

# THE FINANCIAL ANALYSIS OF THE PETROLEUM COMPANIES IN ROMANIA

## CASE STUDY

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### Keywords

Oil Industry,  
Z-scores  
Bankruptcy  
Financial Crisis

### JEL Classification

L71, Q40, G30

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### Abstract

*With the trigger of the Financial Crisis of the 2008, many companies in Romania and across the world had realized that the economic environment became very unstable. In order to compete in a turbulent external environment the managers of companies must know first the stability of the internal environment of the company. The analysis of the financial health is one the most important analysis because it reveals the financial problems that the company have or will have in the near future. This paper is a comparison between the potential financial health of the petroleum and gas companies that have economic activities in Romania. The analysis is made in order to show the impact that had the Financial Crisis upon the Romanian Energy Industry. The results can be used by the managers of the energy companies or other industries in order to identify the financial problems of the companies.*

## Introduction

The oil and gas industry represents the most important branch of the energy industry, because of the large use of the fossil fuels for transport, production of electric energy, petrochemical products and for domestic use. The petroleum industry is also split into two main branches:

- Upstream represents the exploration and exploitation of the oil reservoirs, which is influenced mostly by the demand and the price of the crude
- Downstream represents the refining, logistics and retail services, which is influenced mostly by the demand and prices of the fuels.

The Financial Crisis of the 2008 caught the petroleum companies, around the world, in a very vulnerable position, mainly because the fall of the demand for oil and petroleum products. This event has come after a long period of growing the demand for petroleum products and a high price for oil. That period was known as the Energy Crisis of the 2000s, began in 2003 when oil rose above 30 USD/barrel and lasted until July when oil reached the peak price of 147 USD/barrel. Shortly after the beginning of Financial Crisis, the oil crisis began to decline, reaching the 32 USD/barrel at the end of the 2008 (United States Energy Information Administration). A more complex analysis about the evolution of oil prices in the period of 2003-2009 was written by RamaprasadBhar and Malliaris A.G. (2011). This event has found petroleum companies unprepared for the new situation, because most of the investments were in the increasing of the production capacity and loans were taken with interest rates calculated to revenues of 2007-2008. A fact that resulted was the need for re-evaluation of the financial health the companies, according to the new situation.

## 2. Oil and gas industry in Romania

Romania petroleum industry was severely hit by the Financial Crisis of 2008, mainly

because of abrupt decline of consumption of the crude oil and the petroleum products such as fuels. But the production had declined more slowly than consumption, resulting in the reduction of imports for petroleum products and natural gas (Figure 1).

The decline in consumption resulted in the reduction of the turnovers of the petroleum companies in all primary activities like exploitation, refining and retail sell for fuels (Figure 2).

The turnovers from the retail of fuel grow at a faster rate than the extraction and manufacture turnovers mostly because of the stabilization of the need for the transport services, the growing number of the motor vehicles owned by population and the rising of the fuel prices.

The company that had the biggest market share of the Romanian fuels market been OMV Petrom, being followed by Rompetrol Group, OMV Romania, MOL, LukOil, ENI and others.

OMV PETROM has the both upstream and downstream activities in Romania. Rompetrol Group had the second place on the retail market, being mainly focused on the downstream activities like refining and retail. Even OMV is the biggest shareholder of OMV PETROM, compete with it for the Romanian retail fuel market, having the third place. Fourth place on the Romanian market is contested by LukOil, MOL and ENI, all three having close market shares.

Even companies as LukOil and ENI are more powerful on the international market than OMV PETROM, their retail policies in Romania didn't put them in a better position on the fuel market.

Potential competitors for energy market is represented by KazMunayGas who bought the majority share of Rompetrol Group and Chevron who want to enter in Romania for shale gas exploration and exploitation.

## 3. Methodology

The used methodology for this study is the Z-score formula for predicting bankruptcy,

developed by Altman (1968). Later Altman revisited the Z-score and developed two variations of the formula for manufacturer companies (Z'-score) and for non-manufacturer companies (Z''-score) that aren't listed in the stock market (Altman, 2000).

The Altman Z-score is a discriminator function that combines independent variables in order to analyse the bankruptcy probability.

