

Modeling Labor Supply through Duality and the Slutsky Equation

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Abstract

In the present paper an analysis of the neo-classical optimization model with linear constraints is proposed. By introducing the dual problem it is shown that the solution to the maximization problem is also a solution to the minimization problem. The purely theoretical model proposes a universal equation, similar to the Slutsky equation as derived in the consumption theory. Another application is needed, different from the standard applications of the model found in economic literature. This application is based on the study of the change in optimality caused by the taxes on labor. The application focuses on how they impact the optimal decision in the choice between leisure and labor through the application of the classification derived on the basis of the Slutsky equation.

Keywords: labor optimization, duality, the Slutsky equation, tax rates

JEL classification: C61, C62, D11

1. Introduction

The model in the present paper elaborates the ideas as proposed by Ivanov (2005) and it differs from the traditional application of the optimization method, which solves for the maximum value of an n -argument function under a given constraint. The dual problem has been recently used by Menez and Wang (2005), who analyze the income and substitution effect under an increase in wage risk and uncertainty. Sedaghat (1996) provides a version of the Slutsky equation in a dynamic consumer's account model. In this paper, we propose an optimization model of labor supply by introducing the so called 'dual' problem and we find solutions for maximum and minimum. Aronsson (2004), Jones (1993), Sorensen (1999), and Werning (2007) treat the problem of optimal taxation and decision making in defining fiscal policies. Similar analysis are proposed by Bassetto

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