The Z-Score Model for Predicting Periods of Financial Instability. Z-Score Estimation for the Banks Listed on Bucharest Stock Exchange

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Abstract. *Financial stability is an ongoing concern for practitioners, policy makers, but also for banks, especially in terms of quantifying it. Therefore, this paper consists of a theoretical approach in conjunction with an applicative study based on an alternative measure of financial stability, namely the Z-score model proposed by Altman. The Z-score model, although originally designed for manufacturing companies, has been repeatedly adjusted, depending on the activity of the company which applies the model and the development of the operating market. Thus, from a sample of banks listed on the Bucharest Stock Exchange, we determined the Z-score function for the period 2012-2014, outlining the evolution of their financial stability according to the classification results.*

Key words: financial stability, bankruptcy risk, Z-score model, ROA, Bucharest Stock Exchange

JEL Classification: D81, E58, G21

1. Introduction

Financial stability and systemic risk represent highly debated concepts which are difficult to quantify in the current financial post-crisis context, when the economy has been still experiencing the effects of the crisis and efforts have been made to enhance prudential supervision at the micro and macro level. Therefore, the measures of financial stability have to be emphasized in order to be put to practice not only by the systemically important banks, but also by every participant at the financial system. The core element of this paper is one the reference models for predicting insolvency risk, which is Altman's Z-score model, in its particular form for banks. In the first section of the paper, ''Measures of financial stability in literature'', we briefly present several approaches of financial stability quantification, from the financial soundness indicators recommended by the International Monetary Fund to the uni and multivariate analysis and the Z-score function, derived from a discriminant analysis. The next section,''Z-score estimation for the banks listed on Bucharest Stock Exchange in the period 2012-2014'', is an empiric approach of the Z-score model meant to predict financial instability for the banks listed on BVB, based on the financial ratios of the sample banks for the period of time 2012-2014. This model highlights the weaknesses of the banks' management in terms of liquidity and profitability. Even though the sample banks are not bankrupt, given the fact that the global financial crisis did not result in bankrupted banks, the Z-score model may be utilized as a disposable tool for measuring financial stability or instability in the Romanian banking system and to offer an early warning signal.

2. Methodology

The methodology used for this study consists both of a quantitative and qualitative analysis of the variables of the Altman's model, adjusted for banks in order to predict insolvency risk or financial instability, consequent on the sections of the paper and the appendices . The data were collected from the individual financial reports of the banks for the period of time 2012-2014 and the monthly bulletins of the Bucharest Stock Exchange regarding the capitalisation of the listed banks. Data processing was done using Ms Excel 2010 and then synthetized as graphic representations and tables.

3. Measures of Financial Stability in Literature

Financial stability represents a highly debated issue both in national and international literature and in central banks' policy, which are assigned to promote, ensure and maintain it as a fundamental objective. The reglementation framework of the monetary policy, the macro prudential regulation measures implemented by the Basel Agreements, same as the solidity of the financial institutions and their resilience to the wide range of specific and systemic risks authorize the outlook on the measures of financial stability and their validation nationally.

The necessity of 'building' methods to quantify financial (in)stability and predicting potential instability episodes on their basis has become stringent after the outburst of the global financial crisis in 2008; it is imperative to implement ex ante measures to the detriment of the post factum ones, which imply significant costs.

Balakrishnan (2011, p.44) defines such an instability episode as a "periods when the financial system is under strain and its ability to intermediate is impaired". Moreover, the periods of financial distress result in massive fluctuations of asset prices, an accelerated growth of risks and uncertainty, liquidity shortage, hence in a significant impairment of the financial system soundness.

Needless to say that the global financial crisis started in 2008 led to the bankruptcy of several financial 'colossi' (Merril Lynch, Lehman Brothers) and busted the myth of 'too big to fail'. Therefore, bank failure is not a concept anymore, but a reality, with an inherent probability of happening that involves every stakeholder of the financial system.

