Strategic Implications of The 2008 Financial Crisis

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Milestones of the Czech Republic

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<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>&quot;Velvet Revolution&quot; = End of Communism</td>
</tr>
<tr>
<td>1995</td>
<td>Czech Rep. = member of OECD</td>
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<tr>
<td>1999</td>
<td>Czech Rep. = member of NATO</td>
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<tr>
<td>2004</td>
<td>Czech Rep. = member of EU</td>
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<tr>
<td>1H 2009</td>
<td>Czech Rep. = EU president country</td>
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</tbody>
</table>
Introduction
Introduction

- The same essence of crises - cycles of abundant liquidity, rapid credit growth, and a low-inflation environment followed by an asset-price bubble
- The US imbalanced macroeconomic position in mid-2000s
- Mounting defaults in the US sub-prime mortgage market -> market instability -> world economic upheaval.
- Description of key investment banking and risk management practices (an originate-to-distribute model, risk-shifting, securitization techniques, ratings processes and the use of off-balance sheet vehicles…)
- Key lessons for future risk management
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Background of the crisis

Comparison with the dot.-com bubble crisis

Market Capitalization: US Equities (Year-end 1999)

Subprime Bubble: Securitized Mortgage Debt outstanding (March 2007)

- 94% Dot-com
- 6% Other

- 6.5% Prime Conforming
- 14.3% Alt-A
- 12.7% Subprime
- 9.5% Jumbo

Source: Federal Reserve, FDIC, MBA, Morgan Stanley Research

Relatively low shares but huge impacts…
Background of the crisis

Macroeconomic imbalances in the US

- **External imbalance** - 1995-2006, the US current account deficit jumped from 1.5% of GDP to 6% (financed through foreign market lenders who hold dollars as the world’s reserve currency “Bretton Woods II”)

- **Internal imbalance** - of personal consumption on the US GDP grew from 67% in 1997 to 71% in 2007

Source: IMF, Morgan Stanley Research
Background of the crisis

Milestones of the mortgage crisis

- **1977** - Community Reinvestment Act (CRA)
- **1995** - Introduction of systematic ratings of banks in terms of CRA compliance,
  Permission of securitization of CRA loans containing subprime mortgages
- **1997** - First securitization between Union Bank (later taken over by Wachovia) and Bear Stearns (later taken over by JPMorgan)
- **2003** - Guarantees from US government to Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corporation (Freddie Mac)
- **Mid-2005** - surging delinquencies on US sub-prime adjustable-rate mortgages (ARM)
- **Mid-2006** - Falling house prices in the US
  Homeowners’ equity started declining

Source: Authors based on Zelený (2008) and ECB (2007)
Background of the crisis

Milestones of the mortgage crisis

US house prices in 1998-June 2008

The US subprime mortgage delinquency rate in 1998-2007

Falling house prices and increasing mortgage delinquency rate…
Background of the crisis

Milestones of the mortgage crisis

U.S. residential real estate loan charge-off rates in 1991-2010

Sources: IMF
Background of the crisis

Milestones of the 2008 crisis

- **Nov 2006** - Falling prices of US mortgage-related securities
- **2007** - Recognized losses from US mortgage-related securities
- **Mar 2008** - Takeover of Bear Stearns by JP Morgan
- **Sep 2008** - Lehman Brothers’ bankruptcy, Merrill Lynch taken over by Bank of America, Morgan Stanley and Goldman Sachs applied to become regulated banks
  - Nationalization of Freddie Mac and Fannie Mae, AIG, Fortis, Citi, Hypo, Glitnir, Bradford & Bingley, Dexia, Irish Banks…
- **Oct 2008** - British government provided strong intervention
  - U.S. Congress Emergency Economic Stabilization Act
  - Unlimited guarantees on deposits
  - Central banks cut interest rates
  - Financial problems of Belarus, Iceland, Hungary, Ukraine…

Source: Authors
Background of the crisis

Securitization I – main idea

- a modern financial process whereby traditional bank assets are pooled and repackaged into securities that are then sold to investors.