The general z-score formula (Mandru, Khashman, Carstea, David, & Patrascu, 2010) is:

$$Z=C1*X1+C2*X2+\dots+Cn*Xn$$

Where:

$X_i$ = independent variable

$C_i$ =discriminator coefficient

The Altman Z-Score of listed companies:

$$Z=1.2*X1+1.4*X2+3.3X3+0.6*X4+0.999*X5$$

$X_1$ =(Current Assets – Current Liabilities)/Total Assets

$X_2$ =Retained Earnings/Total Assets

$X_3$ =Earnings before Interest and Taxes/Total Assets

$X_4$ =Market Value Equity/Total Liabilities

$X_5$ =Sales/Total Assets

Discrimination zones:

$Z' > 2.99$  – Safe Zone – probability that company could bankrupt is low.

$1.81 < Z' < 2.9$  - Gray Zone –probability that the company could bankrupt is medium,

$Z < 1.81$  – Distress Zone- probability that the company could bankrupt is high.

The Z'-Score was created by Altman (2000) in order to calculate the bankruptcy zones for the manufacturing companies, that aren't listed on the stock market.

The difference between this the classic Z-score for listed companies and the Z-score for unlisted companies is represented by the variable  $X_4$  who is calculated with book value of equity instead of the market value. The coefficients for the rest of the variables have been also changed because the impact of the variables is different in the Z'-score:

$$Z'=0.717*X1+0.847*X2+3.107*X3+0.420*X4+0.998*X5$$

$X_1$ =(Current Assets – Current Liabilities)/Total Assets

$X_2$ =Retain Earnings/Total Assets

$X_3$ =Earnings before Interest and Taxes/Total Assets

$X_4$ =Book Value Equity/Total Liabilities

$X_5$ =Sales/Total Assets

Discrimination Zones are also modified by modifying the grey zone lower boundary from 1.81 to 1.23.

$Z' > 2.9$  – Safe Zone – Low bankrupt probability

$1.23 < Z' < 2.9$  - Gray Zone – uncertainty about probability

$Z' < 1.23$  – Distress Zone – High Bankrupt probability

Data used was collected from the balance sheet and the income statement from the annual reports of the oil and gas companies that have economic activities in Romania, published 2010, 2011 and 2012.

#### 4. Study case

The primary company selected for this study is OMV PETROM, because it is the major player on the Romanian retail market and has both upstream and downstream activities. After the both Altman Z-scores (Classic Z-score and Manufacture Z-score) are calculated, the company's Z-scores were compared with Z-scores of the rest competitors on the Romanian retail market.

By using the data from Table 1 was calculated the Z-score for OMV Petrom for the year 2010:

$$Z=1.$$

$$2*X1+1.4*X2+3.3X3+0.6*X4+0.999*X5$$

$$X1=(1950.93-1727.85)/10755.91=0.02$$

$$X2=365.82/10755.91=0.03$$

$$X3=923.68/10755.91=0.09$$

$$X4=5870.92/5044.93=1.16$$

$$X5=18615.69/10755.91=0.54$$

$$Z=1.2*0.02+1.4*0.03+3.3*0.09+0.6*1.16+0.999*1.58=1.58$$

According to the Z-score analysis from the Table 8, the OMV PETROM Z-score increased by 0.17 points in 2011 and by 0.47 points in 2012, fact that resulted in existing from the Distress Zone, reaching

the score of 2.22 points which is higher the zone border of 1.81 points.

OMV Petrom's Bankruptcy Z'-Score for manufacturing companies, even is mostly used for unlisted companies, was calculated because petroleum companies are mostly influenced by the evolution of oil prices on the market and the sale of the fuels than the market values of their shares. One other factor is that the most OMV PETROM equity (51%) is controlled by OMV Group.

The only variable changed for Z' score was X4, because the market value equity was replaced with the book value equity.

$$Z' = 0.717 * X1 + 0.847 * X2 + 3.107 * X3 + 0.420 * X4 + 0.998 * X5$$

$$X1 = (1950.93 - 1727.85) / 10755.91 = 0.02$$

$$X2 = 365.82 / 10755.91 = 0.03$$

$$X3 = 923.68 / 10755.91 = 0.09$$

$$X4 = 5710.98 / 5044.93 = 1.13$$

$$X5 = 18615.69 / 10755.91 = 0.54$$

$$Z' = 0.717 * 0.02 + 0.847 * 0.03 + 3.107 * 0.09 + 0.42 * 1.13 + 0.998 * 0.54 = 1.32$$

The table 9 reveals that Z'-score wasn't in the uncertain zone, even in 2010, because  $1.32 > 1.29$ , but the value is smaller than the value of the original Z-score.

#### **Z-score analysis for all companies that have retail activities in Romania**

The competitors Z-score analyses were calculated with the same methodology as OMV PETROM, with the data collected in the Appendix B (Table 2, Table 3, Table 4, Table 5 and Table 6).