In literature, there are outlined different approaches to monitor and measure risks, uncertainty, instability, from simple to complex, from financial ratios to aggregate indicators(composite), which embed financial data from the micro and macro level, based on the idea that systemic risk is the core of interconnections in the financial system. Accordingly, there are a few authors that highlight alternative measures of financial stability, such as Albulescu (2010), who frames an aggregate indicator of financial stability based on micro and macroeconomic indicators. On the other hand, there are the Financial Stability Indicators(FSI), developed by EBRD, WB and IMF as a core set indicators, and the indicators used by Demigurc-Kunt and Detragiache(1998) and later adjusted by Davis and Karim(2008).

Moreover, there are the early warning systems(EWS) as a complementary measure of predicting potential threats for the financial system; along with the stress tests, the EWS simulate the effects of a pessimistic scenario on the financial system and, if interpreted properly, it can be an effective tool to maintain financial stability and diminish damage in case the distress episode becomes likely to occur.

Among these measures of financial stability, there is another method of quantitative analysis, such as Z-score, which is derived from a discriminant analysis, formulated as the linear between a non-metric dependent variable that defines two or

more groups and the linear combinations of several metric independent variables.(Jaba et al, 2006)

The Z-score function takes the form of a simple discriminant analysis, developed by E.I.Altman in 1968 and recurrently revised in order to apply to specific contexts and „users", such as manufacturing firms, non-manufacturers, emerging markets or banks.

4. The Evolution of the Z-score Model for Bankruptcy Risk Prediction

The insolvency risk represents a real threat for companies, irrespective of the sector in which they operate, and is has generated substantial research in order to predict it with a great accuracy and for as many years as possible in advance.

The pioneer of the empirical research of bankruptcy risk was Beaver(1966), who utilized univariate methods, based on the comparison of financial ratios between 79 bankrupted firms and 79 non-bankrupted firms, in order to test the bankruptcy risk prediction capacity of a model based on financial data. The financial ratios were chosen if they met the following criteria: wide usage in literature, good performance of their usage in previous research, the capability of the ratios to be defined as cash-flow elements (Siew Bee & Abdollahi, 2013, p.7986). Beaver also used "the misclassification rate as an index to gauge the predictive power of variables". Among these ratios, the highest prediction capacity and, inferentially, with the lowest misclassification rate(13% for one year prior to failure and 22% for five years before failure) was Cash-flow/Total debts. This ratio was followed by other ones with high accuracy in bankruptcy prediction, including Net Income/Total Assets, Total Debts/Total assets, Working Capital/Total Assets, Current ratio.

Discriminant analysis, uni or multivariate, represents a statistical method used to identify the discriminant variables which feature groups, so as to outline the differences among them, expressed as deviation and dispersion. Mathematically, DA is the sum betweenthe independent variables weighted with coefficients and a constant, as following:

$D = a1X1 + a2X2 + \ldots + anXn + c$, where

D is the discriminant function, a1,a2,..,an are the coefficients, X1,X2,…,Xn are the independent variables and c is the constant.

As previously mentioned, the purpose of DA is to discriminate between two samples, for example, bankrupted firm versus financially healthy firms, periods of fragility and periods of normality in terms of financial stability. Particularly, the Z-score function, a form of DA, aims at identifying the causality between bankruptcy, on the one hand, and macroeconomic and prudential factors, on the other hand, in order to enhance the techniques of credit, capital and liquidity risk management (Albulescu,2009,p.341). Subsequently, using Beaver's model as a benchmark which „established certain important generalizations regarding the performance and trends of particular measurements"(Altman, 2000, p.4), Altman advanced research and contributed to the variables' range that influence the bankruptcy risk, including four more variables(ratios): He developed the univariate method, whose main drawback consisted of emphasizing "individual signals of impending problems"(), and transformed it into a multivariate discriminant analysis (MDA). MDA offers a simultaneous view on the variables taken into account, as opposed to "sequentially examining its individual characteristics"(). Altman's method remains fundamental for predicting insolvency risk, especially for the manufacturing firms, given the fact that the model was first developed using as sample industrial firms, classified as bankrupt or no bankrupt. Due to the large number of variables considered relevant for the study in previous research, Altman managed to yield a model with five variables, regarded as significant in terms of liquidity, profitability, leverage, solvability and activity ratios.

