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Exit Strategies from The Global Crisis

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Abstract**—**While the form of crises may change, their essence remains the same (such as a cycle of abundant liquidity, rapid credit growth, and a low-inflation environment followed by an asset-price bubble). The current market turbulence began in mid-2000s when the US economy shifted to imbalanced both internal and external macroeconomic positions. We see two key causes of these problems – loose US monetary policy in early 2000s and US government guarantees issued on the securities by government-sponsored enterprises what was further fueled by financial innovations such as structured credit products. We have discovered both negative and positive lessons deriving from this crisis and divided the negative lessons into three groups: financial products and valuation, processes and business models, and strategic issues. Moreover, we address key risk management lessons and exit strategies derived from the current crisis and recommend policies that should help diminish the negative impact of future potential crises.

Keywords**—**exist strategy, global crisis, risk management, corporate governance

I. Introduction

IN 2007, the sub-prime mortgage crisis undermined the US financial market, resulting in global credit and liquidity shortages and revising the structure of the world financial market. In this paper, we discuss the history, macroeconomic conditions, and milestones of the US mortgage crisis. We also describe key investment banking and risk management practices that exacerbated the impact of this crisis, such as the industry's reliance on ratings assessment, an originate-to-distribute model, risk-shifting, securitization techniques, and the use of off-balance sheet vehicles. Moreover, we address key lessons for risk management derived from the current global market turbulence and recommend policies that should help diminish the negative impact of future potential crises.

This paper is organized as follows. After a brief introduction we describe the background of the crisis. In section three we define key market players, risks and relevant risk management issues. The fourth section presents both negative and positive lessons emerged from current financial problems. The fifth section reviews how troubles of a virtual economy might affect a real economy in the US and subsequently spill over the world. Finally, in conclusion we summarize the paper and state final remarks.

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II. Background of the Crisis

A. Comparison of the current crisis with other crises

Before discussing the main aspects of the current crisis, we provide the historical context needed to better understanding these issues. When compared to other financial crises (see Fig. 1), the 2008 turmoil has caused serious problems for many institutions around the world and resulted, among others, in the end of an era in investment banking.

When comparing the dot.-com bubble crisis in late 1999 and the current crisis, it is evident that both crises accounted only for relatively-low market shares in US market capitalization (6% of US equities market capitalization in 1999) and securitized mortgage debt outstanding in the US respectively (14% share in 2007). However, the consequences of these crises affected the whole economy and world financial markets significantly. Specifically, the dot.-com bubble was followed by a 49% fall in the S&P 500 index over the next two and a half years (and a recession), while the latter crisis caused a US market crash and roiled world financial markets.

B. Macroeconomic imbalances in the US

No economy can live perpetually beyond its means and the case with the US proves this theorem. Both an increasing current deficit, as well as US growing consumption (spurred outsized US consumer demand), led to the negative consequences discussed below (e.g. low savings, moral hazard in financial markets, unrealistic goals of home ownerships implying in increasing demand on mortgages in the US etc.). Last but not least, the Federal Reserve's (FED) monetary policy supported this imbalance through maintaining low interest rates fostering excessive US consumer demand.

First, in the period from 1995-2006, the US current account deficit jumped from 1.5% of GDP to 6% and was financed through foreign market lenders who hold dollars as the world's reserve currency. Some researchers were talking about a new "Bretton Woods II" arrangement, whereby "surplus savers such as China could forever recycle excess dollars into US assets in order to keep their currencies competitive and their export-led growth models humming"[9]. The question remains if such unrestrained borrowing is sustainable.

Second, in the mid-1990s, the shift in US consumers' preferences caused another problem – the consumers started to prefer asset-based savings (e.g. home equity) to income-based savings. As a result, US personal consumption rose by 3.5% p.a. in the real terms in the period from 1994-2007, becoming the highest increase in a protracted period for any economy in modern history [9]. Between the years of 1997 to 2007, household sector indebtedness jumped from 90% to 133% of disposable personal income. Moreover, the ratio of personal consumption on the US GDP grew from 67% in 1997 to 71% in 2007. However, the decline in the US household consumption has caused problems to Asia's export-led growth dynamic, which is highly-dependant on continued exports to the US.

