the money market fund would complete the circle, since household savers would own shares to these funds. Martin Hellwig (1994, 1995) has been one of the early voices to comment on the trend of lengthening intermediation chains and the possible consequences of such lengthening chains for financial stability.

Of course, the illustration in Figure 3 is a simple example of potentially much more complex and intertwined relationships. For instance, the same security could be used several times in repo lending as the lender turns round and pledges the same security as collateral to another lender (the practice known as "re-hypothecation"). In that case, the chain would be much longer and more involved. Nor does the illustration take account of off-balance sheet vehicles such as structured investment vehicles (SIVs) or ABCP conduits that the commercial bank might set up in order to finance the direct holding of CDOs and other asset-backed securities.

What is noticeable from the institutions involved in Figure 3 is that they were precisely those institutions that were at the sharp end of the financial crisis of 2007 and 2008. Subprime mortgages cropped up in this chain, and the failure of Bear Stearns and Lehman Brothers owed to problems in the smooth functioning of this chain. This realization begs the question of what advantages can be gained by such long intermediation chains.

One possible argument might be that securitization enables the dispersion of credit risk to those who can best bear losses. We have already commented on the apparent failure of this particular mechanism, but we will return to examine it more closely below. Leaving that to one side, another possible justification for long intermediation chains is that there is an inherent need for maturity transformation in the financial system because ultimate creditors demand short-term claims, and that the process of stringing together long lending relationships make it easier to perform the overall maturity transformation role.

There are well known arguments for the desirability of short-term debt for incentive reasons - in particular in disciplining managers. Calomiris and Kahn (1991) have argued that demand deposits for banking arose naturally as a response by the bank's owners and managers to commit not to engage in actions that dissipate the value of the assets, on pain of triggering a depositor run. Diamond and Rajan (2001) have developed this argument further, and have argued that the coordination problem inherent in a depositor run serves as a commitment device on the part of the depositors not to renegotiate in the face of opportunistic actions by the managers. When the bank has the right quantity of deposits outstanding, any attempt by the banker to extract a rent from depositors will be met by a run, which drives the banker's rents to zero. Foreseeing this, the banker will not attempt to extract rents. In a world of certainty, the bank maximizes the amount of credit it can offer by financing with a rigid and fragile deposit-only capital structure.

However, in both Calomiris and Kahn (1991) and Diamond and Rajan (2001), the focus is on traditional bank deposits, where the creditors are not financial intermediaries themselves. However, what is notable about the financial boom and bust cycle witnessed recently is that the largest fluctuations in ultra short-term debt has not been associated with the liabilities to retail depositors, but rather with the liabilities to other financial intermediaries. Adrian and Shin (2009) compare the stock of repurchase agreements of US primary dealers plus the stock of financial commercial paper expressed as a proportion of the M2 stock. M2 includes the bulk of retail deposits and holdings in money market mutual funds, and so is a good proxy for the total stock of liquid claims held by ultimate creditors against the financial intermediary sector as a whole. As recently as the early 1990s, repos and financial CP were only a quarter of the size of M2. However, the total rose rapidly reaching over 80% of M2 by the eve of the financial crisis in August 2007, only to collapse with the onset of the crisis.