The initial model proposed by Altman (Altman, 1968, p.594) was formulated as follows:

Z = 0.012 X1 + 0.014 X2 + 0.033 X3 + 0.006 X4 + 0.999 X5 (1), where:

X1 = Net Working Capital/Total Assets
X2 = Retained Earnings/total assets,
X3 = Earnings before interest and taxes/total assets,
X4 = Market value equity/book value of total liabilities,
X5 = Sales/total assets,

Z-score value decides whether the firm is situated in the safe, grey or distress zone, discriminating among these as it follows:

- If >2.99, the firm is situated in the safe zone and it is financially healthy;
- If 1.81<Z<2.99, the firm lies in the grey area and it carries a low risk;
- If Z<2.81, the firm is situated in the distress zone and carries a high risk of bankruptcy in a short time horizon(2 years).

This model was used and validated by Altman on predicting the bankruptcy of a sample consisting of 53 bankrupt firms and 58 nonbankrupt entities with a classification accuracy of 94%. However, further studies claim that the efficiency and accuracy of the model is much lower, of only 70%.

However, the model proposed by Altman has several drawbacks, especially due to its reductionist character, as it has been conceived for the industrial companies and, therefore, it cannot precisely predict the evolution of the companies operating in the financial sector. Moreover, we consider that the model being based on financial ratios stands as another disadvantage because the ratios are determined from the annual financial statements published by each company and they do not have a flawless predictive capacity.

An opponent of Altman's model (Hillegeist, 2004) claims that Altman's model does not take into account asset volatility, and "Such volatility is important because it measures the probabilities that the value of a firm's assets decline to an extent that it is unable to pay its debts"(Li & Rahgozar, 2012, p.13)

Z-score function has been constantly revised in order to adjust to new parameters, conditions of the business environment and, generally, to the global social and economic dynamics. Due to the fact that the banks operate in a different sector than the industrial companies which served as a sample for the initial prediction model, at the moment, the model utilized for the bankruptcy prediction of the firms from tha emergent countries and for the non-industrial firms is:

Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4 (2) (Altman, 1993,p. 122), where:

X1 = Net Working Capital/Total Assets
X2 = Retained Earnings/total assets,
X3 = Earnings before interest and taxes/total assets,
X4 = Market value equity/book value of total liabilities.

Hence, the revised model eliminates the X5 variable from the previous formulas so as to avoid the discrepancies among the indicators's value according to the operating sector of the firm.

In order to analyze the predictive bankruptcy risk which the banks are exposed to, numerous researchers have utilized the Z-score function, given its high accuracy level demonstrated by the empirical studies developed in the Italian banking system(Altman, Danovi, Falini, 2012), the french banking system (Lepetit, Strobel, 2014), the islamic banking system (Čihák, Hesse, 2008), but in several transnational

studies which tests in a comparative manner the health of the banking system from a few countries using the Z-score model.

The logit and the discriminant analysis models have prevailed over the recent decades regarding the application of bankruptcy risk prediction models for companies, some of which being adjusted to anticipate potential bank failures. Most studies developed for the banking system start from choosing a sample of bankrupt banks, a sample of financially healthy banks and these samples are tested to determine the accuracy and validity of the model. An addition was made to the tested models tested by Henage (1995) as it was based on a larger sample of banks, 425 respectively, grouped by the state of bankrupt or non-bankrupt. At the same time, he used five variables and strengthened the predictive capacity of the financial ratios, the calculation tool of z-score, thus carrying out their value in predicting bankruptcy by up to five years, with high precision.

5. Z-score Estimation for the Banks Listed on Bucharest Stock Exchange in the Period 2012-2014

Identifying and outlining banks' financial downturns have been the studied empirically for over 50 years, so that there have been developed numerous early warning systems as a "proxy" for banks' impairment.In the 2000's, the range of financial stability measures has been enhanced and widened, in order to be adjusted to the dynamic circumstances that the financial system undergoes.Therefore, the recalibration of the Altman model was necessary in order to become a predictor of bankruptcy for financial institutions as well.

