

# Expanding Social Insurance Coverage in Urban China

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## Abstract

This paper first reviews the history of social insurance policy and coverage in urban China, documenting the evolution in the coverage of pensions and medical and unemployment insurance for both local residents and migrants, and highlighting obstacles to expanding coverage. The paper then uses two waves of the China Urban Labor Survey, conducted in 2005 and 2010, to examine the correlates of social insurance participation before and after implementation of the 2008 Labor

Contract Law. A higher labor tax wedge is associated with a lower probability that local employed residents participate in social insurance programs, but is not associated with participation of wage-earning migrants, who are more likely to be dissuaded by fragmentation of the social insurance system. The existing gender gap in social insurance coverage is explained by differences in coverage across industrial sectors and firm ownership classes in which men and women work.

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## Expanding Social Insurance Coverage in Urban China\*

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## 1. Introduction

As countries develop and urbanize, larger shares of their populations spend their working lives in formal employment relationships. At the same time, with declining fertility and increasing population mobility, traditional support from family members becomes less reliable. Moreover, rising average incomes and improvements in administrative capacity enable governments to introduce social insurance systems capable of helping their citizens face a range of uncertainties. Among developing countries, China is unique not only in its rapid growth over the last 30 years, but also in its simultaneous gradual transition from a planned economy. Early after economic reforms began, it became evident to policy-makers that the provision of social insurance by government and state-owned work units under the planned economy would need to be reformed into a broader system more compatible with a functioning labor market and mobile workforce (World Bank, 1997a; Zhang, 2002). The Chinese government has developed a framework for a social security system covering both rural and urban areas, and embraced the goal of full coverage by 2020. However, survey-based research suggests that less than 50 percent of the urban population has comprehensive social insurance coverage that includes pension, unemployment, health and disability insurance.<sup>1</sup> Expanding coverage could promote more equitable access to protection from a range of risks, including the risk of poverty in old age, the risk of unexpected medical expenses, disability risk, and financial risk associated with unemployment.

Concentrating only on increasing the participation of workers in registered enterprises and organizations, however, is not sufficient for reaching full coverage in urban China. Several important groups of the urban population would still not be covered, including the self-employed, workers in unregistered private enterprises or those with fewer than eight employees, and urban residents who are not in the work force.<sup>2</sup> Members of these groups lack formal employment relationships and often also lack an employer to co-finance social insurance contributions. Current initiatives to expand coverage to this group of urban residents have thus concentrated on expanding public co-financing of social insurance programs. A basic medical insurance program for urban residents was established in 2007 after which participation grew

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<sup>1</sup>We use the expression “urban population” to refer to everyone living in urban areas. In the context of social insurance policy in China, the term “residents” has a specific meaning based on both employment and *hukou* (residential registration) status. In this paper the term “residents” refers to all workers living in the urban area, and the non-working population, self-employed and informally employed populations regardless of *hukou* status.

<sup>2</sup>The share of urban employees outside of formal sector enterprises increased from 13.6 percent in 1990 to a peak of 38.9 percent in 2002 and then dropped down to 28.9 percent in 2009. When one includes the self-employed as well, the percentage outside the formal sector remained 42.6 percent in 2009. International experience suggests that coverage tends to increase with growth in per capita income, but in economies in which many workers are self-employed or are employed informally in small scale enterprises, it is unlikely that full coverage can be achieved through employer-based social insurance programs. (Holzmann and Cuesta, 2001; Holzmann et. al, 2009; Hu and Stewart, 2009; Mackellar, 2009; Jeong, 2010).

rapidly, and a pilot urban resident pension program was announced in July 2011 with the aim of covering all cities by the end of 2012.<sup>3</sup>

Understanding low coverage rates requires insight into both the decisions of employers to provide mandatory contributions to social insurance funds and the participation decision of wage-earners and other residents. This paper highlights two important disincentives for participation in social insurance programs: the relatively high rate of combined employer and employee contributions, which are even higher at low incomes, and the consequences of institutional fragmentation. Both mandatory programs, financed from employer and employee contributions, and voluntary programs are funded and administered locally. As a result, the levels of protection, degree of fund pooling, and management quality vary both by social insurance scheme and across provinces. Decentralization and differences in governance across social insurance schemes are unsurprising as they reflect the decentralized implementation characteristic of China's economic reform process. Unfortunately, they inhibit portability and create an important disincentive for China's mobile workforce to participate in these new schemes.<sup>4</sup>

Section two, below, first briefly introduces the history of social insurance reform and documents changes in the patterns of coverage. Section three introduces specific social insurance programs and their targeted populations. In this discussion, we use both administrative sources and survey data to document levels of coverage for different groups of workers and present hypotheses for explaining continued low levels of coverage. Section four introduces the China Urban Labor Survey (CULS) which we use to describe the correlates of participation in social insurance programs by different targeted subgroups of the population. We focus on informing as to how incentives and program design may affect coverage. Taking a cue from a rich literature on the gender wage gap in China, the descriptive analysis also documents the existence and sources of gender differences in social insurance coverage.<sup>5</sup> A final section then concludes by highlighting important features of China's decentralized social insurance system which could further frustrate efforts to expand coverage.

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<sup>3</sup>In design and basic framework, the urban pension scheme is very similar to the new rural resident pension scheme, which was introduced in 2009 and will cover all counties by the end of 2012.

<sup>4</sup>According to China's sixth population census, 261.4 million rural registered residents (rural *hukou* holders), or 39.2 percent of the urban population, now live in China's cities. These newer urban residents comprise the majority of workers outside the formal sector, and tend to be far more mobile geographically than urban registered residents.

<sup>5</sup>Earlier research emphasized that gender wage gaps between men and women were higher in the private sector (e.g., Liu et al., 2000; Maurer-Fazio and Hughes, 2002), and more recent work has emphasized that the gender gap has ceased to grow (Liu, 2011) and persists primarily among less educated workers urban workers in the lower end of the wage distribution (Chi and Li, 2008; Li and Song, 2011).

## 2. Social Insurance in China

### 2.1 A Brief History of Social Insurance and Economic Reform

Under the centrally planned economy of the early 1980s, China's government and urban state sector employees received social insurance benefits from employers in what were essentially pay-as-you-go (PAYG) systems operated at the enterprise level. Relatively few urban workers were outside the government and state sectors, but those who were, as well as rural residents, lacked pension coverage.<sup>6</sup> From early in the reform period, the government recognized that the legacy costs associated with supporting health and pension payments for retirees would place a growing burden on state-owned enterprises (SOEs) and put older firms (with more retirees) at a disadvantage relative to new firms (World Bank, 1997b; Sin, 2005). Pilot social insurance programs, first implemented locally in the 1980s, exhibited variation across provinces and industries in individual and enterprise contribution rates; by the early 1990s, evidence from these pilots led to a consensus on desired features of a social insurance program for urban workers.

Covering urban state sector workers, however, would not be sufficient. Economic restructuring associated with China's economic transition in the late 1990s created a more dynamic labor market and increased efficiency in the allocation of labor (Cai and Wang, 1999; Cai et al., 2002; Lin et al., 2003; World Bank, 2005; Naughton, 2007). The deepening SOE reform process, however, resulted in the dislocation of millions of urban workers (Cai et al., 2008, Giles et al., 2006a). In order to prevent sharp increases in poverty and to reduce unemployment, re-employment centers were established in the late 1990s as a temporary measure to provide training and job referral services, and basic social insurance through income support for displaced workers. After completion of SOE restructuring in the early 2000s, establishing formal, more permanent social insurance programs became necessary. In addition to the loss of social insurance coverage due to job loss, the lower share of workers in the state sector, where compliance with labor laws mandating social insurance coverage is higher, meant that, by the early 2000s, fewer urban workers received social insurance from employers (Giles et al., 2006b).

In a series of policy directives starting in the late 1990s, the State Council built up a new social insurance scheme targeting all urban workers.<sup>7</sup> To cover health insurance, the Basic Medical Insurance (BMI)

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<sup>6</sup>In rural areas, the Cooperative Medical Scheme (CMS) financed health care for members of the agricultural commune and the *wu bao* program provided insurance against infirmity. Under reform, the household responsibility system eroded the capacity of communes, which became townships, to provide services under the CMS, and this system had collapsed by the mid-1980s (Hsiao, 1984; Liu, 2004).

<sup>7</sup>In 1997, the state council promulgated the *Decision on Establishing a Uniform Basic Pension System for Enterprise Employees*. The design of individual accounts was piloted in Heilongjiang, Jilin and Liaoning provinces. In 2005,

scheme was launched in 1995, and extended nationally in 1998, to provide health insurance covering all urban formal-sector workers (but not their dependents) (Wang and Huang, 2000; and Liu 2002).<sup>8</sup> By the early 2000s, attention turned to the problem of providing social insurance to individuals who were not in formal employment relationships, including the self-employed and uncovered dependents. China's government settled on a social protection system funded by contributions to individual accounts by individuals, enterprises and local and central governments (Zhang, 2002), but the details remained to be worked out.<sup>9</sup>

Growth in the population of migrants in China's cities from the mid-1990s to the mid-2000s, mainly working in services, construction and export-oriented manufacturing, complicated the expansion of social insurance coverage in China's urban areas. Migrants tended to be either self-employed or employed informally by firms without receiving any non-wage benefits, thus these new urban residents frequently lacked social insurance.<sup>10</sup> By 2009, changes in rules governing both employer-based social insurance and new voluntary programs aimed to resolve problems insuring migrants, the self-employed and family members.

## **2.2 Trends in Social Insurance Participation, Coverage and Benefit Levels**

Using administrative and population data, we first track implementation of pension, health, unemployment and disability schemes using three metrics that may be calculated similarly for each scheme: the number of participants, the coverage rates of urban employees and urban residents, and benefit levels. In general, programs for urban workers (salaried employees of firms with eight workers or more) mandate participation, although both compliance and enforcement vary by ownership, industry

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the State Council issued the *Determination on Perfecting the Basic Pension System for Enterprise Employees* that finalized the uniform pension insurance scheme. In 1998, the State Council announced the *Determination to Establish a Basic Medical Insurance System for Urban Workers*. In 1999, the *Regulation on Unemployment Insurance* was issued to provide temporary income replacement.

<sup>8</sup>As we only touch lightly on urban and rural health insurance initiatives, the reader may wish to consult the more comprehensive reviews of Leung, Wagstaff, Lindelow and Lu (2007) and Wagstaff, Yip, Lindelow, and Hsiao (2009). Hsiao (1995) and Liu and Hsiao (1995) provides a useful early review of China's health system and cost issues in existing health insurance reform, respectively, prior to the reforms of the late 1990s. Gao et al (2001) provide evidence of a lack of equity in access to health services as of the late 1990s.)

<sup>9</sup>In addition to the social insurance system, new social assistance programs were initiated based on a minimum living standard guarantee program (the *dibao*) were introduced to complement existing *wu bao* and *te kun* programs for individuals too infirm to work and lacking family support.

<sup>10</sup>Throughout the paper we follow the International Labor Organization's definition of informal status: a worker is informal if not receiving social insurance benefits. Strictly speaking, this will include wage-earning employees who are informally employed and self-employed workers. Researchers working in China argue in favor of using the presence of an employment contract as an indicator of informality. As this definition reduces comparability with the international literature and evidence, we follow the ILO standard in this paper. Frequently, it is also useful to distinguish further between informal employees and the self-employed.

sector, and city. In contrast, more recently initiated programs for residents (the self-employed and those who do not work, including the dependents of workers) are voluntary. Employer-based pension and unemployment insurance reforms were initiated earlier, and enjoyed significant participation from the early 1990s. As national policy focused on implementing social insurance programs after 2000, growth in participation for all types of insurance accelerated. Among the five social insurance programs (pension, health, unemployment, disability, and maternity), pension programs have had the largest number of urban participants, 194.0 million in 2010, which accounted for 55.9 percent of the employed urban population (Appendix Table A.1).<sup>11</sup> Participants in urban medical insurance programs have grown fastest over the last decade, from 12.4 percent of the urban population not covered through an employer in 2000 to 51.3 percent in 2010. Although the number of participants in unemployment insurance has grown, the coverage rate among urban employees has fallen from 43.4 percent in 1993 to 38.6 percent in 2010. Nearly half of urban employees were covered by work injury insurance by 2010, and maternity insurance, which only benefits women, reports a coverage rate of 35.6 percent of urban employees in 2010.<sup>12</sup>

As coverage has expanded, benefit levels provided by the main social insurance programs have also increased. Pension and unemployment insurance benefits have been adjusted upward as the cost of living and household incomes have risen. Figure 1 shows a 7.9 percent real annual growth rate in the average pension benefit over time, with average pensions rising from 3,179 to 10,684 yuan from 1994 to 2010. Average unemployment insurance benefits increased more sharply, from 258 yuan to 2,076 yuan, or a real annual growth rate of 13.9 percent. Benefit levels for health insurance, work injury and maternity also increased over time, with the reimbursement rate for urban resident health insurance increasing to 60 percent in 2010, and the reimbursement cap increased to 6 times the average annual wage of local urban workers or average annual disposable income for urban residents, whichever is lower. While the rapid expansion in health insurance coverage is quite positive, a reimbursement rate of only 60 percent and caps on coverage still leave urban households exposed to considerable financial risk associated with unexpected illness.<sup>13</sup>

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<sup>11</sup>In the body of the paper we cite administrative data from the National Bureau of Statistics (NBS) and Ministry of Human Resources and Social Security (MOHRSS), and include more detailed tables and figures compiled from source data in Appendices.

<sup>12</sup>As employment rates of women under 40 are almost the same as men, this implies that a high share of women with formal sector employment receive maternity coverage.

<sup>13</sup>It should be noted that average reimbursement rates are only a partial indicator of generosity. The mix of exclusions, deductibles and ceilings vary considerably across jurisdiction, and contribute to a far more complex picture of the urban health insurance system.