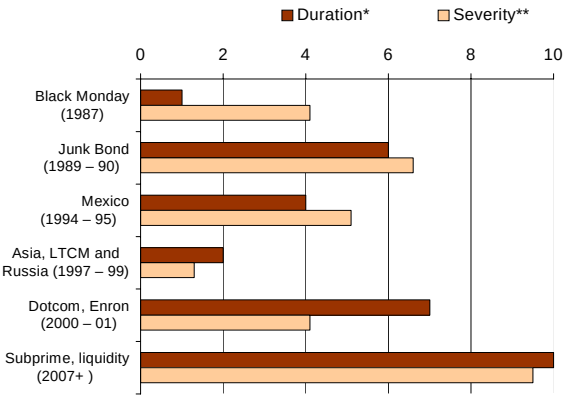

Fig. 1 Impact of Recent Capital-market Crises on Investment Banks
Notes: *Number of quarters till earnings at pre-crisis levels, ** Earnings lost, number of pre-crisis-quarter earnings
Source: Author based on [10]

C. *The history of US mortgage market*

We see two key causes of the crisis – loose US monetary policy in 2003-2004 and US government guarantees on the securities by government-sponsored enterprises what was further fueled by financial innovations such as structured credit products. These facts resulted in an enormous amount of money invested in home mortgages followed by soaring prices of home building.

Although the problems in the US mortgage market first materialized in 2005, the whole problem started in 1977, when the Community Reinvestment Act (CRA), a United States federal law, came into force (see Table I). The CRA tightened credit standards for the US commercial banks and savings associations as it required the provision of loans for the whole market segment, i.e. also for low- and moderate-income loan applicants. In 1995, the credit standards were further eased as new US regulation required banks to provide more loans to low-income borrowers (in terms both the number and aggregate dollar amount) or risk serious sanctions. On the other hand, we should note that the CRA fostered problems of the US mortgage market rather than caused it.

TABLE I BACKGROUND MILESTONES OF THE MORTGAGE CRISIS

Year	Event	Short description
1977	Community Reinvestment Act (CRA)	Relaxing lending standards -> mortgages for "everyone"
1995	Introduction of systematic ratings of banks in terms of CRA compliance Permission of securitization of CRA loans containing subprime mortgages	Loosing credit standards for banks -> more loans to low-income borrowers
1997	First securitization between Union Bank (later taken over by Wachovia) and Bear Stearns (later taken over by JPMorgan)	This securitization started a wave of similar transactions/ investment structures
2003	Guarantees from US government to Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corporation (Freddie Mac)	Explicit guarantees -> lower risk -> issuance of debt with lower rates than competitors
Mid 2005	Surging delinquencies on US sub-prime adjustable-rate mortgages (ARM)	Delinquency rates are good harbingers of future foreclosure rates
Mid 2006	Falling house prices in the US Homeowners' equity started declining	Higher loan-to-value ratio (best predictor of future defaults) Higher delinquency rates on both sub-prime and prime mortgages

Source: Author based on [8] and [11]

In mid-2005, the US market saw increasing delinquency rates on sub-prime adjustable-rate mortgages (ARM), which historically has been a good predictor of future foreclosure rates. Consequently, in mid-2006, the situation deteriorated as the US housing prices started to fall and delinquency rates on sub-prime mortgages surged, later also prime mortgages in a lesser extent.

Future US housing prices will be crucial for the next development of the market. However, according to IMF [7] the troubles on the US housing market are anticipated to continue through 2009 (mainly due to the combination of tighter lending standards, falling home prices, and lower recovery values). As a result, the potential increase in charge-off rates on residential mortgages could sky-rocket from 1.1% today to 1.9% by mid-2009. Moreover, consumer loan charge-off rates could move higher as a result of strengthened bank lending standards and slowing economic growth [10].

D. *Securitization*

Securitization is a modern financial process whereby traditional bank assets (for example, mortgages or receivables from credit cards) are pooled and repackaged into securities that are then sold to investors. The results of securitization are the multi-billion sized asset-backed securities (ABS) markets. Specifically, the bank could issue a bond with the pooled assets serving as collateral, but the credit rating assigned to the new security is based on the reserve requirements, leading to AAA rated securities. Meanwhile, the assets are included in any computation of the bank's capital ratio. However, 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. For more details about securitization see [4] or [8].