As aforementioned, the model used for predicting financial distress is formulated as a discriminant function, as following (2):

$$Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4 \quad (2)$$

The revised five-variable Z-score has the coefficients changed and the cutoff score as well, as further explained.

The first variable(X1), **Working Capital/Total Assets (WC/TA),** represents a liquidity ratio reflecting the net liquid assets of the bank divided to the size of the bank in terms of assets. Working capital represents the difference between current assets and current liabilities. A decrease of this variable indicates signs of financial deterioration of the bank, whereas a high level of the indicator reflects a reduction of the debts as opposed to the current assets of the bank. Among other liquidity ratios such as current ration and quick ratio, this one is regarded the best indicator of discontinuity, as Altman stated. (Altman, 1969, p.595)

The second variable(X2), **Retained Earnings/Total Assets (RE/TA),** is "the account which reports the total amount of reinvested earnings and/or losses of a firm over its entire life"(Altman, 2000, p.10). This variable is connected to the 'age' of the bank and it is sensitive to the risk of manipulating the financial statements when it comes to declaring the destinations of the profit reported by the bank, which could be dividend payment or reinvesting the profit. In addition, this ratio outlines the capacity of the bank to accumulate profit based on its assets.

The third variable(X3), **Earnings Before Interest and Taxes/Total Assets (EBIT/TA),** entails "the ability of the company in generating profits from their assets base"(Othman, 2012,p.162). This ratio measures the productivity of a banks' total assets notwithstanding any interest or tax elements.

The fourth variable, X4(**Market Value of Equity/Book Value of Total Liabilities (MVE/TL),** expresses the financial stability of the bank on a long term, mainly "how much the firm's assets can decline in value (measured by market value of

equity plus debt) before the liabilities exceed the assets and the firm becomes insolvent". (Altman, 1968, p.595) This model embeds a market value that previous studies did not consider, contributing to the effectiveness of the model as a predictor of bankruptcy. A high value of this ratio lies in an aggressive debt policy; if the borrowing cost "outweighs the return that the company generates on the debt, it could even lead to the possible bankruptcy".(Chieng, 2013, p.29)

The Z-score value of a bank places the bank in one of the following areas:

Table no.1.

Company Classification According to the Z-score Values

Z-score Value	Safe Zone	Gray Zone	Risk Zone
< 1.1			
1.1<Z<2.66			
>2.66			

Source: authors' projection

Altman and Hotchkiss (2006) added a constant (3.25), derived from the average Z scores obtained by companies in the United States, enabling the standardization of the Z-function, so that negative values correspond to category D, the bankruptcy state.

They also conducted a study on the correlation between the score obtained by using Altman's model and the rating by Standard and Poor summarized in Figure 1:

Table no.2.

Z-score Function and its corresponding rating according to Standard and Poor

Safe Zone	RATING	Z-SCORE	RATING	Z-SCORE	Gray Zone
	AAA	>8.15	BB+	5.65	
	AA+	8.15	BB	5.25	
	AA	7.60	BB-	4.95	
	AA-	7.30	B+	4.75	
	A+	7	B	4.50	
	A	6.85	B-	4.15	Risk Zone
	A-	6.65	CCC+	3.75	
	BBB+	6.40	CCC	3.20	
	BBB	6.25	CCC-	2.50	
	BBB-	5.83	D	<1..75	

Source: own projection based on Altman and Hotchkiss(2006, p.314)

Moreover, we have applied the last version of Altman's model for the Romanian banks listed on Bucharest Stock Exchange(BSE), for the time horizon 2012-2014. The sample banks are Transilvania Bank(TB), BRD - Groupe Société Générale(BRD) and the Carpathian Commercial Bank(CCB), with a market share summing up to 41.3%, in terms of assets, as results from Figure 1:

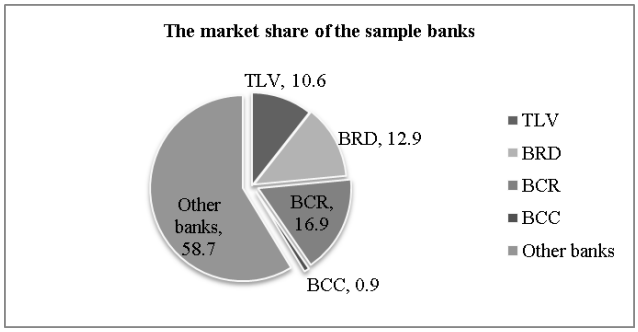

Figure 1. The Market Share of the Sample Banks in the Romanian Banking System in 2014

Source: authors' processing based on the annual statements of the sample banks in 2014

The values of the variables X1, X2, X3, X4 calculated are given in the appendices, for each bank over the period considered, from 2012 to 2014, and the variables' values are presented in Table 3:

Table no. 3.

The Values of the X1-X4 Variables for the Banks Listed on BVB during 2012-2014

		X1	X2	X3	X4
	2012	0.6937	0.0013	0.0467	0.0899
TLV	2013	0.8341	0.0013	0.0405	0.1256
	2014	0.1980	0.0014	0.0316	0.1559
	2012	-0.0818	0.0654	0.0173	0.1333
BRD	2013	0.2692	0.0546	0.0059	0.1496
	2014	-0.0450	0.0581	0.0157	0.1536
	2012	-0.2374	0.0048	0.0150	0.6553
BCR	2013	-0.2647	0.0478	0.0241	0.8760
	2014	-0.3082	0.0070	-0.0289	0.6517
	2012	-0.5634	-0.0206	0.0472	0.0283
BCC	2013	-0.5034	-0.0143	0.0392	0.0580
	2014	-0.5573	-0.0692	-0.0275	0.0741

Source: authors' data processing

In addition, we apply the formula mentioned above and standardize the results with a constant (3.25), which allows giving every value a corresponding rating, according to the rating classification presented above:

	TLV	BRD	BCR	BCC
2012	4.9630	-0.0669	-0.7534	-3.4162
2013	1.6012	2.1402	-0.4987	-3.0246
2014	1.6791	0.1614	-1.5090	-3.9888

	TLV (+3.25)	Rating	BRD (+3.25)	Rating	BCR (+3.25)	Rating	BCC (+3.25)	Rating

2012	8.2130	AAA	3.1831	CCC	2.4966	CCC-	-0.1662	D
2013	4.8512	BB-	5.3902	BB+	2.7513	CCC-	0.2254	D
2014	4.9291	BB-	3.4114	CCC+	1.7410	D	-0.7388	D

In Figure 2 we represent the Z-score evolution for the banks listed on BVB during the analyzed period.

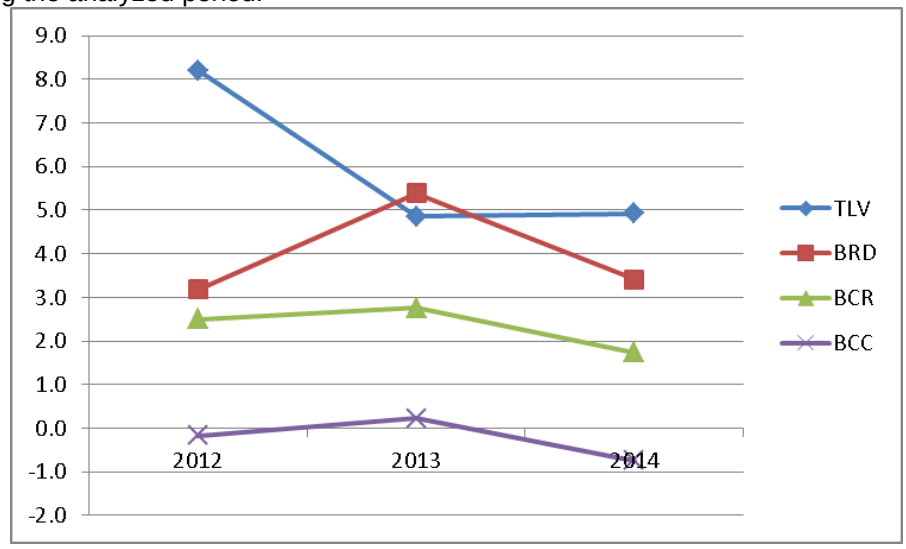

Figure 2. Z-score Values of the Listed Banks in the period of time 2012-2014
Source: authors' calculations

