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Dynamics of social health insurance development: Examining the determinants of Chinese basic health insurance coverage with panel data

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ABSTRACT

Social health insurance (SHI) is gaining popularity in many developing countries, but there are few systematic empirical studies on the dynamics of SHI development. This study investigates the determinants of coverage of the Basic Healthcare Insurance for Urban Employees (BHI) in China. Using a panel database ranging from 1999 to 2007, the study finds that: (1) economic development plays a valuable role in BHI development; (2) strong financial capacity and administrative capacity in the government contributes to BHI progress; (3) higher trade union density is closely related to more rapid BHI expansion; and (4) taxation agencies are better at collecting SHI premiums. These findings provide evidence-based lessons for new and ongoing SHI programs. In addition, this article aims to make a more general contribution to the study of social policy development by expanding the scope of current theories on social policy development.

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Introduction

Since the 1880s, 27 countries have achieved universal health care coverage through social health insurance (SHI) (Carrin & James, 2005). Now SHI is rapidly spreading among developing countries. South Africa, Zimbabwe, Cambodia, Laos and Malaysia are considering the introduction of or a shift to SHI, while Thailand, Colombia, the Philippines, Ghana and Kenya are at different stages of SHI development (Hsiao & Shaw, 2007; Obermann, Jowett, Alcantara, Banzon, & Bodart, 2006). International organizations (e.g., the World Health Organization and the World Bank) are actively promoting SHI in developing countries.

In order to mobilize funds and pool risks, SHI plans collect contributions from various units, such as individuals, households and enterprises, and then pool health risks among the group. It is believed that SHI can raise stable funding for the health care system, which will help resolve the under-funding problem among health care providers in low- and middle-income countries. Despite the popularity of SHI, several questions remain unanswered or have untested answers. For instance, one key issue of SHI development is the extension of coverage (Schremmer, Coheur, Jacquier, & Schmitt-Diabaté, 2009). A brief historical review finds that the time to achieve universal coverage has varied across time and countries: Germany, 127 years; Austria, 79 years; Belgium, 118 years; Luxembourg, 72 years; Israel, 84 years; Costa Rico, 20 years; Japan, 36

years; and South Korea, 26 years (Carrin and James, 2005; Kwon, 2009; Barnighausen & Sauerborn, 2002).

What factors foster or fetter SHI coverage? Systematic analysis of variations in SHI coverage is still rare. By investigating factors that determine the development of SHI in developing countries, we can achieve a twofold benefit: first, evidence-based findings will inspire ongoing SHI projects in developing countries; second, we can situate SHI development theoretically and expand the explanatory scope of social policy development theories.

This article traces the development of Basic Healthcare Insurance (BHI) for Urban Employees in China and examines the determinants of coverage. Initiated in 1999, BHI covered 180.2 million people in 2007. However, its development has not been smooth across regions or over time. As the largest developing country in the world, China shares many similarities with other middle- and low-income countries. Therefore, as SHI gains increasing attention worldwide, the study of China's BHI case will offer lessons to ongoing SHI projects in developing countries.

In pursuing this agenda, the article is organized as follows. First, background information is provided on the evolution of the Chinese health protection system, along with a brief introduction to the political economy of developing BHI in contemporary China. Second, two lines of literature are reviewed concerning SHI development: one is a theoretical analysis of social program development, and the other is a specific analysis of factors influencing SHI development. The third part discusses methodology and introduces data, measurements and the statistical model. Last, the article concludes with research findings and a discussion.

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The evolution of health insurance programs and the political economy of extending BHI coverage

Under China's planned economy, most urban residents were covered by health insurance programs (Ramesh & Wu, 2009; Bloom & Gu, 1997). The labor insurance scheme (LIS) covered workers, while the government insurance scheme (GIS) covered civil servants and other state employees. Employees' dependents enjoyed a half-free medical service. However, as economic reform moved forward, a large number of publicly-owned enterprises began incurring losses, and some even went bankrupt (Grogan, 1995; Du, 2009). Consequently, LIS and GIS could not be sustained because they were embedded in the planned economy. This resulted in more than half of urban residents losing coverage from any health care program (Liu, 2002; Meng et al., 2004).

To tackle this problem, the Chinese government piloted a new scheme to replace the old system. In December 1998, after years of pilot testing, BHI for Urban Employees was launched nationwide (Liu, Zhao, Cai, Yamada, & Yamada, 2002). It was designed to cover the urban working population, especially those working in the formal sectors. After nine years of development, BHI covered only 53% of urban employees in 2007. The progress of BHI across different provinces has varied greatly, despite similar starting points and policy design (Fig. 1). A natural question arises; what determines the pace of BHI expansion?

