

# Taxes, benefits, and careers: Complete versus incomplete markets<sup>☆</sup>

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## Abstract

An incomplete-market life-cycle model with indivisible labor makes career lengths and human capital accumulation respond to labor tax rates and government supplied non-employment benefits. We compare aggregate and individual outcomes in this individualistic incomplete-market model with those in a comparable collectivist representative-family model with employment lotteries and complete-insurance markets. The incomplete- and complete-market structures assign leisure to different types of individuals who are distinguished by their human capital and age. These microeconomic differences distinguish the two models in terms of how macroeconomic aggregates respond to some types of government supplied non-employment benefits, but remarkably, not to labor tax changes.

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## 1. Introduction

This paper is a companion to Ljungqvist and Sargent (2006) where we critically examined Prescott's (2002, 2004) thesis that high non-employment in Europe is caused by distortionary labor taxation. To explain cross-country differences in hours per capita in terms of cross-country differences in taxes on labor, Prescott

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used a growth model with a stand-in household and the assumption that the government transfers all tax revenues to the household. Prescott (2002) argued that the high labor supply elasticity responsible for these outcomes comes from his use of a “not-so-well-known” aggregation theory due to Hansen (1985) and Rogerson (1988) that assumes indivisible labor, employment lotteries, and perfect private consumption insurance. Lessons learned in Ljungqvist and Sargent (2006, p. 218) can be summarized in three basic messages:

1. Complete markets and employment lotteries are not necessary for Prescott’s conclusion about large employment effects of taxation.
2. A model with a high disutility of labor is a non-starter for explaining employment outcomes in Europe with its generous social insurance.
3. The tax explanation for European non-employment has counterfactual implications about the identities of the nonemployed and how they are financed.

The first message is encouraging for Prescott’s tax theory since his conclusion can be obtained in a complete-market model as well as in an incomplete-market model. Ljungqvist and Sargent (2006) show that a high disutility of labor and returning tax revenues via lump sum transfers to households are the critical ingredients for obtaining large employment effects of taxation, with or without complete markets. The second message is potentially a mortal wound to Prescott’s tax theory since it seems hard to motivate the omission of generous social insurance in any analysis of European employment. Ljungqvist and Sargent (2006) show how adding generous government supplied benefits to Prescott’s model causes employment to implode and therefore prevents the model from matching outcomes observed in Europe. The third message is based on an analysis of taxes and heterogeneous agents that will be a focus of the present paper that will also study non-employment benefits. But before turning to these analyses, it is useful to review two reactions so far to our investigation.

### *1.1. Reaction I: benefits should be considered*

Prescott (2006a) responded to our criticism of Prescott (2002, 2004) that he had ignored the all-pervasive welfare systems in Europe by including benefits in his analysis and drastically cutting his calibration for the European tax wedge. Specifically, he slashed the marginal labor tax in Europe from his earlier estimate of 50% (Prescott, 2004) to only 30% (Prescott, 2006a). That puts his estimate of the European labor tax wedge below his estimate of a U.S. labor tax rate of 33%, which Prescott held unchanged from his earlier analysis. His European tax cut allowed Prescott to introduce a non-employment benefit in Europe that amounts to a replacement rate of 29% on after-tax earnings.<sup>1</sup> Prescott (2006a) asserted that distinguishing between the aggregate effects of labor taxes and non-employment benefits is a ‘red herring’, a claim that we evaluate in Section 4.

### *1.2. Reaction II: individualistic life-cycle perspective is embraced*

Prescott (2006a) lauded our life-cycle framework with labor indivisibilities and saw it as the initiation of an important research program that will focus on the endogenous forces determining lengths of labor market careers.<sup>2</sup> Prescott et al. (2006) extended our analysis to include a particular intensive margin in agents’ labor supply. Rogerson and Wallenius (2007) also introduced human capital, but instead of making human capital endogenous as we do, they assumed that workers face an exogenously given age-specific labor productivity that is described by the empirically observed hump-shaped earnings curve over workers’ lifetime. Another key difference between these other papers and our present analysis is that we consider heterogeneity among agents,

<sup>1</sup>As suggested by our marginal condition (37), Prescott is swapping a high labor tax rate of 50% for a combination of a low labor tax rate of 30% and a meager replacement rate of 29% in the social insurance system, which implies an unchanged net wedge since  $(1 - 0.50) \approx (1 - 0.30) \times (1 - 0.29)$ .

<sup>2</sup>While Prescott’s (2005) original Nobel lecture was devoted to the complete-market representative-agent framework, the later version (Prescott, 2006b) contains an added section on “The Life Cycle and Labor Indivisibility.” As we emphasize, this alternative analytical perspective raises new issues and suggests new empirical facts to be explained.

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