Global Financial Crisis

Madrid
April 3, 2009

The perfect storm

• Number one: its probability is low based on past knowledge
• Number two: although its probability is low, when it happens it has a massive impact
• Number three: people don’t see it coming before the fact, but after the fact, everybody saw it coming

So it’s prospectively unpredictable but retrospectively predictable
Agenda

• Remember how the crisis started
  • Subprime mortgage status
  • Needed fixes
  • Impact of the financial crisis
  • What’s next?

How it All Started (1 of 3)

• Economic environment since 2000
• Huge growth of the securitization business
• Unprecedented massive amount of senior tranches of subprime CDOs were downgraded from triple-A to junk within a short period of time
Banks’ securitization exposures have soared and dramatically changed the banks’ risk profiles over the past decade.

(global asset-backed securities outstanding, billion dollars)


Credit Securitization and Risk

1. Transfer of assets from the originator to the issuing vehicle
   - Underlying assets ("collateral")
   - Assets immune from bankruptcy of seller
   - Originator retains no legal interest in assets

2. Issuing agent (e.g., special purpose vehicle [SPV])
   - Typically structured into various classes/tranches, rated by one or more rating agencies

3. SPV issues debt securities (asset-backed) to investors
   - Issues asset-backed securities
   - Senior tranche(s)
   - Mezzanine tranche(s)
   - Junior tranche

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How it All Started (2 of 3)

- Reasons why delinquencies on subprime loans started to skyrocket after mid-2005:
  - Subprime borrowers were not very creditworthy, highly levered with high debt-to-income ratios, large loan-to-value ratios, no down payment (second mortgage: “piggyback loan”)
  - In a market where housing prices kept rising, borrowers expected to refinance before the reset and build some equity cushion
  - Huge demand from investors for higher yielding assets, such as super senior tranches of subprime CDOs, lead to lowering of lending standards: low documentation or no-documentation loans, “liar loans”

How it All Started (3 of 3)

- The current crisis was thus an accident waiting to happen. The trigger was a series of events.
  - Bear Stearns
  - IKB
  - BNP Paribas
The perfect storm

• Housing boom
• Demand for high yield assets
• Lots of money looking for investments
• Incentive systems
• Lack of controls
• …

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Nature of the Subprime Crisis

- It is fair to say that the full extent of the subprime crisis, is not yet known.
- It is commonly accepted that the subprime crisis has become a crisis of confidence in the financial system.
- The start of the crisis can be attributed basically to the securitization of subprime mortgages.
- Given the differences in asset valuation calculations and the lack of standardized accounting, the banks do not have a clear idea of each other’s exposure.

Moreover, assets covered by “debt repayment insurance” from insurance companies affected by the crisis are shown as “risk-free assets” on banks’ balance sheets
- Should banks reclassify these assets as “risky” and record the appropriate provisions?
- The subprime crisis contributes to a general economic crisis via a restriction of the supply of credit and a tightening of credit terms
Subprime Crisis

The subprime mortgage crisis generated in the US has originated a drastic fall of the property prices, a ralentization of the economy, and billions of $ of losses to the global financial institutions. It has its origin in the fundamental change of the model used to generate mortgage loans.
Why did not the sophisticated, computerized pricing models that Wall Street firms use to predict returns and risk for complex derivatives save them from the subprime mortgage mess?
CDOs are Over The Counter (OTC) traded derivative instruments. How did the accounting procedure used to settle these instruments facilitated the subprime crisis?

Is there a relationship between rating agencies and the subprime crisis?
What is market liquidity? How the current subprime mortgage crisis has snowballed into severe credit crunch?

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Needed fixes

Excess “Leverage” and synthetic liquidity

Increase of the disintermediation process, with growing number of participants:

– Financial intermediates
– Investment funds
– Hedge funds
– Banks
– Institutional investors
– Retail customers

which participating very actively in the financial markets develop a huge derivative market with very high synthetic liquidity

As a result, we lost the markets dimension

Needed fixes

Excess “Leverage” and synthetic liquidity (2)

As a consequence, the focus of the crisis was changing:

Price

Liquidity

Capital

And finally, the real economy was heavily impacted

Global Recession
Needed fixes
Excess “Leverage” and synthetic liquidity

The “heart” of the system were the “conduits” and its financing in the commercial paper market

US Commercial Paper: Nominal Value (1)

Global Liquidity

Derivatives (2)

802% of the world GDP

Monetary Base
10% of the world GDP

Securitized Debt
142% of the world GDP

122% of the world GDP

(1) Source: Federal Reserve.
(2) Derivatives in an ample sense, including securitization, credit derivatives, etc. Source: BIS (2007)

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Needed fixes
Financial structures...

