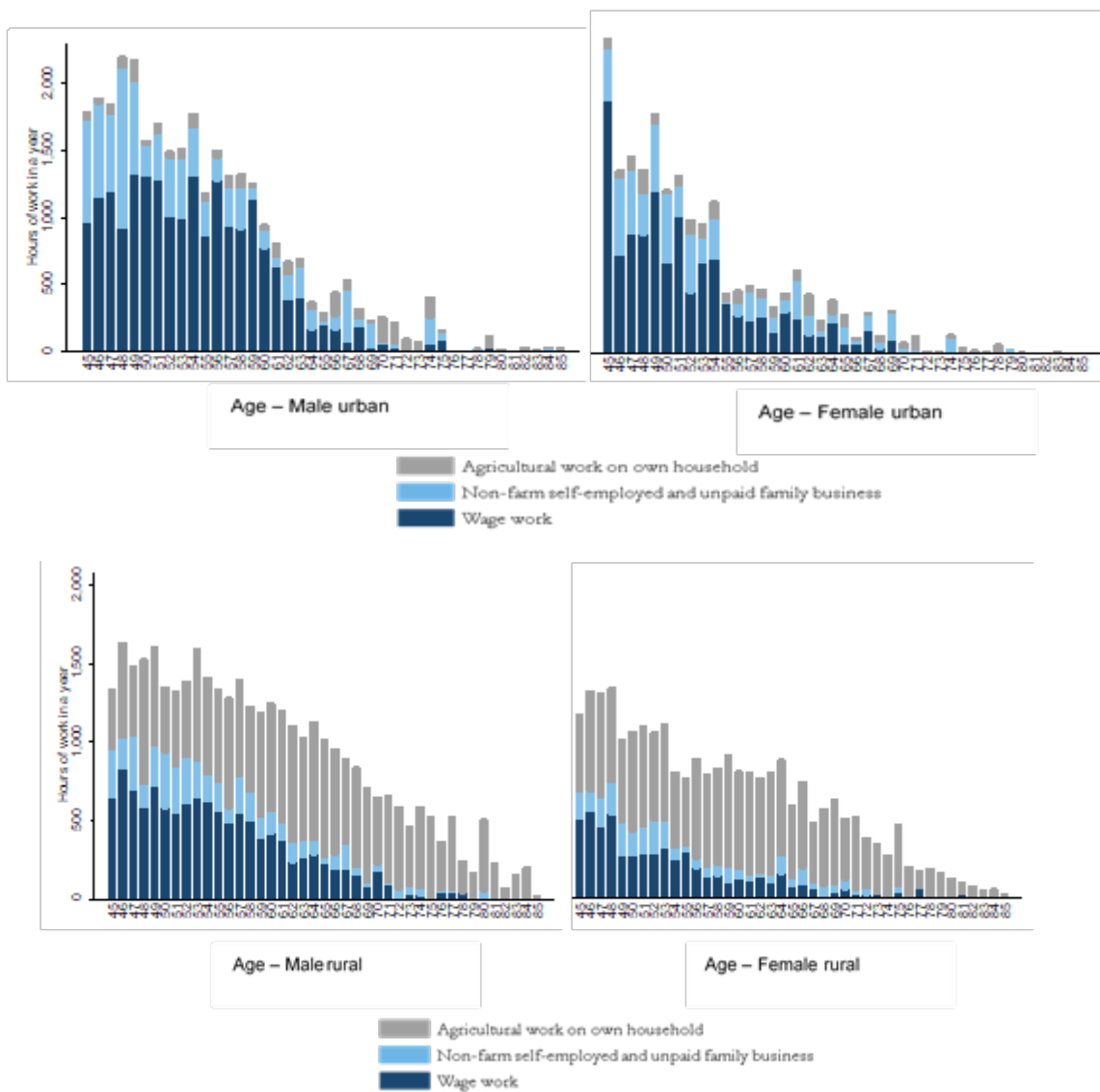
4.5 Work activity

Not only is the amount worked informative about old age coping strategies, but also the types of work performed. The data support the analysis of three types of working time measured in the survey: agricultural work in own household or on others' farms; wage work; and non-farm self-employed and unpaid family business. The questionnaire does not distinguish between small-scale household agricultural work and farming, nor does it measure household work more broadly; moreover, unpaid care of others is not treated as productive work. For these reasons, working time, particularly for women, is likely to be under-reported. Figure 7 charts the average hours worked per year, broken down by the three broad work categories for near old and older persons by gender, locality, and age. Unlike the previous analysis, the averages include those working no hours to show the relative exit patterns by work type.

As the charts indicate, wage work is the predominant form of work for urban men and women up to their mid-sixties, tracking largely common retirement ages. Rural residents engage in relatively little wage work compared to urban residents, with rural older women relying the least on wage income. Non-farm self-employment and unpaid family business account for a relatively small share of equivalent working days. For men, the equivalent working days decline continually as age progresses, while for women, there is a drop from age 55. Rural residents work much less than urban residents in non-farm self-employment and unpaid family business.

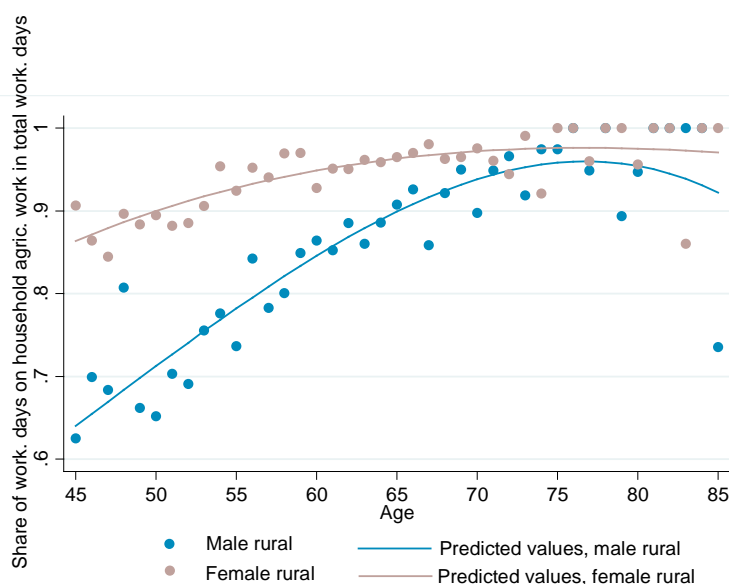
There is reliance on agricultural work at all ages for rural men and women. In fact, nearly all work reported by those in rural areas above the age of 70 years is agricultural, suggesting that for some it continues to be a safety net in extreme old age. Figure 8 shows the percentages of agricultural work in own household in equivalent working days divided by total equivalent working days, for female and male rural residents before the age of 85. For both men and women in rural residences, the share of agricultural work over the total equivalent working days increases with age to the point that, for the oldest, it becomes almost the only form of work.

Figure 7: Levels of work reported by age, gender and locality, broken down by work types



Source: CHARLS 2017; authors' calculations

Figure 8: Average share of household agricultural work as a share of total annual working days



Source: CHARLS 2017; authors' calculations

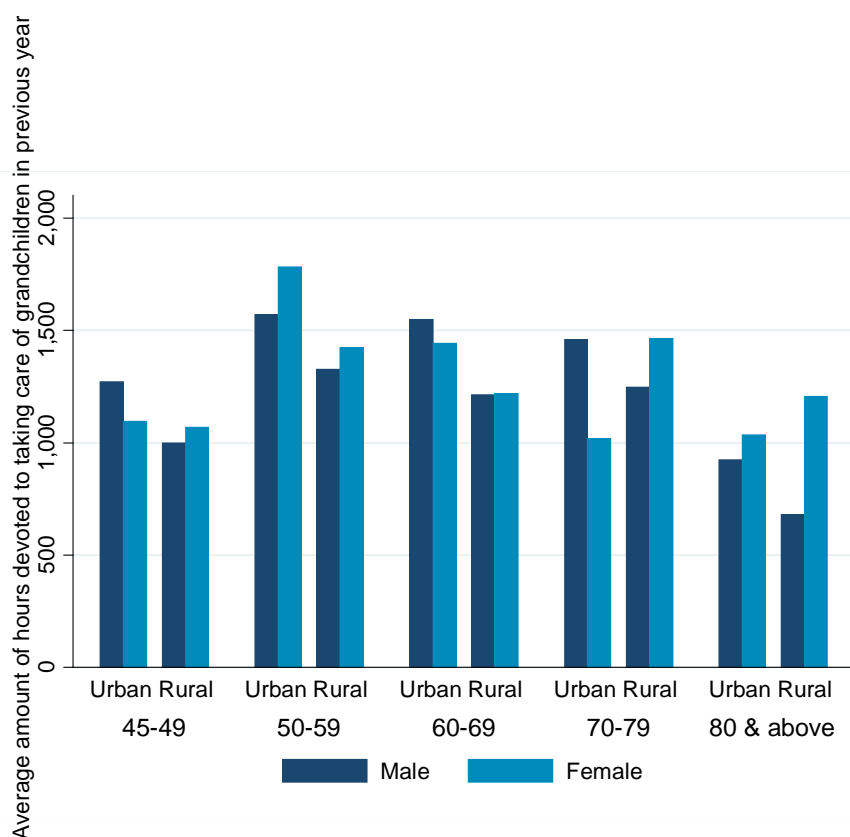
4.5.1 Multiple types of work

A final lens for considering how China's near old and older population rely on work as part of their coping strategies is their reliance on multiple sources of work. Roughly 30 per cent of rural males rely on more than one type of work between ages 45 and 56, with wage and agricultural work being the most common combination. Less than 10 per cent rely on multiple work sources after age 65. Roughly 10 per cent of rural women carry out work of more than one type – primarily a combination of wage and agricultural work until age 55, after which the incidence also tapers down. Urban women are the least reliant on multiple sources of work, with less than 5 per cent depending on them, and then primarily between the ages of 45 to 54.

4.5.2 Care work

The data do not measure hours spent doing household work or family care, both of which would likely augment rural and urban old age workloads. More than 60 per cent of respondents between the ages of 45 and 70 report caring for grandchildren during the year. For those married and living with their spouse, most report that this care work is a shared responsibility, with equal amounts of time used, as suggested in the gender disaggregated results in Figure 9. After age 70, the average share caring for grandchildren drops to less than one in three. Roughly 25 to 30 hours per week of care work are reported by those providing care.

Figure 9: Persons caring for grandchildren: Mean number of hours per year occupied



4.6 Determinants of old age working time: Regression results

So far, the descriptive analysis suggests that there may be different factors influencing decisions about how much to work. In order to find out, ordinary least squares regression was used to test the significance of the various characteristics considered for decisions related to labour participation. The sample used was reduced to only those indicating some hours of productive work over the past year.

As shown in Table 6, explanatory factors that influence the number of hours worked for those reporting to participate in work differ only somewhat from those found to associate with the decision to work. As would be expected, age is negatively associated with the number of hours worked. Likewise, having a working spouse and being in relatively better health are positively associated with more work hours per week, which is consistent with earlier results. Others found inversely related to higher amounts worked are being female, being rural, receiving an employment pension, and being financially supported by children. Showing little effect on the amount worked are education level and being a recipient of at least one social pension.

Table 6: Regression Table – OLS-2

Dependent variable = Hours worked in a week					
Explanatory variables	Urban		Rural		All
	Male	Female	Male	Female	
Married (yes=1)	-4.93 (-1.3)	4.08 (0.9)	3.04 [*] (1.9)	1.18 (0.6)	0.68 (0.6)
Spouse working (yes=1)	2.49 (1.5)	0.88 (0.2)	1.72 [*] (1.7)	-0.14 (-0.1)	1.65 ^{**} (2.0)
Age	-0.48 ^{***} (-3.6)	-0.42 ^{**} (-2.4)	-0.40 ^{***} (-6.4)	-0.30 ^{***} (-4.6)	-0.39 ^{***} (-9.1)
Gender (Female=1)	-	-	-	-	-3.46 ^{***} (-5.9)
Rural / Urban (Rural=1)	-	-	-	-	-6.97 ^{***} (-9.0)
Education	0.99 (0.6)	1.04 (0.4)	-1.18 (-1.4)	1.16 (1.0)	0.40 (0.6)
Health	0.48 (0.9)	0.14 (0.2)	0.70 ^{**} (3.1)	0.43 [*] (1.7)	0.52 ^{***} (3.2)
Receives employment pension (yes = 1)	-5.78 [*] (-1.9)	-9.63 ^{***} (-3.0)	-5.73 ^{**} (-2.3)	6.65 (1.4)	-5.23 ^{***} (-3.2)
Receives social pension (yes =1)	-3.67 (-1.1)	-6.23 [*] (-1.7)	0.28 (0.3)	0.74 (0.7)	0.11 (0.14)
Receives supporting income from children (yes=1)	-1.55 (-1.1)	-5.57 ^{**} (-2.5)	-1.82 ^{**} (-2.3)	-2.77 ^{***} (-3.2)	-2.57 ^{***} (-4.6)
Number of obs.	977	726	3,396	3,190	8,289
Adjusted R-squared	0.07	0.09	0.04	0.02	0.21

5. Conclusion

This research has shed light on how old age work in China configures within the overall income and security situations of older persons. This study does not advocate old age work, nor does it advocate an end to it. Within the context of ending old age poverty, it tried to analyse the incidence of work and identify factors associated with it. The results of this analysis suggest that the decision to work and the amount of work among older persons constitute key elements of coping strategies, and these continue to differ across four demographic groups: rural, urban, male, and female. Part of these differences are associated with variations in government policies targeted towards older populations based on gender, age, locality, and family circumstances, as well as with long established cultural and social norms. Specifically, the analysis has pointed to several insights.

For those households surveyed, a large share of the near old and older individuals, particularly in rural areas, opt to work at least part time and predominantly in non-regular employment as part of their old age coping strategies.

Much of the rural work is likely based on necessity rather than choice, since many of those with

adequate sources of income, such as employment pensions, opt out of work by age 70. Those who continue to work well into old age report few alternative sources of income and security. Most put in long hours, and a small segment continue to do so up to a very old age.

Women in rural areas appear to be the more vulnerable and more likely to work well into old age. Their informal work status, longer life expectancy, reliance on household agriculture, and likelihood to engage in care work all contribute to lower work-related old age security. For urban women, lower mandatory retirement ages translate into lower pension benefits and less opportunity to build savings.

The current configuration of basic health and social pension scheme payouts also appears to be inadequate to offset the need to work even into advanced old age, particularly for those in rural areas who do not have other sources of income. Recipients will likely require supplemental income and/or family support to avoid poverty. In the absence of the latter, a significant share of China's aging rural population, in particular, will face deep poverty, especially when combined with poor health. In contrast, based on the work and retirement patterns of those eligible for employment pensions, payouts appear to deliver income security to the point that recipients no longer need to rely on work as a main source of income as they advance in age.

A final point should be made on those persons under 70 and still working. The findings of this study call into question the reliance on old age dependency ratios as a means of estimating the demographic burden of China's aging population on an economy, based on the assumption that people beyond retirement age cease to work and rely on other means of support. Although the data suggest this to be largely the case at advanced ages, many Chinese work well past their retirement ages.

Policy implications

Ensuring that old age work is available to those able to work and needing income from it will be an important means of fighting old age poverty worldwide. However, for China to end the need to work in old age, more progress is needed in deepening social pensions for the vulnerable. This study has found evidence of relatively low payouts, which leave many falling short of covering their basic needs. There is a need to deepen payouts for the current generation, who have not had the opportunity to build up years of contributions.

China is currently considering changes to its relatively young mandatory retirement ages to enable older workers to remain longer in productive employment. This in turn would extend their old age income security. Such a move would likely benefit to a large extent many urban workers. Within this context, stronger incentives can be delivered to women to stay in the formal work force for longer durations. For informal work, the policy changes would probably have limited effect, particularly in rural areas, except to perhaps extend the period of contribution to national health insurance and social pension schemes.

Neither deepening social pension payouts nor extending retirement ages, however, will address the barriers to pension claims of rural migrants working urban jobs. Without a reconsideration of hukou driven benefits packages, this aging group will miss out on accruing employment related social benefits associated with their urban work history. Older returning migrants will make up a rapidly growing share of the rural elderly. This study did not delve into the issues surrounding this phenomenon, but more research is needed to inform better policy configurations for this growing demographic group.

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