### 3. Expanding Social Insurance Coverage

#### 3.1 Key Programs and Targeted Populations

After first developing an overall framework for social insurance programs, recent policy initiatives have emphasized implementation and extension of social insurance to groups not previously covered, including the informal and flexibly employed, the self-employed, and rural migrant workers. In recent years, basic health insurance has been introduced for urban residents, and a new urban residents' pension program is currently being piloted for national roll-out by the end of 2012.<sup>14</sup> Key social insurance programs and the types of persons they target are shown in Table 1. Individuals are grouped into the following categories:<sup>15</sup> civil servants, public institution employees, urban enterprise workers, self-employed individuals, informally employed local residents, rural migrant workers and those who are not working. Civil servants, public institution employees and urban enterprise workers, generally enjoy comprehensive social protection through programs in which participation is *de jure* mandatory, even if workers and employers in some sectors might avoid participation. For rural migrant enterprise employees, current policy directives aim to extend coverage, but with the exception of work injury insurance, they remain voluntary in practice. All programs targeting the self-employed are explicitly voluntary.

Pension coverage for working-age adults is shown in Figure 2 below using data from the 2005 and 2010 waves of the China Urban Labor Survey (CULS). Among local residents, coverage rates are nearly 75 percent among men and 68 percent for women in 2010, which are higher than reported coverage rates from the 2005 Population Sample shown in Table 2. A significant share of the difference between 2005 and 2010 likely reflects implementation of the 2008 Labor Contract Law, which increased sanctions for hiring workers without offering contracts and for failure to enroll employees in social insurance schemes. Nonetheless, as shown in Figure 3, the variation in coverage across ownership type remains evident. Much of this variation is driven by differences in compliance and risk of audit across ownership types. Participation in social insurance among local residents employed in government and Party agencies, SOEs and foreign invested firms is nearly 90 percent for men and 85 percent for women. In the private sector, where firms are smaller and face a lower likelihood of audit, only about 60 percent of local workers participate in the employer-based pension.

Given that there are significant differences in the types of programs available to subgroups of the working-age population, we first discuss available social insurance programs for employed workers by

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<sup>14</sup>A discussion of the roll out of the new urban residents' health insurance program can be found in Lin et al (2009).

<sup>15</sup>The 2008 Labor Contract Law created the mandate for provision of Social Insurance, and the 2010 Social Insurance Law provides the umbrella for the range of urban insurance schemes.

employer ownership type, and then consider the newer schemes targeting urban residents who lack access to social insurance through their employers.

***Employer-Based Social Insurance Programs.*** Social insurance for employed workers in urban China, which includes the ostensibly mandatory urban enterprise pension, unemployment and medical insurance, combine social pooling with individual accounts. Table 3 provides the summary information on the basic contribution rates for employers and employees for different social insurance programs in which workers and urban enterprises are supposed to participate.

Civil servants and public institution (*shiye danwei*) employees enjoy a traditional defined benefit pension, although some provinces and the central government have recently implemented local pilots experimenting with reform of these pensions for public institution employees. Urban enterprise employees are required to participate in urban social insurance programs, with employers and employees contributing 29 to 31 and 11 percent of wage income, respectively, to the complete set of programs (Table 3). In spite of these mandates, however, evidence from household survey data presented below suggests that they are difficult to enforce and that coverage rates remain low.

The urban employee pension insurance scheme requires a total contribution of 28 percent of payroll, with employers providing 20 percent to a social pooling account and employees contributing 8 percent of their wage income to individual accounts.<sup>16</sup> The pension benefits received upon retirement include a basic pension from the social pooling account equivalent to 20 percent of the local average wage of urban employees, and an individual benefit equal to the individual account accumulation divided by 139. The vesting period is 15 years for the basic pension, and if contributing for less than 15 years, beneficiaries receive a lump-sum payment from their individual account accumulation upon retirement.

The urban employee medical insurance scheme requires a total contribution of 8 percent of salary. Employers contribute 6 percent, of which 70 percent of the contribution goes to a pooling fund account, and 30 percent is allocated to the employee's individual account. Employees then contribute 2 percent of their wage to individual accounts. The insurance scheme covers both outpatient and inpatient health services. Participants in the scheme typically have a deductible equal to 10 percent of the average annual wage, with reimbursements capped at four times the local average annual wage. The pooling funds finance 80 percent of the reimbursement, and employees co-finance 20 percent from their individual accounts. Those health services expenditures below the minimum required payment are paid from

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<sup>16</sup>There is considerable scope for local variation in these rates. In Guangdong, for example, some prefectures have contribution rates as low as 13 percent. The rates listed here may be viewed as maximums, although they are adhered to by many prefectures. Some jurisdictions lowered the rates in the wake of the 2008 Global Financial Crisis.

individual accounts. As is evident from Figure 4, increases in coverage under the urban employee medical scheme have accounted for a substantial increase in coverage of local residents from 2005 to 2010 (see Figure A.1 for variation across ownership types).

The unemployment insurance (UI) scheme requires employers and employees to contribute two and one percent of wages, respectively. Government guidelines require that the standard UI payment is set below the local minimum wage, but above the local *dibao* threshold.<sup>17</sup> Unemployed workers may receive benefits for up to 24 months, with UI benefit duration determined by number of months contributing to the scheme. Migrant workers are not typically covered by unemployment insurance, but China's central government asked local governments to extend unemployment insurance benefits to migrants in the wake of the global financial crisis.<sup>18</sup>

Urban workers may also participate in a work injury insurance scheme and maternity insurance programs, with contributions collected only from employers. The work injury insurance scheme contribution ranges from 0.5 percent to 2.0 percent of salary, based on the degree of risk in the specific industry, and covers the cost of injury, lost wages, living allowance and medical care costs for treatment; the maximum period for benefit receipt is capped at 12 months. Those identified as disabled from injury then receive disability benefits. The maternity insurance contribution is less than one percent of wage, the standard benefit is calculated as the average monthly wage of enterprise employees for the previous month, and includes medical services related to pregnancy and three months of maternity allowance.

***Social Insurance for Urban Residents who are not Wage-Earners.*** Apart from wage-earning workers receiving contributions to social insurance accounts, other urban residents have been left out of social insurance coverage until recently, including the self-employed, workers in firms with fewer than eight employees, workers who are “informally employed” and not receiving benefits, and individuals who do not work. The self-employed and informally employed may make voluntary contributions to pension funds. In some cases, informal workers will still receive mandatory contributions to work-injury

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<sup>17</sup> The *dibao* is the minimum living standard guarantee. Families with income per capita below the locally determined *dibao* threshold may apply for financial support.

<sup>18</sup> Evidence from the CULS, however, suggests that local governments were not particularly responsive to this request. Few laid-off migrants received UI support, and focus group interviews conducted by scholars from the Chinese Academy of Social Sciences suggest that local labor bureaus in cities as diverse as Shanghai and Shenyang were concerned primarily with assisting local workers who had lost jobs (Giles et al., 2012). Certain conditions are also required for unemployed workers to receive UI benefits. In most cities, a worker must be employed a minimum number of months prior to layoff (in most jurisdictions displaced workers receive one month of UI for every 12 months that they had been employed. In the wake of the global financial crisis, the minimum employment duration was reduced to six months in some urban areas). Rural migrants typically do not remain long in urban areas if they do not have income support.

insurance.<sup>19</sup> New urban-based programs for health and pension insurance coverage now target these groups in the cities, and among migrants, some may have coverage through programs targeting them in their home village.

For urban residents, the basic medical insurance scheme introduced in 2007 covers children and the elderly, school students, and urban residents who are not employed and thus not covered by the urban employee medical insurance scheme. The funds for the basic medical insurance program include contributions of participants and government subsidies, with reduction or exemption from contribution requirements for poorer vulnerable groups. The funds are used primarily to reimburse expenses related to inpatient care and serious illness at roughly 60 percent of total expenditures. Some pilots were implemented first in 2007 and by 2009 coverage for outpatient services was available in a majority of urban areas. By 2009, the number of participants had increased sharply to 195.7 million, or 60.5 percent of the targeted population.<sup>20</sup>

After introducing the new rural resident pension scheme in 2009, the Chinese government followed a similar framework to roll out a pension scheme for urban residents in cities. The framework has an individual account financed by individual contributions and matched local government subsidies, with defined basic pension benefits paid after retirement. The contribution rates, however, differ across regions, and unlike the employer-based programs, participation is voluntary.<sup>21</sup>

Until recently, the millions of rural migrants who have come into cities and developed coastal areas looking for non-agricultural employment opportunities have been explicitly excluded from urban social insurance schemes as they lack local residential registration, or *hukou*. At present, rural migrant workers are encouraged to participate in either urban or rural social insurance schemes, but there is a lack of clear national-level policy guidance for raising the participation of rural migrant workers. Whether it is because institutions create outright barriers or migrants face strong disincentives to participate, it is evident that coverage of rural migrants lags far behind that of local residents (Appendix Table A.2).<sup>22</sup> Administrative

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<sup>19</sup>In response to a series of accidents in mining and construction industries, the Ministry of Human Resources and Social Security has required companies in these industries to provide work injury insurance for workers as a precondition for operating their business establishments. This mandate has led to increased participation of informal and migrant workers in work injury insurance within these industries.

<sup>20</sup>Appendix Figure A.2 shows the growth of the urban resident medical insurance scheme.

<sup>21</sup>The urban resident pension has an individual account in which participants may choose to contribute between 100 and 1000 RMB annually and local governments co-finance up to 30 RMB. In order to provide incentives for participation, both central and local governments provide a basic pension benefit (55 RMB monthly) in addition to the pension benefits received from the accumulation of individual accounts.

<sup>22</sup>Some provinces (cities) have started piloting social insurance programs targeted to migrants in an effort to overcome apparent labor shortages. For example, Shanghai and Chengdu have introduced a comprehensive commercial program for rural migrant workers, and the required contribution rate for employers in Guangdong is

data from the MOHRSS suggest that 30 and 41 percent of rural migrants participated in health and work injury insurance, respectively, but only 13 and 21 percent participated in unemployment insurance and pension programs. Mandatory (and enforced) provisions for employers and enterprises in mining and construction sectors, and for jobs with dangerous work, likely contributed to raising the participation rate for work injury insurance.

Alternatively, rural migrants may choose to participate in social insurance through programs based in their home counties. The new rural collective medical insurance scheme (NRCMS) should be available to all rural migrants, but using the insurance typically requires visiting medical care providers in their home counties and thus they frequently do not participate (some counties allow NRCMS enrollees to use providers in current locations). A new rural pension scheme was only implemented recently, and participation in this program is unlikely to show up in the data available at the time of this study.

### **3.2 High Contribution Rates Discourage Employer Compliance and Worker Participation**

Financed by combined employer and employee contributions of 40 to 42 percent of payroll for the five basic insurance programs and a further 10 percent or more for housing funds,<sup>23</sup> China's urban social insurance system carries heavy burdens for both employers and workers, and may carry significant implications for China's long-run competitiveness. Moreover, this high implied *labor tax wedge* likely encourages informalization of the labor market: employers under-report wages and game the system in numerous ways, while workers have incentives to opt out of participation in social insurance schemes.<sup>24</sup>

As in other developing countries, high mandated contribution rates provide strong incentive for employers to evade compliance through the use of labor dispatch services and under-reporting of employment and wages (Gallagher et al., 2012; Wang and Zhu, 2010).<sup>25</sup> This phenomenon is particularly pervasive among private enterprises and self-employed businesses, but it occurs even among firms with considerable state or foreign investment. While estimated evasion rates have fallen from a high of 41 percent in 2000 to 2.4

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much lower than in other provinces (See Wang, et al., 2010). Other prefectures have merged rural and urban resident pension schemes for rural workers from the same prefecture.

<sup>23</sup>The compulsory Housing Fund collects contributions from both workers and employers. On average, workers and employers each contribute 5 percent of the individual wage bill, but rates vary significantly across regions.

<sup>24</sup>Strictly speaking, these contributions are not taxes. They are paid into individual and social pooling accounts to which workers may eventually have a claim. Nonetheless, we follow conventions in the international literature in referring to the ratio of the combined contribution to wages paid as the "tax wedge." Recall also that we follow the International Labor Organization standard in defining workers who do not have social insurance coverage to be "informal."

<sup>25</sup>This phenomenon is quite common in other countries as well. Perry et al (2007) document how efforts to avoid high contribution rates contributes to efforts to avoid formal contracts in Latin America. Cahuc and Postel-Vinay (2002) suggest that restrictive employment protections may create incentives for firms to hire workers on short-term temporary contracts.

percent in 2010 (see detailed calculation in Appendix Table A.3), this apparent improvement comes with caveats and should be interpreted with caution appropriate to use of administrative data voluntarily provided by firms. The shortfall in social insurance contributions due to evasion is calculated as the difference between what registered firms should contribute, given their reported wage bill, less the total of their actual contributions divided by required contribution levels.

The decline in outright evasion among formal sector firms is consistent with micro-evidence suggesting rising levels of the social insurance coverage, but the decline in evasion calculated from official yearbook data suggests higher participation rates than observed in micro data. There are two sources of exclusion: firms may hire some workers informally without contracts and the NBS yearbook data may exclude many smaller firms that are less likely to participate.

As suggested above, one disincentive for participation by both employers and employees lies with China's high social insurance contribution rate, which leads to a "labor tax wedge" that is among the highest found in both developing and developed countries (Figure 5).<sup>26</sup> Moreover the design of the social insurance system includes minimum payments that imply significantly higher contribution rates for low income workers, primarily part-time workers, migrants and lower income self-employed. More specifically, the urban social insurance contribution, based on average wages, requires a minimum payment for workers equal to that which would be paid by a worker earning 60 percent of the local average wage and a maximum payment of 300 percent. If a worker earns less than 60 percent of the local average annual wage, for example, the worker and employer must make the same contribution as a worker earning exactly 60 percent of the average wage. This non-linearity at low income levels introduces a significant disincentive for low wage workers to participate in social insurance (DRC and World Bank, 2012).

### **3.3 Consequences of a Fragmented System: Benefit Disparity and Limited Portability**

Urban China's social insurance system is fragmented across geographic jurisdictions. Differences in basic program features across localities are reinforced by low levels of pooling and differences in the financial capacity of local governments. As a result, workers face differences across provinces, and even localities

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<sup>26</sup>The *labor tax wedge* is calculated as (total labor cost – net take home pay)/total labor cost. For example, assume a wage of 100 RMB, then total labor cost (100 + 42) is 142, net take home pay (100 – 22) is 78, and tax wedge is calculated as (142-78)/142, or 45.1 percent. For many countries, one would also calculate the personal income tax (PIT) levied after deduction of SI contribution, and OECD also allows for transfers from the state (e.g. income tax credits). In China, neither of these is included in the calculation because the average urban worker falls below the payable income tax threshold. Figure 5 shows cross country comparisons using OECD data. Part of the reason for the relatively high cost rests with legacy costs from the previous pension system. The high employer contribution is the primary source of social pooling used to cover the pensions of retirees who retired before establishment of the retirement system.

within provinces, in important program parameters such as contribution rates, the wage base, benefit levels and rules for indexation.

