

What impact crises have on market share and to what extent do the U.S. use crises to defend its market? A study about the Volkswagen diesel- and CO2-issue

A Master's Thesis submitted for the degree of
"Master of Business Administration"

supervised by
Dipl. Ing. Silvia Nosálová

Michael Pollok, B.Eng.

1426640

Stuttgart, August 1, 2016

Affidavit

I, **MICHAEL POLLOK**, hereby declare

1. that I am the sole author of the present Master's Thesis, "WHAT IMPACT CRISES HAVE ON MARKET SHARE AND TO WHAT EXTENT DO THE U.S. USE CRISES TO DEFEND ITS MARKET? A STUDY ABOUT THE VOLKSWAGEN DIESEL- AND CO2 ISSUE", 61 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted this Master's Thesis as an examination paper in any form in Austria or abroad.

Vienna, 05.09.2016

Signature

I. Abstract

This Master's Thesis shows the impact regarding the sales figures in the United States of one of the latest crisis in the automotive industry, the Volkswagen diesel- and CO₂-issue. Therefore the official sales figures of the main important car manufacturers are consulted and analyzed. It is clearly visualized, that Volkswagen is not able to sell as many cars in the U.S. market as they did before the crisis and that their performance is below the average of the overall U.S. automobile market. Further the impact of the crisis on other competitors is shown, like Mercedes-Benz and BMW, who are both reporting a sales volume which is on the level of the previous year instead of being above like it has been the case before the diesel crisis. Contrary, the American OEMs are selling more cars which results in a plus of 0.8% of market shares for the American car manufacturers in the short time frame of only 9 months after beginning of the crisis, while Volkswagen lost 0.2% of market share in the U.S. market.

As a pursuing question, the Master's Thesis discusses to what extent the U.S. use the Volkswagen diesel- and CO₂-issue to defend its market and in order to do so, the influence of the government, the competitive strategy of a company and the buying decision of a customer become topical. The American authorities have strict regulations regarding the emissions, which are a measure of protectionism. Although these regulations apply for every car manufacturer, they are taken as a legal basis for accusing Volkswagen with the resulting effect that Volkswagen lost market shares. Moreover a competitive advantage of Volkswagen by differentiation with help of diesel engines is crossed out. Last, the perceived customer value is reduced, for example the image benefit is less because of the effecting testimony of Volkswagen managers in front of the government.

The results of this work are classified with help of a comparison with the Toyota crisis of the years 2009 until 2011 and by offering more information about the current characteristics of the U.S. market. Even if the long-term impact of the Volkswagen crisis cannot be foreseen, the different approach regarding the crisis communication and possible consequences are identifiable. Further, the current time, in which a high scrappage rate supports the saturated U.S. automobile market, is taken into account.

II. Table of contents

I.	Abstract.....	2
II.	Table of contents.....	3
III.	List of abbreviations	5
1	Introduction	6
1.1	Latest recalls and crisis in the automotive industry	6
1.2	Description of the Problem.....	7
1.3	Structure of the thesis.....	7
2	Theoretical (scientific) part about influences in a market place	9
2.1.1	Influence of the state: Economics of protection.....	9
2.1.2	Influence of the company: Competitive advantages	11
2.1.3	Influence of the customer: The buying behavior.....	13
2.2	Summary	16
3	Theoretical part about the automotive industry and its crisis.....	17
3.1	The automotive market in the US.....	17
3.2	Crises in the automotive Industry.....	20
3.2.1	The Volkswagen Emission issue	20
3.2.2	The Toyota Crisis	25
3.3	Summary	27
4	Impact of the crisis	28
4.1	Analysis of the sales volumes	28
4.1.1	Impact of the crisis on the sales volume of Volkswagen and further German OEMs.....	29
4.1.2	Impact of the crisis on the sales volume of domestic competitors	35
4.1.3	Impact of the crisis on the sales volume of further competitors	41

4.2	Analysis of the market share.....	47
4.2.1	Analysis of the market share in the long term	47
4.2.2	Analysis of the market share in the short term	49
4.3	Summary	52
5	Validation and interpretation of the results.....	53
5.1	What impact crises have on market share	53
5.2	To what extent is the U.S. defending its automobile market?.....	55
5.3	Conclusion.....	58
IV.	Bibliography	60
V.	List of figures.....	69
VI.	List of tables	71

III. List of abbreviations

CAA	Clean Air Act
EPA	Environmental Protection Agency
EU	European Union
FCA	Fiat Chrysler Automobile
GM	General Motors
NAFTA	North American Free Trade Agreement
NHTSA	National Highway Traffic Safety Administration
OEM	Original Equipment Manufacturer
SUV	Sport Utility Vehicle
U.S.	United States (United States of America)
VW	Volkswagen Group
WTO	World Trade Organization

1 Introduction

1.1 Latest recalls and crisis in the automotive industry

In the last years, the number of recalls in the automotive industry and the number of cars recalled increased noticeable. The Forbs magazine reported in 2014 that 15 million cars were sold in the U.S., but 22 million cars were recalled (Gorzelay, 2014). In the previous year's Toyota recalled almost 7 million cars because of an uncontrolled acceleration and GM even 30 million vehicles because of faulty ignition switches. Both recalls rate among the largest recalls in history and have been the reason for a crisis of the appropriate car manufacturer (KCRA Television , 2016). In 2015, the latest big recall with 11 million vehicles including a crisis of the appropriate company had its beginning. On 18th September 2015, when a U.S. authority accused officially the German OEM Volkswagen to use illegal software in its diesel powered vehicles the magazine The New York Time headlines:

“VW Is Said to Cheat on Diesel Emissions; U.S. to Order Big Recall” (Davenport & Ewing, 2015).

The Volkswagen Diesel crisis popped up in the American market, which is one of the most important markets in the automotive industry. Before the crisis an article of the global marketing research firm J.D. Power forecasted an increase of registrations of diesel vehicles in the U.S. by 30% in the period between 2010 and 2025, while the overall market is forecasted to grow only 3.6% (Youngs, 2015). For the companies, who are well-known for the diesel technology like Volkswagen, there was a chance to grow in a big, but almost saturated market. In other words, market shares could be gained compared to established American car manufacturers. Possibly, the Volkswagen crisis turns the situation upside down.

The described conception makes it worth to have a closer look on this latest crisis in the automotive industry, to analyze the impact of the Volkswagen crisis on the market shares and to answer the question to what extent the U.S. use the crisis to defend its market.

1.2 Description of the Problem

As described, in a globalized world companies are trying to grow in foreign markets, like it is also the case for Volkswagen who is competing on the American automobile market with other domestic car manufacturers. In doing so, Volkswagen was running into a crisis in the United States from which the domestic companies may benefit. A similar situation has been taken place in the years around 2010, when Toyota was facing a crisis in the American market. As a result the thesis arises, if the U.S. uses crises to defend its market. By proving or disproving the thesis, it is necessary to figure out the impact of the crisis on the market share. In other words, the Master's Thesis is analyzing first the impact of the Volkswagen crisis on the market share and then the question is answered, to what extent the U.S. use crises to defend its market. Therefore, the target of my work is to find answers for the following three scientifically defined questions:

1. What impact has the crisis on the market share of Volkswagen in the U.S.?
2. What impact has the Volkswagen crisis on the market share of other brands?
3. In how far is the U.S. defending its market by using crises?

Since the Volkswagen crisis is still of actuality and not overcome yet, there are no scientific papers of the crisis available and the Master's thesis is collating essential information of the Volkswagen crisis and its impact. Additionally the work is based on the American market, where the crisis popped up.

1.3 Structure of the thesis

The subsequent chapters of the thesis are structured as followed: Chapter 2 and chapter 3 are examining necessary basics and background knowledge with help of scientific literature and officially published documents. In chapter 4 the analysis of the impact on the sales volumes and market shares is done particularly and in chapter 5 the interpretation of the analysis and the classification into the context can be found.

Chapter 2 is describing the influences in a market place, whereby the focus is on three different categories; the influence of the state, the influence of the company and the influence of the customer. For the composition, scientific literature and articles are used. The content becomes again necessary in the last chapter, where it is interpreted in how far the U.S. use crisis to defend its market.

The background knowledge about the American automobile market and the crisis relevant for this thesis, are examined in chapter 3. The description of the American market helps to give the crises a proper background and to classify the importance of crises. Therefore studies and essays published by market-research companies and automobile magazines are used. Thereafter the Volkswagen crisis is chronologically summarized and the reactions of the management are listed up in detail. The used sources are primary literature like press releases from Volkswagen Group or announcements from the Environmental Protection Agency (EPA). For the long term impacts as well as for an additional reference the Toyota crisis from the years 2009 – 2011 is briefly described. Since already existing scientific articles are referring to the Toyota crisis, the sequence is mainly based on these articles.

Chapter 4 is dealing with the impact of the Volkswagen crisis and therefore the sales figures of the car manufacturers are used. As main affected company, the analyses of the sales figures of Volkswagen in the U.S. market can be found first. Then, the focus turns on the sales figures of the German competitors. In the further subchapter the domestic OEMs and the American car manufacturers are analyzed followed by competitors from Far East. As data source, primary sources are chosen in terms of press releases of the OEMs published on the official websites of the companies. The press releases contain detailed monthly sales figures in the U.S. market.

All the detailed information and results of the previous chapters are coming together in chapter 5. In this chapter the interpretation of the impact of the crisis on the market share takes place as well as the interpretation in how far the U.S. is using the crisis to defend its market. In addition, a short summary and an outlook are prepared.

