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Journal of International Money and Finance

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Intranational risk sharing and its determinants[☆]



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ARTICLE INFO

Article history:

Available online 31 October 2014

JEL classifications:

E21

F15

R11

Keywords:

Consumption risk sharing

Welfare

City

China

ABSTRACT

We develop a model of risk sharing in which agents can pool their consumption risks in both national and local markets and then smooth the remaining consumption fluctuations with credit markets. Estimating the model with a unique dataset on Chinese cities, we find that the participation rate in risk sharing is low, but upon entering the market, agents tend to pool risk in the national market rather than the local market. The welfare gain from reaching the perfect consumption risk sharing at the national market could be as large as 4% of the perpetual deterministic consumption flow. However, conditional on the estimated degree of risk sharing participation, the welfare gain from pooling all income risks at the national market is only 0.1%. Empirical analysis on the determinants of city risk sharing reveals that the degree of risk sharing depends on initial economic development and share of GDP contributed by tertiary industry.

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[☆] We thank Menzie Chinn (the editor), Qianying Chen, Kang Shi, Cedric Tille, Shang-Jin Wei, Eric van Wincoop, Jenny Xu, Xinpeng Xu and conference and seminar participants in Asian Meeting of Econometrics Society 2011, Chinese Economic Association in North America 2010, The First Annual International Conference on the Chinese Economy organized by the Hong Kong Institute for Monetary Research, Fudan University, Georgia Institute of Technology, Hong Kong University of Science and Technology, Shanghai Jiao Tong University and Shanghai University of Finance and Economics for helpful comments and suggestions. We are grateful to the financial support from the National Natural Science Foundation of China (NSFC, Projects No. 71301103 and 71403058) and the High-end Academic Research Project of Financial Research Center, Fudan University. Wai-Yip Alex Ho was a manager at the Hong Kong Monetary Authority at the time that this paper was written. The views and analysis expressed in this paper are those of the authors, and do not necessarily represent the views of the Hong Kong Monetary Authority.

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1. Introduction

Risk sharing theory predicts that in the absence of transaction and contract enforcement costs, perfect consumption risk sharing can be achieved. However, empirical findings show that risk sharing is not perfect among nations internationally or among regions intranationally because agents encounter nontrivial frictions for participating in risk sharing (e.g. Obstfeld, 1994; Crucini, 1999; Athanasoulis and van Wincoop, 2001; Crucini and Hess, 2000 and etc). The literature generally assumes that agents minimize their consumption volatility through sharing the risks at the highest aggregate level and then smooth the remaining risks intertemporally via saving. Nevertheless, even if participation in risk sharing is not perfect at the highest aggregated level, it does not prohibit agents to share risk at lower or local levels. This paper explores the spatial dimension of consumption risk sharing, which is a less adventured avenue.

In this paper, we build a model in which agents first choose a fraction of resources for participating in risk-sharing and then allocate these resources between the national and local markets to pool risk. Agents can smooth the remaining consumption fluctuations through saving and dis-saving. With this model, we do not only know the level of risk sharing that a representative agent chooses but also with whom the agent pools risks by identifying whether the agent pools risk nationally, locally or both. The degree of *complete income pooling* (the percentage of resources devoted to risk sharing in the national market) informs the extent that welfare can be improved by pooling risk in the national market. We further exploit a large cross-section of cities to identify the determinants of risk sharing and quantify their welfare effects.

The empirical analysis is based on a newly compiled dataset on retail sales, GDP and other information of 196 Chinese prefectural-level cities (including their associated counties and rural areas) and 24 provinces for the period of 1990–2010. We show that the participation of cities in risk-sharing arrangements is limited, and hence only about 40% of the variance of consumption growth across cities is attributed to the aggregate component.¹ Nonetheless, once they choose to pool risk, they tend to pool risk in the national market rather than in the local market: there is no conclusive evidence of domestic border effects for risk sharing. Next, we show that cities with initial higher GDP, smaller share of non-tradable goods in GDP and higher ratio of fiscal expenditure to GDP feature a higher degree of risk sharing subsequently. Finally, the welfare analysis indicates that Chinese households are willing to pay about 4% of their perpetual consumption flow in exchange for a perfect risk-sharing arrangement. Conditional on the estimated degree of risk sharing, the welfare gain from pooling all income risk at the national market is only 0.1% of their perpetual consumption flow.

Our study on intranational risk sharing at city-level in China provides insights on three international issues. First, it sheds light on the literature on international risk sharing. The degree of consumption risk sharing across Chinese provinces is comparable to that across countries (Boyreau-Debray and Wei, 2005; Xu, 2008; Ho et al., 2010; Curtis and Mark, 2011; Du et al., 2011; Chan et al., 2014; Lai et al. 2014). Since the barrier to risk sharing across provinces in our model is parallel to that across countries along the international dimension, our work provides insights on how a sub-national entity, such as a city, can share consumption risks within its nation and with other entities in other countries. Moreover, our work gives an idea on how a country can promote its sub-national entities sharing consumption risks with the global market instead of the national market.

Second, it is interesting to examine the consumption risk sharing in China because China shares many important features with emerging market economies such as structural transformation from agriculture to manufacturing and service (Restuccia et al., 2008), structural reform of state enterprises to private enterprises (Megginson and Netter, 2001), low infrastructure stock (Canning, 1998) and under-developed financial system (King and Levine, 1993). First, the structural transformation in China from agriculture to manufacturing and services could affect the trading cost of product. For instance, non-tradable goods produced in tertiary industry may prevent local economy from sharing risk with

¹ In more advanced economies with better risk-sharing arrangement, 68–72% for Canada and 78–92% for U.S. of the variance of consumption growth across cities are attributed to the aggregate component (Crucini, 1999).

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