Subprime Credit Crisis.

Evolution And Effects On The Romanian Stock Exchange

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1. INTRODUCTION

From the second half of the year 2007 the Bucharest Stock exchange faced accelerated and long-term depreciation on all the areas of activity. The most affected were the investment companies and the banking institutions. The oil companies, medicine companies and chemicals companies also sustained significant depreciation. From a sample of the most traded companies at the stock exchange, in the period between 1 August 2007 – 17 May 2009 only one of them had an increase in the stock value (Policolor Bucharest, +5%), 2 companies have fallen between 10-20% in stock value, 3 of them had losses between 32-50 % and the rest well over 50% losses. These losses were on the same line of the general losses of the stock exchanges all over the world, but the analysts started to notice a correlation between the evolution of the USA stock exchange and the Bucharest Stock Exchange. An important observation is that even if the global evolutions had the same trend, the value of the losses was different (in most cases smaller).

The present study has in plan a detailed analysis of the movements of the exchange values, also investigating the factors that led to the decline of shares listed on stock exchange and of the daily liquidity. The investor's interest dropped gradually in the last two years with the liquidity, from an average of 20 million euro daily to only 2-3 millions at the beginning of 2009. The reluctance of the investors is easy to understand if we consider the fact that the evolution of the stock exchange in Bucharest does not seem to notice the good results of the companies, especially the ones reported by the Romanian banks. Now, we pass through a hard economical, still expecting a worldwide recession and financial crisis, according to the indicators presented by the governmental institutions, including the European Union. The financial problems that we experienced since 2007 led to the reduction of the demand for goods, to decrease in profit and the increase of the unemployment.

In the pages of this paper, there will be an analysis of the effects of the crisis for the capital market from Romania and the correlation between the stock exchanges from USA and Bucharest. The capital market proved to be very fragile in the period 2007-2009 to any event broadcasted at the news. In the daily bulletins transmitted by the financial services companies, we can observe a clear resemblance between the falls from New York and the ones from Bucharest. Even in the trading sessions in which we should register slightly improvements due to some very good financial results or optimistic previsions for the next period, in Bucharest there was no signal of any improvement.

This is also the leading reason for this paper. Because the studies referring to this situation did not take these indices in consideration, we want to prove not only the existence of a correlation between the movement of the prices in USA and Romania, but to also explore the signals that the Romanian investors interpreted the wrong way. Personally I think that the way active investors from the Bucharest Stock Exchange reacted at the subprime credit crisis

is of the most importance, especially that at the BSE the consequences were visible. The depreciations registered on the market were very high and very fast even if we take in consideration the fact that we are a developing country and we have a long way until we achieve maturity.

2. LITEARATURE REVIEW

Already know as the "Subprime crisis", this affected besides the origin country, the USA, all of Europe and Asia. Lead names in the financial and banking domain, and not only them, announced being on the edge of bankruptcy without the help from the state.
In 2008 most of the investor firms on Wall Street, confronted with liquidity problems. To support these institutions, the governments promised emergency bailouts, and in some cases, special founds were created for the full guarantee of the deposits and other financial instruments from the banks. This are authorized until 2010 with the possibility of renewal if the situation does not improve.

The lead cause of the economical situation comes from USA, and is represented by the subprime mortgage and complex financial instruments, connected to it. We can say that the two leading factors were the speculative growth of the housing prices in the USA and the financial market with a high liquidity due to the usage of new derivative instruments.Theese new products had a considerably higher risk, which was transferred by the banks to the whole financial community.

