The Origins,
The Incipient Recovery,
and How Things can Still Go Wrong

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PSU 10/22, 2010
Outline:

- Brief timeline of crisis, and it’s economic impact.
- Why did the crisis happen – main focus on financial deregulation and “misunderestimation” of risk.
- What reforms are necessary?
- The recovery and Murphy’s Law
A timeline of some important events:

- Early 2007: home prices start to decline as new home construction saturates the market.
- July 2007: Two Bear Sterns funds have lost all assets due to declining home values.
- March 2008: Bear Sterns sold to JP Morgan, had 15,000 employees worldwide.
- Spring of 2008: Bank of America takes over Countrywide Financial.
- July 2008: IndyMac Bank seized by the feds, the 7th largest mortgage originator in the US.
- September 2008: (i) Lehman Brothers filed for Chapter 11 protection, largest bankruptcy in US history, $600 billion in assets; (ii) Merrill Lunch sold to Bank of America, (iii) Goldman Sachs and JP Morgan were converted into bank holding companies which gave them access to Lender of Last resort facilities from the Federal Reserve.
- October 2008: Troubled Asset Relief Program (TARP) signed into law by President GW Bush.
Chart 1: The Impact of the Great Recession 2006-09

Sources: Robert Shiller (housing and S&P composite index), and IMF WEO Oct. 2010
Why and How did the Crisis happen?

2000-06 a period marked by overpricing of real estate and underpricing of risk; a result of a combination of:

- Overoptimistic macroeconomic outlook
- Lax monetary policy
- Financial deregulation
- And a cameo of Federal Housing policy
The mirror image of housing prices and risk perception 2000-06

Chart 2: Housing Prices and Perception of Risk

- Shiller-Case Housing Price index, right scale
- Risk index based on US 3-month interest rate, left axis (Source: IMF)
- Risk index based on 3-month LIBOR, left scale (Source: IMF)
Overoptimistic environment:

Because……..

- “The Great Moderation” – declining volatility means we’ve got macroeconomic policy nailed
- “This Time is Different” – there is no asset bubble

…warnings got little traction.
Monetary Policy – two points:

- Relaxed sharply from 2000 as stimulus following the “dot-com” bust in late 1990s (and after 9/11). Significant tightening did not start until 2005, with limited impact on mortgage rates.

- The “Greenspan put”:
  
  “How do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions….? We as central bankers need not be concerned if a collapsing financial asset bubble does not threaten to impair the real economy, its production, jobs, and price stability.”

Implication of “put”: Moral Hazard
Chart 4: US current account balance
Percent of GDP

Source: IMF WEO, October 2010
Financial deregulation: where the rubber meets the road

Deregulation spawned:

- Sharp growth of a very profitable financial industry;
- Financial innovation: “Creative” mortgages, new products (CDOs and CDSs); and the securitization process;
- Growing importance of credit rating agencies

But why deregulation? Because confluence of:

- Shifting political winds, and
- Advances in academic research
Intellectual basis for deregulation:
Fischer Black, Robert Merton, Myron Scholes

- “Because traders (in financial markets) are looking for and exploiting inefficiencies in asset prices, those inefficiencies cannot exist for more than a brief period of time; as a result, prices are always “right”.”

- “And if a free market always produce fundamentally correct asset prices, there is no need for regulation—the financial industry can be left to its own devices.”

Quotes are from Johnson & Kwak, 2010.

- But how about “noise” in the market? Prices are not always “right”.

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Chart 5: Growth of Nonbank Financial Institutions in the United States

(In trillions of U.S. dollars)

Source: Vinals et al. IMF, 2010
Chart 6a: Real Corporate Profits, Financial vs. Nonfinancial Sectors

Source: Johnson and Kwak, 2010
Chart 6b: Real Average Annual Compensation, Banking vs. Private Sector Overall

Source: Bureau of Economic Analysis, National Income and Product Accounts, Tables 1.1.4, 6.3, 6.5; calculation by the authors. Banking includes financial sector less insurance, real estate, and holding companies. Annual compensation is total wage and salary accruals divided by full-time equivalent employees.
Source: Johnson and Kwak, 2010
The Transformation of Banking: “Old and boring” to “New and Exciting”.