This fragmentation is one consequence of China's decentralized approach to reforming social insurance provisions, which gave authority and responsibility to local governments to devise reforms suitable to local fiscal capacity. At the outset of social insurance reform, funds were pooled at county, city or industry level (Table 4). Since the mid-1990s, China's government has made concerted efforts to promote pooling across larger geographic areas and populations, especially for pensions and medical insurance. Pension insurance funds are now consolidated at the prefectural city level, and partially pooled at the provincial level through an adjustment fund for social pooling accounts. For medical insurance, funds for urban workers and residents are now pooled at prefecture city level in most provinces. Other insurance schemes are now also pooled at prefecture city level.

As China has 333 prefecture cities and 31 provinces, social insurance funds are still pooled at a low level. The recent social insurance law sets a target of pooling pensions at the national level, and the provincial level for other social insurance schemes. Raising the level of pooling, however, must overcome tricky issues of political economy. Pooling at higher levels would facilitate more efficient operation of the labor market, but more affluent provinces and localities are concerned about being required to subsidize the pension and social insurance funds of poorer provinces.<sup>27</sup>

Reinforcing fragmentation are differences across regions in the management of social insurance programs, as decentralization of control led to localized accounting, budgeting and management and information systems. As a result, social insurance programs cannot "talk to each other" across cities and provide integrated services to geographically mobile beneficiary populations. Localized management leads to lack of portability of social insurance benefits and likely discourages participation of migrant workers who may only claim individual account accumulations when moving to work in another city. In response to uncertainty about future benefit entitlements, rural migrant workers tend to withdraw individual account accumulations each year before returning to their home villages during Chinese Spring Festival.

In recognition of this phenomenon, the Chinese authorities issued two policy documents in 2009 to guide the transfer of pension insurance and medical insurance accumulations for migrants.<sup>28</sup> With respect to

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<sup>27</sup>Variation across provinces in both coverage and benefit levels is shown in Appendix Figures A.3 to A.7. These figures use provincial level administrative data to show differences in coverage and benefit levels over time and by level of provincial average gdp per capita.

<sup>28</sup> In December 2009, the Ministry of Human Resources and Social Security and the Ministry of Finance jointly issued the *Interim Measures on the Transfer and Continuation of Basic Pension Relationship of Urban Enterprise Workers*; In the same month, the Ministry of Human Resources and Social Security, the Ministry of Health and the

pensions, migrants are able transfer their full individual account accumulation to a new workplace and 12 percent of their pooling account accumulation. The potential loss of at least 88 percent of the social pooling portion of the pension account, even under these new guidelines, implies that the benefits of participating in employer based pensions are sharply lower for migrants who are uncertain of whether they will be in a jurisdiction long enough for the social pooling account to be fully vested. Rules for medical insurance are similar: migrants may transfer their individual account accumulation, but lose accumulations from employer contributions to their social pooling account. As we find in the microeconomic analysis below, rural migrants are far more likely to participate in medical insurance schemes based in their home counties (the NRCMS). Even with the potential difficulties associated with drawing on these accounts while away from home, there is sound logic behind this decision: migrants do not risk loss of a social pooling account when they move.

Even as new measures make pension and medical insurance schemes more portable, migrants report difficulties gaining access to paper records and proof of accumulation from workplaces when they leave a job and additional difficulties transferring them to a new workplace. Further, they are often unaware of procedures and requirements, and understanding them costs additional time due to fragmented administration systems. Moreover, the prospect of new restrictions on withdrawing accumulations from individual accounts may reduce exit from social insurance programs, but at the cost of creating an additional disincentive to participate in the first place.

#### **4. Evidence on the Determinants of Social Insurance Participation**

**Participation in the Employer-Based Social Insurance Program.** At the level of the individual, employer-based social insurance coverage reflects two decisions: the profit-maximizing decision of employers and the utility maximizing decisions of individuals. From an employer's perspective, providing the full package of social insurance benefits may be more expensive for some employees than others. Employers, for example, will be expected to cover maternity leave benefits for women of child-bearing age but not men, making women who have not yet had children more expensive to cover. Thus, in industry sectors that have historically employed a larger share of women and tend not to provide social insurance, it may be more difficult to expand coverage. The rapidly growing service sector, for example, tends to include smaller, private sector employers who employ a higher share of women. As women

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Ministry of Finance jointly issued the *Interim Measures on the Transfer and Continuation of Basic Medical Insurance Relationship of Floating Workers* ("floating workers" is a term for migrants).

represent a larger share of employees in the sector, systematic decisions within this industry to avoid making social insurance contributions may lead to somewhat lower coverage of women.<sup>29</sup>

Employers may differ across industry and ownership sectors in the perceived costs associated with evading provisions of China's labor law that mandate contributions to social insurance funds. Managers of larger state-owned enterprises (SOEs) face both greater likelihood of an audit, and if audited, sanctions may be relatively more severe than in the private sector.<sup>30</sup> Firms in the private sector, by contrast, tend to employ fewer employees, and thus face a lower probability of audit from the local labor bureau.<sup>31</sup> Thus, potential costs of not providing social insurance may be perceived to be higher in the state, government, and foreign-invested ownership sectors, than among private, domestically-owned firms.

Social insurance coverage also reflects the decisions of employees. It is likely that key features of the social insurance framework, as well as geographic fragmentation and decentralized administration, lead to variation across groups of workers in the perceived benefits of participating in employer-based social insurance programs. First, as noted above, the average labor tax wedge is particularly high in China, and for workers earning less than 60 percent of average local wages, it is even higher. Low income workers and their employers have a proportionately larger surplus that they may split if they avoid participation. Second, to the extent that they may collude with employers in determining their coverage, an employee will balance the value of deferred compensation when making an individual contribution today against discounted expected future benefits of participating in social insurance. Apart from such incentives influencing individual decisions, other characteristics of the individual and the enterprise are likely to influence the participation decision. Workers with higher education may not only have greater ability to plan for the future, but may also have contracts and prospects that promise more long-term stability. Older workers, who are closer to retirement and may have higher expected health care expenditures, may be more likely to participate in social insurance programs. Existence of an employment contract raises the probability of coverage, and indeed, both local and migrant workers with contracts are more likely to have pension and health insurance benefits.<sup>32</sup>

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<sup>29</sup>As noted above, some scholars have pointed to a decline in the gender-wage gap over the 2000s (Liu, 2011), or argue that the gender-wage gap remains important for lower income women (Chi and Li, 2008; Li and Song, 2011).

<sup>30</sup>Reduced prospects for promotion within a large SOE will cause a larger relative loss in expected future earnings than any sanction faced in a smaller private sector firm.

<sup>31</sup>In the wake of the 2008 Labor Contract Law, local labor bureaus were over-burdened and understaffed. Inspecting fewer large employers in the state sector is less costly than surveying large numbers of smaller privately-owned firms (Gallagher et al., 2012). Moreover, as audits typically occur only after repeated complaints from workers at a firm, individuals working in ownership sectors with less job security (e.g., the private sector) may be less likely to contact labor bureaus with complaints.

<sup>32</sup>In the CULS sample, a local urban *hukou* employee with a contract has a 95 and 92 percent chance of participating in employer provided pension and health insurance, respectively. By contrast, only 75 percent of local workers

**Participation in Voluntary Social Insurance Programs.** After documenting correlates of participation in the employer-based social insurance programs, we next examine the characteristics of urban residents who choose to participate in voluntary programs, including the new urban-residents medical insurance and pension programs, and for migrants, the new rural collective medical system (NRCMS) insurance and the new rural pension insurance scheme.<sup>33</sup>

#### 4.1 Analytical Approaches

**Participation in Employer-Based Social Insurance Programs.** We first estimate the correlates of participation in employer-based social insurance programs for the subsample of workers who are employed and working for a wage.<sup>34</sup> Our basic framework is to estimate a standard binary outcome probit model, in which participation ( $y_{ijt}$ ) of employee  $i$  residing in city  $j$  in year  $t$  is represented a function of individual and firm characteristics. Employee  $i$ 's participation,  $y_{ijt}$ , is modeled as:

$$\Pr(y_{ijt} = 1) = \Phi(\mathbf{X}'_{ijt}\boldsymbol{\beta} + \gamma fem_{ijt} + \alpha_1 m_{ijt}^r + \alpha_2 m_{ijt}^u + \mathbf{y2010} + \mathbf{C}_j + \epsilon_{ijt}) \quad (1)$$

where  $\mathbf{X}$  is a vector of individual characteristics, including age, age-squared, years of schooling, an indicator for completing some post-secondary education, and marital status. The coefficient on the gender indicator,  $fem_{ijt}$ , allows us to pick up any systematic differences in coverage between men ( $fem_{ijt} = 0$ ) and women ( $fem_{ijt} = 1$ ). Residential registration status of the respondent is captured by two indicators,  $m_{ijt}^r$  and  $m_{ijt}^u$ , signifying whether the respondent is a migrant with rural or urban *hukou*, respectively. The coefficients on these terms pick up the correlation between *hukou* status and participation. Of course, *hukou* status is not assigned randomly, and may be associated with other unobserved dimensions of ability, and so one should interpret these coefficients with care. The indicator  $\mathbf{y2010}$  controls for whether the respondent was surveyed in the 2010 survey round (as opposed to 2005) and a vector of city dummy variables,  $\mathbf{C}_j$ , control for systematic differences in policies and fiscal capacity across cities.

After estimating the base specification for pension, health insurance and unemployment participation, we next add controls for industry sector and enterprise ownership type. By examining how coefficients on  $fem_{ijt}$ ,  $m_{ijt}^r$  and  $m_{ijt}^u$  change after controlling for these characteristics of the firms, we assess whether

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lacking a contract participate in employer provided pension and health insurance. Among migrants, participation rates are lower but even more stark: 33 percent of wage-earning migrants with contracts participate in social insurance (pension and health insurance) but only 12 percent of wage-earners without contracts (Gallagher et al, 2012).

<sup>33</sup>As participation in employer-based and voluntary social insurance programs are not necessarily mutually exclusive choices, we do not implement a multinomial logit approach.

<sup>34</sup>Other residents of urban China, including the dependents and family members of wage earners, are not eligible to participate in these social programs.

gaps in coverage between men and women or by *hukou* status are associated with the industry and ownership sectors of firms where workers are employed. If rural migrants work almost exclusively for private sector employers, for example, and very few private sector employers provide social insurance benefits, then the coefficient on the rural migrant indicator should fall to zero once we control for ownership.

As social insurance coverage is supposed to be mandatory for workers who sign contracts under the Labor Contract Law which went into effect in January 2008, we estimate a model including an indicator for whether a worker has a contract. As social insurance contributions are mandated, we expect a high correlation between the incidence of a contract and participation in employer-based social insurance. As some contracts are of a temporary nature and monitoring is imperfect, it is unlikely that participation is perfectly collinear with existence of an employment contract. Next we introduce interactions that aim to pick up gender differences across migrant status (gender-migrant indicator interactions), differences in coverage of migrants over time (migrant-y2010 interactions), and finally gender differences in changes in migrant coverage (gender-migrant-y2010 interactions).

*Does the Tax Wedge Create Higher Disincentives at Low Incomes?* Given that the employer-based social insurance programs have a higher labor tax wedge at low incomes, we next estimate models in which we include the estimated labor tax wedge faced by the worker and employer. It is important to recognize that the estimated labor tax wedge faced by a particular worker will still be associated with both observed and unobserved factors affecting the wage or salary of the worker. As unobservables may also be related to factors affecting contract terms, including social insurance coverage, we cannot make a causal interpretation of the coefficient on the estimated labor tax wedge. At best we document a descriptive relationship between participation and the labor tax wedge.

With an eye toward distinguishing the effects of the tax wedge on more and less mobile workers, we estimate these effects separately on local residents and migrants. Local *hukou* residents, who are more likely to remain in the city until retirement, may show greater responsiveness to the tax wedge than migrants. While some migrants have lower hourly wages than local residents, they also tend to be more mobile and have less certainty about where they will retire.<sup>35</sup> For migrants, who may never expect to be fully vested in the social pooling portion of the pension program, the discounted benefits of participating will be distinctly lower at any level of the tax wedge.

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<sup>35</sup>While national administrative data suggests that hourly earnings of migrants are significantly lower than local residents, the CULS, however, finds that income of migrants and locals does not differ by much, and that this is explained by the fact that migrants work many more hours per month than local residents.

While we lack an appropriate counterfactual for examining how institutional fragmentation affects the participation decision, the comparison between migrants and local residents is informative. Given that migrants are far more mobile than local residents, we expect that differences with local residents in the responsiveness to incentives created by the labor tax wedge are likely to be driven by factors affecting portability.

*Who Participates in Voluntary Social Insurance Programs?* After examining participation of employed workers, we expand the sample to include all working-age adults and then examine the correlates of decisions to participate in urban residents' health insurance and pension programs, and collective medical insurance and pension schemes targeted to rural residents. Of particular interest is evidence of whether participation is associated with self-employment and the extent to which individuals use voluntary social insurance programs as a substitute for employer-based programs for which they may be ineligible.