Expanding coverage of BHI is not merely a problem of policy implementation, it is also a problem related to China's rapidly changing political economy. To understand the difficulty of extending BHI coverage, it is first necessary to understand that it requires the participation of several stakeholders, including, but not limited to, the state, employers and employees. China's changing political economy has made this seemingly easy task more complicated. For the state, ongoing reform has fragmented authority both vertically and horizontally. Whereas decentralization has given local governments more autonomy, it has also shouldered them with more responsibility for local affairs (Blumenthal & Hsiao, 2005). For employers, complications arise because state-owned enterprises (SOEs) account for a declining share of gross domestic product (GDP), while private businesses and foreign firms are booming. Private sector employers are more profit oriented and less constrained by the state, which gives rise to disobedience of laws that do not coincide with their interests. In fact, disputes over social insurance payments are responsible for

30% of total labor dispute cases (Department of Population and Employment Statistics of the National Bureau of Statistics of China and Department of Planning and Finance of the Ministry of Labor and Social Security of China, various years). For employees, difficulties arise because more and more people are being employed in the private sector. They are exposed to more market risks, while their chances of obtaining social protection are undermined. To understand this perplexing situation, we turn to existing knowledge for insights.

Theoretical and empirical studies on social policy development

Two lines of thinking have developed over the issue of SHI development. The first concerns social policy development in general, a mainstream theme in the field of welfare state research. The other is more directly related to SHI. Many scholars and policy analysts have explored the empirical factors influencing SHI development. Although both lines of study have yielded important insights, they are separate lines of study that still need to be linked. This section will review theories of social policy development and the related empirical studies.

The logic of industrialism

Proposed by Wilensky and Libeaux (1958), this model argues that social policy is the consequence of modernity. Social and economic forces have shaped the origination and development of social programs. The mechanism can be summarized as follows. Economic development first increases state revenues and individual incomes, thereby improving the public and private affordability of social programs. With economic growth, labor from rural and low-value-added agriculture moves to high-value-added industries. Because more and more people are employed in concentrated urban industries, social policy development gains economic support and geographic convenience. At the same time, social contingencies, such as old age, sickness and unemployment, brought about by industrialization and urbanization also make social protection necessary (Skocpol & Amenta, 1986).

This argument corresponds with studies of SHI. Hsiao and Shaw (2007) developed a rule of thumb to judge whether a state is in a good position to achieve universal coverage through SHI; whether its GDP per capita reaches US\$6000 per year. Many scholars have

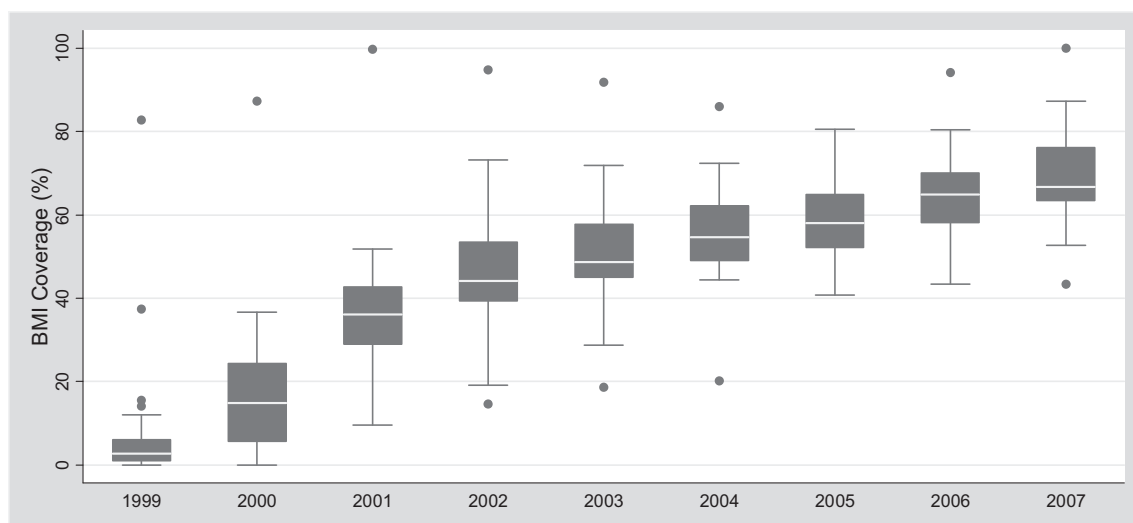


Fig. 1. BHI coverage from 1999 to 2007. Source: BHI panel database.

also shown that the level of income and economic structure play an important role in SHI/social policy development (Carrin, 2002; Lindert, 2004). In this article, we analyze the role of economic development specifically in developing the BHI.

Power resource theory

The logic of industrialism, however, has been criticized for its weakness in explaining variations in the welfare state among advanced countries. For instance, although the United States has undoubtedly achieved economic prosperity, it still has no universal health insurance. Power resource theory proposes some new mechanisms, arguing that the labor-capital relationship better accounts for differences in social policy development. In democratic regimes, wage workers can be organized and transform their population dominance (and hence voting share) into bargaining power (Korpi, 1983). Left-wing parties are likely to adopt pro-social program policies if they win elections with support from unionized workers (Esping-Andersen & van Kersbergen, 1992).

These mechanisms have worked well in studies on OECD countries (Shalev, 1983). Do they also work in developing countries? Obviously, competitive election and collective bargaining mechanisms are absent in many developing countries. But the basic idea of power resource theory is still illuminating. The relationships between laborers and capitalists (or employers and employees) influence the progress of SHI. Gruber and Krueger (1990), for instance, found that the unionization of workers has an influence on their access to social insurance. In this paper, we examine variables related to both employers and employees. Employer variables are designed to consider employer willingness and capacity to pay SHI premiums, while employees variables are designed to examine the role that unionization plays in BHI expansion.

