COMPARATION OF MARKET VALUE ADDED CREATED BY AUTOMOTIVE COMPANIES IN CZECHIA, SLOVAKIA AND GERMANY

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Abstract

The revenue generated by the German automotive industry is the largest in the EU-27 region. However, using the measurement of the ratio of automotive industry revenue to GDP, Slovakia moves into the top position, followed by the Czech Republic. In all three countries, the largest automotive producers are companies that are part of the Volkswagen Group. Our interest is in determining comparability in the ways the automotive industry generates value for owners in these three economies. The parameter in question is market value added (MVA). There are two attitudes towards MVA measurement - ex post and ex ante. The latter, ex ante, is the methodology used in this paper. We analyse the development of the key financial value drivers of 3,233 automotive companies based in Germany, the Czech Republic and Slovakia and subsequently assume their rate of growth. The aim is to quantify the MVA of the automotive industry of the countries in question as a present value of economic value added (EVA) expected to be created by the industry in the future and to identify the differences in the way local businesses generate value for their owners.

Key words: value drivers, value creation, market capitalization, EVA

JEL Code: F37, F47, G32

Introduction

Market value added (MVA) is the difference between the market value of a company at the valution date and the capital employed (net operating assets). According to the International Valuation Standards (IVS) the market value is understood as “the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.” The market value of companies in a given industry can be derived from the market price of the publicly traded

shares. The problem is that not all companies are publicly traded. Moreover, if they are publicly traded, it cannot necessarily be guaranteed that the market capitalization (multiple of the market price and the number of shares outstanding) corresponds to the market value defined above. Market value is rarely the same as the market price. Among other reasons, speculative mania, greed, and panic (i.e. market sentiment) prevent investors from taking knowledgeable and prudent action and prevent the market price from reflecting market value. Consequently, the theory of fundamental analysis refers to the difference between market price and intrinsic value which results in the ex post and ex ante approaches to determining the value of a company as well as MVA.

The ex post approach is based on the knowledge of the share price (market price). MVA is then quantified as a difference between the market capitalization of a company and its net operating assets (book value of equity and interest-bearing debt) at the valuation date. Market value of the company is the sum of the capital contributed by the creditors (interest-bearing debt) and its market capitalization. MVA per share is the difference between the share price and the book value of equity per share. Ex ante is based on the income-based valuation approach (so called forward-looking valuation), in which the value of the company is determined based on the discounted amount of the expected future benefits. These benefits are expressed by different economic parameters, usually either by cash flows available for the shareholders (and creditors) or by a certain category of profit.

In this paper, an ex ante approach based on the economic added value method (EVA) is used for the purpose of quantifying the MVA. The amount of the MVA is quantified as the present value of EVA expected to be created in the future. EVA is quantified as an after-tax operating profit exceeding the costs of equity and interest-bearing debt. Our research focuses on the MVA of the Czech automotive industry, which is compared with the results of Slovakia and Germany - the countries for which the automotive industry is the most important for the national economy between EU-27 countries. We measured automotive industry turnover to GDP and identified Slovakia, as the country with the biggest share among EU-27 countries (34,4 % in the year 2018), followed by the Czech Republic (25,1 %) and Germany (23,3 %). Alternatively, Germany is the country with the highest absolute amount of automotive industry turnover per capita (8 942,9 EUR in the year 2018) followed by the Czech republic (5 557,5 EUR in the year 2018) and Slovakia (4 963 EUR in the year 2018)[1]. In the automotive industry of all three countries, Volkswagen Group plays a crucial role from

[1] authorial computation according to Eurostat and Amadeus database accessed in April 2020

the perspectives of revenue and number of employees. The biggest local company in Germany is Volkswagen AG with a 32 % share of total revenue in the industry (in 2018). In Slovakia, the biggest local company in the industry is Volkswagen Slovakia, a.s. with a 34 % share of total industry revenue (in 2018). In the Czech Republic, the biggest company, with a 32 % share of the total industry revenue (in 2018), is ŠKODA AUTO, a.s. – a wholly owned subsidiary of the Volkswagen Group. Shares of Volkswagen Group are publicly traded, as are the shares of the two other biggest German automotive companies – Daimler AG and Bayerische Motoren Werke AG. In the last two years, we can see interesting development of the key valuation ratio price-to-book (P/B), or market capitalization to the book value of equity (compare with the MVA per share mentioned above). The book value is mostly determined by the historic cost of assets and not by their earning capacity. As shown in Table 1, for the biggest automotive producers, the ratio has gone below one in recent years, which means that MVA measured ex post is negative. What does the ex ante approach to MVA say?

Tab. 1: Basic overview of automotive industry in the countries in question

Country	12/2015	12/2016	12/2017	12/2018	12/2019
Volkswagen AG (VLKAF)	0,702	0,712	0,812	0,611	0,754
Daimler AG (DDAIF)	1,622	1,317	1,248	0,753	0,848
Bayerische Motoren Werke AG (BAMXF)	1,478	1,218	1,115	0,805	0,842

Source: https://ycharts.com

This paper adds new perspective to our previous research (Krabec and Čižinská, 2020). Value creation in the automotive industry is among others analyzed by (Brandenburg, 2016), (Dietl et al., 2009), (Pavelková et al., 2018) and (Pavlínek and Ženka, 2015).

1 Data and Methodology

For this paper, we used publicly available information only. Our pimary sources are the database of Damodaran (http://people.stern.nyu.edu/adamodar/) and the Amadeus database of comparable financial information for public and private companies across Europe (published by Bureau Van Dijk / A Moody's Analytics Company). We used selected available financial information about 3 233 companies that largely operate in the following industries: manufacture of motor vehicles (NACE Rev. 2 – 291), manufacture of bodies (coachwork) for motor vehicles, manufacture of trailers and semi-trailers (NACE Rev. 2: 292), and manufacture of parts and accessories for motor vehicles (NACE Rev. 2: 293). The results of

individual companies (687 companies in Czechia, 2 018 companies in Germany, 528 companies in Slovakia) were summed up for each country and represent the key performance indicators of local automotive industry in each country in question.

To assess MVA we used the EVA valuation method (income-based valuation approach), the detailed methodology of which is described, for example, by Mařík et al., 2018. Within this method, MVA is mathematically equal to the present value of the stream of EVA expected to be generated in the future of a company. In this article we adopted the simplified assumption, that the companies in question will have a perpetual life (i.e. going concern) and that their key value drivers will grow at a constant growth rate for the whole future period. Taking these assumptions into consideration, MVA at a valuation date (t – 1) can be calculated as a share of EVAt and the difference between WACC and g (WACC – g).

EVA_t is a company's EVA for any year t and it is equal to cost of capital subtracted from the net operating profit after tax created at the year t (NOPATt). Cost of capital is a result of a multiple of capital employed at the beginning of the year t (CE_{t-1}) and the weighted average cost of capital at the year t ($WACC_t$). Weighted average cost of capital represents the required rate of return expected by the shareholders and creditors. We use the share of interest paid on non-current liabilities and loans to assess the before-tax cost of debt. For the cost of equity, we use the Capital Asset Pricing Model (CAPM) based on Damodaran's data files for the time period in question. Cost of equity is the return that shareholders require for investing in a business. It equals the sum of the risk-free rate (r_f) and the premium expected for risk. Risk premium is a product of levered industry beta (β_L) and the current risk premium for a mature equity market (ERP_{AAA}). To reflect the country risk, we add country risk premium (CRP_{Rating}) which is a product of Moody's Rating-based Default Spread and relative equity market volatility.

$$r_E = r_f + \beta_L ERP_{AAA} + CRP_{Rating} \qquad (1)$$

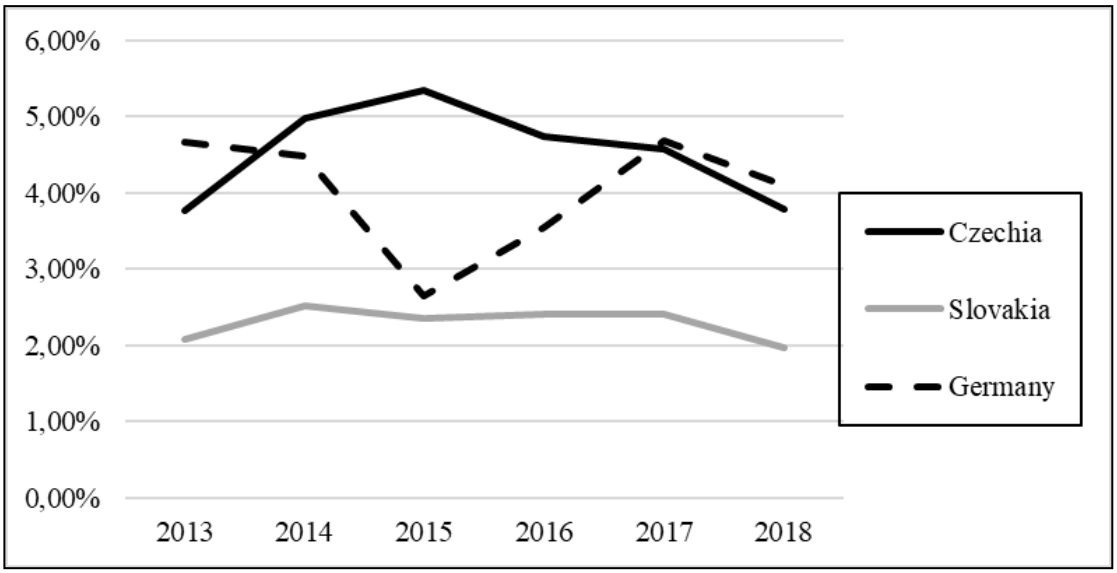
Unlevered industry beta (β_U) is determined as a weighted average of unlevered beta of the auto and truck industry and the auto parts industry in the region of Western Europe according to Damodaran's data for the time period in question. To compute levered beta (β_L) we apply the conventional approach, according to which beta of equity can be written as a function of the unlevered beta and the debt-equity ratio:

$$\beta_L = \beta_U (1 + (1 - t_{ef}) \frac{D}{E}) \qquad (2)$$

2 Results and Discussion

In this paper, we used non-adjusted accounting data presented in the Amadeus database. For NOPAT estimation, we used after-tax EBIT as recorded by the Amadeus database. Though potential for minor error can exist here, this attitude was chosen because the Amadeus database lacked relevant information inputs for the modification of the accounting operating profit to NOPAT. We used effective tax rate (t_{ef}) measured from the share of profit after tax (EAT) and profit before tax (EBT). Figure 1 represents the after-tax operating profit margin calculated as the share of NOPAT and operating revenue (sales) in the period 2013 – 2018. The after-tax operating profit margin ranges between 2,0 % and 5,4 %. In all three countries, the negative trend is apparent in 2018. The highest margin is reached by Germany. However, there was negative divergence in the period 2014 – 2016, when the Czech Republic values were higher. The after-tax operating profit margin of Slovakia is the lowest and reaches approximately the half level of Czech and German results.

Fig. 1: After-tax operating profit margin of automotive industry in selected countries



Source: authorial computation according to Amadeus database

Czechia and Slovakia can be described as integrated peripheries of the current world automotive industry that are part of the global production network. The position of the automotive industry in these countries reflects their specific involvement in global automotive production networks, where foreign direct investments play a key role (Pavlínek, 2017). The importance of the automotive industry for the German economy is determined by different

factors than in the Central and Eastern European countries. Germany focuses on the luxury (premium) segment, where revenues are higher than in other segments; therefore, local automotive companies generally achieve higher operating profit margins in Germany than in other European countries. Currently, German automotive controls 75% of the premium segment of the world market (Bormann et al., 2018). Germany has also the dominant position in the vertical global production network where local automotive companies, through ownership control in the above-mentioned integrated peripheries, promote and control the focus on high value-added production (Pavlínek and Ženka, 2015). Two thirds of German automotive sales are conducted abroad, as well as one third of the German industry in total (Bormann et al., 2018).

Capital employed (CE) consists of equity (E) and interest-bearing debt (D). From the perspective of assets, it equals to the sum of long-term assets (LTA) and net working capital (NWC). Given the nature of the information available from the Amadeus database, all calculations are based on the assumption that all fixed assets and net working capital items can be considered necessarily required for the normal operations of a business in question. Net working capital is calculated as the sum of cash and equivalents, receivables, inventories and other current assests minus the current liabilities.

The development of indicators of assets turnover is shown in the table 3. Turnover ratios reflect the share of invested capital (or fixed assets or net working capital) on sales and express the amount of sales generated from one monetary unit of capital employed. Slovakia automotive has the highest values of turnover ratios. It needs the lowest volume of fixed and NWC to generate sales. In addition, NWC has been negative in the last two years. This means that short-term non-interest-bearing liabilities cover not only current assets but also part of the fixed assets. This aggressive strategy is efficient since it reduces the absolute amount of the cost of capital employed. On the contrary, Germany has the lowest values of turnover ratios. The operation of companies in the automotive industry is particularly demanding, especially on the fixed assets.

Tab. 2: Turnover and debt ratios of automotive industry in selected countries

Country	Ratio	2013	2014	2015	2016	2017	2018
Czechia	Capital Employed Turnover	1,67	1,77	1,84	1,85	1,88	1,90
	Fixed Assets Turnover	3,59	3,89	4,28	4,49	4,65	4,33
	NWC Turnover	15,63	16,33	11,72	10,16	12,77	14,43

Country	Ratio	2013	2014	2015	2016	2017	2018
Slovakia	Capital Employed Turnover	2,54	2,45	2,53	2,45	2,22	2,36
	Fixed Assets Turnover	5,20	5,12	5,49	5,35	4,49	4,72
	NWC Turnover	222,41	36,99	44,05	47,32	-241,33	-307,04
Germany	Capital Employed Turnover	0,76	0,76	0,77	0,72	0,73	0,68
	Fixed Assets Turnover	1,85	1,89	1,92	1,82	1,93	1,79
	NWC Turnover	2,66	2,73	2,78	2,60	2,37	2,02

Source: authorial computation according to Amadeus database

Table 3 displays WACC and EVA created by automotive industry companies in the period 2016 – 2018. Table 3 also shows the debt ratio, which is by far the highest in the German automotive industry. The WACC of all three countries is comparable (around 8 %). German Automotive companies use a significantly higher share of debt in their capital structure, and additional financial risk increases cost of equity through leveraged beta. However, the effect of beta levered in the cost of equity of German automotive was also more than offset by adding low cost debt to the capital structure. At the same time, Germany got the best rating over the whole period (AAA according to Moody's). Rating of Czechia (A1) and Slovakia (A2) resulted in additional country risk premium (0,81 % – 1,21 %). The EVA of the automotive industry reflects the declining trend in all three countries. The highest values are reported by the automotive industry in Czechia, where the EVA is more than five times higher than the EVA of Slovakian automotive. At the same time, the sales of the Czech automotive industry are only about twice as high as the sales of the Slovak automotive companies.

Tab. 3: Cost of capital employed and EVA of automotive industry in selected countries

Country	Ratio	2016	2017	2018
Czechia	Debt / Capital Employed	13,5%	13,2%	16,1%
	Levered cost of equity	9,317%	9,370%	8,655%
	After tax cost of debt	2,64%	2,75%	2,70%
	WACC	8,42%	8,49%	7,70%
	EVA (th. EUR)	1 033 734	1 157 153	782 630
Slovakia	Debt / Capital Employed	27,2%	24,7%	22,9%
	Levered cost of equity	11,385%	10,920%	9,708%
	After tax cost of debt	1,50%	1,45%	1,67%
	WACC	8,69%	8,58%	7,87%
	EVA (th. EUR)	216 865	181 288	142 729

Country	Ratio	2016	2017	2018
Germany	Debt / Capital Employed	61,2%	58,5%	61,4%
	Levered cost of equity	19,872%	17,985%	17,046%
	After tax cost of debt	0,77%	1,13%	0,89%
	WACC	8,18%	8,13%	7,12%
	EVA (th. EUR)	-25 899 333	-19 674 541	-19 557 208

If we assume the stability of relationships between key value drivers in the future as well as the stability of WACC, then MVA as of 12/2018 reaches the values displayed in table 4. The values are based on the assumption of constant rate of growth of sales, EBIT and capital employed 2 – 5 %.

Tab. 4: Market value added as of 12/2018 compared to the book value of equity

Country	Expected rate of growth	MVA (th. EUR)	Book value of equity (th. EUR)
Cz4echia	2%	13 740 654	13 149 582
	3%	16 666 858	
	4%	21 176 622	
	5%	29 032 247	
Slovakia	2%	2 432 953	4 994 870
	3%	2 932 892	
	4%	3 691 432	
	5%	4 979 217	
Germany	2%	-382 248 712	316 949 040
	3%	-475 109 639	
	4%	-627 566 391	
	5%	-924 097 855	

According to Damodaran's data, the expected growth in EBIT for auto & truck (Western Europe) at 1/19 is 4,16 %. Average growth rate of EBIT in the period 2016 – 2018 was 6,5 %. However, the growth was negative in 2018 in Czechia and Germany and reached only 3,5 % in Slovakia. Based on this assumptions, MVA of the Czech automotive industry ranges from the one to two multiple of the book value of equity. Taking the future earnings potential of the Czech automotive companies into consideration, more than half of the total value of the automotive industry will be created in the future. Also, the results of the Slovak automotive industry prove the value creation when the MVA reaches 0,5 – 1 multiple of the

book value of equity. On the other hand, the results of the German automotive industry indicate that the value for the owners is not created in the long run and that if the companies continue their operations in the future, the value of the previous investments of the shareholders (i.e. book value of equity) will be eliminated. This unexpected finding is in accordance with the findings of Brandenburg (2015) who concluded that the European automotive industry, in the long run, struggles with significant performance deteriorations and considerable value losses.

Conclusion

In this paper, the ex ante MVA of autmotive industry is calculated as the present value of future EVA generated by the companies operating in the industry. The Czech Republic has the highest EVA, about five times higher than the EVA of the Slovak automotive industry. The main reason for this result is the high operating profit margin of the Czech automotive industry. Companies in Slovakia use their fixed assets and net working capital more efficiently compared to the Czech Republic and benefit from the positive effect of debt on the WACC. However, the additional premium is given by the lower rating of Slovakia, which raises the cost of capital employed. Our key finding relates to the EVA of Germany, which is negative in the long run. As a result, MVA is also negative and if the 5% rate of growth of sales, EBIT (NOPAT) and capital employed is assumed, it exceeds the book value of equity nearly three times over. German automotive companies seem to be destroying the value of previous shareholder investments. The relatively high level of operating profit margin is outweighed by the low efficiency of asset utilization (according to the capital employed turnover). Taking our findings into consideration, it seems that the share market is even over optimistic in the share price valuation, when price to book value values the biggest German automotive companies at slightly under one.

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