

Project Dissertation
on
Study of the US Subprime Mortgage Crisis

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**UNIVERSITY SCHOOL OF MANAGEMENT
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Delhi Technological University

CERTIFICATE

This is to certify that the project report titled “ **Study of the US Subprime Mortgage Crisis** ” is a Bonafide work carried out by **Mr. Satyajit Kumar** of **MBA Business Analytics, 2018-20** and submitted to **University School of Management & Entrepreneurship, Delhi Technological University**, Bawana Road, Delhi in the partial fulfilment of the requirement for the award of the Degree of Masters of Business Administration.

Signature of Guide

Signature of Head (USME)

Place:

Seal Head

Date:

DECLARATION

This to certify that I have completed the project titled **“Study of the US Subprime Mortgage Crisis”** under the guidance of **“Dr Manoj K Sharma, Professor at DTU”** in the partial fulfilment of the requirement for the award of the degree of **“Master of Business Administration in Business Analytics”** from University School of Management & Entrepreneurship, Delhi Technological University, Delhi. This is my original work and I have not submitted it earlier elsewhere.

Name – Satyajit Kumar

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MBA (Business Analytics)

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I take the opportunity to thank to all of my friends and family members who in some way or the other helped me to accomplish my project. No amount of written expression is sufficient to express my deepest sense gratitude to them.

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Executive Summary

The US subprime mortgage crisis of 2007-08 was the reason of the economic slowdown as well as the recession in not only in the then safe considered investment destination, the United States but also almost on the entire globe. It was a crisis caused by a sudden and accidental increase in foreclosure of properties in early 2007.

Because of the inadequate policies of the government in early 2000 related to monetary management, a housing bubble was created in which costs of properties were augmenting vastly. Thus the instant factor for the mortgage menace can be attributed to the bursting of the assets bubble which had spiked in 2006. The interest rates on subprime lending augmented by end of the year 2006 as well as the prices of properties leaned which became a factor for an unexpected increase in foreclosure stir.

Our dissertation contains the analysis which hints that even if the decrease in the US rate of interest could fascinate higher number of subprime customers yet is not a powerful cause to influence the worldwide slowdown, the crisis could have been confined within the United States if portfolio managers had not bought the securities supported by mortgages. Hence, the headway towards securitization is believed to be a powerful reason of the worldwide slowdowns of financial activities.

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Abbreviations	
SMC	Subprime Mortgage Crisis
MBS	Mortgage Backed Securities
CRA	Credit Rating Agencies
CDO	Collateralized Debt Obligations
US	United States

Introduction

The US crisis related to the subprime mortgages had oscillated the pecuniary system in the United States as well as various nations on the globe. Consumer spending went down by the year 2007 and the number of foreclosures of properties soared, the real estate market had been dwindling, the share markets became bearish, and a lot of financial institutions throughout the world suffered remarkably high deficit because of the crisis.

In 2006, after the United States marketing rate for properties went high and started their unexpected downfall later on, changing the terms of loan and paying back the loans turned tougher. Since Adjustable Rate Mortgages (ARM) began to alter at soared rates of interest leading to monthly payments of the installments at a bigger sum than the capability of the liable person to repay, hence, flaw in mortgage debt soared. Mortgage Backed Securities (MBS), the instrument, frequently owned by the financial organizations, could not hold its sheen. Due to the increased mortgage flaws, international investment bodies largely refrained from investing in MBSs and hence it contributed toward paralyzing the financial developments in the North American country (the United States) and a number of countries as well. The immediate cause of the crisis, according to many experts, was the explosion of the asset bubble which had soared in 2006 and became lean afterwards because of soared rate of interest, that then became the reason of a remarkable

augmentation in the activities related to foreclosure.

The policy of economic liberalization by the government of the United States was a significant reason for the SMC. Many presidents of the United States wanted that the home ownership in the US should increase. They made the rules in such a way that rate of interest on mortgage loans could become adjustable. The new variety of mortgage loans had generated chances for a lot of persons in the North American nation (the US) to afford a house, as well as it had also made a new strata of loan seekers – the subprime borrowers, however the chances of their failing to repay were tall. So, after the evolution of the subprime borrowers the difficulty in the housing industry of the North American nation grew. Usually, borrowers of the subprime category had delinquent payment records added with other features which had inhibited this group of people to be eligible for mortgage-based loan.

The lending organizations were well aware that the price of houses are augmenting continuously and the borrowers could accept the changing terms of their loans simply, so, these institutions were comfortably providing loans to borrowers of the subprime category for earning big margins. Moreover, assuming uninterrupted augmentation in the prices of properties were the single route to the organizations which were granting the loans, in handling the hazard of default as far as the subprime borrowers were concerned. Before the year 2007, the rates of mortgage were moderate and prices of the houses were augmenting as well as the housing market, primarily for residential purposes, were

moving ahead till 2006.

Before the crisis, more and more customers were attracted by the lending institutions by bringing in alluring loan terms like lower amount of installments in the beginning or lower rate of interest for some initial periods after the loan get issued. The necessary requirements for the loan were easy as well as there was an increasing movement in prices of assets which had sufficiently impacted borrowers to reckon on into mortgage loan contracts as they were

feeling that the changing the terms of loan could be convenient for the

favorable loan conditions.

Many people were able to afford buying a property easily because of the attractive mortgage loan packages. Loans were easily issued to such people who were not fulfilling the requisite eligibility for it and were declined for a loan in the past. There was a significant increase in the subprime lending for the time period of 2001- 2006. In the conventional subprime loan distribution, the banks were the only granter of loans for mortgages for the people seeking homes and huge growth was not possible in this system. Many middlemen were brought in to bring-in liquidity into the Subprime Mortgage System by the

adoption of modern subprime lending method.

The loan providing bodies were well informed that the subprime borrowers can be unable to repay under the new subprime model and the progressive increase of the cost of houses firmly motivated the loan seekers to get loans on mortgages. There were higher chances of default by borrowers because of an augmentation in rates related to mortgages by the loan providing bodies, hence, these loan providing bodies concluded that they should scatter the hazard related to subprime mortgage among the portfolio managers. So, the securitization process was devised for the financing of subprime mortgages besides the investment banks.

In the process of Securitization the properties are clubbed all in one, their terms and conditions are re-defined and distributed in the form of debt instruments. After this, the institutional investors acquire these debt instruments for selling it in the market.

In Mortgage Backed Securities (MBS), it is the subprime mortgages which are considered as the ultimate properties. The new approach of financing such as the Mortgage Backed Securities stimulated the portfolio managers of the entire globe for making investments in the real estate industry of the North American nation and hence the number of Mortgage Backed Securities contracts witnessed sufficient augmentation prior to the start of the menace. International portfolio managers who had poured their funds in

Mortgage Backed Securities reported high deficit, when the cost of the real estate came down. Impairments on other kinds of loan had also soared. Worldwide total deficit were estimated in many trillion US Dollars.

There were suspicions on the role of Credit Rating Agencies as they had given high and potentially inaccurate ratings to the Mortgage Backed Securities (MBS). While the real estate bubble was the instant factor of the subprime mortgage crisis, the high rated Mortgage Backed Securities proved to be the factor for real estate price augmentation. The carelessness in ratings for mortgage products by the Credit Rating Agencies was the reason why the Credit Rating Agencies (CRA) are held liable for the menace.

There was an uninterrupted soaring in the costs of properties which necessitated for bringing down the chance of the non repayment by the subprime borrowers that had permitted the investment banks to issue CDOs with very nice ratings. Interestingly, the ratings were provided by the Credit Rating Agencies (CRA). The high rating securities were believed to be issued because the well-known Credit Rating Agencies were paid not by the investors but by the issuers of securities

which finally led to the clashes of interest as well as the rupture of proper management was also palpable in the behavior of these industry bodies. Had the CRAs done their respective jobs properly, the menace might have been avoided because it was possible that the fund managers could have attained insights about the higher hazards which were involved in the mortgage industry.

The subprime mortgage crisis was the cause for a lot of possessors of houses to relinquish the properties and jobs they owned. When the subprime borrowers were unable to repay the sum they borrowed, the fund managers (pension, hedge, etc.) started suffering losses. The menace also became the reason for many persons to forego their contingency money. So, almost everybody in the United States (US) got influenced by the menace. The United States became a big bearer of this menace and its development almost got derailed, and finally there was a reduction in the Gross Domestic Product of the United States.

The United States government had to announce bailout packages to save many of the indebted companies.

Quantitative easing were also done.

Objective of the Study

The objectives of the study are as follows:

- To find out the reasons of the SMC
- To discuss the prime effects of the SMC
- To highlight salient points to be cognized so that the catastrophe can be deferred in future

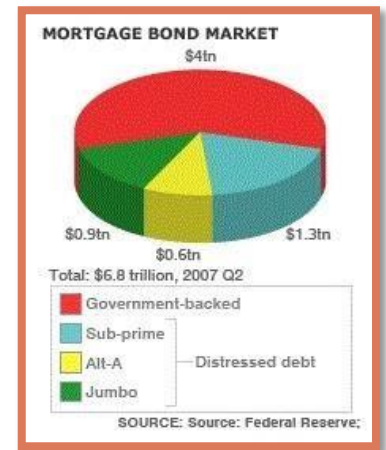
Literature Review

There is exigency for housing business due to various factors; the investors may purchase residences either for profiteering, or asset allotment, or for residential purposes- short duration and long duration both. Every segment of the aforesaid people affect as well as generate need of the real estate sector. The US mortgages can be clubbed into three major kinds: the A-paper Mortgage, the Alternative-A (Alt-A) paper mortgage, and the Subprime mortgage.

The debt provided to the buyers of the home who belong to the marginalized segments of the society with doubtful repaying capacity usually constitute subprime mortgages. So, the fear of non-recovery is sky high as far as subprime loans are concerned. Before the beginning of the crisis debts were available without much difficulty to such people, the recovery from whom were highly doubtful. On contrary, for the people who belonged to the high-income group could only avail A-paper type of mortgage debts. Also, for middle-income group an Alternative A-paper (Alt-A) mortgage loan was considered as suitable.

The private sector had largely increased its role in the mortgage market after 2002. There was a huge increase in sub-prime lending of around United States Dollars 0.5 trillion for the period of 2003- 2006. Such increase was difficult to achieve if the real estate sector was completely overshadowed by the sovereign organizations. The private sector helped a lot of people in affording accommodation by making loan to even the marginalized people of the society, repayment from whom was not guaranteed.

However greed of some people in the corporate sector finally led to the menace.



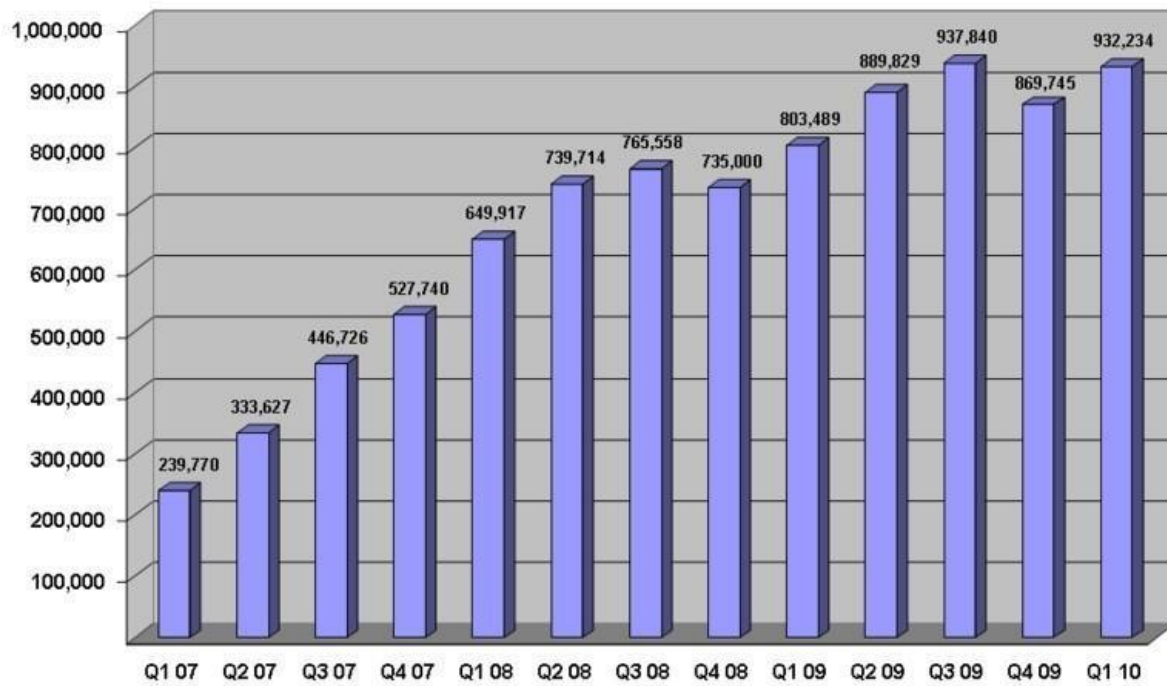
The entire United States debt segment was worth of USD 27 trillion (in the year 2007), out of which, with a total value of United States Dollars 6800 billion, the biggest part was contributed by the US mortgage bonds. By the time, the US subprime crisis happened,

these were not only the subprime lenders who incurred losses but the entire real estate sector suffered. Many corporate bodies incurred big deficits.

Various stakeholders in various United States companies had to suffer a lot since the value of their shares gone down by very high amounts. The non-repayment proceedings magnified from the beginning of the SMC.

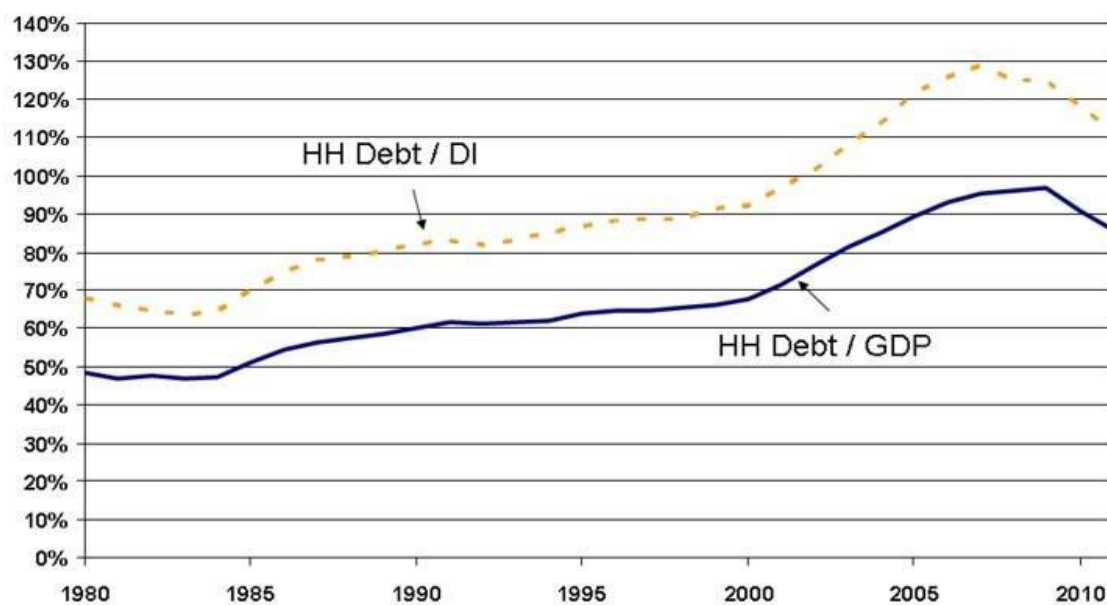
It is estimated that around 1.55 million properties were facing foreclosure proceedings during 2007, which was 75% up from 2006.

U.S. Properties with Foreclosure Activity

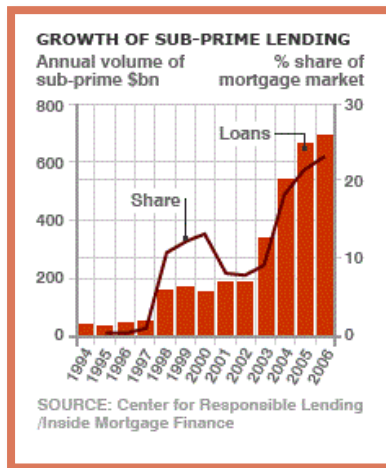


Source: RealtyTrac Press Releases of U.S. Foreclosure Market Report

U.S. Household Debt vs. Disposable Income (DI) and GDP



Sources: U.S. Federal Reserve (FRED), BEA



Return hungry investors are considered as a major cause of the crisis.

Everyone wanted better returns.

Research Methodology

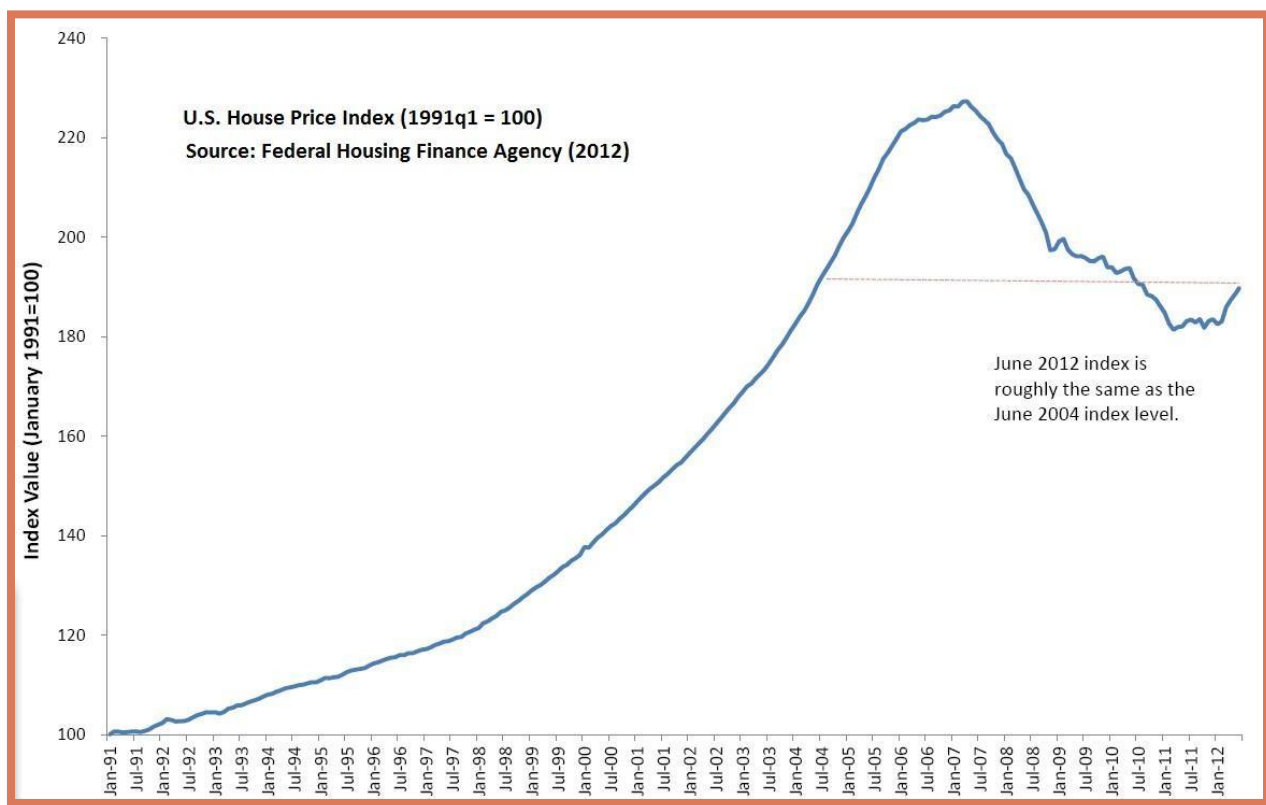
For proper understanding of the topic, qualitative as well as quantitative methodologies of research have been invoked for the analysis of data which have been collected from diverse instruments, mainly secondary.

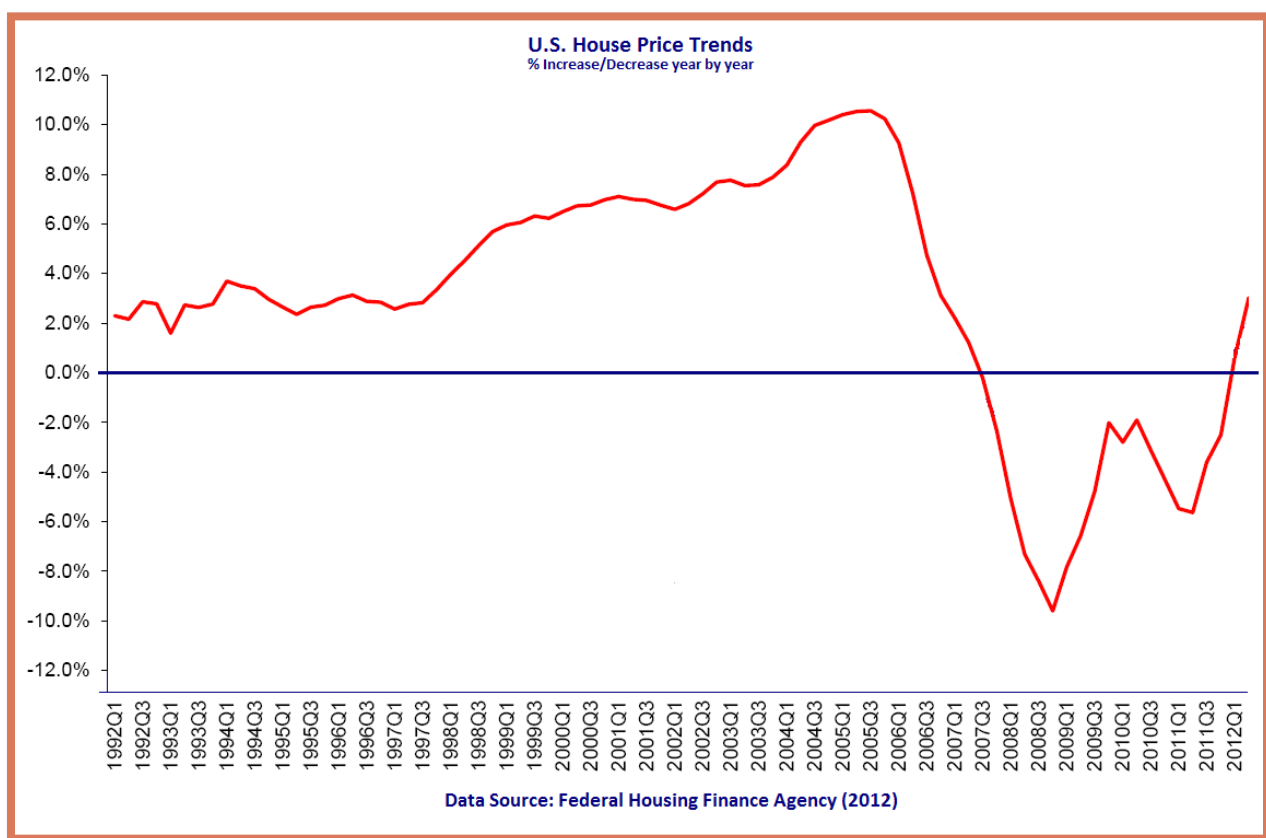
Since the research topic is vast which required data from various sources, so, secondary research methodology is frequently used to complete this research.

Findings and Analysis

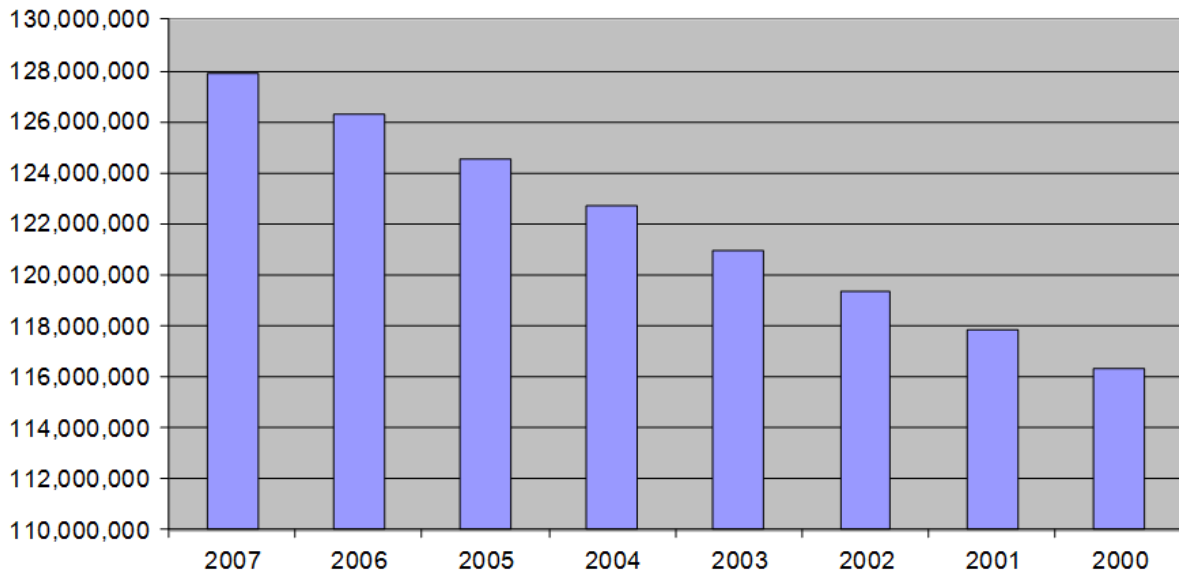
Over-securitization of mortgages as well as increase in making loan to people with poor repaying capacity were attributed as the main reasons for the menace. As soon as the borrowers became unable to repay their loans, the proceedings related to default started.

We can observe from the figure below that there is an intermediate growth in the costs of houses for the time period of 1991 -1999 while an accelerated increase can be noticed during the time period of 2000-2007.

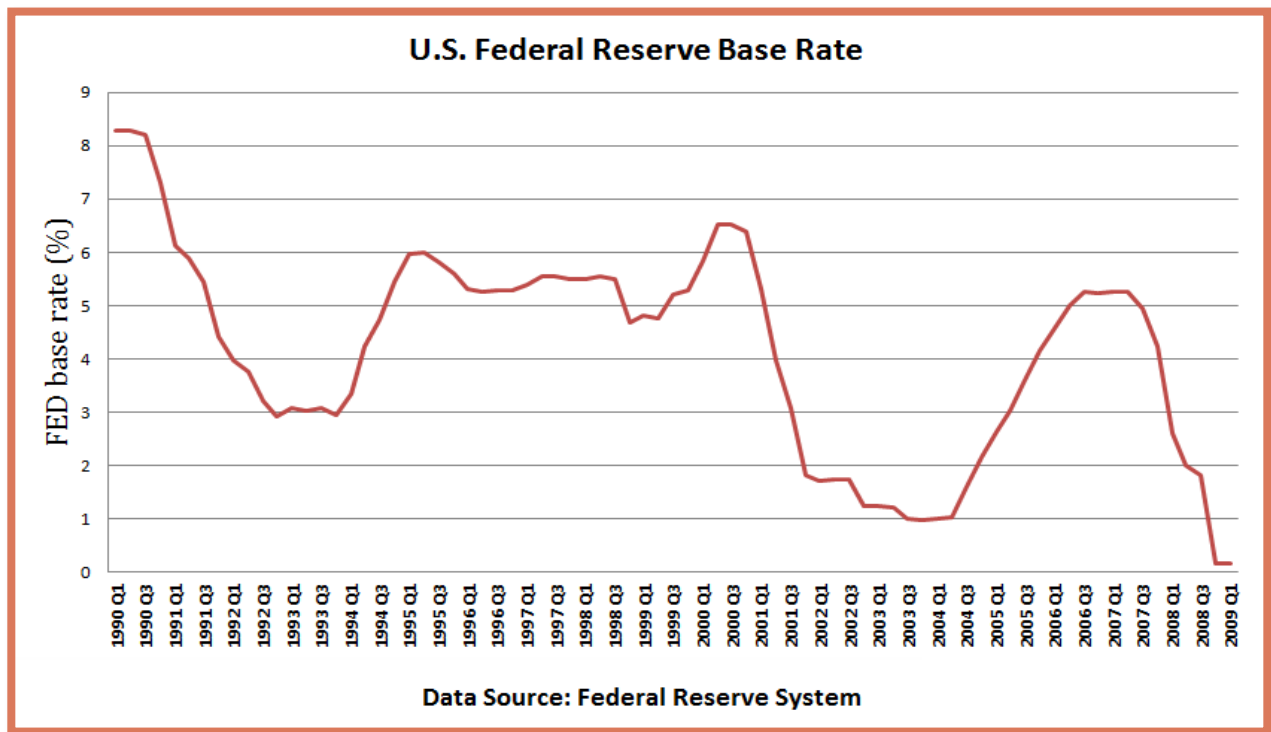


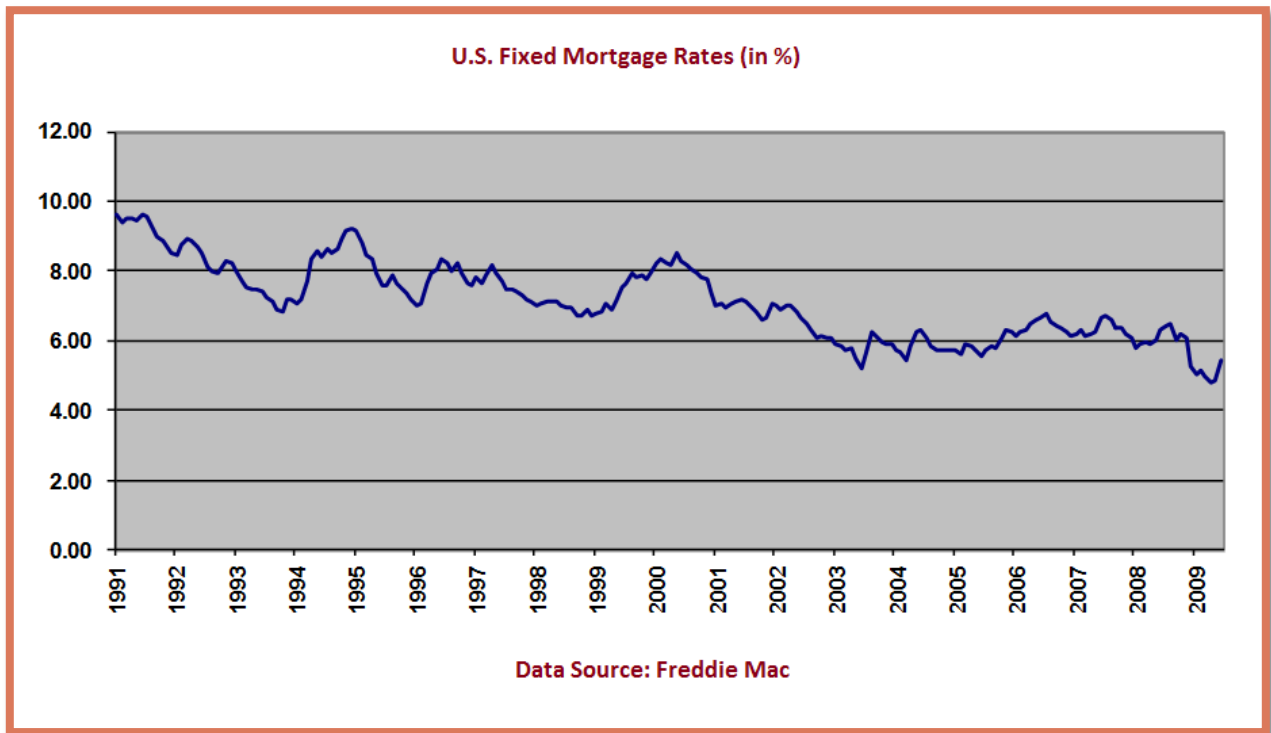


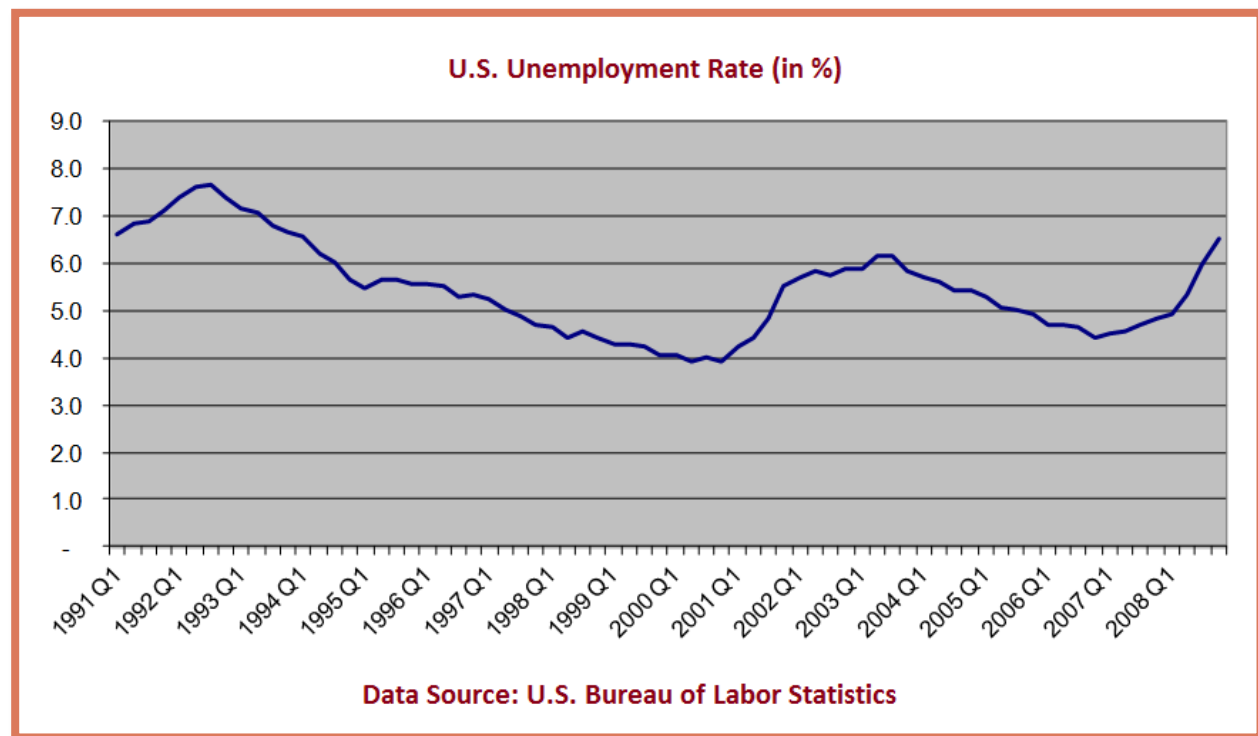
Total supply of houses in U.S.

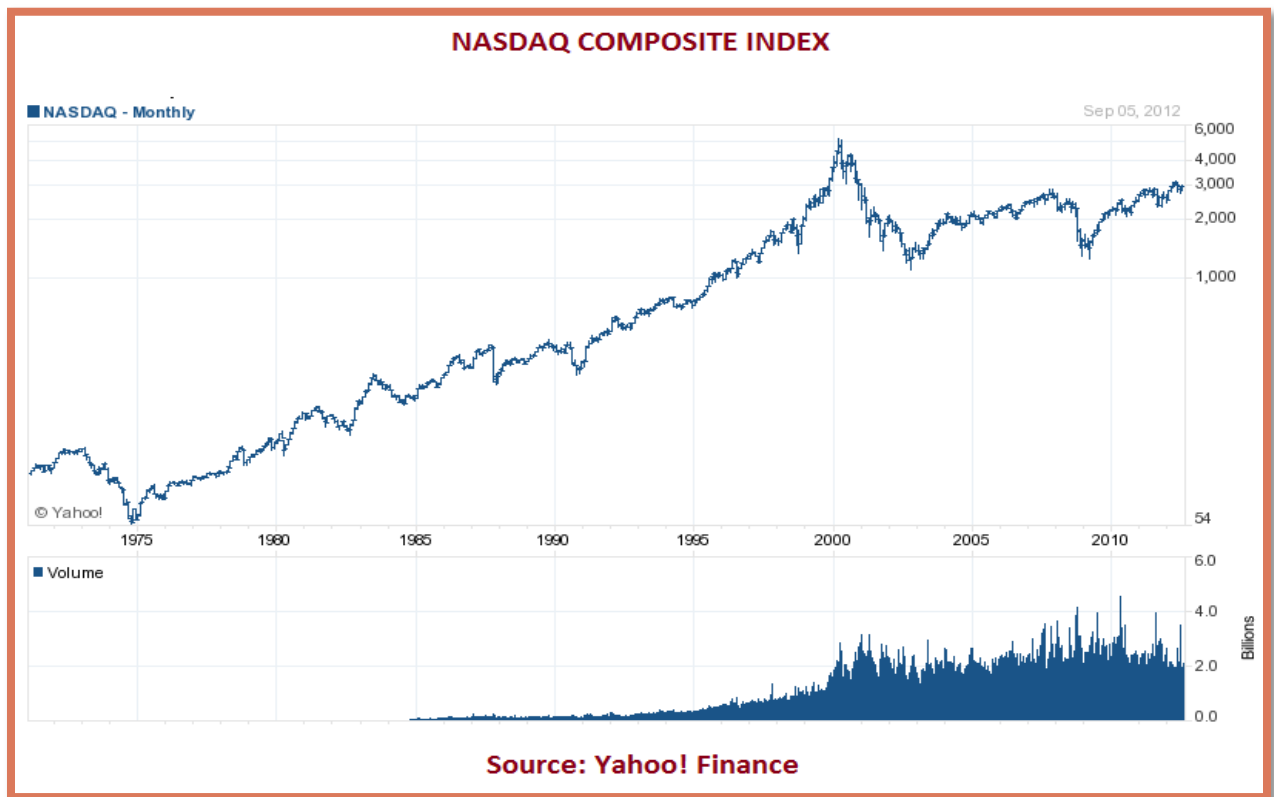


Data Source: U.S. Census Bureau

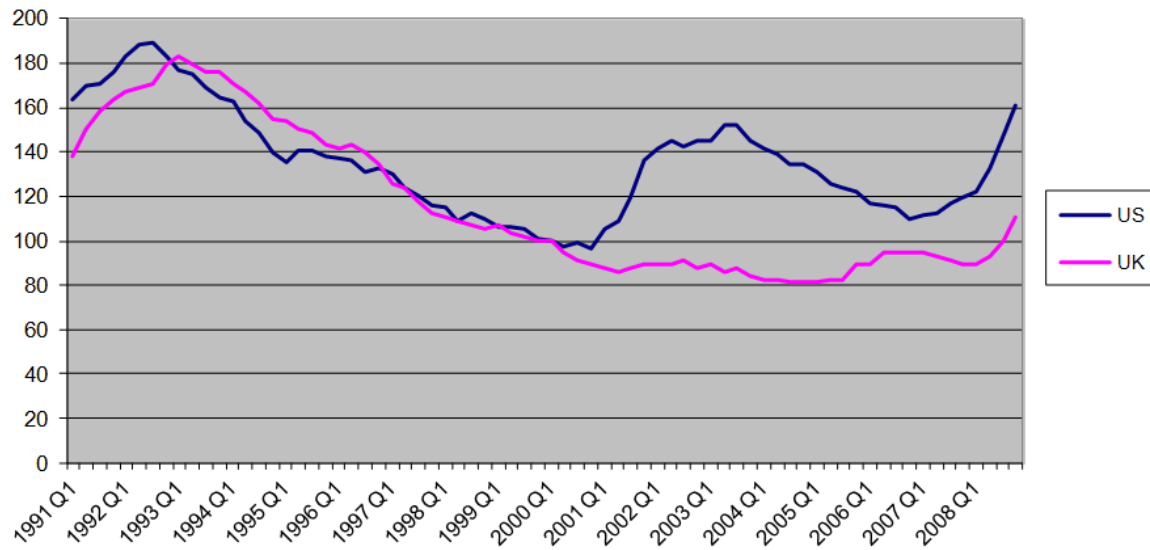






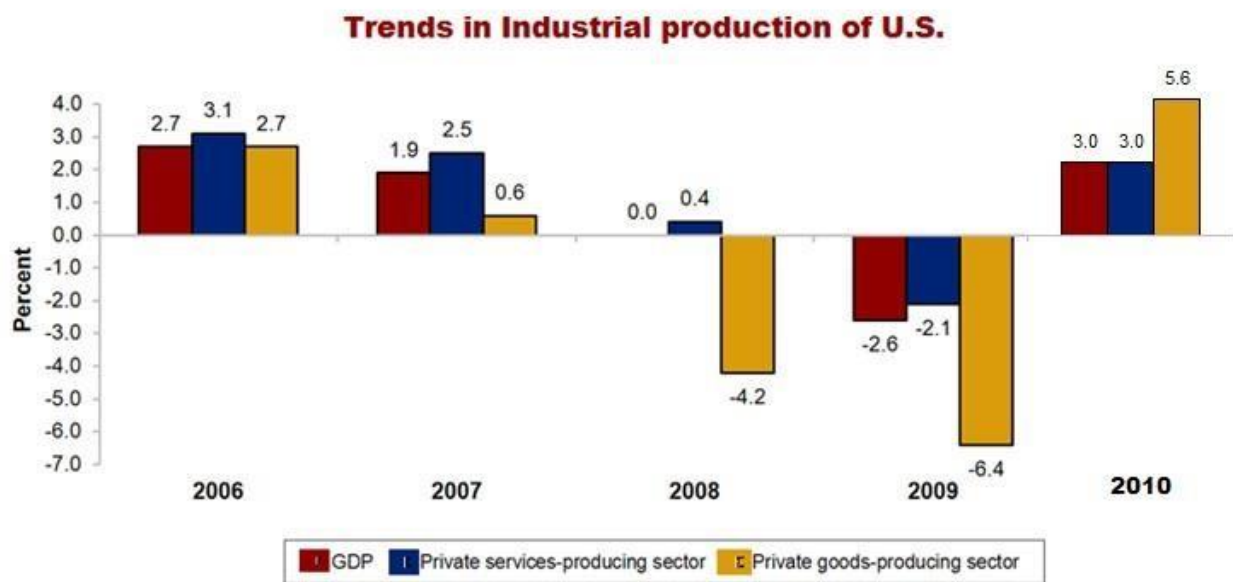


U.S. and UK unemployment indexes [2000 Q1 = 100]



**Data Sources: U.S. Bureau of Labor Statistics &
UK office for National Statistics**

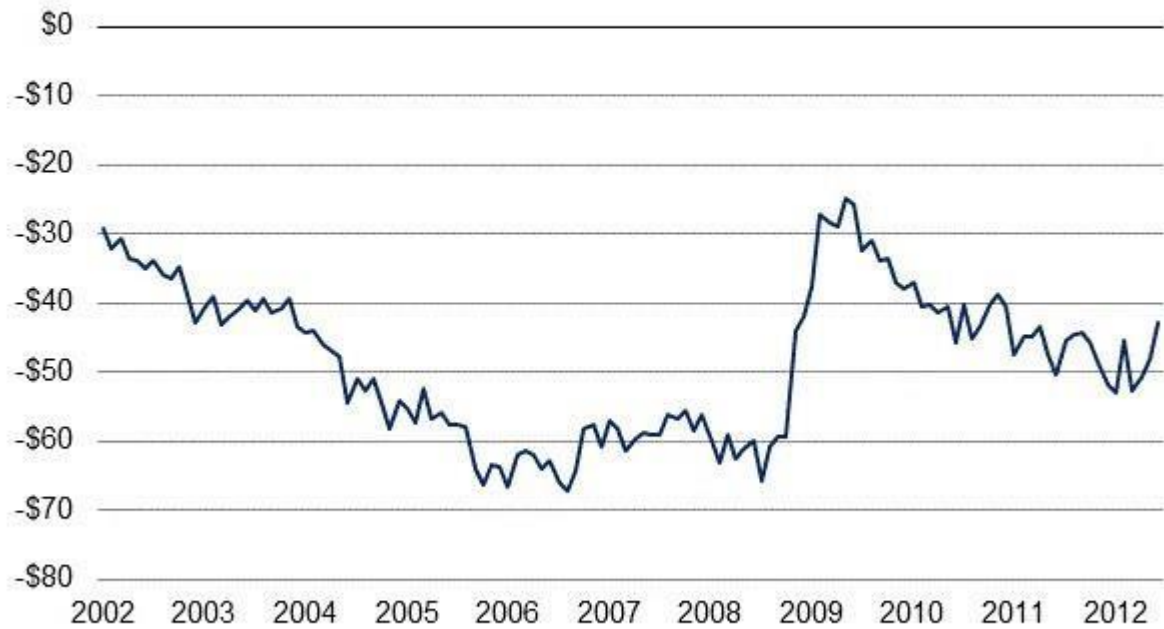




Source: U.S. Bureau of Economic Analysis

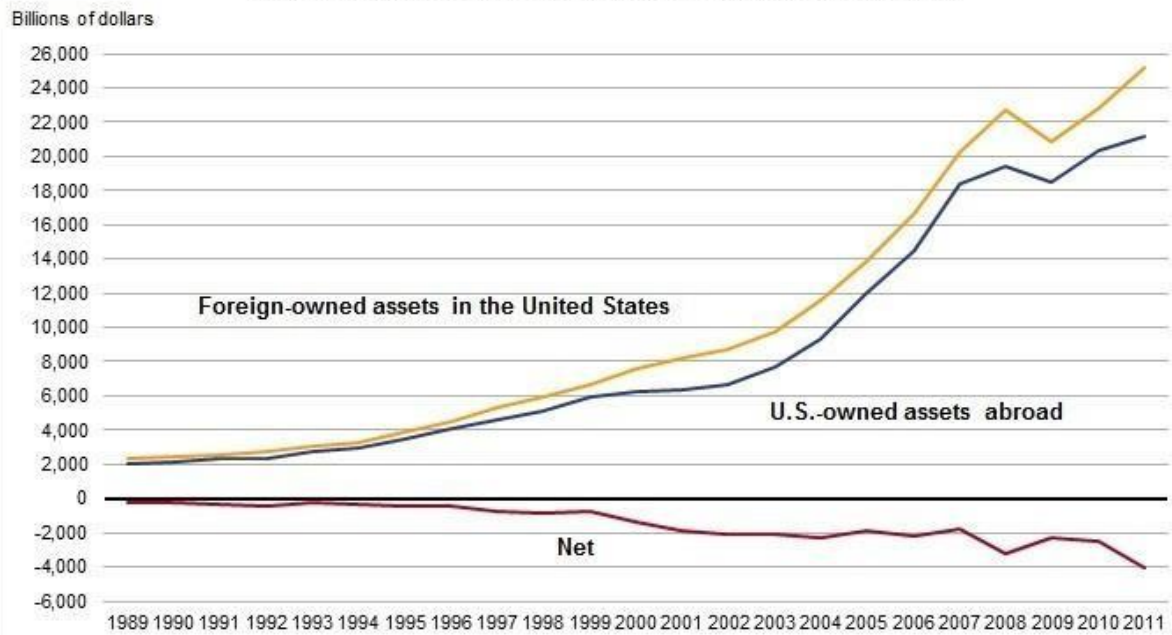
Balance on Goods and Services Trade

(\$ in Billions)











































U.S. Bureau of Economic Analysis

U.S. Net International Investment Position at Yearend

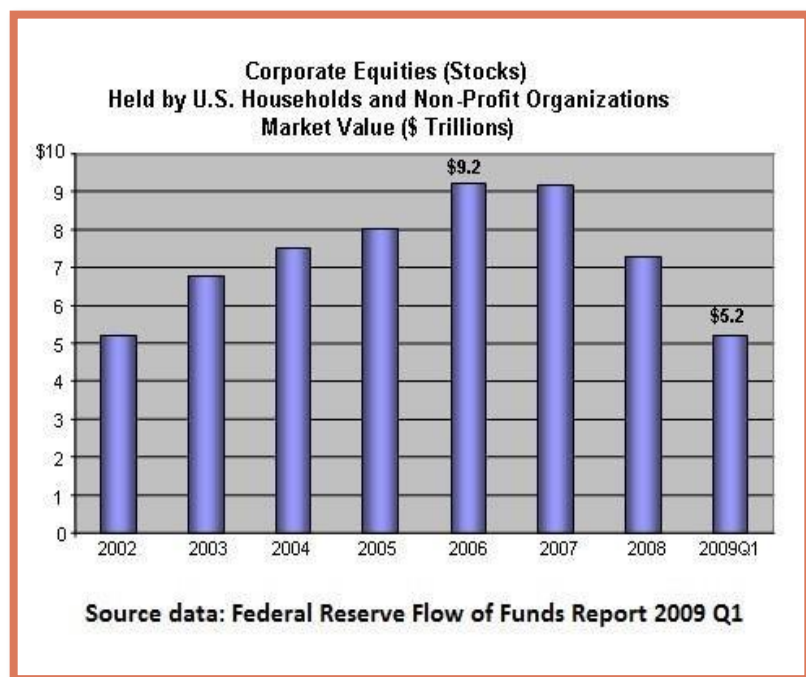


U.S. Bureau of Economic Analysis

**Top 40 companies writedowns on the value of CDOs, loans, and MBS due to mortgage crisis
August, 2008 estimates**

S. No	Company	Business Type	Loss in Billion USD	S. No	Company	Business Type	Loss in Billion USD
1	 Citigroup	bank	\$ 39.10	21	 Dresdner Bank	bank	\$ 3.49
2	 UBS	bank	\$ 37.70	22	 IKB Deutsche Industriebank	bank	\$ 3.45
3	 Merrill Lynch	investment bank	\$ 29.10	23	 MBIA	bond insurance	\$ 3.30
4	 HSBC	bank	\$ 20.40	24	 CIBC	bank	\$ 3.20
5	 Royal Bank of Scotland	bank	\$ 15.20	25	 Barclays	bank	\$ 3.10
6	 Morgan Stanley	investment bank	\$ 11.50	26	 Société Générale	bank	\$ 3.00
7	 Wachovia	bank	\$ 11.10	27	 Wells Fargo	bank	\$ 2.90
8	 American International Group	insurance	\$ 11.10	28	 WestLB	bank	\$ 2.74
9	 Credit Suisse	bank	\$ 9.00	29	 Bear Stearns	investment bank	\$ 2.60
10	 Bank of America	bank	\$ 7.95	30	 Washington Mutual	savings and loan	\$ 2.40
11	 Deutsche Bank	bank	\$ 7.70	31	 Fortis	bank	\$ 2.30
12	 HBOS	bank	\$ 7.06	32	 DZ Bank	bank	\$ 2.10
13	 BayernLB	bank	\$ 6.70	33	 Swiss Re	reinsurance	\$ 2.04
14	 Mizuho Financial Group	bank	\$ 5.50	34	 Bank of China	bank	\$ 2.00
15	 JPMorgan Chase	bank	\$ 5.50	35	 Natixis	bank	\$ 1.75
16	 Crédit Agricole	bank	\$ 4.80	36	 Goldman Sachs	investment bank	\$ 1.50
17	 Freddie Mac	mortgage GSE	\$ 4.30	37	 Lloyds TSB	bank	\$ 1.32
18	 Countrywide Financial	mortgage bank	\$ 4.00	38	 RBC	bank	\$ 1.20
19	 Lehman Brothers	investment bank	\$ 3.93	39	 LBBW	bank	\$ 1.10
20	 Ambac Financial Group	bond insurance	\$ 3.50	40	 Commerzbank	bank	\$ 1.10

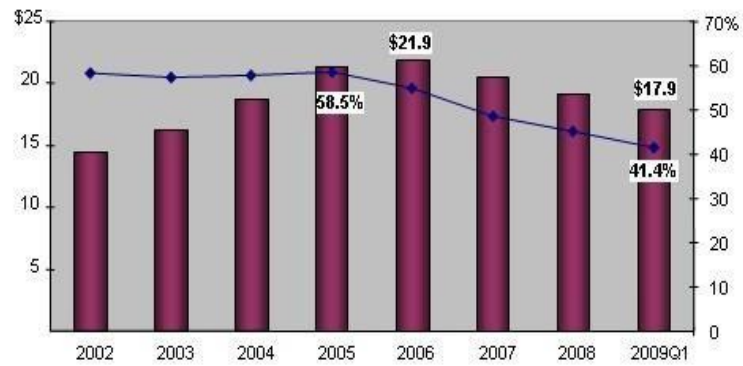
Source: Bloomberg



Initially real estate prices were increasing continuously, then suddenly came down.

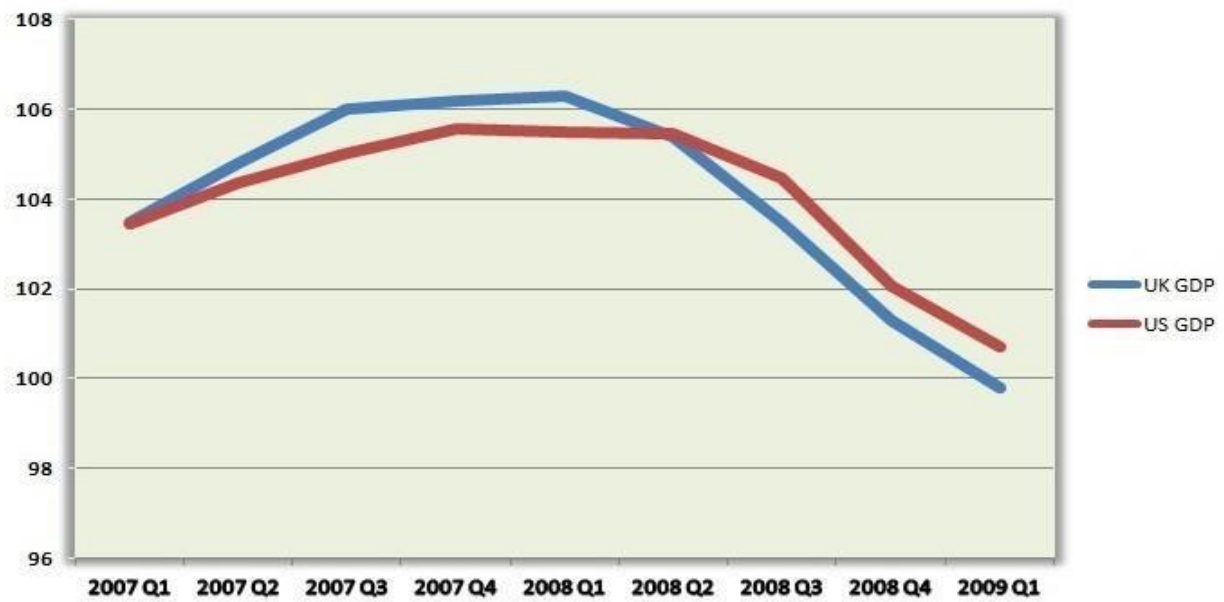
Many investors suffered huge losses.

**U.S. Household Real Estate (\$ Trillions - Bars/Left Axis)
And Owners Equity as % Real Estate Value (Right Axis/Line)**



Source: Federal Reserve Flow of Funds report 2009 Q1

Decline in U.S. and UK GDP



Source data: Bureau of Economic Analysis and UK for National Statistics

The Gross Domestic Product suffered sufficiently.

Many fiscal stimuluses started.

Almost entire world was affected by the pandemic.

Many governments had to revise their policies.

Conclusion and Recommendations

Economy develops cyclically- the occurrence of monetary deceleration in various nations has re- affirmed it. During the decade of 2000-2010, the United States (US) had suffered two slowdowns as far as its developments are concerned. The secondary (share) market were performing very badly around in the beginning of 2000 due to the disruption of dotcom companies and this was the first economic slowdown. However, the second slowdown did not occurred just after the dotcom trouble,

because of many progressive steps of the policy makers like the lowering down the minimum lending rate by banks which led to the recovery of the declining economy and hence an accelerated development phase could become possible. So, as the economic activities got increased unemployment rate got decreased. There was a decrease in rates based on mortgages which became helpful in attracting more number of clients and this could become possible because of the cut in base rate. There was preparing a base for another slowdown hovering sometimes after the boom phase even the developmental works were appearing fine.

Opportunities were created for loan providing bodies so that they could make better profit in the real estate sector after the entrance of the subprime borrowers and competition among the lending institutions helped in mortgage prices leaning, which was the cause of increase in the requirement for real estates in the United States. Asset costs augmented expeditiously. Reduction in base rate helped huge augmentation in the real estate sector which finally became the cause of real estate bubble.

The loan providing bodies estimated that the cost of properties which were there as collateral from loan takers who were not able to repay will augment, so the subprime borrowers whose credit history was rated as weak were easily issued the mortgage loans. So, the mortgage loans were helpful in making the balance sheet better for the lenders. Moreover, the Collateralized assets of the

defaulted borrowers were also helpful in generating revenue for the lenders. There was a continuous increasing track in real estate costs which permitted the loan providers to fascinate higher number of loan seekers, and moreover, the reformative laws of the land required the lending bodies to issue loans even to marginalized loan seekers. Therefore, the loan providing bodies were continuously augmenting their customers inspired by the rules and regulations of the government and money-making chances. However, cause of the crisis was not just the entrance to the subprime borrowers only.

The involvement of investment banks as well as the securitization process were the prime factors the crisis to spread on the world level and affect so many countries. The instruments like Collateralized Debt Obligations as well as the Mortgage Backed Securities that were traded at international market were containing the properties that were of lower standards but were still considered as a secured input. Moreover, inaccurate rating of the substandard assets by the Credit Rating Agencies (CRAs), had enormously caused the crisis. The CRAs rated the risky mortgage products on par with the US treasury bonds and were rated at AAA, and thus they deceived and attracted the institutional investors (IIs). The lending institutions successfully augmented not only their lending but also the investment activities because they (the IIs) were dependent on the ratings given by the CRAs. Gradually the non-repayment of loans started increasing and real estate costs got decreased, the influx of money as well as profit on

properties discontinued to investment bodies who were the custodians of the Mortgage Backed Securities as well as the Collateralized Debt Obligations. There were impairments in the tune of trillions of US Dollars. Consequently the households lost their savings and pension funds in addition to their homes as well as jobs, which further led to leaning of the consumer spending and also in the other sectors of the economy.

The United States government policy may be concerned with the strength of the economy, still it was not a powerful cause of influencing the dismal development of the world, rather, the dismal development of the world can be decoded by the inadequate policies of the respective governments like parking money in foreign nations for better earnings without sufficient knowledge about hazard involved in the investment.

The ugly aftereffects of the menace were also propounded on financial health of both, the United States and the United Kingdom. Many businesses paralyzed because of the menace and hence there was dearth of employment in both the countries. Furthermore, the costs of properties leaned and the share market turned bearish, so the business entities had to suffer sufficient losses. Finally, the Subprime Mortgage Crisis had weakened most of the economies.

The main reaction of the menace was to infuse money into the economy to

stabilize it, however the actual issue lying before us is to find out ways to avert such menaces in the upcoming times. Finding out the factors of the menace, and subsequently devising ways to avert them are the areas of utmost importance.

To avert future miscarriage in the housing market; it is advisable to restrict the improper ways of providing loans in the real estate sector like preventing the loan making bodies in making available loans to the “No Income, No Asset” group. Rational improvements should also be done in the policies related to the real estate sector. Providing homes to the marginalized segment of the society is an important issue but at the same time a robust mechanism should be devised so that the interests of investors as well as borrowers should be taken care of simultaneously in a proper way. For the avoidance of any illegal activity; the law-makers should bring-in a guideline so that people may do their respective works at full potential. The government should strive towards making a system in which only legitimate people can do businesses and there should be a feedback mechanism also. Furthermore, luring in name of variable interest rates should be taken care of in a proper way.

Moreover; inappropriate works by Credit Rating Agencies, lean risk management by the lending institutions and conflict of interest among the organizations which were the root causes of the SMC were existent since proper regulatory mechanism was not successful in these organizations. For better performance, it is suggested to follow the corporate governance mechanisms of an organization to protect the interests of all the associated persons through the advancement in the outcome of the board in a firm. In a nutshell, there is a need to devise a robust mechanism

by the United States lawmakers so that the interests of all segments of the society should be protected.

Limitations of the Study

The data from primary sources would have probably yielded more precise results instead of the frequently invoked source secondary.

Bibliography

- Wikipedia
- The official websites of the different US departments
- The official websites of the different UK departments
- Internet

US subprime mortgage crisis

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