Financial market innovations generally occur in the context of three fundamental conditions, all of which are highly relevant to the origins of subprime mortgage lending. First of all is extreamly important the existence of previously underserved borrowers and investors. Subprime borrowers were eager to use mortgage loans to finance home purchases, while a worlwide savings glut created large numbers of investors eager to earn the relatively high interest rates promised on US subprime mortgage securities. Also important is the catalyst of advances in technologi and know-how. Subprime mortgage securization applied state-of-the-art tools of security design and financial risk management, expanding on the successful implementation of similar tools to earlier classes of high-risk securization ranging from credit card loans to natural disaster catastrophe bonds. We should not forget about the encouraging regulatory environment. Although US mortgage lenders face a complex network of state and federal regulations, few of these regulations impeded the origination of subprime loans. Furthermore, the existing system of commercial bank capital requirements provided banks with strong incentives to securitize many of the subprime mortgage loans they originated.

For the traditional model, the banks financed the loans, guaranteed with the mortgage from the client's deposits. Therefore, there were two parts implicated in this process, the buyer of the property and the bank, and in this case, the bank was responsible for the risk assumed, which limited the number of guaranteed loans it could offer.

From the 90's this model was modified step by step, leading to the subprime model, in which the mortgage don't remain in the possession of the banks, but are redistributed as derivate instruments to the whole financial community. A subprime loan represents a mortgage guaranteed credit, with a high rate, given to the persons that do not qualify for regular credits.
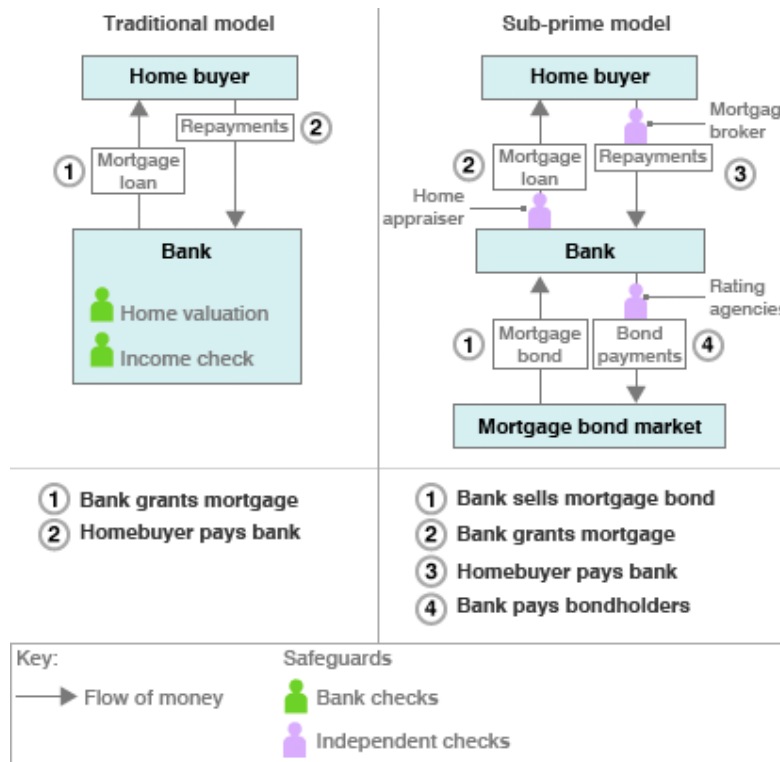
Figure no.1 Traditional Model vs Subprime Model

Here is the big picture and how it works: An individual gets a mortgage loan from a broker. Then the broker sells the mortgage to a bank, which in its turn again sells the mortgage but this time to an investment firm on Wall Street. Such firms collect thousands of mortgages in one big pile. This in fact represents thousands of mortgage checks coming every month, a monthly income that was supposed to continue for the life of the mortgages. And of course, the firm in its turn sells shares of that income to investors who are willing to buy.

Another interesting subject for the investors is the fact that this crisis is very different from the ones we knew until now, and there were signs pointing to this, we choose not to see them. We can certainly say that the signs existed, even if some still debate about this too. Some analyst say that the prices were growing in an speculative bubble, while others say that this growth was sustained by financial innovation (meaning subprime loans), combined with the new assets from Asia and oil exporters.