The state-centered approach

The role of the state in social policy development has been a mainstream research topic since the 1980s. State capacity is defined as the ability of “states to implement official goals, especially over the actual or potential opposition of powerful social groups or in the face of recalcitrant socioeconomic circumstances” (Skocpol, 1985:9). State capacity has a significant impact on social policy development. The introduction and establishment of social programs relies on the state’s legal recognition, resource mobilization and even direct involvement in everyday management.

Empirical studies have confirmed the above mechanisms. Ginneken (2007) found that “a strong and competent state is a first requirement for the extension of social security”. Rand Corporation experts reviewed the historical experience of several nations and revealed that authorities (usually the state) play a crucial role in building a national health system (Jones et al., 2006). Confirming the state capacity mechanism above, Ito (1980) also found that state subsidization of health insurance funds plays an important role in expanding health insurance programs. In this study, we will investigate the role of state capacity on BHI expansion.

Policy design and performance

Factors related to policy per se are influential as well. Policy design, for better or worse, affects policy progress. In addition, after a policy is transformed into real world institutions, the performance of those institutions may affect its sustainability. A well-designed and efficient policy will benefit its participants, which can reinforce their loyalty and attract outsiders. Ito’s (1980) study showed that the activeness of a health insurance fund contributes to the expansion of SHI programs. Bad performance will undermine

participants’ confidence in a policy. For instance, experts have revealed that in Kenya, only 22% of SHI funds had been used to reimburse health expenditures, while 25% were consumed in administrative costs and 53% were wasted in various unnecessary investments (Fraker & Hsiao, 2007).

In summary, we categorize the determinants of policy development into four groups: economic development; state-related factors, mainly state capacity; policy objects, in this case employers and employees; and finally policy design and performance. Although not complete, this covers the major factors and stakeholders that influence SHI expansion. With these determinants identified, we can systematically investigate the factors and actors that influence social policy development.

Hypotheses

In order to develop an empirical model, we formulate the above theories into testable hypotheses, presented below.

Economic development

Because different levels of economic development indicate different socioeconomic settings for SHI development, the variation in China’s level of economic development across provinces provides a rich opportunity to assess the above mechanism (see Table in the Appendix for background information on each province). The average GDP per capita in western China is half that of mid- and eastern China. Correspondingly, BHI coverage in western China has lagged behind that of the other regions since 1999. We thus hypothesize that economic development will have a positive relationship with BHI coverage.

The capital–labor relationship

We will examine the characteristics of both sides of the capital–labor relationship, employers and employees. For employers, their willingness and capacity to pay are crucial for BHI’s expansion, because they are required to pay 6% of their payroll as BHI premiums. They must also pay 20% of payroll as pension contributions and 1% to unemployment insurance. Altogether, social insurance premiums account for 29% of payroll, which reduces employer profits. Because it is difficult to estimate willingness and capacity to pay directly, we consider two kinds of employers whose willingness and capacity to pay social insurance premiums are likely to be problematic. For employees, organizations (e.g., trade unions) are vital for defending their interests. We will thus consider how trade unions can influence BHI development.

For employers, we first analyze foreign investors, who, along with their firms, are likely to influence BHI progress in the following ways. First, they are profit oriented, and social insurance contributions will decrease their profits. Second, the majority of foreign investor owned firms in China are labor intensive, and they are very sensitive to labor costs (Huang, 2003). Third, the labor force working in foreign investor owned firms is relatively younger and more mobile, and thus the risk that employees will fall ill is lower than average, and the level of subsequent health expenditures is much lower than average. Fourth, foreign investors often have high bargaining power with local governments. In China, foreign investment is welcomed by every level of government (Huang, 2003). In fact, attracting outside investment is one crucial task for and indicator of the promotion of local government officials. In some areas, foreign investors can obtain many privileges such as exemption from social insurance participation. Finally, since the late 1990s foreign investor owned firms have accounted for almost 30% of gross industrial output value (Fig. 2). This growing share strengthens their voice. All these

