

### Box 3.1. Risks Associated with New Forms of Financial Intermediation

*Changes in structures of financial intermediation over the decade have considerably expanded access to finance and contributed to social welfare. The changes led to new forms of bank intermediation, including the rise of the shadow banking system and innovative products. Yet, some of the changes—associated with the attributes of concentration, interconnectedness, complexity, and opacity—have come with risks.*

The greatest change to intermediation in the history of finance has been spurred by advances in information technology (IT) that have enabled, among other things, better and faster processing of information and trading in a wider range of financial instruments. Over the past 10 years, these changes have allowed more financial intermediation to take place in markets instead of through bilateral negotiations. The more market-based system has in turn generated new or expanded forms of financial intermediation: banks deriving income from nontraditional sources and lending to and borrowing from nonbank financial institutions, expanded intermediation by nonbanks, and new financial products like private-label asset-backed securities and customized derivatives.

#### *Nontraditional Banking and Associated Risks*

Bank business models have traditionally been built on information obtained from repeated interactions with customers, or “soft” information. Technology and transparency have shifted banks toward the use of hard information (e.g., credit registries or standardized scoring) and “arm’s length” transactions (IMF, 2006) for their traditional deposit and lending business, and toward more fee-based business (Boot and Thakor, 2000). Thus, transactions that were based on customer relationships lost their natural advantage, and banks came to face greater competition. The tilt in intermediation toward nontraditional banking has entailed rising systemic risks:

- *Size and complexity.* Soft information benefits smaller, simpler banks. Hard information enables banks to become larger and more complex (Stein, 2002). Theoretically, large banks could benefit from economies of scale and scope. Yet the

evidence on such economies is mixed (De Nicolò, Boyd, and Jalal, 2009; Demsetz and Strahan, 1997; Saunders, 2000). Large and complex banks are hard to resolve, which increases the impact of crises (Hoenig and Morris, 2011; Ueda and Weder di Mauro, 2012). Also, when bank assets are tradable, banks can change risk profiles rapidly or structure their assets in a way that conceals risks from outside parties (Myers and Rajan, 1998). These factors challenge the ability of market discipline, corporate governance, and supervision to reduce potential systemic risks.

- *Concentration.* As banks grow, in part through mergers and acquisitions, the banking industry could become more concentrated, which tends to increase profits and could reduce the incentives to take risk. However, higher concentration could also induce banks to charge higher loan rates, which in turn could lead to higher risk taking by banks’ borrowers, thus increasing systemic risk (Allen and Gale, 2004; Boyd and De Nicolò, 2005). Concentration can also make institutions too important to fail if resolution regimes are inadequate, with detrimental effects on financial stability.
- *Interconnectedness.* With a wider universe of tradable claims, banks become more connected with other banks and with nonbanks. Interconnectedness improves opportunities for diversifying risks, allows a wider range of transactions, and facilitates a more globally integrated financial system (Wagner, 2011; Freixas and Holthausen, 2005). Yet increased interconnectedness can also lead to higher systemic risk. Interconnected systems spread small and idiosyncratic shocks but can be fragile when subjected to large, systemic shocks, particularly when banks underestimate their likelihood (Allen and Gale, 2000; Acemoglu, Ozdaglar, and Tahbaz-Salehi, 2012; Gennaioli, Shleifer, and Vishny, forthcoming).
- *Procyclicality.* When bank assets are tradable, it is easier for a bank to alter the size of its balance sheet and leverage. This exposes the bank to boom-bust financial cycles, which can be amplified by mark-to-market rules (Shleifer and Vishny, 2010; Plantin, Sapra, and Shin, 2008; IMF, 2009). The shedding of assets may trigger fire sales and

Note: Prepared by Lev Ratnovski.

**Box 3.1 (continued)**

credit freezes, with significant negative implications for macroeconomic outcomes and financial stability. Depressed asset values through fire sales pose a contagion risk in that they may lead to additional margin calls and losses for other institutions, including previously unaffected firms.

- *Tail risk.* With more tradable assets and less traditional banking business, banks can accumulate large, skewed exposures to various risks. In a common pattern before and, in some cases, during the global crisis, banks used structured investments and proprietary trading to generate additional return (“alpha”) at the cost of a rise in “tail risk”—the risk of a rare but catastrophic event (Acharya and others, 2010; Boot and Ratnovski, forthcoming). A realization of such risk is likely to bring about long-lasting bank distress (Brunnermeier, Dong, and Palia, forthcoming).
- *Wholesale funding and market discipline.* The providers of wholesale funding are often senior creditors to a bank who can maintain lending to prop up a troubled bank, but they can also rapidly cut it off if the riskiness of the bank becomes excessive or its value falls below a certain threshold (Gorton and Metrick, 2012; Huang and Ratnovski, 2011). An abrupt funding freeze may complicate a policy response, particularly if such an event affects multiple banks—that is, a systemic liquidity event. Lack of disclosure and transparency (particularly with respect to exposures taken by the bank) can undermine the market discipline that should be applied by those providing wholesale funding and by equity investors. Market discipline can be further compromised if the losses of most creditors of distressed banks are cushioned by government interventions.

***Nonbanks and New Financial Products***

Another change in the financial sector structure has been the reemergence of a variety of nonbank intermediaries, including money market funds, major broker-dealers, and various off-balance-sheet vehicles sponsored by banks (Claessens and others,

forthcoming). Collectively, credit intermediation involving entities or activities by nonbanks (whether by maturity or liquidity transformation or leverage) has become known as the shadow banking system.<sup>1</sup>

The breakdown in credit markets in 2008 revealed how this type of financial intermediation can contribute to systemic risks. The interconnection of nonbanks and banks led to contagion across both sets of entities as uncertainty caused funding markets to seize up. Reliance on very-short-term funding resulted in the private creation of money-like financial instruments that were subject to runs once market participants started seeing the instruments as risky instead of safe. The resilience of nonbanks—notably U.S. investment banks—was hampered by insufficient capital and there were no appropriate procedures for access to liquidity support or a set of rules for resolution (Duffie, 2010; Covitz, Liang, and Suarez, forthcoming). Banks had used nonbanks to move their own risks off the balance sheet—for instance by establishing separate special-purpose vehicles (SPVs) and providing them with insurance facilities to cover credit and liquidity risk—but had to take back those risks for reputational reasons during the crisis. Banks retained the residual risks that their customers eschewed (for instance, the risky tranches of structured instruments), while they sold off the safer tranches (Pozsar, 2011). As a result, banks had assumed too much residual risk (Gennaioli, Shleifer, and Vishny, forthcoming).

New insurance and investment products (like exchange traded products, customized derivatives, and synthetic debt obligations) have become easy to construct with greater availability of data and better information technology. Some of these new products can be complex and opaque; therefore, counterparties may not understand the risks that they are assuming (Gabaix and Laibson, 2006; Carlin, 2009; Lo, 2011), causing financial instability when their risks are revealed.

<sup>1</sup>The FSB (2012a) describes the shadow banking system as “credit intermediation involving entities and activities outside the regular banking system.”