Some authors sought answers even in the characteristics of this product, trying to find out if the poor "rating" of this product led to the problems it caused. Moreover, the time frame from the moment in which the person who took the credit stops paying and the ending period of the loan has a very important role in determining the cost supported by the borrower.

Subprime loans refer to loans given on some indirect and non-secure incomes, with higher interest ratings to cover the risk. The interest rate is generally lower in the first two, 3 years, than adjusted by applying a consistent value over the rate of the interest rate in the London interchange market or over the annual interest's rate of the state bonds.

In Romania, the danger of these credits is not felt directly, due to the reduction of the lending from a few years ago, but indirectly most of the investors feel affected, by the decrease of the stock exchange or by the reduction of prices in the real estate domain. The banks that went bankrupt or the ones, which lost milliards of Euros, did not have business in Romania. The foreign banks who activate in our country had limited exposure to the subprime market.

The subprime crisis was based on the growth of the real estate prices, but in this case, it was only a speculative evolution caused by the appearance of the mortgage derivative instruments. The increasing value of the housing pricing was determined by the apparition of credits for the persons with reduced rating, or without stable income. Even more, most of the times, the credits had buffer periods and had the possibility of credit refunding. At the beginning of the 2000 year on global level, the market had an excess of liquidity so the access to financing was easy.

At that moment, there were no issues concerning a global crisis, and investors were looking for way to place their available funds. They were looking especially for reduced risks investment and a fair yield rate. These kinds of investments were not easy to find, and when the instruments based on subprime mortgage has appeared, they gained most of the available funds. A person obtained a mortgage guaranteed credit from a broker, and then the broker sells it to a bank, and the bank to an investments society on the Wall Street.

So many companies collected thousand of mortgages, considering them a safe monthly income. Of course, that the companies sold parts of this income to the investors interested in acquiring them. These derivate financial instruments were based on the mortgages in the USA market, and seemed to be the perfect solution not only to the American investors but to the ones in Europe and Asia too. The request for mortgage guaranteed credit was in continuous increase, so in 2003 anyone that qualified could access a credit. Later on, the conditions change and an income validation was no longer necessary. After a period of time, the activity domain stopped being mandatory, saving from and account being considered sufficient. The thirst of investors for guaranteed subprime mortgage's was still not satisfied so the condition were softened even more to generate more credits. The result is NINA (no income no assets) some sort of mortgage credit only with the identity card.

The global crisis started in august 2007 and became the biggest financial disaster since the Big Crisis in 1929, with effects on the markets and institutions that compose the financial system. The question now is why the subprime crisis was not isolated to the American banking system and to the mortgage segment. The answer is pretty simple. The subprime crisis emerged as a liquidity crisis, but slowly transformed on a solvability one, when the financial institutes where forced to call for financial support by injections of capital from other investor, and the effect of the liquidity crisis became a global sentiment of mistrust in these institutions.

When the banks and other credit institutions reduce their available funds significantly , they will have to refuse more and more companies or persons, putting accent on the growth of the deposits, and studying more carefully each credit. The result was a reduction of the request on global level and the decrease of the economical increase factor.

We have reasons to be optimistic. The USA economy, in spite of the recent problems it encountered, still remains the most complex and competitive in the world. We also noted

the fact that the American economy has a sustained growth of the PIB even though the price for the barrel of oil well passed 100 dollars, America being the most important oil buyer. This means that the rest of the economy is going well, covering the reduction of the cost to compensate the increase in the price of the "black gold".

Another indicator that the situation can get better is the fact that in the last year, most of the goods used in the real estate domain were imported, so the reduction of interest for this domain will not add any extra stress on the economy. It is expected in the next period that the imports will drop, encouraging the exports, because of the depreciation of the dollar in comparison with the other major currency. We already have signals that the account deficiency is stable and starts to grow.

For the Romanian situation, we took in consideration, in the attempt to explain the drastic reduction of liquidity, the influence of the foreign investor amongst the investor at BSE. According to this concept, the investment funds and other strong investors decided to sell the positions on the emerging markets before the effects of the crisis would be felt directly, to cover from the profits made here the losses from the mature markets. Or the investors just decided, in the context of the subprime crises, to charge their profit from the last years of implication into the market.