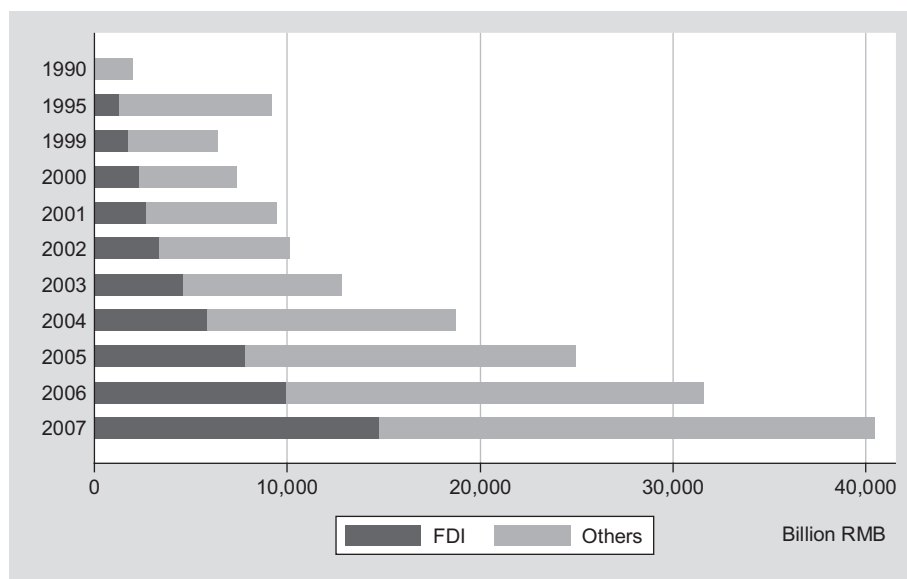


Fig. 2. Foreign invested firms' share in gross industrial output value, 1990–2007. Source: The website of the Investment Promotion Agency of the Ministry of Commerce of China, http://www.fdi.gov.cn/pub/FDI/wztj/lntjsj/wstzsj/2008nzwztj/t20100607_122507.htm, 2010-10-14.

characteristics help consolidate foreign investors' resistance to BHI. Therefore, we hypothesize that the more prevalent foreign investment is in a region, the lower the percentage of the urban employed population that will be covered by BHI.

The second type of employer we examine is the loss-making SOEs. The SOEs matter in two ways. First, the state-owned sector (mainly SOEs) is the largest employer in urban areas, employing 70.8% of workers in 1999 and 53.8% in 2007 (National Bureau of Statistics of China, various years). This implies that SOEs influence the progress of BHI. Second, SOEs' capacity to pay social insurance contributions is requisite for BHI expansion. In fact, BHI was launched because of the poor state of SOE operations; more than half were losing money in the 1990s and over 40% continued to do so after 2000 (Editorial Committee of the Accounting Yearbook of China, various years). According to a survey by the All China's Federation of Trade Unions (ACFTU), 30.13% of SOEs deferred payment of employees' medical expenditures; this number rose to 53.07% in marginally bankrupt SOEs (Policy Research Office of ACFTU, 1999). Obviously, the SOEs' insolvency has become a drag on the growth of BHI in China. Therefore, we hypothesize that the more loss-making SOEs there are in a region, the slower BHI will be able to expand its coverage.

To evaluate the benefit of collective action for improving BHI coverage for employees, we consider the role of trade unions in protecting workers' social benefits. Although Chinese trade unions have been criticized for their lack of independence, they are included in our study because they are the few legal organizations to represent and protect workers' interests. Moreover, recent changes in the reach and management style of Chinese trade unions may reinforce their role in labor protection. Firstly, trade unions have been reaching out to workers in the private sector since 1995 (All China's Federation of Trade Unions, 1995). This "zero to one" change has expanded coverage considerably in the private sector where workers are less protected. Secondly, as many have observed, direct elections have been implemented in grass-roots unions (Feng, 2009); this has given rise to union independence and union leader accountability, to some degree, because the elected leaders must gain support from members. Propelled by these changes, Chinese trade unions are likely to play a more active role in defending workers' interests. Thus, we hypothesize that a higher level of trade union density will promote BHI development.

State capacity

As discussed before, decentralization has granted local governments more autonomy as well as greater responsibility to provide local social services. Therefore, variation in state capacity between regions may result in different levels of social policy development.

In BHI's case, although contributions come mainly from employers and employees, the government must pay huge start-up costs, including developing policy propaganda, agency building and subsidizing SHI funding. In addition, the government must allocate money from the budget to pay for administrative costs because it is not allowed to deduct these from BHI funding in China. Thus, we hypothesize that the government's financial capacity will be positively related to BHI coverage.

In China, the SHI agencies are in charge of implementing and operating BHI, and they are responsible for extending BHI coverage. The funding and staffing of SHI agencies determine their reach and work capacity, and therefore influence BHI progress. Certain agency characteristics, including SHI funding that covers labor costs, office expenditure and other costs, can reflect the financial resources available to the agencies. Therefore, we hypothesize that the abundance of SHI agency funding will speed up BHI progress.

In China, labor inspection organizations represent the coercive dimension of the state in BHI development. They are responsible for supervising and correcting offences against labor laws, including social insurance affairs. Sufficient funding for these organizations means competent staff and more frequent inspections, which are powerful in correcting lawbreaking. We thus hypothesize that the more funding labor inspection organizations have, the better the chances of BHI development.

Policy design and performance

Collecting SHI premiums is a central task in policy development. Policy design, in this respect, varies across provinces according to whether SHI agencies or taxation agencies take on this responsibility. Debates over agency selection are intense both in China and worldwide (Barrand, Ross, & Harrison, 2004; International Social Security Association, 1997; Ross, 2004). In China, 17 provinces had adopted taxation agencies as collection organizations, as of 2007,

while the remaining provinces chose to use SHI agencies for collection. The taxation agencies have comprehensive branches and rich experience, but they do not have strong incentives to collect SHI contributions. In SHI agencies, although collecting SHI premiums is a high priority in their organizational missions, they usually lack resources comparable to the taxation agencies. Which agency will complete the mission better? Chinese scholars have been debating this matter for over a decade, and even the newly passed Social Insurance Law (October 2010) did not end this debate. In this study, we compare the performance of SHI agencies and taxation agencies.

To assess BHI performance, we employ an indicator variable, the surplus rate of BHI funding, which is defined as the BHI surplus as a percentage of BHI revenues in the same year. The surplus rate reflects BHI performance because BHI fund is balanced on a yearly basis; therefore, BHI does not need to reserve a large share of funding. In China, the surplus rates of BHI are quite high and have been widely criticized (Gu, 2010). A large proportion of money remains unused in BHI accounts, indicating that BHI administrators may not be able to manage this funding efficiently or are unwilling to dispense it according to participants' needs. Participants are thus unable to get high reimbursement rates for health expenditures. Consequently, this indicator reveals BHI efficiency to some degree. Our hypothesis is thus as follows: higher surplus rates of BHI funding will be negatively related to BHI coverage.

Data and measurements

Database

We established a panel dataset to trace the progress of BHI ranging from 1999, the first year of BHI implementation, to 2007, the latest year with systematic data. Panel data are advantageous in examining dynamic processes (Frees, 2004), and repeated observations in panel datasets provide more cases and hence facilitate precise estimates.

The unit of analysis was province by year. We chose provinces as the unit of analysis for two reasons. First, in China policy decisions are made by the central government, but provinces are allowed to modify and make practical plans according to their local conditions. Prefecture or county level governments are responsible for making more concrete plans and carrying them out. Due to the ability of local governments to exercise discretion, policy practice is more consistent within one province than across provinces. Therefore, it is reasonable to compare BHI at the province level. Second, data are most accessible at the provincial level, whereas at the prefecture or county level, most key indicators have very limited data (in many cities, even BHI coverage, the dependent variable, is not available). Thus, although they would be more desirable, datasets with information on lower levels of government suffer from missing values. The availability of provincial-level data enables us to piece together the picture of BHI development.

Most of these data were extracted from various official statistics books. This secondary dataset was economical to collect and easy to update while avoiding sample attrition. Of course, data quality is an important concern. The quality of Chinese official statistics has been questioned by some scholars (Rawski, 2001; Cai, 2000), and some statistics, like the urban employment rate and especially that of migrant workers, need to be improved, but according to Holz (2003) and Chow (2006), Chinese official statistics are not as defective as has been thought. In this study, most data were related to real world objects, for instance, government expenditure, human resources and funding. These data have been carefully recorded and scrutinized by the governmental accounting system, so quality is guaranteed to some degree. Additionally, this study concentrates on Chinese urban areas, where data is more reliable.

Measurements

BHI coverage

We used BHI coverage to estimate the level of BHI development, because this is a top priority for the newly initiated program. The dependent variable, BHI coverage, was calculated as follows:

$$\text{BHI Coverage} = \frac{\text{the number of BHI participants}}{(\text{urban employment} + \text{retirees})} \quad (1)$$

The denominator reflects the fact that BHI is intended to cover the urban working population and retired workers. These two groups comprise the policy population. They are also used to calculate some other independent variables (see below). We collected data from *China Statistics Yearbooks* and *China Labor Statistics Yearbooks*.

Independent variables

We used GDP per capita to represent the levels of economic development across regions and over time. To measure the influence of foreign investors, we calculated foreign direct investment (FDI) as a percentage of GDP as the indicator variable. GDP per capita and level of FDI to GDP were calculated with data from the *China Statistics Yearbooks*. We used the percentage of SOEs experiencing net losses to reflect the proportion of SOEs that may have difficulty paying employee BHI contributions; this indicator was extracted from the *Accounting Yearbooks of China*. For employees, we estimated trade union density defined as trade union membership as a percent of total urban employment. These numbers were sourced from the *China Trade Unions Statistics Yearbooks* (Research Office of ACFTU, various years).

Concerning state capacity variables, we first measured the financial capacity of each province using government expenditure per capita divided by total population in that province. This indicator reflects the financial resources that a provincial government has access to. We then estimated administrative capacity using the average funding of SHI agencies, divided by total policy population of urban employment plus retirees. We assessed coercive capacity of the individual provinces with the average funding of labor inspection organizations, also divided by total policy population. All these data came from *Financial Statistics of Chinese Local Governments* (Department of the Exchequer and Department of the Budget of the Ministry of Finance of China, various years).

We used a dummy variable to examine the relative performance of BHI premium collection agencies, assigning the value of 1 to provinces where taxation agencies collect SHI premiums and the value of 0 to provinces where SHI agencies take charge. This variable is designed to help show which kind of agencies does this job better. We collected these data from interviews with government officials at the provincial level. As an indicator of BHI efficiency, we calculated the surplus rate of BHI funding as described below and collected data from the *China Labour Statistics Yearbooks*.

$$\text{Surplus rate of BHI funding} = \frac{(\text{current year revenue} - \text{current year expenditure})}{\text{current year revenue}} \quad (2)$$

All the variables and measurements are summarized in Table 1.