Figure 2 presents a downward trend for all the banks included in the study, but the Z-score values' evolution for each of them is different, since the variables used mainly depend on the total assets of banks, namely their size within the Romanian banking system and their ability to use assets efficiently and with high profitability. Even if none of these banks have failed in the period under review, the use of this financial stability measure can provide useful information to decision-making and, especially, signalizing fragility within banks in order to improve techniques for monitoring and managing banking risks.

The Carpathian Commercial Bank records negative values of the Z-score even after its standardizing. Due to the D rating category which corresponds to this value, the bank undergoes a difficult postcrisis period of time, characterized by liquidity shortage and financial loss.

Moreover, Transilvania Bank has been downgraded from the AAA category to the BB- one within only one year, and this is mainly caused by the abruptly descending trend of the net working capital, following the growth of the short term debts, which represent 88% in the banks' total debts.

Furthermore, another significant cause of the ratings' decay is recording repeated losses. Transilvania Bank is the only bank in the group of four which proves stability in terms of profitability and liquidity, while maintaining control of all the variables analyzed. BCR instead records losses of up to 2.6 billion Lei in 2014, which has damaged its financial position, stability and credibility to investors, consequently diminishing the market value of equity or market capitalization.

Even though the concept of bank failure has not been materialized in the recent history of the Romanian banking system, and the global financial crisis "erupted" in 2008 has not resulted in such "casualties" in our country, the fundamental objective

of the National Bank of Romania must be met under micro-prundentiality and alignment with European practices, this being done through the Basel Accords implemented so far. In this context, the models for financial collapse prediction up to five years should be permanently adjusted to the international background, so as to dynamically analyze the most vulnerable and significant variables.

6. Conclusions

The Altman model for predicting insolvency risk, intially ellaborated for the manufacturing firms, then repeatedly adjusted to the wide range of object of activity, including the banks' one, represents a solid basis for measuring financial instability of a company. This has been argued in numerous research papers developed in order to enhance the model for a higher accuracy. Nevertheless, financial stability quantification remains a sinuous issue, which does not benefit from a standard measure of early warning signal of a potential systemic crisis; therefore, the methods mentioned in this paper need to be complementary in order to compensate their individual limitations.

The limitations of the Z-score model are based on the fact that the formula encompasses financial ratios which totally depend on the individual financial statements of the banks, and it is well known that financial statement manipulation is an ongoing worldwide problem that can counterfeit bank's stability in order to avoid a state of distrust among potential clients, that would lead to a strong negative impact on the bank's activity.Another drawback of this model is the time horizon taken into account for predicting an episode of financial instability, namely up to five years, which is insufficient for the bank to operate consistent changes on its strategy.

Beyond its limits, Altman's model can only be beneficial to the bank's risk management as captures the evolution of key variables related to profitability, liquidity, stability in a word. From this point of view, from the sample banks listed on BSE 3 of 4 banks are in gray areas, with a high risk of financial instability that can generate bank failure. Transilvania Bank has been downgraded from an AAA rating in 2012 to BB- in 2013 and 2014, but remains afloat, while the Carpathian Commercial Bank is ranked in each of the analyzed years as D rating with negative Z-score values.

As numerous studies have been testing the validity of this model, namely the determination of Z-score accuracy with which predicts bank failure, and this can exceed 90% for a time horizon of 1 year, but also because Romanian bankrupted banks ceased operations primarily in the post-communist period, we consider that it is of real interest for the Romanian financial system to identify the impact of macroeconomic variables on the financial stability / instability of the banking system, measured using the model presented.

