Understanding the 2008 Financial Crisis

Ryan Doody

March 24, 2014

Terminology

- **Properties of Mortgages and Loans:**
  - **Teaser Rate Loans.** Loans that have very low (as low as 0%) introductory interest rates. The rate is temporary and adjustable.
  - **Variable Interest Rate Loans.** Loans that have interest rates that can be adjusted to reflect the costs incurred by the lender.
  - **Liar Loans.** Loans issued by lenders who are not required to verify the income of potential borrowers.

Variable Interest Rate Loans tie their interest rates to the health of the housing market. If the value of your home drops, your interest rate goes up.

- **Financial Products:**
  - **Collateralized Debt Obligations (CDOs).** A type of structured asset-backed security that "bundle" together loans (mortgages, car loans, student loans, etc.) in order to diffuse risk. (If you hold a single mortgage, and the borrow defaults on it, you lose; but if you hold a CDO, and a borrow defaults, the CDO can still have positive value).
  - **Credit Default Swap (CDSs).** A financial agreement according to which the seller of the CDS promises to compensate the buyer in the event that a particular financial product (like a mortgage, a CDO, or other credit entity) defaults. CDSs are akin to a kind of *insurance policy.*

CDSs differ from regular insurance policies in two important respects: (1) They can be acquired by anyone (regardless of whether or not that person owns the CDO), and (2) they are not regulated in the same way insurance normally is (e.g., if you issue an insurance policy, you are required to set a certain amount of money aside to payout in case the CDO defaults).

- **Institutions and Legislation:**
  - **Glass-Steagall Act (1933).** Legislation passed after the Great Depression that, among other things, forbids *commercial* banks from trading securities using their clients' deposits. In other words, this law basically cordons off *commercial* banks from *investment* banks. Commercial banks were allowed to invest their clients' deposits *only* in government-issued bonds.
  - **Rating Agencies.** Institutions that "grade" financial products on their riskiness. The less risky a product, the higher the rating. Certain government-run programs (like, pensions) are required by law to only invest in products with a AAA rating.

By 1999, the Glass-Steagall Act was all but repealed.

The highest rating is 'AAA', or triple-A.

What Happened?

1. **Housing Bubble Burst.**

   By 2005, housing prices had peaked. The housing market took a turn soon after. This caused...

2. **Massive Foreclosures and Mortgage Defaults.**

   Why? Many home-owners had been issued various Variable Interest Rate Mortgages, which tied the size of their monthly payments to the value of their homes. When the housing prices began to fall, the interest rates of these loans increased, which forced many people to default on their mortgages, which further precipitated the fall of housing prices.

3. **Why Were So Many Variable Interest Rate Loans Issued?**

   (a) Traditionally, mortgages were *potted:* you acquire a loan from your local bank, which stands to lose money if you are unable to pay it back. Under this scheme, there is an incentive for banks to be careful about to whom they issue loans.

   (b) Now, loan-issuing banks can "bundle" loans into CDOs, which they can sell to investment banks. Once sold, the loan-issuing bank no longer holds any risk. Therefore, there is little incentive for loan-issuing banks to carefully vet borrows.

   These CDOs (created from potentially unsafe mortgages) were sold to investment banks, which were then sold to investors.

4. **If the CDOs Were Toxic, Why Would the Investment Banks Buy Them?**

   The investment banks were willing to buy potentially toxic CDOs for several reasons:

   (a) *Hard to Evaluate.* CDOs (and other related financial products) are incredibly complicated. It is not obvious how to assess their value.

   (b) *Selling to Investors.* The investment banks were not going to just hold on to the CDOs. They sold them to investors. The investors, then, would absorb the risk, not the banks.

   (c) *Hedging Bets with CDSs.* The investment banks were able to hedge their bets by purchasing CDSs from insurance companies (like AIG), which meant that they would still make money from the CDOs even if they defaulted.

In fact, the *Gaussian Copula*, which was invented as a way of measuring the value of these products, turned out to based on a mathematical error. Moreover, the theory behind CDOs — the idea that loans are "safer" when bundled together — assumes that riskiness of the individual loans are *independent* of each other. And the extent to which this assumption held was vastly overestimated.

However, the prospects for selling these products at profit depended on them receiving favorable ratings from the rating agencies. (See Below).

5. **The Role of Credit Rating Agencies.**

   In order to make a profit on (what turned out to be toxic) CDOs, investment banks had to ensure that they were highly-rated, so that their investors would invest in them. Rating Agencies (like, *S&P* and Moody's) evaluate financial products in terms of their risk. Even very risky CDOs were given *AAA* ratings. Why?

   (a) *Original Business Model:* Rating Agencies made money by issuing reports to subscribers. They collected information about the health of financial products, and then sell that information.

   (b) *Current Business Model:* Now, Rating Agencies are hired by the very financial instituted the products of which they are tasked with evaluating.

Incentives: This creates a strong incentive to rate rate the products favorably because, in order to remain competitive, the Rating Agencies need to keep the financial institutions (i.e., their employers) happy.

6. **Crash and Bailout.**

   When housing prices dropped, many people defaulted on their mortgages. The prevalence of Variable Interest Rate loans exacerbated the problem. This caused many CDOs (which are bundles of loans) to become toxic.

   Because the CDOs defaulted, investment banks, who'd hedged their bets by purchasing CDSs, were owed massive amounts of money from insurance companies. Because CDSs are not regulated like normal insurance policies, insurance companies (like AIG) had not set aside enough money to payout.

   On top of that, investors who owned shares of the toxic CDOs (which, due to their high credit rating, were heavily and widely invested in) lost billions. The effects were not isolated to the housing market. The economic market collapsed.

   Because many banks and insurance companies were deemed "too big to fail," the US government bailed them out.