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Financial system design and liquidity provision by banks and markets in a dynamic economy

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Abstract

This paper contributes to the literature on financial system design by comparing markets and banks in a dynamic economy. Investors trade off their liquidity needs against the high returns on illiquid investments. Both the banking system and the market can provide partial liquidity insurance to investors. We consider full market participation as well as limited market participation. We demonstrate that the full-participation market with intergenerational trading can provide more liquidity than one without. Insurance is provided through wealth transfer across generations, instead of cross-subsidization across contemporaneous types as is the case in the finite economy. Given a full-participation market that allows trading across generations, only banks with initial capital can provide additional liquidity. In a limited-participation market with uncertainty about trading types, an intergenerational bank (with or without initial capital) provides additional insurance to investors. The need for trade is eliminated. Finally, if there is no uncertainty about trading types, then an intergenerational bank with initial capital eliminates the need for trading and improves welfare for all. An intergenerational bank without initial capital improves welfare for people who do not trade.

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1. Introduction

The relative merits of financial intermediaries and financial markets in providing liquidity have been examined in an extensive recent literature.[1] In their asset allocation decisions, investors trade off their liquidity risk against the high return of long-term investments. Both markets and banks can provide some insurance to individual investors by aggregating liquidity risk. Pioneering work by Bryant (1980) and Diamond and Dybvig (1983), and extension by Jacklin (1987), Bhattacharya and Gale (1987), and others, have been the starting point of an important information-based literature on banking and liquidity. The relative importance of banks and markets as liquidity provision mechanisms has been a central question in this literature.

Diamond and Dybvig (1983) model a two-period economy in which ex ante identical agents either consume in period one or in period two and the productive technology is an illiquid two-period investment. Meanwhile, the Arrow–Debreu type of insurance contracts are not available. They show that demand deposits with banks are able to provide partial liquidity insurance by centralizing the asset holding and risk bearing and thus subsidizing the consumers with high liquidity needs. Jacklin (1987) points out that once the trading is introduced, banks cannot provide more liquidity than the market does, questioning banks' importance. Haubrich and King (1990), von Thadden (1997) and Hellwig (1994) also present models that cast doubt on the liquidity role of banks in the presence of financial markets. Diamond (1997) shows that if there is only limited participation in the financial market, banks and markets coexist and influence each other's activities. Under various specified conditions, banks are shown to improve the consumption to the full-participation market level or higher.

The above articles have all used a single generation static model of intertemporal liquidity risk. These models have been recently extended to dynamic overlapping generations (OLG) economies. Qi (1994), Bhattacharya and Padilla (1996) and Fulghieri and Rovelli (1998) have studied the problem of designing and implementing ex ante optimal stationary allocations in dynamic OLG economies. Qi (1994) examines banks' liquidity service and stability in an overlapping generations version of Diamond and Dybvig model. He concludes that the intergenerational transfers enable an intergenerational bank to achieve interest rate smoothing and provide depositors with liquidity insurance without Diamond and Dybvig's assumption of no side trades. Instead, the need for side trades is removed by

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[1] There has been a lot of academic interest also in the broader question of the design of financial systems, in particular the role of contracts, institutions and markets. See Allen and Gale (2000, 2004) and Thakor (1996) for recent surveys on this topic. The differences in the design of financial systems in different countries, especially in the relative importance of banks and markets, have been of particular interest to policy makers and academics (See, for example, Allen and Gale (1995, 2000, 2004) and Levine (2002)). The correlation of the degree of development of the financial system and the level of economic development has also spawned an extensive literature (See Demirguc-Kunt and Levine (2001) and Thakor (1996)).

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