FINANCIAL RISKS – A CASE STUDY FOR AUTOMOTIVE INDUSTRY

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Abstract:

In general, financial risks – from operational risk to bankruptcy risk, are important distress for companies from every sector or industry. In this paper we try to measure the financial risk for the most important eight companies that activate in automotive industry. We propose a model in order to evaluate financial risk, by using discriminate analysis, which integrate five of the most important financial indicators: current ratio, return on investment, debt to equity, total assets turnover, working capital to total assets. Based on these results the rank will be very different beside the Global Fortune 500 rank that evaluates company only by the level of revenue.

 Key words: *financial risk, financial indicators, automotive industry, score model*

1.   Introduction

This study is based on previous research that we made in the field of financial performance in automotive industry. So, the study entitled "Evaluation of firm financial performance and competitiveness: evidences for automotive industy" was presented by the authors on a International Finance Conference in septembre 2013. The present paper tries to complete our previous research because we think that is very important to analyse the financial risk in order to create financial performance and competitiveness. More than that, it is also very important to stay related with de industry by making comparison and establish benchmarks.

According to Moyer, McGuigan, Rao (2007), "profitability ratios measure how effectively a firm`s management is generating profits on sales, total assets, and, most importantly, stockholders` investments". More than that, "financial ratios are meaningful when it is compared with some standard, such an industry ratio". But, the financial risks

and also the profitability of a firm are affected by: "result from its operations and how these are financed"" (Klingenberg, Timberlake, Guerts, Brown, 2013), on one hand, and differences in financial risks between companies may be given by the company size and leverage, on the other hand (Mayoral, Degura, 2011). Beside that, Besides that, the most common reasons for a company financial risk and distress are management inadequacies and incompetence because the ultimate cause of failure is often represented by the lack of cask or running out of liquidities (Alman and Hotchkiss, 2006).

Under these circumstancias, companies have to face financial distress in several ways: "selling major assets, merging with another firm, reducing capital spending, issuing new securities, negotiating with banks and other creditors, exchanging debt to equity, filing for bankruptcy" (Ross, Westerfield, Jaffe, Jordan, 2008). Some of these are related to firm assets, and some with firms financial capital.

2. Data and methodology

In order to analyse and evaluate the company's financial risk it will be used some financial indicators that are very well known in the field and which represent important parts of assets, liabilities and shareholders' equity. The financial indicators are: current ratio (liquidity), return on investment, debt to equity, total assets turnover, working capital to total assets. This paper tries to propose a model in order to measure the financial risk for automotive industry based on these financial indicators.

The automotive sector is concentrated in the three triad regions of the United States, Europe and Asia. According to Rugman (2005), "Toyota, General Motors and Volkswagen are locked in a battle for global supremacy and the bragging rights and scale that come with being the world's biggest automaker. Companies` profit strategies and conceivably their productive models will have been constructed in a framework enabling the growth strategy and model typifying their country or region of origin. The only chance they have for lasting profitability is if these strategies and productive models are compatible with the growth strategies and models found in the countries where they move".

In this context, companies are very expose to a lot risks, form market risk to operational risk, even bankruptcy risk. All this will have a huge impact on financial risk. But, "companies might decide that their core business risk (say chip manufacturing) is all they want exposure to" (Christoffersen, 2012); especially in this industry.

We choose for the case study eight of the most important carmakers in the world, such as: Toyota, Volkswagen, General Motors (GM), Ford, Honda, Nissan, Volvo, and Tata (3 from Japan, 2 from USA, 1 from Germany, 1 from Sweden, and 1 from India).

According to their balance sheet and income statement for the fiscal year 2012, Toyota has registered de higher level of revenues and Tata the lowest level. But in terms of net income, Volkswagen is a leader (see Table 1).

Table 1. Financial information (Global Fortune 500, Fiscal year 2012)

Company	Revenues	Net income	Total Assets	Shareholders' equity	Current Assets	Current Liabilities	Total Liabilities
Toyota	266.30	11.60	377.50	129.30	146.7	158.8	248.2
Volkswagen	248.90	28.10	408.20	102.20	149.1	94.1	306
GM	152.30	6.20	149.40	36.20	68.2	71.7	113.2
Ford	134.30	5.70	190.60	15.90	129.1	61.8	174.7
Honda	100.90	2.70	143.10	53.50	57.6	49.1	89.6
Nissan	119.50	4.30	134.50	38.30	80.3	58.4	96.2
Volvo	45.20	1.60	52.10	13.20	23.5	21.9	38.9
Tata	34.40	2.80	28.40	6.40	12.6	13.9	22

Source: http://money.cnn.com/magazines/fortune/global500/index.html; Data are in Billions USD

Based on data from Table 1 we calculated the 5 financial indicators that will be used in construction of model, such as:
- ✓ CR (current ratio) = Current Assets / Current Liabilities
- ✓ ROI (return on investment) = Net income / Total Assets
- ✓ DTE (Debt to Equity) = Total Liabilities / Shareholders` Equity
- ✓ TAT (Total Assets Turnovers) = Revenues / Total Assets
- ✓ WCA (Working Capital to Total Assets) = (Current Assets – Current Liabilities)/ Total Assets

The results are in Table 2.

