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Social security and retirement across the OECD

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ABSTRACT

Employment to population ratios differ markedly across Organization for Economic Cooperation and Development (OECD) countries, especially for people aged over 55 years. In addition, social security features differ markedly across the OECD, particularly with respect to features such as generosity, entitlement ages, and implicit taxes on social security benefits. This study postulates that differences in social security features explain many differences in employment to population ratios at older ages. This conjecture is assessed quantitatively with a life cycle general equilibrium model of retirement. At ages 60–64 years, the correlation between the simulations of this study's model and observed data is 0.67. Generosity and implicit taxes are key features to explain the cross-country variation, whereas entitlement age is not.

1. Introduction

There are large cross-country differences in employment to population ratios for those aged 20–75 years in the OECD. Turkey had the lowest ratio of 42% in 2006, whereas Norway had a ratio of 66%, the highest in the OECD. These differences are an order of magnitude bigger than differences found over a typical business cycle in OECD countries. These big differences are much larger for people more than 50 years, with the lowest ratio of 13% found in Hungary and the highest of 60% in New Zealand. These differences coexist with big cross-country differences in social security programs. Differences in three features seem to be particularly relevant. First, the replacement rate, a common measure of how generous social security is, was 38% in Mexico, but 124% in Turkey, in 2006. Second, entitlement age to social security benefits was 55 years in Australia but 67 years in Norway, a 12-year difference. Third, some countries allow individuals to work while collecting social security whereas other countries do not and yet others discourage it to some degree. Among the last group, the US imposes an "earnings test" that penalizes collecting social security while working. This study refers to these three features as generosity, entitlement age, and implicit taxes.

This study seeks to answer two questions. First, can differences in social security features account for large differences in employment to population at older ages? Second, what features of social security are key to accounting for those differences? The answer to these questions is key to assessing current policy debate on social security reform in aging societies. In addition, it is a good exercise to validate whether a standard model of policy evaluation can deliver cross-country differences in employment at older ages as we see in the data.

This study develops a life cycle general equilibrium model of retirement with a discrete labor choice, idiosyncratic labor income risk, and incomplete markets to answer these questions. The model is calibrated to match key statistics of

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the US economy and its social security system. The model captures much of the heterogeneity in employment by age found in the data. Therefore, differences in social security account for many differences in employment and simulating counterfactuals allows for an inquiry about the importance of each social security feature considered. Idiosyncratic labor income risk is a mechanism to produce individuals making different retirement decisions, as we see in the data. For example, in the US, 60% of 62-year-old people still work, as do 40% of 65-year-old ones, regardless of the discouraging effect of social security.

Differences in social security account for two-thirds of the differences in employment to population at ages 60–64 years and 65–69 years. Through variations in only three features of social security, the model is able to match the employment age profile for people aged more than 50 years for many countries in the sample. A useful way to summarize this finding is by using the coefficient of variation of employment to population across OECD countries by age. At ages 60–64 years, differences in social security account for most of the differences in employment to population as the coefficient of variation is 0.32 in the data and 0.38 in the model. Similarly, at ages 65–69 years, the coefficient is 0.49 in the data and 0.56 in the model. Using different assessments, this study consistently documents the crucial importance of the incentives that social security systems provide to people older than 50 years. Furthermore, the model predicts accurately average employment to population of the OECD relative to the US. At 60–64 years, the model predicts the same average employment to population relative to the US as in the data.

Among the three social security features explored, the study finds that variation in generosity and implicit taxes is able to account for most of the differences in employment to population at older ages, whereas differences in entitlement ages are not. This is an important result, as many policymakers believe that increasing retirement age is the way to increase employment to population ratios at older ages. Their intuition is backed up by many reduced form regressions, which find a positive correlation between entitlement ages and retirement ages; however, they do not take into account that savings decisions change dramatically under different social security systems. Reduced form regressions abstract from the fact that social security reforms in any country trigger changes in savings behavior that results in potentially different retirement behaviors. If a government decides to increase entitlement age, people increase savings over their life so they can retire when they plan to and not when they are told to. As a result, people's planned retirement age does not change that much. However, increasing entitlement age is definitely not a bad policy as it would not change retirement age substantially but it would reduce the fiscal burden governments face to finance PAYGO social security systems.

This study shuts down each feature of social security to US levels, one at a time, to explore which social security feature is more important. In addition, it simulates every possible combination of features to explore how they interact. The coefficient of variation of employment to population at ages 60–64 years in the model is 0.12 when there are differences in generosity or implicit taxes only. In contrast, the coefficient of variation is 0.07 when there are differences in the entitlement age only. Either generosity or implicit taxes account for one-third of the variability in the model alone but they explain most of the variability when they interact. In addition, the model accurately predicts labor supply profiles for many countries in the sample, capturing both variability and employment to population rates relative to the US.

This study is most related to two streams of the literature. The first follows Prescott (2004), who seeks to explain large differences in hours of work per person through differences in the average tax rates for G-7 economies through the lenses of the neoclassical growth model. Rogerson (2007) extends Prescott's (2004) analysis to study why Scandinavian countries work too much for their level of taxes. He finds that studying how these taxes are spent is key to understanding their effects on hours of work. Ohanian et al. (2008), following Prescott (2004), document trends and cross-country differences in labor supply in more detail, for a longer time span, and for as many OECD countries for which data is available. Taxes and transfers play a major role in accounting for trend and cross-country differences in hours of work per person. McDaniel (2011) studies the relative importance of differences in taxes and productivity to account for differences in hours of work per person, confirming that taxes remain the major source of variation in hours of work across countries. Similarly, Ragan (2013) studies the role of taxes and transfers, using a household model, to account for time use patterns across countries and time. She finds that public expenditure, in the form of provision of home goods, is key to understanding patterns of time use, in particular, home production time. This major effect of taxes and transfers on the use of time not only circumscribes to a representative household that lives forever. For example, Bick et al. (2014) document large cross-country differences in hours of work for married females using a static model of joint family labor decisions. They find that a model of family labor supply that takes into account the full nonlinearity of taxes, in particular second earner taxation, accounts for a substantial fraction of these cross-country differences. It is only a natural extension to study how specific features of social security impact the labor supply of older people.

Two recent studies are close to the present work. Wallenius (2013) analyzes the importance of PAYGO social security systems to understand life cycle labor supply across OECD countries. Her framework is based on previous work by Prescott et al. (2009) and Rogerson and Wallenius (2009), which develop a framework to deal with labor supply in the extensive and intensive margin all together. Wallenius's (2013) model is extended to include human capital accumulation decisions. She finds that differences in social security programs play a substantial role in accounting for cross-country differences in average retirement ages but they do not seem to play a significant role in accounting for differences in hours of work of prime age individuals. Relative to Wallenius (2013), this study introduces idiosyncratic labor income and mortality risks and is applied to a larger sample of countries. Another important difference is that this study focuses on changing features of social security rather than imposing one country's social security system on another. A growing body of literature identifies the importance of considering idiosyncratic labor income risks to study the role of taxes and transfers, to account