Z-score revealed that LukOil was the only company who had the Z-score in the SAFE Zone, having the score values above 2.99 for all three years. MOL was the Distress Zone in every of the studied years, but had a slight increase of the score and potentially could reach the Uncertain zone in 2013. Even ENI is the biggest company of the study; their performances weren't the best, exiting from the Distress Zone just in 2012. OMV had approximately the same evolution of the OMV PETROM, because exited from the Distress Zone in 2012. The Rompetrol Z-score wasn't calculated because of missing data about

market value equity in the 2010, 2011 and 2012 on the company web address or on the other stock market sites.

The main difference between the results of Z'-Score (table 11) in comparison with the result of Z-score (table 10) is that all companies were in the Uncertainty Zone even 2010. This fact resulted from the lower score needed for a company to exist the Distress Zone. Most of the scores Table 11 of have lower values than scores in Table 10. LukOil reached the score to enter into Safe Zone just in 2012, and the decline the Z'-score of 2012 was only by 0.02 points in comparison with Z-score who decline by 0.1 points. MOL had a different situation in 2012 because the decline of Z'-score was more abrupt in comparison with the decline of Z-score. Rompetrol's Z-score was mostly influenced by the big difference between sales and total assets. Rompetrol was the single companies who had negative values for X1, X2 and X3, because of the negative value of the Earnings Before Interest and Tax (EBIT), Net profit (Loss), Current Capital. ENI was nearly the border of the Distress zone in 2010 and 2011 but score begin to grow abruptly in 2012 to 1.70 points. OMV's Z'-score evolution took a different path the OMV PETROM Z'-score, resulting that the book value of equities weren't so much connected between them.

#### **Conclusion**

The Financial Crisis had a great impact on the activities of petroleum companies, because of the financial activities were unprepared, as the companies were used to the high prices and the high demand from the period of the Energy Crisis of the 2000s. The study revealed that the most of the oil companies that have economic activities in Romania were in great danger of bankruptcy in the 2010, but their financial situation improved after the companies started to adapt to the new economic environment.

Even the classical Z-score is more popular for investors and managers of the listed companies, the Z'-score should be used as well by managers in order to see the financial efficiency, because this score is influenced by the book value of equity instead of the market value equity.

In conclusion, researchers should create a Z-score who will contain or merge the Book value equity and the Market value equity in the variable X4, in order to describe both the prices of equity shares and the nominal value of equity in comparison with total liabilities. The big problem is that these two values of the equity aren't independent from each other. Because when a company issues new shares, at the nominal value, on the stock market, will result an increasing of the supply of shares which will decrease the market value of equity per shares. The book value of the shares is also influenced by the evolution of the market value which has a great impact on the demand for the new issued shares.

