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Incomplete Markets, Transitory Shocks, and Welfare[1]

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Although equilibrium allocations in models with incomplete markets are generally not Pareto-efficient, it is often argued that quantitative welfare losses from missing assets are small when time horizons are long and shocks are transitory. In this paper we use a computational analysis to show that even in the simplest infinite horizon model without aggregate uncertainty welfare losses can be substantial. Furthermore we show that in this model welfare losses from incomplete markets do not necessarily disappear when one considers calibrations of the model in which agents become very patient. We argue that when the economic model is calibrated to higher frequency data, the period persistence of negative income shocks must increase as well. In this case the welfare loss of incomplete markets remains constant even as agents' rate of time preference tends to one. *Journal of Economic Literature* Classification Numbers: D52, D58, D60. © 2001 Academic Press

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1. INTRODUCTION

Although competitive equilibria are generally not Pareto-efficient when financial markets are incomplete, in the applied literature it is often argued that incomplete markets do not matter and that the welfare losses due to missing financial securities are quantitatively small. This argument comes in two parts. First, following Lucas' observation (1987) on the welfare costs of business cycles, it is argued that the overall welfare gains from risk sharing are quantitatively small. A second argument states that in a model with transitory shocks and patient agents a single bond often suffices to realize most of the potential welfare gains from risk sharing and that the welfare gains from additional assets are very small (see, e.g., Levine and Zame, 2000).

Comparing the welfare agents achieve in autarky to the complete-markets welfare in a realistically calibrated model where agents have von-Neumann–Morgenstern utility with relatively low risk aversion, one readily notices that the differences are often small in terms of wealth equivalences. However, this observation crucially depends on the specification of preferences and endowment shocks (see, e.g., van Wincoop (1993)), for examples where there are substantial gains from risk sharing). In models where even the welfare gains from perfect risk sharing are small, it is obvious that market incompleteness cannot have large effects on welfare, because the autarky welfare provides a lower bound on any equilibrium welfare. In determining the quantitative welfare effects of incomplete markets one therefore must view welfare losses from missing assets relative to the welfare achieved in autarky. A more interesting question is then to determine what percentage of the total welfare gains from perfect risk sharing can be realized with a limited number of assets (see Magill and Quinzii, 2000, for a similar argument).

We consider a simple infinite-horizon model with 2 types of agents and with a single bond.[3] Using Heaton and Lucas' calibration (1996) of idiosyncratic shocks to yearly U.S. data we show that with a single bond there are likely to be substantial gains from additional financial assets. Using the algorithm developed in Judd *et al.* (2000) we compute (approximate) incomplete-markets equilibria. We consider the effect of agents' risk

[3]An important issue for welfare losses in incomplete markets is the number of assets, their dividends, and the specification of agents' endowments. It is an important but nearly unmanageable empirical task to correctly specify the stochastic process of existing assets' dividends and individual endowments. Since we focus on the long-time-horizon aspect of the problem and ask how much borrowing is needed for agents to be able to smooth out transitory shocks we consider an incomplete markets economy with a single bond. It is currently computationally too burdensome to consider models with more than 1 asset and very patient agents.