

Reexamining Financial Innovation after the Global Financial Crisis

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Financial System Innovation

Merton (1992): The primary function of the financial system is to facilitate the allocation and deployment of economic resources, both spatially and across time, in an uncertain environment.

- Payments system with medium of exchange;
- Transfer of resources from savers to borrowers;
- Gathering of savings for time transformation (consumption smoothing);
- Reduction of risk via insurance and diversification.

Frame & White (2004): Financial innovations are something new that reduces costs, reduces risks, or provides an improved product/service/instrument that better satisfies financial system participants' demands.

- New products and services, production processes, and organizational forms.

Financial System Innovation

Campbell (1988): Four environmental conditions conducive to financial innovation.

- 1.) Underlying technologies. Technological improvements may lead to increased efficiency.
 - Think about the overall effect of the IT revolution on the financial services industry; and in particular how it has facilitated the reliance on applied statistics for financial risk measurement and management.
- 2.) Unstable macroeconomic conditions. Fluctuating asset prices spur innovations to alleviate risks.
 - Think about mortgage and securities innovations that financed the housing bubble.
- 3.) Regulation. This can inhibit some innovations and encourage others (as a mechanism to avoid regulation).
 - Think about “regulatory capital arbitrage” or the ability to hold a particular risk in a different form and receive regulatory capital relief for doing so.
- 4.) Taxes. Different taxes levied on different types of income streams (or different asset categories) will create an incentive to repackage/re-label the income streams or shift expenses.

Financial System Innovation

Financial innovation has long been viewed quite positively. See, for example, Miller (1986, 1992), Merton (1992), Tufano (2003), Frame & White (2004), and Allen (2011).

The basic idea is that, since finance facilitates such a large share of economic activity, any improvements in the financial sector should have direct positive ramifications throughout an economy.

However, the recent global financial crisis has led many to cast doubt on the usefulness of most financial innovation -- seeing such activity as having caused the crisis.

While such a reevaluation is natural in light of the most recent crisis, we do need to keep in mind that not every innovation will be successful. Innovation involves trial and error, and failures can be costly.

When one suggests that financial innovation is beneficial, this should be viewed as “on net”.

Beck, Chen, Lin, and Song (2012)

Authors empirically examine the two contrasting views of financial innovation.

Innovation-growth view: Financial innovations help to reduce transactions costs, agency costs, facilitate risk-sharing, and ultimately improve allocative efficiency and economic growth.

Innovation-fragility view: Financial innovations are the root cause of the recent global financial crisis (and several previous ones).

Authors present cross-country evidence consistent with both views.

- Financial innovation is associated with a stronger relationship between a country's growth opportunities and actual growth; but with higher growth volatility.
- Financial innovation is also associated with higher bank fragility.

Financial Innovation and the Financial Crisis

The standard narrative of the negative role of financial innovation in the global financial crisis is well captured by a New York Times column by Paul Krugman (2007).

“The innovations of recent years - the alphabet soup of CDOs and SIVs, RMBS, and ABCP - were sold on false pretenses. They were promoted as ways to spread risk, making investment safer. What they did instead - aside from making their creators a lot of money, which they didn’t have to repay when it all went bust - was to spread confusion, luring investors into taking on more risk than they realized.”

Lots of work describing how the financial crisis unfolded and the roles played by relatively new financial technologies’ being used on a large-scale. This, in turn, has begun to motivate new theoretical research.

We will explore what has been learned about three “usual suspects”: credit default swaps, off-balance sheet conduits, and securitization/structured finance.

Credit Default Swaps

Credit default swaps (CDS) were most likely vilified because of AIG and the introduction of the ABX-HE index.

AIG: Sold CDS (wrote insurance) against the default of a large quantity of AAA-rated structured finance securities for which it was insufficiently capitalized.

- Similar to monoline bond insurers and GSEs.

ABX-HE: Index based on the value of a basket of AAA-rated subprime mortgage-backed securities.

- Arose because of increased hedging demands (buy-side) and desire to take on more housing-related credit risk (sell-side).
- Acted as a pricing benchmark for sector of heterogeneous bonds during crash.

Bank for International Settlements data indicates CDS outstanding has declined from its peak, but stabilized to its 2007 level.

- Not surprising given reduced risk of large financial institution and sovereign default.

CDS will almost certainly remain - provide hedging opportunities (buy-side) and more liquid exposure to credit risk than bonds (sell-side).