Credit Risk Transfer Instruments (CRT)

Credit Derivatives
ABS: Asset Backed Securities
MBS: Mortgage Backed Securities
CMO: Collateralized Mortgage Obligations
CDO: Collateralized Debt Obligations
CBO: Collateralized Bond Obligations
CLO: Collateralized Loan Obligations

Securitizations
of several asset types: mortgages, other credit products, bonds, etc.

Debt Repayment Insurance
CDS: Credit Default Swaps

Insuring credit risk

Global Financial Crisis – April 3, 2009
Global Financial Crisis – April 3, 2009

Needed fixes
...that changed the financial system, due to the dissemination and quick sale to the market of the different risk components and factors

- Traditional banking model (originate to maintain)
- Model “originate to distribute”
- Abrupt rupture of the primary credit markets
- The question is: What’s next?

August 2007

Agenda

- Remember how the crisis started
- Subprime mortgage status
- Needed fixes

- Impact of the financial crisis
- What’s next?
### Bank Writedowns and Capital Raised since January 2007 – Millions of US$

<table>
<thead>
<tr>
<th>Bank</th>
<th>Subprime Losses</th>
<th>Capital Raised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wachovia</td>
<td>96,500</td>
<td>11,000</td>
</tr>
<tr>
<td>Citigroup</td>
<td>85,100</td>
<td>113,800</td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td>55,900</td>
<td>29,900</td>
</tr>
<tr>
<td>UBS</td>
<td>48,600</td>
<td>33,000</td>
</tr>
<tr>
<td>Washington Mutual</td>
<td>45,600</td>
<td>12,100</td>
</tr>
<tr>
<td>HSBC*</td>
<td>33,100</td>
<td>4,900</td>
</tr>
<tr>
<td>BofA</td>
<td>40,200</td>
<td>58,500</td>
</tr>
<tr>
<td>JP Morgan</td>
<td>29,500</td>
<td>44,700</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>21,300</td>
<td>24,600</td>
</tr>
<tr>
<td>RBS*</td>
<td>14,900</td>
<td>49,300</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>14,600</td>
<td>41,800</td>
</tr>
<tr>
<td>Lehman Brothers</td>
<td>16,200</td>
<td>13,900</td>
</tr>
<tr>
<td>Credit Suisse</td>
<td>14,100</td>
<td>11,900</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>12,200</td>
<td>5,900</td>
</tr>
<tr>
<td>HBOS*</td>
<td>9,100</td>
<td>22,800</td>
</tr>
<tr>
<td>Société Générale</td>
<td>7,900</td>
<td>10,900</td>
</tr>
<tr>
<td>Barclays*</td>
<td>6,400</td>
<td>27,200</td>
</tr>
<tr>
<td>BNP Paribas</td>
<td>5,600</td>
<td>3,400</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>7,100</td>
<td>20,500</td>
</tr>
<tr>
<td>Unicredit</td>
<td>4,100</td>
<td>9,900</td>
</tr>
<tr>
<td>Others</td>
<td>204,200</td>
<td>249,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>772,400</strong></td>
<td><strong>799,000</strong></td>
</tr>
</tbody>
</table>

Of this total, approximately US$ 360,000 millions came from different Governments.

Indirect helps are not included (i.e. US Treasury Guarantees to Citigroup in the order of US$ 305,000 millions and to Bank of America in the order of US$ 118,000 millions)

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**Sources:** World Bank; and IMF staff estimates.

**Note:** U.S. subprime costs represent staff estimates of losses on banks and other financial institutions from Table 1.2. All costs are in real 2007 dollars. Asia includes Indonesia, Malaysia, Korea, the Philippines, and Thailand.
IMF Predicts a Global Economic Recession

- Global economic activity is falling, with advanced economies registering their sharpest declines in the post-war era