#### **4.2 The China Urban Labor Survey**

The analysis of individual participation in social insurance uses data from the 2005 and 2010 waves of the China Urban Labor Survey (CULS).<sup>36</sup> We make use of data from the five large cities that were surveyed in both years (and also in the 2001 wave), which are located in different regions of the country. Shanghai is in the Yangtze River Delta near the coast; Wuhan in Hubei Province in central China; Shenyang in Liaoning Province in the northeast; Fuzhou in Fujian Province in the southeast; and Xian in Shaanxi Province in the northwest. In each city, representative samples of local residents and migrants were independently selected in a two-stage procedure. Using previous year data (2004 and 2008) on the local resident population of each neighborhood, a fixed number of neighborhoods were selected in each city using probability proportionate to size (PPS) sampling. As the cities had limited information on the number of migrants living in each neighborhood, neighborhoods were first selected based on local resident populations, and weights are used to correct for differences in the relative sizes of migrant and local resident populations based on population estimates made by neighborhood office staff. Neighborhood staff then helped to construct an updated list of households, including unregistered migrants living in the neighborhood, to serve as a sampling frame. In each year, a fixed number of

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<sup>36</sup>These are the second and third waves of the CULS, which is a repeated cross-sectional survey conducted under the direction of the Institute of Population and Labor Economics of the Chinese Academy of Social Sciences, in collaboration with international scholars and with the support of the World Bank.

households were then randomly sampled in each neighborhood, with 500 local resident and 500 migrant households sampled in each city.<sup>37</sup>

Detailed work history and other information were collected for all adult members of each household. One strength of the CULS is that it surveyed migrants (including rural migrants and urban migrants) and local residents in an identical fashion, and it collected enough observations per city to calculate city-level aggregates for these groups. One disadvantage is that migrants were sampled through neighborhood committees, so that unregistered migrants and those living in collective forms of housing (e.g., factory dormitories, construction sites) may be underrepresented.

Descriptive statistics for key variables used in the analysis are summarized in Table 5, with summary statistics for all adults aged 18 to 60 shown in Panel A, and those for the subset who are employed workers are shown in Panel B. In models examining participation in employer-based social insurance programs, the analysis sample is restricted to the population that is potentially eligible for the program (e.g., working-age respondents with wage employment). As seen in the descriptive statistics and in Figure 2, participation in employer-based pensions remains somewhat higher for men than women in 2010, and as is evident from Figure 4, the same pattern also holds for health insurance coverage. Relative to 2005, among wage-earning migrant workers both men and women are participating in pension programs at higher rates, reaching nearly 30 percent by 2010.<sup>38</sup> As suggested in Figure 2, some of this increase may be attributed to participation in urban residents' programs, and rural and commercial pension programs, but most of the gain in coverage is driven by greater participation in employer-based pensions.

The average working age and marital status of migrants suggests that migrants in the CULS sample are relatively well established, which is not surprising as the five capital cities surveyed have higher costs of living than coastal towns where young unmarried migrants may have their first jobs. Among all working-age migrants, 80 percent were married in 2005 and 75 percent in 2010 (Table 5, Panel A), but migrants employed for a wage had somewhat lower rates of marriage at 71 and 68 percent in 2005 and 2010, respectively (Table 5, Panel B).<sup>39</sup> These marriage rates are nevertheless significantly higher than those reported in the RUMiC surveys (e.g., Akay et al, 2012) which include small and medium-sized cities as

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<sup>37</sup>The sampling approach differed somewhat in the first 2001 wave, when 600 local households were surveyed and 500 migrant individuals. Due to differences in comparability of social insurance programs and sampling, we do not use the first wave.

<sup>38</sup>Descriptive evidence from official yearbooks on unemployment and disability insurance coverage is provided in Appendix Tables A.1 and A.2. While a worker receiving one employer-provided benefit will not necessarily receive all of them, participation in each of the four employer-based programs is strongly associated, and so we concentrate here on pension participation in basic pension for employees (城镇职工基本养老保险), and further discuss results for participation in health and unemployment insurance programs.

<sup>39</sup>Cai (2011) argues that the costs of moving into major cities acts as a screening device such that higher ability (and perhaps more established) migrants are able to settle in them.

well and samples migrants through their work locations rather than residences (which may favor younger migrants).

The average labor tax wedge faced by each worker and his (or her) employer if they decide to participate is 55 and 60 percent for local and migrant workers in 2005 and fell to 53 and 55 percent by 2010 (Table 5B). These differences are similar for migrant and local workers, and across years. Also, it is of note that the estimated average labor tax wedge is higher using survey data than administrative sources (Figure 5), perhaps reflecting the fact that workers who face a high labor tax wedge may be less likely to participate in social insurance.

### **4.3 Correlates of Participation in Employer-Based Social Insurance**

Results from the base model estimating the partial correlates of participation in the employer-based pension program are reported in Table 6. Column (1) reports marginal effects from a probit model with the base set of covariates. Increasing one year of schooling (at the average years of schooling) is associated with a 3 percent increase in the probability of participating in a pension, and any post-secondary education is associated with an additional 4.6 percent increase. As one might expect, older workers are more likely to be covered, with each year of age corresponding to a 3 percent increase in the probability of coverage. However, as one approaches age 60 the effect of age on coverage from one's current employer starts to decrease: at this point more people who are working are already receiving pensions from early retirement, or alternatively, may still be in the workforce at an older age because they lack pension support altogether.

Additional covariates are then added to control successively for industry of employment, employer ownership type, and whether or not the worker has signed a labor contract. While it is important to keep in mind that unobserved characteristics (e.g., unobserved dimensions of ability) may be correlated with selection into an industry or work unit type, including such indicators allows us to get a sense of whether migrant status or gender, per se, are associated with lack of pension coverage, or whether lack of coverage is associated with higher concentrations of migrants or women in specific industrial sectors or firm ownership types. Figure 3 suggests that there are considerable differences across ownership sectors in participation, but that participation has risen for both migrants and local residents in foreign invested and private firms. If coefficients on gender or migrant status are driven to zero by including these additional controls for industry or ownership, then the source of differences may be driven (in part) by job sorting.

***Gender Differences in Pension Coverage.*** When examining factors influencing participation in employer-based pensions, results from the base model shown in column (1) of Table 6 suggest that a

woman is 2.2 percent less likely to participate than men. Once industry and ownership controls are included (column 2), however, the coefficient on gender declines and becomes statistically insignificant after controlling for individual characteristics such as education and age. Thus, gender differences in coverage are associated with differences across industries in the concentration of women.<sup>40</sup>

By examining interaction terms of migrant status and gender, and migrant status-gender-year, we are able to pick up changes in participation across groups of women. Overall, rural migrant women are 7.4 percent more likely to participate in pensions than rural migrant men (column 5), and participation of rural migrant women is nearly 11 percent higher in 2010 than in 2005 (column 6). These findings are interesting in light of evidence from Gallagher et al. (2012) that women have better knowledge of provisions in the 2008 Labor Contract Law than men. Migrant women may make greater effort to understand provisions of the law, and are thus in a better position to insist on participating in employer-based social insurance programs.

***Participation of Migrants.*** After controlling for individual characteristics, urban and rural migrants are 37 and 54 percent, respectively, less likely to participate in employer-based pensions. When industry and ownership sector controls (column 2) and contract status (column 3) are included, coefficients on migrant status decline 4 to 5 percentage points, reflecting some industry-level effects, but they are still quite significant. Industry, occupation and existence of a labor contract are associated with participation, but migrant status remains strongly associated with whether a worker is covered. Of course, this not only may reflect employer bias against migrants, but also may indicate that workers and employers collude to avoid making social insurance contributions. Such collusion is frequently observed across the developing world, and recent policy-oriented research has documented substantial evidence suggesting that informal employment, under the ILO's preferred definition, is often a choice (Perry et al, 2007).

***Contracts and Pension Participation.*** Employees with labor contracts are 27 percent more likely to participate in pensions through their employers, suggesting that efforts to improve the use of contracts with passage of the 2008 Labor Contract Law may have led to greater social insurance coverage. In interpreting this coefficient, however, it is important to remember that contracts are not randomly assigned to employees. Those workers with longer tenure, and of higher ability and education, will have both better knowledge about the benefits of having a contract and of participating in social insurance, and may also be in a better position to bargain for these benefits.

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<sup>40</sup>Drilling down further, if one separately adds work unit ownership and industry variables, we learn that differences in participation across genders are driven by industry sector of employment.

***Participation in Health and Unemployment Insurance.*** The combined pension contribution rate for the “mandatory” employer-based pension is 28 percent (20 percent from the employer and 8 percent from the employee). Apart from the pension, employer and employee also each make contributions to health and unemployment insurance. While employees and employers should be participating in all social insurance programs, evidence from the CULS suggests high correlation, but some differences across these programs. We thus re-estimate the models (1) for participation in health and unemployment insurance, and present results in Appendix Tables A.4 and A.5. Most of the results highlighted above for pension participation are similar for health and unemployment insurance, except there is less evidence of gender differences in health insurance coverage, even before controlling for industry and ownership sector.

***Does the “Tax Wedge” Influence Participation Decisions?*** As noted earlier, one significant feature of China’s enterprise-based urban worker social insurance scheme is the specification of a minimum contribution level set at 60 percent of the local average wage. This provision introduces a kink at 60 percent and implies that the “labor tax wedge” is higher for low income workers. In order to characterize the relationship between the labor tax wedge and social insurance coverage, we include estimates of the worker-specific labor tax wedge in models of participation in the worker pension program. Further, because local and migrant workers may face different expectations as to the benefits of participating in the pension, we estimate models separately for the two groups.

Results shown in Table 7 suggest that local *hukou* workers facing a higher labor tax wedge are less likely to be covered, but that there is no impact on participation of migrant workers. A one percent increase in the labor tax wedge is associated with a 0.24 percent reduction in the probability that a local *hukou* employee will participate in the urban worker pension, and this magnitude decreases to 0.14 percent reduction with a full set of industry and enterprise controls included. Somewhat surprisingly, however, we find no relationship between the labor tax wedge and participation of migrant workers. This suggests that higher ability migrants who are earning high incomes, and face a lower labor tax wedge, are no more likely to participate in employer-based pensions than workers earning less than 60 percent of the average local wage. Lower wage local *hukou* residents and their employers, however, respond more readily to disincentives created by the kink in the labor tax wedge.<sup>41</sup>

What factors explain this difference? The 20 percent employer contribution to the social pooling account in the pension program has a 15-year vesting period. As the program is now structured, a worker who moves out of a city has access to the 8 percent individual contribution, but loses 88 percent of the

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<sup>41</sup>We must properly view these results as descriptive. Lower ability workers, with both lower incomes and employers who may avoid paying benefits, may have less recognition of the potential value of a pension (they may discount the future at a higher rate).

employer contribution (under 2009 guidelines). Thus, while the higher contribution wedge at low incomes may discourage local workers, the lack of portability of the pension (driven by institutional fragmentation) lowers the expected value of participating for migrants far more than for local *hukou* workers, and this effect is felt by all migrants.

#### 4.4 Voluntary Participation in Social Insurance Programs

As summarized in Table 1, those workers who are not employed in urban enterprises now have several different social insurance programs (pension, health or unemployment) in which they may choose to participate. These include health and pension programs based in urban areas (residents' health insurance and pension) and programs based in their home villages (the new rural collective medical system, and the new rural collective pension). The residents' and rural pension programs were both just starting at the time of the survey, and participation was relatively low. For this reason we concentrate below on analyzing the correlates of participation in residents' health insurance and migrant participation in the new rural collective medical system (NRCMS) insurance in 2010.<sup>42</sup> As these programs are targeted to residents who are not necessarily in formal sector work units, the estimation sample includes all working age adults for participation in residents' health insurance, and all working age migrants for participation in NRCMS. We include standard sets of controls, and also report specifications that include an indicator variable for whether the respondent participates in medical insurance through their employer.<sup>43</sup>

From the marginal effects reported in Table 8, participation in the residents' medical insurance program is declining slightly in years of schooling, in contrast to employer-based coverage. This is not surprising as the program is targeted to individuals who may not be eligible for employer-based insurance, and participation in employer-based schemes is increasing in education. Migrants, in particular rural *hukou* migrants, are less likely to participate, which likely reflects the intent to target local *hukou* residents. A significant negative coefficient on participation in employer-based medical insurance highlights the substitutability of the two programs. Finally, there is a strong positive association between status as a self-employed worker and participation in residents' medical insurance. The fall to zero in the coefficient on the self-employed indicator once both this variable and the employer-based indicator are included highlights the relationship between choice of employment sector and choice of coverage. Those workers employed before insurance was available made a (potentially constrained) choice of sector first, for which

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<sup>42</sup>In Appendix Tables A.6 and A.7 we include results from probit models examining decisions to participate in the new rural pension or residents' pension. As participation rates were very low, we learn little from these explorations.

<sup>43</sup>This indicator is endogenous as it reflects a choice between participating in an employer program or voluntary program. One might favor multinomial logit specifications with two alternative choices, but some respondents report participating in both employer-based social insurance and voluntary programs, suggesting that these choices are not mutually exclusive.

a decision about social insurance coverage may have been important. Once the residents' medical insurance program became available, individuals in the informal sector then made a decision about whether or not to enroll. For new entrants into the labor market, decisions may be made jointly, and lack of employer-provided medical insurance may no longer create a disincentive for self-employed or informal sector wage employment.

Similar patterns are evident in migrant decisions to participate in the NRCMS. Of note, 46 percent of migrants report participating in the NRCMS, making medical insurance in migrants' home counties the most significant mechanism that rural respondents use for coping with medical expenditure risk. Participation is negatively associated with schooling, and positively associated with carrying a rural *hukou* and working (column 4). Once industry controls are included, the currently employed indicator is no longer significant, but industry controls are jointly highly collinear with this indicator. Of note, the self-employed are far more likely to be participating in NRCMS insurance (Table 9).

The take-up of both residents' medical insurance and the NRCMS suggests that workers who are not covered may be induced to participate voluntarily in social insurance schemes. Raising the return to participation, by increasing the matching contribution or improving portability, may induce further participation on the part of self-employed, informal and migrant workers. Future research could use differences in program parameters across jurisdictions to identify the sensitivity of take-up to differences in the match or in levels of program integration.

## **5. Conclusions**

The paper documents significant expansion in social insurance coverage since the early 1990s, with the rapid expansion of basic medical insurance for urban residents serving as an example of the potential for reaching the urban population through voluntary programs. At the same time, the paper demonstrates significant remaining gaps in coverage. Several features of these gaps are worth highlighting:

First, social insurance participation varies considerably among different types of workers. Workers who are formally employed in larger enterprises, local workers and workers with more education are more likely to be covered by employer-based insurance than informal sector workers in smaller scale or private sector firms, particularly migrant workers from rural areas and workers with less education. Differences between participation in employer-based social insurance programs by men and women are driven primarily by differences in coverage at the industry-level. The lower participation rate of women thus may be explained by the fact that women are more likely to be working in industries, such as services or commerce, in which employers are less likely to comply with mandates to provide social insurance.