3. METHODOLOGY

For conceiving the database, I used the empirical observations described in the previous chapter. The first information were the stock values for the Romanian indices, which are BET, BET-FI, BET-C and ROTX, also listed at the stock exchange in Vienna. The BET index is the first one developed by the BSE, and is the reference index of the capital market. This is an index weighted with the capitalization of free-float of the 10 most liquid companies listed at BSE. Its methodology permits it to be active support for the derivative financial instruments and structural products. BET-C is a composite index of the stock market. It reflects the evolution of the prices of all the companies listed at the BSE, first and second category, except the financial investment societies. BET-C is also and prince index, but moderated by the capitalization of the companies in its component. BET-FI is the first sectoral index of BSE and reflects the trend of the investment funds, traded on the stock market. The share of the companies in the index is made by the capitalization of the free-float. Its methodology allows it to be used as active support for derivatives and structural products. ROTX is a price index moderated with the capitalization of the free-float and reflects, in real time, the movement of „blue chip" shares traded at the BSE. Calculated in RON, EUR, USD and disseminated in real time by the stock market in Vienna (Wiener Borse AG), ROTX is projected as a transactional index, and it can be used as active support for the derivative and structural products.

Considering the most relevant situations for the analyzed phenomenon were observed in USA, Europe and Asia, we took in consideration the following main indexes: Dow Jones Industrial Average and Standard&Poor's 500 for the USA stock exchange. For Europe we picked the index FTSE 100 from London, DAX 30 from Germany and CAC40 from France. From Asia, the most representative index is Nikkei 225 from Japan.

The Dow Jones Industrial Average is one of several stock market indices, created by nineteenth-century Wall Street Journal editor and Dow Jones & Company co-founder Charles Dow. It is an index that shows how certain stocks have traded. Dow compiled the index to

gauge the performance of the industrial sector of the American stock market. The average is computed from the stock prices of 30 of the largest and most widely held public companies in the United States. The "Industrial" portion of the name is largely historical. Many of the 30 components have little or nothing to do with traditional heavy industry. The average is price-weighted, and to compensate for the effects of stock splits and other adjustments, it is currently a scaled average. Not the actual average of the prices of its component stocks, but rather the sum of the component prices divided by a divisor, which changes whenever one of the component stocks has a stock split or stock dividend, so as to generate the value of the index. Since the divisor is currently less than one, the value of the index is higher than the sum of the component prices.

The S&P 500 is a value weighted index published since 1957 of the prices of 500 large-cap common stocks actively traded in the United States. The stocks included in the S&P 500 are those of large publicly held companies that trade on either of the two largest American stock markets, the New York Stock Exchange and NASDAQ. Almost all of the stocks included in the index are among the 500 American stocks with the largest market capitalizations. Some mutual funds, exchange traded funds, and other managed funds, such as pension funds, are designed so as to mimic the performance of the S&P 500 index. Hundreds of billions of US dollars have been invested in this fashion.

The FTSE 100 Index s a share index of the 100 most highly capitalized UK companies listed on the London Stock Exchange. The index began on 3 January 1984 with a base level of 1000; the highest value reached to date is 6950.6, on 30 December 1999. FTSE 100 companies represent about 81% of the market capitalization of the whole London Stock Exchange. Even though the FTSE All-Share Index is more comprehensive, the FTSE 100 is by far the most widely used UK stock market indicator.

The DAX (Deutscher Aktien IndeX) is a blue chip stock market index consisting of the 30 major German companies trading on the Frankfurt Stock Exchange. Prices are taken from the electronic Xetra trading system. According to Deutsche Boerse, the operator of Xetra, DAX measures the performance of the Prime Standard's 30 largest German companies in terms of order book volume and market capitalization.