The big problem principles of securitization was, among others, mezzanine structured-finance CDOs with AAA rating were backed by subprime mortgage bonds below BBB rating [11].

The global issuance of bonds backed by mortgages saw a rapid annual growth until the year 2005. However, not only mortgagees have been securitized; Fig. 2 implies that securitized credit card receivables amounted 14% (USD 346 billion) of total ABS outstanding in the US in 2007, while securitized auto loan receivables reached 8% (USD 198 billion). We expect that US banks will face huge losses stemming from these products in the coming years.

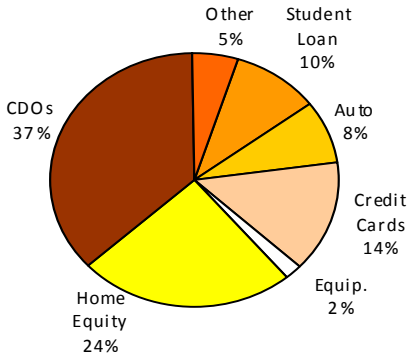

Fig. 2 ABS Outstanding by Collateral in The US as of The End of 2007 (Total = USD 2,472 Billion)
Source: Author based on [10]

III. Risk Management during the Crisis

A. Key market players

Before presenting risk management lessons, the key players during global financial turmoil need to be identified. We have divided these players into six groups: mortgage originators, risk shifters/transformers, investors, insurers, rescuers and others (see Table II).

B. Main risks involved

As Fig. 3 indicates, the pending crisis started as a credit crisis (from mid-2007 until August 2008) and later became a liquidity crisis (since September 2008). Although this figure is simplified (e.g. only CDOs and general SPV structures are considered), it shows main money flows during the crisis. We should note that the existence of US government guarantees on behalf of government-sponsored enterprises (GSE) - Fannie Mae and Freddie Mac - have distorted the CDO market significantly. As a result of these state guarantees market players considered CDOs as safe financial instruments, although they were backed by low-quality underlying assets such as subprime mortgages.

Table II 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 banks
- Investment banks
- Hedge funds
- Pension funds
- Insurance companies
- Investment funds
- Private investors

4. Insurers
- Insurance companies
- Monoline insurers
- Reinsurence companies

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

6. Others
- Rating agencies
- US government
- Regulatory bodies

Note:* ABCP = asset-backed commercial paper, SIV = structured investment vehicle
Source. Author

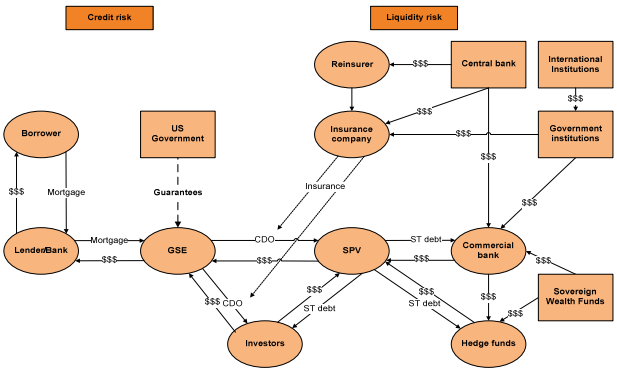

Fig. 3 The Credit and Liquidity Risk during The Pending Crisis
Source: Author

Other than credit and liquidity risks, risks such as operational, market, off-balance sheet, contagion, systematic, regulatory and globalization risk have materialized concurrently (see Table III). For more details of operational risk management see [2], [8] or [9].

We should note that only credit, market and operational risks are covered in Basel II requirements, while the others are not.

