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Household Responses to Individual Shocks: Disability and Labour Supply

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Abstract

What are idiosyncratic shocks and how do people respond to them? This paper starts from the observation that idiosyncratic shocks are experienced at the individual level, but responses to shocks can encompass the whole household. Understanding and accurately modeling these responses is essential to the analysis of intra-household allocations, especially labour supply. Using longitudinal data from the Canadian Survey of Labour and Income Dynamics (SLID) we exploit information about disability and health status to develop a life-cycle framework which rationalizes observed responses of household members to idiosyncratic shocks. Two puzzling findings associated to disability onset motivate our work: (1) the almost complete absence of ‘added worker’ effects within households and, (2) the fact that single agents’ labour supply responses to disability shocks are larger and more persistent than those of married agents. We show that a first-pass, basic model of the household has predictions about dynamic labour supply responses which are at odds with these facts; despite such failure, we argue that these facts are consistent with optimal household behaviour when we account for two simple mechanisms: the first mechanism relates to selection into and out of marriage, while the second hinges on insurance transfers taking place within households. We show that these mechanisms arise naturally when we allow for three features: a linkage between human capital accumulation and life-cycle labour supply, endogenous marriage contracts and the possibility of time transfers between partners. We also report evidence that the extended model with endogenous marriage contracts can fit divorce patterns observed in Canadian data, as well as correlations between disability prevalence and marital status, providing an ideal framework to study intra-household risk-sharing with limited commitment.

JEL Code: E20, I10, H31, J12

Keywords: Idiosyncratic Risk, Disability, Household Behaviour, Marriage, Insurance

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Executive Summary

This paper provides a 'snapshot' of the labour supply responses of singles and couples to health shocks. By exploiting information about disability onset, severity and persistence, we are able to identify the long-term responses of disabled people as well as their spouses'. Our analysis provides micro-level information about the effects of idiosyncratic shocks and about the way people respond to them.

We start from the observation that idiosyncratic shocks are experienced at the individual level, but responses to shocks encompass the whole household. We then provide evidence that the dynamic labour supply responses to disability shocks vary significantly by marital status; similar differences are also observed in the dynamic wage and income responses. (We also find additional differences by gender group, which are the object of some separate research).

We argue that understanding and accurately modeling these responses is essential to the analysis of intra-household allocations, especially labour supply. Our analysis is based on longitudinal data from the Canadian Survey of Labour and Income Dynamics (SLID): the large amount of information about disability and health status in this data set is used to develop a life-cycle framework which rationalizes observed responses of household members to idiosyncratic shocks. In particular we focus our attention on two puzzling findings associated to disability onset: (1) the almost complete absence of 'added worker' effects within households and, (2) the fact that single agents' labour supply responses to disability shocks are larger and more persistent than those of married agents. We show that a first-pass, basic model of the household has predictions about dynamic labour supply responses which are at odds with these facts; one possible explanation for the poor empirical performance of the 'basic' model is its lack of flexibility in modeling idiosyncratic risk: however, we show that simply adding an explicit disability shock process to the basic AR(1) model of idiosyncratic risk does very little to rationalize the observed dynamic responses of singles and married individuals. Despite such failure, we argue that the observed responses are consistent with optimal household behavior when we account for two simple mechanisms: the first mechanism relates to selection into and out of marriage, while the second hinges on insurance transfers taking place within households. These two mechanisms emerge naturally when: (1) the wage process is dynamically linked to labour supply by allowing human capital accumulation through work experience (like in Shaw, 1989, or Michelacci and Pijoan-Mas, 2008), which introduces dynamic considerations linking disability onset, life-cycle labour supply and wages, and makes human capital an important vehicle of consumption smoothing over the life-cycle; (2) households can provide insurance through transfers of time, as well as consumption. In the paper we provide substantial evidence that supports the empirical relevance of both these mechanisms: in particular we show that increased transfers of time tend to occur when disability shocks hit, and that endogenous marriage sorting goes a long way in explaining divorce rates and disability report rates by marital status. More importantly, the model with dynamic human capital accumulation and intra-household transfers of 'time' generates labour supply responses which are extremely close to the ones observed for both singles and couples.

We also investigate how the 'marriage' contract is chosen to accommodate the possibility of idiosyncratic shocks and to provide insurance which is unavailable to single agents. We find that main-earners (mostly husbands) tend to transfer consumption to second-earners (mostly wives) who trade additional consumption insurance for time transfers in periods of need. The

latter transfers serve as an important mechanism within the household, as they allow the main earner to smooth labour supply and achieve higher levels of human capital and earnings. However, in a limited commitment environment, we also show that incentives to renegotiate (and possibly terminate) the contract can arise over the life-cycle because of the history of idiosyncratic shocks: in particular, we show that the relative value of marriage changes for men and women as they age. Men who are at high risk of receiving idiosyncratic shocks value marriage early in life, when they are poor in assets and human capital, while all men value marriage at the late stages of their working life as they approach retirement and periods of high health risk. Accordingly, sharing and allocations within households change, in some cases non-monotonically, over the working life. These changes, typically unobserved in micro data, play an important role in explaining individual and household responses to shocks, and labour supply decisions, over the life cycle.

Finally, we report evidence that the extended model with endogenous marriage contracts can fit divorce patterns observed in Canadian data, as well as correlations between disability prevalence and marital status, providing an ideal framework to study intra-household risk-sharing with limited commitment.