Statistical model

We adopted the fixed effects model to estimate the coefficients explaining the percentage of BHI coverage. This model gives more consistent results because it can control for variations within the group. Also, the Hausman test indicated that the fixed effects model

Table 1
Variables and measurements.

Variables		Indicators	Measurements
BHI coverage		BHI coverage	BHI participants/(urban employment + retirees)
Economic development		GDP per capita	GDP/province population
Business-labour	Foreign investors	Share of FDI in GDP	FDI/GDP
	Loss-making SOEs	Ratio of loss-making SOEs	1—ratio of profit making SOEs
	Organizational support	Trade union density	Trade union members/urban employment
State capacity	Financial capacity	Government expenditure per capita	Government expenditure/province population
	Administrative capacity	average SHI agency funding	SHI agency funding/(urban employment + retirees)
	Coercive capacity	Average funding of labor inspection organization	Labor inspection organization funding/(urban employment + retirees)
Policy designing & performance	Policy designing	SHI fee collection agency	1 = taxation; 0 = SHI
	BHI performance	Surplus rates of BHI funding	(Current year funding revenue—current year funding expenditure)/current year funding revenue

would be more appropriate than the random effects model in this study, with $\text{Prob} > \chi^2 = 0.0012$ (Hausman, 1978).

The model is as follows:

$$Y_{it} = \beta_0 + \beta_1 x_{it1} + \dots + \beta_k x_{itk} + \alpha_i + \mu_{it}, \quad i = (1, 2, \dots, 31); \quad t = (1999, 2000, \dots, 2007) \quad (3)$$

In this formula, i represents each of 31 provinces and t refers to each of the nine years. α_i and μ_{it} are two components of variance; α_i is province specific and does not vary with time, while μ_{it} varies with time. Y_{it} is the BHI coverage of province i at year t . x_{it1}, \dots, x_{itk} are a series of independent variables, and β_k are the coefficients we are investigating.

Findings

From 1999 to 2007, BHI in China expanded its coverage from 8% to 53% of the urban working population. The huge variations across regions and over time lie at the center of our analysis. The descriptive statistics of our data samples are displayed in Table 2. Background information about each province during the final year of our study, 2007, can be seen in the Appendix in Table.

Table 3 displays the results of the analysis step by step. We analyzed each theoretical approach separately (model 1 to model 4), and then took all variables together for multivariate analysis (model 5).

Economic development

We started our analysis with a model developed to explain the role of economic development in BHI coverage (model 1 in Table 3).

This model is intended to test the logic of industrialism theory, and the results are consistent with the hypothesis that BHI coverage will increase with improved economic development. The model indicates that every 1000 Renminbi (RMB) increase in GDP per capita creates a 2.47% increase in BHI coverage. The regional levels of economic development are highly variable in China. Therefore, this finding implies that uneven economic development may be a source of BHI regional coverage differences.

Capital and labor

As model 2 shows, the two types of employers evaluated in this study, foreign investors and loss-making SOEs, exert a negative influence on BHI coverage. The findings for both groups are statistically significant. These results uphold our hypotheses that the capacity and willingness for an employer to pay SHI premiums is crucial for the expansion of BHI coverage. In addition, trade union density, a variable designed to reflect the degree of organization among urban Chinese workers, has a positive influence on BHI coverage, as expected. Our hypothesis that trade unions help protect workers' interests is thus supported by the data.

State capacity

In model 3, which measures the government's financial capacity and administrative capacity, shows that these factors have a positive and significant relationship with BHI coverage. We also found that the government's coercive capacity is negatively related to BHI coverage, but this result does not pass the significance test. These results thus give credence to our claim that the state's level financial resources and capabilities in agency building play an important role in BHI progress.

Table 2
Descriptive statistics.

	1999		2000		2001		2002		2003		2004		2005		2006		2007	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Coverage	0.07	0.16	0.17	0.17	0.36	0.17	0.46	0.15	0.51	0.13	0.56	0.11	0.59	0.09	0.65	0.10	0.69	0.11
GDP per capita (1000 RMB)	7.55	5.10	8.04	5.11	9.29	6.60	10.27	7.37	11.74	8.37	13.92	9.85	16.13	10.86	18.52	12.10	21.84	13.75
FDI/GDP	0.27	0.39	0.26	0.36	0.24	0.33	0.21	0.22	0.21	0.22	0.20	0.19	0.20	0.19	0.20	0.19	0.20	0.20
Loss-making SOEs	0.57	0.10	0.54	0.09	0.55	0.09	0.53	0.09	0.53	0.08	0.55	0.09	0.54	0.08	0.50	0.08	0.47	0.08
Trade union density	0.57	0.09	0.68	0.11	0.78	0.15	0.84	0.17	0.75	0.16	0.78	0.17	0.81	0.18	0.88	0.21	0.95	0.25
Financial capacity (1000 RMB)	0.94	0.72	1.08	0.75	1.38	1.01	1.62	1.22	1.79	1.38	2.08	1.57	2.54	1.86	3.00	2.01	3.75	2.46
Administrative capacity (1 RMB)	7.06	3.79	10.71	4.96	15.25	6.16	17.39	7.01	19.41	8.42	20.82	7.32	25.21	9.05	26.01	7.45	28.78	11.91
Coercive capacity (1 RMB)	0.43	0.42	0.29	0.26	0.28	0.25	0.39	0.36	0.48	0.35	0.56	0.38	0.68	0.46	0.97	0.66	1.77	1.02
Taxation agencies collect BHI premium (1 = yes; 0 = no)	0.00	0.00	0.03	0.18	0.23	0.43	0.26	0.44	0.26	0.44	0.26	0.44	0.32	0.48	0.32	0.48	0.32	0.48
Surplus rate of BHI	−0.01	1.15	0.35	0.22	0.42	0.17	0.37	0.13	0.13	0.09	0.24	0.13	0.23	0.09	0.28	0.09	0.30	0.08

