



How important is intra-household risk sharing for savings and labor supply?



Salvador Ortigueira*, Nawid Siassi

Economics Department, Universidad Carlos III de Madrid, Calle Madrid 126, 28903 Getafe (Madrid), Spain

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ABSTRACT

While it is recognized that the family is a risk-sharing institution, little is known about the quantitative effects of this source of insurance on savings and labor supply. In this paper, we present a model where workers (females and males) are subject to idiosyncratic employment risk and where capital markets are incomplete. A household is formed by a female and a male, who decide on consumption, savings and labor supplies. In a calibrated version of our model we find that intra-household risk sharing has its largest impact among wealth-poor households. While the wealth-rich use mainly savings to smooth consumption across unemployment spells, wealth-poor households rely on spousal labor supply. For instance, for low-wealth households, average hours worked by wives of unemployed husbands are 8% higher than those worked by wives of employed husbands. This response in wives' hours makes up 9% of lost family income. We also study consumption losses upon an unemployment spell, precautionary savings and the crowding out effects of the public unemployment insurance program on the extent of risk sharing within the household.

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1. Introduction

There is a vast literature studying workers' precautionary responses to employment risk under incomplete asset markets. Understanding these responses is important for assessing both the aggregate implications of this type of risk and public insurance policies. For instance, recent empirical evidence on patterns of insurance against employment risk has shed light on how some sources of insurance are crowded out by public insurance. More specifically, Cullen and Gruber (2000) and Engen and Gruber (2001) use a panel of U.S. households to estimate the extent to which two sources of insurance – the accumulation of financial assets and spousal labor supply – respond to changes in the generosity of public unemployment insurance (UI). They find significant crowding out effects on both, a finding that is of paramount importance for public policy evaluation.¹

The workhorse model of idiosyncratic risk under incomplete markets, the Aiyagari (1994)–Huggett (1993) setup, assumes, however, the *bachelor household* formulation, where a single breadwinner partially insures against employment risk by accumulating precautionary wealth when working.² This model is thus silent about risk sharing within the household, an insurance arrangement recently emphasized in the empirical literature (see, e.g., Blundell et al., 2008; Shore, 2010).

* Corresponding author. Tel.: +34 91 624 9584; fax: +34 91 624 9329.

E-mail addresses: Salvador.Ortigueira@uc3m.es (S. Ortigueira), Nawid.Siassi@uc3m.es (N. Siassi).

¹ See, e.g., Attanasio and Rios-Rull (2000), Golosov and Tsyvinski (2007) and Chetty and Saez (2010) for analyses on the optimal level of social insurance when other forms of private insurance are also available.

² See Flodén and Lindé (2001), Marcet et al. (2007) and Pijoan-Mas (2006), among others.

In this paper we introduce within-household risk sharing into the Aiyagari–Huggett model and assess the extent and effects of spousal labor supply as insurance against unemployment shocks. In our model economy, households are made up by two workers who pool risks and make decisions on individual consumptions, labor supplies and joint savings. Risk sharing within the two-person household is assumed to be efficient. There is a firms sector producing a homogeneous good with capital and labor services. Finally, there is a government collecting labor income taxes and paying UI benefits to unemployed workers.

To answer our question on the insurance role of spousal labor supply, we use the model just outlined to conduct a number of simulations. We start by looking at the role of within-household risk sharing in shaping consumption losses upon an unemployment spell, a question that has received attention in the empirical literature. We then focus on wealth accumulation and compute the elasticity of the average household's assets-to-income ratio with respect to the generosity of UI. This elasticity provides us with a measure of both the precautionary saving motive and the crowding-out effect of UI on household savings, a measure that can be compared to recent empirical estimates. Then, we compute the added worker effect, namely, the response of wives' labor supply to husbands' unemployment spells, and the extent to which it is crowded out by UI. We assess both the change in hours of work by females brought about by an unemployment spell of their husbands, as well as the fraction of lost family income made up by this change in hours worked. All these effects of within-household risk sharing on spousal labor supply and on consumption losses are computed for households with different levels of wealth. Since risk sharing has its largest impact among low-wealth households, special attention is devoted to the group of households with asset holdings below two months of average income. This is the group that [Zeldes \(1989\)](#) termed as liquidity-constrained households, and that represented almost 20% of all U.S. households in 2001. Finally, and in order to put our findings in perspective, we compare the results of our simulations with those obtained in the workhorse model with bachelor households.