2 Theoretical (scientific) part about influences in a market place

In the context of this work, it is of essential nature to consider different factors having an influence on the success of a company and its products in a certain market place. As one of the major players, the impact of the state who is setting the rules regarding trade and who is able to use tools of protectionism, is shown first. In the chapter thereafter, the strategies the company chooses to strengthen its position in the market are figured out. Besides the company, the customer decides crucially about the success of a product with the individual purchase decision. That is why a marketing approach and a look at the customer behavior are added.

2.1.1 Influence of the state: Economics of protection

In this chapter, the possibilities of influencing a free market by authorities are figured out. Governments have many policies they can chose in order to protect the domestic industry. In the work of Neil Vousden about economics and trade protection, the following policies are named regarding this matter: Tariffs on import, export subsidies and taxes, import quotas, protection subsidies, price support schemes and local content schemes (Vousden, 1990, p. 25). Further, the larger economies, like the United States, Japan or the EU can exert influence by using their buying and selling power (Vousden, 1990, p. 84). For the approach of this work only the policies having an influence on the import of goods and regulations in the internal market which may touches the equal opportunities of foreign competitors, are considered.

The most obvious methods to intervene directly in the international trade are to implement tariffs and quotas by national law. The World Trade Organization (WTO) is an international organization dealing with the regulation of economic and trade relations and making national protection activities transparent. The WTO defines tariffs as customs duties on merchandise imports. As a result of the tariffs locally produced goods are getting a price advantage (WTO - World Trade Organization (a), 2016). In contrast, quotas are quantitative restrictions on imported goods expressed in volume or value terms, respectively foreign firms are allowed to export only a fixed quantity into a specific country (WTO - World Trade Organization (b),

2016). Other measures commonly used by governments are local content schemes which are imposed by the importing country. The schemes are again a type of quantitative restrictions and require that final good producers purchase a minimum of their intermediate goods from domestic firms, so from companies located in the same country like the final good producer located its production plant. By achieving this quote, the producer gets a concessional rate of duty on the imported intermediate components. Otherwise the producer may have to pay a penalty tariff (Vousden, 1990, p. 41). Beyond the unilateral and national quotas, there are also regulations based on bilateral negotiations between two countries, so called voluntary export restraints. For instance, voluntary export restraints have been in place in the 1980s and allowed Japanese car manufacturers to export to France a volume of only 3% of the French automobile market (Gemper, 1984, p. 34).

Impacts on the international trade can be also caused by indirect interventions of a national government, for example by protection subsidies, technical regulations and standards and further non-tariff barriers (Gemper, 1984, p. 37). Starting with subsidies, they can protect products by giving them a price advantage. This happens either with help of direct financial aids or indirectly by reducing the costs for the producers. In any case, subsidies decided by national governments, can privilege separate companies or products and therefore also impede the cross-border trade and end up in a distortion in competition. (van Beers & van den Bergh, 2001, pp. 477-484). The technical regulations and standards are discussed sophisticatedly by the WTO. Of course, technical regulations and standards can become necessary for environmental protection, safety or national security to consumer information. But they can also hide protectionist tactics, especially if the regulations seem to be set randomly. In such a case, technical regulations complicate business for producers and exporters and are an obstacle for free trade (WTO - World Trade Organization (c), 2016). Another excuse for protectionism can be bureaucratic or legal issues, also called red tape. The term red tape covers import licensing, rules for the valuation of goods at customs, preshipment inspections and rules of origin which indicates where the product is mainly produced. Again, bureaucracy is necessary, but as soon as the legal provisions are defined arbitrarily and therefore seem to be less transparent for importers, it can involve hindrance to trade and get a protectionist character (WTO - World Trade Organization (d), 2016). Last, the government can use its buying and selling power to participate in the market. Government procurement constitutes an important

aspect of international trade with roughly 10% of the GDP of an economy on average and with its economic power the state is a big player influencing mainly the internal market (WTO - World Trade Organization (e), 2016).

2.1.2 Influence of the company: Competitive advantages

Not only the framework given by the state has an influence on the success of a company or a business and results in a significant advantage, but also the competitive strategy of the company. So the different strategies will be pointed out in the following pages.

Companies are pursuing different types of strategies with the objective to get a stable position in a market or even to gain market shares. The best strategy may be a unique construction; however, Michael E. Porter named three generic strategies on a general level, which can lead to a competitive advantage (Porter, 2013, p. 73):

- Cost leadership,
- Differentiation,
- Focus.

According to Michael E. Porter, the cost leadership requires both, the building of production facilities in an efficient size to gain cost advantages through economies of scale and the reduction of fixed and variable costs. Companies that achieve a cost leadership can benefit either by gaining market share through lower prices or by maintaining average prices and therefore increasing profits compared to their competitors (Porter, 2014, pp. 95-97).

The strategy of differentiation is based on offering a different product, a different service or a different marketing approach. The customer gets an obvious reason to buy a product which distinguishes from the competitors and by doing so companies can gain market shares through unique features valued by their customers. The third strategy which is named focus is pursued when a company chooses a narrow segment within its industry and adjusts its offerings to this market niche. Therefore the focus strategy involves cost leadership and differentiation and leads finally to an advantage against competitors offering a broader portfolio (Porter, 2013, pp. 74 - 79).

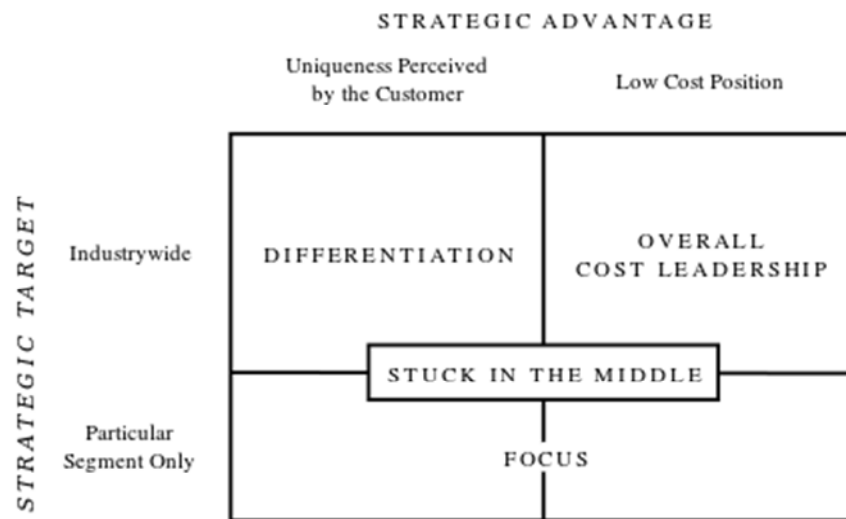


Figure 1: Three generic strategies
Source: (Fadeev, 2014) based on (Porter, 1980)

Figure 1 is visualizing the three generic strategies. A company that is caught between more strategies has always a competition with cost leaders or better positioned companies which are pursuing differentiation or focusing. So if a company cannot concentrate on one strategy, it has no competitive advantage and as a result, the business model may cause failure. Therefore a 'stuck in the middle' should be avoided (Dr. Horváth, 2014, p. 14).

As one of the main important drivers in competition Michael E. Porter points out the technological change, since it has an impact on the competitive structure by leveraging the cost leadership or the differentiation of a company in its competitive surrounding. A technological change to an automated production can exemplarily be a cost-cutting measure and increase the position in cost leadership. Alternatively, an innovative technology implemented in a product can help to increase the differentiation. Hence, technological change can stable or even increase the position in the market or it can help to get in line with leading competitors (Porter, 2014, pp. 222, 228).

2.1.3 Influence of the customer: The buying behavior

The customer has with its buying decision for a special product an influence on the economy and on the market, so it is worth to get a closer look in this chapter on the buying behavior of a customer. Within the scope of this thesis, not all segments of the entire marketing approach become necessary. That is why the focus is on the perceived customer value and briefly on cultural aspects.

In accordance with the literature of marketing-management the buying decision of an individual customer is based on the maximization of the perceived customer value for this individual customer. Rephrased, the customer is buying the product which offers the greatest benefit. The customer value defines the ratio between benefits and costs of the offered product in relation to the other alternatives and is a subjective factor (Kotler, et al., 2015, p. 160). In the following, the greatest possible perceived benefits and the overall costs for a customer are explained in detail.

The overall monetary value of all economical, functional and psychological advantages of the offer reflects the greatest possible customer benefit. There are four different fields called product, service, personnel and image, where the different advantages – the economical, functional and psychological advantages – have to be applied (Kotler, et al., 2015, p. 161). Exemplarily, the product will be chosen that meets the functional requirements with a good release value, which makes the product economical. If the service for the mentioned product is cheap and of a good quality, the staff is friendly and competent and the image of the product is also supporting your image, the chance is even higher that the buying decision will be done in the favor of this product.

In contrast, the costs for a customer are firstly visible on the price tag. But besides the monetary costs, the time, energy and psychological effort, which a customer has to bring in, is included in the overall costs or the perceived sacrifices. The factors are not only relevant at the point of time but also when the buying decision is done. Moreover, the time, energy and psychological efforts for evaluating, buying, using and disposing the product are summed up and in addition with the monetary costs, the perceived sacrifices are the results (Kotler, et al., 2015, p. 160). If the product, out of the section above, is only available in a store located far away and in the case of a necessary repair, the same store has to be consulted, that makes the buying decision not that clear anymore due to the perceived sacrifices of the customer, which can counterbalance the perceived benefits.

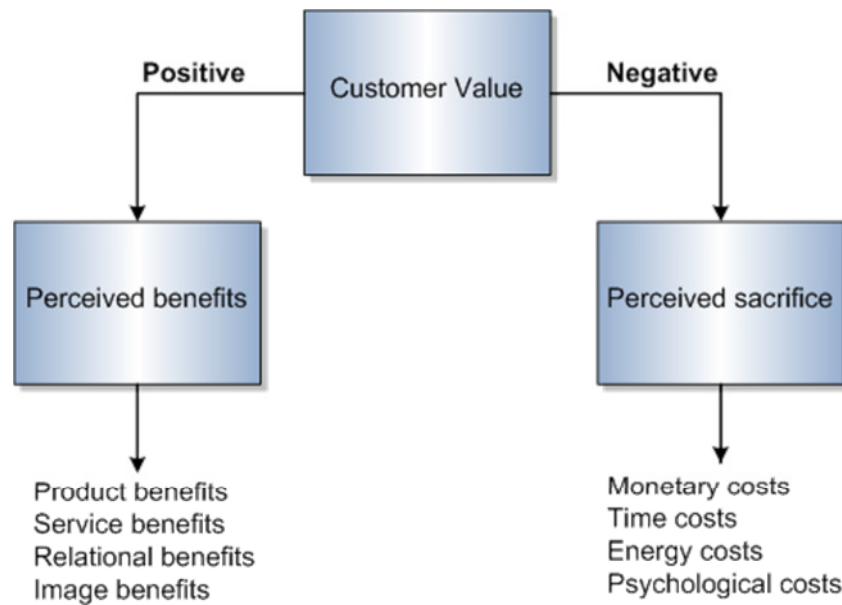


Figure 2: Creating Customer Value diagram

Source: (Staffordshire University, 2012)

Since the single aspects of the total customer value that can be seen in the figure above (Figure 2) are perceived subjectively, they can be influenced by external events or persons, like sellers. A product, which may have a disadvantage, can be sold by increasing the perceived benefits or by decreasing the perceived sacrifices for the customer (Kotler, et al., 2015, pp. 162-163).

The weighting of several aspects of the total customer value may also differ in the context of various cultures. A culture is described as a way of life, which is raised by a group of people and passed on to the next generation. Thus, culture is a learned reaction on recurring problems and influences also the attitude towards a product. For example is a high level of sitting comfort in a car of more importance for a European customer. Compared to others, the European customer for instance is willing to spend additional money for a seat comfort package because the customer gives a higher priority to the option (Keegan, et al., 2002, p. 96).

In a text about possible corporate success in the United States of America the characteristics of the US culture are pointed out briefly. First, the main focus is on the region and not on international markets, which can be also recognized in the media. While in Europe international news is very present, the US Media is focusing on regional and national belongings. Besides this basis, there are four factors which have to be considered in the US market and in the decision process of an American

customer: comfort, speed, risk and emotions (Drews & Lamson, 2014, pp. 5-12). The figure below (Figure 3) is visualizing the focus on the US market and the four particular characteristics.

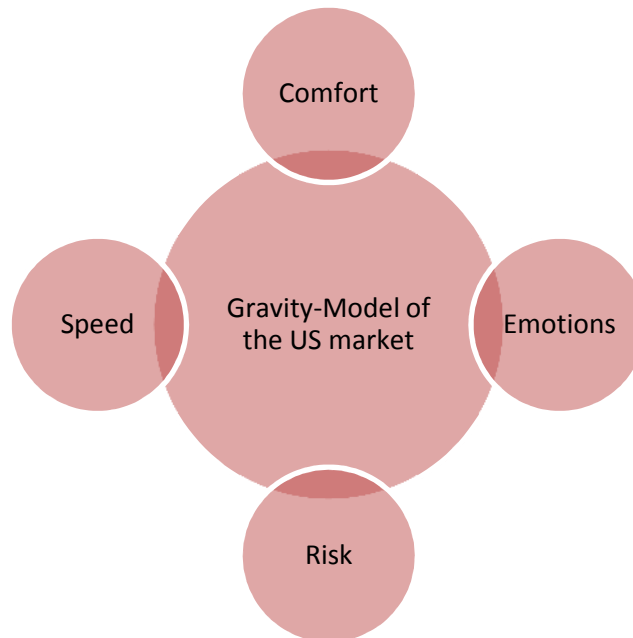


Figure 3: US Cultural Gravity Model

Source: translated from (Drews & Lamson, 2014, p. 13)

The characteristic of comfort refers to the usability. For the US customer it is a perceived benefit, if the product is easy to get and easy to use. The term speed points out that the buying process is done faster because it is less time spend in advance for evaluating the product with its alternatives. Also important is the risk aversion and the openness towards new ideas and products, as long as the products can easily be changed. Last, the US customers are buying mainly by gut feeling. So the emotions and the relations are more important than only the pure facts. By showing the emotions informally, a relationship and an emotional connection is build, which has an influence on the gut feeling and also on the buying decision of the customer (Drews & Lamson, 2014, pp. 13-14).

2.2 Summary

The framework given by the state, the competitive strategy and the buying decision of a customer are essentially influencing the success of a company in a market. The state can influence by using direct measures of protectionism like tariffs on import, export subsidies, taxes and import quotas. Further there is the possibility for a government to implement indirect interventions, for example protection subsidies, technical regulations and standards as well as further non-tariff barriers. The company itself has the chance to improve the probability of success in a market by using a strategy which generates a competitive advantage as a result. There are three different types of competitive advantages: cost leadership, product differentiation or focusing. Last, the customer is influencing with its buying decision if a company has success in a market. The buying decision of a customer is done subjectively by comparing benefits and costs of the offered product in relation to the other alternatives. In conclusion, the customer has the aim to buy a product that offers the greatest benefits and the maximal perceived customer value. All mentioned influences in the market matter significantly in the last section of this thesis, where the question is answered in how far the U.S. is using crises to defend its market.

3 Theoretical part about the automotive industry and its crisis

In this chapter the American automobile market is described in greater detail. In order to paint a complete picture of the U.S. automotive market its classification into the global market is described firstly, followed by an overlook of the past development and the expectations of the future development of the automobile market in America. Afterwards, several characteristics like the popularity of different segments and the share of different engines are pointed as well as the importance of the automotive industry and its importance for the U.S. economy. At the end of chapter 3 a description of the two crises can be found, which become relevant in the context of this work: The current Volkswagen emission issue and the elapsed Toyota crisis.

3.1 The automotive market in the US

The USA, the largest industrialized nation, is even one of the biggest sales markets for the automotive industry. The Center of Automotive Management published a study in which the USA is listed as the second biggest sales market behind China. In 2015, approximately 17 million units have been sold in the U.S. and in China even more than 19 million units. The EU is rated on the third place with roughly 13 million sold units in the year 2015 (Prof. Dr. Bratzel, et al., 2015, pp. 19-21). According to the study of the Center of Automotive Management, success and failure gets more dependent of the positioning of an automotive company in the Chinese and American sales market. Since these two markets are covering almost half of the global automotive sales it gets more important for a car manufacturer to perform well in China and in the USA (Prof. Dr. Bratzel, et al., 2015, p. 75).

Focusing on the North American market, the bellows graphic (Figure 4) shows the past development and in addition an outlook until the year 2020. The number of unit sales includes the entire NAFTA region, so Canada, USA and Mexico, whereas the U.S. sales market is with its 17 million units in 2015 more weighted compared to 1.9 million units in Canada and 1.35 million units in Mexico. After five years of downturn between 2004 and 2009 with its lowest point in the financial crisis in 2009, the upcoming years of 2016 and 2017 are expected to be the eighth successive year in

a row. Economic growth, job security and good credit availability are seen as the main macro-factors to support this development. In addition, the replacement demand of the 13-17 year old cars is estimated to underpin the new car market in the upcoming years. Nevertheless, there will be a mild cyclical downturn towards the end of the decade. Summarizing, the rise of sales will be boost in the near term and the afterwards downturn will be limited thanks to the high number of cars sold in the 2000s, which reach the peak age for scrappage.(Automotive World (b), 2016, pp. 2-7).

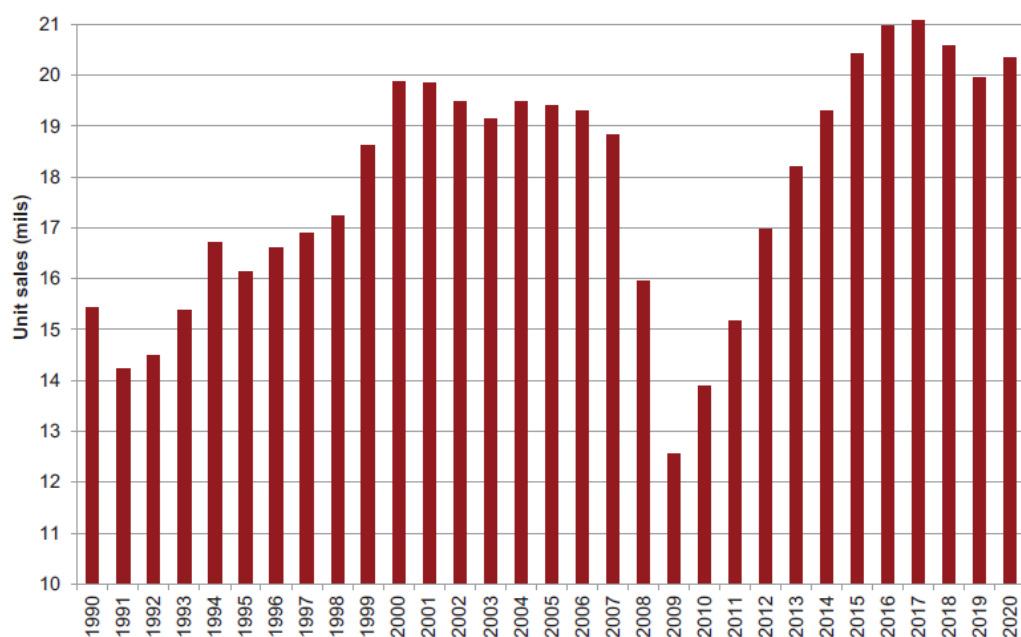


Figure 4: NAFTA light vehicle demand, 1990-2020

Source: (Automotive World (b), 2016, p. 7)

Related to the segments, the global consulting company Frost & Sullivan publishes in its report about the 2016 outlook for the automotive industry that the SUV and Pick-up segment will account for approximately 50% of sales in the United States of America. This makes the SUV-Pick-up segment to the strongest segment in the U.S. as conventional body styles are expected to fall to 39%. As a reason, the falling or stagnating fuel price is indicated (Frost & Sillivan, 2016, p. 18).

The outlook for 2016 regarding the mix of powertrains is dominated by gasoline engines. Globally, the share of gasoline is around 75% and in the U.S. even around 92%. Due to the high number of gasoline engines, the diesel engines account

maximum 3% in America. Nevertheless, the amount of cars equipped with diesel engines and the efforts of OEMs to develop cleaner diesel technologies was rising during the last years (Frost & Sullivan, 2016, p. 53). The statistic below (Table 1) that is published from Statista GmbH in 2015, illustrates this process. Since 2010 a constant growth in registrations of diesel cars is recognizable. First, the German OEMs offered diesel engines and in 2013 the American company GM followed.

	2010	2011	2012	2013	2014
Volkswagen (VW)	51.848	69.730	87.814	93.338	80.441
BMW	3.216	3.722	1.258	2.958	13.296
General Motors (GM)	0	0	0	2.912	5.880
Daimler	1.105	3.041	3.085	2.005	2.586
In Total	56.169	76.493	92.157	101.213	102.203

Table 1: Registration numbers of cars with diesel engines in the U.S. until 2014

Source: (Statista GmbH, 2015)

Apart from the huge sales market, the automotive sector is one of the most important industries in the U.S. economy. The Center for Automotive Research figures out the contribution of the automotive industry to the economy of the United States summarized that car manufacturers, suppliers and dealers are supporting over 7 million private sector jobs. On the one hand side, the number of jobs created causes an annual compensation that amounts to \$500 billion to employees hired in the automotive industry. On the other hand side, the industry provides \$200 billion to the federal and state governments in the form of federal, state and local tax revenues (Menk, et al., 2015, p. 1).

In the important automotive segment fourteen automotive companies are participating mainly with numerous facilities in America. Some companies are only assembling in the region, while the scope of others expands to fully integrated operations including research, development, design, engineering, headquarters and manufacturing operations (Menk, et al., 2015, pp. 5-7). For cars assembled in the region, there exists a local content requirement of 62.5%. By achieving the local content scheme, a duty rate that goes down to 0% can be received; otherwise the duty rates depend on the countries where the parts are imported from. In any case, the price of the product is increased by the additional duty rates (Daimler AG - Steuerung Produktprojekte C-Klasse, 2015).

3.2 Crises in the automotive Industry

As any other industry, the automotive sector or some of the companies associated with the automotive industry are sometimes touched by crises. The latest crisis is the Volkswagen Emission issue, which smashes the Volkswagen Group in the American market. Before, also GM and Toyota had to face difficulties. A scientific paper authored in 2014 by Shamsud D. Chowdhury compares the crisis of GM and Toyota on its battle for the top of the world largest car maker. GM struggled with a mismanagement of further generations coupled with the financial crisis in 2009 and as a result the American car manufacturer was pushed into bankruptcy-court protection (Chowdhury, 2014, p. 129). The Toyota crisis starting in the years 2009 was caused by persistent quality problems (Chowdhury, 2014, p. 129).

This chapter is organized as follows: first, the Volkswagen crisis is described with help of primary sources, which means that official documents of the U.S. authorities are consulted as well as official press releases from the Volkswagen Group. In order to classify scientifically the Volkswagen crisis, the Toyota crisis is briefly described in an other chapter. Since the Toyota crisis dates back to the year 2009 and 2010, it is possible to use already existing articles and summaries of the crisis.

3.2.1 The Volkswagen Emission issue

As already mentioned above, the Volkswagen Emission issue is the latest crisis in the automotive industry. Since the focus of this thesis is set on the Volkswagen crisis, the detailed chronological and content-related description in the upcoming chapter is extended by a brief description of the approach of the Volkswagen management. The approach is necessary to evaluate the crisis and its impacts in the background of crisis communications and responses by the Volkswagen management.

3.2.1.1 Schedule and issues of the Volkswagen-Crisis

The Volkswagen crisis, which is still not overcome yet, is described particularly in this chapter, with a focus on the timescale and the different accusations of the crisis. Starting on 18th September 2015, when the US Environmental Protection Agency

(EPA) issued a Notice of Violation of the Clean Air Act (CAA) to Volkswagen AG, Audi AG and Volkswagen Group of America, Inc., which are following named collectively VW. In the document it is written, that VW “manufactured and installed defeat devices in certain model year 2009 through 2015 diesel light-duty vehicles equipped with 2.0 liter engines” (United States Environmental Protection Agency (a), 2015, p. 1). A defeat device is software that detects when a car is driven on a laboratory test cycle. The testing conditions are identified by the software by evaluating parameters from steering position, speed and engine operations. As a result, during a laboratory test cycle more urea is released into the exhaust system, which improves the emissions and reduces nitrous oxide released emissions. In normal operations the vehicle emits nitrous oxide over 40 times of the permitted level. According to the CAA, the usage of the defeat device is not permitted and illegal. (Frost & Sullivan, 2016, p. 40).

On 22nd September 2015, VW is accepting the accusations. In a press release Volkswagen confirms “irregularities concerning a particular software used in diesel engines” (Volkswagen AG (a), 2015). In the same press release Volkswagen informs further that vehicles with Type EA 189 engines, which is the internal name for the 1.2-liter, 1.6-liter and 2.0-liter diesel engines, are affected (Volkswagen AG (a), 2015). In the US only the 2.0-liter diesel engines are sold and impacted (Volkswagen of America, Inc. (a), 2016). Worldwide eleven million vehicles relate to the discrepancies and to cover the upcoming necessary measures, the concern set aside a provision of 6.5 billion euros that will also account to the profit and loss statement (Volkswagen AG (a), 2015). One day later, Martin Winterkorn, CEO of Volkswagen Group until such time, apologized and resigned. The former Porsche chief, Matthias Mueller was appointed as the new CEO of Volkswagen Group (Frost & Sullivan, 2016, p. 40). Both managers are visible in the picture below (Figure 5), which was published by a German newspaper at the day, when the change in the management was announced. Matthias Müller stepped in as CEO of the Volkswagen Group by saying: "My most urgent task is to win back trust for the Volkswagen Group – by leaving no stone unturned and with maximum transparency, as well as drawing the right conclusions from the current situation. Under my leadership, Volkswagen will do everything it can to develop and implement the most stringent compliance and governance standards in our industry. If we manage to achieve that then the Volkswagen Group with its innovative strength, its strong

brands and above all its competent and highly motivated team has the opportunity to emerge from this crisis stronger than before." (Volkswagen AG (h), 2015).



Figure 5: Martin Winterkorn, resigned CEO of Volkswagen Group and Matthias Müller, appointed as the new CEO of Volkswagen Group

Source: (red/rtr/dpa, 2015)

The German Federal Motor Transport Authority decided on recall for the affected EA 189 diesel vehicles on 15th October 2015, according to a timetable and plan of measures, which has been submitted by VW. The recall for the 8.5 million vehicles in Europe is scheduled to start in January 2016. Outside of the European countries the measures are clarified with each country individually. Beside the brand Volkswagen, also Audi, Seat and Skoda are included in the decision of the Federal Motor Transport Authority (Volkswagen AG (b), 2015).

On 2nd November 2015, a second Notice of Violation has been issued by the EPA to Volkswagen AG, Audi AG, Volkswagen Group of America, Inc. and this time also to Porsche AG and Porsche Cars North America. Subsequent to the first Notice of Violation, the EPO determined, that VW "manufactured and installed defeat devices in certain model year 2014 – 2016 diesel light-duty vehicles equipped with 3.0 liter engines" (United States Environmental Protection Agency (b), 2015). This time the larger sedan cars like the Audi A6, A7 and A8 and SUVs like Audi Q5, Q7, Porsche Cayenne and Volkswagen Touareg with 3.0L TDI diesel engines are related to the

accusations. Volkswagen confirmed the installation of a defeat device on 19th November 2015 (United States Environmental Protection Agency, 2016).

Moreover, Volkswagen announced on 03rd November 2015 that irregularities in the CO₂ levels have been identified by internal investigations. In an initial assessment, the fuel consumption of 800.000 cars of the Volkswagen Group was set too low during the CO₂ certification process. The economic risks have been estimated to account 2 billion euros. (Volkswagen AG (c), 2015). The investigations have been concluded on 09th December 2016 with the result that no unlawful change to the CO₂ figures was found and that the published irregularities were not confirmed (Volkswagen AG (d), 2015).

Whereas the recalls for the affected vehicles in the European market started in the beginning of 2016, in the US there were still negotiations ongoing. The US Department of Justice filed a complaint on behalf of EPA against the above mentioned brands of the Volkswagen Group for a violation of the Clean Air Act on 4th January 2016 (United States Environmental Protection Agency, 2016). In a press release on 22st April 2016, Volkswagen announced that an agreement in principle has been reached with the Department of Justice and in an additional statement about the status of the investigations Volkswagen explained, that “Volkswagen's complex negotiations with a large number of parties in the United States [...] have entered a decisive phase sooner than anticipated and require Volkswagen to maintain the highest degree of confidentiality” (Volkswagen AG (e), 2016). Up to the time of authoring this work, this is the latest status.

On the financial site, the Volkswagen Group communicates in the annual report of the business year 2015 that “€16.2 billion were recognized and charged to operating results, primarily for pending technical modifications, for repurchases, and customer-related measures as well as legal risks” (Volkswagen Aktiengesellschaft, 2015, p. 53). So as a result of the irregularities in the software used in certain diesel engines, the reported special item causes an operating result of -4,069 million Euros (Volkswagen Aktiengesellschaft, 2015, p. U3).

3.2.1.2 Approach of Volkswagen during the crisis

Already stating on the same day when Volkswagen accepted the accusations, Martin Winterkorn, the former CEO of the Volkswagen Group, apologized in a video statement by saying: “I am deeply sorry that we have broken this trust. I would like to make a formal apology to our customers, to the authorities and to the general public for this misconduct. We will do everything necessary to reverse the damage. And we will do everything necessary to win back trust – step by step” (Volkswagen AG (f), 2016). Further, Martin Winterkorn announced that Volkswagen will work on this issue with the greatest possible openness and transparency (Volkswagen AG (f), 2016).

Michael Horn, President and CEO of Volkswagen Group of America, came for a personal testimony before the US House Committee on Energy and Commerce on 8th October 2015. There, he also apologized and explained that the responsible parties for the happening will be identified and held accountable and that compliance, processes and standards will be examined. Furthermore, Michael Horn described that the technical teams are developing remedies for the affected vehicles and he commits that there will be a regular and open communication with the customers (Volkswagen of America, Inc. (c), 2015). As a part of the communication, Volkswagen established an internet site, a customer care center as well as a personal letter of Michael Horn addressed to every affected U.S. customer. On the internet site, updates of the diesel-issues and the possibility to look up if the customer’s car is affected are prepared. The customer care center is trained to response to possible questions and concerns of customers (Volkswagen of America, Inc. (b), 2016). Besides, Volkswagen expressed his appreciation for the customer’s patience by offering a Goodwill Package including a \$500 Volkswagen Prepaid Loyalty Card and a \$500 Volkswagen Dealership Card. This gesture is prepared for the US customers as the settlement with the American authorities took some time and the recalls in the US has not started up to the day of authoring this work (Volkswagen of America, Inc. (a), 2016).

On a company level Matthias Mueller, the current CEO of Volkswagen Group, announced changes in the structure as well as in the culture of the company and critical reviews of all planned investments, whereas the business in North America should expand, which includes an investment in the Volkswagen plant in Chattanooga, Tennessee of more than \$1 billion, another investment of \$900 million

in the production of a mid-size SUV and 2.000 new jobs in the United States of America (Volkswagen AG (g), 2016). On 10th January 2016, in advance of the Detroit Auto Show, Matthias Mueller says that “the USA is and remains a core market for the Volkswagen Group” (Volkswagen AG (g), 2016).

3.2.2 The Toyota Crisis

The Toyota crisis and its massive recalls are analyzed in an article of the Management Research Review published in 2011. According to this article, the crisis became acute on August 28, 2009 when a Lexus suddenly accelerated out of control and all passengers died due to the consequential accident. The first recommendation to the customers of Toyota was to remove the floor mates because they were suspected to trap the gas pedal which could lead to an unwished acceleration of the car. After closer investigations of the National Highway Traffic Safety Administration (NHTSA) and additional claims of erroneous acceleration by Toyota vehicles, an official recall of 4.2 million vehicles was announced to prevent entrapment of gas pedals by floor mates in November 2009 (Andrews, et al., 2011, p. 1070). In January 2010, Toyota ordered a second recall of 2.3 million vehicles because of continued problems with the gas pedal (Heller & Darling, 2011, p. 8).

On a financial site the costs for Toyota are estimated to a level of over \$2-billion consisting of direct costs for repairs and upgrades to existing models and of litigation costs (Heller & Darling, 2011, p. 13). The government of the United States of America levied penalties against Toyota accounting \$48.8 million. The U.S. Government criticized that Toyota did not act in a timely manner and that the recalls should have been initiated at least one year earlier (Bowen & Zheng, 2015, p. 40). Additionally \$16 million in fines by the NHTSA for Toyota were accounted with the justification of disregards of safety protocols. This is the highest fine in the automotive sector by an American authority since today (Andrews, et al., 2011, p. 1064).

The approach of the Toyota management in advance and during the crisis is discussed by S.A. Bowen and Y. Zheng. They conclude that “Toyota did not act in the public interest” (Bowen & Zheng, 2015, p. 46). Toyota managers, including the CEO Mr. Akido Toyoda, did not act rapidly at the first sign and after the first crucial complains. On the contrary, the Toyota executives reacted by “denying problems,

not investigating potential causes and not alerting stakeholders and publics of the potential problems” (Bowen & Zheng, 2015, p. 45). In the article published in the *Management Research Review*, the authors take the position that Toyota did not react in accordance to their principles, which is explained with help of two examples. First, while Toyota promised to be customer focused, the company has “repeatedly blamed user errors as the main cause of these accidents” (Andrews, et al., 2011, p. 1072). The second example and indication for a violation of the own principles further underpins the accusation against the Toyota management of responding lately. Even though sincere communication was one of Toyota’s core values, there was the “decision to withhold information regarding the safety problems” (Andrews, et al., 2011, pp. 1072 - 1073). The CEO of Toyota, Mr. Akio Toyoda, testified on Capitol Hill in late February 2010 in front of members of the U.S. Government that “55% of Americans think Toyota has failed to respond quickly to potential safety defects in its vehicles” (Andrews, et al., 2011, p. 1073). The *New York Times* magazine illustrates Akio Toyoda on the day of the testimony, which can be also seen in figure 6 below.



Figure 6: Akio Toyoda, the president of Toyota, at a hearing of the House Committee in the U.S.

Source: (Maynard, 2010)

3.3 Summary

The U.S. market with 17 million vehicles sold is the second biggest sales market in the automotive world and therefore of great importance for the entire U.S. economy as well as for the automotive industry. In the upcoming years it is expected that there will be a cyclical downturn regarding the sales figures, which will be held small thanks to a high scrappage rate. The U.S. market is characterized by SUVs and Pick-ups as well as by gasoline powered engines. Nevertheless, the diesel powertrains were growing in the last years up to 3% of market share and have been expected to grow even further.

On the U.S. automobile market, the Volkswagen crisis had its beginning with an accusation of the EPA. Volkswagen confirmed on 22nd September that a defeat device that recognized a laboratory test cycle and reduced the nitrous oxide released emissions, was installed into some vehicles. Worldwide 11 million vehicles were affected and the company charged €16.2 billion to operating results in its business report in order to solve the crisis. As a consequence, Martin Winterkorn, the former CEO of the Volkswagen Group resigned and Matthias Müller was applied. Volkswagen and its managers communicated during the crisis, that all efforts will be done to solve the crisis as soon as possible and that investments into the American production sides of Volkswagen will be kept. The customers have been informed regularly and had the possibility to get information via various channels.

The Toyota crisis, which took place in the United States between 2009 and 2011, was characterized by denying problems. The first recall of 4.2 million vehicles was reasoned with the entrapment of gas pedals by floor mates and the second recall of another 2.3 million vehicles was reasoned with continued problems with the gas pedals. The government of the United States of America levied penalties against Toyota accounting \$48.8 million, due to the reason that Toyota did not act in a timely manner.

4 Impact of the crisis

4.1 Analysis of the sales volumes

The sales volumes in the U.S. of the relevant OEMs are going to be analyzed first. GM, Ford and FCA are chosen, since they are the biggest domestic car manufacturers. As additional main players in the U.S. market the companies Toyota, Honda, Nissan, Kia and Hyundai are added, which are all representing also OEMs from Far East. The Volkswagen Group with its brands Volkswagen and Audi are certainly evaluated because they are the main affected parties of the emission crises and their German competitors, Mercedes-Benz and BMW, are added as well. The twelve mentioned car manufacturers are representing over 90% of the market shares in the American automobile industry, which enables a scientific and representative evaluation. The analysis of the market share is clearly pointed out in the following chapter 4.2.

For the detailed analysis of the sales volumes during the diesel- and CO₂-issue, the period of nine month after the official acceptance of the accusations is chosen. Volkswagen confirmed on September 22nd, 2015 that investigations have started and up from then the following nine months are evaluated, which relates to the absolute sale figures from beginning of October 2015 until end of June 2016. The three quarters after the crisis are a sufficient time frame to get a first result of the short-term impacts of the Volkswagen-crisis regarding the sales figures in America. The long-term impacts cannot be evaluated precisely to the time of research and exceeds the context of this work. In addition to the period of the crisis, the sales statistics of the prior third quarter of 2015, from beginning of July until end of September, is also included in the evaluations in order to show the development before the crisis.

To enable an interpretation of the data and to bring it into the right context, it is necessary not only to take a look at the absolute sales figures of the main brands in the U.S. automobile market from July 2015 until June 2016, but also at the absolute sales figures from July 2014 until June 2015. The great benefit of this comparison is that special courses can be distinguished from seasonal differences. Furthermore, the overall sales figures of the US automobile market are consulted for the same reason in a second evaluation. The chosen timeframe is again from July 2015 until June 2016 and in order to extract differences in the development of the sales figures

of one brand from the overall market, the evaluation is based on a percentage change of the sales volume. The sales figures of July 2015 are set as 100% and each following month refers to this figure, which means that if the sales increase in one month above the value of July 2015, also the percentage will be above 100%.

Since the U.S. automobile market is a built-to stock market, the analysis of the sales volumes may have an imprecision. The OEMs can produce the same amount of cars, even there are no correlating orders behind, which means that the cars are produced for stock and no impact on the sales volume will be recognizable. If this is the case, the inventory of the affected brand and its dealers increases. The organization WardsAuto, which covers the automotive industry since 80 years and offers several publications, is offering a statistic about the Days' Supply. The ratio Days' Supply is the inventory at the end of the month divided by the rate of daily sales, which is an individual value for each brand. In other words, the Days' Supply Rate shows how many days a company can still sell cars thanks to inventory, if the production stopped at the end of the month. So the ratio gives a clue about the inventory of the OEM and therefore helps to get the right approach of the sales volume. If the monthly sales volume is high and the Days' Supply Rate too, than the company produced on stock but probably there is a reduction of sales to a final customer.

As mentioned, the sales volume of the different brands may have a direct impact on the market share. That is the reason, why after the detailed approach of the monthly sales volumes an analysis of the market shares can be found.

4.1.1 Impact of the crisis on the sales volume of Volkswagen and further German OEMs

The market shares of OEMs are based on the sales figures and that is the reason why in the upcoming chapters the sales volumes are particularly analyzed. As major player in the diesel- and CO₂-issue, it is worth to have a first glance on the Volkswagen Group. Since German OEMs are well known for diesel technology, the brands of BMW and Mercedes-Benz are analyzed afterwards. They all gain a sales volume of maximum 40.000 cars per month in the United States.

For March 2016 the statistic of the Days' Supply Rates of Volkswagen, Audi, BMW and Daimler, of which Mercedes-Benz is the major part, is shown in table 2. Again the Days' Supply Rate indicates how long the company is able to deliver a product, even if the production stops immediately. Although Audi was able to reduce the Days' Supply under the average of an inventory that lasts 65 days, the brand is still above the comparable value of the prior year. BMW is showing the same manner and also Volkswagen is 19 days above the Days' Supply Rate of March 2015. In particular, Volkswagen is far above the total average. Only Daimler stays on a constant level.

	Month-End Days' Supply				
	March 2016	February 2016	March 2015	Plus/Minus Prior	Plus/Minus Year-Ago
Audi	57	81	41	-24	16
BMW	44	62	28	-18	16
Daimler	49	44	45	5	4
Volkswagen	94	97	75	-3	19
Light Vehicle Total	65	69	58	-4	7

Table 2: Month-End Days' Supply of Audi, BMW, Daimler and Volkswagen

Source: (WardsAuto (b), 2016) – own illustration

4.1.1.1 Impact of the crisis on the sales volume of the Volkswagen Group

The Volkswagen brand and Audi, both members of the Volkswagen Group and both affected by the accusations of the U.S. authorities, are also the companies with the highest sales figures within the Volkswagen Group. The other brands of the Volkswagen Group are not consulted, since the volume of sales is of such a low amount that no scientific significance could be achieved within this data.

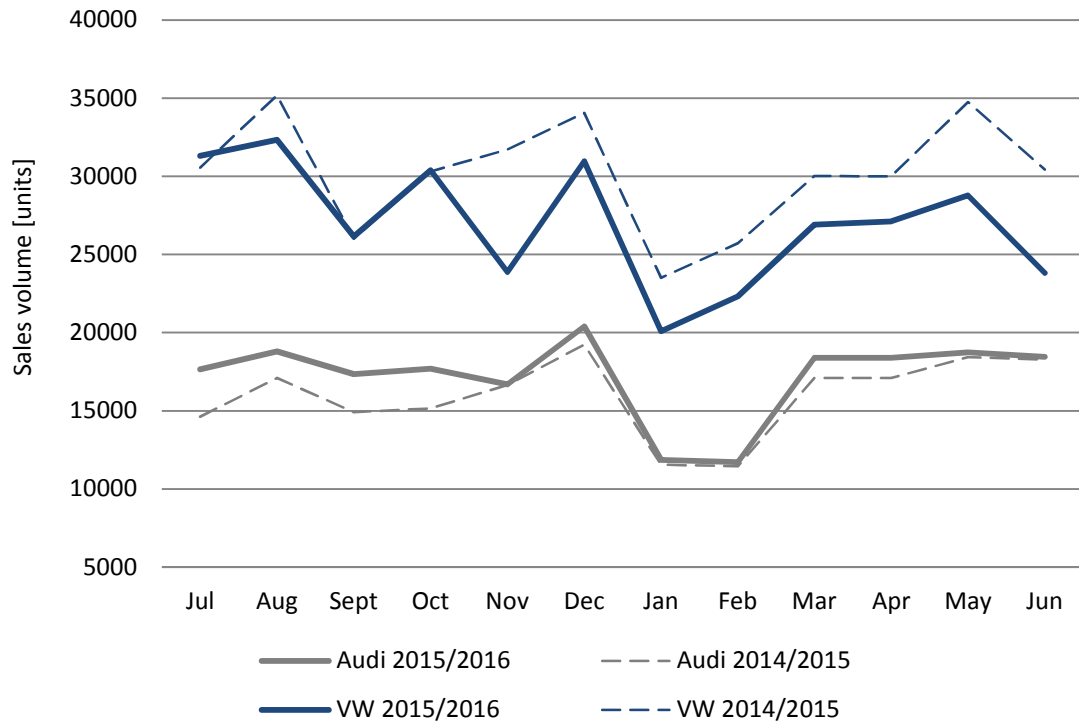


Figure 7: Sales volume in units per month of Volkswagen and Audi in the U.S.
Source: (Volkswagen of America, Inc. (d), 2016) and (AUDI AG, 2016) – own illustration

In the inserted illustration (figure 7), the sales volumes of Volkswagen and Audi in the U.S. are visible. As presented in a previous chapter, the time period from July until June of the following year is shown. More detailed, the continuous line represents the time from July 2015 to June 2016, which is the timeframe in which the crisis had its beginning. In comparison, the dashed line is showing the same period from the previous year, so from July 2014 to June 2015 and serves as an orientation in the valuation of the actual sales. The blue, continuous line of the Volkswagen brand starts on the same level than the dashed line or rather a little bit below. Since October the distance between both lines increased, which means that the performance of the Volkswagen brand regarding the sales did not achieve the figures of the previous year anymore. The volume of sales stays constantly on a lower level. A similar turning point is recognizable for the grey line of Audi. The company outperformed the sales in the third quarter of 2015 compared to the same period in 2014. So the continuous, grey line is roughly 2000 units above the dashed line. Again with the October figures the gap between both lines decreases until in November both lines are on top of each other. But the sales of the year 2015/2016

don't drop below the values of 2014/2015. In summary, the actual sales figures lowered to the level of the previous year.

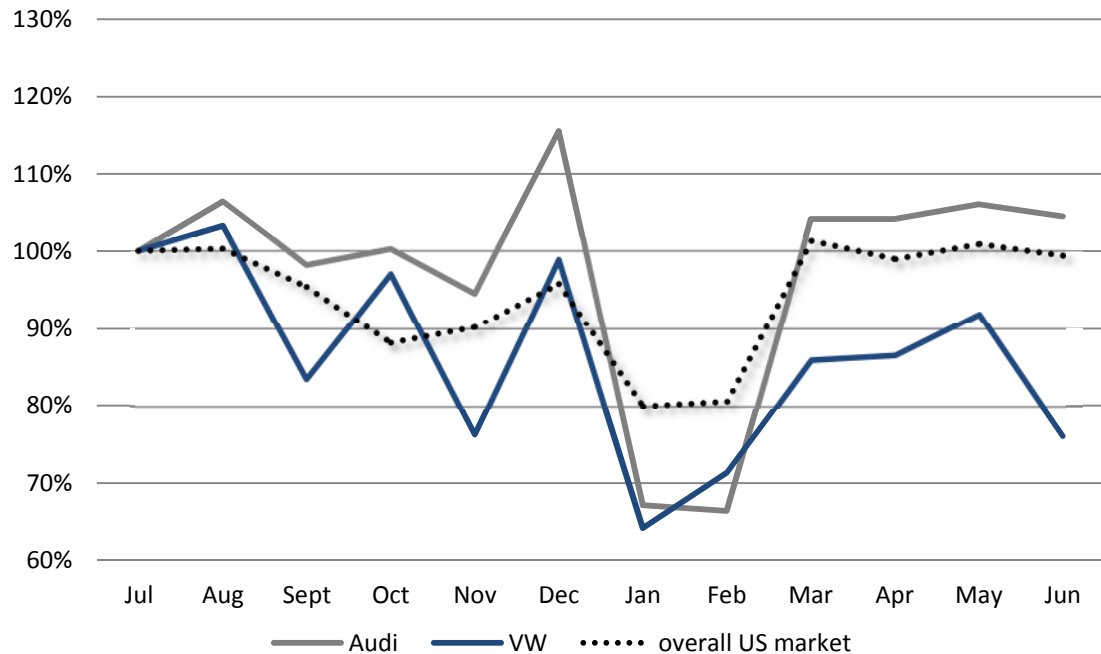


Figure 8: Performance in percentage of sales of Volkswagen and Audi since July 2015

Source: (Volkswagen of America, Inc. (d), 2016), (AUDI AG, 2016) and (Automotive World (a)) – own illustration

Figure 8 is visualizing the performance of Volkswagen and Audi regarding the sales volume compared to the overall American market for passenger cars since July 2015. Therefore, the overall sales figures of all OEMs selling cars in the U.S. are consulted. The number of sold cars in July is set as 100% and the percentage of the following months indicates if the market increased or decreased. Basically, the development of the sales figures of Volkswagen and Audi allows a better interpretation in an overall context. The blue line of the Volkswagen brand is on average already lower than the dotted line of the U.S. market. In January 2016 the U.S. market sells only 80% of the units compared to the number of units that have been sold in July; however Volkswagen sells less than 70%. By contrast, Audi performs better than the average American market until December. But in January 2016 the sales figures drops likewise below 70%. Also the overall U.S. automobile market performed not that good in January, due to two selling-days' less and a

blizzard on the east coast. The grey line of Audi outperforms the dotted line in March 2016 again and stays above until the end of the evaluated time frame, whereas the blue line of Volkswagen is still below. In March, Volkswagen is selling 15% less cars than in July 2015 and in June 2016 it even 20% less. In conclusion, the gap between the overall American sales performance and the sales performance of Volkswagen is getting bigger.

4.1.1.2 Impact of the crisis on the sales volume of Mercedes-Benz and BMW

Not only the brands of the Volkswagen Group are well known for diesel engines, but also the German competitors Mercedes-Benz and BMW. During the diesel- and CO₂-issue of Volkswagen the both competitors had to defend similar accusations once in a while. Additionally, the volume of sale is with 30.000 cars per month on a similar level. That is why they are now to be considered.

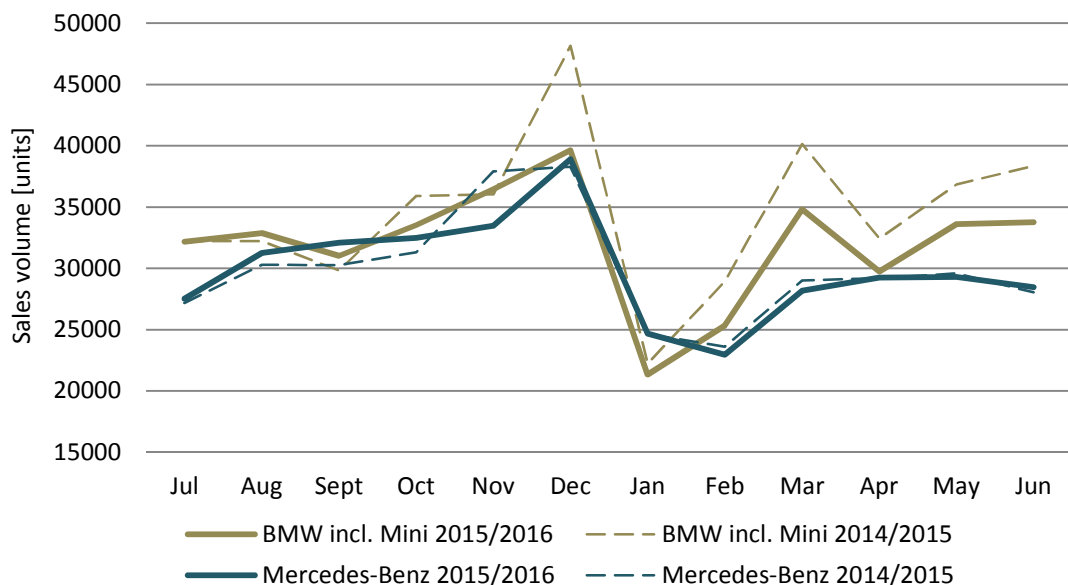


Figure 9: Sales volume in units per month of BMW and Mercedes-Benz in the U.S.

Source: (BMW of North America, LCC., 2015) and (Mercedes-Benz USA, LLC., 2016) – own illustration

In figure 9 the volume of sales in units per month is illustrated. The continuous lines are representing the sales figures from July 2015 to June 2016, whereas the golden

line is showing the sales figures of BMW in the U.S. and the sales figures in of Mercedes-Benz are presented in the color tone petrol. Again, the dashed line illustrates the sales figures of the previous year. The two lines in the diagram representing the sales figures of BMW are showing roughly the same course in the first five months with a similar number of cars sold. Although, December 2015 is the month with the highest sales volume, the high level of December 2014 with over 45.000 units sold is not achieved. Since then, the continuous line stays below the dashed line. The two lines of Mercedes-Benz rise also up to a sales volume of over 35.000 units in December and drops then to less than 25.000 units in February. In comparison to the already shown diagrams, it should be emphasized that the petrol colored lines for the period 2015/2016 is approximately congruent to the course of the previous year over the complete period from July until June.

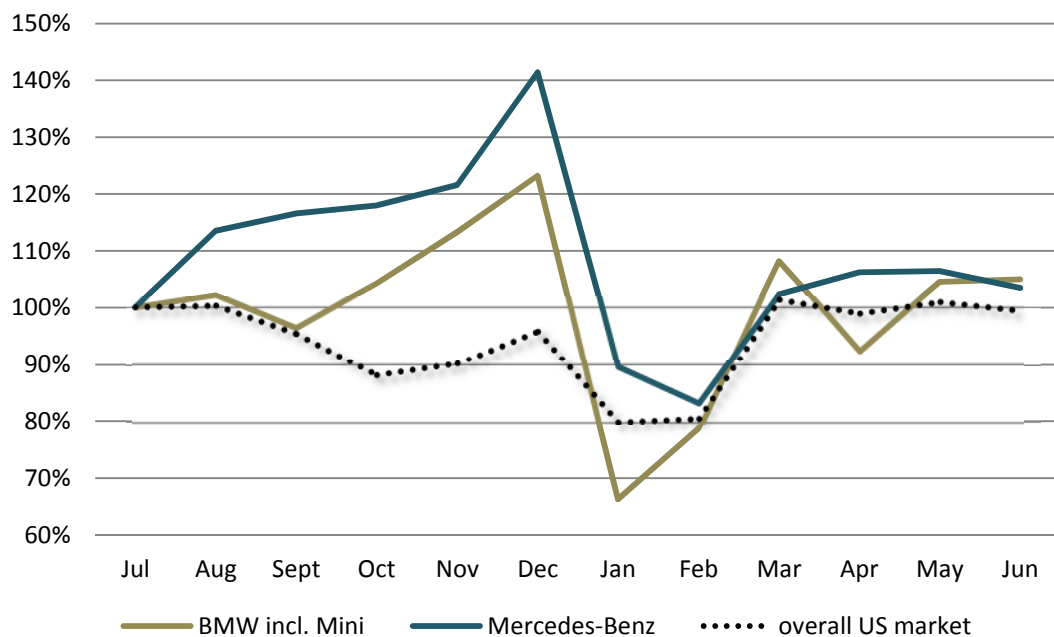


Figure 10: Performance in percentage of sales of BMW and Mercedes-Benz since July 2015

Source: (BMW of North America, LCC., 2015), (Mercedes-Benz USA, LLC., 2016) and (Automotive World (a)) – own illustration

In order to bring the sales volume in the context of the performance of the overall automobile market in the United States, the change of the sales volume is shown in percentage in figure 10. The dotted line, which graphs the overall U.S. automobile market, is referring to the same sources than in the upper chapters, so it is identical

as in the previous chapter and the focus moves immediately to the lines of the OEMs. The sales figures of BMW are developing in the same manner than the overall market from July 2015 until September and in February and March 2016. In the middle of the time period the sales volume increased up to 120% in December, which means that BMW had a growth in sales compared to a reduction of the overall US market. The peak is followed by a weak January 2016 with less than 70% of sold cars compared to the figures of July. Mercedes-Benz shows a weak January too, with a sales volume of 90% compared to the number of July 2015. Nevertheless, the line of Mercedes-Benz always outperforms the overall US market. The difference between these two lines rises from 15% in August to 40% in December. Up from March the line of Mercedes-Benz approaches a slightly higher percentage regarding the development of sales figures than the overall US market.

4.1.2 Impact of the crisis on the sales volume of domestic competitors

In the last chapters there was a focus on the OEMs received Notices of Violation by the EPA and the German competitors, which are using also Diesel technologies. In the upcoming chapters the focus turns to the American OEMs. The big three companies dominating the market, are Ford, GM and FCA. So the sales figures of these companies will be evaluated on the following pages in more detail. Thereby, the same kinds of diagrams are used. One diagram is created for comparing the sales volume with the once from the previous year in order to distinguish from seasonal and particular changes. Another diagram is used to place the performance and development of the sales volume in the context of the overall U.S. automobile market.

	Month-End Days' Supply				
	March 2016	February 2016	March 2015	Plus/Minus Prior	Year-Ago
FCA	82	89	74	-7	8
Ford	80	84	65	-4	15
GM	71	67	76	4	-5
Light Vehicle Total	65	69	58	-4	7

Table 3: Month-End Days' Supply of FCA, Ford and GM
Source: (WardsAuto (b), 2016) – own illustration

The Days' Supply Rates (table 3) of the American car manufacturers stay constant. Like in 2015 the level is also in March 2016 above the average. Only Ford records a significant increase of 15 days in comparison to the prior year.

4.1.2.1 Impact of the crisis on the sales volume of Ford

The Ford Motor Company sold in the period from July 2015 to June 2016 between approximately 175.000 and 250.000 cars in the United States each month. Included are the brands Ford and Lincoln in this figures. With less than 10.000 cars, there is no scientific significance to list the brand Lincoln separately.