Nikkei 225 is a stock market index for the Tokyo Stock Exchange (TSE). It has been calculated daily by the Nihon Keizai Shimbun (Nikkei) newspaper since 1950. It is a price-weighted average (the unit is yen), and the components are reviewed once a year. Currently, the Nikkei is the most widely quoted average of Japanese equities, similar to the Dow Jones Industrial Average. In fact, it was known as the "Nikkei Dow Jones Stock Average" from 1975 to 1985.

For the beginning I made some test for the index CSI 300 from China, but the results were not satisfactory. China had a really good economical evolution until the fall of 2008, with record increases for the last 2 years, of over 10%. The effects of the crisis are present in this country too, but appeared later than in USA or Europe, even than in Asia (for example Japan, a country that reacted a lot faster to the propagation of the crisis, because most of the producers sold their products in USA.)

We can't neglect the fact that the Romanian stock exchange is not even close to the level of maturity of the stock exchanges described above, so we must not ignore the stock exchanges near by, from emerging capital countries. So I chose ATX, lead index of Vienna, CTXEUR from the Czech Republic, HTXEUR from Hungary and PTXEUR from Poland. Matching those indexes I used ROTX, as a Romanian index.

Analyzed period

The period for which the observations are made is of 2 years and 4 months, more exactly from 1 January 2007 – 1 May 2009, with the observation that detailed analysis was made on the most relevant interval, August 2007 – February 2009.
The processing of the data base was realized trough the homogenization of the recordings, to obtain the same number of exchange courses independent of the index. For a higher accuracy of the analysis, the data were synthesized on weekly basis, to eliminate the variations of data and the difference between the numbers of day in which stock was traded.

4. MODEL: PRESENTATION AND FUNDAMENT

Theoretical presentation

For the beginning we will analyze the possible links between the introduced variables, trough multivariate analysis, which presumes utilizing a group of static and mathematic methods for the simultaneous research of the association links existing between more than two variables.
One of this methods referring to the multivariate analysis is the multiple regression. The purpose of this multiple regression is to point out the relation between an independent variable (explained, endogenous, and pointing to a result) and a group of independent variables (explained, exogenous, predictors). Most of the times, trough the multiple regression, we often try to get an answer to one of the questions: "which is the best prediction for…?", "who is the best predictor for…?).

Case study

In the desire to make a more accurate analysis, the values introduced in the data base where split in 3 groups. We will analyze the values of these 3 groups separately, to have a conclusion for each of them. The 3 groups are not randomly picked, in their choosing the real situation was taken in consideration. According to the empiric data from the previous chapter, the indexes were compared one at a time with indexes from the USA (Dow Jones Industrial Average and Standard & Poor's 500), from the mature markets of Europe and Asia(FTSE 100, Dax30, Nikkei 225) and representative indexes from countries with markets at near the same level as the one in Romania.

Regression Statistics					
VARIABILE (INDICI)		R2	Standard Error	Coeficientul b	Testul F
BET	DOW	0,513	0,0276	1,033	100
	S&P 500	0,572	0,0350	1,261	139
BET-C	DOW	0,701	0,0260	1,269	244
	S&P 500	0,724	0,0250	1,257	252
BET-FI	DOW	0,444	0,0594	1,603	87

	S&P 500	0,397	0,0665	1,513	72
ROTX	DOW	0,500	0,0398	1,172	110
	S&P 500	0,560	0,0374	1,178	135
BET	FTSE 100	0,514	0,0382	1,152	109
	DAX 30	0,530	0,0379	1,010	123
	NIKKEI 225	0,552	0,0376	1,013	136
BET-C	FTSE 100	0,524	0,0369	1,085	116
	DAX 30	0,568	0,0347	1,022	141
	NIKKEI 225	0,637	0,0330	1,081	187
BET-FI	FTSE 100	0,430	0,0639	1,621	80
	DAX 30	0,494	0,0554	1,374	103
	NIKKEI 225	0,605	0,0500	1,527	162
ROTX	FTSE 100	0,563	0,0365	1,164	134
	DAX 30	0,608	0,0344	1,067	166
	NIKKEI 225	0,623	0,0363	1,124	179
ROTX	CTXEUR	0,643	0,0345	0,9694	205
	HTXEUR	0,491	0,0422	0,7498	105
	PTXEUR	0,473	0,0404	0,6502	102