Table III Risk Typology

Risk	Short description	Example
Credit	Risk to a financial institution of losses resulting from the failure of a counterparty to meet its obligations in accordance with the terms of a contract under which a financial institution has become a creditor of the counterparty	Default of mortgage borrowers Bankruptcy of Lehman Brothers

Liquidity	The probability of a situation when a financial institution cannot meet its proper (both cash and payment) obligations as they become due.	Overall lack of liquidity in inter-bank markets
Operational	Risk to a bank of loss resulting from inadequate or failed internal processes, people and systems, or the risk to a bank of loss resulting from external events, including the legal risk	Mortgage frauds by dealers Misconduct of managers
Market	Risk to a financial institution of losses resulting from changes in prices, exchange rates and interest rates on the financial markets	Sudden increase in interest rates
Off-balance sheet	Risk that off-balance assets/liabilities appear on a balance sheet of a financial institution	Off-balance sheet SPVs became balance-sheet items
Contagion	Risk of a negative indirect impact of other financial institutions on a financial institution itself the transmission of an idiosyncratic shock affecting one bank or a group of banks to other banks or other banking sectors	Mistrust in inter-bank/short-term markets
Systematic	Risk that cannot be diversified through portfolio diversification	Worldwide market crash
Regulatory	The risk of potential loss due to the violation or a sudden change of the regulatory framework	Change in regulatory framework of credit derivatives/OTC market
Globalization	The risk of worldwide contagion - increasingly correlated markets and a decoupling of markets	Worldwide global turmoil

Source: Author

For investing to securitized products some banks used off-balance sheet entities – such as structured investment vehicles (SIVs) and conduits – that required less capital charges and hence enabling a higher leverage. SPVs were not included in the balance sheets of these banks. However, these conduits were facing liquidity risk because they invested to long-term assets such as CDOs or ABSs but were funded through shorter-term asset-backed commercial paper (ABCP). When CDOs' value deteriorated, conduits'creditors stopped lending money to the conduits. As a result, the banks had to fund these conduits, because they appeared on banks' balance sheet, what further intensified liquidity problems of these banks.

Central banks provided emergency liquidity (discount windows, extra credit lines for instance Primary Dealer Credit Facility PDCF, Term Auction Facility TAF or Term Securities Lending Facility TSLF or Commercial Paper Funding Facility CPFF etc.) into the financial system in order to refresh confidence among market players and stabilization the situation. For example, as of October 2008 the European Central Bank has lent more than EUR 770 billion to banks. However, despite this central bank liquidity support and lower policy interest rates, the crisis has deepened and broadened. For instance, current monetary policy enacted by the Czech National Bank seems to be inefficient; as late as October 2008 a Czech basic interest rate (2W-repo rate) amounted 3.5% p.a., while the Czech inter-bank rate PRIBOR oscillated around 3.8% p.a. These figures indicate high risk premium on the Czech market implying pending mistrust between market players.

IV. Lessons from the Crisis

The current global financial upheaval raise few issues related risk management tools, processes and techniques, which might give several lessons for future development on the financial markets. We find both negative and positive lessons from this crisis.

A. Negative lessons

The negative lessons can be divided into three groups: financial products and valuation, processes and business models, and strategic issues (see Table IV).

Table IV Negative Lessons

Issue	Description	Who failed	Lesson
Financial products and valuation			
Adjustable-rate-mortgage (ARM)	Lack of information about ARMs for borrowers	Mortgage originators, regulators, GSE	More publicly-available information for consumers
Credit default swaps	Unregulated credit default swaps/OTC market	Regulators, risk managers	Sensitive regulation of OTC markets Clearing centre
Financial innovations	Financial innovators were one step before regulators	Regulators, rating agencies	Sensitive regulation of new products
Structure product valuation	Nobody understood risk inherent in structured products	Rating agencies, internal auditors, risk managers, regulators, GSE, investment banks	Better both external and internal regulation of structure products
Processes and business models			
Basel II requirements	Reliance on rating RWA concept failed Own bank models	Regulators	Failed rating assessment Broker-dealer had low RWAs but higher leverage
Mortgage frauds	High fees for dealers/low lending standards	Mortgage dealers, mortgage originators, GSE	NINJA loans
Originate-to-distribute model	Banks with no incentives to assess borrower's creditworthiness	Regulators, internal auditors	Better regulation of risk management processes
Rating agencies	RAs did not evaluation true risk of securitized products	RAs, investors, regulators, risk managers, internal auditors	RAs should evaluate credit + liquidity + systematic risk
Reliance on rating	Strong reliance on incorrect rating assessment	Investors, regulators, risk managers, internal auditors	Investors should do own valuation of investments