<table>
<thead>
<tr>
<th>Hard times</th>
</tr>
</thead>
<tbody>
<tr>
<td>The IMF’s March 2009 projections show a contraction in world growth this year, followed by a small recovery. (percent change, unless otherwise noted)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>World output</td>
<td>3.2</td>
<td>-1.0 to -0.5</td>
<td>1.5 to 2.5</td>
</tr>
<tr>
<td>Advanced economies</td>
<td>0.8</td>
<td>-3.5 to -3.0</td>
<td>0.0 to 0.5</td>
</tr>
<tr>
<td>United States</td>
<td>1.1</td>
<td>-2.6</td>
<td>0.2</td>
</tr>
<tr>
<td>Euro area</td>
<td>0.9</td>
<td>-3.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Japan</td>
<td>-0.7</td>
<td>-5.8</td>
<td>-0.2</td>
</tr>
<tr>
<td>Emerging and developing economies</td>
<td>6.1</td>
<td>1.5 to 2.5</td>
<td>3.5 to 4.5</td>
</tr>
</tbody>
</table>

- Central and Eastern Europe and the Commonwealth of Independent States are the most adversely affected


Global Financial Crisis – April 3, 2009
1929 – 2009 des différences majeures

1929
- Le protectionnisme est aux origines de la crise
- Rigidité d’un système de taux de change fixes
- Laissez faire total des autorités, absence de protection sociale et politique monétaire restrictive des Banques centrales

2009
- Le protectionnisme est l’une des conséquences possibles de la crise : à éviter à tout prix
- Flexibilité des taux de change flottants
- Réponses précoces, massives et coordonnées des gouvernements et des Banques Centrales

Taux directeurs de la Réserve Fédérale (FED) et de la Banque Centrale Européenne (BCE)

Source: DATASTREAM
Programmes de relance économique annoncés

- USA : 6% - 7% du PIB
- UE : 3,5% - 4,0% du PIB
- Japon : 2% du PIB
- Chine : 20% du PIB
- Total monde : 4% du PIB

Marchés boursiers

FOUR BAD BEAR MARKETS

En 1929, le marché boursier a connu une baisse de 44%.
En 1932, le marché boursier a connu une baisse de 44%.
En 2000-2002, le marché boursier a connu une baisse de 44%.
En 2007-9, le marché boursier a connu une baisse de 44%.

Crash of 29
crash/1929 - 09/18/1932

Crash of 87
crash/1987 - 01/1989

Crash of 01
crash/2001 - 12/01/2002

Crash of 09
crash/2009 - 10/01/2009
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- What’s next?
Obama’s rescue plan (1 of 2)

1 Capital Injections
Projected cost: not available
Details:
• Capital injections to needy financial institutions based on review
• Bank regulators to institute uniform standards to strengthen banks
• “Stress tests” to ensure largest banks can withstand worsening economy

2 Unfreezing credit markets
Projected cost: $200-$1,000bn
Coming from Fed loans backed by Treasury equity
Details:
• Expansion of existing $200bn Fed program (Talf) to unfreeze asset-backed markets
• New lending initiative to kick-start the financing of student, auto, and credit card loans, commercial mortgages and some residential mortgages

Source: Financial Times

Obama’s rescue plan (2 of 2)

3 Toxic assets
Projected cost: Up to $1,000bn
Coming from Fed balance sheet, Treasury, FDIC, private investors
Details:
• Public-private investment fund will provide government financing to leverage private capital to purchase toxic assets from banks
• Private sector buyers to determine price for previously illiquid assets, valuation details not yet worked out
• Possible guarantees from FDIC to limit losses for investors who purchase toxic assets

4 Foreclosure relief
Projected cost: $50bn
Coming from Treasury and Fed
Details:
• Investment to keep people in homes and curb housing crisis
• Program to reduce monthly mortgage payments and establish loan modification guidelines

Source: Financial Times
Open issues

- Financial system broken
- Size of the problem is much bigger than we thought initially
- There was an abuse of the perfect markets hypothesis
- Liquidity and depth of the financial markets
- Today it is impossible to know the global risk map

Is it necessary a deep transformation of the banking institutions?

What are the main implications for the regulatory framework?

Financial regulation

- More regulation is not needed. Basel II is sufficient, but it is required a greater global coordination, greater emphasis in liquidity, and a more consolidated vision
- Greater focus on an integrated and unified treatment of all the risk typologies. Greater importance of the Global Risk Manager role in its contact with the regulator
- There is risk of over-regulation
- All financial crisis are different. An over-reaction will not avoid a next one
Final thoughts

The transformation of the banking system provides some ideas...

Banks: TOP 12 in Market Capitalization

EUR Thousand of millions

February 12, 2007

March 17, 2009*

Out of the list

... The excesses need to be paid back.

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* Source: Financial Times

Back to growth

<table>
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<tr>
<th></th>
<th>US</th>
<th>EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Markets</td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>Housing &amp; Consumption</td>
<td>2010</td>
<td>2011</td>
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