Second, high contribution rates create disincentives for participation. Among local workers, a one percent increase in the labor tax wedge is associated with a 0.14 percent reduction in the probability of participating in the urban worker pension program. The fact that participation of migrants is unaffected at the margin is suggestive of the possibility that other factors, most likely institutional fragmentation and lack of portability, have a larger negative impact on the expected benefits from participating in social insurance programs.

Social insurance programs may be more attractive to workers if both worker and employer contribution rates can be limited, and if pension and social insurance systems can be integrated through higher levels of pooling. The main obstacle to reducing pension contribution rates is the legacy costs associated with retirees from the SOEs and government offices under the centrally planned system. If covering legacy costs can be separated from the pension programs for current workers, costs for workers and employees could be reduced which we would expect to increase participation.

Integrating the social insurance system requires overcoming problems of political economy. Moving toward national, or even provincial, levels of coordination among prefectures and cities at different levels of development is frustrated by the fact that they also differ significantly in their capacity to finance social insurance programs. Consolidation of budgetary management, monitoring and management and information systems used to run these programs would both lower operating costs and provide some measure of confidence that a worker will not lose contributions when moving. To this end, developing common procedures that allow workers to maintain accounts, including access to social pooling accounts, when switching employers and even moving geographically, would likely raise the perceived benefit of participating in employer-based pension, health and UI programs.

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**Table 1. Intended Beneficiaries of Social Insurance Schemes in Urban China**

	Pension Insurance	Unemployment Insurance	Medical Insurance	Work Injury Insurance	Maternity Insurance
<i>Social Insurance Schemes for Urban Wage-Based Workers</i>					
Public Institution Employees	T	M	M	T	T
Civil servants	T	T	M	T	T
Urban enterprise workers	M	M	M	M	M
Self-employed individuals	V		M	V	
Informal employment	V	V	V	V/M	
Rural migrant workers	V	V	V	V/M	
Unemployed workers	V		V		
<i>Social Insurance Schemes for Urban Residents</i>					
Urban residents	V		M		

Note: (1) Urban enterprises include SOEs; collective units; joint-ownership; limited liability and share holding companies; Foreign; Hong Kong SAR, China; Macao; and Taiwan, China funded enterprises, private enterprises; (2) M- mandatory by the Social Insurance Law and policies, V- voluntary by the Social Insurance Law and policies, T- traditional defined benefit approach; (3) unemployment insurance, work injury insurance and maternity insurance do not apply to urban residents.

**Table 2. Population Based Estimates of Social Insurance Participation for Different Groups Of Workers Living in Urban China (%)**

	Local Resident Workers	Migrant Workers	Rural Migrant Workers	Urban Migrant Workers
<b>Pension Insurance</b>				
Capital cities	59.0	34.1	12.6	64.7
Other cities	32.3	24.1	12.3	53.7
All cities	42.9	27.1	12.2	57.9
<b>Unemployment Insurance</b>				
Capital cities	44.6	25.7	6.8	52.5
Other cities	22.5	13.9	5.6	34.7
All cities	27.5	17.5	5.9	41.7
<b>Medical Insurance</b>				
Capital cities	63.2	33.3	14.2	60.5
Other cities	45.2	26.2	17.2	48.7
All cities	49.0	28.2	16.2	53.2

Source: the National Bureau of Statistics, 2005 One Percent Population Sample.

**Table 3. Urban Social Insurance Contribution Rates for Urban Enterprise Workers**

Type	Employer	Employee
Pension insurance	20 percent of payroll	8 percent of monthly wage
Unemployment insurance	2 percent of payroll	1 percent of monthly wage
Medical insurance	6 percent of payroll	2 percent of monthly wage
Work injury insurance	0.5-2 percent of payroll	No contribution
Maternity insurance	0.5-1 percent of payroll	No contribution
Total	29-31 percent of payroll	11 percent of monthly wage

Source: Authors' compilation according to relevant policy directives and documents

**Table 4. Pooling Levels of Social Insurance Funds in Urban China**

Urban Population	Outset of Reform	Present	Goal
<b>Urban Employees</b>			
Pension Insurance	County (2858) /city or Industry	Province (31)	Nationwide (1)
Medical Insurance	County (2858) /city or Industry	Prefecture city (333)	Province (31)
Unemployment Insurance	Prefecture city (333)	Prefecture city (333)	Province (31)
Work Injury Insurance	Prefecture city (333)	Prefecture city (333)	Province (31)
Maternity Insurance	County (2858) or prefecture city (333)	Prefecture city (333)	Province (31)
<b>Urban Residents</b>			
Medical Insurance	County (2858) or prefecture city (333)	Prefecture city (333)	Province (31)
Pension Insurance	A few cities or prefecture cities	A few cities or prefecture cities	Province (?)

Source: Authors' compilation based on relevant policies, regulations and laws.

**Table 5A**  
**Working Age Adults**

	2005				2010			
	Local		Migrant		Local		Migrant	
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
Age	40.605	11.606	34.041	9.150	41.062	11.852	34.839	10.019
Years of Education	11.572	2.769	8.760	3.141	11.995	2.964	10.244	3.298
Post Secondary Education	0.235	0.424	0.052	0.222	0.300	0.458	0.159	0.366
Married	0.763	0.425	0.799	0.401	0.759	0.428	0.752	0.432
Female	0.510	0.500	0.479	0.500	0.514	0.500	0.504	0.500
Rural Hukou	0.024	0.154	0.821	0.384	0.041	0.198	0.756	0.430
Contract	0.419	0.493	0.120	0.325	0.448	0.497	0.302	0.459
Working	0.621	0.485	0.897	0.304	0.641	0.480	0.879	0.326
Self-Employed	0.157	0.364	0.727	0.446	0.161	0.368	0.522	0.500
Employer-Based Pension	0.634	0.482	0.085	0.279	0.675	0.468	0.146	0.353
Employer-Based Medical Insurance	0.509	0.500	0.066	0.248	0.640	0.480	0.128	0.334
Unemployment Insurance	0.213	0.409	0.019	0.135	0.272	0.445	0.053	0.224
Residence-Based Pension	n.a.	n.a.	n.a.	n.a.	0.059	0.235	0.027	0.163
Residence-Based Medical Insurance	n.a.	n.a.	n.a.	n.a.	0.123	0.328	0.043	0.203
NRCMS	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.049	0.215
Government	0.052	0.222	0.004	0.064	0.041	0.199	0.003	0.059
Public Institute	0.117	0.322	0.041	0.198	0.127	0.333	0.039	0.194
SOE	0.165	0.371	0.028	0.166	0.160	0.366	0.042	0.200
Collective	0.029	0.167	0.020	0.139	0.026	0.159	0.019	0.138
Private	0.094	0.292	0.086	0.280	0.126	0.332	0.215	0.411
Foreign-Invested	0.041	0.198	0.027	0.162	0.047	0.212	0.046	0.209
Others	0.047	0.211	0.039	0.195	0.026	0.158	0.056	0.231
Observations	5310		4385		7045		5249	

\* n.a. : not applicable. \*\*Working Age refers to age 18-60. Source: 2005 and 2010 China Urban Labor Survey (CULS).

**Table 5B**  
**Wage-Employed Working Age Adults**

	2005				2010			
	Local		Migrant		Local		Migrant	
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
Age	40.431	9.812	33.275	9.556	39.544	9.962	33.427	9.456
Years of Education	12.183	2.689	9.498	3.580	12.887	2.822	11.343	3.510
Post Secondary Education	0.298	0.458	0.117	0.322	0.423	0.494	0.286	0.452
Married	0.811	0.392	0.714	0.452	0.790	0.408	0.681	0.466
Female	0.432	0.495	0.420	0.494	0.427	0.495	0.473	0.499
Rural Hukou	0.020	0.139	0.741	0.438	0.029	0.169	0.670	0.470
Contract	0.778	0.415	0.502	0.500	0.810	0.396	0.586	0.492
Monthly Wage	1178.1	988.3	1044.4	890.9	2153.0	2249.1	2262.2	2658.4
Wage Below 60% Threshold	0.309	0.463	0.410	0.492	0.258	0.438	0.291	0.456
Estimated Labor Tax Wedge	0.548	0.221	0.597	0.237	0.533	0.223	0.551	0.231
Employer-Based Pension	0.777	0.416	0.226	0.418	0.848	0.359	0.284	0.451
Employer-Based Medical Insurance	0.677	0.468	0.214	0.411	0.812	0.390	0.250	0.433
Unemployment Insurance	0.334	0.472	0.056	0.230	0.436	0.496	0.116	0.320
Government	0.062	0.241	0.015	0.121	0.049	0.217	0.007	0.085
Public Institute	0.223	0.417	0.167	0.373	0.236	0.424	0.093	0.291
SOE	0.314	0.464	0.116	0.320	0.297	0.457	0.099	0.298
Collective	0.055	0.228	0.080	0.272	0.048	0.214	0.046	0.210
Private	0.179	0.384	0.351	0.478	0.235	0.424	0.511	0.500
Foreign Invested	0.078	0.268	0.110	0.313	0.088	0.283	0.109	0.312
Other	0.089	0.285	0.161	0.368	0.048	0.213	0.134	0.341
Observations	2789		1073		3790		2206	

\*\*Working Age refers to age 18-60. Source China Urban Labor Survey (CULS) 2005 and 2010.

**Table 6**  
**Correlates of Participation in Employer-Based Pension**  
 Dependent Variable: Participates in Employer-Based Pension  
 Probit Marginal Effects

Controls	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.027*** (0.005)	0.032*** (0.005)	0.031*** (0.005)	0.032*** (0.005)	0.033*** (0.005)	0.033*** (0.005)
Age-Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Years of Schooling	0.030*** (0.003)	0.025*** (0.003)	0.021*** (0.003)	0.026*** (0.003)	0.026*** (0.003)	0.026*** (0.003)
Post-Secondary Education	0.046** (0.019)	0.010 (0.021)	0.010 (0.021)	0.007 (0.021)	0.008 (0.021)	0.006 (0.021)
Married	0.047*** (0.017)	0.025 (0.017)	0.023 (0.017)	0.024 (0.017)	0.027 (0.017)	0.028 (0.017)
Female	-0.022** (0.011)	-0.012 (0.012)	-0.010 (0.012)	-0.011 (0.012)	-0.036** (0.015)	-0.036** (0.015)
Urban Migrant w/ Other Urban Hukou	-0.365*** (0.017)	-0.311*** (0.019)	-0.312*** (0.020)	-0.310*** (0.035)	-0.333*** (0.025)	-0.307*** (0.044)
Rural Hukou Migrant	-0.538*** (0.012)	-0.502*** (0.015)	-0.496*** (0.015)	-0.474*** (0.024)	-0.534*** (0.018)	-0.477*** (0.029)
Year 2010	0.056*** (0.012)	0.092*** (0.012)	0.105*** (0.013)	0.102*** (0.015)	0.091*** (0.012)	0.102*** (0.015)
Female x Rural Migrant					0.074*** (0.025)	0.001 (0.046)
Female x Urban Migrant					0.044 (0.032)	-0.013 (0.064)
Urban Migrant x Year 2010				-0.003 (0.038)		-0.038 (0.049)
Rural Migrant x Year 2010				-0.045 (0.031)		-0.101** (0.040)
Female x Rural x 2010						0.107** (0.044)
Female x Urban x 2010						0.074 (0.063)
Has Labor Contract			0.270*** (0.013)			
<i>Other Controls</i>						
Industry	No	Yes	Yes	Yes	Yes	Yes
Work-Unit Ownership	No	Yes	Yes	Yes	Yes	Yes
Average Participation	0.634	0.634	0.634	0.634	0.634	0.634
Observations	9,830	9,830	9,820	9,830	9,830	9,830

Notes: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The sample includes 9830 working age adults, aged 18-60, who are employed for a wage. The sample is drawn from the five cities common to the 2005 and 2010 CULS survey rounds (Fuzhou, Shanghai, Shenyang, Wuhan and Xian). All models include city dummy variables. Models (2) through (6) control for 17 industries and 8 work unit ownership types.

**Table 7**  
**What is the Effect of a High Labor Tax Wedge on Participation**  
 Dependent Variable: Participates in Employer-Based Pension (1= Yes, 0=No)

	(1)		(2)		(3)		(4)	
	Worker Type		Worker Type		Worker Type		Worker Type	
	Local	Migrant	Local	Migrant	Local	Migrant	Local	Migrant
Estimated Labor Tax Wedge	-0.235*** (0.021)	0.026 (0.037)	-0.135*** (0.021)	0.018 (0.039)				
<i>Alternate Controls</i>								
Industry	no	no	yes	yes				
Work Unit Ownership	no	no	yes	yes				
Observations	6565	3265	6565	3265				
Average Participation	0.818	0.264	0.818	0.822				

Notes (for both panels): Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The sample includes 9830 working age adults, aged 18-60, who are employed for a wage. The sample is drawn from the five cities common to the 2005 and 2010 CULS survey rounds (Fuzhou, Shanghai, Shenyang, Wuhan and Xian). All models include age, age-squared, years of schooling, post-secondary indicator, marital status, female indicator, dummy for 2010 survey round and city dummy variables.