5. CONCLUSIONS

The subprime crisis extended not only in the country of origin but also in Europe and Asia. In the United States of America, heavy names from the financial domain were forced to ask for the help of the state to escape bankruptcy. Even if the economical situation seemed to be stable in the USA, the ramifications of the crisis had a colossal effect on the banking system, with chain effects on all the other industries.

Few were expecting that the derivative financial tools of subprime credits could pose such a high risk, which was transferred by the banks to the whole financial community. In the traditional mortgage, the banks financed the loans, with a guarantee from the client's deposits. There were two parts implicated in this process, the buyer and the bank, and in this case the bank was responsible for taking the risk, which limited the number of guaranteed mortgage loans it could offer. From the 90's this model was modified, resulting the subprime model, in which the mortgage's don't remain under the possession of the bank, but are redistributed as derivative tools to the whole financial community. A subprime loan represents a guaranteed mortgage, with a high interest rate, given to the persons that do not qualify for regular credits.

In the period prior to 2007, it was a common thing to take the decision of investing in companies with PER of over 40 at the Bucharest Stock Exchange. The optimism in the marked was based less on economical reasons or indicators, but more on the inertia of the last years of constant growth of over 100%. In almost two years the PER index dropped from the medium official value of 21,77 at 1 August 2007 at just 2,5 for 27 February 2009.

About the previous studies we must mention the fact that most of the times, their content represents mostly translations of elaborate studies for other economies, which besides scientific importance, are of little importance to the particularities of the Romanian capital market.

The empiric observations indicated that the BSE moves weren't quite foreign of the evolutions registered on the markets all over the world. These resemblances are illustrated trough daily transactional graphics, from the last 36 month, taking in consideration the principal indexes from BSE and two American indexes, Dow Jones Industrial and Standard & Poor's 500.

Both analysts and media man, blames the subprime crisis and the depreciation on Wall Street for the collapse of the stock exchange. Because this crisis has its origin on America soil, it is understandable while the investors concentrated their attention to the signals coming from that direction. Even when the ramifications of the worldwide credits crisis became more and more obvious, the most efficient measures of crisis management were still expected from the USA and eventually to help rebuild the economy.

The results of the case study are in concordance with these opinions. After reading the diagrams we can make an opinion about the situation. We can say that only 44% of the variation of the BET index is explained by the variation of the Dija, which makes the share of the other factors count. For a more detailed analysis we should consider economical factors and indexes such as: Retail Sales, Industrial Production, Manufacturing Production, Consumer Confidence, Unemployment Rate, Initial and Continuing Jobless Claims.

For the ROTX index, the results show that it is correlated with both DOW and S&P 500, but S&P has a bigger influence, but smaller than in other circumstances. The highest values for the determination coefficient are for the BET-C – Dow and BET-C – S&P, their evolution explaining about 70% of the moves of the BET-C index. The standard error has the lowest values, which tells us that the observation data are not at distance of the line of regression. This means that this is representative for the real data. The b coefficient is positive which meant that at a modification of 1 point of the American index, BET-C modifies with 1,2 points. The value of the F test is relevant which makes the model acceptable.

For more accurate results, tests were made with the help of the statistics program SPSS, to detect the correlations. There is high level of tolerance, meaning a smaller determination coefficient, situation that appears, mostly due to the fact that the data base in use wasn't adjusted and contains extreme values. Usually a value greater than 1 reflects a weaker bond between x and the rest of the independent variables. From the analysis of the values registered by the inflation factor VIF, we can conclude that the independent variables are not characterized by lining, so there is the possibility that the variation of coefficients to be overrated.

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