Risk management process	Inadequate process, weak supervision	Internal auditors, regulators, top and risk managers	Better regulation of processes
Use of OBS vehicles	Banks used OBS vehicles to avoid capital requirements	Top and risk managers, regulators	Better regulation of OBS vehicles (e.g. Basel II)
Wholesale funding	Reliance on wholesale funding possible in good times	Risk managers	Liquidity risk might be stress-tested
Strategic issues			
Corporate governance (principal-agent problem)	Top managers preferred own interest to company's interest	Top managers, regulators, shareholders	Motivation of managers on long-term goals of a company
Fair-value accounting	Fair-value accounting caused further price falls (fire-sale prices)	Risk/finance managers	Fair-value accounting is a good concept
Government guarantees	US government guarantees to GSEs totally distorted the financial market	US government	"Careful" state guarantees
Moral hazard	State bailouts/support of private financial institutions	Governments	"Careful" state intervention
Too-big-too-fail doctrine	State rescues of AIG, GSEs, Icelandic and UK banks etc.	Governments, international institutions	"Careful" state intervention
Too-connected-too-fail doctrine	State rescues of AIG, GSEs etc.	Governments, international institutions	"Careful" state intervention
Transparency	Lack of transparency in securitization process, blurred structures of SPVs	Regulators, securitization originators (investment banks, GSEs)	Encouragement of self-discipline of market players

Notes: ARM = adjustable-rate-mortgage, GSE = government-sponsored enterprises, OTC = over-the-counter, OBS = off-balance sheet, RA = rating agency, RWA = risk-weighted assets, SPV = special purpose vehicles
Source: Author based on [10]

B. Positive lessons and winners

Despite the above-mentioned negatives, we can find several positives and winners of the current situation (see Table V).

TABLE V POSITIVES AND WINNERS OF THE TURMOIL

Positives	Winners
1. Governments were not the only buyer	1. Politicians (takes power over nationalized companies)
2. Central banks provided liquidity support to banks/insurers	2. Institutional investors (JPMorgan, etc.)
3. Investments from sovereign wealth funds (now decreasing, though)	3. Private investors (Warren Buffet etc.)
4. Valuation techniques worked (some investors bought distressed assets)	4. The International Monetary Fund (justified its existence)
5. Proper regulation/new prudence rules are expected (Basel II revision∗)	5. Bankruptcy lawyers/advisors (assist to companies in trouble)
6. Falling (speculative) oil prices	6. Academics (write about the crisis and produce future outlook)
7. World-wide inflation threat receded.	

Source: Author
Note: ∗For more details about Basell II requirements see [7] or [8].

V. FUTURE OUTLOOK

As we noted earlier, the US sub-prime crisis had roots in macroeconomic imbalances of the US economy. On a related note, the credit crisis has spread over the global financial markets and negatively effected global macroeconomic situation.

We believe that the current credit crisis is the first phase of the global crisis (see Table VII). In the first phase, a virtual economy was affected through the subprime meltdown (cross-product contagion from mortgage-backed securities to credit derivatives markets, inter-bank markets, leverage lending markets etc.).

During the second phase, the real side of the US economy would be affected. The household consumption will fall, foreclosures on home-equities will rise, higher unemployment will result in lower disposable personal income. The US households will have less money to repay their debts (mortgages, auto loans, credit cards) and aggregate demand will fall deeper.

Finally, during the third phase the US troubles would spread cross-border and would negatively affect foreign trade and global capital flows. Consequently, export-dependant economies would see a decline in their export, what would further harm a global economic situation.

TABLE VI TAXONOMY OF A CRISIS

Impacts	Transmission mechanism	Outcome	Period
First-order	Cross-product contagion: derivatives and structured products	De-risking De-leveraging	2007-2010
Second-order	Asset-dependent real economies	Consolidation of consumption and homebuilding	2008-2013
Third-order	Cross-border linkages trade and capital flows	Export and vendor financing risks	2009-2015

Source: Author based on [10]

VI. CONCLUSION

While the form of crises may change, their essence remains the same – repeating cycles of abundant liquidity, low interest rates, rapid credit growth, and a low-inflation environment followed by an asset-price bubble. The current market turbulence began in mid-2000s when the US economy shifted to an imbalanced macroeconomic position. By 2007, mounting defaults in the US sub-prime mortgage market led to US market instability, unleashing a global fiscal contagion that spread around the world, roiling markets and causing world economic upheaval. This contagion led to, for example, the nationalization of big financial institutions, bank failures, the end of an era in investment banking, increased federal insurance on banking deposits, government bailouts and opportunistic investments by sovereign wealth funds.

