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# An evaluation of pension differentials between Chinese private and public sectors from perspective of protection and incentives over the lifecycle

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ABSTRACT

This article evaluates pension differentials between the private and public sectors over the lifecycle in urban areas in China. The aim of this study was to examine social equity in the face of increasing pressures to reform the current pension system. We developed a model to measure the protection and incentives offered by pensions in the private and public sectors. By incorporating educational cost, career length, retirement age, average years that a retiree receives the pension after retirement, growth rate of wages, interest rates and pension benefits into the model, we provided actuarial assessments. This study found that the current institutional arrangement of pensions in China results in negative incentives for workers in the public sector.



## 1. Introduction

Due to China's transition from a planned to a market-oriented economy since 1993 and on-going population aging, the institutional arrangement of pensions in the private sector (i.e. enterprises) shifted from the national insurance mode, following the model of the former Soviet Union, to a social insurance system in 1997, which included the compulsory mix of a defined-benefit-defined-contribution (DB-DC) system based on the experiences of Germany, Singapore and the World Bank.

After 17 years of operating a pension system in the private sector, pension benefits have decreased significantly and, since 2005, have been less than half (47%) of the social average wage (Ministry of Human Resources and Social Security of People's Republic of China, 2013). Meanwhile, the public sector pension system (including public institutions and administrative organs of government) did not experience any substantial changes until 2015. The original DB plan has been maintained since its establishment in the early stages of the founding of the People's Republic of China to obtain contributions from general taxes for retirees. According to China Human Resources and Social Security Yearbook 2015, the replacement rate of pension for public sector workers in 2005 is approximately 80% of social average wage (Ministry of Human Resources and Social Security of People's Republic of China, 2016), 33% higher than that of private sector workers in the same year. Although Chinese government has increased pension benefits for private workers significantly in the past decade, the replacement rates of pension for private and public sector workers in 2014, as percentage of social average wage, are about 43% and 56% respectively (Ministry of Human Resources and Social Security of People's Republic of China, 2016). The sectoral gap in pension benefits still exists.

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In the last 17 years, the pressure to reform the pension system for private sector workers has been increasing given the obvious gap in pension benefits between the private and public sectors. Recently, this issue has become a hot topic for two reasons. First, the private sector pension system has not essentially improved, and the gap in pension benefits between the private and public sectors is increasing. Second, the Chinese government changed public sector pension system in 2015 from a DB system to a contributory pension system similar to that in private sector. This shift resulted in discontent among employees, which in turn caused renewed dissatisfaction among public sector workers, as they were concerned about the possible reduction in pension benefits if they adopted a contributory pension system, as the private sector had.

A number of questions have arisen concerning the apparent disparity between the public and private sectors. Should the pension gap be regarded as an issue of inequity? Are public sector workers overpaid or underpaid compared with their private sector counterparts when wages and pensions are taken into account over the whole lifecycle? Should China augment the pension benefit for private sector workers, or should it moderate pension benefits for public sector workers to maintain the balance and impede the increasing gap? If it is necessary to have different pension benefits in different sectors, how can this difference be kept within reasonable bounds? These questions are of great concern for both scholars and policymakers. Against this backdrop, the goal of this study is to evaluate pension differentials between private and public sectors in China from the perspective of protection and incentives over lifecycle by providing actuarial evidence. No analyses of this issue, to our knowledge, have been undertaken in current literatures.

It is difficult to comprehensively assess pension differentials between the private and public sectors due to the close relationship between the pension and other components of compensation. The pension is regarded as an inevitable aspect of employee compensation, in addition to other components, such as wages, employment security, paid vacation, and health insurance benefits—all of which can impact an employee's behaviour.

It is incorrect to estimate pension differentials between private and public sectors by solely considering pension benefits. At the very least, wages and the cost of human capital inputs should be taken into consideration when examining the reasonability of pension differentials, as they contribute to ensuring proper incentives in different sectors. Additionally, the most important function of a pension, which is protecting the basic living expenses of retirees, should be considered when assessing the sectoral pension differentials. Furthermore, the same time point should be selected to obtain a consistent measure of the pension gap. Therefore, it is necessary to evaluate the pension differential between the private and public sectors from the perspective of protection and incentives over the lifecycle.

There is a relatively extensive theoretical and empirical literature on this subject. The relevant literature can be summarized into four broad categories: the protection role of minimum pension; the incentive effect of pension; the lifecycle analysis of pension, taking both wages and pension into account; the assessment of pension differentials.

Some of the literature has focused on the protection role of a minimum pension, either directly or indirectly, especially in the last decade (Chłoń-Domińczak & Strzelecki, 2013; Cifre, 2013; Grande & Visco, 2011; Kawiński, Stańko, & Rutecka, 2012; Pestieau, Dethier, & Rabia, 2011). The literature on incentive effects of pensions can be divided into two main strands: one focuses on incentive effect of pensions on saving, and the other focuses on incentive effect of pensions on retirement behaviour. The effect of pensions on savings is very controversial, and there is no consensus at present (Ang & Sen, 2011; Attanasio & Rohwedder, 2003; Bailliu & Reisen, 1998; Coronado, 2002; Draper, 1994; Euwals, 2000; Lesnoy & Leimer, 1985; Meguire, 2003; Obben & Waayer, 2011). Many international studies made the seminal theoretical and empirical contributions on social security and retirement decisions (Chan & Stevens, 2004; Diamond & Mirrlees, 1978; French & Jones, 2012; Manchester, 2010; Siddiqui, 1997). There are many articles focusing on pensions from the lifecycle perspective that take both wage and pensions into account (Haan & Prowse, 2014; Jiménez-Martín, Martín, & Alfonso, 2007; Kaupelytė & Dačiolienė, 2011; McCarthy, 2003). As for assessment of pension differentials, Asher and Bali (2015) created four dimensions to assess public pension systems in Southeast Asia. With regard to assessing China's pension differentials, researchers have done work on how to break the “double track” and integrate present pension systems to promote fairness and sustainability (Leckie, 2012; Wang & Zhu, 2011). Yong and Zhang (2013) conducted a comparison for income and need ratio of basic pension from horizontal and longitudinal perspectives and made a conclusion regarding China's pension fairness. Wang, Béland, and Zhang (2014) calculated the fairness coefficients of five types pensions in China based on pension income, contributions, demand, and generational gap and found that five old-age pensions across different schemes in China are absolutely unfair.

In all of the above studies, the authors provide evidence that the pension plays a role in both protection and incentives and it is impossible to obtain a proper assessment of pension differentials between the private and public sectors without jointly considering wages and pensions over the lifecycle. Pension systems have multiple objectives and analyses should consider the pension system as a whole (Barr & Diamond, 2009). Many factors such as educational cost, career length, retirement age, average years a retiree receives pension, growth rate of wages, interest rates, and pension benefits should be considered when evaluates pension differentials in different sectors.

There are three unique features of this study compared with previous contributions. First, we hold the view that each pension plan should simultaneously serve protection and incentive functions for participants. It is not appropriate to separate the roles of protection and incentives, and it is necessary to properly coordinate them. Second, pensions and wages are the two most important methods of compensation and have an obvious relationship. Considering the substitution effect between wages and pensions, the difference between human capital inputs and outputs and the comparability of the reference time point, it is necessary to include wages when accurately examining pension differentials across sectors over the lifecycle. Either merely making the comparison using cross-sectional methods or from the lifecycle perspective while excluding wages, is not accurate enough to assess the pension differential across sectors. Third, this study is, to our knowledge, the first Chinese study to