Our main findings show that within-household risk sharing has sizable effects. First, the implications of family insurance for consumption losses upon unemployment are large, especially for low-wealth households. We find that the average liquidity-constrained male lacking insurance from the family (bachelor household) suffers a drop in consumption of 30% upon a job loss, while the same male suffers a drop of only 8% when given access to family insurance (two-person household). When we compute the fraction of household income loss that transmits to household consumption loss for liquidity-constrained households, we find 35% under no family insurance, and 17% with family insurance. Second, our two-person household model generates less precautionary savings than the bachelor model, and comes closer to replicating empirical estimates of the elasticity of the average household's assets-to-income ratio with respect to UI. [Engen and Gruber \(2001\)](#) estimate this elasticity to be -0.28 . When calibrated to match key average values for the US economy, our two-person household model yields a value for this elasticity equal to -0.39 , while the bachelor household model yields -0.70 . This finding suggests that abstracting from risk sharing at the level of the household introduces an important bias in this elasticity. Third, we find that spousal labor supply is a significant source of insurance for wealth-poor households, while it is not for the wealth-rich. For instance, among liquidity-constrained households average hours worked by wives of unemployed husbands are 8.6% higher than those worked by wives of employed husbands. This response in wives' hours makes up on average 9.6% of lost family income.

We include two applications and one extension of our model. First, we compute the value of intra-household risk sharing. As suggested by our results above, this value is higher for individuals in low-wealth households. For example, the value of family insurance to an unemployed individual with an employed spouse and no assets represents more than 5% of per period consumption of a similar individual with no family insurance. This value decreases with the level of wealth. Second, we study the consequences of family insurance for optimal UI and find that it is one of its key determinants. We compute optimal UI for households with different wealth levels with and without intra-household risk sharing, and find that family insurance creates a wedge in optimal replacement rates that is decreasing in the level of wealth. For instance, the optimal replacement rate for the average two-person household with no assets is 15%, while this rate is 60% for a similar household lacking family insurance. This wedge closes at wealth levels equal to six months of average income. As an extension, we introduce marital shocks in our benchmark model so that married and single households co-exist. Within this framework we study the robustness of our results on intra-household risk sharing, the implications of marital risk on households' savings, and compute consumption losses upon employment and/or marital shocks.

The literature on uninsurable idiosyncratic income risk with the bachelor household formulation is too large to summarize here. A recent example is the paper by [Low et al. \(2008\)](#), where individuals (they focus only on males) are subject to a rich array of idiosyncratic shocks differing in their available insurance opportunities. [Kotlikoff and Spivak \(1981\)](#) is one of the first papers in economics to study the role of the family as provider of insurance. They focus on longevity risk and show that within-household risk sharing closes much of the utility gap between no annuities and complete annuities. A more recent exception to the use of the bachelor household formulation is the work of [Attanasio et al. \(2005\)](#), who present a partial equilibrium, two-person household model to assess the response of female labor market participation (extensive margin) to idiosyncratic earnings risk within the family. [Heathcote et al. \(2010\)](#) use a life-cycle, two-person household model to study the welfare implications of recent changes in the U.S. wage structure, namely, the rising college premium, the narrowing wage gender gap and the increasing wage volatility. They find that, on average, recent cohorts of households enjoy welfare gains, as the new structure of wages translates into higher educational attainment. [Heathcote et al. \(2009\)](#) study the rise in women's participation within a two-person household model with household bargaining.

The remaining of the paper is organized as follows. [Section 2](#) describes the economic environment, defines the steady-state equilibrium, and presents some properties of decision rules for two-person households. The model economy is

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