The 2008 global financial upheaval has taught risk management lessons that will be crucial for future financial markets development. We see two main causes of the crisis – loose US monetary policy, US government guarantees on the securities by GSEs what was further fueled by financial innovations such as structure credit products or credit derivatives.

We have discovered both negative and positive lessons deriving from this crisis. We have divided the negative lessons into three groups: financial products and valuation (e.g. failure of rating agencies when valuating structured products), processes and business models (e.g. the failed originate-to-distribute model), and strategic issues (e.g. moral hazard or principle-agent problem). Moreover, the 2008 crisis heralded a new risk occurred during the crisis – globalization risk as a risk of worldwide contagion resulting from increasingly correlated markets and a decoupling of markets.

The pending global market turbulences negatively affected financial institutions' performance. To offset this drop in profits, pressure on lower costs and related cost-cutting initiatives might be expected in financial institutions during coming months. Moreover, we recommend the following four policies to protect against repeating these errors and limiting future risk exposure: internationally-coordinated policy when funding private financial institutions, tighter regulation and higher transparency of financial markets, revision of Basel II requirements, and a change in financing rating agencies. These steps should help diminish the negative impact of future potential crises by adding higher credibility, accountability, transparency and risk diversification of the world financial markets.

At present we are seeing two potential remaining problems in the US financial market: credit cards defaults and auto loans defaults, which could cause USD multi-billion losses for financial institutions in coming years. We believe that the current credit crisis is the first phase of an ongoing global crisis. In the first phase, a virtual economy was affected through the subprime meltdown. During the second phase, the real side of the US economy would be affected. Finally, during the third phase the US troubles would spread cross-border and would negatively affect foreign trade and capital flows. In other words, we are at the beginning of the global crisis that could take several years to unfold.

REFERENCES

[1] J. Cheng, , M. Walsh, , S. Flax, "Demystifying the Credit Crunch : A Primer and Glossary." *Arthur D. Little.* 2008. Available: <http://www.privateequitycouncil.org/wordpress/wp-content/uploads/adl-pe-primer-fin-r2.pdf>.

[2] R. Chalupka, P. Teply, "Operational Risk Management and Implications for Bank's Economic Capital – A Case Study", *IES Working Papers No.14*. Charles University, 2008. Available: <http://ies.fsv.cuni.cz/default/file/download/id/8933>.

[3] ECB, EU Banking Sector Stability, 2007. Available: <http://www.ecb.int/pub/pdf/other/eubankingsectorstability2007en.pdf>. ISSN 1725-555.

[4] F. J. Fabozzi, V. Kothari, *Introduction to Securitization*. 1st ed. Oxford: Wiley, 2008.

[5] F. J Fabozzi et al. *Subprime Mortgage Credit Derivatives*. Viley, 2008.

[6] IMF, Global Financial Stability Report: Containing Systemic Risks and Restoring Financial Soudness. *International monetary Fund: World Economic and Financial Surveys*, 2008. Available: <http://www.imf.org/external/pubs/ft/gfsr/2008/01/pdf/text.pdf>.

[7] M. Mejstrik, M. Pecena, P. Teply. *Basic Principles of Banking*. Czech Republic : Karolinum press, 2008.

[8] M. Rippel, , P. Teply, Operational Risk - Scenario Analysis : *IES Working Papers No. 15*. Charles University, 2008. Available: <ies.fsv.cuni.cz/default/file/download/id/8910>.

[9] S S. Roach, Pitfalls in a Post-Bubble World. *Morgan Stanley*. 2008 Available: <http://www.scribd.com/doc/5351746/Pitfalls-in-a-PostBubble-World-Stephen-Roach-Morgan-Stanley>.

[10] P. Teply, *The Truth About The 2008-2009 Crisis: A Hard Lesson for The Global Markets*. VDM Verlag, Germany, 2010.

[11] M. Zeleny, World financial crisis has long roots. *Czech Business Weekly* No. 39, 2008 Available: <http://web.fame.utb.cz/cs/docs/World_financial_crisis_has_long_roots.pdf>.