Chart 7: "Old" Banking: Originate and Hold

- Home Buyers
- Money
- Mortgage assets
- Banks

Chart 8: "New" Banking: Originate and Distribute

- Money
- Mortgage assets
- Home Buyers
- Mortgage Brokers/Originators
- Banks and the Securitization Process
- Investors: Pension Funds, Investment Banks, Foreign Banks, etc.
The Building Blocks of Securitization

- The “Regular” Collateralized Debt Obligation (CDO)
- The CDO Squared and derivative securities
- The Principle of “Unbundling Risk”
- The Credit Default Swap – dressed and undressed.
Chart 9: The Construction of a "Regular" Collateralized Debt Obligation (CDO)

Mortgage #1
Mortgage #2
Mortgage #3
...
Mortgage #1000

Mortgage-backed security #1

Collateralized Debt Obligation #1

Mortgage #1001
Mortgage #1002
Mortgage #1003
...
Mortgage #2000

Mortgage-backed security #2
Chart 10: The Construction of a CDO Squared and the risk tranches

- CDO #1
- CDO #2

CDO Squared

- Senior tranche; pays low interest but carries low default risk.
- Mezzanine tranche; pays "average" interest rate and carries "average" default risk.
- Junior tranche; pays high interest rate but carries high default risk.
Chart 11: The Principle of "Unbundling Risk"

Mortgage #1
Face value: $1
Default probability: 10%

Senior tranche
Face value: $1
Default probability: 1%

Mortgage-backed security

Mortgage #2
Face value: $1
Default probability: 10%

Junior tranche
Face value: $1
Default probability: 10%

Key Assumption: The default probabilities of the two mortgages are not correlated. If they were positively correlated, the (conditional) default probability of Mortgage #1 would be >1%.
Chart 12: The Workings of a Basic Credit Default Swap

Key issue:
The creditor/insurance buyer has an "insurable interest" against a bond default.
Federal Housing Policy

The main elements:

- Tax deduction of mortgage interest
- Assist housing finance through the GSEs: FHA, Fannie Mae, Freddie Mac.
- Low-income Housing

The Issue:

- Fannie/Freddie share of lending to low-income housing was increased from 42% to 50% in 2000 and to 54% in 2004;
- The Community Reinvestment Act – some lending to low-income areas.
How did this create excessive risk?

- Lax regulation and supervision of mortgage originators => declining standards of loan quality, which
- increased default risk, which was transmitted up through securitization process, and
- this was compounded by leverage and maturity mismatch; and
- by thin market for many CDOs and lack of reserves to back up CDSs, and
- by lack of transparency in these securities.
### Chart 13: Leverage in a Simple Balance Sheet

#### Case #1

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>690</td>
<td>660</td>
</tr>
<tr>
<td>30</td>
<td>(Other)</td>
</tr>
<tr>
<td></td>
<td>(Equity)</td>
</tr>
</tbody>
</table>

Leverage ratio: 690/30 = 23

If assets values decline by 4

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>662.4</td>
<td>660</td>
</tr>
<tr>
<td>2.4</td>
<td></td>
</tr>
</tbody>
</table>

Leverage ratio: 662.4/2.4 = 276

#### Case #2

(Safe) ("Risky")

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>340</td>
<td>660</td>
</tr>
<tr>
<td>350</td>
<td>(Other)</td>
</tr>
<tr>
<td></td>
<td>(Equity)</td>
</tr>
</tbody>
</table>

Leverage ratio: 350/30 = 11.67

If assets values decline by 4

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>340</td>
<td>660</td>
</tr>
<tr>
<td>336</td>
<td>16</td>
</tr>
</tbody>
</table>

Leverage ratio: 336/16 = 21

Erik Offerdal presentation at PSU, 10/22, 2010
Why the Willingness to take Risks?
Because it was believed to be “tail risk”.