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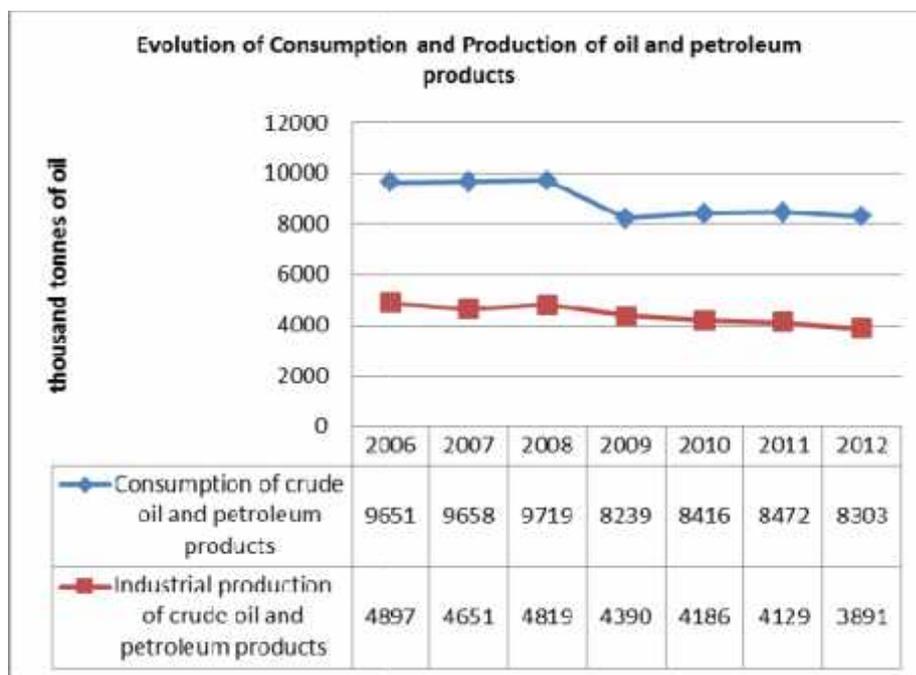
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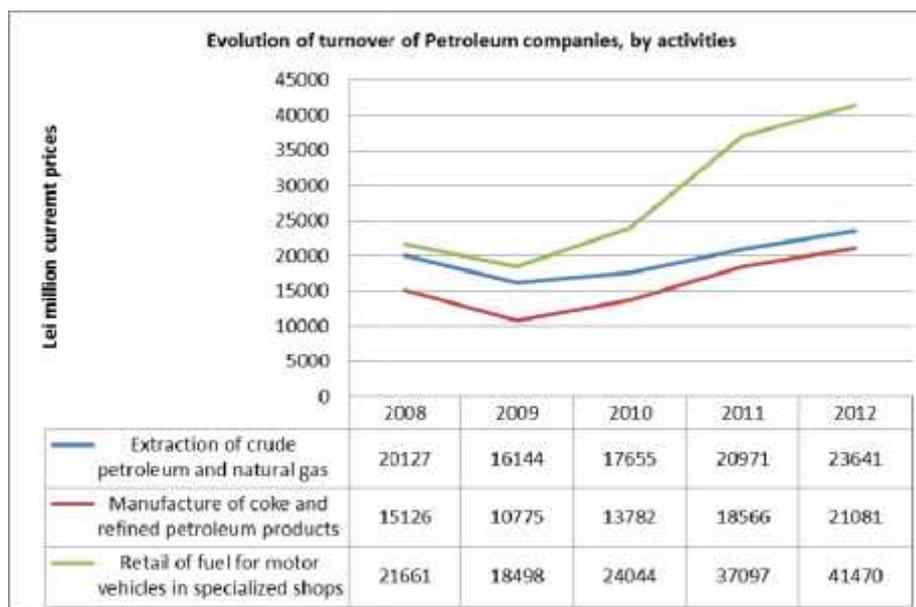
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Appendix A: Figures



**Figure 1. Evolution of Consumption and Production of crude oil and petroleum products in Romania**

Sources the Romanian Statistical Yearbooks (2007-2013) – National Institute of Statistics



**Figure 2. Evolution of turnover of petroleum companies by activity, Romania**

Sources the Romanian Statistical Yearbooks (2009-2013) – National Institute of Statistics

APPENDIX B: Financial profile

Table 1: Financial profile of OMV PETROM SA (Millions USD)

Indicators	2010	2011	2012
Sales	5759.45	6759.22	7812.13
Retained Earnings	365.82	595.13	705.70
Earnings before Interest and Taxes	923.68	1475.30	1684.52
Market Value Equity	5870.92	4910.03	7214.39
Book Values Equity	5710.98	6299.80	6963.39
Current Assets	1950.93	1634.07	1597.04
Current Liabilities	1725.85	1830.69	1812.86
Total Liabilities	5044.93	4606.60	4385.12
Total Assets	10755.91	10906.40	11348.51

Sources: Table calculated with data from OMV Petrom SA Annual reports of 2011 and 2012 converted from RON into USD, using the exchange rates for 2010, 2011, 2012 from <http://www.exchangerates.org.uk>.

Table 2: Financial profile Rompetrol (Millions USD)

Indicators	2010	2011	2012
Sales	1568.79	2058.23	2754.6
Retained Earnings	0	0	0
Earnings before Interest and Taxes	-31.29	-54.83	-28.38
Market Value Equity	-	-	-
Book Values Equity	170.19	89.50	317.68
Current Assets	454	425	586
Current Liabilities	432.19	469.41	592.34
Total Liabilities	711.20	759.51	704.68
Total Assets	881.39	849.01	1022.36

Sources: Table calculated with data from ROMPETROL Annual reports of 2011 and 2012 converted from RON into USD, using the exchange rates for 2010, 2011, 2012 from <http://www.exchangerates.org.uk>.