- Potential issues: Counterparty risk and margin; “empty creditors”.

See Stulz (2010) for a nice overview.

Off-Balance-Sheet Financing Vehicles (SIVs or ABCP Conduits)

SIVs held highly rated, long-term assets (often-AAA rated asset backed securities) and typically funded them with very short-term debt (asset-backed commercial paper, or ABCP).

SIV sponsors treated these conduits as being “off-balance-sheet” for accounting purposes but generally provided a back-up liquidity guarantee to calm ABCP investors.

When the asset-values of many conduits plummeted in 2007, ABCP investors pulled out and sponsors were forced to repatriate the assets.

As described and analyzed in Acharya, Schnabl, and Suarez (2011), these conduits represented a form of regulatory capital arbitrage.

Thankfully, this organizational innovation has disappeared as a result of changes to accounting rules.

Securitization / Structured Finance / CDOs

Securitization -- or the process of pooling loans and selling shares of the underlying cash flows -- has been with us for a long time.

- The devilish “originate-to-distribute” model!

Originally and principally for residential mortgages through government agencies: Fannie Mae, Freddie Mac, and Ginnie Mae (starting in 1970).

- Most often a simple “pass through,” but CMOs were introduced in the 1980s, which allowed for priority structuring (tranching) for prepayments.

The “pooling and tranching” of cash flows was extended in the 1990s and applied to credit - effectively creating a “capital structure”.

- Principally used to create “non-Agency” mortgage-backed securities (jumbo and subprime), but then to other assets.
- See Coval, Jurek, and Stafford (2009) for a review.

The pooling and tranching of cash flows (securitization) can serve to better match investor demands (e.g., DeMarzo 2005) and allow greater specialization of functions. And by doing so, securitization can reduce borrowing costs.

Securitization / Structured Finance / CDOs (cont'd)

But securitization has also meant the replacement of the vertically integrated lending model with a vertically dis-integrated model.

- Created greater possibilities for adverse selection and moral hazard (principal-agent) problems.

Moreover, a great deal of securitization activity was driven by regulatory arbitrage.

- U.S. banks and Agency MBS: Basel I versus GSE capital requirements.
 - Banks bound by leverage requirement securitized and sold Agency MBS to Fannie and Freddie (5% bank capital vs. 2.5% Agency capital for MBS).
 - Banks bound by risk-based capital requirement securitized and held Agency MBS (4% risk-based capital for mortgages vs. 1.6% for Agency MBS).
 - See Frame & White (2005).
- U.S. investment banks & European banks and securitization: Basel II (without minimum leverage requirement).
 - AAA-rated asset-backed securities became subject to extremely low Basel II capital charges (0.56%).
 - Frame & White (2007); Acharya & Richardson (2009); Nadauld & Sherlund (2009).

Securitization / Structured Finance / CDOs (cont'd)

Besides being thinly capitalized, structured finance transactions had become increasingly complex during the mid-2000s boom - more complicated capital structures and cash flow waterfalls, and the pooling of securitized assets into collateral pools (CDOs).

The valuation of asset-backed securities relies on statistical models to predict the behavior of borrowers on underlying loans. However, such models are often built on incomplete or insufficient data and are subject to mis-specification and error.

- The Basel II “internal ratings-based approach” for setting required risk-based capital for such assets is built upon the same models and data.

Overall, we think that securitization will remain, although there will likely be much less activity and simpler structures.

Note that government policy toward mortgage finance is currently restraining private mortgage securitization (e.g., domination of Agency securitization; lack of clarity about “appropriate” minimum underwriting standards per DFA).

Closing

Financial innovation has generally been viewed, on net, as welfare enhancing. However, in light of the recent global financial crisis, financial innovation has come under greater scrutiny.

Research is ongoing as to the role of specific financial innovations in the financial crisis. We briefly discussed three of the often-cited culprits: securitization, off-balance sheet conduits, and credit default swaps.

We have two principal (and related) conclusions.

- 1.) Regulatory capital arbitrage appears to have played a central role in the crisis. Simply put, many failed innovations were those that were designed to lower regulatory capital for a given risk.
- 2.) Financial firms and regulators appear to have over-relied on applied statistics for risk measurement and management. While intellectually appealing and promising, there was perhaps too little appreciation for the limitations of data inputs and model misspecification.