- The essence of securitization is that banks can avoid these constraints if a separate entity is established (special purpose vehicle or SPV).

- The bank sells then the asset pool to the SPV, which pays for the assets from the proceeds of the sale of securities.

- Mezzanine structured-finance CDOs with AAA rating were backed by subprime mortgage bonds below BBB rating.
Background of the crisis

Securitization II - Matryoshka - Russian Doll

Source: Authors based on IMF (2008a)
Background of the crisis

Securitization III - volume

Global issuance of bonds backed by mortgages in 1995-2008

ABS outstanding by collateral in the US as of the end of 2007 (total = USD 2,472 billion)

Source: Bank of England

Source: SIGMA
Background of the crisis

Future dynamites – credit cards & car loans

Credit card charge-offs in the US in 2001-2009 (in USD billions)

US car approval rate in 2007 – September 2008 (in %)

Source: Innovast

Source: CNW Reserach
Background of the crisis

Relatively good initial conditions of the CR

- High deposit/loan ratio (130% vs. EU average 85%)
- Very low share of FX loans in the corporate sector (18%), almost no FX loans drawn by households
- No need to help banks with liquidity, no international institutions were needed

Source: The Czech National Bank
Background of the crisis
Integration of supervision in CR (since April 2006)

Source: The Czech National Bank
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Risk management

Key players during the crisis

1. Mortgage originators
   • Lenders
   • Commercial banks

2. Risk shifters/transformers
   • Commercial banks
   • Investment banks/prime brokers
   • Government-sponsored enterprises
   • SPVs (ABCP/SIV/conduits)

3. Investors
   • Commercial/investment banks
   • Hedge/pension funds
   • Insurance companies
   • Investment funds
   • Private investors

4. Insurers
   • Insurance companies
   • Monoline insurers
   • Reinsurance companies

5. Rescuers
   • Central banks
   • Governmental institutions
   • Sovereign wealth funds
   • International Monetary Fund
   • Private investors

6. Others
   • Rating agencies
   • US government
   • Regulatory bodies
Risk management
The credit and liquidity risk during the crisis

Source: Authors
Risk management

Risk typology

- **Credit** - default of mortgage borrowers, bankruptcy of Lehman Bros
- **Liquidity** - overall lack of liquidity in inter-bank markets
- **Operational** - mortgage frauds by dealers, misconduct of managers
- **Market** - sudden increase in interest rates
- **Off-balance sheet** - off-balance sheet SPVs became balance-sheet items
- **Contagion** - mistrust in inter-bank/short-term markets
- **Systematic** - worldwide market crash
- **Regulatory** - change in reg.framework of credit derivatives/OTC market
- **Globalization** - worldwide global turmoil/correlated markets

Source: Authors
Risk management

Credit risk

Credit Default Swap Spreads on Selected Emerging Market Banks, January 2007—Early October 2008 (in basis points)

DR Counterparty Risk Index in 2006- September 2008 (in basis points)

Source: Bloomberg, Datastream, IMF estimates

Source: Credit Derivatives Research
Risk management
Liquidity risk I

*Illiquidity, rather than poor asset quality, is the immediate cause of most bank failures*

Source: Mejstřík, Pečená, Teplý (2008)
Risk management

Liquidity risk II

Three phases in the euro area interbank market (Jan. 2007 – May 2009)

Daily issuance of AA-rated asset-backed commercial papers by original maturity in August-September 2008 (in USD billion)

Source: ECB

Source: Federal Reserve
Risk management

Liquidity risk III

Real Central Bank Assets of Selected Countries, January 2006-March 2009 (August 2008 = 100)

Interest rate spread (PRIBOR – 2W REPO) in the Czech Republic in July-October 2008 (in basis points)

Source: IMF

Sources: Authors based on the Czech National Bank
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Lessons from the crisis