**Table 8**  
**What Characteristics are Correlated with Participation in the Urban Residents' Medical Insurance Program?**

Dependent Variable: Participation (Yes=1, No=0)

Probit Marginal Effects

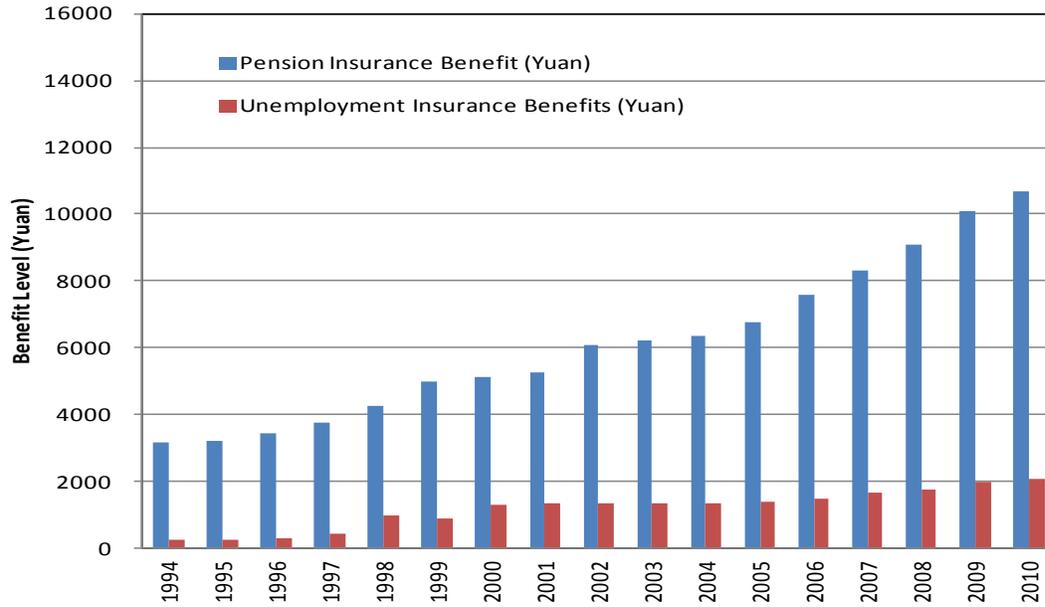
Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.006*** (0.002)	0.006*** (0.002)	0.006*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.005*** (0.001)
Age-Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Years of Schooling	-0.005*** (0.001)	-0.005*** (0.001)	0.000 (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	0.000 (0.001)
Post-Secondary Education	-0.018*** (0.006)	-0.018*** (0.006)	-0.009** (0.004)	-0.006 (0.006)	-0.006 (0.006)	-0.007 (0.004)
Married	-0.002 (0.006)	-0.002 (0.006)	-0.000 (0.004)	-0.002 (0.005)	-0.002 (0.005)	-0.000 (0.004)
Rural Hukou Migrant	-0.086*** (0.004)	-0.082*** (0.006)	-0.079*** (0.004)	-0.092*** (0.004)	-0.092*** (0.006)	-0.079*** (0.004)
Urban Migrant w/ Other Urban Hukou	-0.006 (0.006)	-0.003 (0.008)	-0.023*** (0.002)	-0.017*** (0.004)	-0.016*** (0.006)	-0.023*** (0.002)
Female	-0.000 (0.004)	0.002 (0.005)	-0.002 (0.003)	-0.005 (0.004)	-0.005 (0.004)	-0.002 (0.003)
Female x Rural Migrant		-0.009 (0.009)			-0.000 (0.009)	
Female x Urban Migrant		-0.006 (0.011)			-0.001 (0.011)	
Participate in Medical Insurance Through Employer			-0.112*** (0.005)			-0.111*** (0.006)
Self-Employed				0.068*** (0.022)	0.068*** (0.022)	0.001 (0.011)
<i>Alternate Controls</i>						
Industry	no	no	no	yes	yes	yes
Work Unit Ownership	no	no	no	yes	yes	yes
Observations	11,769	11,769	11,769	11,749	11,749	11,749
Average Participation	0.0794	0.0794	0.0794	0.0796	0.0796	0.0796

Notes: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The sample includes all working age adults in 2010, regardless of work status. The sample is drawn from the five cities common to the 2005 and 2010 CULS survey rounds (Fuzhou, Shanghai, Shenyang, Wuhan and Xian). All models include city dummy variables.

**Table 9**  
**What are the Correlates of Migrant Participation in the**  
**New Rural Collective Medical Insurance Program**  
 Dependent Variable: Participation (Yes=1, No=0)  
 Probit Marginal Effects

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.001 (0.006)	-0.001 (0.006)	-0.001 (0.006)	-0.003 (0.006)	-0.004 (0.006)	-0.005 (0.006)
Age-Squared	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Years of Schooling	-0.034*** (0.003)	-0.018*** (0.003)	-0.035*** (0.003)	-0.019*** (0.003)	-0.018*** (0.003)	-0.015*** (0.003)
Post-Secondary Education	-0.188*** (0.028)	-0.132*** (0.030)	-0.186*** (0.028)	-0.130*** (0.030)	-0.112*** (0.032)	-0.087*** (0.033)
Married	0.103*** (0.022)	0.095*** (0.023)	0.110*** (0.022)	0.100*** (0.023)	0.088*** (0.024)	0.090*** (0.024)
Female	-0.045*** (0.015)	-0.035** (0.015)	-0.034** (0.016)	-0.027* (0.016)	-0.029* (0.017)	-0.026 (0.017)
Rural Hukou		0.397*** (0.015)		0.396*** (0.015)	0.396*** (0.016)	0.378*** (0.016)
Currently Employed			0.074*** (0.026)	0.056** (0.027)	-0.323 (0.276)	-0.253 (0.545)
Participates in Medical Insurance through Employer						-0.341*** (0.022)
Self-Employed					0.584*** (0.232)	0.520 (0.450)
<i>Alternate Controls</i>						
Industry	no	no	no	no	yes	yes
Work Unit Ownership	no	no	no	no	yes	yes
Observations	5,116	5,116	5,116	5,116	5,116	5,116
Average Participation	0.463	0.463	0.463	0.463	0.463	0.463

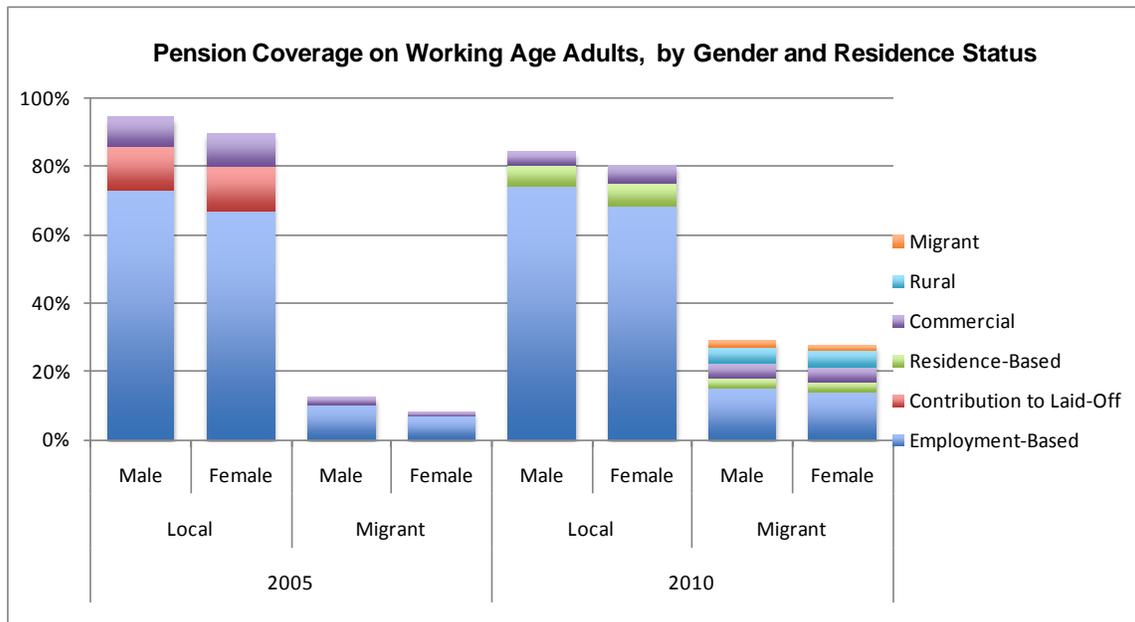
Notes (for both panels): Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The sample includes 5116 migrant working age adults, aged 18-60. The sample is drawn from the five cities common to the 2005 and 2010 CULS survey rounds (Fuzhou, Shanghai, Shenyang, Wuhan and Xian). All models include city dummy variables. Models (5) and (6) control for 17 industries and 8 work unit ownership types.



**Figure 1. Pension and Unemployment Insurance Benefits in Urban China, 1994-2010**

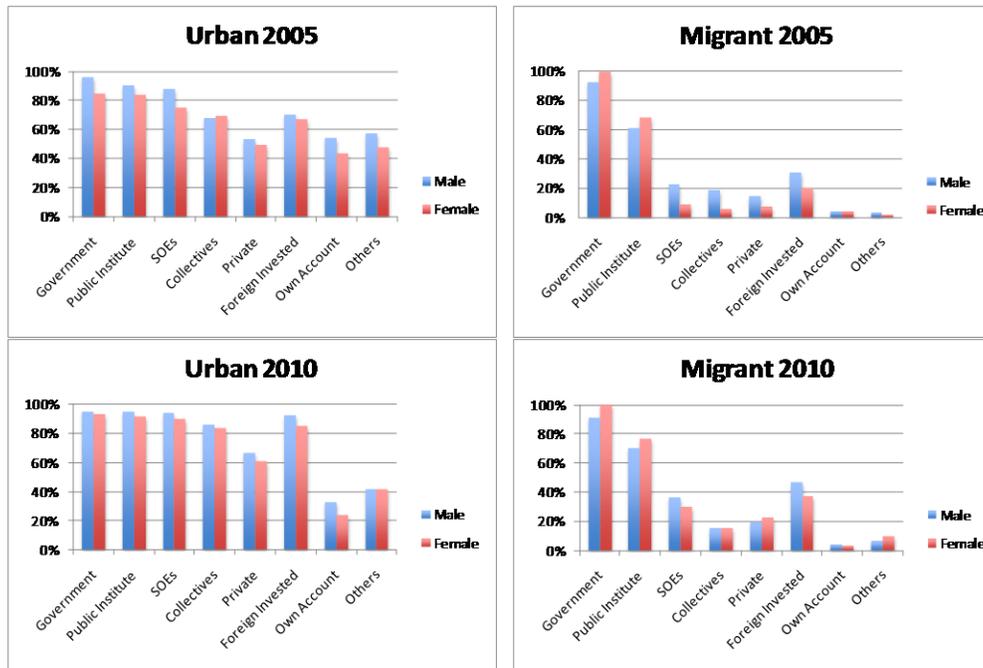
Source: NBS, China Statistical Yearbook (2011), China Statistics Press, Beijing.

Note: Both pension and unemployment insurance benefits are deflated by CPI (1994=100).

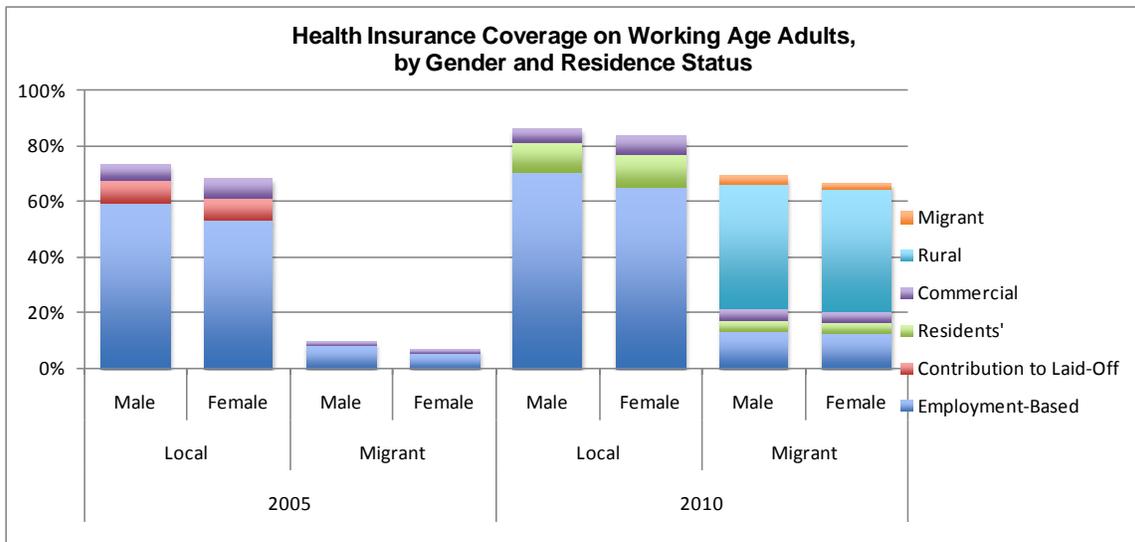


**Figure 2. Pension Coverage of Working Age Adults, by Gender and Residence Status**

Source: China Urban Labor Survey 2005, 2010.

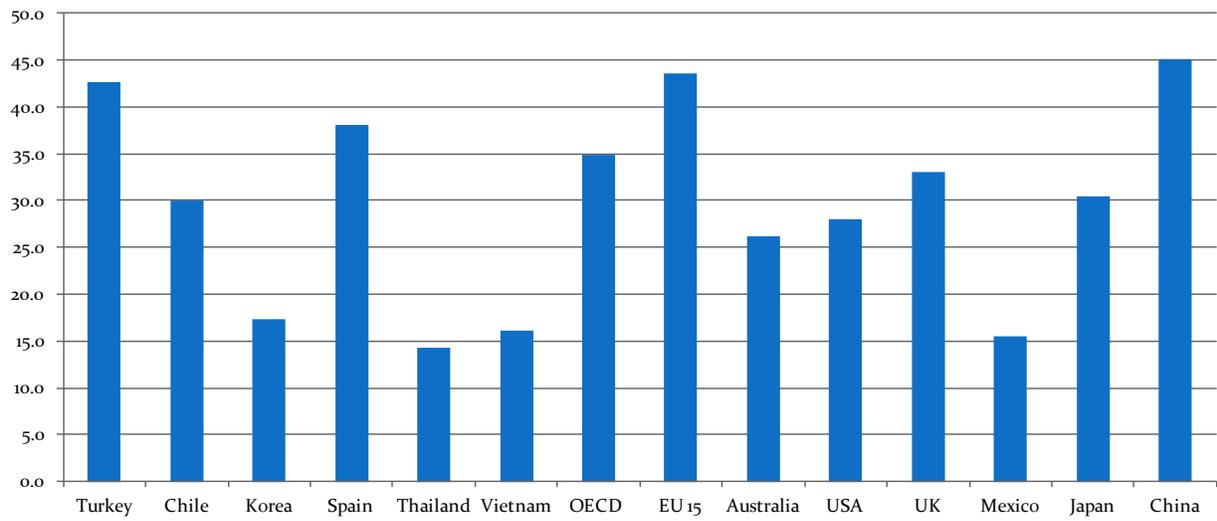


**Figure 3. Participation in Pension through Employer/Worker Contributions (by Enterprise Ownership)**  
 Source: China Urban Labor Surveys (2005, 2010)



**Figure 4. Health Insurance Coverage in 2005 and 2010: Increases in both Employer-Provided Health Insurance, and Access to NRCMS Insurance**

Source: Five City Sample from the China Urban Labor Surveys (2005, 2010)



**Figure 5. China's Labor Tax Wedge in Comparative Perspective**

Source: OECD, 2011. For China, author calculation from aggregate data.