Bold values represents the mean values.

Table 3Fixed-effects (within) regression for BHI coverage ($N = 279$).

	Model 1	Model 2	Model 3	Model 4	Model 5
Economic Development					
GDP per capita (1000 RMB)	0.0247*** (0.0019)				0.0073** (0.0033)
Capitalist–labour					
Foreign employers: Share of FDI in GDP		−0.2694*** (0.0798)			−0.0954 (0.0633)
Insolvent employers: Ratio of loss-making SOEs		−0.4801** (0.1878)			−0.1502 (0.1519)
Organizational support: Trade union density		0.9906*** (0.0700)			0.5405*** (0.0684)
State Capacity					
Financial capacity: Government expenditure per capita (1000 RMB)			0.0528*** (0.0135)		0.0383** (0.0170)
Administrative capacity: Average SHI agency funding (1 RMB)			0.0136*** (0.0015)		0.0070*** (0.0014)
Coercive capacity: Average funding of labor inspection organizations (1 RMB)			−0.0106 (0.0209)		−0.0463*** (0.0179)
Policy design & performance					
Taxation agencies collect SHI fees (1 = Yes; 0 = No)				0.3640*** (0.0513)	0.1030*** (0.0338)
Surplus rates of BHI funding				0.0364 (0.0320)	0.0206 (0.0190)
R ² – within					0.7281
R ² – between					0.5035
R ² – overall					0.6508

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Policy design and performance

In model 4, we find that the policy design variable passes the significance test and demonstrates the hypothesized relationship with BHI coverage. The statistics also show that taxation agencies do a better job expanding BHI coverage. The second indicator, policy performance, has no significant relationship with the dependent variable, and this makes it difficult to infer any effects that this variable may have on BHI coverage.

To ensure that the relationships detailed above are still credible when all factors are considered, we estimated all variables in model 5. The result shows that most variables are consistent with their counterparts in models 1 to 4, except that some change their significance levels. The role of economic development in BHI's coverage continues to be supported by the data. All else being equal, a 1000 RMB increase in GDP per capita results in a 0.73% increase in BHI coverage.

The two types of employers, loss-making SOEs and foreign investors, retain their negative relationship with BHI coverage but both are insignificant. Only the FDI/GDP ratio is estimated close to the 0.1 significance level (p -value = 0.133). The only variable testing the relationship between labor and capital that remains significant is trade union density. With other variables holding constant, the positive relationship between trade union density and BHI coverage is confirmed. Thus, trade unions are helpful in protecting workers' interests.

Financial capacity and administrative capacity maintain their positive and significant relationship with BHI coverage. With other variables held constant, a 1000 RMB increase in government expenditure per capita causes a 3.83% increase in BHI coverage, and each 1 RMB increase in SHI agency funding is related to a 0.7% increase of BHI coverage. The estimate for coercive capacity turns out to be puzzling; it retains its negative sign but becomes significant. The true relationship between labor inspection organizations and BHI development thus requires in-depth fieldwork. There are several plausible reasons that this variable is not consistently significant. Average funding of labor inspection organizations may not accurately represent the state's coercive capacity. Although the inspection organization is one of the many agencies that has coercive power over employers, it is limited by human and financial resources and is therefore one of the weakest coercive organizations. One extreme case is Ningxia, where only five labor inspectors

active in the entire province (Editorial Office of China's Labor Protection, 2005).

In model 5, we continue to find that taxation agencies perform better than SHI agencies. When other variables are held constant, provinces where the taxation agency collects SHI fees have, on average, 10.3% higher coverage than other provinces. This finding will help resolve the decade-long debate over the choice of collection agency for SHI premiums. The variable representing the surplus rate of BHI funding remains insignificant.

In summary, models 1 to 5 map out the patterns of BHI coverage expansion. Economic development, labor relationships, state capacity and policy design all have explanatory power over the dependent variable. The next section discusses the underlying meaning and policy implications of these results.

Discussion

We began this article by asking questions about the development of SHI in developing countries. For example, what determines the development of SHI, especially in middle- and low-income countries? This question is crucial for understanding the logic of social policy development within a broader scope of conditions. We have used the case of BHI expansion in China to examine the determinants of SHI development. The results indicate that most theory-driven hypotheses are supported by empirical evidence.

