

A Theory of Labor Supply Late in the Life Cycle: Social Security and Disability Insurance

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Abstract

This paper studies the role of social security and tax and transfer programs for understanding cross-country differences in labor supply late in the life cycle. First, we use the Survey of Health, Ageing, and Retirement in Europe (SHARE) as well as the U.S. Health and Retirement Study (HRS) to document consistently the facts on labor supply late in the life cycle (over the age of 50). Second, we build a life-cycle, heterogeneous-agent model which incorporates important determinants of labor supply late in the life cycle. In particular, we model cross country differences in (i) the pay-as-you-go social security system – the benefit formula, accrual profile, early and normal retirement rules; (ii) income taxation; and (iii) the disability insurance rules. We use the model to assess how these institutions affect labor supply late in the life cycle as well as their relative importance in accounting for differences in labor supply among the European countries and between the United States and Europe. Third, we use our quantitative theory to conduct policy experiments that highlight the interaction between the various social programs in affecting labor supply decisions. Preliminary results indicate that the theory accounts well for the cross-country variation in labor supply documented in the data and that both features – social security and disability insurance – quantitatively play an important role.

JEL Classification: D9, E2, E13, E62, J22.

Keywords: Social Security, Disability Insurance, Labor Supply, Heterogeneous Agents, Life Cycle

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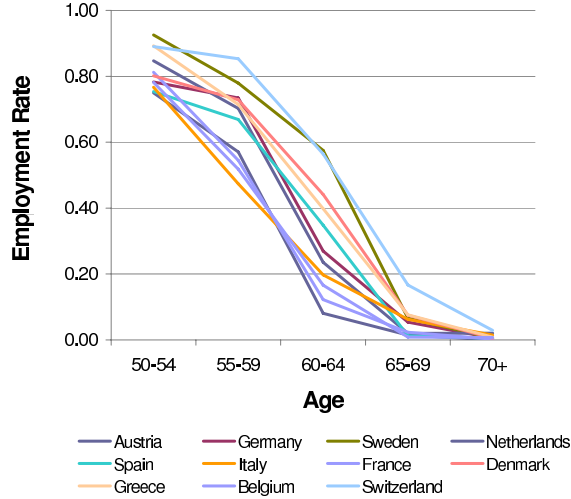
1 Overview

This paper studies the role of social security and tax and transfer programs for understanding cross-country differences in labor supply late in the life cycle. First, we use the Survey of Health, Ageing, and Retirement in Europe (SHARE)¹ as well as the U.S. Health and Retirement Study (HRS) to document consistently the facts on labor supply late in the life cycle (over the age of 50). Second, we build a life-cycle, heterogeneous-agent model which incorporates important determinants of labor supply late in the life cycle. In particular, we model cross country differences in (i) the pay-as-you-go social security system – the benefit formula, accrual profile, early and normal retirement rules; (ii) income taxation; and (iii) the disability insurance rules. We use the model to assess how these institutions affect labor supply late in the life cycle as well as their relative importance in accounting for differences in labor supply among the European countries and between the United States and Europe. Third, we use our quantitative theory to conduct policy experiments that highlight the interaction between the various social programs in affecting labor supply decisions.

The paper is motivated by the fact that there are substantial differences in the observed labor supply behavior within the European countries (as well as between the U.S. and Europe as a whole). For example, as illustrated on Figure 1, the differences in the employment rates of 11 European countries in the dataset increase dramatically late in the life cycle – while they are in the order of 15 percentage points for the 50-54 age group, they increase to 35 percentage points for the 55-59 age group and to 50 percentage points for the 60-64 age group. Similar patterns are also observed for mean annual hours worked. We focus on studying the effect of two government programs on labor supply late in the life cycle: social security and disability insurance. Social security rules – such as early (normal) age of entitlement, replacement rates, accrual rates, adjustment for early and late withdrawal, and the tax on work after retirement – affect labor supply decisions in an important way. Gruber and Wise (1999) and Blondal and Scarpetta (1999) provide empirical evidence on the importance of social security rules. The SHARE, however, allows us (i) to document the facts on employment consistently across several European countries, (ii) to focus on a much broader picture of labor supply late in the life cycle, and (iii) to correlate labor supply behavior with numerous other variables of interest, such as consumption, assets, (sources of) income, (sources of) transfers, and health. Several empirical studies (Gruber and Wise (1999) and OECD) have also pointed out to the potential importance of the so-called “early retirement programs” in Europe such as

¹The Survey of Health, Ageing, and Retirement in Europe (SHARE) is a European cross-national panel of micro data on health and socio-economic status which was administered in 2004, 2006, 2008, and 2010. It has data on 11 countries and more than 45,000 individuals aged 50 or older. The survey provides a balanced representation of various European regions: Scandinavia – Denmark and Sweden; Central Europe – Austria, France, Germany, Switzerland, Belgium, and the Netherlands; and Mediterranean – Spain, Italy, and Greece. Israel, the Czech Republic, and Poland were added in the 2006 wave. The dataset provides detailed longitudinal individual data on employment, (sources of) income, (sources of) transfers, health, consumption, and assets. It is harmonized with the U.S. Health and Retirement Study (HRS) and the English Longitudinal Study of Ageing (ELSA).

Figure 1: Employment Rate, Men, SHARE, 2004.



Source: Survey of Health, Ageing, and Retirement in Europe (SHARE), 2004.

disability insurance. The SHARE provides excellent individual cross-country data on disability rates, disability transfers, and individual health. Furthermore, the panel aspect of SHARE – it is available in 2004, 2006, and 2008 (with the 2010 wave scheduled to be released in 2011) – allows us to analyze the longitudinal effects of the disability insurance programs in Europe on labor supply.

We build a rich life-cycle, heterogeneous-agent model based on French (2005), Erosa, Fuster, and Kambourov (2009), Attanasio, Kitao, and Violante (2009), Imrohoroglu and Kitao (2009), Low, Meghir, and Pistaferri (2009), and Low and Pistaferri (2010). We model in great detail the social security and disability insurance programs in the United States and in the European countries in the sample. We model two education groups – college and non-college – since we observe important differences between these two groups in the data. Then, we use the model to quantify the importance of the social security and disability insurance programs in accounting for the observed cross-country differences in labor supply over the age of 50. Preliminary results indicate that the theory accounts well for the cross-country variation in labor supply documented in the data and that both features – social security and disability insurance – quantitatively play an important role.