Table 2. Financial indicators

Company	CR	ROI	DTE	TAT	WCA
Toyota	0.92	0.03	1.92	0.71	-0.03
Volkswagen	1.58	0.07	2.99	0.61	0.13
GM	0.95	0.04	3.13	1.02	-0.02
Ford	2.09	0.03	10.99	0.70	0.35
Honda	1.17	0.02	1.67	0.71	0.06
Nissan	1.38	0.03	2.51	0.89	0.16
Volvo	1.07	0.03	2.95	0.87	0.03
Tata	0.91	0.10	3.44	1.21	-0.05
Average	**1.26**	**0.04**	**3.70**	**0.84**	**0.08**
STD	**0,384**	**0,024**	**2,811**	**0,187**	**0,125**

Source: own calculation

For every indicator we identify the highest and the lowest value for the discriminante analysis. The proposed model is based on the following equation:

$$FRS = \alpha_1 CR + \alpha_2 ROI + \alpha_3 DTE + \alpha_4 TAT + \alpha_5 WCA + \beta$$

Where,

FRS – Financial Risk Score

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ – parameters

β - error

Table 3. Results for α and β

Financial indicators	Mimimum level	Maximum level	α	β
CR	0.91	2.09	0.847	-0.771
ROI	0.02	0.10	12.5	-0.25
DTE	1.67	10.99	-0.107	1.179
TAT	0.61	1.21	1.66	-1.016
WCA	-0.05	0.35	2.5	0.125

Source: own calculation

The final form of the FRS is given by the equation:

$$FRS = 0.847CR + 12.5ROI – 0.107DTE + 1.66TAT + 2.5WCA – 0.733$$

According to the FRS model and using the data from Table 2 we calculate the FRS for every company (see Table 4). These results place Tata on the first position on the rank and Toyota on the last position.

Table 4. FRS – Financial risk score

Company	FRS	Rank
Toyota	1,3191	8
Volkswagen	2,4982	2
GM	1,8905	5
Ford	2,2869	4
Honda	1,6362	7
Nissan	2,4444	3
Volvo	1,7614	6
Tata	2,7956	1
Average	**2,0790**	
STD	**0.471**	

Source: own calculation

There is not very surprising if we analyse the results in comparison with industry average (see Table 5).

Table 5: Comparative analysis

FRS								
Industry Average	Toyota	Volkswagen	GM	Ford	Honda	Nissan	Volvo	Tata
2.0790	1.3191	2.4982	1.8905	2.2868	1.6362	2.4444	1.7614	2.7956
Assessment	Lowest score	Better	Worse	Better	Worse	Better	Worse	Highest score
Current ratio – CR								
Industry Average	Toyota	Volkswagen	GM	Ford	Honda	Nissan	Volvo	Tata
1.26	0.92	1.58	0.95	2.09	1.17	1.38	1.07	0.91
Assessment	Lowest score	Better	Worse	Highest score	Worse	Better	Worse	Worse
Return on Investment – ROI								
Industry Average	Toyota	Volkswagen	GM	Ford	Honda	Nissan	Volvo	Tata
0.04	0.03	0.07	0.04	0.03	0.02	0.03	0.03	0.1
Assessment	Worse	Better	Average	Worse	Lowest score	Worse	Worse	Highest score
Debt to equity – DTE								
Industry Average	Toyota	Volkswagen	GM	Ford	Honda	Nissan	Volvo	Tata
3.70	1.92	2.99	3.13	10.99	1.67	2.51	2.95	3.44
Assessment	Better	Better	Better	Worse	Better	Better	Better	Better
Total Assets Turnover – TAT								
Industry Average	Toyota	Volkswagen	GM	Ford	Honda	Nissan	Volvo	Tata
0.84	0.71	0.61	1.02	0.70	0.71	0.89	0.87	1.21
Assessment	Worse	Lowest score	Better	Worse	Worse	Better	Better	Highest score
Working capital to Total Assets – WCA								
Industry Average	Toyota	Volkswagen	GM	Ford	Honda	Nissan	Volvo	Tata
0.08	-0.03	0.13	-0.02	0.35	0.06	0.16	0.03	-0.05
Assessment	Worse	Better	Worse	Better	Worse	Highest score	Worse	Lowest score

Source: own calculation and interpretation

3. Conclusion

Sometimes by taking financial risks companies can gain more profit or revenues, transforming these risks into financial opportunities. In order to satisfy the needs of all stakeholders CEOs have to identify financial opportunities, with lower costs, opportunities that will eliminate some of financial risks. More than that, it has to be estimated or calculated the optimal level of every form of financial capital (shareholders equity, long term debt or current liabilities), on one hand, and the optimal structure of assents (fixed, current) and working capital, on the other hand.

Even if, automotive industry managed to recovered after the financial crisis and at the end of the 2012 fiscal year all 8 companies have registered net income, they have some problems like: liquidity in case of Toyota, General Motors, Honda, Volvo, Tata; return on investment, only Volkswagen and Tata have higher score than average; total assets turnovers for Toyota, Volkswagen, Ford and Honda. Also, Toyota has the worst score for debt to equity (companies with more debt are expose to financial risks earlier than companies with less debt). No company has better or worse score than average at all 5 indicators. Despite that, the rank look different if will aggregate more than one variable. Even so, the automotive industry remains an industry that generates a lot of income at every level – microeconomic, macroeconomic, and global. The carmakers are all over the place.

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