Appendix Tables and Figures  
Expanding Social Insurance Coverage in Urban China

John Giles, Dewen Wang and Albert Park

The following pages include additional appendix material for Giles, Wang and Park (2012). We anticipate making these tables and figures available as additional materials in Working Paper versions of the paper.

**Table A.1 Trends in Coverage of Urban Worker Social Insurance Programs**

Year	Pension Insurance	Unemployment Insurance	Medical Insurance	Work Injury Insurance	Maternity Insurance
Contributors (Million)					
1993	80.1	79.2	2.7	11.0	5.6
1994	84.9	79.7	3.7	18.2	9.2
1995	87.4	82.4	7.0	26.1	15.0
1996	87.6	83.3	7.9	31.0	20.2
1997	86.7	79.6	15.9	35.1	24.9
1998	84.8	79.3	15.1	37.8	27.8
1999	95.0	98.5	15.1	39.1	29.3
2000	104.5	104.1	28.6	43.5	30.0
2001	108.0	103.5	54.7	43.5	34.6
2002	111.3	101.8	69.3	44.1	34.9
2003	116.5	103.7	79.7	45.7	36.6
2004	122.5	105.8	90.4	68.5	43.8
2005	131.2	106.5	100.2	84.8	54.1
2006	141.3	111.9	115.8	102.7	64.6
2007	151.8	116.4	134.2	121.7	77.8
2008	165.9	124.0	149.9	137.9	92.5
2009	177.4	127.2	164.1	149.0	108.8
2010	194.0	133.8	177.9	161.6	123.4
Coverage (%)					
1993	43.9	43.4	1.5	6.0	3.1
1994	45.5	42.7	2.0	9.8	4.9
1995	45.9	43.3	3.7	13.7	7.9
1996	44.0	41.8	4.0	15.6	10.1
1997	41.7	38.3	7.6	16.9	12.0
1998	39.2	36.7	7.0	17.5	12.8
1999	42.4	44.0	6.7	17.5	13.1
2000	45.1	45.0	12.4	18.8	13.0
2001	45.1	43.3	22.9	18.2	14.4
2002	44.9	41.1	27.9	17.8	14.1
2003	45.4	40.5	31.1	17.8	14.3
2004	46.3	40.0	34.2	25.9	16.6
2005	48.0	39.0	36.7	31.0	19.8
2006	49.9	39.5	40.9	36.3	22.8
2007	51.7	39.7	45.7	41.5	26.5
2008	54.9	41.0	49.6	45.6	30.6
2009	57.0	40.9	52.7	47.9	34.9
2010	55.9	38.6	51.3	46.6	35.6

Note: (1) Retirees/beneficiaries are not included; (2) the coverage of social insurance schemes equals contributors divided by urban employment.

Source: NBS, China Labor Statistical Yearbook (2010), China Statistical Yearbook (2011), China Statistics Press, Beijing.

**Table A.2. Social Insurance Coverage Rates of Rural Migrant Workers**

Year	Pension Insurance	Medical Insurance	Unemployment Insurance	Work Injure Insurance
Participants (Millions)				
2006	14.2	23.7		25.4
2007	18.5	31.3	11.5	39.8
2008	24.2	42.7	15.5	49.4
2009	26.5	43.4	16.4	55.9
2010	32.8	45.8	19.9	63.0
Coverage Rate (%)				
2006	15.0	25.0		26.8
2007	17.6	29.8	11.0	37.9
2008	18.0	31.8	11.6	36.9
2009	18.7	30.6	11.6	39.4
2010	21.4	29.9	13.0	41.1

Source: MOHRSS, Statistical Bulletin of Social Security Development (2006-2010), MOHRSS website. Note: The denominator for calculating coverage rate is the number of rural migrants outside their townships.

**Table A.3 Trends in the Evasion of Mandated Contributions to Urban Social Insurance Programs**

Year	Aggregated Wage (Billion Yuan)	Expected Revenue Level (Billion Yuan)	Actual Revenue (Billion Yuan)	Total Evasion (Billion Yuan)	Evasion Rate (%)
2000	1095	449	264	185	41.1
2001	1221	500	310	190	38.0
2002	1364	559	405	154	27.6
2003	1533	629	488	140	22.3
2004	1762	722	578	144	20.0
2005	2063	846	698	148	17.5
2006	2426	995	864	130	13.1
2007	2947	1208	1081	127	10.5
2008	3529	1447	1370	77	5.3
2009	4029	1652	1612	40	2.4
2010	4727	1938	1882	56	2.9

Note: (1) Aggregated wage is from the registered enterprises, excluding those private firms, self-employed and rural migrant workers; (2) expected revenue is calculated based on the assumption of 41 percent contribution of aggregated wage. Source: NBS, China Statistical Yearbook (2011), China Statistics Press, Beijing.

**Table A.4**

## Correlates of Participation in Employer-Based Health Insurance

Dependent Variable: Participation (1=Yes, 0=No)

Probit Marginal Effects

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.021*** (0.005)	0.027*** (0.005)	0.025*** (0.006)	0.027*** (0.005)	0.028*** (0.005)	0.028*** (0.005)
Age-Squared	-0.000* (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Years of Schooling	0.029*** (0.003)	0.023*** (0.003)	0.019*** (0.004)	0.025*** (0.003)	0.023*** (0.003)	0.025*** (0.003)
Post-Secondary Education	0.061*** (0.020)	0.019 (0.022)	0.020 (0.022)	0.011 (0.022)	0.017 (0.022)	0.009 (0.022)
Married	0.037** (0.017)	0.012 (0.018)	0.011 (0.018)	0.010 (0.018)	0.013 (0.018)	0.012 (0.018)
Female	-0.007 (0.011)	0.004 (0.013)	0.007 (0.013)	0.007 (0.013)	-0.017 (0.015)	-0.016 (0.015)
Urban Migrant w/ Other Urban Hukou	-0.342*** (0.016)	-0.287*** (0.019)	-0.288*** (0.019)	-0.230*** (0.035)	-0.306*** (0.024)	-0.231*** (0.045)
Rural Hukou Migrant	-0.499*** (0.012)	-0.469*** (0.015)	-0.459*** (0.015)	-0.378*** (0.026)	-0.497*** (0.018)	-0.388*** (0.031)
Year 2010	0.107*** (0.012)	0.156*** (0.013)	0.175*** (0.013)	0.191*** (0.015)	0.155*** (0.013)	0.191*** (0.015)
Female x Rural Migrant					0.074** (0.029)	0.025 (0.049)
Female x Urban Migrant					0.043 (0.036)	-0.002 (0.069)
Urban Migrant x Year 2010				-0.089** (0.043)		-0.119** (0.054)
Rural Migrant x Year 2010				-0.155*** (0.034)		-0.200*** (0.042)
Female x Rural x 2010						0.086 (0.054)
Female x Urban x 2010						0.063 (0.073)
Has Labor Contract			0.266*** (0.013)			
<i>Alternate Controls</i>						
Industry	no	yes	yes	yes	yes	yes
Work Unit Ownership	no	yes	yes	yes	yes	yes
Observations	9,830	9,830	9,820	9,830	9,830	9,830
Average Participation	0.583	0.583	0.583	0.583	0.583	0.583

Notes: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The sample includes 9830 working age adults, aged 18-60, who are employed for a wage. The sample is drawn from the five cities common to the 2005 and 2010 CULS survey rounds (Fuzhou, Shanghai, Shenyang, Wuhan and Xian). All models include city dummy variables. Models (2) through (6) control for 17 industries and 8 work unit ownership types.

**Table A.5**

## Correlates of Participation in Employer-Based Unemployment Insurance

Dependent Variable: Participation (1=Yes, 0=No)

Probit Marginal Effects

Controls	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.018*** (0.004)	0.018*** (0.004)	0.017*** (0.004)	0.018*** (0.004)	0.018*** (0.004)	0.018*** (0.004)
Age-Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Years of Schooling	0.021*** (0.003)	0.021*** (0.003)	0.018*** (0.003)	0.020*** (0.003)	0.021*** (0.003)	0.021*** (0.003)
Post-Secondary Education	-0.045*** (0.017)	-0.021 (0.017)	-0.014 (0.017)	-0.021 (0.017)	-0.021 (0.017)	-0.022 (0.017)
Married	0.021 (0.014)	0.014 (0.014)	0.011 (0.014)	0.014 (0.014)	0.015 (0.014)	0.015 (0.014)
Female	-0.033*** (0.009)	-0.005 (0.010)	-0.004 (0.010)	-0.005 (0.010)	-0.013 (0.011)	-0.013 (0.011)
Urban Migrant w/ Other Urban Hukou	-0.179*** (0.010)	-0.161*** (0.010)	-0.155*** (0.010)	-0.179*** (0.018)	-0.168*** (0.013)	-0.190*** (0.021)
Rural Hukou Migrant	-0.299*** (0.008)	-0.257*** (0.009)	-0.242*** (0.009)	-0.255*** (0.016)	-0.268*** (0.011)	-0.248*** (0.020)
Year 2010	0.085*** (0.009)	0.078*** (0.009)	0.102*** (0.009)	0.075*** (0.010)	0.078*** (0.009)	0.075*** (0.010)
Female x Rural Migrant					0.045 (0.033)	-0.038 (0.055)
Female x Urban Migrant					0.029 (0.034)	0.060 (0.073)
Urban Migrant x Year 2010				0.044 (0.041)		0.060 (0.054)
Rural Migrant x Year 2010				-0.004 (0.034)		-0.049 (0.039)
Female x Rural x 2010						0.122 (0.080)
Female x Urban x 2010						-0.037 (0.067)
Has Labor Contract			0.203*** (0.010)			
Industry and Ownership Dontrols	No	Yes	Yes	Yes	Yes	Yes
Observations	9,830	9,830	9,820	9,830	9,830	9,830
Average Participation	0.294	0.294	0.294	0.294	0.294	0.294

Notes: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The sample includes 9830 working age adults, aged 18-60, who are employed for a wage. The sample is drawn from the five cities common to the 2005 and 2010 CULS survey rounds (Fuzhou, Shanghai, Shenyang, Wuhan and Xian). All models include city dummy variables. Models (2) through (6) control for 17 industries and 8 work unit ownership types.

**Table A.6**  
**What Determines Participation in the Urban Residents' Pension Program?**

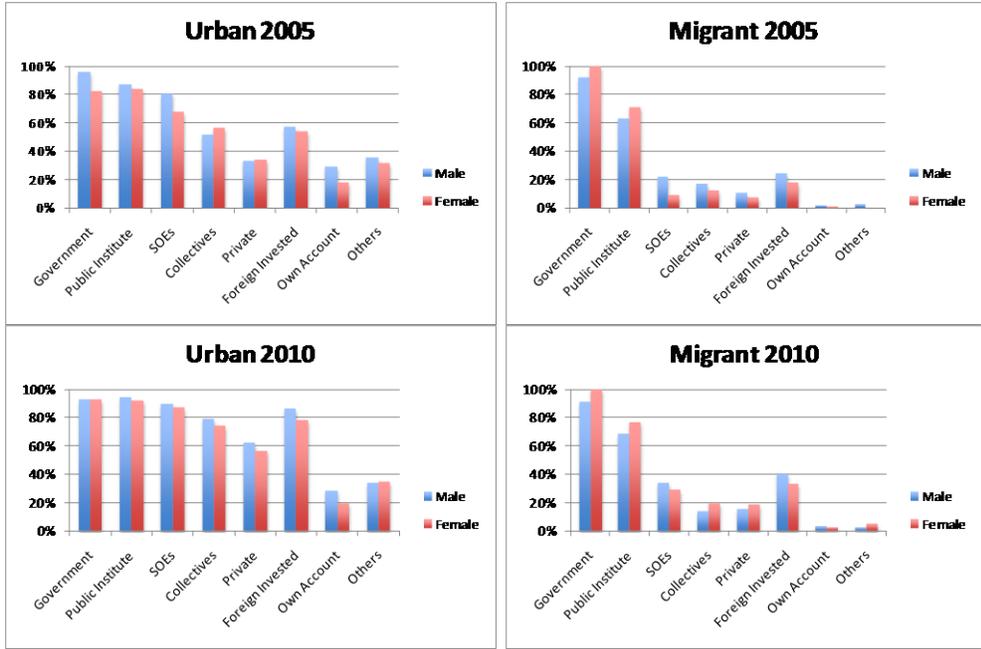
Probit Marginal Effects						
Controls	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.009*** (0.001)	0.009*** (0.001)	0.008*** (0.001)	0.008*** (0.001)	0.008*** (0.001)	0.007*** (0.001)
Age-Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Years of Schooling	-0.000 (0.001)	-0.000 (0.001)	0.002*** (0.001)	0.000 (0.001)	0.000 (0.001)	0.002*** (0.001)
Post-Secondary Education	-0.012*** (0.005)	-0.012*** (0.005)	-0.009** (0.004)	-0.005 (0.005)	-0.005 (0.005)	-0.007 (0.004)
Married	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)
Rural Hukou Migrant	-0.039*** (0.003)	-0.040*** (0.004)	-0.047*** (0.003)	-0.045*** (0.003)	-0.046*** (0.004)	-0.048*** (0.003)
Urban Migrant w/ Other Urban Hukou	0.015** (0.006)	0.021** (0.009)	-0.005 (0.004)	0.005 (0.005)	0.010 (0.008)	-0.007** (0.003)
Female	0.001 (0.003)	0.002 (0.004)	0.000 (0.003)	0.001 (0.003)	0.001 (0.004)	0.002 (0.003)
Female x Rural Migrant		0.001 (0.008)			0.004 (0.008)	
Female x Urban Migrant		-0.008 (0.007)			-0.007 (0.007)	
Participate in Employer-Provided Pension			-0.055*** (0.004)			-0.057*** (0.004)
<i>Work Unit Type</i>						
Collective Enterprise				0.022 (0.022)	0.022 (0.022)	0.014 (0.019)
Private Enterprise				0.020 (0.017)	0.020 (0.017)	0.004 (0.012)
Foreign-Invested Enterprise				-0.003 (0.013)	-0.003 (0.013)	-0.003 (0.011)
Self-Employed				0.033* (0.018)	0.033* (0.018)	0.002 (0.012)
Other				0.023 (0.021)	0.023 (0.021)	-0.003 (0.011)
Includes Industry Controls	no	no	no	yes	yes	Yes
Observations	11,769	11,769	11,769	11,749	11,749	11,749
Average Participation	0.0466	0.0466	0.0466	0.0467	0.0467	0.0467

Notes: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The sample includes all working age adults in 2010, regardless of work status. The sample is drawn from the five cities common to the 2005 and 2010 CULS survey rounds (Fuzhou, Shanghai, Shenyang, Wuhan and Xian). All models include city dummy variables.