Economic development

The hypothesis that economic development plays an important role in promoting SHI progress is supported by empirical evidence. Economic development raises the income of both ordinary people and government, providing the necessary components for SHI's emergence and growth. As discussed above, China has huge regional disparities in economic development, which may be one reason for the unbalanced expansion of BHI coverage.

With this in mind, we should be aware that economic backwardness may hinder SHI development. As explained by Wagstaff (2007), SHI is not applicable to all countries. It is difficult to develop SHI in a country where most residents live in the countryside and are employed in agriculture or the informal sectors. Therefore, policy advocates and decision makers should be cautious in promoting SHI, especially in low-income countries.

Labor organization

Chinese trade unions have been criticized for being dependent on the government. They are depicted as tools used by the government to manipulate workers by eliminating the possibility of organizing independent unions. This conventional wisdom, however, is challenged by the statistical results. As Table 3 shows, trade union density has a positive and significant relationship with BHI coverage. We are quite cautious about this finding, even though similar results have been found at the micro level. According to a longitudinal study of Chinese private enterprises, the employee coverage of social insurance (including BHI) is higher in those enterprises with trade unions (All China Federation of Industry and Commerce, 2007). To fully understand how Chinese trade unions influence their members is not well understood and still needs in-depth field research.

The policy implications of this result for middle- and low-income countries, where workers lack strong organization and protection, is that developing employee organizations will empower them and better defend their rights.

State capacity

The results indicate that state capacity in policy development plays a central role in the development of SHI. Specifically, the financial capacity of the state makes it possible for it to budget the necessary funding for new program development. However, in many developing countries, start-up costs and subsidies to balance SHI funding also increase pressure on the government budgets. Many countries suffer from inadequate financial resources. Therefore, the results provide a useful lesson to never underestimate the government's financial responsibility.

Administrative capacity matters as well. SHI agencies undertake the everyday management of BHI, and in some provinces they are responsible for collecting SHI premiums. It is inconceivable that a policy could progress without trained staff or systematic agency building. Therefore, providing adequate human resources is another problem for developing countries that lack well-trained staff. For instance, Ghana has confronted the problem of inadequate human resources, and Colombia has had to appeal to private insurance companies for assistance. The only positive example is Thailand; two decades of investment in human resources has helped Thailand achieve universal coverage (Hsiao, 2007). Considering the sophistication of SHI financing and operations, administrative capacity should be highlighted for those governments who are initiating new SHI programs.

Collection agencies for SHI contributions

This study adds policy design and performance as independent variables, and the results show that the selection of a BHI premium collection agency does affect BHI coverage. The means of collecting SHI premiums is a key element of policy design. In China, provinces where taxation agencies collect BHI premiums do a better job expanding BHI coverage. The choice is a resource-versus-incentive problem. Taxation agencies have relatively complete staff and funding, but collecting insurance fees is not their primary responsibility. SHI agencies have a mission to collect premiums and a strong incentive to do so, but newly established SHI agencies lack adequate staff or funding.

Scholars have been debating the selection of SHI financing agencies since 1999, but this result suggests that taxation agencies are a better choice. The implication for other countries is that they should make good use of current institutions, which would save the resources involved in building new agencies.

In the end, compared with the abundant knowledge on social policy development in rich democracies, the picture of social policy in developing countries is still being developed (Carnes & Mares, 2007). Knowledge about developing social programs is increasingly necessary in middle- and low-income countries. This gap should be filled by evidence-based studies, which could benefit both theoretical development and policy practice. This study, as one such endeavor, has investigated the dynamics of SHI development in one developing country, China. Economic development, state capacity, labor organizations and policy design are revealed to have significant effects on SHI expansion. These findings, based on social science theories and supported by quantitative data, will provide valuable lessons to those initiating SHI.

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Appendix

Background information of provincial units in China, 2007

Province	Population (million people)	Working-aged (%)	Urbanization (%)	GDP (billion yuan)
Beijing	16.3	68	85	935
Tianjin	11.2	39	76	505
Hebei	69.4	51	40	1371
Shanxi	33.9	46	44	573
Inner Mongolia	24.1	45	50	609
Liaoning	43.0	48	59	1102
Jilin	27.3	40	53	528
Heilongjiang	38.2	43	54	707
Shanghai	18.6	47	89	1219
Jiangsu	76.3	55	53	2574
Zhejiang	50.6	71	57	1878
Anhui	61.2	59	39	736
Fujian	35.8	56	49	925
Jiangxi	43.7	50	40	550
Shandong	93.7	56	47	2597
Henan	93.6	62	34	1501
Hubei	57.0	48	44	923
Hunan	63.6	59	40	920
Guangdong	94.5	56	63	3108
Guangxi	47.7	58	36	596
Hainan	8.5	49	47	122
Chongqing	28.2	64	48	412
Sichuan	81.3	59	36	1051
Guizhou	37.6	61	28	274
Yunnan	45.1	58	32	474
Tibet	2.8	54	28	34
Shaanxi	37.5	51	41	547
Gansu	26.2	53	32	270
Qinghai	5.5	50	40	78
Ningxia	6.1	51	44	89
Xinjiang	21.0	38	39	352

Source: China Statistical Yearbook, 2008.

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