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Does unemployment insurance crowd out home production? [☆]

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ABSTRACT

In this paper, we study the interaction between self insurance and public insurance. In particular, we provide evidence on a negative correlation between unemployment insurance benefits and home production using the American Time Use Survey (ATUS) and the state-level unemployment insurance data of the U.S. The empirical results suggest that moving to a two times more generous state would decrease time spent on home production about 22% for the unemployed. Then, we pursue a quantitative assessment of this empirical finding using a dynamic competitive equilibrium model in which households do home production as well as market production. The model is able to generate the empirical facts regarding the unemployment benefits and home production. The fact that unemployment insurance benefits crowd out home production is interpreted as a substitution between the two insurance mechanisms against loss of earnings during unemployment spells.

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1. Introduction

This paper investigates whether households substitute public insurance (unemployment benefits) for self insurance (home production) against loss of earnings during unemployment spells. We do so in two steps. First, we provide empirical evidence on the relationship between the level of unemployment insurance and home production using the American Time Use Survey (ATUS) and the state-level unemployment insurance data. Second, we pursue a quantitative assessment of the documented empirical facts using a dynamic heterogeneous-agents model of unemployment with incomplete asset markets.

Although there is a vast literature on the effects of unemployment insurance policies on market production, surprisingly there is a lack of theory and evidence on the effects of unemployment benefits on non-market production (in particular, home production).¹ Recent studies provided evidence on the use of home production as a self insurance mechanism against

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¹ See Krueger and Meyer (2002) for a detailed survey on the labor supply effects of social benefit programs.

lost/reduced earnings.² Since unemployment benefit programs provide another channel of insurance against lost earnings, we would like to investigate whether people tend to substitute these two insurance mechanisms.

We use the American Time Use Survey (ATUS) and state-level unemployment insurance data to provide empirical evidence on the relationship between home production and the level of unemployment insurance. The empirical results suggest a negative correlation between the former and the latter. Quantitatively, moving to a two times more generous state would – on an average – decrease time spent in home production about 22% for the unemployed households. Moreover, we find that the results are sensitive to family composition. In particular, the negative relationship between the level of unemployment benefits and home production is stronger for single households compared to the married ones; and stronger for those who are married with a non-employed spouse compared to those married with an employed spouse. We interpret this result as a higher degree of substitutability between self insurance and public insurance (home production and unemployment insurance) for the households who have less additional insurance opportunities.

In order to pursue a quantitative assessment on the substitution between home production and unemployment benefits, we present a dynamic model featuring a heterogeneous-agents framework, where households receive idiosyncratic (un)employment shocks. The asset markets are incomplete so that households can partially insure themselves through a non-interest bearing asset. An additional channel of partial insurance is home production through which households can increase their home production to insure against lost earnings during unemployment spells. The model implies a reduction in average hours of home production in response to an increase in the level of the unemployment benefit. In particular, the average fraction of time spent in home production for unemployed is decreasing from 0.19 to 0.15 as we increase replacement rate from 0.20 to 0.90 gradually. We also replicate the benchmark empirical regression with the model data and find a coefficient of -0.25 , that is doubling benefits decrease time spent in home production by 25%. This result is consistent with the empirical one and in line with the interpretation of substitutability between self-insurance (home production) and public insurance (unemployment benefits) against loss of earnings during unemployment spells. The negative correlation between unemployment benefits and time spent in home production is stronger when agents' willingness to substitute home goods with market goods is greater and time is more intensely used in home production process. Similarly, it is weaker when risk aversion and time discount factor is greater. The fact that the time spent for home production and unemployment benefits are negatively correlated is sensitive to the elasticity of substitution between market goods and home goods. However, it is robust to various values of other parameters. The model also implies a negative relationship between the level of unemployment benefits and mean savings of households for a reasonable range of unemployment benefits which is consistent with the empirical counterpart documented in [Engen and Gruber \(2001\)](#).

Substitutability between various insurance channels has been studied in several papers. For instance, [Engen and Gruber \(2001\)](#) consider precautionary savings as a self insurance mechanism and examine the relationship between unemployment benefits and precautionary savings. They find that households increase their precautionary savings in response to a decrease in unemployment benefits. They interpret this as a substitution between self insurance and public insurance. [Cullen and Gruber \(2000\)](#) consider spousal labor supply as a self insurance mechanism against loss of earnings during unemployment spells. They find that unemployment insurance crowds out this kind of family insurance mechanism. [Cutler and Gruber \(1996a, 1996b\)](#) provide empirical evidence on the fact that households substitute public health insurance for the private one using the policy changes in the U.S. in 1980's and 1990's. [Chetty and Saez \(2010\)](#) emphasize the role of informal self insurance mechanisms such as loans from relatives and spousal labor supply – which does not generate moral hazard problem – in determining the optimal level of social insurance. Among others, [Golosov and Tsyvinski \(2007\)](#), [Attanasio and Rios-Rull \(2000\)](#), and [Ortigueira and Siassi \(2011\)](#) study the interaction between self insurance and public insurance and determine the optimal level of the latter under availability of various sources of self insurance. [Taskin \(2011\)](#) studies the optimal rate of unemployment insurance in an economy where agents do home production as well as market production and finds that the optimal rate of unemployment insurance is significantly smaller in the economy where agents are able to do home production. A number of papers including [Moffitt and Nicholson \(1982\)](#), [Meyer \(1990\)](#), [Card and Levine \(2000\)](#), and [Nakajima \(2011\)](#) study the effect of unemployment insurance policies on labor supply using the U.S. data. We contribute to the literature on the interaction between self and public insurance by studying home production and unemployment benefits in a dynamic competitive equilibrium framework, and providing empirical evidence on the interaction between these two insurance mechanisms.

The rest of the paper is organized as follows. We provide empirical evidence in [Section 2](#). In [Section 3](#), we present the dynamic model. In [Section 4](#) we discuss both the theoretical and quantitative results of the model together with some robustness checks. We finally conclude in [Section 5](#).

2. Empirical evidence

In this section we provide empirical evidence on the correlation between the level of unemployment insurance and home production.

² [Aguiar and Hurst \(2005, 2007\)](#) document that households increase home production during retirement. [Burda and Hamermesh \(2010\)](#) and [Taskin \(2011\)](#) document that households increase home production during unemployment spells.

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