Table 3: Financial profile LukOil (Millions USD)

Indicators	2010	2011	2012
Sales	104956	133650	139171
Retained Earnings	7691	8197	8197
Earnings before Interest and Taxes	11533	13155	14070
Market Value Equity	47710	44890	40980
Book Values Equity	59608	67466	74188
Current Assets	20617	23529	24273
Current Liabilities	10775	11108	12453
Total Liabilities	24409	23726	24773
Total Assets	84017	91192	98961

Sources: Table calculated with data from the LUKOIL's Annual reports of 2011 and 2012, the Market value equity was taken from <http://www.ycharts.com>

Table 4: Financial profile MOL(millions USD)

Indicators	2010	2011	2012
Sales	20722.22	21944.36	25046.78
Retained Earnings	481.81	691.4247	481.65
Earnings before Interest and Taxes	1183.08	1039.80	999.73
Market Value Equity	7420	7581	6060
Book Values Equity	9516.01	9214.51	10192.02
Current Assets	6421.97	6680.82	7243.96
Current Liabilities	5390.06	5770.87	6190.71
Total Liabilities	12103.00	11294.69	11425.83
Total Assets	21619	20509.2	21617.9

Sources: Table calculated with data from the MOL's Annual reports of 2011 and 2012 converted from HUF into USD, using the exchange rates for 2010, 2011, 2012 from <http://www.exchangerates.org.uk>., the Market value equity was taken from <http://www.ycharts.com>

Table 5: Financial profile ENI (millions USD)

Indicators	2010	2011	2012
Sales	129312.2	139480.1	167917.7
Retained Earnings	4345.78	4605.73	5667.65
Earnings before Interest and Taxes	20721.10	20830.7	19832.82
Market Value Equity	79233	75121	87641
Book Values Equity	74586.36	78221.01	82774.89
Current Assets	46724.88	49470.16	64334.57
Current Liabilities	46639.22	46150.57	44858.12
Total Liabilities	101895.1	106921.3	101537.3
Total Assets	176481.4	185142.4	184312.2

Sources: Table calculated with data from ENI's Annual report of 2012 converted from EUR into USD, using the exchange rates for 2010, 2011, 2012 from <http://www.exchangerates.org.uk>.

Table 6: Financial profile OMV (millions USD)

Indicators	2010	2011	2012
Sales	31216.09	44105.70	56292.72
Retained Earnings	1223.46	1590.37	1844.87
Earnings before Interest and Taxes	3123.56	3230.41	4096.60
Market Value Equity	11938.53	9895.33	11773.51
Book Values Equity	15040.70	17360.73	19178.11
Current Assets	10096.86	10171.49	12467.85
Current Liabilities	8325.44	8418.31	9604.03
Total Liabilities	20318.40	19452.05	21104.14
Total Assets	35359.10	36801.13	40282.25

Sources: Table calculated with data from OMV' Annual report of 2012 converted from EUR into USD, using the exchange rates for 2010, 2011, 2012 from <http://www.exchangerates.org.uk>., the Market value equity was taken from <http://www.ycharts.com>

Table 7: Exchange rates used:

	31 December 2010	31 December 2011	31 December 2012
EUR/USD	1.3384	1.2952	1.3199
USD/HUF	207.49	243.49	220.48
USD/RON	3.2322	3.3456	3.3612

Source: <http://www.exchangerates.org.uk>.

### Appendix C: Z-scores

Table 8: Z-scores and X variables for OMV PETROM in 2010-2012 period:

	2010	2011	2012
X1	0.02	-0.02	-0.02
X2	0.03	0.05	0.06
X3	0.09	0.14	0.15
X4	1.16	1.07	1.65
X5	0.54	0.62	0.69
Z	1.58	1.75	2.22

Table 9: Z'-scores and X variables for OMV PETROM in 2010-2012 period:

	2010	2011	2012
X1	0.02	-0.02	-0.02
X2	0.03	0.05	0.06
X3	0.09	0.14	0.15
X4	1.13	1.37	1.59
X5	0.54	0.62	0.69
Z'	1.32	1.65	1.85

Table 10: Z-score for main retail fuel companies in Romania

Companies	Z-Score		
	2010	2011	2012
OMV Petrom	1.58	1.75	2.22
LukOil	3.42	3.68	3.58
MOL	1.58	1.72	1.70
ENI (AGIP)	1.77	1.72	2.12
OMV	1.62	1.89	2.20

Table 11: Z'-scores for main retail fuel companies in Romania:

Companies	Z'-Score		
	2010	2011	2012
Petrom	1,34	1,66	1,86
Rompetrol	1,75	2,15	2,75
LukOil	2,86	3,27	3,25
MOL	1,51	1,63	1,20
ENI (AGIP)	1,43	1,45	1,70
OMV	1,53	1,91	2,18