**Table A.7**  
**What are the Correlates of Participation in the New Rural Pension Program?**  
**Dependent Variable: Participation (Yes=1, No=0)**  
 Probit Marginal Effects

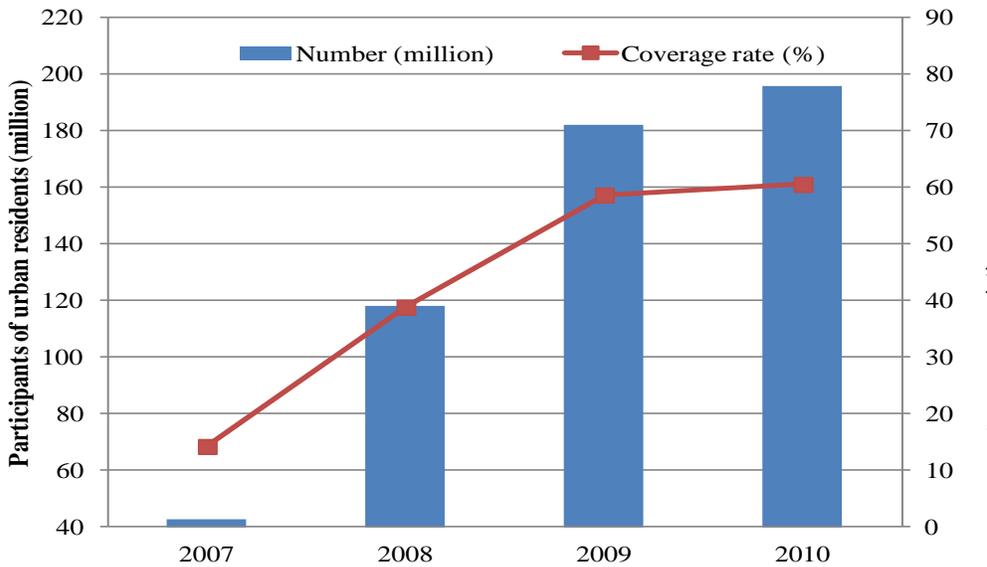
Controls	(1)	(2)	(3)	(4)	(5)	(6)
Age	-0.002 (0.002)	-0.002 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)
Age-Squared	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)	0.000 (0.000)	0.000* (0.000)
Years of Schooling	-0.002* (0.001)	-0.000 (0.001)	-0.002* (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
Post-Secondary Education	-0.030*** (0.008)	-0.018* (0.009)	-0.030*** (0.008)	-0.018* (0.009)	-0.016* (0.009)	-0.012 (0.010)
Married	0.009 (0.008)	0.005 (0.008)	0.011 (0.008)	0.007 (0.008)	0.004 (0.008)	0.005 (0.008)
Female	-0.006 (0.006)	-0.004 (0.005)	-0.003 (0.006)	-0.002 (0.005)	-0.000 (0.006)	0.000 (0.005)
Rural Hukou Migrant		0.046*** (0.005)		0.046*** (0.005)	0.044*** (0.005)	0.038*** (0.005)
Currently Has a Primary Job			0.019** (0.008)	0.015* (0.008)	-0.164 (0.359)	-0.139 (0.482)
Participates in Employer-Based Pension Scheme						-0.036*** (0.005)
Self-Employed					0.015 (0.120)	0.004 (0.166)
<i>Alternate Controls</i>						
Industry	no	no	no	no	yes	yes
Work-Unit Ownership	no	no	no	no	yes	yes
Observations	5,116	5,116	5,116	5,116	5,052	5,052
Average Participation	0.0645	0.0645	0.0645	0.0645	0.0653	0.0653

Notes (for both panels): Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The sample includes 5116 migrant working age adults, aged 18-60. The sample is drawn from the five cities common to the 2005 and 2010 CULS survey rounds (Fuzhou, Shanghai, Shenyang, Wuhan and Xian). All models include city dummy variables. Models (5) and (6) control for 17 industries and 8 work unit ownership types.



**Figure A.1. Participation in Health Insurance through Employer Contributions (by Enterprise Ownership)**

Source: Five City Sample from the China Urban Labor Surveys (2005, 2010)



**Figure A.2. Coverage Rates for Urban Residents' Medical insurance, 2007-2009**

Note: The denominator equals urban population minus urban employment.

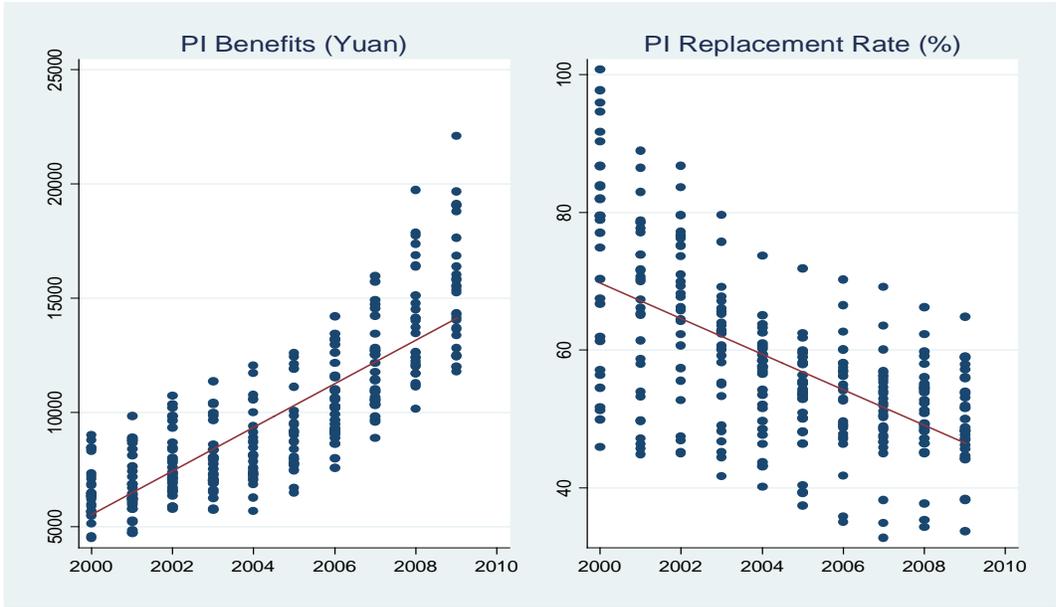
Source: NBS, China Labor Statistical Yearbook (2010), China Statistics Press, Beijing.



**Figure A.3. Social Insurance Coverage by Province, 2000-2009**

Note: PI-Pension Insurance, MI-Medical insurance, UI-Unemployment Insurance.

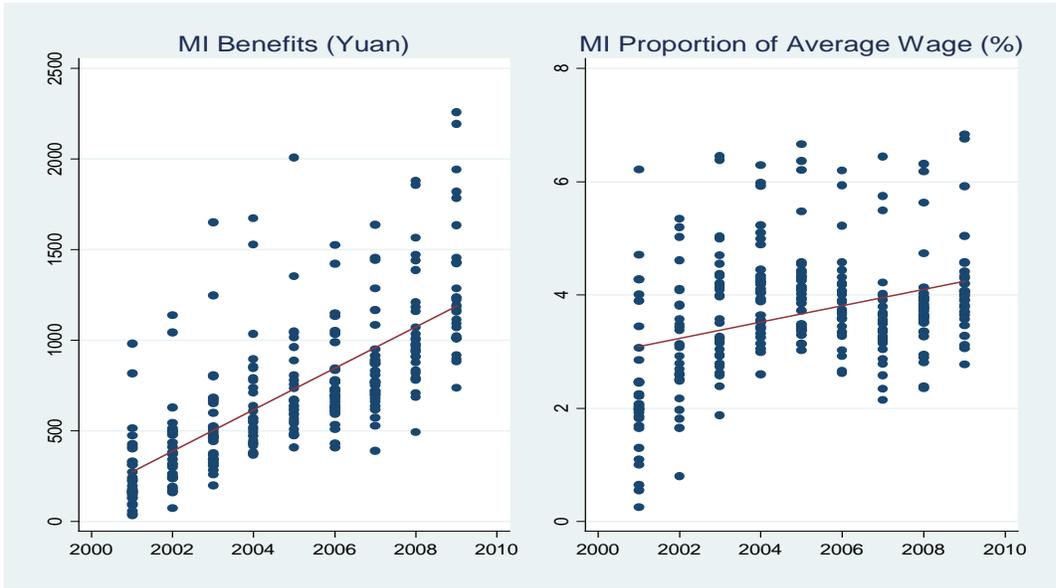
Source: NBS, China Labor Statistical Yearbook (2001-2010), China Statistics Press, Beijing.



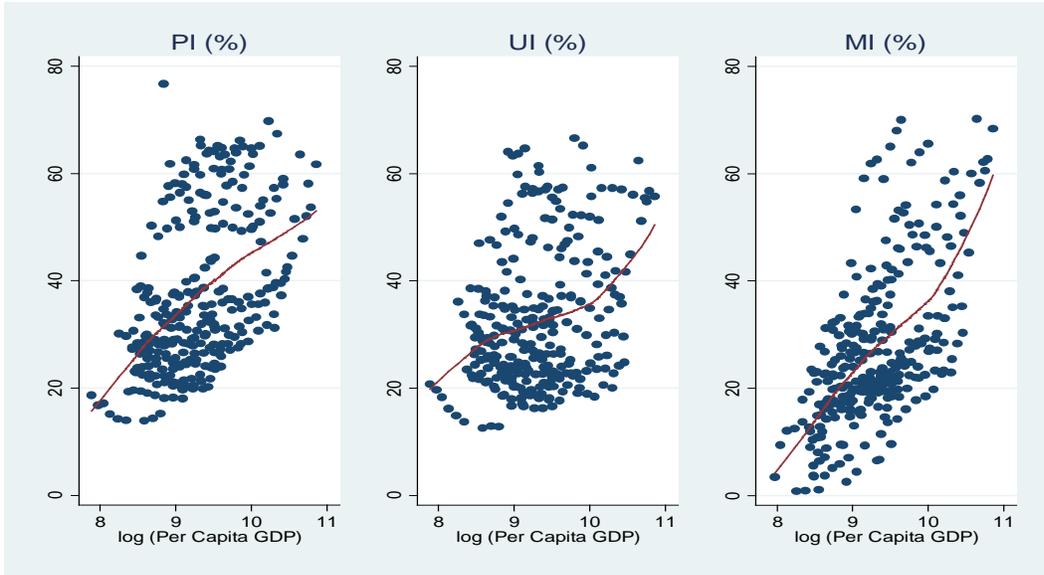
**Figure A.4. Trends in Pension Benefits and Replacement Rates by Province**

Note: PI-Pension Insurance.

Source: NBS, China Labor Statistical Yearbook (2001-2010), China Statistics Press, Beijing.

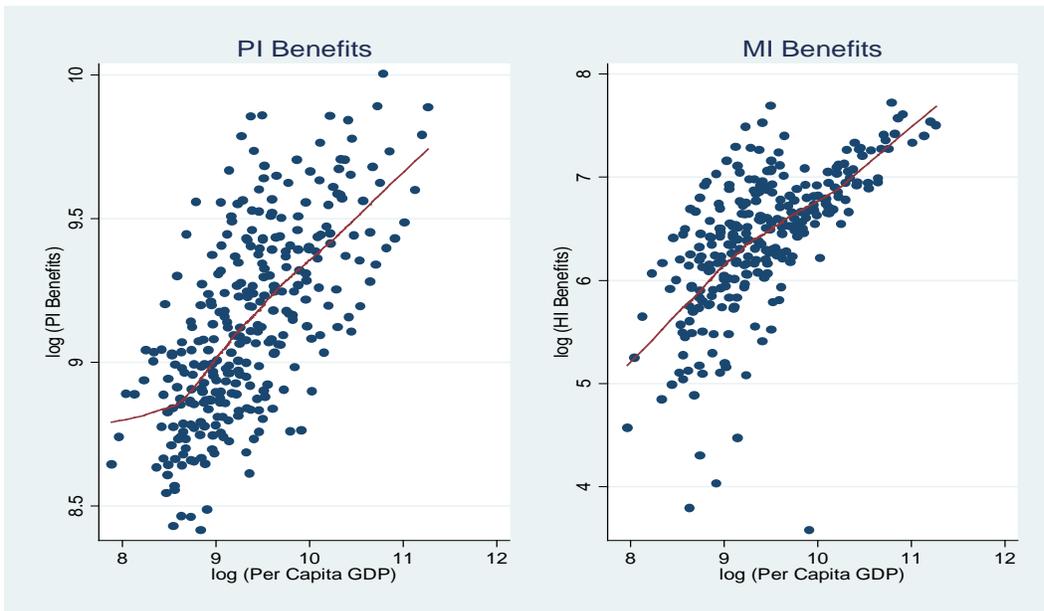


**Figure A.5. Trends in Medical Insurance Benefits by Province: Benefit Levels and Benefits as a Share of Wages** Note: MI-Medical insurance. Source: NBS, China Labor Statistical Yearbook (2001-2010), China Statistics Press, Beijing.



**Figure A.6. Social Insurance Coverage Varies with Provincial Per Capita GDP, 2000-2009**

Note: PI-Pension Insurance, MI-Medical insurance, UI-Unemployment Insurance.  
 Source: NBS, China Labor Statistical Yearbook (2001-2010), China Statistical Yearbook (2001-2010), China Statistics Press, Beijing.



**Figure A.7. Social Insurance Benefits Vary with Provincial Per Capita GDP, 2000-2009.** Note: PI-Pension Insurance, MI-Medical Insurance.

Source: NBS, China Labor Statistical Yearbook (2001-2010), China Statistical Yearbook (2001-2010), China Statistics Press, Beijing.