Strategic issues

- Corporate governance (principal-agent problem)
- Fair-value accounting
- Government guarantees
- Moral hazard
- Too-big-too-fail doctrine
- Too-connected-too-fail doctrine
- Transparency
Lessons from the crisis
State bailouts

<table>
<thead>
<tr>
<th>Date(s) of Intervention</th>
<th>Country</th>
<th>Institution</th>
<th>Date(s) of Intervention</th>
<th>Country</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Intervened institutions - banks</td>
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<td></td>
<td>Intervened institutions - investment banks</td>
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<td>9/29/2008</td>
<td>Belgium/Netherlands/ Luxembourg</td>
<td>Fortis</td>
<td>9/15/2008</td>
<td>United States</td>
<td>Lehman Brothers</td>
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<tr>
<td>10/3/2008</td>
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<td></td>
<td>Switzerland</td>
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<td>10/28/2008</td>
<td>United States</td>
<td>Morgan Stanley</td>
</tr>
<tr>
<td>10/19/2008</td>
<td>Netherlands</td>
<td>ING Group</td>
<td></td>
<td>United States</td>
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<tr>
<td>10/28/2008</td>
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<td>United States</td>
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<td>11/24/2008</td>
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<td>1/8/2009</td>
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<td>Commerzbank</td>
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<tr>
<td>1/19/2009</td>
<td>United Kingdom</td>
<td>Royal Bank of Scotland</td>
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</tbody>
</table>

Source: IMF
Lessons from the crisis
Processes and business models

- Basel II requirements (fundamental vs. technical analysis)
- Mortgage frauds
- Originate-to-distribute model
- Rating agencies
- Reliance on rating
- Risk management process
- Use of OBS vehicles
- Wholesale funding
Lessons from the crisis
Financial products and valuation

- Financial innovations
- Adjustable-rate-mortgage
- Credit default swaps
- Structure product valuation
Lessons from the crisis

Positive lessons

1. Governments were not the only buyer
2. Central banks provided liquidity support to banks/insurers
3. Investments from sovereign wealth funds (now decreasing, though)
4. Valuation techniques worked (some investors bought distressed assets)
5. Proper regulation/new prudence rules are expected (Basel II revision)
6. Falling (speculative) oil prices
7. World-wide inflation threat receded.
Lessons from the crisis

Winners

1. Politicians (more powerful)
2. Institutional investors
3. Private investors (Warren Buffet etc.)
4. The International Monetary Fund (justifying its existence)
5. Bankruptcy lawyers/advisors (assisting to companies in trouble)
6. Academics (writing about the crisis and produce future outlook)
Future outlook by the IMF

Estimates of potential writedowns for 2007-2010 on U.S. originated assets as reported in the GFSR and GFSR quarterly updates. GDP growth (year-on-year) is average for 2007-2010.

Source: Authors based on various sources
## Future outlook

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Transmission mechanism</th>
<th>Outcome</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First-order</strong></td>
<td>Cross-Product Contagion: Derivatives and Structured Products</td>
<td>De-risking De-leveraging</td>
<td>2007-2010</td>
</tr>
<tr>
<td><strong>Second-order</strong></td>
<td>Asset-Dependent Real Economies</td>
<td>Consolidation of Consumption and Homebuilding</td>
<td>2008-2012</td>
</tr>
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Conclusion

Good times are over!
Conclusion

Recommendations - 4 policies

1. Internationally-coordinated policy when funding private financial institutions
2. Tighter regulation and higher transparency of financial markets
3. Revision of Basel II requirements
4. Change in rating agencies business model
Discussion

Thanks for your attention.
Let's discuss it now!
References

• Arthur D. Little (2008): Demystifying the Credit Crunch, July 2008


• Fabozzi, F. J., Kothari, V. (2008): Introduction to Securitization, Wiley

• Fabozzi, F. J. et al. (2008): Subprime Mortgage Credit Derivatives, Wiley