- Originators faced no downside risk;
- Rating agencies provided “good” ratings – because they had an incentive to do so;
- Many securities had “high, even AAA rating, so default was considered unlikely,
- Since risk had been “unbundled”, system-wide adverse event necessary for wide-spread defaults;
- “Greenspan put”

Conclusion: A system riddled with “one way bets” and moral hazard.
How it all fell apart
(a very stylized summary):

- Mortgages start to default;
- Owners of junior tranches lose income and equity;
- Face difficulty in rolling over debt; try to cash in CDSs or sell securities;
- More mortgages default, impacting securities in higher tranches;
- “Everybody” tries to cash in CDSs or sell securities;
- Confidence and trust erodes, prices of securities crash, and credit market freeze.
- Cascading claims on naked CDSs aggravate situation.
"There's no question about it. Wall Street got drunk—that's one of the reasons I asked you to turn off the TV cameras—it got drunk and now it's got a hangover. The question is how long will it sober up and not try to do all these fancy financial instruments."
Reforms to prevent a recurrence

What has been done:

What needs to be done:
1. Deal with “systemic” financial institution;
2. Extend regulatory perimeter;
3. Address compensation policies in financial sector;
4. Change the way rating agencies operate;
5. Improve integration of financial regulation and macroeconomic policymaking.

Scorecard on Dodd-Frank: 1) Almost nothing; 2) Pretty good; 3) Very little; 4) OK; 5) Not addressed.
Chart 14: Growth of Six Big Banks

* Chase Manhattan through 1999
** Travelers through 1997
*** First Union through 2000; Wachovia 2001–2007
Source: Company annual and quarterly reports. 2009 is at end of Q3.
Source: Johnson and Kwak, 2010
Chart 15: Relative Financial Wages and Financial Deregulation

Source: Johnson and Kwak, 2010
Quo Vadis Recovery?
Latest WEO indicates that:

- “Thus far, economic recovery is proceeding broadly as expected, but downside risks remain elevated………

- Sustained, healthy recover rests on two rebalancing acts: internal rebalancing, with a strengthening of private demand in advanced economies, allowing for fiscal consolidation; and external rebalancing with an increase in net exports in deficit countries, such as the United States, and a decrease in net exports in surplus countries, notably emerging Asia.”
What does “internal rebalancing” mean?

- In simple terms: Reduce fiscal deficits without impairing growth!
- Why? Because public debt levels have left economies vulnerable.
- How to reduce deficits? How, indeed……

Will now focus on the connection between “downside risks” and fiscal adjustment/recovery. Look at two groups of countries:

- France, Germany, The UK, and the US
- Greece, Ireland, Portugal, and Spain
Chart 16: General government fiscal balance, Percent of GDP
France, Germany, the UK, and the U.S.

Changes 2006-09  2009-15
France: -5.3  5.4
Germany: -1.5  1.7
UK: -7.6  7.8
US: -10.8  6.4

Source: IMF WEO October 2010
Chart 17: General government gross debt, percent of GDP
France, Germany, the UK, and the U.S.

Actual values

Projections

Changes 2006-09 2009-15
France: 14.4 pp 10.3 pp
Germany: 6.0 pp 2.1 pp
UK: 25.4 pp 15.4 pp
US: 23.2 pp 26.5 pp

Source: IMF WEO October 2010
Three good questions
And no good answers……

- Is a Public debt/GDP ratio of about 85 percent in the UK sustainable long term?
- Will announced fiscal adjustment in the UK be socially sustainable? What about France?
- Should the US provide more fiscal stimulus now (given tepid recovery)? And how much public debt is too much?
Chart 20: Revenues as percent of gross debt, General Government
Greece, Ireland, Portugal, and Spain

Changes 2006-09:
- Greece: -8.7 pp
- Ireland: -93.5 pp
- Portugal: -12.5 pp
- Spain: -36.9 pp

Source: IMF WEO October 2010
Suggested further reading:


