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FAIR VALUE ACCOUNTING AND THE GLOBAL FINANCIAL CRISIS. THE CASE OF GREECE

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Διατριβή υποβληθείσα προς μερική εκπλήρωση
των απαραιτήτων προϋποθέσεων
για την απόκτηση του
Μεταπτυχιακού Διπλώματος Ειδίκευσης

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SUMMARY

The global financial crisis that began in the summer of 2007 and had its roots mainly in the U.S. sub-prime mortgages, led into recession the international banking system. Many countries worldwide were affected and their economies went into recession. As a result, investors, creditors and generally all market participants lost their confidence in the banking system, which in turn started to face severe problems of liquidity. Both leverage and the application of the Fair Value Accounting approach seem to be major amplifiers of the recent crisis.

Greece could not have been unscathed. Our country has been confronted with serious financial and political problems. The Greek economy as well as the Greek banking system has to make large changes and adapt in the new extreme financial conditions in order to keep healthy and finally manage to overcome the financial crisis.

This paper studies how the broader adoption of Fair Value Accounting and the increased financial intermediaries' leverage contributed to the global financial crisis.It is separated into seven chapters.

The first chapter of the paper presents the main causes of the global financial crisis and its expansion in the European and the Greek economy.

The second chapter presents the impact of the global financial crisis on the Greek banking system and the measures that Greek government had to take in order to keep the banking system strong and strengthen its liquidity. It describes the Accord of Basel I, II and III and their weaknesses. It also deals with the Greek Government Bonds' "haircut" and the new agreement of the Eurozone.

The third chapter describes the applied accounting standards worldwide such as GAAP, IAS and IFRS and the accounting standards boards responsible for the issue and application of accounting standards. In addition, it describes IAS 39: Financial Instruments- Recognition and Measurement, the model of Fair Value and its application.

The fourth chapter presents the way in which the application of Fair Value Accounting affected the banking sector before the global financial crisis. It presents both advantages and drawbacks of the Full Fair Value Accounting application, the criticism that it accepted and the related supervisory problems.

The fifth chapter discusses the effect of Fair Value Accounting during the recent financial crisis. It describes the modifications of FVA, the benefits and the disadvantages of FVA during the recession. Furthermore, it presents the actions made by the largest Greek banks during 2009 and 2010 concerning their GGBs holdings and their removals from the Available-for-Sales category to

the Held-to-Maturity category.Also, it makes a comparison between the way in which financial intermediaries managed their balance sheets during the LTCM crisis and the recent crisis.

The sixth chapter presents the economic theory's predictions about the potential impact of FVA on the whole economy-welfare. It gives a brief description of the economic conditions and the market prices' role before the financial crisis and the connection between the price of bonds and property and its dependence on the accounting approach used. Moreover, it describes how FVA enhances the role of market prices and discusses the impact of leverage and FVA on the recent financial crisis.

Finally the seventh chapter presents the conclusions about the impact of FVA and its contribution to the recent global financial crisis.

In the end of the paper there are Appendix A and Appendix B. The first one presents briefly the Greek banking system. It describes Greek banks' categories and activities. The Appendix B presents the investment securities of the six largest Greek banks,their actions made between 2009 and 2010influenced by the recent crisis and their effect.

CHAPTER 1: THE GLOBAL FINANCIAL CRISIS OF 2007 TO DATE

1.1 DEFINITION OF FINANCIAL CRISIS

There are lots of interpretations about the term of financial crisis. Some economists[1] connect the financial crisis with only the panic in the banking sector, which has as a result chain reactions in the whole of the economy. Others support that the financial crisis comes from the discounting of assets, or the failure of trading institutions, or the failure of market's exchange operation or a combination of all of them. The financial crisis is a situation where the value of a financial institution or asset declines quickly. It is often associated with a panic and a run on the banks, where most investors sell off assets or withdraw money based on fears and expectations that the value of those assets will drop. This means that liquidity declines rapidly, forcing banks either to sell other investments to make up for the shortfall or to collapse. Generally, by the term of global financial crisis we refer to the situation of economic recession in the broad financial and banking sector. Could this crisis have a good end? Horst Kohler, former head of the International Monetary Fund-IMF, had stated in Financial Times: "The only good thing about this crisis is that it has made clear to any thinking, responsible person in the sector that international financial markets have developed into a monster that must be put back in its place. We need more severe and efficient regulation, higher capital requirements to underpin financial trades, more transparency and a global institution to independently oversee the stability of the international financial system."[2]

1.2THE STARTING POINT AND CAUSES OF THE GLOBAL FINANCIAL CRISIS 2007

The financial crisis of 2007 constitutes a global economic recession that has its origins in the United States. It's the worst crisis after the great crash that took place in 1929. The background on which it was based was the global imbalances. These imbalances were the result of the excessive US current account deficit that had as consequence the great surplus in Middle East, Asia and specifically in China. The global imbalances combined with the international financial flows were a deep cause of the global crisis.However the genesis of the crisis was more complicated. We can find its origins particularly in the US sub-prime mortgages. Banks used to provide funding with high interest rates to individuals who weren't able to guarantee for the payments of the loans. As a

[1]Friedman M., Scwartz A., «A monetary history of the United States».

[2]German president complains of financial markets "monster". Financial Times.By Bertrand Benoit in Berlin and James Wilson in Frankfurt.

result these loans were insecure from the beginning. These mortgages dealt particularly with house purchases and are known as sub-prime loans with adjustable rate mortgages, ARMs. The American banks used to transfer their sub-prime loans to companies that had set up so as to discharge their assets. These companies, which are known as Special Purpose Vehicles-SPV, then issued securities (Asset Based Securities – ABSs) that were based on the standardized loans and in this way succeeded to get financed. These ABSs were distributed to other mutual funds and the payment of the coupons depended exclusively on the borrowers ability to face their liabilities. These securities were assessed and evaluated by external evaluating agencies known as Credit Rating Agencies-CRAs. Moreover, based on these securities and as a result on the sub-prime mortgages, the Collateralized Debt Obligations-CDOs developed. The CDOs paid off coupons to their holders whose payment depended directly on the right payment of the loans. Many banking conglomerates had set up Special Investment Companies, known as Structured Investment Vehicles or Conduits-SIVs, which were responsible for the determination of the CDOs retaining but were obligated only to guarantee the ability to compensate the investors in case they couldn't issue any new security in the market. Banks decided to set up these companies because they didn't include constraints about the liquidity as their parent bank did. As the number of non-performing loans begun to increase,banks needed liquidity in order to cover the collaterals that had given for the securitization, which made them to readjust their current ratios. However, lots of these investment companies had convinced the credit rating agencies to evaluate the bounced bonds that they issued with high scoring. That raised moral hazard, as there was close connection between the investment companies and the credit rating agencies and the first ones paid the last ones to evaluate their bonds. Credit risk increased and banks had to face it, as they couldn't collect the money from the borrowers and so they weren't able to pay their obligations (coupons and bonds CDOs) in which they and many European banks had invested. So banks held bonds with no real value. This fact and the banks illiquidity had as a result to make them seem insolvent at the interested parties. The other banks hesitated to fund them and all these gave huge rise to the interest rates.

Another factor that contributed to the rise of the crisis was the Credit Default Swaps-CDSs. The holders of CDOs purchased CDSs so as to protect from the risk of default on mortgages and especially sub-prime mortgages. CDSs are credit derivative contracts that lenders purchase in order to be protected from default or similar credit event by a reference entity (such as debt, borrowing institution).CDSs became means of speculation rather than insurance, as their purchasers didn't need to be financially interested in the reference entity. Issuers of CDSs were able to exploit the quiet period, which didn't include any default, using a small amount of capital

and earning enormous amounts in fees. On the other hand, CDSs sellers were purchasing CDSs that paid in a credit event case so as to offset their risk. But, as long as the number of defaults was increasing, CDSs cost rose too. As a result, investors could arbitrage between the lower and higher CDSs risk and gain huge earnings.

The use of the traditional historical cost[3] accounting worsened banks' condition as it delayed the recognition of the problem. And that, because the problem banks were facing was gradually notified to the market participants through banks' negative annual net interest income. Many regulators argue that fair value accounting would have recognized the problem at an earlier stage, reducing the fiscal cost of the crisis confrontation. However, many banks and accounting regulators blame Fair Value Accounting for exacerbating the crisis.

Therefore, an important number of banks and investment companies went bankrupt and draft stocks that in turn began to collapse[4]. The first large bank that declared bankruptcy was Lehman Brothers in September 2008, which was one of the largest investment banks in US. A series of failing banks, financial institutions and firms then followed.

In a nutshell, we can enumerate the main reasons of the global financial crisis:

- The excessive use of loans.
- The high amount of securities that banks issued.
- The imprecise evaluation of sub-prime mortgages risk.
- The incomplete markets monitoring.
- The establishment of off-balance sheet entities by banks to hold mortgages or mortgage-related securities that allowed banks to make more loans during the expansion.
- The high compensation of financial sector executives who as a result made their decisions based on their own interests. This fact made them issue sub-prime mortgages in spite of the high risk that implied for the bank.
- Payoffs and collateral calls on CDSs issued on sub-prime mortgage CDOs.
- The low requirements for disclosure and transparency that hedge funds and conduits had to fulfill.

[3]A measure of value used in accounting in which the price of an asset on the balance sheet is based on its nominal or original cost when acquired by the company.

[4]The Federal Deposit ("FDIC") website posts information about bank failures from 1991 to present. According to the information released by the FDIC, as of Dec. 1, 2008, there were 22 bank failures during 2008. Bank refers to traditional banks, like Washington Mutual, as opposed to Investment Banks like Bear Stearns and Lehman Brothers.

1.3: FOUR STEPS OF THE GLOBAL FINANCIAL CRISIS

We can distinguish four steps in the international effort to confront the global financial crisis. These steps are interdependent and their end seems still unknown.

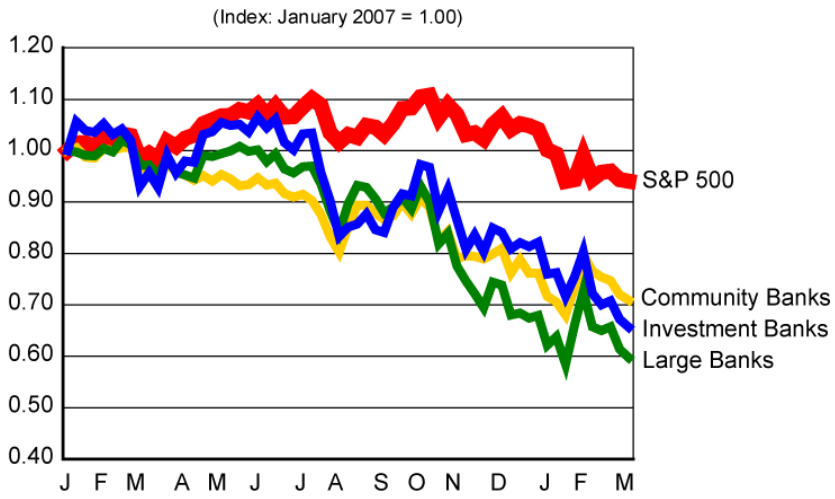
The first step includes the attempt to prevent the crisis transmission and help the financial sector. This was undertaken through interest rates reductions, monetary easing, effort to persuade investors to confidence again financial markets, injections of capital, rescue packages for the weak enterprises and debt restructuring.

The second step involves the attempt to confront the macroeconomic effects of the crisis. The crises no longer concerns firms and banks but has spread and affected whole countries. Many sectors such as unemployment, production and trade have been affected. For this purpose rescue packages have been used.

The third step includes the effort to restructure the financial system and regulation. In order to bring off this result, an international cooperation has been required. Many meetings of the world leaders have taken place in an international level, known as G-20 Summits, so as to achieve financial strengthening and stability.

Finally, the fourth step involves the social, political and security impact of the crisis. A series of attempts have been made to reduce the influence and the contagion of these effects on the economies of other countries, if not to eliminate them.

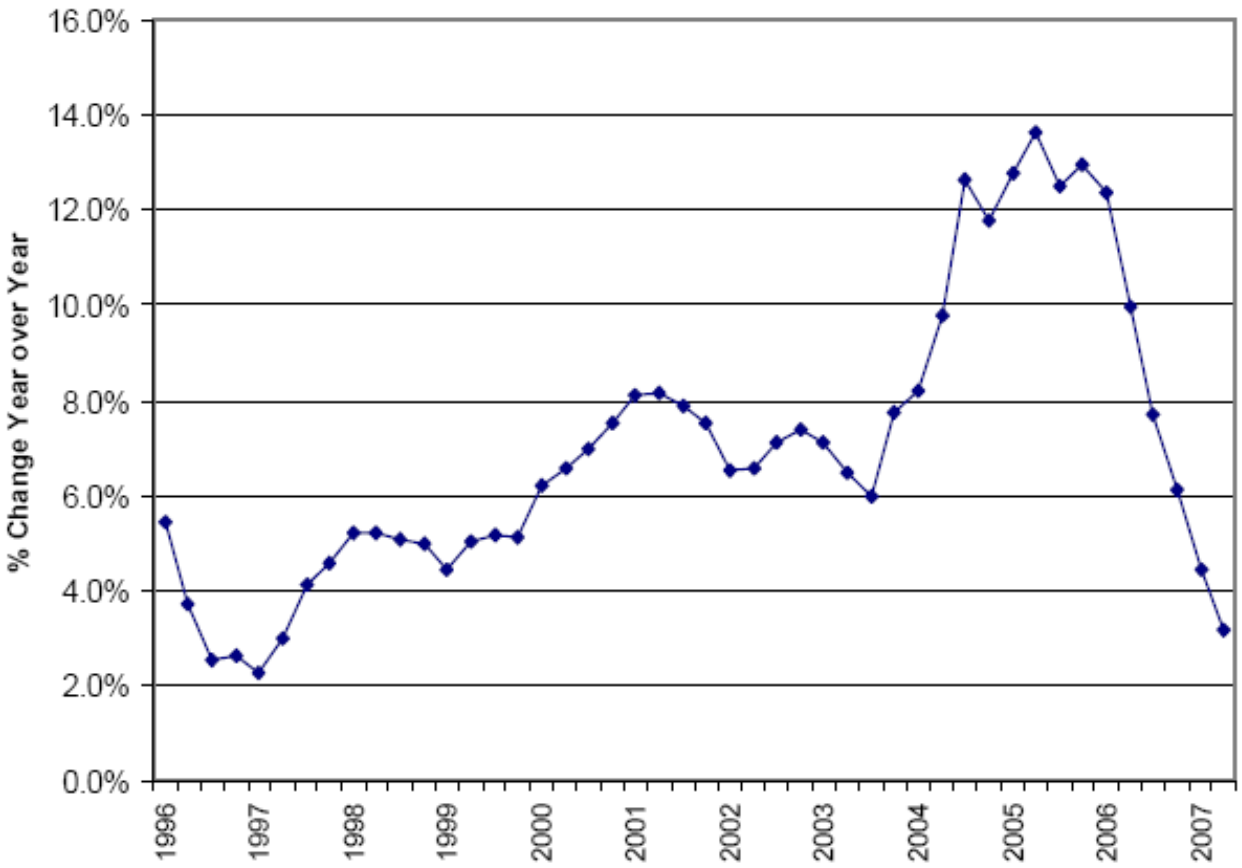
FIGYRE 1: COMMERCIAL AND INVESTMENT BANK STOCK INDEXES FROM JENUARY 2007-MARCH 2008



SOURCE: Global Financial Data

As one can presume from the above figure, stock market has suffered from a severe depreciation. Stock prices for community, investment and larege banks have considerably fallen, especially during the last nine months, compared with Standard & Poor's 500 Index.

FIGURE 2: APPRECIATION OF HOUSE PRICES 1996-2007



SOURCE: BILAL AZIZ POSWAL, Causes of World Financial Crisis 2007-2009

As figure 2 shows house prices had had a rising trade during the period 1996-2006. From 2006 these prices began falling dramatically. Indeed, the percentage of house prices change from 2006 to 2007 was about 10%. This fact is a real evidence of the crisis that has follwed.

1.4: THE FINANCIAL CRISIS IN EUROPE

It didn't take a long time for the American financial crisis to show up in other countries and of course in the European Union. Very soon the levels of unemployment increased, financial stability was perturbed and citizens went out in the streets to manifest against their governments and their leaders.The real estate market includes many sellers and few buyers, where mortgage foreclosures rates are at the highest level since the great depression. With credit markets virtually frozen, banks are still desperately trying to raise capital and to strengthen their balance sheets.

The interest rates that were very low and the excessive investment that was based on sub-prime mortgages drove to the expeditious growth of European countries. Then, as a result the values of commodities, equities, housing cost and real estate increased. People's reaction to all these events was to reduce their purchases and more generally their expenditures. This led to the cutting down of economic activity and to a decrease in real estate values. The value of securities that were based on sub-prime mortgages fell dramatically. A lot of firms, banks, insurance companies, pension funds and hedge funds risked defaultingand some of them weren't able to avoid it.

European governments decided to join their strength to achieve coordination, organize their economies and take measures against the pervasive phenomenon of the global crisis. Central Banks have been trying to boost the liquidity into the markets and decrease interest rates as a reaction to this negative situation. Governments stated that would finance banks that needed liquidity and purchase shares from ill banks. They also agreed that they would guarantee for any new loan in the entire Euro area and reform the asset valuation so as to include the risk of default. Also the EU decided to invest more in R&D, to free up lots of businesses and boost green technology as an attempt to assist to the economic growth.

Many financial intermediaries blamed accounting standards for contributing to the crisis[5]. So, in 2008, the International Accounting Standards Board-IASB[6] proposed some important changes that would allow banks to valuate some of their assets, whose prices have fallen as a result of the crisis, according to their discretion. International accounting rule makers accepted the IASB's proposal. Consequently, financial institutions may reclassify their financial instruments, moving them from their trading books to their banking books. In the trading book financial instruments are

[5]Financial Times: EU BACKS EMERGENCY ACCOUNTING CHANGES. By Nikki Tait in Brussels and Jennifer Hughes in London.Published: October 15 2008 20:06.

[6]It is an independent, privately funded accounting body. From 2001 and on it is charged with the responsibility to set the new restructured IAS, which renamed to IFRS, and promote their wide implementation.

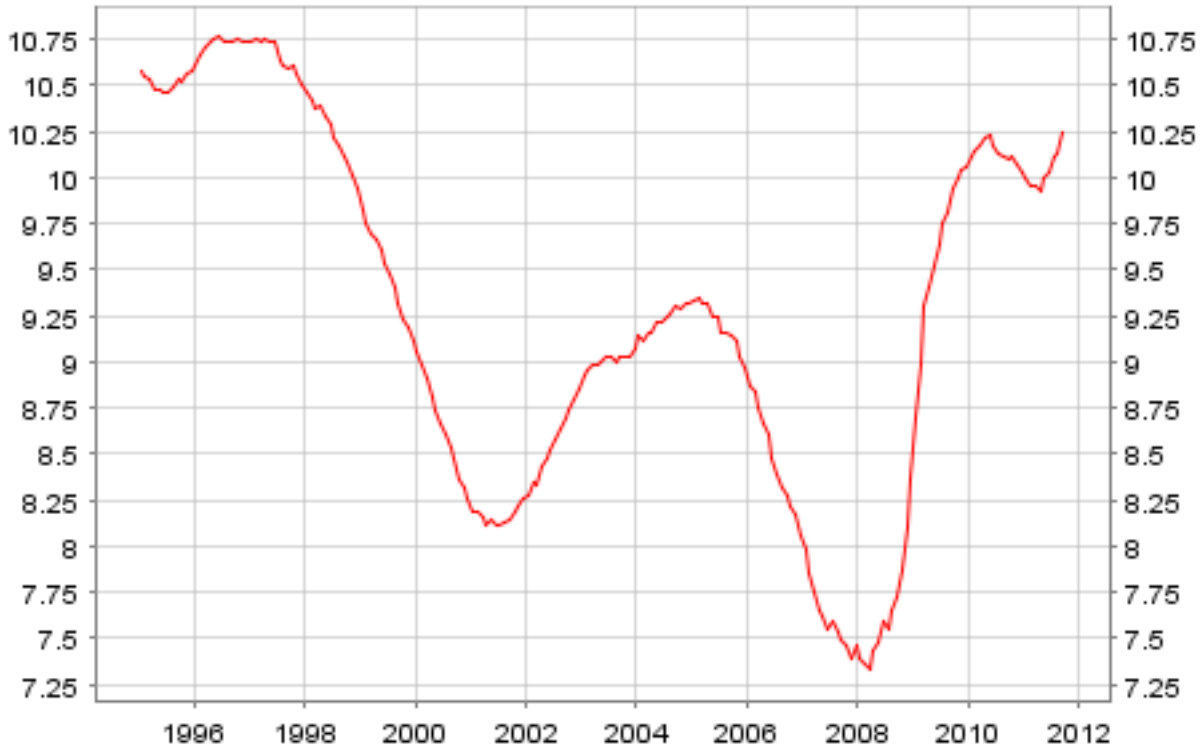
marked at their fair value[7], while in the banking bookfinancial instruments are marked at their amortized cost. Financial institutions could benefit from moving their financial instruments to their banking books, as they would not have to report any reductions in market prices.

FIGURE 3: GOVERNMENT DEBT (AS A % OF GDP) IN EURO AREA

SOURECE: European Central Bank

[7]It is an estimate about the price at which an entity would accept to sell an asset or relieve a liability.

FIGURE 4: STANDARDISED UNEMPLOYMENT RATE IN EURO AREA 1996-2011



SOURCE: European central Bank

Figures 3 and 4 depict the current situation in Euro area. Government debt ejected from 65% in 2008 to 87.5% in 2011 as a percentage of GDP. This is a huge rise that Euro area has to face and limit. Moreover, unemployment is another factor of the crisis that Europe has to take care of. Unemployment rate increased significantly, from 7.25% in 2008 to 10.25% in 2011. This means that more and more individuals have lost their jobs or cannot find one and as a result they won't be able to cope with their obligations to banks, if they have borrowed any money, and of course to live in dignity. All these make Euro area seem unattractive to any investors even to its citizens. That's a reason why many persons quit Europe and go elsewhere, especially in Australia and Canada, to live or set up their enterprise.

Although European leaders make their best to limit the effects of the crisis, the situation increasingly deteriorates. More and more European countries are about to go bankrupt and resort to borrowing from the EU and the European Central Bank. The European countries that have suffered the most from the crisis are Spain, Portugal, Italy, Greece and Ireland. There is no stability in the markets, the leaders of many governments change or quit themselves and even the

European currency, euro, is threatened to disappear. Time is short and is urgent for the whole Euro area to find a solution before it's too late.

1.5 THE FINANCIAL CRISIS IN GREECE

The crisis very soon spread to Greece. A great number of sectors in the Greek economy, such as banks and shipping companies have been internationally active. Therefore, it was easy for the consequences of the broader economic recession to be conveyed in our country too. What made it easy for the crisis to make its appearance in Greece was the financial situation that was really unfavorable and of course the high public debt. Debt had been created due to the deficits and accumulated debt. As long as the expenses of Greece have exceeded its revenues, deficit has been created. Moreover, the accumulated debt that Greek Government has had form previous years, that Greece had presented deficits, combined with current deficit increase more public debt. The main cause of Greek deficit is tax evasion as Government expenditures outweigh its revenues.

Public debt was increasing in order to meet the needs of public sector but also in order to cover the deficit of current transactions. External debt is the sum of private and public debt owed to nonresidents that has to be repaid in foreign currency, goods or services. Our country's externaldebt has been public and not at all private because its genesis is due to external debt that our government has accomplished. Conversely, private sector, mostly banks, didn't need to borrow from abroad because Greeks savings could suffice loans from private sector. As a result its foreign debt has been equal to its foreign public debt.

Public debt caused the increase of consumption and the decrease of productive investments such as public infrastructure. That's because the biggest part of these money has been used to cover the salaries of civil servants and pensioners. Big revenues increased consumption. On the other hand, investments decreased because the available private capital wasn't enough to finance them. What comes from all these is that consumption in Greece has exceeded productivity.

TABLE 1: DEBT AS A % OF GDP

	2007	2008	2009	2010
CONSOLIDATED DEBT[8]	239.364	262.318	298.706	328.588
GDP	227.074	236.917	235.017	230.173
DEBT TO GDP	105,41%	110,72%	127,10%	142,76%

SOURCE: Greek Statistical Service

GDP is the total value of finished goods and services that have been produced during the period of one year by production units that operate within the country but also by production units that foreign holders own.

The previous table presents the consolidated debt of Greece, its GDP and finally its debt as a percentage of its GDP. It is obvious that public debt has followed an upward path from 2007 onward, having the higher percentage in 2010 equal to 142,76% of GDP. This means that the dynamics of debt are stronger than those of GDP. This is a fact that demonstrates the urgent need for the economic policy to be scheduled in the best way so as to make it possible for the Greek economy to recover from the financial crisis and produce at a satisfying level.

Greek deficit has increased during last years as well. In order to reduce the deficit Geek Government is required to take severe measures. In reality Government should generate a primary surplus so as to succeed in recovering from the crisis. Apart from public debt and deficit the Government has to find ways to increase its GDP. One way to achieve this goal is to increase the competitiveness of its economy. In fact, a county can repay its external debt if its exports exceed its imports. Unfortunately, Greece imports more and more goods but instead exports a few, making it difficult for its economy to be significantly competitive. These factors are responsible for the high interest rates with which Greece borrows from the international financial markets.

Greek Government couldn't meet its liabilities towards to its creditors. This combined with the fact that the accuracy of Greek budgets was limited, made our country insolvent.

[8] Consolidated general government debt includes cash and deposits, short-term and long-term securities other than shares and financial derivatives, and short-term and long-term loans as well.

Ratingagencies such as Moody's, Standard & Poor's and Fitch downgraded Greece. That is the reason why lending spreads[9] increased so rapidly. So, the reputation of default began to spread and the risk to increase. As a result, Greece resorted to EU and IMF to get financed. Particularly on11 April2010, the Finance Ministers of Euro Group decided to aid Greece providing it with bilateral loans from European Committee and IMF. The Memorandum of Economic and Financial Policies will determine the criteria for the performance and progress of Greek economy. The total amount of money that Greece has accepted on 2010 as support package was nearly € 110 bn, €80 bn from member countries of Europe and € 30 bn from IMF. It was agreed that from then on the disbursements would be gradually carried out on the basis of quarterly accounts that Greek government will present as compliance with what had been provided by the Memorandum. In July 2011 a new package was launched with extra € 109 bn in support of Greece. However, Greece couldn't handle the crisis and its negative effects. So in 27 October 2011 the IMF and Eurozone leaders proposed to banks to let a 50% write-off of Greek debt, equal to € 100 bn, known as haircut. This move had as purpose to reduce the debt of Greece making it sustainable. However, a few months later, in late January 2012, the IMF and Eurozone leaders resulted in a 70% haircut. Even this help does not seem to have helped Greece recover from the crisis. On the contrary, the situation is getting more and more worse. Many economists state that the best solution for Greece is to declare an "orderly default" on its debt, get out of the EU, quit euro and return again to drachma otherwise EU lenders and countries will be harmed even more. All these facts drove Prime Minister George Papandreou to resign in 6 November 2011, creating a government of national unity. The Prime Minister position took Lucas Papadimos. The government's interest has shifted to the 6 disbursement of delivery so as to manage to cover some of its needs. What the IMF and Eurozone required is the commitment of the major parties. A series of austerity measures will be taken such as changes in taxes, reduction in the number of civil servants and their salary, reduction in the subsidies, in order to make Greece strong again and able to have a position in international markets. It is sure that the next four years will be difficult and crucial not only for Greece but for the whole EU.

[9]Is the difference between the interest rates with which Greece has borrowed against those paid by Germany, which is the reference country, for its own lending.

FIGURE 5: COUNTRIES MOST EXPOSED TO GREEK DEBT

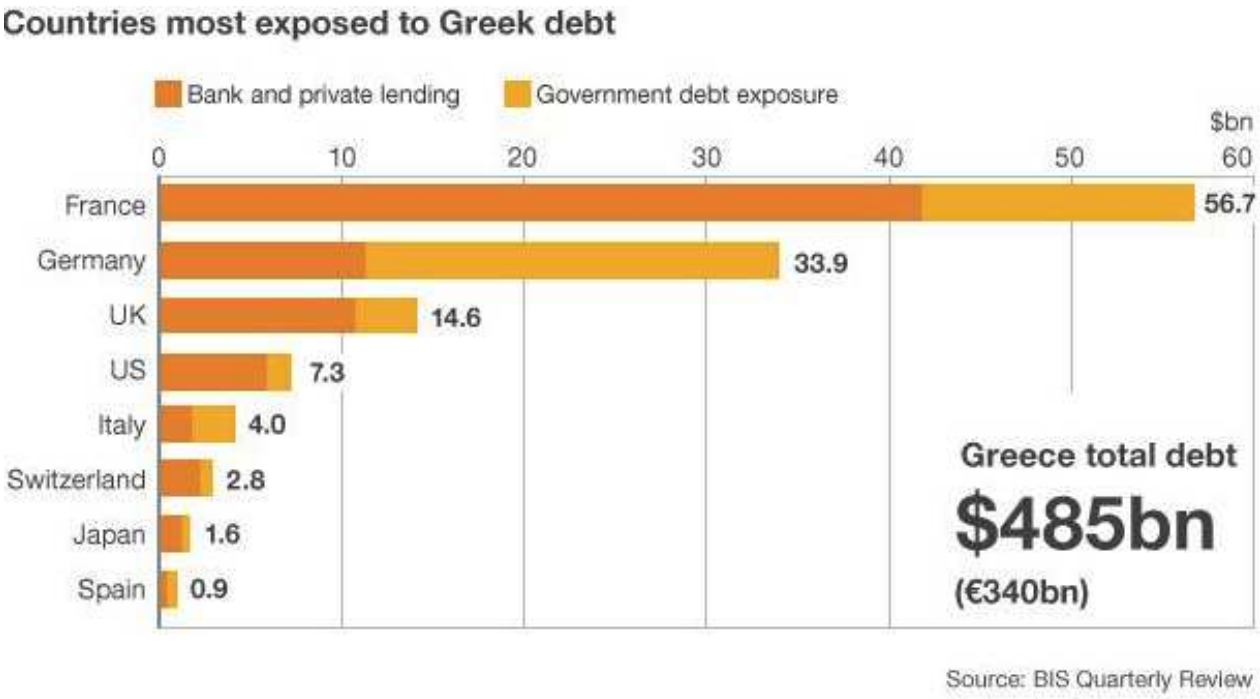


Figure 5 depicts the exposure of different counties, most of them European, to Greek debt. France is the most exposed one, especially banking and private sector, but Germany's government debt exposure exceeds that of France. Spain is the least exposed one as its exposure to Greek debt equals only to 0,9%. The most reasonable cause for this is that Spain faces a very severe situation as well and tries to avoid bankruptcy. It would be extremely risky and even impossible for Spain to expose to Greek debt.

CHAPTER 2: THE IMPACT OF THE CRISIS IN THE GREEK BANKING SYSTEM AND THE IMPLEMENTD MEASURES

2.1: THE IMPACT OF THE CRISIS ON GREEK BANKS

Global economy suffered a major blow that affected almost all its factors. It inevitably went into recession. Global growth was significantly reduced, particularly it was negative, and the rate of liquidations was huge. Banks could not be intact. However, Greek banks were not exposed to "toxic bonds", so were unaffected by these. While in the U.S.A and in many countries the crisis began from the banking system, in Greece banks had to front the crisis effects and the consequences of Greek economy's recession. Greek banks did not cause the crisis in Greece but were influenced by it. Greek banks disposed capital adequacy and liquidity, so were able to face the bad developments.

Unfortunately, this good performance of Greek banks did not last long. Due to reduced solvency among banks worldwide, the interest rates increased globally. Greek banks had to handle with this increase in interest rates. Euribor, which is the base rate of the euro interbank money market, increased dramatically during 2011. This is shown in the table below.

TABLE 2: EURIBOR

	JEN11	FEB11	MAR11	APR11	MAY11	JUN11	JUL11	AUG11	SEP11
1m	0,793	0,894	0,903	0,984	1,244	1,223	1,332	1,434	1,351
3m	1,017	1,087	1,176	1,249	1,395	1,434	1,556	1,609	1,543
12m	1,550	1,714	1,948	2,013	2,139	2,137	2,172	2,177	2,089

	OCT11	NOV11
1m	1,355	1,362
3m	1,557	1,585
12m	2,085	2,111

SOURCE: European Banking Federationwww.euribor-ebf.eu

As we can see in the table, euribor moved upwards during 2011 except of the June and September months that presented a very small reduction.

As long as the situation in the Greek economy worsened, rumors of bankruptcy began to be spread. This fact had as a result the appearance of liquidity risk for Greek banks. Then. Greek banking system downgraded and Greek banks were excluded from international markets, where they could raise funds.Depositors began to pull their money out because of fear of loosing them, or in order to cover their needs (unemployment increased even more). Moreover, the volume of savings was reducing due to pay cuts or because people preferred to keep money home. These reduced banks liquidity. Due to the need for Greek banks to maintain their liquidity and because of the lack of solvency, they have been forced to borrow from the European Central Bank-ECB. Greek banks use the Greek Government Bonds-GGBs that keep in their portfolios as guarantee for their borrowing from ECB. But the risk that ECB took when first began to fund GGBs increased gradually due tothe degradation of Greek banks creditworthiness. As a result, the number of loans from ECB to Greek banks started reducing. Greek banks, trying to maintain an adequate level of liquidity, were forced to increase interest rates so as to attract deposits and on the other hand increased the rates of housing and business loans in order to cover the high borrowing cost (through deposits).

2.2: THE BASEL COMMITTEE- BASEL I, BASEL II, BASEL III

During last decades, the environment of the international financial system has constantly been changing due to the financial market liberalization, the complexity of financial products, the high-speed capital and the technological developments. As a result, national authorities face difficulties in exercising their supervising work.

Rise to the need for a common risk management practice gave the elimination of the international monetary system of fixed exchange rates of Bretton Woods in 1973. This fact caused strong fluctuations in the exchange and interest rates. Consequently, banks had to face for the first time the risk of exchange and interest rate changes. In 1974 two large banks collapsed, the German bank BankhausI.D.Herstatt and the U.S.A. bank Franklin National. The first one got bankrupt due to unfortunate positions in forward foreign exchange while the second one because of bad management and fraud. A great number of collapsed banks followed and made it necessary for the financial markets to develop a common supervisory system for banks. Its purpose would be the crisis prevention and the ensuring stability in the international banking system. For this reason the Committee of Banking Supervision was firstly created and then in 1974 followed the Basel Committee. The members of the Basel Committee are the Central Banks and other supervisory

authorities of member states of the Group of 10 (known as the G-10), Switzerland, Luxembourg and Spain.

The Basel Committee is not an international organization or supervisory authority, but a de facto organization without legal personality that operates under the Bank of International Settlements. So, the rules contained in its reports have no legal power. However, many supervisory authorities in lots of countries around the world, even in countries that do not participate in Basel's composition, have adopted and implemented these rules. Its goals are the stability of the international financial system and the equality in competition among banks but also between banks and investment organizations. Its work consists of the cross-border cooperation among banking supervisors, the methods about the prudential supervision and control of banks, the prudential supervision of compound financial conglomerates, the accounting presentation for banking transactions and finally the banks responsibility to provide information to the supervisory authorities and investors.

Basel Committee issued Basel I, Basel II and Basel III in order to enhance the Supervision of Banks and the international banking cooperation. Through quantitative and technical benchmarks, Basel I and II have helped harmonize banking supervision, regulation, and capital adequacy standards across the eleven countries of the Basel Group and many other emerging market economies. Their goal is to extend regulatory coverage, promote adequate banking supervision, and ensure that no foreign banking establishment can escape supervision. Basel Committee has not the right to impose its Accords. However, most of the member states and also other countries enforce its proposals.

2.2.1: BASEL I

In July of 1988, the G-10 plus Spain agreed on the International Convergence of Capital Measurements and Capital Standards, known as Basel I.Its goal was to harmonize the international supervisory system. This Accord firstly divides capital into two Tiers, Tier 1 Capital and Tier 2 Capital. Tier 1 includes core equity and disclosed cash reserves, while Tier 2 includes undisclosed reserves, general loss reserves and subordinated term debt. The most important part of the Accord concerns on the Capital Adequacy of financial institutions. It sets a minimum level of equity that any financial institution must maintain in relation to the credit risk that it takes. Capital serves as financial buffer enabling a financial institution to ride out earnings volatility. The need for calculating the Risk of Capital Adequacy was then created. This risk concerns on an unexpected loss and is divided into five categories (0%, 10%20%, 50% and 100% from riskless assets to very

risky assets). So, the principle of capital adequacy was based and the height of equity capital was associated with credit risk. The Accord also set a Target Standard Ratio, the Coefficient of Solvency, which is defined as the ratio of the financial institution's equity capital to its assets and the off-balance-sheet items weighted by their risk. The minimum value of this Coefficient was 8% and covers the risk of non-fulfillment of the contractor's obligation in all its forms. In addition, the Accord stipulated thatlenders should hold Tier 1 capital of at least 4% of risk-weighted assets.

In 1996, the Accord of Basel I was amended so as to include not only the credit risk but also the market risk. The new ratio, Capital Adequacy Directive Ratio-CAD, is calculated similar to the Coefficient of Solvency but the denominator (the weighted assets) now includes also items of the trading book, which carry the market risk. These items are weighted according to the risk that comes from the change in foreign exchange rates, shares, interest rates and other market parameters.

There are many ways to reduce market risk. The most common strategythat is used in order to reduce the risk of a portfolio is diversification. The market risk must not be calculated cumulatively. For example, the market risk of a portfolio that includes four shares does not equal to the algebraic sum of the market risk of four portfolios that each includes one of the four shares. Another strategy that aims to reduce the risk of adverse price movements in an asset is hedge.Hedge is feasible only if supervisory authorities allow the offsetting positions in securities with high negative correlation. The amended Accord of Basel I let financial institutions use internal models based on the methodology of Maximum Potential Losses, which takes into account the market risk and capital requirements[10].

This Basel Accord complements the regulatory framework that concerns on banks' capital adequacy,imposing capital requirements for banks in order to be protected against market risk. It was implemented by most of European countries, including Greece. As a result, the banking system of many countries around the world introduced the increase in supervisor capital equity and the establishment of supervisory conditions for fair competition among banks or between banks and investment organizations.

Although Basel I was widely accepted, soon banks and supervisory authorities began to criticize it due to its weaknesses.A very important weakness of Basel I was that it did not take into account other risks except from the credit and market risk. This failure became strongly evident during 1990, when many financial institutions experienced catastrophic damages. These damages arose from imperfections of the institutions operational framework and not from counterparty default or

[10]Bank of International Settlements. www.bis.org

high volatility of market factors. Another failure of Basel I was the arbitrary fixing of capital adequacy, since it was independent of the size of anyfinancial institution. Moreover, the Accord did not diversify capital requirements depending on the level of risk. This weakness allowed banks to use the <<regulatory capital arbitrage>>. This kind of arbitrage enables banks to increase the profit margins of low-grade corporate loans, without the simultaneous increase in required capital. Consequently, the quality of the banks'loan booksdegrades without increasing capital requirements or predictions. All these mean that banks were able to reduce required capital in ways that did not reflect lower real risk.

Because of these failures of Basel I, Basel Committee conducted reviews and new supervisory rules. So, in 2001 the Committee published a new Accord including its proposals for the review of Basel I. Three years later, in 2004, the Committee published Basel II with a margin of implementation by 2015.

2.2.2: BASEL II

On 26th June 2004, the Basel Committee issued the revised regulatory framework, known as Basel II, which should be fully implemented until 2015. Specifically, in the EU all financial institutions had to adopt the new Accord by the beginning of 2008. The U.S.A. implemented it a year later, in 2009.

Basel II focuses on three areas, known as Pillars, which include minimum required capital, supervisory control and market discipline. The main goals of this Accord are to give a new approach of measuring credit risk, to pay attention on supervisory review process and market transparency, to cover all financial and other risks and finally to make the height of regulatory capital converge to the capital of banks. Probably its greatest impact will be the improvement of risk management across the banking system and the better understanding of senior management in issues related to risk.

The first Pillar concerns on the definition of capital requirements to cover credit, market and operational risk. The second Pillar concerns on the adoption of general principles governing the evaluation of the credit institutions capital adequacy. Finally, the third Pillar concerns on the enhancement of market discipline and transparency through the disclosure of qualitative and quantitative data about the risks that financial institutions take.

<u>PILLAR I-Minimum Capital Requirements</u>

The new Accord takes also into account the operational risk, and not only the credit and market risk, and reserves the Coefficient of the credit institutions capital compared to their weighted risk assets, known as Risk-based capital ratio, equal to 8%. This ratio represents the minimum level of capital a bank should hold based on the measured volume of its risk exposures. Its calculation will be made on consolidated basis.

Credit risk can be calculated in two ways, through the standardized approach or the Internal Rating Based approach-IRB. The first approach is the simplest one. It provides a set of risk weights for all in and off balance sheet assets. The assets will be classified in risk categories after being evaluated by External Credit Assessment Institutions that are recognized by the supervisory authorities of each country. It is necessary to classify funds into categories such as financing to banks, companies, countries and equity financing in order to calculate capital requirements. Moreover, government securities, issues of shares listed on the general index or public institutions that have been evaluated over AA- and shares can be used as collaterals in order to decrease credit risk. Credit risk mitigation can also be achieved through the use of derivatives or real estate. The IRB approach is more complicated. It concerns on the use of internal rating systems that any financial institution has implemented for a relatively long period, usually over 3 years, so as to determine the appropriate minimum capital requirements.This approach requires the approval of the bank's supervisor. Banks should be able to calculate the probability of default and the loss given default based on historical data. In addition, banks should be able to group their requirements into categories according to their risk and diversify risk depending on credit exposures. Basel Committee enables financial institutions to use different internal rating systems depending on the contractor's type such as banks, corporates, retail, sovereigns, equities and project finance. Supervisory Authorities should note the quality of the used data and the compatibility of different kinds of methodology to ensure convergence of methodologies that any bank uses. IRB approach is further divided into two alternative approaches, the Fundamental Approach and the Advanced Approach.

Credit risk can be calculated based on 4 parameters that must be fully documented and their calculation updated on an annual basis. These parameters are:

1. Probability of Default-PD: It measures the probability of failure for the customer to meet his obligations and shows his creditworthiness.
2. Loss Given Default-LGD: It measures the loss from the breach of the customer's obligation to meet his obligations. It depends on the type of collateral and guarantees that have been used.
3. Expected Exposure At Default-EAD: It measures the balance of the loan at the time of default

of the borrower's obligations.

4. Maturity-M: It counts the remaining time until the end of the borrower's exposure.

In the Fundamental Approach, the Committee estimates the weights of LGD, EAD and M and only the loan portfolio provides the PD value. On the other hand, in the Advanced Approach banks estimate the weights of PD, LGD, EAD and M based on historical data. Maturity can be excluded for some exposures.

Marker risk includes the risk to which banks are exposed due to changes in market prices such as interest rates, exchange rates, equity and commodity. Banks, in their effort to cope with market risk, follow certain principles in order to ensure the principle of prudential regulation and provide competitive advantage to themselves. Capital treatment is generally unchanged. Specific risk weights now depend on the external ratings. Market risk is monitored and calculated on a daily basis by the Internal Valuation Model Risk. This model uses as methodology Value At Risk, which refers to the maximum possible loss that a holder of a portfolio may suffer at a given period and with a given probability.

It is the first time that operational risk is taken into account. Capital requirements are imposed in order to face this kind of risk. Operational risk includes losses caused by human factor, external causes and failure or inadequacy of internal processes and systems. There are three alternative methods for the calculation of capital requirements against operational risk. These methods are:

1. Basic Indicator Approach: It measures, using as index gross profits, the required capital adequacy equal to 15% of total capital.
2. Standardized Approach: It uses different indicators for each banking activity such as management of assets or retail banking. Total operational risk charge is the sum of the charges for all banking activities.
3. Advanced Measurement Approach: It computes the required capital based on statistical methods.

PILLAR II-Supervisory Review Process

The second Pillar of the Committee concerns on the procedures that supervisors should implement so as to be able to examine the qualitative characteristics of the methods applied by banks for the evaluation of their capital adequacy and whether they are consistent with the philosophy of the first Pillar. Its purpose is to ensure the responsibility and transparency of supervisory authorities. Specifically, supervisors monitor mechanisms used by banks to measure, manage and mitigate the risks that have taken and the basic criteria and principles governing the system of internal control that have been adopted.

The framework around which the second Pillar is structured is defined by the following four principles:

1. Financial institutions must have a mechanism for assessing their capital adequacy, depending on the type of risks they choose to assume and the strategy followed to ensure that they maintain adequate capital.
2. Supervisors should estimate and evaluate the assessment of banks' capital adequacy based on their internal mechanisms, the impact of their strategic choices on their capital adequacy and also the ability of banks to monitor and confirm that their capital adequacy ratios are at the levels that Supervisory Authorities prescribe. If supervisors are not satisfied with the results of their researches, they should take appropriate measures.
3. Supervisory authorities should require from banks, if it is necessary, to operate with capital ratios better than the minimum specified (8% based on the first Accord) and also to keep capital above the minimum level.
4. Finally, supervisory authorities should be able to interfere in time so as to prevent the reduction of capital below the minimum levels required, depending on the risks specificities that are associated with the strategic choices of each bank. They should also require from banks to correct immediately their actions, if the amount of their capital is not stable or it is not returned to desired levels.

The Supervisory Review Process represents one of the basic innovations of the new Basel Accord. It is no longer sufficient only to detect risk or measure the potential consequences of any activity. It is also necessary for any financial institution to evaluate the organization, completeness and effectiveness of its internal mechanisms.

PILLAR III-Market Discipline

The third Pillar has as purpose to strengthen the market discipline. It regards to the obligation of banks to disclose qualitative and quantitative data about the risks they take, their used method to monitor risks and the principles of corporate governance so as to enable investors estimate correctly their investments in the banking sector. This is achieved through the disclosure of information about the structure of risk exposures. As a result, markets take a large part of the supervisory tasks.
The required disclosures can be broadly classified into the following categories:

- Scope of application (at the level of conglomerates)
- Capital structure.
- Capital adequacy
- Credit risk exposure
- Credit risk mitigation
- Market risk exposure
- Operational risk exposure
- Equity exposure
- Securitization exposure
- Exposure to interest rate risk in the banking book.
- The nature of the models when internal models are used.

Taking into account the three Pillars of the Basel Committee, one can conclude that the effectivenessof the rules of the first pillar premises the ability of supervisors to monitortheir implementation through the power of the second pillar. Moreover, the increased disclosure of data of the third Pillar strengthens the improvement of risk management procedures developed by banks.

2.2.3: THE IMPACT OF THE GLOBAL FINANCIAL CRISIS ON BASELII

The global financial crisis has uncovered gaps and inefficiencies of Basel II to manage the presented risks. These weaknesses are due to the fact that Basel II did not foresee some possible situations. So when the liquidity in market fell in due to the investors' lack of confidence to the whole banking system, the market value of banks' securities fell dramatically. Also, the liquidity of the Mortgage Backed Securities that had been issued collapsed since credit ratings

characterized them as unreliable. What the recent financial crisis revealed was the domino effect of the whole financial sector's failure. The value of financial instruments and investments that were thought as safe fell due to risky exposures. For these reasons, it was necessary for the Basel Committee and the EU to impose some changes and improvements in Basel II. Basel III came to cover Basel II weaknesses.

2.2.4: BASEL II WEAKNESSES

The new revised Accord of Basel II has many weaknesses in all its Pillars. The recent financial crisis revealed most of them.

The first Pillar (Minimum Capital Requirements) is the most problematic one. First of all, the required capital that is necessary to back loans should be a linear relationship of the specific loan's risk, not taking into account the portfolio that contains this loan. Consequently, the risk of the whole portfolio is not affected by diversification and portfolio concentration is not penalized. Portfolios are usually concentrated in low-weighted assets, such as government bonds and mortgages, allowing saving capital. Also, exposures are subject to a global risk factor and are not influenced by local economy or events. However, regional risks can be greatly expanded. Contagion and counterparty risks are undoubtedly evident in the global banking sector and its capital market activities. That is why the default of Lehman Brothers spread so quickly. The system that Basel has established is pro-cyclical as it overestimates risks in bad times and underestimates them in good times. This phenomenon is shown in the IRB approach that let banks estimate themselves PD, EAD and LGD. Moreover, capital is unclearly defined and banks do not disclose clearly their qualitative and quantitative dataconcerning their capital. Finally, the risks that inputs contain are subjective, so that banks can use inputs for their own benefit and decrease the amount of required capital.

The second Pillar (Supervisory Review Process) makes evident another one weakness of Basel II, which is the supervisors' inability to predict the future market movements and changes.

The third Pillar (Market Discipline) has also a problem. Markets are inefficient, as these that cannot manage appropriately their risk are not penalized.

2.2.5: BASEL III

In December 2009, the Basel Committee issued a new document in order to improve the previous Accords and cover their weaknesses. The Governors, Heads of Supervision and the G20 Leaders agreed on higher capital and liquidity standards so as to achieve financial stability and promote sustainable economic growth. The Committee expects any changes and adjustments to have been completed until the end of 2017 allowing financial institutions globally implement the Basel III Framework.

The first proposal of Basel III is to increase the quality and transparency of required capital. The capital of Tier 1 will include mainly common equity and some equity-like debt instruments. Severe measures will also be taken for the definition of Tier 2 capital. Common equity will not include goodwill, minority interest and banks' investments in other banks, in their own shares or generally in other financial institutions and deferred tax assets, as these elements cannot absorb losses.

The second proposal of the new Accord is to improve the protection against all types of risk. Banks must use '' stressed'' inputs when they determine their required capital and demand charges depending on the counterparty credit risk. These charges must be greater if the counterparty's probability of default increases as long as the exposure augments. This will be achieved by imposing a higher correlation multiplier on risky exposures. If these exposures are large, the regulatory capital will have to be determined in longer periods. Also, centralized exchanges will be encouraged, as these exchanges will be weighted at zero coefficients.

The third Accord's proposal is to introduce a leverage[11] ratio, a "backstop" measure for the risk-based approach. This ratio has as purpose to avoid the abnormal transition from high leverage to low leverage (a common phenomenon during periods of crisis) and its effects.

The fourth proposal of the Committee is associated with liquidity. The Liquidity Coverage Ratio-LCR is proposed to help banks hold short-term liquidity so as to be secured and defendthemselves against crunches. The second proposed ratio is the Net Stable Funding Ratio-NSFR, which concerns stable funding for a period of one year.

The last proposal of Basel III concerns on pro-cyclicality[12]. Forward-looking provisioning and implementing the International Accounting Standards Board principles, which emphasize on the

[11]The amount of capital used to finance a firm's assets. Ii is equal to the ratio Total Assets/Equity.

[12]It is a situation in which a specific regulation amplifies fluctuations in natural cycles or the case where a specific regulation changes the natural economic trend, because, for example, of misaligned incentives.

expected and not the incurred losses, would constrict cyclicality.Also, banks should hold a larger amount of capital than the minimum required, so as to be protected against large financial shocks. The proposals of Basel III, especially those concerning the leverage ratio, the capital buffer and the confrontation of pro-cyclicality, improve the status and management of banks making them safer, decreasing the risk of another new crisis.

2.3: STRENGTHENING THE LIQUIDITY OF THE ECONOMY IN ORDER TO FACE THE EFFECTS OF THE GLOBAL FINANCIAL CRISIS

The impact of global crisis was very strong in EU and consequently in Greece. A lot of measures were taken in the Euro zone in order to keep its currency, euro, strong. Specifically in Greece there was an urgent need to stimulate the economy. So, in 2008 Greece adopted a plan to address the negative impacts of the crisis in the banking system. This was a package up to €28 bn with two objectives. The first objective was to restore liquidity (short and medium term) and the second to strengthen the capital base of financial institutions. These objectives would be achieved in three ways:

- Through the guarantee of Greek government to all financial institutions to address the liquidity needs of banking system up to € 15 bn.

  The guarantee concerned on the issuance of new medium and long term loans and securities that would be issued until the end of 2009 with duration 3-5 years. The guarantee of Greek public sector addressed to the financial institution that borrowed or to the one that lent, to ensure favorable conditions. In order to obtain guarantee, financial institution had to pay commission 100-150 bp, to supply collaterals or to make some other charge according to their credit risk. Responsible for assessing the credit risk is the Bank of Greece.

- Through the issuing of special GGBs, available to financial institutions up to € 8 bn.

  Greek banks issued GGBs of duration 2-3-5 years against a fee depending on the duration 50-100 bp and collaterals. The Bank of Greece and the Agency Administration of Public Debt were responsible for the issuing conditions and management of debt.

- Through the strengthening of the financial institutions' capital base up to € 5 bn.

Public sector would undertake to purchase preference shares[13]with the required characteristics of Tier 1 Capital.These shares have embedded call options that would be exercised after 5 years. Government can receive a yield up to 10%.

Moreover, in March 2010 ECB decided to continue accepting GGBs as a guarantee even after 2010 in order to support Greek banking sector. Also, ECB took another new measure due to financial crisis and decided to keep borrowing credit institutions even if bonds or other financial products have been downgraded and assessed the extent BBB.

2.4: DEPOSIT GUARANTEE

Another measure that was taken by the Greek government in order to enhance the liquidity of banking system was the deposit guarantee. So the Hellenic Deposit & Investment Guarantee Fund was established, which is a private entity and has its base in Athens.

The Fund was founded in order to compensate the banks customers in case banks are not able to meet their obligations connected with investment products and also to compensate depositors in case banks are not able to give them their money back. The Fund can act after the Bank of Greece has ascertained that a credit institution is weak and unable to give deposits back to the public. The compensation will be given to depositors in three months from the first day that deposits were no longer available. The amount of compensation for deposits can reach € 20 thousand. It is calculated based on the credit and debit balances that depositors keep in any bank and concerns on the total deposits that they keep in banks.

2.5: ESTABLISHMENT OF THE HELLENIC FINANCIAL STABILITY FUND- HFSF

[13]Shares that offer their holders additional privileges compared with those who hold ordinary shares, such as priority in dividend, participation in equity capital increases and in case of a company's dissolution. Their holders do not have the right to vote at general meetings. In case that an enterprise displays damage, at its first profitable income statement will have to reimburse the holders of preference shares cumulative dividend for the previous injurious statements too. Source: www.ase.gr

Greek government announced the establishment of the Hellenic Financial Stability Fund, known as Fund (HFSF), which is a legal private entity. The Fund does not belong to public sector and has full legal capacity. Its purpose is to maintain the stability in the Greek banking system. This can be obtained by strengthening the capital adequacy of financial institutions. It must manage its capital and generally its property in a way that protects the value of this property, minimizes the risks for the public and enhances competition among credit institutions. But first of all, it has to get permission from the Bank of Greece. The Fund has its base in Athens and the law defines its duration to be until 30th June 2017.

Its capital comes from the money that the Greek government will draw from the European Union and the International Monetary Fund under the support mechanism for Greece. It amounts to € 10 bn and is deposited in the Bank of Greece. It is progressively covered by the Greek public sector and is embedded in securities. The Funds property consists of deposits, interests and any shares. The Fund cannot borrow money, issue bonds or other securities.

The Board of directors administers the Fund and makes decisions about its purposes, management, operation and its property.The Board of directors consists of 7 members, who are the President, 2 Vice Presidents-executive members and 4 non-executive members. The Administrator of the Bank of Greece chooses the President, Vice Presidents and 2 non-executive members.The General Secretary of the Finance Ministry and the Financial Stability Director of the Bank of Greece cover ex officio the other two positions of the non-executive members. The Board of directors has a 5 years term of office. It sends monthly sheets to the Finance Minister and Bank of Greece to inform them on its activities.

The credit institutions that have problems of capital adequacy and have unsuccessfully tried to solve them are able to resource to the HFSF in order to enhance their capital adequacy. Then, the Fund operates Equity Capital Increase through the issuance of preference shares. These shares may subsequently be converted into ordinary shares [14] in case that the financial institutionsareunable to cover the minimum level of equity, as it is defined by the regulations, or in case the financial institutions cannot meet some financial obligations that the Fund has imposed to them.The action of financial institutions to the Fund and the conversion of preference shares into

[14]They provide to their holders the right to participate in the profits, in company's liquidation, in the issuance of new shares and finally the right to vote in the General Assembly.

Source: www.ase.gr

ordinary ones lead to the gradual nationalization of these institutions. This means that their administration is transferred to the State.

2.6: STRESS TEST

The Committee of European Banking Supervisors-CEBS in cooperation with national supervisory authorities and the European Central Bank enforced banks to make stress testing in order to estimate their overall ability to cope with extreme economic phenomena. This procedure is very important as it enhances the stability and the risk management of the European banking sector.
The stress testing took place in 91 banks of EU on a consolidated base. It included three scenarios concerning the years 2010 and 2011. The first scenario was the main, which reflects the current macroeconomic estimates for 2010 and 2011. The second scenario was the unfavorable, which contains extreme and unlikely to occur risks, such as the risk of a country's debt or the risk of adverse economic conditions. The third scenario was the extremely unfavorable. The results of the stress testing and their impact are different for each bank.
In Greece specifically, the unfavorable scenario presents sharper recession in 2010 and 2011 than the one forecasted by international organizations and also higher interest rates in comparison with current level. The main differences between the stress testing of 2011 and that of 2010 are that the baseline reached 5% versus 6% and the used capital adequacy ratio was that of the main core capital, core Tier II instead of Tier I. Another one difference is that in 2011 stress testing, the banks' requirements to central governments are treated in the same way as other debt portfolio credit risk. For the stress testing of 2011, data were used from the balance sheet of December 2010. This stress testing concerns the period from 2011 to 2012 and includes one unfavorable and one extremely unfavorable scenario. The unfavorable scenario takes into account all the additional measures that banks have taken until 30.04.2011 and various future business strategies, while the highly unfavorable scenario does not include any of these measures and strategies[15]. The Greek banks that participated in stress testing were the six largest, which have total assets greater than 90% of the assets of the whole Greek banking system. These banks are the National Bank of Greece, Alpha Bank, ATE bank, EFG Eurobank, Piraeus Bank and the Hellenic Postbank. The information that each stress testing provides, and even more that resulting from the unfavorable scenarios, should be used only for comparative purposes as it does not representthe current

[15]Bank of Greece « Results from the European stress test 2011».

situation or an accurate prediction of future data for each bank.

2.6.1: STRESS TEST 2010

The results from the stress test are encouraging as the six participating Greek banks hold net capital of € 3,3bn for the amount corresponding to the agreed baseline, which is 6% of the capital adequacy ratio Tier I. Specifically, the National Bank of Greece, Alpha Bank, EFG Eurobank and the Hellenic Postbank exceeded the baseline of 6% of Tier I, while Piraeus Bank just reached the benchmark. Although, Ate bank failed to reach the benchmark due to its capital deficit of € 242 million.

2.6.2: STRESS TEST 2011

The results from this stress test are also encouraging. Specifically, in the unfavorable scenario, where all the additional measures and business strategies such as capital increases or state aid that banks have accomplished until 30.04.2011 have been taken into account, each one of the six largest Greek banks exceeds the benchmark of 5% of core Tier II. In the extremely unfavorable scenario, where the additional banks measures and strategies are not taken into account, the National Bank of Greece, Piraeus Bank, the Hellenic Postbank and Alpha Bank exceed this baseline. Although, EFG Eurobank is marginally below the benchmark and the Ate Bank is well below it.

2.7: BLACK ROCK

Black Rock is the largest asset management company in the world. It is headquartered in New York and specializes in advising on risk management.Black Rock, under the supervision of the Bank of Greece, has taken control of the capital adequacy of Greek banks by checking their loan portfolios and their reaction to a worse scenario than what is provided in the medium term. The inspections will take place only in Greek loan agreements, excluding loans provided by subsidiaries of foreign banks, bonds and loans to seagoing shipping. Within this process, the Bank of Greece will be able to know the capital needs of Greek banks.

Black Rock separates loans into two categories depending on whether they are over € 25 million or not. As far as loans that are over € 25 million are concerned, it focuses on collateral and

guarantees received by banks for each loan. In case that a property has been mortgaged, Black Rock requires from banks to hire an engineer in order to reassess it, always in accordance with current values.This is a problem as most banks report values into their balance sheets in the value at which the property was acquired and therefore the new valuation will result in gaps. Moreover, Black Rock takes into account the borrower's bankruptcy. For the rest, smaller business loans, Black Rock carries out random checks on specific time periods.

Furthermore, Black Rock will decide which of the loans of the banks' portfolios will be defined as permanent retard, as they are considered to be permanently lost.Most of them are problematic loans, which banks were trying to maintain in a variety of ways, such as expired interest capitalization or refinancing. But if these loans are considered permanently lost, the banks 'results will be negatively affected.

2.8: THE GREEK GOVERNMENT BONDS' "HAIRCUT"

During the last few months, the E.U. leaders have been making lots of discussions in order to reach a decision about the restructuring of the Greek public debt. Their aim is to reduce it and make it sustainable for Greece. Initially, the E.U. authorities considered of a soft restructuring and not heavy haircut of Greek debt because they feared the impact of such an act. They believed thatGreece is not in a position to be excluded from the markets since it is still funding from external sources and that a heavy haircut of its debt would have negative effects on Greek banks, which hold around € 55 bn of GGBs in their banking books.Tracy Alloway stated in Financial Times that: "According to JPM, Greek banks held a total of € 48.1 bn worth of Hellenic debt as of February 2011. Some 85% of that is assumed to be Held-to-Maturity (HTM), while a mere 9% is Available-for-Sales (AFS). More significantly, 30% of the HTM holdings were at one point AFS-meaning that only 60% of Greek banks' Greek debt might be eligible for the impairment trick"[16]. They also feared a possible contagion of this phenomenon to other states members of the E.U. A soft restructuring would mean a voluntary extension of GGB maturity, a decrease in GGB coupons or small haircuts for the bonds that are less sensitive to haircuts (longer-end bonds).

Despite its fears, the E.U. decided to let Greece reform its public debt through heavy haircuts.

[16] To avoid Greek restructuring losses- an accounting loophole for banks.Financial Times.By Tracy Alloway.http://ftalphaville.ft.com/blog/2011/05/10/564496/to-avoid-greek-restructuring-losses-an-accounting-loophole-for-banks/

Many European countries objected to this decision. Their leaders state that if the haircut reaches 30-35%, then some of the major banks will have to result to the Hellenic Financial Stability Fund-HFSF for funding. Also, in case of a 45% haircut all the banks will result to the HFSF. Furthermore, in case of a 50% haircut, sovereign's rating would be kept low.

JPM argues that: "Following reclassification, if there is 'objective evidence' that the cash flows on the reclassified bond are impaired, the AFS loss reserve relating to it must be written off to the P&L (just as it would have been if the bond had remained in AFS and not been reclassified). As a consequence, bonds currently held at amortized cost that were previously classified as AFS would not benefit from the maturity extension solution, although the extent of the impairment charge would depend upon their fair value when reclassified".

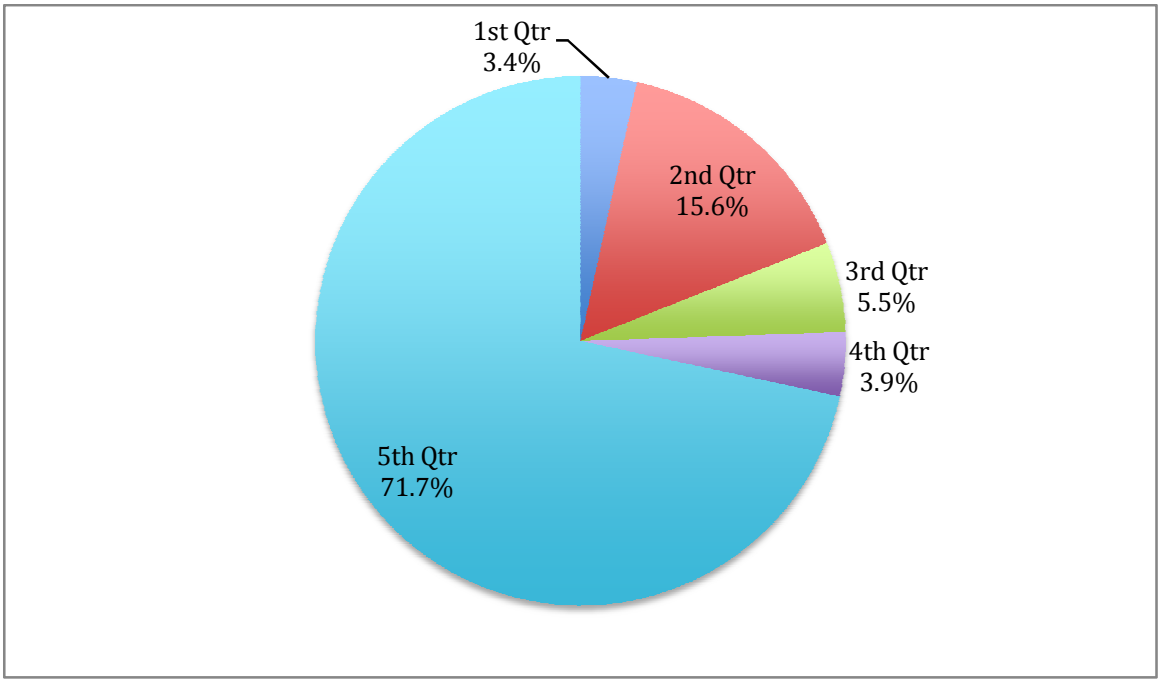
In late October 2011, the E.U. invited private investors in GGBs to exchange their bonds for new debt of 50% lower national value. Such an act would probably have as a result a decline in rating into B category or even lower. The size of the drop will depend on the response and participation of private creditors. Of course, the remaining debt of Greece will still be high. Its amount will depend on the proportion of creditor's participation, the details of the debt exchange and any liabilities in both the financial and non-financial public sector of Greece. E.U. has stated that if Greece fully implements the restructuring program and the creditor's participation is quite large, the reduction of Greek debt/GDP ratio would reach 120% in 2020.

The 50% haircut of GGBs does not mean an equal decrease of the overall public debt. This is due to the fact that the IMF, the ECB and other member-states of the E.U., which totally hold more than the one third of Greek debt, will not be involved in this debt exchange. The holdings of ECB will probably be excluded from the reduction in GGBs value of 50%. The most probable scenario includes 70% haircut of GGBs.

However, all Greek institutions both bank and non-bank would have severe losses in case of a 50% decrease in debt, and even worse in case of a 70% decrease in debt, as all of them are exposed to the sovereign (Greece has been funded during 2011 with an additional rescue package of € 30 bnin order to cover the costs of bank recapitalization and other stock-flow adjustments).

Despite the efforts of the Greek government to exit from the crisis, reduce public debt and deficit and be competitive, EU members are cautious about the fully implementation of the program by Greece. The members of EU continue their negotiations with private investors about the "haircut" of the Greek public debt. The creditors participation is not fully determined yet.

FIGURE 6: GREEK DEBT COMPOSITION



SOURCE: Bloomberg.

2.9: GREEK BANKS' REACTION TO THEIR GGBs MANAGEMENT DURING THE FINANCIAL CRISIS

Greek banks used to hold a lot of GGBs, keeping them in their portfolios as guarantee for their borrowing from ECB. The recent financial crisis and surely the deterioration of Greek government's creditworthiness influenced Greek banks' holdings of GGBs. Greek banks rushed to apply the proposal of IASB in mid-2008 for reclassification of bonds and securities.

The six largest Greek banks, which are the National Bank of Greece, Alpha Bank, ATE bank, EFG Eurobank, Piraeus Bank and the Hellenic Postbank, since 2008 have reclassified a great number of their bonds and securities moving them from their trading books to their banking books. In the banking book, financial instruments are valuated at their amortized cost instead of their fair value. In this way, Greek banks are able to avoid recognizing losses into their results. Consequently, any reduction in the financial instruments' market value is not reportedand gains would be spread smoothly over the lifetime of the financial instruments. These banks moved bonds and securities from the Available-for-Sale portfolio to their Held-to-Maturity portfolio. Significantly, between 2009 and 2010, most of them almost doubled their Held-to-Maturity securities and managed to maintain their net trading income at higher levels[17]. Of course, all these bonds that are included into the banks' Held-to-Maturity portfolio will be directly affected by the imminent 70% haircut of GGBs, which has been decided in the beginning of 2012. This means that their value will be reduced by 70%, having an extremely negative impact on Greek banks.

In this point it is important to mention that the merger of Alpha bank and EFG Eurobankthat was agreed on November 15 of 2010 has been doubtful after the changes in the finalization of Private Sector Involvement-PSI. EFG Eurobank supports that their merger will have a positive impact on Greek economy and will contribute to the accelerating of the country's exit from the crisis and the reform and strengthening of the Greek banking system. However, Alpha bank decided to suspend its shares trading[18]. The merger between the two banks is threatened as Alpha Bank holds approximately € 3.9 billion in GGBs, while Eurobankholds almost € 7.5 billion in GGBs. For the time being, the negotiations for their merger have been postponed.

2.10: THE NEW "AGREEMENT" OF THE EUROZONE

[17]In the end of this working paper, in Appendix B, there are detailed information and results for the investment securities of the six largest Greek banks during 2009 and 2010.

[18]Μάχη ανακοινώσεωνEurobank– Alpha.www.banksnews.grTuesday, 31 January 2012 00:35.

After a series of negotiationsin the meeting that took place in Brussels, on 9 December 2011, the countries-members of the EU finally reached an agreement concerning the change of the Treaty on European Union. This new agreement between the Member States of the monetary union provides for closer coordination among economic policies in areas of common interest and also new stricter fiscal discipline and issuing national debt. Its purpose is to strengthen the economic union and end the debt of member states imposing strict fiscal discipline and automatic penalties. Moreover, the pact intends to achievestronger growth, greater competitiveness and social cohesion.

European leaders of 27 member countries of the European Union failed to reach an agreement to change the Treaty of the EU. So, the efforts about the rescue of EU cohesion and the euro focused on an agreement between the 17 countries out of 27.Specifically, the new pact will include the euro countries plus six other countries-EU members, total 23 out of 27. Britain and Hungary refused to participate in the agreement, while Sweden and the Czech Republic will seek approval from their parliaments.These23 countries will proceed in a "Union budgetary stability" with enhanced governance.According to the European Council President Herman Van Rompuy;countries outside the euro area are welcome to participate in the agreement on the new Treaty if they wish.

The key points of the new Treaty are 5:

1.Each member country of the Eurozone is committed to adopt a new financial regulation, the so-called"golden rule". This setting should be included in the Constitution of each country and these rules need to be common. The overall budget should be balanced or in surplus. However, countries may have a "structural deficit" that will not exceed 0.5% of GDP. Brussels will propose a schedule based on which countries will converge towards a balanced budget.

2.More systematic sanctions will be charged against countries whose deficits exceed the predetermined threshold of 3% of GDP or whose deficit is growing overwhelmingly.European Commission will be charged to propose sanctions. The penalties on members that violate the regulationswill be automated and enforced immediately, unless a qualified majority decides otherwise.

3.The European Court will be empowered to verify whether the financial rules of each country respond to the principles defined by the European Commission.Countries that present excessive deficit should present a program of structural reforms, which will be supervised by the European Commission and European Council. The proposals of Brussels to strengthen its

monitoring of national budgets, even under preparation, will be dealt with quickly by governments. If the European Commission finds particularly severe violations of the Stability and Growth Pact, it may request review of the draft budget.

4.The operation of European Stability Mechanism is provided for July 2012. ESM will work alongside the provisional mechanism European Financial Stability Facility for a year until mid-2013. The ceiling for ESM amounts to € 500 bn. Qualified majority 85% will take future decisions on financial assistance in order to accelerate decision-making and prevent smaller countries from having the ability to block. Moreover, ESM will not be able to operate as a bank and borrow from the ECB.

5.Bilateral loans will be given to the IMF amounting to € 200 bn.These funds to the IMF will be allocated by the central banks of the Eurozone countries. IMF will then fund programs to support European countries. Finally, the potential involvement of private creditors in future restructurings is excluded, because the case in Greece has already caused huge uncertainty in the markets and investors. In the future, the rules of IMF will be applied in cases of bankruptcy.

As expected, European market closed with significant gains, after the agreement at the crucial summit in Brussels. Specifically, the French CAC 40 was reinforced at a rate of 2.47%, the UK FTSE 100 rose by 1%, the German DAX gained 1.97% and the Spanish IBEX 35 made gains of 2.28%. Also, the Italian FTSE MIB rose by 3.23%. Finally, the pan-European Stoxx Europe 600 Index rose 1.18%, while the Euro Stoxx 50 gained 2.42%.

Greece depends heavily on these decisions. Ofcourse for our country the ideal solution was the one that would not split the EU, which means an agreement between all the Member States of the E.U. about a simplified Treaty revision. An inability to find an active solution to the debt crisis would lead to a rapid deterioration in the Eurozone, and in this case the biggest problems would be faced by the weak countries and of course the weakest one, which is unfortunately our country. Especially during a period, which is quite difficult and critical for Greece because of the full negotiations with private investors about the "haircut" of the debt and also in view of talks with Troika for the new memorandum, under the new support.

CHAPTER 3: ACCOUNTING STANDARDS WORLDWIDE

3.1: GENERALLY ACCEPTED ACCOUNTING PRINCIPLES-GAAP

Each country needs to establish a set of accounting standards to make its national companies able to use these standards when they report their financial statements. Over the years, most countries worldwide have established their principles, which differ from one country to the others. These accounting principles, known as Generally Accepted Accounting Principles-GAAP, are common to the companies of each country so as to allow investors compare the available information about different companies and products and make their decisions.

GAAP are used when companies record and publish financial statements such as balance sheet, revenue recognition and share measurements. They are set by policy boards or by the habit of recording and presenting financial data. Their purpose is to make the financial information of companies valid, consistent, transparent and comparable not only for themselves but especially for investors.

The United States implement their national accounting standards, known as US GAAP. They are a mixture of preferred standards, principles and practices that US regulators established. The Financial Accounting Standards Board-FASB,the American Institute of Certified Public Accountants and the Securities and Exchange Commission-SEC were responsible for the interpretation and instructions about the application of GAAP.

As US was a dominant force able to fund even other foreign companies, most companies worldwide used to apply the US GAAP. Consequently, even though US GAAP were not typically stated, most companies and countries adopted them when they were recording their financial statements.

3.2: INTERNATIONAL ACCOUNTING STANDARDS-IAS

The opening of markets, funding not only to companies but also to entire countries from other states and globalization made it necessary for all countries to adopt a commonly accepted international set of accounting standards.These International Accounting Standards-IAS allowed investors of any country compare and evaluate the performance of a great number of companies so as to make their economic decisions.

Until 2001 all countries and companies worldwide had to implement the IAS, which were governing their transactions and generally all the financial events.The financial statements of

publicly traded companiesshould follow the instructions and principles of IAS. Responsible for issuing these International Accounting Standards was the Board of the International Accounting Standards Committee-IASC.

Although IASC had no authority to require from all countries to adopt its accounting standards, most of countries worldwide required from their publicly traded companies to implement IAS when they record and report their financial statements. As a result, IAS even though informal became widely accepted.

3.3: INTERNATIONAL FINANCIAL REPORTING STANDARDS-IFRS

The new International Financial Reporting Standards-IFRS are a set of principles, methods and guidelines to address specific accounting issues adopted by the International Accounting Standards Board-IASB. They are a mix of the existing International Accounting Standards-IAS and Standing Interpretations Committee standards-SICs.Their implementation enhances the calculation of the economic effect of different companies and the training of their financial statements, as these data are calculated in a determined and uniform way.

The need for their introduction was firstly created due to the requirements of investors, supervisors and agency's managers of all kinds of businessesfor registration and monitoring of the actual image of business organizations. Theimplementation of IFRS added extra dimensions, necessary in the current globalized environment, which are the transparency, credibility and comparability of business accounts at a European and international level.

The consolidated balance sheet of corporate groups, the drawing and appearance of the Explanatory Notes are some of the most important elements of the accounting reform.

3.4: FINANCIAL ACCOUNTING STANDARDS BOARD-FASB

Financial Accounting Standards Board-FASB was established in 1973 in the United States and replaced the Committee on Accounting Procedure-CAP and the Accounting Principles Board-APB of the American Institute of Certified Public Accountants-AICPA. It is a private, non-for-profit organization consisting of accounting professionals. It is charged with the responsibility to develop and promote the application of GAAP by publicly held companies within the U.S. Its purpose is to set or improve the existing corporate accounting practices making them understandable, credible, current and transparent. FASB consists of seven members.The Securities

and Exchange Commission-SEC recognizes FASB principles as authoritative. On July 1, 2009, the FASB announced the launch of its Accounting Standards Codification, declaring it to be "the single source of authoritative nongovernmental U.S. generally accepted accounting principles."

3.5: INTERNATIONAL ACCOUNTING STANDARDS COMMITTEE-IASC

International Accounting Standards Committee-IASC was established in June 1973 in London, in United Kingdom. Its establishment was accomplished after the agreement of the accounting bodies of Australia, France, Germany, England, Mexico, Japan, Ireland, Canada, Netherlands and U.S.A. IASC responsibility was to issue and enhance the International Accounting Standards and also to promote their global acceptance, implementation and harmonization.The action and function of the IASC lasted until 2001 when the International Accounting Standards Board-IASB took its place.

3.6: INTERNATIONAL ACCOUNTING STANDARDS BOARD-IASB

The International Accounting Standards Board-IASB was established in April 2001 in London and replaced the IASC.It is an independent, privately funded accounting body. From 2001 and on it is charged with the responsibility to set the new restructured IAS, which renamed to IFRS, and promote their wide implementation.Its purpose is to enhance the quality and transparency of international accounting standards. Member bureaus may be found in US, Australia, Canada, Colombia, England, Germany, Mexico, The Netherlands, South Africa, South Korea, Spain, Singapore, Brazil, France, Portugal and New Zealand. IASB consists of 16 Board members, each with one vote. IASB, banks and other companies that use to promote international standards fund IFRS. It cooperates closely with stakeholders around the world, including investors, analysts, regulators, business leaders, accounting standard-setters and the accountancy profession.

3.7: A BRIEF HISTORICAL OVERVIEW OF ACCOUNTING STANDARDS

Over the years, countries have felt the need for the development and application of accounting standards, making financial information credible and comparable. Publicly held companies inside each country had to implement these country-specific standards when report their financial statements. Consequently, the accounting standards were common for the companies within each country. These common accounting standards were named as Generally Accepted Accounting Standards-GAAP and were unique for each country. Their purpose was to present financial information of high quality and transparency to the public. The Financial Accounting Standards Board, which was founded in 1973 in United States, was charged to develop U.S. GAAP and enhance their quality so as to allow companies within the United States follow a common base of accounting principles.

Over the last decades, the flow of capital to borrowers and businesses both domestically and globally, the development of technology, the global competition and in general globalization made it necessary for securities' regulators worldwide to adapt so as to serve market participants and simultaneously provide protection and transparency to investors and capital markets. This would be achieved through the implementation of a set of generally accepted accounting standards, which were named as International Accounting Standards- IAS.

The IAS had been issued by the International Accounting Standards Committee-IASC, which was founded in June 1973 in London. The establishment of IASC was accomplished after the agreement of the accounting bodies of the Australia, France, Germany, England, Mexico, Japan, Ireland, Canada, Netherlands and U.S.A.This Committee was an independent, self-governing body. It was charged with the responsibility to develop the International Accounting Standards and promote their global acceptance, implementation and harmonization.

On April 1, 2001 the IASB replaced the IASC and took the responsibility for setting the new reformed IAS, which then renamed to IFRS.IASB was established in London too. All listed enterprises have been required to apply these standards in the preparation of their consolidated accounts. The listed companies had to implement a gradual transition to evaluate the economic consequences and plan the appropriate application of IFRS. The financial statements that must be harmonized with IFRS are the balance sheet, profit and loss statement, statement of changes in equity, cash flow statement and notes to financial statements. These statements concern onboth the individual financial statements of the parent companies and the consolidated financial statements of the conglomerates.

The importance and impact of IFRS are illustrated by the fact that they have become widely accepted in most European and non-European countries. More than 100 countries worldwide are members and apply the instructions of IASB. The IASB cooperates closely with other

international bodies such as the Financial Accounting Standards Board-FASB founded in 1973 in U.S., the World Bank and the European Commission to ensure the effectiveness, realism and connection of IFRS to the requirements of investors, analysts and capital market in general.
The most important advantages of the application of IFRS are the emphasis in the substance of the transaction, the flexibility in choosing among alternative accounting methods, the estimation in current values and the adoption of a common basis for assessing the business worldwide making the comparison of financial information possible.
As years pass, the IFRS have been changed to reflect the current and real economic situation of the various types of enterprises. IFRS must satisfy the following conditions in order to be efficient:

1: They have to be timely, functional and convenient.
2: They have to promote the transparency and reliability of the enterprises'financial data.
3: They should provide accounting information that is reliable and of high quality.
4: They have to provide accurate constructionsabout their application margin to prevent mistakes and incorrect interpretations.
5: They should also facilitate the effective supervision and monitoring of accounting practices that companies use.
6: They need to be suitable for application not only in developed but also in developing capital markets and economies.
7: They have to deal with consistency and caution the various accounting events that arise each time.
8: They finally should take the necessary measures to avoid cases of misinformation or misunderstanding of investors when there are alternative methods of recording certain accounting events. This can be achieved by informing the investors about which method is each time used.

It is undoubtedly true that the adoption and application of IFRS (and formerly of IAS) caused except of positive effects many problems too. First of all, one of the most important problems was the cost of learning and understanding of the provisions of the new standards. Problems had been caused because of differences between IFRS and the outgoing accounting practices. Another problem was the late or incorrect application of IFRS. Also, a climate of uncertainty and imbalance had been created in financial markets due to the pursuit of investors to predict the impact on the financial situation of enterprises from the adoption of IFRS. Finally, there was very concern in the markets about the way in which the application of IFRS would affect the business'

context such as the competitive advantage of all enterprises, their sustainability, their share of the market and the reaction of competitors.

In Greece, the IAS werefirst introduced in March 2002 for the annual or periodic financial statementsof the following year. The regulation was applied only to public limited companies, whose shares were listed on the Athens Stock Exchange and optionally to other public limited companies that were audited by certified public accountants. Corporate issuers had to announce with the financial statements for the year 2003, how they intended to implement the transition to IAS and the key differences among the used accounting methods.

TABLE 3: IFRS AND IAS SUMMARIES-ENGLISH 2011

IFRS 1	First-time Adoption of International Financial Reporting Standards
IFRS 2	Share-based Payment
IFRS 3	Business Combinations
IFRS 4	Insurance Contracts
IFRS 5	Non-current Assets Held for Sale and Discontinued Operations
IFRS 6	Exploration for and evaluation of Mineral Resource
IFRS 7	Financial Instruments: Disclosures
IFRS 8	Operating Segments
IAS 1	Presentation of Financial Statements
IAS 2	Inventories
IAS 7	Statement of Cash Flows
IAS 8	Accounting Policies, Changes in Accounting Estimates and Errors
IAS 10	Events After the Balance Sheet Date
IAS 11	Construction Contracts
IAS 12	Income Taxes
IAS 16	Property, Plant and Equipment
IAS 17	Leases
IAS 18	Revenue
IAS 19	Employee Benefits
IAS 20	Accounting for Government Grants and Disclosure of Government Assistance
IAS 21	The Effects of Changes in Foreign Exchange Rates
IAS 23	Borrowing Costs

IAS 24	Related Party Disclosures
IAS 26	Accounting and Reporting by Retirement Benefit Plans
IAS 27	Consolidated and Separate Financial Statements
IAS 28	Investments in Associates
IAS 29	Financial Reporting in Hyperinflationary Economies
IAS 31	Interests in Joint Ventures
IAS 32	Financial Instruments: Presentation
IAS 33	Earnings per Share
IAS 34	Interim Financial Reporting
IAS 36	Impairment of Assets
IAS 37	Provisions, Contingent Liabilities and Contingent Assets
IAS 38	Intangible Assets
IAS 39	Financial Instruments: Recognition and Measurement
IAS 40	Investment Property
IAS 41	Agriculture

SOURCE: IFRS Foundation.

3.8: DEFINITION AND USE OF FAIR VALUE ACCOUNTING

Fair value is an estimate about the price at which an entity would accept to sell an asset or relieve a liability.The IASB (2007) defines FVA as "the amount for which an asset could be exchanged or a liability settled, between knowledgeable, willing parties in an arms length transaction". Ryan (2008a) defines Fair Value Accounting as "a financial reporting approach in which companies are required or permitted to measure and report on an ongoing basis certain assets and liabilities (generally financial instruments) at estimates of the prices they would receive if they were to sell the assets or would pay if they were to be relieved of the liabilities".A great number of financial instruments such as debt securities, derivatives and shares traded on an exchange, are recorded at fair value. However, there is lack of justifications for the selection of FVA.The fair value method is one of the most traditional models for valuating financial instruments. This model records financial instruments at their market value and not at their historical cost, as other models do. Most firms dispose a robust internal control process in order toobtain through their models valuations that correspond to the underlying market conditions. In addition, they disclose in their financial reports information about how they calculate fair value.During last years, the application of the fair value method has significantly increased and legislators attempt to spread its implementation to an ever-greater range of assets and liabilities.

Institutions take into account the intended use of financial instruments, their intent for holding the instruments and also the nature of their business activity in order to decide whether these financial instruments should be recorded at fair value in their financial statements.Moreover, institutions calculate their financial instruments at fair value when they make investing and trading decisions, evaluate compensation, measure risks or when they want to determine capital allocation.

Sometimes it is quite easy for companies to determine the fair value of an instrument as they can look for its price in a newspaper or a quotation system such as broker quotes, electronic systems that record the prices of various securities or subscription services that provide price data for specific instruments. These prices correspond to the last price in which securities were traded in the secondary market. If there is no information available for a financial instrument, companies can use valuation models in order to estimate its fair value. Valuation models are statistical practices that take into account general market conditions, the price of similar financial instruments, current economic forecasts and other factors that affect pricing, in order to estimate the fair value of financial instruments. Companies that use valuation models usually review them to obtain accurate and reasonable estimations. In case of lack of information about an instrument's price, companies have to make judgments about the fair value of this financial

instrument.Financial statements dispose footnotes that give information about the fair values of the company's financial instruments and how these fair values were determined.

Financial reports that use fair values enable investors to be aware of current market values. Probably, the most important advantage of financial reports that use fair value is that they give investorsthe possibility to compare the value of various financial instruments bought at different times.

3.9: IAS 39 FINANCIAL INSTRUMENTS-RECOGNITION AND MEASUREMENT

In mid 1980, financial instruments that are mainly known as derivatives began to be widely used. Derivatives are financial instruments such as options and futures, whose characteristics and value depend upon the characteristics and value of an underlier, typicallya commodity, bond, equity or currency. Investors purchase or sell derivatives in order to reduce the risk that they face from potential future movements in a market variable, known as hedgers, to bet on a future direction of a market variable, known as speculators, or in order to take off setting positions in two or more instruments to lock in a profit, known as arbitrageurs.Credit institutions and non-financial corporations started incorporating them into their traditional financial activities. Simultaneously, the strength of capital market started increasing significantly as a source of fund and investments. These facts resulted in the reform of the used methods for reporting financial statements.

Until the end of 1980, companies used to calculate their profit as the difference between the incomes accrued and costs incurred. So profits were recognized only when a sale or other form of disposal or an increase in liquid assets had been accomplished. However, this method proved ineffective partly because the transactions of financial instruments were zero cost and as a result they could not be reported in their historical cost and also due to the lack of credibility of the financial statements' information that was based on historical cost.

At the beginning of 1990, the bodies responsible for issuing accounting standards concluded that the most convenient valuation model for financial instruments was fair value. In 1992 the United States were the first that implemented fair value. Companies had then to include into their financial statements the fair value of their financial instruments such as their negotiable securities, their portfolio of loans, their deposits and any other off-balance-sheet items banks could contract.The accounting framework in the E.U. hade made the distinction between financial instruments held for trading purposes (in the trading book), which were valued at market prices and those intended to be held to maturity (in the banking book), which were valued atthe lower of

historical cost and market value. Profits or losses arising from the revaluation of trading book instruments were recognized in the profit and loss account. On the other hand, only losses arising from the revaluation of banking book instruments were recognized in the profit and loss account. Unrealized gains were not recognized and as a result could be converted into hidden reserves in the balance sheet.

In 1999 the IASC issued IAS 39-Financial Instruments: recognition and measurement which supported that derivatives, as well as shares and other securities, whether held for trading purposes or for sale, should be calculated at fair value. IAS 39 classifies financial assets and liabilities into 5 categories: Fair value through profit or loss – designated Fair value through profit or loss – held-for-trading, Held-to-maturity, Available-for-sale and Loans and receivables.

At the beginning of 2000, IASB and other international accounting standards bodies tried to extend the use of fair value for the majority of financial instruments.In 2002, the European Parliament and Council required from all publicly listed companies and credit institutions (numbering more than 7,000) to prepare consolidated financial statements in accordance with IFRS as of 2005 in order to create a harmonized accounting framework for all Member States of E.U.In 2003 IASB issued the restructured IAS 39 and IAS 32- Financial Instruments: disclosure and presentation. IASB also decided to allow the use of the fair value option for any available-for-sale financial asset other than a loan or receivable only if their fair value can be ascertained. In 2005, the IASB issued IFRS 7: Financial Instruments: Disclosures.It has required disclosure of detailed information for recognized financial instruments that are valuated using fair value or not. Supervisors have been responsible for monitoring the implementation of the fair value method so as to reflect the risk management practices of their institution. In 2006, the FASB issued a new standard, FAS 157: Fair Value Measurements, which provided significantly more inclusive guidance to assist companies in estimating fair values.

On 13 October 2008, the IASB issued amendments to IAS 39 and IFRS 7 that allow the reclassification of some financial instruments in order to reduce the differences between IFRS and US GAAP. The FASB describes a hierarchy of preferences for measurement of fair value in its Exposure Draft: Fair value measurements. The IASB adopts a similar hierarchy in IAS 39. Level 1fair value estimates are those based on observable prices for identical assets and liabilities, and are most applicable to those assets or liabilities that are actively traded (e.g. trading investment securities). It constitutes the most reliable basis for fair value measurement.Level 2estimates are those based on quoted market prices of similar or related assets and liabilities. Finally, level 3estimates, the least preferred, are those based on company estimates, and should only be used if level 1 or 2 estimates are not available.Level 3 inputs are commonly referred as “mark-to-

model".Also, SFAS 115: Accounting for Certain Investments in Debt and Equity Securities permits debt securities for which an enterprise intends and can hold to maturity to be classified as held-to-maturity securities and be reported at amortized cost. If the fair value of these securities decreases below the amortized cost basis for a long time, their accounting cost must be written down to that value and the write-down must be reflected into net earnings as a realized loss. In case the held-to-maturity securities are written down, they cannot be written up.
During all these years and until now, the valuation model of fair value has been strongly criticized about its appropriateness,reliability and transparency.

3.10: THE MODEL OF FAIR VALUE AND ITS APPLICATION

The FASB defines fair value as the total for which an asset can be sold in a real transaction between independent parties undertaking the transaction in a situation other than that of a liquidation or forced sale so as to avoid overestimates or underestimates.The parties should be well informed about the assets characteristics. However, fair value of all assets and liabilities is not always available.
IAS 39 states that if there are published prices in an active[19] market,these should be used for the valuation of financial assets and liabilities. But if there does not exist an active market for the instrument,credit institutions have to use a valuation model that takes into account all underlying market conditions to estimate the instrument's price. This price corresponds to a specific moment and so it may be a bad estimator in future calculations. IAS 39 finally supports that an entity cannot use the fair value option to estimate its financial instruments, if the estimates show great volatility and so are not credible. In this case, firms should count on objective estimates. Moreover,FAS 157: Fair Value Measurement gives three approaches for measuring the fair value: the market approach, income approach and cost approach. The market approach uses prices and other relevant information taken by market transactions including identical or comparable items. Matrix pricing is an appropriate valuation technique for this approach. The income approach uses values indicated by current market expectations about future amounts. The valuation techniques

[19]A market is active if the assets traded are uniform, prices are known to the public, parties are symmetrically informed and almost at any time willing to trade the assets.

used in this approach include present value techniques, option-pricing models such as Black-Scholes-Merton formula, and the multi-period excess earnings method. Finally, the cost approach uses prices that are developed based on market elements generated by sources that have no relationship with the reporting entity.

Financial assets and liabilities are initially valued but may also be subject to other subsequent valuations. The initial valuation is carried out at the instrument's fair value, which represents the actual cost of the transaction. However, subsequent valuations show some differences. Particularly:

- Financial instruments of trading portfolios are valued at fair value with changes in the profit and loss account.
- Available-for-sale financial assets are valued at fair value with changes in equity until they are realized.
- All derivatives, including some embedded derivatives, must be measured at fair value in the balance sheet.
- Held-to-maturity investments are valued at the amortized cost.
- The majority of liabilities, such as loans and receivables, the equity instruments that do not have a listed price on an active market and also credit investments are valued at amortized cost.

In order to determine the financial instruments' fair value we have to take into account that there are two categories of instruments. There are financial instruments that have an active market and those with no market or for which the market is not very active.

3.10.1: FINANCIAL INSTRUMENTS WITH AN ACTIVE MARKET

When there is an active market for the financial instruments the majority of their prices are published, known to the public and reflect the market values. So, investors are well informed about the risks that any instrument involves and may make better decisions. There are markets where the published information is only one price, the closing price, and other markets where many different prices are available.Specifically:

- The fair value of a financial instrument that is traded on more than one active market at the same time is the most profitable price among them.
- The fair value of an asset that has been bought or a liability to be issued is the bid price

and that of an asset to be bought or a liability that has been issued is the ask price, when bid and ask[20] prices are published for the instruments.

- Average market prices are used to determine the fair value of the risk positions and the bid or ask prices will be used for the net open position, when an entity has assets and liabilities used to offset market risks.
- When the market price of the asset does not contain important market factors, an adjustment is used so as to take these factors into account.
- The fair value is determined using the market price of the components parts of the instrument, when there is no published information for the financial instrument's price although there is an active market for its components parts.
- The fair value of a financial asset or liability is determined using as a factor for the valuation method an interest rate, when this interest rate is the only information available.

3.10.2: FINANCIAL INSTRUMENTS WITH NO MARKET OR FOR WHICH THE MARKET IS NOT VERY ACTIVE

Valuation techniques have been used to determine the fair value of financial assets and liabilities as if these instruments were traded in an active market. Directors are responsible for estimating the available information and making economic decisions.

If there is available information about the market prices of the last traded instruments, directors should use this information, given that the economic conditions have been stable and the transaction that took place was voluntary. Any important change in the economic conditions or proof of involuntary transaction should be taken into account and the fair value of the instruments concerned should be adjusted so as to include these facts. If there is no available information about the instruments' market prices, directors should use as base the fair value of other familiar financial instruments. Moreover, if there is no available information, directors should use valuation techniques such as discounted (at the current market rate of return) cash flows in order to determine as accurately as possible the instruments' fair value.

Valuation techniques have to satisfy some conditions in order to be reliable:

- They have to be consistent with financial theory and reflect any important market condition.

[20]Bid price is the price that a buyer is willing to pay in order to purchase a security. The ask price is just the opposite, the price at which a seller is willing to sell his securities. These prices often differ from the securities current price.

- They have to use as accurately as possible market inputs and include only a little of subjective judgments.
- They have to be reviewed at regular intervals so as to reflect current market conditions.
- If there is one valuation model that is the most widely used or has proved to be the most consistent and reliable, directors have to use this model.
- Directors have to disclose information about the valuation model used and also the reasons why they prefer it.
- If there is no need for modification of the valuation model, directors should continue to use the same model as the one previously used.

Directors should always take into account the model risk, which represents the possibility that the model used is not the appropriate one. In order to reflect recent information and market conditions, valuation models have to take into account:

- The time value of money.
- Credit risk.
- Commodity prices.
- Equity prices.
- Foreign currency exchange prices.
- Servicing costs.
- Volatility of market prices.
- Liquidity, i.e. the possibility of a quick and easy transaction of financial instruments.
- Risk of early cancellation, which includes prepayment risk, surrender risk and risk of redemption

3.11: INSTITUTIONS' DISCLOSURE

According to FASB (Statement of Financial Accounting Standard 107, "Disclosures about Fair Value of Financial Instruments"), financial institutions listed on US markets are required to disclose any necessary information about the financial instruments they hold to all market participants. They have to report the estimated fair values of all their financial instruments (instruments that are on-balance sheet and off-balance sheet as well) when this is feasible.In order to achieve this they have to:

- Report the fair value of all portfolios of financial instruments compared with their book values as presented in the balance sheet.
- Disclose the used quoted prices or valuation models.
- Report the techniques used and the assumptions made to determine the fair value of the financial instruments that do not have an active market.
- Disclose the fair value of the instruments that are not estimated by the fair value option.
- Report any change of the fair value of financial assets and liabilities caused by changes in the assumptions made.
- Disclose all unlisted equity instruments and any derivative linked to them that cannot be valued reliably by the fair value option and as a result are valued using their historical cost. In addition, institutions have to report their book value, characteristics and any other information available.
- Report the amount of the profit or loss in the equity and also the one that has been withdrawn from the equity when the financial instrument concerned is asset available for sale.
- Disclose the impact on the profit and loss account caused by any change in the instruments fair value.

CHAPTER 4: FAIR VALUE ACCOUNTING BEFORE THE GLOBAL FINACIAL CRISIS AND ITS EFFECTS

4.1: THE PROPOSAL FOR THE APPLICATION OF FULL FAIR VALUE ACCOUNTING-FFVA

Current financial statements are based on a mixed-attribute accounting model including values recorded using historical cost and other values recorded using fair value. Market developments forced regulatory authorities and accounting standards bodies to focus their attention to the wider application of fair value accounting for financial instruments, known as Full Fair Value Accounting-FFVA. Accounting standards setters in many countries around the world have issued standards requiring recognition of balance sheet amounts at fair value and changes in their fair values in income. Indeed, in December 2000, the Financial Instruments Joint Working Group-JWG of Standard Setters issued the consultative document entitled "Draft Standard and Basis for Conclusions – Financial Instruments and Similar Items". It suggests that Fair Value Accounting-FVA should be used as the basis for the valuation of all financial instruments in a bank's balance sheet.Under FFVA assets and liabilities are carried on the balance sheet at their market value, if known, or at fair value. Such a reform would affect the banking and financial industry, financial stability and also the operation of financial markets in the euro zone.The accounting framework needs to be restructured in order to allow the valuation of all trading instruments. One important problem of the existing accounting framework was that financial statements included items valued at historical cost and others at market value. Financial institutions used to handle these items in the same way with the intention to hedge the interest rate risk in the banking book. Another important problem was that financial institutions were closely linked to derivatives contracts that were mainly recorded as off-balance-sheet items.This fact permitted institutions to conceal their real risk and as a result to report unreliable financial statements. Financial statements need then an improvement in the quality and the transparency of the information reported so as to present current market conditions. The countries Member States of the European Union support the restructure of the accounting framework, as they desire to establish and implement a common set of accounting standards. This could result in the stimulation and development of financial markets within the EU. Moving in this direction, in May 2003 the E.U. Council approved a Directive, which required from all listed companies and banks to prepare consolidated accounts in accordance with IAS from 2005 onwards. The E.U. required the use of International Accounting Standards for the group accounts of companies listed in the EU from 2005.

Regulators and banks encountered the idea of the FFVA implementation with suspiciousness, as credit risk models and valuation techniques concerning illiquid or non-traded instruments were not appropriate for the application of FFVA in institutions' and banks' financial statements.The transition to FFVA should be made after a detailed and thorough estimation of its advantages and disadvantages.

4.2: IAS 39 AND FAIR VALUE HEDGE ACCOUNTING

IAS 39 has distinguished between two kinds of hedges, the fair value hedge and the cash flow hedge. The first one prevents variance of the value of balance sheet instruments, while any changes in the value of fair value hedges must be reported into the income statement for the hedged item and the hedging instrument as well. The second kind, cash flow hedge, protects transaction or future revenues. Any changes in the value of cash flow hedges, but in this case only for the hedging instrument, pass on equity.

Until mid 2003, the fair value hedge accounting had been implemented at the micro level. In the end of 2003, fair value hedge accounting was used at a macro level including portfolio hedges of interest rate risk, enabling banks to report any changes caused by the application of this method into their statements.

IAS 39 defines that derivative financial instruments can be used as hedging instruments and have to be valuated using fair value. Due to these regulations, differences may occur on equity or net income according to which kind of hedge accounting was used (fair value hedge or cash flow hedge), the nature of instruments and banks' risk management strategies concerning interest rate risks. There is uncertainty as to whether portfolio hedging strategies should be excluded from hedge accounting, increasing volatility in profit and loss accounts, or they should be recognized in cash flow hedge accounting, valuating the hedging instrument using the fair value method and passing any changes on equity. This in turn raises equity's volatility creating "artificial volatility".

An important issue concerns credit derivatives.They may be useful in managing credit risk. However, the majority of them do not qualify for hedge accounting treatment, which would allow the gain or loss on the credit derivative to be reported in the same period as that of the position being hedged. So, credit derivatives may cause earnings volatility.

Another source of IAS 39 reforms is demand deposits, which are deposits that can only qualify for fair value hedge accounting beyond the shortest period in which the counterparty can demand payment. Depositors consider as value of their demand deposits their face value. There are several cases where the behavioral maturity of core deposits does not equal to the maturity agreed on

contract. Banks take into account this fact when they organize their risk management techniques. Moreover, banks use to be funded by a great range of depositors in order to enhance their ability to transform liquidity and in this way they manage to limit steep and sudden fund withdrawals in case of a very unfavorable event such as a crisis. Credit institutions use behavioral maturities for deposits to hedge only the residual risk.

4.3: ADVANTAGES AND DISADVANTAGES OF THE APPLICATION OF FFVA

In order to be useful as the basis for rational economic decision-making, financial information must be relevant, reliable and comparable.The application of FFVA by financial institutions and specifically by banks for all financial instruments, without making discriminations, contains important advantages but may also include important disadvantages. We can categorize the advantages and drawbacks of FFVA.

4.3.1: ADVANTAGES OF FFVA

We can enumerate four main positive arguments:

The first advantage of the FFVA application is related to the banks' attitude towards to maturity and liquidity transformation. Banks can use properly their available advanced techniques when they try to transform their liquidity. They may spread their risks using risk-transfer mechanisms, such as securitization, in order to let the profit and loss account unaffected by any problems linked to the application of FFVA and simultaneously maintain liquidity to meet the needs of the secondary market for financial instruments that are non-marketable, such as illiquid assets.

Another advantage of FFVA is the efficiency of market discipline through monitoring supervisors and the possible corrective action taken by bank's management. FFVA would reflect the real risks taken by banks. Shareholders and debt holders would then be able to count accurately the banks' performance, risks, possibility of development, to protect themselves against poor market conditions and also to react directly when bad events result. Managers would then have less incentive to use accounting-motivated transaction structures designed to exploit opportunities for income management arising from the current mixed attribute accounting model.As long as the information reported by banks is accurate and consistent, the transparency of market is enhanced and private incentives concerning implicit subsidies and cross-subsidization are limited. For

example, in the case of over-priced or underpriced loans, their value will be changed in the following period to reflect correctly their face value. Banks, fearing the investors' reactions, would take remedial measures in advance and financial stability would be enhanced. Moreover, as far as derivatives are concerned, their historical value is equal to zero and they gain or lose value based on the conditions prevailing in the market of the underlying item.

The third advantage is connected to the confrontation of volatility and the correct interpretation of the information reported. Even if the valuation of financial instruments reported in financial statements shows volatility, investors can overcome this problem through correct judgment of the available information and manage to keep their estimates and decisions unaffected by the observed volatility.

The last advantage of the FFVA application is related to the possibility that it may limit the pro-cyclicality. As far as large borrowers are concerned, they are able to use trading prices and spreads from the secondary market in order to make their valuations of fair value correspond to the real credit quality and let investors interpret correctively any adaptation of valuations. Fair values represent expected cash flows and so are future estimates and can be used to timely predict any banks' asset deterioration or abrupt adjustment.Under FFVA, the asset deterioration is recognized just when the Probability of Defaults are revised upwards, even if impairment or default have not yet materialized and is immediately translated into the profits and loss account. But under the Current Accounting Framework, asset deterioration is evident when the loans are impaired and provisioning decisions are taken.Financial institutions have to report transparent information to limit the sudden and thoughtless investors' reactions during a period of recession and keep financial activity as stable as possible. Moreover, the fact that there is a high possibility of volatility would increase the risk linked to financial ratios such as capital requirements. Banks may take measures in order to be protected against such unfavorable events maintaining more reserves in order to increase their liquidity.

Diane Garnick who oversees more than $500 billion as an investment strategist at Investco Ltd stated, "Accounting does not make corporate earnings or balance sheets more volatile. Accounting just increases the transparency of volatility of earnings."[21] The crisis in Japan, in the mid-to late 1980's,is a good example where bank failures occurred even when fair value accounting was not applied.

[21] www.bloomberg.com/apps/nes?pid=20670001&refer=us&sid=aHApezm3BTu8.

However, the wider application of FVA-FFVA does not include only benefits but drawbacks as well. Indeed, most of its benefits may turn into important disadvantages, if FFVA is not used properly.

4.3.2: DISADVANTAGES OF FFVA

We can enumerate five main negative arguments:

The first disadvantage is the likely increase in the volatility of banks' balance sheets and especially of income accounts. Financial statements are exposed to volatility, as fair value estimates of banks' financial instruments are likely to contain measurement error.Barth (2004) makes the observation that there are three primary sources of "extra" volatility associated with fair value-based accounting amounts relative to those determined under historical cost. The first is true underlying economic volatility that is reflected by changes in bank assets' and liabilities' fair value. The second is volatility induced by measurement error in estimates of those fair value changes. The third, induced volatility arising from using a mixed-attribute model would be less of a concern if all instruments were recognized at fair value. As a result, the information provided is not completely reliable.Financial statements contain another type of volatility, the inherent volatility, which derives from economic forces. Also, the fair value of many assets is relevant only when the assets concerned are sold. As long as financial institutions use more and more the fair value to determine the value of their financial instruments and even of the instruments with no market or for which the market is not very active, the possibility of "artificial" volatility in the information reported increases.The "artificial" volatility is caused by the inefficiency of valuation methods, by market imperfections or by short-term changes in the estimations concerning financial market. In the case of instruments held to maturity, financial statements include "artificial" volatility when these assets and liabilities are not valued at their amortized cost.The application of fair values would yield unrecognized gains and losses that would increase the volatility of earnings and regulatory capital compared to the historical cost model. This is feasible if the measurement error in bank assets' fair values are not offset by measurement error in bank liabilities' fair values. The increased volatility of income could lead to an increase in the pro-cyclicality of bank lending. And that because,on the one hand, during recovery periods,credit would be over expanded based on the banks big profits and on the other hand, during recession periods, credit would be limited because of downward adjustments in the valuation of financial instruments. The result in both cases would be a deeper recession. It is necessary to permit institutions to manage risks correctly and avoid artificial accounting volatility in the balance sheet

and profit and loss accounts, with the consequent negative impact this would have for shareholders and depositors.In addition, counterparties with a volatile credit status, such as small and medium-sized enterprises-SMEs, would be affected, as credit supply towards them would be reduced. The European Union should look carefully at this scenario as it contains lots of strong SMEs and would be economically affected.

The second disadvantage concerns the attitude of banks towards to maturity and liquidity transformation. Banks that hold deposits and non-marketable loans put themselves at risk when they want to treat their assets in the same way. The application of fair value for loans would increase the asymmetries of information between borrowers and lenders, as the lack of separation between marketable and non-marketable assets would enable banks hedge, securitize, or shift the risk to their customers, i.e. households and corporates, (e.g., via floating- rate or shorter-term loans) in order to shape their liabilities in the same way. This would result to restrained maturity and liquidity transformations, as any changes in the interest rates would be shown in the profit and loss accounts.The fair value method used for credit portfolios is related to the opportunity cost rather than the essence of banking business where the factor determining the return is whether or not payments are made and the historical cost method provides reliable information about whether these payments are being made as agreed or not.The application of FFVA would make banks focus on their short-term results undermining their long-term relationship with their customers.

The third drawback relates to the role of banks institutions responsible for normalizing intertemporal shocks. The application of FFVA overestimates assets during upturns.For example, a sudden increase of equity prices will be directly reported into the profit and loss account. As a result, the expected cash flows reported are biased and short-term profits appear bigger. So, using fair values, gains or losses are recognized with short-term market movements.Shareholders, observing this misleading information, would ask for distribution of dividends. As banks have unrealized gains linked to assets held in their portfolio, they would face difficulties in serving their shareholders. If banks distribute these unrealized gains, any future downward adjustment in equity markets would affect capital.On the other hand, in case that the unrealized banks' gains are not distributed to the shareholders, regulatory capital will increase, which maystrengthen lending and give rise to pro-cyclicality. Consequently, banks' stability and efficiency is directly affected.Also, when banks' creditworthiness is reduced, borrowers become more risky as their risk of default increases. To compensate for the increased risk, capital market participants will demand higher risk premium and the market value of debt declines. However, such information is misleading for market participants and also reduces financial statements' transparency.A solution to these problems would be the conservation of reserves during upturns in order to be used during

downturns, enabling banks to be protected against unpredictable situations.

The fourth disadvantage is the likely derangement of market discipline due to the lack of reliability and the inefficiency of financial statements. Valuation models are used in the absence of available market values for items. Unfortunately, valuation models use a variety of inputs, not only from liquid market, and make many assumptions. If banks and more generally financial institutions do not handle these inputs and assumptions differently when making their financial statements, the comparability of their financial statements may be decreased.Moreover, the reliability of a fair value depends on the time and the purpose of the valuation concerned. A right valuation in a specific date or for a specific purpose may not be a good prediction for a future and of different purpose valuation. Fair values do not always reflect the real risk that banks face and as a result,reduce the efficiency of market discipline.

The last drawback concerns the limited reliability of banks probability of default-PDs. Market credit spreads and internal models used for the estimate of the instruments' fair value show marked fluctuations for different levels of risk and for different debt categories. The internal credit risk rating systems used for the estimation of banks' risk management needs are not appropriate for the valuation of loan portfolios' fair value.

The coexistence of advantages and disadvantages concerning the application of FFVA shows that banks tend to act in a different way. Under FFVA, banks' purpose is to satisfy investors and particularly shareholders, providing them with transparent, consistent and accurate information through their financial statements in order to enable them make right investing decisions. This role of financial institutions differs from the traditional, where banks focus on their relationship with their customers, i.e. creditors and borrowers. This difference is evident in the credit risk and provisioning management.

4.4: CRITICISM CONCERNING FFVA TRANSPARENCY, COMPARABILITY AND FINANCIAL STABILITY

IAS 39 and its rules have been criticized for their appropriateness and effectiveness.Banks may decide themselves which financial instruments to measure based on the fair value method. Unfortunately, there is no adequate monitoring on the various valuation methods used and sometimes management is biased using judgment in the valuation procedure. This may lead to inappropriate and unreliable fair value estimates of profits and equity capital. Indeed, research by Federal Reserve staff shows that fair value estimates for bank loans can vary greatly, accordingly to the valuation inputs and the methods used. This fact gives rise to uncertainty about the techniques used for the measurement of financial instruments' fair values, information's credibility and whether fair values are actually reliable. In order to enhance the reliability of fair values, it is necessary for markets to be deep and liquid and also to use market inputs and generally accepted accounting methods. Financial institutions should provide adequate disclosures about fair values and any changes made on them. Moreover, all users of financial statements should try to understand how assets and liabilities are valuated and how much reliable these measurements are when they make their economic decisions.

Some instruments cannot be measured at fair value and as a result entail a degree of subjectivity and unreliability. Also, banks may choose among various valuation models with substantially different assumptions in order to measure their instruments' fair value. So the information reported into financial institutions' statements might not be really comparable.

Also, under FFVA, risks are directly recognized giving rise to pro-cyclicality. So, unsustainable projects would be funded during periods of economic growth and on the other hand, viable projects would be turned down during periods of downturn. This misleading risk management would lead banks to misallocate their recourses and banks' customers to make ineffective economic decisions. Moreover, volatility may increase as a result of credit institutions' risk exposures reflected into their financial statements. This may affect banks' risk management techniques and also banks' role of intermediaries. In addition, the lack of supervision of valuation methods used by credit institutions may help rating agencies, market analysts and institutional investors and also may affect banks' decisions about which instruments to measure at fair value. As a result these decisions would be hasty and maybe wrong.

However, fair value accounting effectiveness and appropriateness to measure banks' financial condition and performance depends significantly on the richness of securities' markets, legal systems and other institutional factors. So it may differ across economies and countries

worldwide. Thus, the use of FVA would reduce comparability of financial reports across economies.

4.5: FAIR VALUE OPTION AND SUPERVISORY PROBLEMS

Many analysts question the compatibility of FFVA with dynamic provisioning. Under FFVA, expected losses, rather than until previously used incurred losses, are measured based on expected cash flows. If credit quality deteriorates, the increase of banks' risk is directly recognized, provisioning may be well timed and the cyclicality of loan loss provisions may be limited.In this way, the increase of risk is gradually presented and the effect of loan impairment losses is limited. However, there is uncertainty about whether this approach is compatible with FFVA.

Moreover, accounting treatment has to follow the requirements of capital adequacy defined by the Basel Accord. Banks would be obliged to adopt various different reporting systems if there were a deviation between the two approximations.The application of these two approaches, FFVA and requirements on capital adequacy defined by the Basel Accord, would give rise to cumulative pro-cyclicality. The new accounting framework is sensitive enough to risk and may lead to binding capital requirements during periods of recession, limiting banks' lending activity and further enhancing the recession. In the presence of increased credit risk and a downward adjustment of asset prices, banks' capital requirements would be augmented and profits would appear reduced.

Another issue of great importance concerning FFVA application is the management of banks' own credit risk. If a bank's creditworthiness was reduced and liabilities were markeddown using current funding rates, this would lead to higher risk spreads and as a result to lower fair values for liabilities.So gains are created into the profit and loss account increasing capital, equity reserves, in the case that these gains are not distributed as dividends to shareholders. In this sense, an unhealthy entity may appear healthy due to marking to market its own deteriorated credit risk. Supervisory authorities tend to be opposed to this approach as they state that such a behavior does not show interest to banks' creditors, who would have been burdened by this situation. The ECB suggests as a solution to this problem the adoption of dynamic provisioning, recognizing that a proportion of the loan portfolio can deteriorate in the future and that this proportion can be measured ex ante on the basis of a specific statistical analysis. In this way, market participants would have sufficient and accurate information aboutbanks' interest rate risk profile.

It is also worth noting that many regulators are against the application of FFVA for the measurement of loans and deposits. These financial instruments used to be recorded at their face

value into financial statements. Regulators state that these instruments should keep being recorded at their nominal value. They also state that the information reflected into banks' financial statements should be consistent with statistical requirements as far as monetary policy purposes are concerned.

The Basel Committee issued a comment letter in July 2004 to the IASB concerning Banking Supervision[22]. The Committee stated that financial institutions have to use observable market prices and transparent valuation models in order to determine accurate fair values for financial instruments enhancing the reliability and comparability of their financial statements. It proposed solutions to resolve the unfavorable effects of the FFVA application. It forbade banks to use marking-to-market[23] in order to determine the credit risk of their debt and fair value to measure their illiquid instruments. However, the Committee stated that fair value should be used for hedging risk exposures.

[22]A copy of the Basel Committee's comment letter can be found on the Bank for International Settlements web site at www.bis.org/ bcbs/commentletters/iasb14.pdf.

[23]It implies the existence of active markets with determinable market prices.

CHAPTER 5: THE EFFECT OF FAIR VALUE ACCOUNTING DURING THE GLOBAL FINANCIAL CRISIS

5.1: MODIFICATIONS OF FAIR VALUE ACCOUNTING

The recent on-going global financial crisis fed a debate, in the end of 2008, concerning the way in which the fair value of financial instruments should be measured.Many are those who support the idea that fair value accounting played an important role in striking the stability of the current financial system. The global financial crisis combined with the decrease in financial instruments' fair values led financial institutions to write-down their financial holdings, generating great losses on their income statements. Moreover, the crisis had as a result many forced liquidations and distress sales, which is against the definition of fair value given by IAS 39. Also, many markets that were active became inactive due to the crisis. In response to these problems, the IASB and the FASB decided to modify their accounting standards as far as fair value accounting is concerned.They ended up permitting firms measure their financial instruments using historical cost accounting instead of fair value accounting under limited circumstances. Specifically, the IASB made three modifications of its accounting standards.

The IASB has amended IAS 39 and IFRS 7 in order to allow reclassifications of non-derivative financial instruments out of the Fair value through profit or loss – held-for-trading-FVTPL – HFT and Available-for-sale-AFS categories under certain circumstances. Its purpose was to minimize the accounting differences in accounting rules and their interpretation between IFRS and US GAAP.Also, it has increased the disclosure requirements concerning on financial instruments. Finally, the IASB has published guidance for the fair value adoption in illiquid markets.

The reclassification of financial items depends on whether the asset was initially recognized as belonging to Loans and Receivables. Debts that belong to the Loans and Receivables category may be classified out of the FVTPL – HFT or AFS category to the Loans and receivables category in case that the entity can hold them as short-term or until their maturity. All others debt or equity instruments can be reclassified from Fair value through profit or loss – held-for-trading to Available-for-sale or to Held-to-maturity in "rare" circumstances, such as the recent impairment of financial markets worldwide, and only in case the assets are not held in order to be sold in the short-term horizon.

The IASB also reformed IFRS 7 in order to increase the requirements of disclosures as far as reclassifications are concerned. Its purpose is to enhance financial statements' transparency. Firms

have to report their reclassifications and information about the "rare" circumstances they face.

5.1.1: LEVEL 1,2, 3 ASSETS

Moreover, the IASB published guidance for the fair value adoption in illiquid and inactive markets. It includes a fair value hierarchy that has three levels of information a firm may use to determine its assets' fair value.Level 1:fair values are based on quoted prices for identical assets and liabilities, and are most applicable to those assets or liabilities that are actively traded. Level 2:fair value is based on quoted market prices of similar or related assets and liabilities in active or not-active markets and also on inputs other than quoted prices that are observable for the asset or liability (for example, interest rate, volatility, prepayment speeds, loss severities, credit risk, and default rates). Firms have to use valuation models in order to determine their financial instruments' fair value.Finally, level 3: the least preferred, fair value estimates are based on company's estimates and are commonly referred as "mark-to-model" (FASB, 2006a).It should only be used if level 1 or 2 estimates are not available.Changes in FV estimates for financial assets and liabilities are to be recognized in the income statement. In 2010, the FASB made the proposal that banks should value their loans portfolios using fair value.

A first study, conducted by Paananen and Renders in 2009[24], on the way markets respond to financial institutions' reclassifications of their financial assets and liabilities from fair value to historical cost using the amended version of IAS 39, proved that investors reacted negatively to this reclassification. In this way, an amendment of accounting standards would not increase the financial statements' credibility.

[24]Providing Short-Term Relief by Amending IAS 39 - the IASB's Mission?

5.2: LEVERAGED FINANCIAL INSTITUTIONS AND AN EXAMPLE BY TOBIAS ADRIAN AND HYUN SONG SHIN

Danielsson and Shin (2003) used the Millennium Bridge analogy to emphasize on the role of measurement systems in promoting financial stability. The Millennium Bridge in London failed the first day it was used. This happened because pedestrians that crossed the bridge adjusted their stance in order to regain balance. The most important element is that they reacted simultaneously. Their adjusted stance provoked even greater moving of the bridge. This made pedestrians adjust again their stance and so on.

Something similar happens with banks and changes in prices. When prices change, banks adjust their balance sheet affecting even more prices and so on. Under marking-to-market any price change is directly recognized on the balance sheet ensuring the synchronized adjustment of all banks.

Adrian and Shin (2008) concluded that:

- Under the historical cost approach, when market prices increase exceeding the assets' historical cost, companies tend to sell their assets to capture the capital gain. This means that, when prices increase, firms tend to sell.
- Under the marking-to-market approach, if market prices increase companies tend to buy assets and if market prices reduce companies tend to sell assets. This means that, when prices increase, firms buy more and when prices reduce, firms sell more.

Financial institutions adjust immediatelytheir balance sheets as a reaction to changes in prices and risk, feeding a round of synchronized reactions. The balance sheets of financial intermediaries, i.e. the broker dealers and commercial banks, are leveraged and so are directly affected by changes in prices and risk. According to Adrian and Shin (2008) financial intermediaries and households do not react in the same way as a response to changes in prices and risk. Households usually do not adjust their balance sheet to changes in asset prices. What usually happens is that leverage[25] falls when assets increase. So, there is a negative relationship between changes in leverage and changes in the balance sheet size. In contrast, for financial intermediaries, the changes in leverage and

[25]The amount of capital used to finance a firm's assets. Ii is equal to the ratio Total Assets/Equity. Let V be the value at risk per dollar of assets held by a bank. The total value at risk of the bank is given by V×A where A is total assets. Then, if the bank maintains capital E to meet total value at risk, we have E = V×A. Hence, L satisfies
L = A/E = 1/V.

those in the balance sheet size are positively related. They adjust drastically their balance sheet so that leverage is high during upturns and low during downturns, creating pro-cyclicality.Financial intermediaries manage their value at risk-VaR[26] adjusting their balance sheets. Value at risk is an estimate of the entity's worst-case loss.Pro-cyclical leverage can be seen directly in the counter-cyclical nature of VaR. Leverage and Value at Risk are negatively related.

Whether pro-cyclical actions may result to the strengthened financial cycles depends on the accounting methods used. When financial institutions use the marking-to-market approach to measure their items, any changes in asset values are directly presented on their balance sheet as increases in equity, creating a further cycle of reactions from the banks' side. This is evident through the following example, taken from Adrian and Shin (2008).

Suppose there is a financial intermediary that manages its balance sheet actively in order to keep its leverage ratio equal to 10. Its balance sheet consists of securities that worth 100 and debt that worth 90 used to fund its assets.

ASSETS	**LIABILITIES**
Securities, 100	Equity, 10
	Debt, 90

Suppose that the price of debt is approximately constant for small changes in total assets and the price of securities increases by 1% (from 100 to 101). So, we have:

ASSETS	**LIABILITIES**
Securities, 101	Equity, 11
	Debt, 90

Leverage is now equal to 101/11=9.18 smaller than 10. So, the financial intermediary has to increase its debt by worth of D and to use these funds in order to buy securities worth D. So, we have :$\frac{\text{Assets}}{\text{Equity}} = \frac{101+D}{11} = 10$

The solution is D=9.Thus, an increase in the price of the security of 1 leads to an increased holding worth 9. The demand curve is upward sloping.We have now:

[26]The value at risk-VaR associated with some time horizon T is the smallest non-negative number V such that the estimated probability that a bank's loss is greater than V is less than some benchmark probability p.

ASSETS	LIABILITIES
Securities, 110	Equity, 11
	Debt, 99

Leverage is again equal to 10.

A great demand for the assets leads to an increase in their prices, making banks' balance sheets stronger, which increases even more the demand for the assets increasing more assets' prices and strengthening even more banks' balance sheets. The example above can be used in reverse, on the way down.

Suppose now that the value of securities reduces and is equal to 109. So, we have:

ASSETS	LIABILITIES
Securities, 109	Equity, 10
	Debt, 99

Leverage is now equal to 109/10=10.9 and exceeds the target of 10. The financial intermediary has to reduce its assets selling securities worth D and use this money to reduce its debt by worth of D. We have then: Assets =109-D =10

Equity 10

The solution is D=9. So, a reduction in the securities' price results to securities' sale worth 9. Thus, a reduction in the price of the security of 1 leads to a reduced holding worth 9. The supply curve is downward slopping. We have now:

ASSETS	LIABILITIES
Securities, 100	Equity, 10
	Debt, 90

Leverage is again equal to 10.

Consequently, leverage rises when balance sheets expandand reduces when balance sheets shrink. An increase in asset prices leads to increased banks' equity valuated using the marking-to-market approach as banks recognize gains. So, their leverage ratio falls. Leveraged financial

intermediaries resort to additional borrowing in order to maintain their leverage high in order to keep their return on equity at desired levels. In contrast, a reduction in asset prices leads to reduced banks' equity valuated using the marking-to-market approach as banks recognize losses.So, their leverage ratio increases. Leveraged financial intermediaries then resort to selling securities in order to reduce their level of leverage and pay down their debt. This may create a feedback effect creating downturn spirals of asset prices and thus contributing to the current financial crisis.

In a nutshell, under the historical cost approach, when market prices increase exceeding the assets' historical cost, companies tend to sell their assets to capture the capital gain. So, when prices increase, firms tend to sell. On the other hand, under the marking-to-market approach, if market prices increase companies tend to buy assets and if market prices reduce companies tend to sell assets. So, when prices increase, firms buy more and when prices reduce, firms sell more.

When the demand for assets is great, prices tend to increase even more generating the potential for feedback creating stronger balance sheets. This in turn, results to greater demand for the assets, increasing the prices of assets and leads to even stronger balance sheets. The mechanism works in reverse in downturns. When the supply for assets is great, prices tend to reduce even more creating weaker balance sheets. This in turn, leads to greater sales of assets, which reduces the prices of the assets and leads to even weaker balance sheets. This fact proves that there is increased volatility of asset prices as well as increased correlation of asset returns.

5.3: SUPPORTING FAIR VALUE ACCOUNTING

Even if economic downturn dominates worldwide, many are those who support fair value accounting and believe that it is the most appropriate measure for financial instruments as it provides market participants with timelier information reflecting current market conditions.

First of all, they argue that it is preferable to rely on a valuation that follows a trend, concerning fair value accounting for level 3 instruments that may be inaccurate, than do nothing. The guidance published enhances the transparency of valuations that may include subjectivity as it increases the requirements for disclosure and detailed explanations.Moreover, the complexity of recent markets and financial instruments, such as the CDOs and other mortgage-based securities, requires advanced valuations that cannot be based on the historical cost accounting. The supporters of fair value accounting state that the increased volatility it generates may lead

management to take actions in order to minimize volatility and reduce the risk taken. Also, volatility can be used as an indicator of the risk associated with any financial asset or liability. Due to the time recognition of gains and losses, companies cannot manipulate their income through gains trading for their own benefit. In this way, it illustrates real conditions.Fair value accounting also requires more detailed and accurate disclosures for the values reported. So, investors are better informed. Another argument of FVA supporters is that it self-corrects over time in contrast to amortized cost accounting. This FVA capability is very important especially during periods of crisis.

Many fair value accounting followers remind us the crisis in Japan. In Japan the accounting valuation used was the historical cost approach. It is a good example where bank failures occurred even though fair value accounting was not applied. In addition, in a SEC study the staff states: "Fair value accounting did not appear to play a meaningful role in bank failures occurring during 2008. Rather, bank failures in the U.S. appeared to be the result of growing probable credit losses, concerns about asset quality, and, in certain cases, eroding lender and investor confidence."

5.4: CRITICISM ON FAIR VALUE ACCOUNTING DURING THE RECENT RECESSION

The recent global financial crisis unveiled a series of problems of the current market-based economy, such as overoptimistic assessment of liquidity risk, inadequate disclosure of risk exposures, dependence on a certain input to determine fair values, excessive reliance on ratings for structured products, too many and as a result inconsistent valuation methods, the use of estimates that include volatility and the lack of well defined terms concerning active markets or observable market prices.Also, there is a lack of information about the reasons of price reductions, whether prices fall due to market conditions such as liquidity factors or due to changes in discounted expected future cash flows.

During crisis market prices do not correspond to future payoffs but to the liquidity that buyers have in markets.From the beginning of the global financial crisis, the marking-to-market approach has been strongly criticized for the validity of the assumptions made, the reliability of fair value techniques and the possible management manipulation. Fair values may be relevant as they reflect current market prices but have lost their reliability as theyuse subjective valuation methods to determine the carrying value of a great number of assets and are not based on arm's-length transactions. This occurred because liquidity in markets has been limited and transaction prices

have became unavailable.So, financial institutions have turned to model-based valuation using unobservable inputs.As a result, the reliability of financial statements has been strongly affected. Many are those who believe that in times of crisis a combination of mark-to-market and historical cost accounting should be used.

It was proved that in times of crisis financial institutions' disclosures are poor and do not reflect the uncertainty of valuations. There is a need for better quality's disclosures that incorporate the methodologies, inputs and parameters used in order to provide market participants with the right risk profile for each company.

An important issue was the fact that many large portfolios of bank loans and mortgages that were categorized as Trading Securities or Available for Sale became illiquid due to developments in the external markets. After the IAS 39 amendments, the IASB in 2008 permitted banks to reclassify such loans to the Held-to-Maturity category, moving them from their trading books to their banking books, in order to avoid recognizing any changes in market values.In banking books banks report their financial instruments at their amortized cost rather than at their fair value. So, any reduction in the financial instruments' market value is not reportedand gains would be spread evenly over the lifetime of the financial instruments. Frank Keating, president of the American Bankers Association stated in Financial Times that: "While mark-to-market can be very useful for a business that trades financial instruments, the most appropriate accounting measure for a loan portfolio is the loan balance minus impairment"[27].

Those who have been opposed to fair value accounting argue that its application causes excessive volatility, that the true underlying value of assets is not actually reflected into financial statements and as a result,companies have to impair their regulatory capital position by recognizing losses too quickly and indeed at the same time.This may give rise to moral hazard problems as banks can transfer risky assets from the trading books, which were marked-to-market, to their banking books, which are held at historical cost. It is evident that banks have to improve their risk management and internal scrutiny and also to increase the use of diversified inputs in order to have the suitable manpower for determining fair values of their assets and liabilities.Moreover, regulators that are against FVA argue that fair value accounting is fundamentally defective when companies have to use models that involve a significant amount of discretion and uncertainty. Especially, in case that risk measures are pro-cyclical, fair value accounting, which requires banks to periodically revalue trading book positions, may lead to pro-cyclical leverage trends.They

[27] Banks win victory over US loan book proposals. Financial Times.By Helen Thomas in New York. http://www.ft.com/intl/cms/s/0/6ecc3384-28ee-11e0-aa18-00144feab49a.html#axzz1kghSjnCF

blame fair value accounting for providing managers with much accounting discretion, especially for assets and liabilities that are measured according to levels 2 and 3 inputs. Such discretion may have as a result biased and less reliable financial reporting.

Critics also state that due to the close relationship between accounting and capital adequacy analysis, fair value accounting increases the capital charges above the required levels affecting the financial statements' solvency. Because of the FVA application, the reduced market values were timely reflected into the balance sheets, which put further pressure on the gains or losses and on equity. This fact coupled with involuntary balance sheet expansion, through structured investment vehicles –SIVs or conduits, led credit institutions to raise capital or sell assets intensifying price reductions. Specifically, former FDIC Chair William Isaac accuses the FASB and the SEC stating "The SEC has destroyed $500 billion of bank capital by its senseless marking to market of these assets for which there is no marking to market, and that has destroyed $5 trillion of bank lending"[28].

It is true that during economic downturns fair value accounting results to pessimistic and thus misleading decisions, which in turn reduce the asset values and the gains due to recognition of the unrealized losses in the income statement. This also leads to increased volatility of the reported earnings in the income statement. But there is a high possibility that these unrealized gains and losses may reverse in markets where exist "bubble prices". "Bubble prices" may take place due to market pessimism or optimism compared to fundamental values. In addition, market prices may not reflect the future cash flows most likely to be paid because of the skewness that the distributions of future cash flows exhibit. Super senior CDOs that suffered unrealized losses during financial crisis are an appropriate example. Super senior Collateralized Debt Obligations-CDOs are riskless debt instruments with embedded written put options on some underlying assets. They return their par value with accrued interest when the performance of the underlying assets is good (exceeds a relatively low level) but they pay much less than this amount when the performance of the underlying assets is poor (below that level). Consequently, due to the embedded written put options, what has happened during the recent financial crisis was that the fair values of super senior CDOs were much less than the values coming of the most likely cash flows.Analysts at the Bank of America, Giles and Tett (2008), state that because of the application of FVA financial institutions worldwide have been hit by more than USD 300 billion in write-downs and been forced to raise more than USD 260 billion from outside investors between 2007 and 2008.

[28]CNBC.com

Fair value accounting has affected firms that accord credit protection through credit default swaps on the underlying asset, as opposite to insurance contracts. Although the non-payment that would give rise to protection may not have occurred, companies have to recognize unrealized losses on the contract finding out that the fair value of the underlying assets has remarkably been reduced. The unrealized losses may mislead market participants. So, these firms argue that only realized gains and losses should be reported (Price Waterhouse Coopers, 2008).

A recent research conducted by Antonio Parbonetti, Andrea Meniniand Michel Magnan (Août2011)concludes that the extended application of fair value for the measurement of banks' assets and liabilities leads analysts to make inaccurate earnings anticipations with low quality. The quality of the information reported to market participants is deteriorated as well. Moreover, the accuracy of the information reported, public and private as well, is reduced. Indeed, as we move from level 2 to level 3 inputs, the quality of the information disclosed is significantly affected. The only positive conclusion they drew for fair value is that the disclosure of levels was a good step as it improved private information, making it more precise and transparent, which improved analysts' predictions. However, many are those (Laux and Leuz, Beyer, Cohen, Lys and Walther, 2009) who question this transparency and argue that the measurement practices and inputs used are not available to the public and consequently the analysts and investors that can benefit from the information reported are only those who have advanced information. Moreover, Khan supports that the wider implementation of fair value accounting may accelerate the spreading of failure among banks. S&P states: "We favor elections for fair value measurement that are based on a desire to mitigate a financial statement mismatch and therefore better represent the underlying economics of asset-liability management. The accounting treatment of debt under the fair value option may create a more symmetrical accounting framework that, we believe, is insightful for analysis.Nevertheless, we have long held that amortized cost is the most relevant way for companies to account for long-term debt in financial statements. We believe it best reflects the amount a going-concern company ultimately needs to pay or settle on a liability**.** Moreover, companies seldom settle their liabilities at the theoretical values(i.e., they may not have the ability or capacity to buy back debt prior to maturity at fair value prices)"[29].

[29]Find out what credit adjustments can do for you. Financial Times.By John McDermott on November 07 2011.

5.5: FINANCIAL INTERMEDIARIES' BALANCE SHEETS MANAGEMENT DURING THE LTCM CRISIS AND THE RECENT CRISIS

The recent financial crisis that began in the summer of 2007 differs from the Long-Term Capital Management-LTCM crisis that took place in 1998 in that balance sheets did not shrink as happened during the LTCM crisis. During the LTCM crisis, financial intermediaries shrank their leverage and their balance sheets due to increased value at risk in order to maintain capital and secure themselves against uncertainty. The main cause of the recent credit crisis is the credit losses of leveraged financial intermediaries.

Balance sheets' management gives rise to new perspectives concerning the nature of financial contagion in the current financial system. Total liquidity reflects the rate of growth of total balance sheets. It is true that when financial intermediaries' balance sheets are strong, their leverage is too low. They hold surplus capital and tend to use it to expand their balance sheets taking additional loans from the central bank and searching for new borrowers. What happened during the mortgage market meltdown in the United States was that financial intermediaries' balance sheets began to expand with such a fast pace that financial intermediaries turned to borrowers that did not have the ability to repay their debts.

It is important to stress that investment banks hold very short-term claims (such as repurchase agreements and reverse repurchase agreements). In this way, their balance sheets provide financial information's users with the marked-to-market values of the underlying securities. In contrast, commercial banks hold a great proportion of loans that are carried at nominal value. The notable about the recent global financial crisis is that, during the first quarter of 2008 the leverage of commercial banks did not shrink but instead increased. This is opposed to the condition that took place during LTCM crisis, where reduced leverage was combined with constricted balance sheets.

5.6: THE INVOLUNTARY EXPANSION OF CREDIT DURING THE RECENT FINANCIAL CRISIS

Leverage acted as an amplifying mechanism during the recent financial crisis. It revealed two main characteristics of the recent crisis. The first one is that by the beginning of the crisis, the interbank funding market and mortgage-related markets, such as asset-backed commercial paper-ABCP, collateralized debt obligations-CDOs and jumbo mortgages were hurt whereas the stock market and the markets for sovereign debt and high-grade corporate bonds came out almost without a scratch.The second characteristic is that the starting point of the recent financial crisis was the deterioration in the credit quality of subprime mortgages in the United States. But it is known that the total amount of expected losses due to credit exposures is small compared to other elements such as total stock market capitalization. Nevertheless, the expected losses have generated great destructions.It is important to notice that the pool of subprime assets in the U.S. was roughly $250bn, yet the impact on financial markets and the induced losses by the financial system was at the magnitude of multi-trillion $U.S.

The answer to the two above characteristics is based on the differentiated identity of all the asset holders that our financial system includes.Non-leveraged investors, such as households, insurance companies and mutual funds, hold the majority of stocks. These investors do not manage actively their balance sheets. Moreover, the same goes for sovereign debt. Non-leveraged investors, such as long-only institutions, hold sovereign debt. This kind of investors also does not manage actively its balance sheets. In addition, non-leveraged investors hold corporate debt and particularly high-grade bonds. Either these investors manage actively their balance sheets. However, leveraged investors such as broker-dealers, hedge funds specialized in mortgage assets, conduits and structured investment vehicles-SIVs that have been designed to hold mortgage-related assets and the collateralized debt obligations backed on them,hold a large proportion of mortgages and asset-backed securities built on mortgage assets.

Although VaR doubled between May 2006 and February 2008 (from 1.00 reached 2.12), financial intermediaries did not constrict their balance sheets as a response to this VaR rise. This fact implies that other factors made banks not to manage actively their balance sheets.The most important reason seems to be that conduits and SIVs, which are off-balance-sheet vehicles, contributed to the recent global financial crisis. Rolling over short-term liabilities, such as asset-backed commercial paper-ABCP,were used to finance these vehicles. From the beginning of the crisis these vehicles started to be unable to roll over their liabilities. Commercial banks used to provide them with liquidity, but very soon (from August 2007) this liquidity started to decline

significantly. Consequently, banks began wishing to reduce their lending. However, they did not shrink their balance sheets and continuedto “lend against their will”. So, banks turned to other means in order to reduce their lending, such as minimizing their discretionary lending.
The U.S. Monetary Policy Forum in 2008 (David Greenlaw, Jan Hatzius, Anil K Kashyap andHyun Song Shin) analyzed the current credit crisis and concluded that it would back down if one or more of the following options occur:

- Financial intermediaries and brokers shrink their balance sheets so as to make their capital sufficient to support their balance sheets.
- Financial intermediaries and brokers absorb new equity capital from new investors so that their capital is capable to support their balance sheets.
- The conditions concerning risk change and become more favorable, so that the already existing capital is sufficient to support the current leverage.

It seems that the first two conditions are more likely to be met.

CHAPTER 6: WHAT ECONOMIC THEORY PREDICTS ABOUT THE POTENTIAL IMPACT OF FAIR-VALUE ACCOUNTING ON THE ECONOMY (WELFARE)

6.1:ECONOMIC CONDITIONS AND THE MARKET PRICES' ROLE BEFORE THE FINANCIAL CRISIS

Before the early signs of the current financial crisis make their appearance, favorable conditions were prevailing in the markets such as low volatility, low long-term interest rates and pressurized yield spreads. These economic conditions supported strong sovereign and corporate balance sheets. Many researchers expressed their concerns about future changes in credit risk, such as changes in the global capital flows or further and sharp reductions of interest rates.

An important issue has been the "reach for yield" or "search for yield", where banks and investors response to the tightening of yield spreads by turning to riskier and therefore higher yielding assets. This in turn, results to even narrower yield spreads and greater risk.

Many market participants and CEOs of central banks have expressed their worries concerning banks' and investors' "search for yield", stating that the market has not adequately evaluated the actual risks. They also argue that financial intermediaries and investors may be faced with unlikely events. If such events take place, financial intermediaries will have to manage actively and adjust their balance sheets. And this will be very wasteful.

Market prices are used in two ways. First, they provide market participants with current conditions and fundamentals and simultaneously they affect market participants' decisions. Investors and generally market participants are informed about the performance of any firm through its financial statements and specifically through its balance sheet. So, in case a bank has a reduced capital on equity compared to other financial intermediaries, its management will probably decide to fix it. In order to achieve this goal, it may choose to increase the leverage of its balance sheet. In this way, fair value accounting seems to be a quite important tool.

However, fair value accounting may generate pro-cyclicality and amplify the upturns or downturns. During booms credit risk may decrease and as a result the assets' fair value of banks increase. This in turn will increase banks' capital. So, banks will choose to increase their lending in order to enhance the economic growth. The reverse will happen in case of burst. It is therefore evident that the impact of fair value accounting on the financial stability is immediate and very important.

6.2: THE CONNECTION BETWEEN THE PRICE OF BONDS AND PROPERTY AND ITS DEPENDENCE ON THE ACCOUNTING APPROACH USED

Plantin, Sapra and Shin (2005) took into account a very simplified financial system that consists of households, financial intermediaries and pension funds in order to examine the connection between bonds' prices and property's prices.
Plantin, Sapra and Shin (2005) reached the two following conclusions:

- Whenthe marking-to-market accounting is used, any increase in the bond's prices will give rise to increases in the property's prices leading to further increases in bond's prices. So, there is a feedback effect.
- When the historical cost accounting is used, the bonds' prices do not have any impact on the property's prices. So, there is no feedback impact from the bonds' price to the property's price.

They used a financial system that was based on property that only the households hold, which in turn borrow from financial intermediaries in order to fund their properties. Households also hold claims on the pension funds, such as annuities or future pension claimsand equity on the pension funds and financial intermediaries. Financial intermediaries' assets are mainly household mortgages. The liabilities of financial intermediaries consist mainly of bonds that are perpetuities and pay a constant coupon. Finally, pension funds' assets consist of cash and financial intermediaries' bonds. They use their assets to meet their liabilities to the households.
Plantin, Sapra and Shin (2005) assumed that pension funds have to mark their liabilities to market according to FRS 17 and also to hold liabilities and assets of similar duration. Pension funds have to compute the present value of their stream of liabilities. The economists suppose that the zero coupon curve used is flat and the intercept is given by the yield of the perpetuity issued by financial intermediaries.

So, $p=1/r$ where p=price of the perpetuity and r=the yield on the perpetuity.

The duration-D of the bond is defined as the sensitivity of its price to changes in its yield.

So, $D=-\frac{dp}{dr}$ and since p=1/rwe have $D=p$.

p

Also, as the price of the bonds determines their yield, and pension funds mark-to-market their

liabilities based on the bonds' yields, the marked-to market value of the pension liabilities will finally be determined by the price of the bonds issued by the financial intermediaries. Suppose that pension flows increase with nominal gains and gains increase over time so that the duration of a pension liability is higher than the duration of a bond, given that they have the same price. As a result, in case that the bonds' duration increases, the pension liability's duration will increase even more and pension funds will have to raise their bond holdings.

The three economists further assumed that financial intermediaries issue new bonds as a response to the increased demand for bonds in order to lend households to gain more property. So, the financial intermediaries' mortgage claims against households increase. Property's prices-v increase as the financing of the property sector increases so that v=M/s where v= the price of property M= dollars that finance property and s= the property's supply on the market.Consequently, when the price of bonds increases, the price of property increases as well.

Given that the funds that financial intermediaries provide to households are collateralized against property, any increase in property's prices will lead to an increase in the credit quality of the mortgage claims that financial intermediaries hold in their balance sheets. This will give rise to the marked-to-market of the financial intermediaries' assets (mortgage claims) and as a result the marked-to-market financial intermediaries' net worth will increase. This in turn will raise the credit quality of the financial intermediaries' bonds. Thus, the bond's price is an increasing function of the property's price.

If the yields of long-maturity Treasuries reduce, the price of bonds will immediately increase. This will give rise to the pension funds' demand for bonds and will improve the credit quality of the bonds issued by the financial intermediaries. This, in turn, will raise the property's prices. The financial system will continue to feedback this result.

The relationship between the valueof the price of bonds, which is an increasing function of the price of property, and the priceof the bond that would give rise to priceof property depends on the accounting method used. If historical cost accounting is used, the bonds' price does not have any impact on the property's price. So, when the historical cost approach is used instead of the marking-to-market approach, there is no feedback impact from the bonds' price to the property's price.

Lets assume now that the inverse happens, i.e. that the yields of long-maturity Treasuries increase. In this case, property's prices will initially be reduced. This reduction in property's prices will reduce the equity value that households hold and consequently the marked-to-market value of the financial intermediaries' mortgage claims against households will be reduced as well. This, in

turn, will have an impact on the bonds' credit quality. The credit quality of the bonds that financial intermediaries issue will fall and as a result the bonds' price will fall too. Pension funds will then reduce their demand for bonds and they will even want to reduce their bonds' holdings. So, there will prevail an excess supply of bonds. Pension funds will try to sell their bonds to other market participants. In this particular highly simplified framework only the financial intermediaries can purchase their own bonds. Financial intermediaries will then have to reduce their funds to households. As a result, the property sector will be affected, as households will reduce their property purchases. Thus, property prices will eventually fall even more. In the end, both bonds' prices and property's prices are much lower than they were in the beginning. In this case also, the amount at which the fall in property prices affect the bonds' prices and further the property prices depends on the accounting approach used.

6.3: AN APPROXIMATION TO THE SITUATION AFTER A PROPERTY BUBBLE

Plantin, Sapra and Shin(2005) further examined the situation after a property bubble, where inconsistent borrowers have put property assets back to their lenders. In this case, the three economists assume that financial intermediaries hold property in the asset side of their balance sheets and in the liabilities side hold net worth and bonds. Moreover, they suppose that the accounting approach used by banks to evaluate their property is the marking-to-market approach.
Plantin, Sapra and Shin (2005) establish the following implication:

- Any changes in assets' prices may be combined with solvency requirements or internal risk controls, such as minimum capital requirement ratios, that financial intermediaries have to satisfy creating amplified reactions that exceed the initial changes. If the fair value accounting approach is used, assets' prices affect market prices and any reduction in property prices will lead to further falls of property prices, generating a feedback effect.

Banks have to satisfy a minimum regulatory capital ratio-r*. Their net worth to the marked-to-market value of their assets must exceed the prespecified ratio r*. If banks do not satisfy this requirement, they will have to sell a proportion of their assets for cash in order to shrink their balance sheets.

If v=the property's price e_i=the bank's i holding of property c_i= bank's holding of other assets l_i=bank's liabilities s_i=the amount of property sold by bank i and t_i=the sale by bank iof its

other assets then the minimum capital adequacy requirement for banks is defined as:

$\underline{ve_i \; c_i - l_i} \geq r^*.$

$v(e_i - s_i)+(c_i-t_i)$

Where $v(e_i - s_i)$ is the worth of property that the bank holds after having sold s_i units of property for vs_i cash.

The sales of property made by banks-s_i can be defined as a function of property's prices-v. So we have: $s_i = \min \left\{ \underline{l_i - c_i - (1-r^*)ve_i} \right\}.$

r^*v

Plantin, Sapra and Shin (2005) described another feedback effect. If a downward shock affects property's prices, financial intermediaries will increase their sales of property raising their supply. This, in turn, reduces even more property prices. Financial intermediaries will respond to this reduction in property prices by increasing even more their supply for property, which in turn will reduce even more property prices. This situation will continue in this way until the property prices are much lower than the price at which balance sheets are valuated.

The conclusion is that any changes in assets' prices may be combined with solvency requirements or internal risk controls, such as minimum capital requirement ratios, that financial intermediaries have to satisfy creating amplified reactions that exceed the initial changes. If the market value of an entity's balance sheet is reduced due to an initial shock, the entity will increase its assets' or trading positions' supply. In case that the market's demand is not perfectly elastic, this increased supply will change the short-term market prices. According to Hendricks, John Kambhu, and Patricia Mosser (2007), under the fair value accounting approach, the increased supply will affect market prices.The marking-to-market accounting approach combined with solvency requirements may lead to spillover effects generating systemic risk and influencing financial stability, especially when liquidity and funding liquidity[30] is low. At the end, the reactions will be much larger than the initial shock leading to "fire sale" prices. It seems that financial markets are not able to occlude the increased supply of assets and as a result the welfare is significantly and negatively influenced.The LTCM crisis of 1998 is a good example.

[30] Is the availability of funds that companies can borrow to meet their obligations.

6.4: THE MODEL DEVELOPED BY PLANTIN, SAPRA AND SHIN (2008)

Plantin, Sapra and Shin (2008) developed a model that recognizes the economic impact of the two rival accounting approaches, the historical cost and mark-to-market approach, emphasizing on their differences.

The historical cost valuation uses past transaction prices ignoring the current price signals and the current fundamental assets' prices. So, the information it provides is outdated. This fact can lead to misleading and as a result, ineffective decisions. Shortsighted firms tend to sell assets that have recently estimated in value because their value will be underestimated in case firms choose to book them at historical cost. Thus, these sales are ineffective. The historical cost approach is inefficient mainly during good periods. However, it urges actions that retard the financial cycle.

On the other hand, the marking-to-market valuation uses current transaction prices. But the current information it provides is usually falsified. Under the marking-to-market approach inefficiencies may be created. If markets are not perfectly liquid, which means that any purchase or sale influences short-term prices, the assets value of any firm will depend on the selling prices of other firms. As long as there are many willing sellers, market prices fall significantly affecting mainly those firms that have maintained their assets. Short horizon banks will try to sell their assets in advance in order to prevent their price drop. However, such a reaction will accelerate the prices decline. Consequently, prices contain endogenous volatility. The marking-to-market approach is inefficient mainly during bad periods, since assets are sold at low prices, strengthening the further price reduction.

The model of Plantin, Sapra and Shin (2008) produces the following three main implications:

- For sufficiently liquid assets, marking-to-market is preferable than the historical cost approach as it is more efficient.
- For sufficiently short-lived assets, marking-to-market is preferable than the historical cost approach as it is more efficient.
- For sufficiently junior assets, marking-to-market is preferable than the historical cost approach as it is more efficient.

In every situation, the converse is true for the opposite condition.

Banks and insurance companies are against to marking-to-market valuation. This is due to the fact that their balance sheet is based on illiquid, long-lived and senior items such as loans. Banks present these items on the asset side of their balance sheet. Insurance companies are interested in

the items presented on the liabilities' side of their balance sheet. On the other hand, equity investors support marking-to-market because equity contains liquid and junior assets.
It is evident that there is an interaction between liquidity and the valuation approach. When assets are illiquid marking-to-market is inefficient, in comparison with historical cost, as strategic concerns depress fundamental analysis. Strategic concerns generate pro-cyclical trades, creating price volatility under the marking-to-market approach, and also countercyclical trades, decreasing volatility under the historical cost approach. Accounting measurement methods affect entities' actions, which in turn affect prices and the price mechanisms' efficiency in making good decisions.

6.5:FAIR VALUE ACCOUNTING ENHANCES THE ROLE OF MARKET PRICES

Under the marking-to-market accounting approach any changes in asset prices are reflected into the balance sheets, influencing the net worth of all the members of the current market-based financial system. As we have already seen in the previous chapter, financial intermediaries are highly leveraged and manageactively their balance sheets unlike households, reacting to changes in prices and measured risk. Thus, changes in financial intermediaries' leverage and changes in their balance sheet size are positively correlated. Indeed, leverage is high during upturns and low during downturns generating pro-cyclicality. Pro-cyclical leverage may have a significant impact on volatility and especially on the price of risk, which is the volatility risk premium. The volatility risk premium is defined as the difference between the VIX index and realized volatility.
Adrian and Shin(2008) examined the quarterly changes in the balance sheets of the (then) five major US pure investment banks (i.e. Bear Stearns, Goldman Sachs, Lehman Brothers, Merrill Lynch and Morgan Stanley) in order to see the way in which leverage changes as balance sheet size changes. The balance sheet of investment banks has this form:

ASSETS	LIABILITIES
Trading assets	Short positions
Reverse repos[31]	Repos[32]
Other assets	Long term debt
	Shareholder equity

Investment banks' balance sheets are marked-to-market as their largest proportion is valued based on market prices. Indeed, trading assets are marked-to-market and for reverse repos the difference between their face value and their market value is very small as they are very short-term loans. Short positions are marked-to-market and for repos the difference between their face value and their market value is very small, as they are very short-term borrowing. Also, investment banks before the crisis were very important for the whole financial system as their total financial assets far exceed those of bank holding companies. However, the size is not the only factor. Both the LTCM and the current financial crisis can prove it. Although the amount of the sub-prime mortgage exposures was small in comparison with the financial system's liabilities, its effect was very large.

Adrian and Shin (2008) found that there was a positive relationship between leverage and total assets for the five investment banks in question, i.e. leverage is high when total assets are large and leverage falls when balance sheets are shrunk as during the third and fourth quarter of 1998. In this way, leverage is pro-cyclical. Although during the LTCM crisis of 1998 banks shrank their balance sheets and leverage fell, in the beginning of the current financial crisis of 2007banks' balance sheets were not shrunk in the last two quarters of 2007.But since the signs of the recent credit crisis were evident, there was a rush to decrease leverage or deleverage.Deleverage can be achieved through a series of ways such as raising new equity, selling assets, reducing dividend payouts, diversifying sources of funds or reducing lending. As we have already seen, deleverage through asset sales may generate a feedback effect leading to even lower prices and thus contributing to the recent financial crisis. Their work proved that adjustments in the balance sheet size (total assets) and hence leverage are carried out through changes in repos and reverse repos. Repos are equivalent to collateralized loans. In this case the interest on the loan represents the

[31]It is an agreement, where a financial institution purchases a security with the obligation to resell it at a pre-agreed price on a fixed future date.

[32]It is a repurchase agreement, where a financial institution sells a security with the obligation to repurchase it at a pre-agreed price on a fixed future date.

amount by which the repurchase price is greater than the sale price. Reverse repos are similar to loans secured on collateral. Investment banks use repos and reverse repos in order to get the necessary financing and securities in order to take positions in financial markets. Consequently, changes in total assets and also leverage are obtained through changes in the collateralized borrowing and lending. Balance sheet's size and collateralized borrowing are positively related.

Adrian and Shin (2008) further examined the impact of balance sheets' adjustments to asset pricing. They showed that changes in the balance sheets' size influence asset prices depending on the credit users', such as hedge funds and traders, ability to get funds for trade purposes. For this analysis they used the weekly repo and reverse repo data. The VIX index of implied volatility in S&P500 index options was used to measure the conditions in the financial markets. It represents aggregate financial market volatility, as well as the price of risk of market volatility. It has been proved that the volatility risk premium (i.e. the difference between implied volatility-the VIX and realized volatility of the S&P500 index) is a better predictor of equity returns than other forecasting ratios. In addition, the two economists found that changes in the banks' balance sheets size through repos predict the price of risk of aggregate volatility and not the aggregate volatility itself. The mechanism works in this way: Financial intermediaries increase the size of their balance sheets through increased collateralized lending and borrowing, providing funds in order to support assets' purchases. In case that the increased financing for assets' purchases leads to an increase in prices and risk appetite, then the increased size of banks' balance sheets will influence assets' prices. In this way, repos predict future volatility and specifically the volatility risk premium.

6.6: THE IMPACT OF LEVERAGE AND FAIR VALUE ACCOUNTING ON THE RECENT FINANCIAL CRISIS

Leverage has been widely used by financial intermediaries in order to strengthen their investments or trade in financial assets and also in order to improve their return on equity. An entity may increase its leverage both by using more debt to buy assets and by using derivatives such as repos or reverse repos, as we discussed above. Leverage was gradually increasing before the recent global financial crisis. In the United States, leverage increased from $20.7 trillion to $31.7 trillion, or by nearly 53 percent from 2002 to 2007. Also, from 2002 to 2007 the ratio of total debt to gross domestic product-GDP increased from 1.96 to 1 to 2.26 to 1, or by nearly 15 percent[33]. Since the economy was highly leveraged, it was vulnerable to economic shocks.But when the crisis got evident, banks and other financial institutions began to reduce their leverage and their risk.

Financial intermediaries increased their leverage in a variety of ways. One way was the use of short-term debt, such as repurchase agreements, in order to finance their assets.Based on short-term debt, financial institutions were affected by a reduction in this type of credit. A second way was through Special Purpose Entities-SPEs, which were established by banks in order to buy and hold mortgage-related assets or other assets that the banks wanted to hold out of their balance sheets. SPEs used to borrow issuing shorter-term instruments, such as commercial paper, increasing the risk of being unable to refresh their debt. Another way was through the securitization of mortgage-backed securities-MBS to form collateralized debt obligations-CDOs.The last way was through credit default swaps, providing credit improvements to the users of CDOs. In all these ways, financial institutions' high leverage made them highly exposed to the mortgage market and the financial crisis that very soon took place.

Many analysts argue that the attempt of financial intermediaries, which were highly leveraged, to reduce their leverage by selling assets and limiting their lending may have amplified the recent crisis. They argue that deleveraging that is achieved by selling assets may lead to decreases in assets' prices and even create a feedback effect, which results to further reductions of the assets' prices. Also, they state that the reduction of leverage through limiting of new lending may burden and thus reduce economic growth. The shrinkage of banks' lending may result to a reduction in consumption and investment spending. This leads to reduction in the income of households and companies, having a negative impact in the whole economy.

[33]According to GAO analysis of the Federal Reserve's Flow of Funds data and the Bureau of Economic Analysis's GDP data. Re

Leverage swells profits or losses, so it can increase an entity's market risk. In addition, leverage may obligate an entity to sell assets in poor economic conditions in order to decrease its exposure. In this way, leverage can increase an entity's liquidity risk as well.

Financial intermediaries have been required to satisfy someminimum risk-based capital and leverage ratios in order to limit leverage and enhance financial stability. There is need for systematic monitoring of leverage and constraining pro-cyclical leverage trends. Federal financial regulators such as Federal Reserve, Federal Deposit Insurance Corporation-FDIC, Office of the Comptroller of the Currency-OCC, and Office of Thrift Supervision-OTS have set minimum risk-based capital ratios according to the Basel Accord and non-risk-based leverage ratios in order to limit financial intermediaries' leverage. Banks are required to meet the minimum risk-based capital ratio, which is defined as the ratio of total capital (Tier 1 and Tier 2 capital) to their total risk-weighted assets. In this way, banks are required to hold more capital for riskier assets. The minimum value of this ratio for banks is equal to 8%. Banks are also required to meet the non-risk-based leverage ratio, which is defined as the ratio of Tier 1 capital to their total assets in order to limit their model risk or measurement risk. The minimum value for this ratio is equal to 3%-4% for banks. Moreover, through strict monitoring, on-site examinations and off-site tools,Federal regulators examine banks' capital adequacy. On-site examinations are used for calculating the total risk exposure of a firm and are based on a firm's capital adequacy, asset quality, management and internal control procedures, earnings, liquidity, and sensitivity to market risk-CAMELS. Off-site tools are reports that banks have to provide in order to inform for their financial condition.

Basel I and especially Basel II were pro-cyclical, as the required capital ratio they had imposed to banks used to increase during downturns and decrease during upturns. But after the beginning of the recent crisis, federal financial regulators in collaboration with international regulators have tried to restructure and improve the regulatory capital framework. The reformed framework will have to include more strict requirements concerning financial intermediaries' trading book exposures in order to limit liquidity and reputation risk caused by inadequate treatment of off-balance sheet assets. The regulators have also attempted to impose improvedVaR models and stress testsin order to enhance monitoring.Regulators also try to deploy and adopt methods to filter the misinformation that market prices may include when these prices do not reflect real changes in the fundamental values of the assets.Their purpose is to constrain pro-cyclicality, i.e. the increased risk-taking in good times, which is caused by the reliance on inadequate risk-measurement practices.

As many economists and regulators argue, the application of fair value accounting seems to be one of the main sources of the recent financial crisis. Public has lost its confidence on market prices.

However, a return to the historical cost approach seems unviable and undesirable, as the current economic environment is complex and market-based. For this reason, the IASB has been working on improving fair value measurements and disclosures. It has tried to improve the accounting and disclosure rules concerning off-balance sheet vehicles in order to enhance international convergence, consistency and higher quality's disclosures. In 2008, the IASB proceeded to the setting up of an expert advisory panel, which includes experienced members from a great number of organizations such as the Basel Committee on Banking Supervision, the Financial Stability Forum, central banks, financial institutions and accounting firms. This panel has been responsible for determining values and disclosure requirements for financial instruments in the current illiquid and inactive market. The aim of IASB is to provide more relevant, transparent, comparable and understandable information to the users of financial statements.

CHAPTER 7: CONCLUSIONS

The recent financial crisis of 2007 constitutes a global economic recession that has its origins in the sub-prime mortgages of the United States. It was rapidly spread to the European Union and by extension to our country, Greece. Greek banking system was directly affected and the creditworthiness of Greek government was quickly downgraded. Greece was forced to seek support from the Finance Ministers of Euro Group, European Committee and IMF, who provided it with bilateral loans. The Memorandum of Economic and Financial Policies will determine the criteria for the performance and progress of Greek economy.Greek government has taken a series of measures in order to reduce its public debt and deficit, produce at a satisfying level and finally be able to recover from the crisis.

The recent global financial crisis unveiled a series of problems of the current market-based economy, such as overoptimistic assessment of liquidity risk, inadequate disclosure of risk exposures, dependence on a certain input to determine fair values, excessive reliance on ratings for structured products, too many and as a result inconsistent valuation methods, the use of estimates that include volatility and the lack of well defined terms concerning active markets or observable market prices. Also, there is a lack of information about the reasons of price reductions, whether prices fall due to market conditions such as liquidity factors or due to changes in discounted expected future cash flows.

The Fair Value Accounting approach has been strongly criticized for the validity of the assumptions made, the reliability of fair value techniques and the possible management manipulation.Financial institutions have turned to model-based valuation using unobservable inputs, as liquidity in the markets has been limited. Also, their disclosures are poor and do not capture the uncertainty of valuations. Many are those who blame fair value accounting for generating excessive volatility. They also argue that the true underlying value of assets is not actually reflected into financial statements and as a result, companies have to impair their regulatory capital position by recognizing losses too quickly and indeed at the same time.

Many economists and regulators argue that the wide application of fair value accounting contributed to the recent financial crisis. There are many studies that examine the impact of fair value accounting on the recent crisis. Among them, the most important are those made by Adrian, Plantin, Sapra and Shin. Plantin, Sapra and Shin (2005) concluded that: When the marking-to-market accounting is used, any increase in the bond's prices will give rise to increases in the property's prices leading to further increases in bond's prices. So, there is a feedback effect.While, when the historical cost accounting is used, the bonds' prices do not have any impact on the

property's prices. So, there is no feedback impact from the bonds' price to the property price.Furthermore, they showed that any changes in assets' prices might be combined with solvencyrequirements or internal risk controls, such as minimum capital requirement ratios, that financial intermediaries have to satisfy creating amplified reactions that exceed the initial changes. If the fair value accounting approach is used, assets' prices affect market prices and any reduction in property prices will lead to further falls of property prices, generating a feedback effect. Also, Plantin, Sapra and Shin (2008) developed a model, which implies that marking-to-market is preferable than the historical cost approach only for sufficiently liquid, short-lived and junior assets.

Financial intermediaries' high leverage combined with the application of fair value accounting seems to be an amplifier of the recent financial crisis.Adrian and Shin (2008) proved that when the demand for assets is great, prices tend to increase even more generating the potential for feedback creating stronger balance sheets. This in turn, results to greater demand for the assets, increasing the prices of assets and leads to even stronger balance sheets. The mechanism works in reverse in downturns. When the supply for assets is great, prices tend to reduce even more creating weaker balance sheets. This in turn, leads to greater sales of the assets, which reduces the prices of the assets and leads to even weaker balance sheets. This fact proves that there is increased volatility of asset prices as well as increased correlation of asset returns. Moreover, many analysts argue that the attempt of highly leveraged financial intermediariesto reduce their leverage by selling assets or limiting their lending may have amplified the recent crisis. They argue that deleveraging that is achieved by selling assets may lead to decreases in assets' prices and even create a feedback effect, which results to further reductions of the assets' prices. Also, they state that the reduction of leverage through limiting of new lending may burden and thus reduce economic growth. The shrinkage of banks' lending may result to a reduction in consumption and investment spending. This may lead to a reduction in the income of households and companies, having a negative impact in the whole economy.

There is need for market participants to trust again market prices, so that fair value accounting be sustainable, as the historical cost approach seems unviable in the current complex and market-basedeconomic environment. Fair value measurements and disclosures have to be improved. The IASB has been working on this issue.

APPENDIXA

THE GREEK BANKING SYSTEM

1: DEFINITION AND STRUCTURE OF GREEK BANKS

Banks are financial institutions that act as intermediaries between depositors and lenders and seek profit[34]. Their presence and impact on the economic and social life of our country is significant. They handle transactions and capital movements but collect savings and make investments as well. They accept deposits against interest, borrow with higher interest and invest capitals in various products and companies. In other words, they drain off the redundant entities deposits to the deficit ones. In this way they create their assets. There is an important difference between banks and other institutions involved in handling money. This is credit operation that only banks can conduct. A bank can lend money, issue guarantee notes and make open sales, i.e. provide purchase power to its customers. Banks' activities have social importance too as their investing decisions influence directly the economy and as a result the society that is based on it.
The highest position in the hierarchy of the banking system has the Central Bank of Greece, which control the other banks, define the monetary policy and issue banknotes. Then, the rest credit and financial institutions follow, which materialize the monetary policy. At the bottom of the hierarchy are the customers (individuals, companies and state).

2: BANKING ACTIVITIES

The importance of banks is great as they carry a set of actions. These actions could be divided into the following categories:

- Funding

Banks' main operation is to act as intermediaries between the surplus and deficit entities. They collect deposits of investors and channel them to the deficit entities through funding. The financing takes the form of granting credit including factoring, leasing, guarantees, investment banking, private banking, selling of insurance products and transaction on behalf of the institution

[34]Shelag Heffernan, «Modern Banking in Theory and Practice», March 2003, England.

or its customers such as money market instruments, exchange, forward, futures, swaps and securities (bonds and shares).

Moreover, deposits can be divided into sight deposits (which are mainly used by companies and are connected to checks) savings deposits (which enable individuals to withdraw or deposit money any time they wish) and time deposits (which include time limited deposits concerning debits). Time deposits ‘’keep money closed’’ for some time and can be available only in case the depositor pays a fine to the bank. On the other hand, savings deposits provide full liquidity to savers.

- Payment system

Technological developments allowed banks to undertake clearing transactions without the physical presence of money. Transactions can also be carried out using credit and debit cards.

- Monetary policy

Every country has a Central Bank that exercises monetary policy and determines the quantity of money circulating in the market, in Greece this bank is called Bank of Greece. In the European Union operates the European Central Bank, whose purpose is to maintain the purchasing power of euro. If ECB needs to increase money supply, purchases government bonds through stock exchange. On the other hand, if ECB needs to decrease money supply sells government bonds.

- Advising services

Another activity of banks is to advise companies or individuals on any possible investment that they can make.

3: CATEGORIES OF FINANCIAL INSTITUTIONS

In our days banks can be classified in various ways according to numerous criteria:

- In terms of the type of business one can distinguish:

1. Local banks, which can act only in a part of the country.
2. National banks that can act within the state, but can also carry on business abroad intending to provide banking services to expatriates.
3. Multinational banks that are National banks that expanded their activities beyond the state in which they were first established, creating branches in other states too.

4. International banks, which are usually established by international conventions and are principally engaged in financing development projects.

- In terms of the type of activities.

1. Issuing banks, which issue banknotes and control the supply of money in the economy. These are Central banks and get this right by special lows of the state. Moreover, these banks deal with public loans as lenders or intermediaries and the country's international trading.
2. Commercial banks that accept deposits, lend money, discount bills and generally provide services to their customers.
3. Specialized credit institutions that specialize in certain sectors of the economy such as rural banks, investment banks and savings banks.
4. Financial institutions, which deal with leasing, business advice, factoring, granting credit, management of portfolio and issue credit cards but cannot accept deposits.

- In terms of the institution's property.

1. Private banks, whose property belongs to individual shareholders, companies or other banks.
2. Cooperative banks, which are created by the initiative of social organizations, such as agricultural cooperatives. They address to a great number of small investors but none of them can have their control.
3. Local banks that cover a certain community.
4. Government institutions that are owned or controlled by the state.

4: THE HISTORY AND THE DEVELOPMENT OF THE GREEK BANKING SYSTEM

The first Greek private forms of banks are dated to 4th and 5th century BC in Corinth and Piraeus. National banks had operated in many cities and temples such as Delos and Delphi. The banks of the temples used to exchange currencies of various cities so as to serve pilgrims but also many citizens and even cities used to save their money to the temples because those years the temples were considered to be inviolable. In ancient Greece, the main activities of banks were the exchange of various cities currencies, the deposits acceptance and borrowing.

Until the 18th century individuals, called bankers, had been practicing the banking profession. However, the industrial revolution caused the great evolution of banks and the creation of structured banks due to the increased borrowing needs of new industries, to the increased savings of rich bourgeoisie and to the increase of transactions.

The first bank that operated in Greece was the National Bank of Greece, which was established in 1841. Its share capital consisted of individuals and states participations. Except of lending and accepting deposits, NBG was also charged with the responsibility of issuing banknotes. Some years later, in 1864, NBG shared this right with Ionian Bank. In 1928 Bank of Greece founded and as central bank undertook to issue banknotes. A great number of credit institutions established such as the Agricultural Bank, Emporiki Bank, Laiki Bank and National Mortgage Bank. After the end of World War II, most of banks had merged and their title was taken by the state. Moreover, the market internationalization created international economic organizations and cooperation.

The implementation of '' the Committee on Reform and Evolution of Greek banking system" proposals led to release in the volatility of the drachma exchange rate, interest rates, elimination of specialized actions that some banks had developed and funding across borders.

Until 2000, the Greek banking system had fully liberalized and followed the practices of other European countries. This fact enhanced the competition in the market, the expansion of banks and the development of new products (such as leasing, factoring, forfeiting, venture capital, swaps, options, futures). A series of new small banks began to be established and banks from abroad started operations in Greece. Technological improvements in services such as ATM, phone banking, e-banking increased even more competition.

In our days, the free movement of people and capitals combined with banking globalization offer a wide range of investing options to Greek citizens in all over the world. Greek banks operate successfully abroad, especially in Southeastern Europe. During the financial crisis they did not face very important problems because they were not exposed to "toxic bonds". Instead, they increased their presence abroad. Specifically, we can enumerate 48 subsidiary banks and branches that are established in 16 countries. Except of competitiveness, the expansion of Greek banks improved the export volume and activities in Balkan market. There are lots of challenges and opportunities for Greek banks, as growth in Balkans is very rapid. That is a reason why Greek banks that operate there show increased profitability. The countries of Southeastern Europe are very important economic partners of Greece and import a great volume of our products. Also a great number of their citizens visit our country and as a result help its economy. All these made impossible for Greek banks to stop their business in these countries. Such a decision would have

only bad consequences, as they would loose many of their customers and generally burden Greek economy.

APPENDIX B

As we have already discussed above, since mid-2008, banks worldwide have been allowed to reclassify some of their assets and move them from their trading books to their banking books. Greek banks applied this measure. We will examine the GGB holdings of the six largest Greek banks, which are the National Bank of Greece, Alpha Bank, ATE bank, EFG Eurobank, Piraeus Bank and the Hellenic Postbank, for the period 2009-2010, and we will see briefly how their choices affected them.

- **INVESTMENT SECURITIES FOR THE NBG GROUP:**

(Amounts in thousand Euro)	**2009**	**2010**
Available-for-sale investment securities:		
Debt securities		
Greek Government bonds	8.108.462	1.215.631
Treasury bills and other eligible bills	177.127	218.728
Debt securities issued by other governments and public entities	3.385.014	3.748.741
Corporate bonds incorporated in Greece	101.783	208.656
Corporate bonds incorporated outside Greece	74.937	134.878
Debt securities issued by Greek financial institutions	416.817	546.063
Debt securities issued by foreign financial institutions	1.161.022	970.241
Total debt securities	**13.425.162**	**7.042.938**
Equity securities	339.118	382.069
Mutual funds units	573.418	499.347
Total available-for-sale investment securities	**14.337.698**	**7.924.354**
Held-to-maturity investment securities:		
Greek Government bonds	34.390	3.501.126
Treasury bills and other eligible bills	-	14.471
Debt securities issued by other government and public entities	60.214	105.671
Debt securities issued by foreign financial institutions	5.014	5.016
Debt securities issued by companies of the Group	-	-

	2009	2010
Total held-to-maturity investment securities	**99.618**	**3.626.284**
Loans and receivables investment securities:		
Greek Government bonds	1.238.559	8.064.404
Debt securities issued by other government and public entities	9.415	16.585
Corporate bonds incorporated outside Greece	13.276	13.249
Debt securities issued by Greek financial institutions	314.470	444.918
Debt securities issued by foreign financial institutions	302.114	277.593
Debt securities issued by companies of the Group	-	-
Total loans and receivable securities	**1.877.834**	**8.816.749**
Total investment securities	**16.315.150**	**20.367.387**

The movement of investment securities of the NBG Group may be summarized as follows:

(Amounts in thousand Euro)	**2009**	**2010**
Available-for-sale investment securities:		
Balance at 1 January	**9.589.647**	**14.337.698**
Additions within the period	23.399.029	17.956.701
Disposals (sales and redemptions) within the period	(20.403.712)	(16.253.355)
Transfers between portfolios	1.721.256	(7.344.622)
Gains / (losses) from changes in fair value	(148.726)	(779.823)
Amortization of premiums / discounts	180.204	7.755
Balance at 31 December	**14.337.698**	**7.924.354**
Held-to-maturity investment securities:		
Balance at 1 January	**141.062**	**99.618**
Additions within the period	760.743	1.308.669
Disposals (sales and redemptions) within the period	(792.306)	(25.748)
Transfers from trading portfolio and available-for-sale portfolio	-	2.203.460
Amortization of premiums / discounts	(983)	40.533
Foreign exchange differences	(8.898)	(248)
Balance at 31 December	**99.618**	**3.626.284**
Loans and receivables investment securities		
Balance at 1 January	**3.178.867**	**1.877.834**
Additions within the period	1.168.505	253.574
Disposals (sales and redemptions) within the period	(630.814)	(198.687)
Transfers from trading portfolio and available-for-sale portfolio	(1.721.256)	6.783.070
Amortization of premiums / discounts	28.078	62.019
Impairment charge	(145.307)	-
Foreign exchange differences	(239)	38.939
Balance at 31 December	**1.877.834**	**8.816.749**

In 2008, the NBG Group reclassified certain AFS and trading securities as loans and receivables, and certain trading securities to the available-for-sale and held to maturity categories. On 31 December 2010, the carrying amount and the fair value of the securities reclassified in 2008 that have not matured, been sold or reclassified again was €689,6 million and €632,1 million respectively. During these years, from 2008 until the end of 2010, €15,6 million interest income, €0,6 million dividend income and €13,8 million impairment loss were recognized. If these securities had not been reclassified, net trading income for the same period would have been lower by €5,6 million, and the AFS securities reserve, net of tax, would have been lower by €5,0 million. Moreover, there was a sharp increase in the amount of Held-to-Maturity securities, from €99.618 thousand in 2009 to € 3.626.284 thousand in the end of 2010. In 2010, NBG Group reclassified €6.767,1 million AFS bonds and €16,0 million trading bonds as loans and receivables. Because of the recent financial crisis, the NGB Group decided also to reclassify trading bonds amounting to €1.340,0 million to AFS and €290,8 million to held to maturity. The carrying amount and the fair value of the reclassified bonds on 31 December 2010 was €8.196,6 million and €7.128,1 million respectively. Before the application of the reclassification, fair value loss of €99,1 million was recognized in the income statement, while loss of €524,5 million was recognized in other comprehensive income net of tax. After the application of the bonds' reclassification, €517,3 million interest income was recognized until 31 December 2010. If these bonds not been reclassified, net trading income for period ended 31 December 2010 would have been lower by €221,6 million, and the AFS securities reserve, net of tax, would have been lower by €679,7 million.

NBG Group more than tripled its Held-to-Maturity securities, from €99.618 thousand in 2009 to €3.626.284 thousand in 2010. Consequently, in 2010, NBG Group moving some of its bonds and trading securities from its trading books to its banking books managed to maintain its net trading income and its AFS securities reserve at higher levels.

- **INVESTMENT SECURITIES FOR THE ATE bank GROUP:**

(Amounts in thousand Euro)	2009	2010
Available-for-sale securities	3.145.963	2.032.140
Held to maturity securities	849.416	3.357.006
	3.995.379	**5.389.146**

AVAILABLE-FOR-SALE SECURITIES

(Amounts in thousand Euro)	2009	2010
Debt securities:		
Greek Government bonds	959.020	1.922.924
Corporate bonds	633.284	787.457
	1.592.304	2.710.381
Equity securities:		
Listed	235.573	348.120
Unlisted	118.748	2.308
Equity funds	23.594	19.053
	377.915	369.481
Mutual fund units	61.921	66.101
	2.032.140	**3.145.963**

The ATE bank Group during 2010, due to the recent global financial crisis decided to reduce its:

- Listed securities by € 93.156 thousand.
- Non-listed securities by its portfolio of € 206 thousand.
- Mutual funds by € 4.740 thousand.
- Corporate bonds by € 8.977 thousand.

The movement in the available-for-sale securities is summarized as follows:

(Amounts in thousand Euro)	2009	2010
At 1 January	**2.340.002**	**3.145.963**
Additions	1.637.326	1.519.284
Disposals	(853.125)	(185.992)
Transfer due to IAS 39	0	(2.196.182)
Impairment	(7.285)	0
Gains/(Losses) from changes in fair value	29.045	(250.933)
31 December	**3.145.963**	**2.032.140**

Analysis of additions and disposals follows:

(Amounts in thousand Euro)	Disposals	Additions
Greek Government bonds	(10.262)	1.333.249
Equity Funds	(3.023)	1.227
Corporate bonds	(164.507)	61.978
Listed securities	(8.200)	3.028
Unlisted securities	0	117.021
Mutual funds	0	2.781
	(185.992)	**1.519.284**

HELD-TO-MATURITY SECURITIES

(Amounts in thousand Euro)	2009	2010
Greek Government bonds	804.990	3.316.976
Foreign Government bonds	22.565	30.030
Corporate bonds	21.861	10.000
	849.416	**3.357.006**

The fair value of the above mentioned bonds as of 31/12/2009 was € 805.647 thousand, while at 31/12/2010 was € 2.775.634 thousand. The Group at 01/04/2010, transferred from the portfolio

"Available- for-sale securities" to the "Held-to-Maturity" portfolio Greek Government Bonds with fair value € 2.189 mil.

Moreover, during the periodbetween 01/07/2008 and 01/10/2008, according to the IAS 39 amendments, the Group reclassified its listed shares and other debt securities from "Trading securities" to "Available for sale securities", whose fair value at 31/12/2010 was estimated to €137,1 million. Their negative valuation of €9,0 million for the period 01/01/2010 – 31/12/2010 was recognized on "Available-for-sale reserve**".**

As we can see from the table that presents the movement in the available-for-sale securities, in the end of 2010 the ATE bank Group had losses from changes in fair value equal to €250.933 thousand. The increase in the amount of Held-to-Maturity securities from € 849.416 thousand in 2009 to 3.357.006 I 2010 was very sharp.

- **INVESTMENT SECURITIES FOR THE PIRAEUS BANK GROUP:**

Available for sale securities	**2009**	**2010**
Bonds and other fixed income securities		
Greek government bonds	1,668,495	557,436
Foreign government bonds	120,158	196,167
Corporate entities bonds	286,042	229,769
Bank bonds	47,479	37,007
Greek government treasury bills	-	604,019
Foreign government treasury bills	-	639
	2,122,173	**1,625,036**
Shares and other variable income securities		
Athens stock exchange listed shares	100,333	60,614
Foreign stock exchanges listed shares	15,276	15,994
Unlisted shares	89,960	158,917
Mutual funds	10,717	190,541
	216,287	**426,066**
Total available for sale securities	**2,338,460**	**2,051,103**
Held to maturity		
Greek government bonds	3,305,687	4,954,598
Foreign government bonds	38,933	58,917
Corporate entities bonds	18,915	17,727
Foreign government Treasury bills & other eligible bills	-	25,578
Total held to maturity	**3,363,535**	**5,056,820**

The movement in the available for sale portfolio is summarized as follows:

	2009	2010
Opening balance	875,892	2,338,460
Balance of subsidiaries companies that sold, liquidated or changed portfolio	-	(958)
Additions	1,641,604	1,680,866
Transfer to associates	(1,693)	-
Transfers from trading portfolio	-	890,444
Transfer to debt securities – receivables	-	(936,575)
Disposals/ maturities	(144,119)	(1,263,856)
Changes in fair value	(4,312)	(258,181)
Transfers to held for sale assets	(19,131)	-
Transfers to held-to-maturity	-	(397,407)
Impairment charge	(4,155)	(5,122)
Foreign exchange differences	(5,626)	3,431
Balance at the end of the year	**2,338,460**	**2,051,103**

The movement in the held to maturity securities is summarized as follows:

	2009	2010
Opening balance	3,372,205	3,363,565
Additions	46,095	1,374,424
Transfers from AFS portfolio	-	397,407
Sale/ maturity of securities	(47,065)	(80,511)
Foreign exchange differences	(7,699)	1,966
Balance at the end of the year	**3,363,535**	**5,056,820**

During the period 2009-2010, the Piraeus bank Group almost doubled its Held-to-Maturity securities from 3,363,535 in the end of 2009 to5,056,820 in the end of 2010.

In the mid-2010, due to adverse conditions in the Greek Government bond market because of the decline of the Greek public financials, the Piraeus bank Group decided to reclassify bonds with fair value of € 890.4 million from the "Trading securities" portfolio into the "Available for sale securities" portfolio. A revaluation loss of € 11.1 million, for the bonds that had not been matured

or sold, from the reclassification date to 31/12/2010 has been recognized in the "Available for Sale reserve".

Also, bonds with fair value of € 936.6 million were reclassified from the "Available for sale securities" portfolio to the "Debt securities - receivables" portfolio as these bonds met, at the date of reclassification all the conditions of IAS 39 in order to be classified as Loans and Receivables. The fair value of these bonds as at 31/12/2010 was € 736.8 million. If these bonds had not been reclassified, a revaluation loss of € 176.9 million would have been recognized in the "Available for sale reserve". Furthermore, bonds with fair value of € 397.4 million were reclassified from the "Available for sale securities" portfolio to the "Held to Maturity" portfolio.

Investment portfolio on 31/12/2010 includes shares and bonds, which have been reclassified on 1/7/2008 and on 1/10/2008 respectively, in accordance with the amendments of IAS 39 and IFRS 7. "Held to Maturity" portfolio as at 31/12/2010 includes bonds with fair value of € 335.6 million, which were reclassified on 1/10/2008 from "Trading securities" portfolio. If these bonds had not been reclassified, a revaluation loss of € 173.4 million would have been recognized in the "Net trading Income" of 2010.

Consequently, in 2010, the Piraeus bank Group moving some of its bonds and trading securities from its trading books to its banking books managed to maintain its Net Trading Income at higher levels.

- **INVESTMENT SECURITIES FOR THE HELLENIC POSTBANK GROUP:**

Amounts in €	2009	2010
Available for sale securities		
Debt securities		
Greek government bonds	4.817.884.842,82	83.847.990,00
Foreign government bonds	63.725.789,22	63.482.725,00
Corporate bonds	197.960.991,35	143.906.100,30
Bonds issued by financial institutions	528.760.678,23	417.633.000,35
Total of debt securities	**5.608.332.301,62**	**708.869.815,65**
Equity securities		
Share listed on ATHEX	137.915.742,96	103.158.167,14
Unlisted shares	27.304.318,46	33.341.154,70
Venture capital	212.078,32	207.876,48
Total equity securities	**165.432.139,74**	**136.707.198,32**
Total available for sale securities	**5.773.764.441,36**	**845.577.013,97**
Securities held to maturity		
Debt securities		
Greek government bonds	261.276.192,34	1.009.267.514,66
Bonds issued by financial institutions	184.917.686,68	77.295.821,59
Corporate bonds	4.542.724,01	4.781.721,66
Greek Treasury Bill securities	-	1.044.182.558,06
Total held to maturity securities	**450.736.603,03**	**2.135.527.615,97**
Total investment portfolio	**6.224.501.044,39**	**2.981.104.629,94**

The movement of available for sale and held to maturity securities for the fiscal year 1/1/2010 – 31/12/2010 is analyzed as follows:

	Investments available for sale	Investments held to maturity	Total
Opening balance as at 1.1.2010	**5.773.764.441,36**	**450.736.603,03**	**6.224.501.044,39**
Additions	1.301.916.514,40	1.719.170.616,46	3.021.087.130,86
Transfers to debt securities	(3.103.698.151,80)	-	(3.103.698.151,80)
Transfers to "Held to maturity" portfolio	(769.920.899,65)	769.920.899,65	-
Transfers from "Trading securities" portfolio	-	132.891.960,20	132.891.960,20
Disposals / write offs / maturities	(2.055.719.164,25)	(967.615.295,35)	(3.023.334.459,60)
Foreign exchange differences	9.210.284,71	1.193.825,16	10.404.109,87
Premium / discount amortization	33.475,11	29.229.006,82	29.262.481,93
Adjustment to fair value recognized directly in reserves	(310.009.485,91)	-	(310.009.485,91)
Closing balance as at 31.12.2010	**845.577.013,97**	**2.135.527.615,97**	**2.981.104.629,94**

The movement of investment securities available for sale for the fiscal year 1/1/2009 - 31/12/2009 is analyzed as follows:

	Investments available for sale	Investments held to maturity	Total
Opening balance as at 1.1.2010	**2.439.197.833,49**	**1.143.282.566,59**	**3.582.480.400,08**
Additions	5.467.669.027,82	-	5.467.669.027,82
Disposals / write offs / maturities	(2.049.246.926,16)	(687.702.555,62)	(2.736.949.481,78)
Foreign exchange differences	(3.215.408,40)	(640.859,09)	(3.856.267,49)
Premium / discount amortization	(19.359.502,80)	(4.202.548,85)	(23.562.051,65)
Adjustment to fair value recognized directly in reserves	(61.280.582,59)	-	(61.280.582,59)
Closing balance as at 31.12.2010	**5.773.764.441,36**	**450.736.603,03**	**6.224.501.044,39**

The Hellenic Postbank Group applied the amendments of I.A.S.39 and I.F.R.S.7, issued in October 2008. Indeed, during the period 2009-2010, the Hellenic Postbank Group increased

sharply its Held-to-Maturity securities from €450.736.603,03 in the end of 2009 to €450.736.603,03 in the end of 2010.

Securities and stocks that were transferred from "Trading securities" portfolio to "Available for sale securities" portfolio had been evaluated at 31/12/2010 at € 50,79 million and the fair value loss amounted to € 6,65 million for the period 1/1/2010 – 31/12/2010, was recognized in "Available for sale reserve".

Moreover, in April 2010, Hellenic Postbank Group reclassified securities from "Available for sale" portfolio either to "Held to maturity" portfolio or "Loans and receivables" and securities from "Trading portfolio" either to "Held to maturity" or "Loans and receivables", both evaluated at amortized cost. At 31/12/2010 the fair value of the first ones was estimated to € 3.017 million, while the fair value of the seconds was estimated to € 130,47 million. Consequently, Hellenic Postbank Group avoided to recognize into its 2010 results the negative evaluation amounting to € 12,73 million for the period from April 2010 to 31/12/2010 that would have been accounted if these securities had been evaluated in fair value.

- **INVESTMENT SECURITIES FOR THE ALPHA BANK GRPOUP:**

	2009	2010
Available for sale		
Greek government bonds	107,110	1,378,311
Other government bonds	617,787	554,811
Other issuers:		
-Listed	549,559	322,777
-Non-listed	10,133	3,707
Shares		
-Listed	39,598	25,063
-Non-listed	37,190	41,005
Other variable yield securities	56,785	50,290
Total Available for sale	**1,418,162**	**2,375,964**
Held-to-Maturity		
Greek government bonds:		
- Non securitized	2,598,364	4,067,960
Other government bonds:		
- Non securitized	25,532	43,312
-Securitized	58,869	
Other issuers:		
-Non-securitized:		
Listed	1,240,838	1,200,429
Non-listed	14,995	4,454
-Securitized		
Listed	949,521	
Total	**4,888,119**	**5,316,155**
Less		
Allowance for impairment losses	(19,626)	(33,657)
Total Held-to-Maturity	**4,868,493**	**5,282,498**

Alpha Bank Group increased its Held-to-Maturity securities but not extremely, from € 4,868,493 in 2009 to € 5,282,498 in 2010. The Group reclassified some bonds that amounted to € 165.8

million, which until 30.9.2010 were classified in "available for sale", and transferred them to the held to maturity portfolio.

During 2010 the Alpha Bank had recognized impairment for the Available-for-sale portfolio that amounted to € 26,376million, while in 2009 it amounted to € 31,121 million, which was included in "Gains less losses on financial transactions".

Allowance for impairment losses:

Balance 1.1.2009	
Changes for the period 1.1-31.12.2009	
Impairment charge for the year	19,626
Balance 31.12.2009	**19,626**
Changes for the period 1.1-31.12.2010	
Impairment charge for the year	21,854
Charge in present value of impairment reserve	516
Foreign exchange differences	660
Securities written-off during the year	(8,999)
Balance 31.12.2010	**33,657**

- **INVESTMENT SECURITIES FOR THE EFG GROUP:**

Amounts in € million	**2009**	**2010**
Available-for-sale investment securities	6,955	3,369
Debt securities lending portfolio	4,663	9,765
Held-to-maturity investment securities	3,625	3,429
	15,243	**16,563**
Mauring after 1 year	13,309	13,362

Amounts in € million	**2009**	**2010**
Available-for-sale investment securities		
Issued by public bodies:		
- government	5,603	2,391
- other public sector	28	36
	5,631	2,427
Issued by other issuers:		
- banks	338	330
- other	986	612
	1,324	942
Total	6,955	3,369
Listed	6,330	2,893
Unlisted	625	476
	6,955	3,369
Equity	681	621
Debt	6,274	2,748
	6,955	3,369

In 2010, the EFG Group reclassified to held-to-maturity investment securities of € 102 million.

Amounts in € million	**2009**	**2010**

Debt securities lending portfolio		
Issued by public bodies:		
- government	4,174	9,235
- other public sector	126	-
	4,300	9,235
Issued by other issuers:		
- banks	168	308
- other	195	222
	363	530
Total	4,663	9,765
Listed	4,554	9,623
Unlisted	109	142
	4,663	9,765
Held-to-maturity investment securities		
Issued by public bodies:		
- government	1,924	2,051
- other public sector	96	-
	2,020	2,051
Issued by other issuers:		
- banks	688	520
- other	917	858
	1,605	1,378
Total	3,625	3,429
Listed	3,577	3,333
Unlisted	48	96
	3,625	3,429

The Group's total Held-to-Maturity securities remained almost unchanged during 2009-2010.

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