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Appendices

		TLV -lei- 2012	2013	2014
	Current Assets	20,536,248,000	31,475,202,000	35,027,240,000
X1	Current Debts	23,282,196	25,645,039,000	27,974,972,000
	Net Working Capital	20,512,965,804	5,830,163,000	7,052,268,000
	Total Assets	29,572,044,797	32,065,865,467	35,619,511,820
X2	Retained Earnings	37,614,400	43,004,300	49,016,000
	Total Assets	29,572,044,797	32,065,865,467	35,619,511,820
X3	Gross Profit	340,759,377	443,102,262	505,046,918
	Interest Expense	1,040,994,842	855,630,628	619,013,420
	EBIT	1,381,754,219	1,298,732,890	1,124,060,338
	Total Assets	29,572,044,797	32,065,865,467	35,619,511,820
X4	Capitalization	2,416,863,864.51	3,640,619,935	4,977,254,327
	Total Debts	26,877,106,835	28,983,371,686	31,917,550,060

		BRD 2012	2013	2014
	Current Assets	37,585,936,000	44,641,671,000	35,408,746,000
X1	Current Debts	41,503,832,000	31,969,719,000	37,441,337,000
	Net Working Capital	-3,917,896,000	12,671,952,000	-2,032,591,000
	Total Assets	47,924,059,000	47,079,103,000	45,179,978,000
X2	Retained Earnings	3,136,184,000	2,570,073,000	2,624,763,000
	Total Assets	47,924,059,000	47,079,103,000	45,179,978,000
X3	Gross Profit	-378,349,000	-648,578,000	49,936,000
	Interest Expense	1,206,235,000	924,538,000	661,452,000
	EBIT	827,886,000	275,960,000	711,388,000
	Total Assets	47,924,059,000	47,079,103,000	45,179,978,000
X4	Capitalization	5,651,871,320	6,272,113,662	6,097,888,283
	Total Debts	42,400,538,000	41,918,124,000	39,687,561,000

		BCR 2012	2013	2014
	Current Assets	25,954,590,000	23,300,058,000	22,125,726,000
X1	Current Debts	42,700,915,000	40,110,751,000	40,321,261,000
	Net Working Capital	-16,746,325,000	-16,810,693,000	-18,195,535,000
	Total Assets	70,531,183,000	63,509,963,000	59,037,134,000
X2	Retained Earnings	335,527,000	3,038,648,000	410,475,000

	Total Assets	70,531,183,000	63,509,963,000	59,037,134,000
X3	Gross Profit	-1,484,270,000	-224,290,000	-2,868,530,000
	Interest Expense	2,540,128,000	1,754,740,000	1,163,094,000
	EBIT	1,055,858,000	1,530,450,000	-1,705,436,000
	Total Assets	70,531,183,000	63,509,963,000	59,037,134,000
X4	Capitalization	41,548,078,529	49,083,160,000	36,962,800,000
	Total Debts	63,407,878,000	56,030,113,000	56,714,459,000

BCC

		2012	**2013**	**2014**
	Current Assets	1,573,266,905	1,531,376,951	1,111,888,546
X1	Current Debts	4,235,793,024	3,576,699,680	2,923,472,757
	Net Working Capital	-2,662,526,119	-2,045,322,729	-1,811,584,211
	Total Assets	4,725,920,079	4,063,065,992	3,250,453,950
X2	Retained Earnings	-97,582,543	-58,223,335	-224,984,441
	Total Assets	4,725,920,079	4,063,065,992	3,250,453,950
X3	Gross Profit	25,206,824	26,509,000	-183,033,659
	Interest Expense	197,876,015	-132,697,601	93,617,032
	EBIT	223,082,839	-106,188,601	-89,416,627
	Total Assets	4,725,920,079	4,063,065,992	3,250,453,950
X4	Capitalization	123,334,587	212,689,237	224,330,512
	Total Debts	4,361,728,637	3,666,472,104	3,026,836,662