In the inserted illustration (figure 11), it becomes obvious that Ford sold in the year 2015/2016 always more cars per month than in 2014/2015 because the turquoise, continuous line stays always above the dashed one, excepting May 2016. However, since August 2015 the sales volume drops, only interrupted by a strong December in the year 2015 as well as in 2014. In the first quarter of 2016 the continuous line rises on a higher level than the dashed line of the first quarter of the previous year.

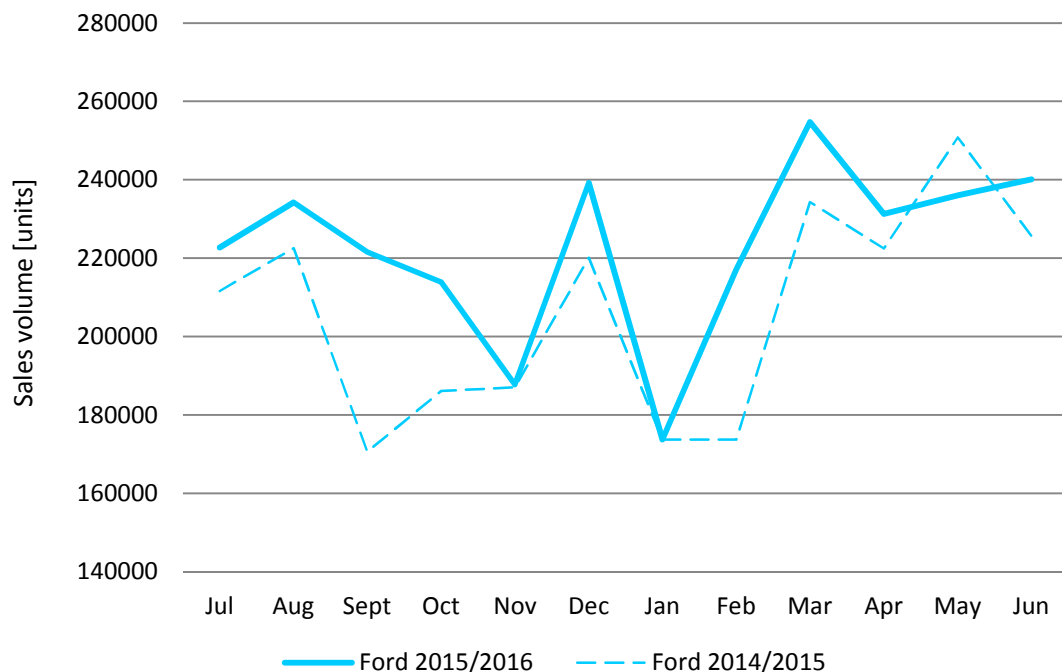


Figure 11: Sales volume in units per month of Ford in the U.S.
Source: (The Ford Motor Company , 2016) – own illustration

Figure 12 also proves the described development of the sales volume of Ford. The December is not even for Ford a strong month but also for the overall U.S. market. Apart from November and January, Ford is outperforming the American market. In the first months the difference between the growth and decrease of Ford was on a 5% higher level and from December to June, it was even on a 10% higher level compared to the average of the market for passenger cars in America.

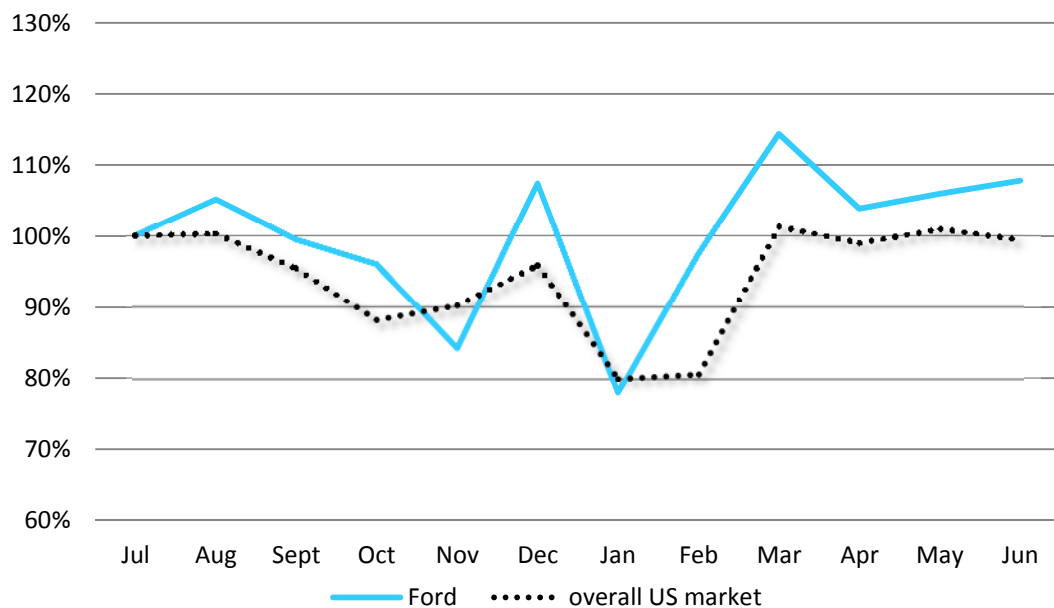


Figure 12: Performance in percentage of sales of Ford since July 2015

*Source: (The Ford Motor Company , 2016) and
(Automotive World (a)) – own illustration*

4.1.2.2 Impact of the crisis on the sales volume of GM

GM is a company with multiple brands included. Thereof four brands have to be considered regarding the American automobile market: Chevrolet, GMC, Buick and Cadillac. All four named brands of the GM concern are selling more than 10.000 cars per month, but with a volume of roughly 170.000 cars per month Chevrolet has the highest volume by far. Due to the big difference between the sales volumes of Chevrolet and the other three brands, there is a second axis on the right-hand side of the following diagram (figure 13), in order to enable an overview of the figures of all brands that have to be consulted.

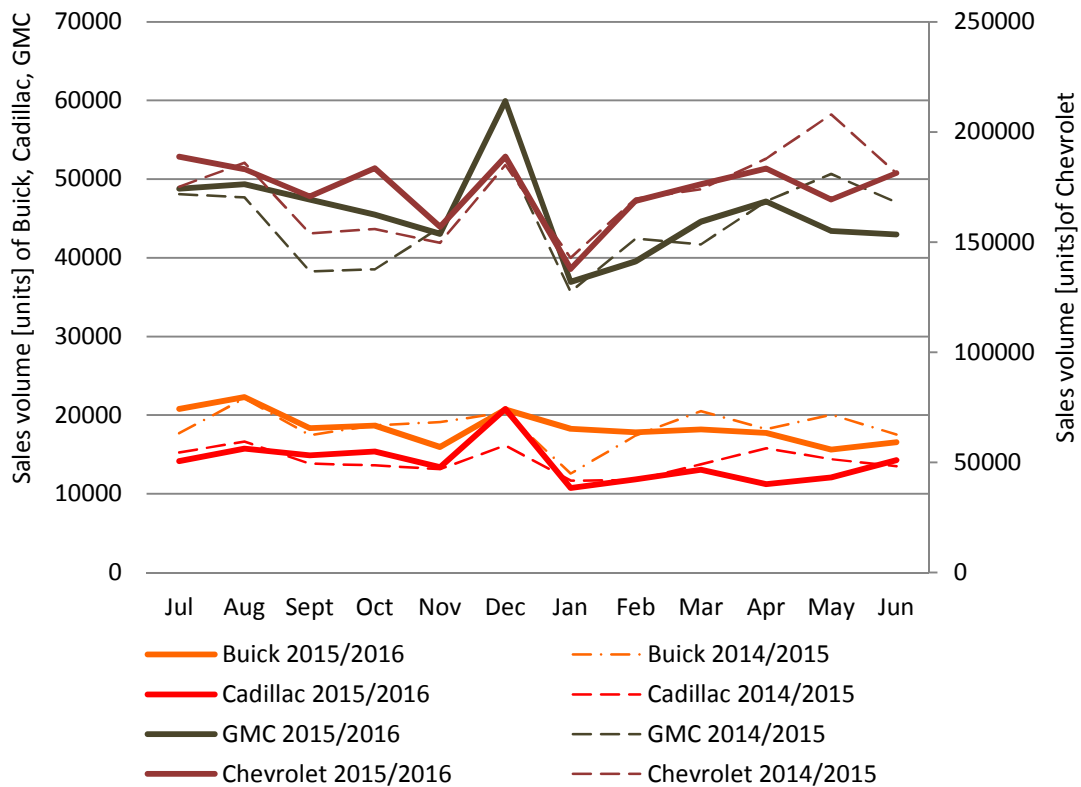


Figure 13: Sales volume in units per month of GM in the U.S.

Source: (General Motors, 2016) – own illustration

The four continuous lines start with strong months in July and August. After a slightly downward trend until November, the strong December is recognizable, especially with a marked peak for GMC and Cadillac. Until then the sales volume achieved the figures of the previous year or is actually slightly higher. The month from January to March are looking identical for the year 2016 and 2015. For these months Buick is an exception because of the converse development. Instead of a rising of the sales volume, which is the case for the dashed line of the year 2014/2015, the continuous line of Buick stays on the same level. For the months April and May all four brands are reporting lower sales figures than in the previous year, but it is steered again in the opposite position in June 2016.

Figure 14 is showing the development of the sales volume in percentage and first the good performance of Cadillac is recognizable. The red line of Cadillac is mainly on a higher level located than the dotted line of the overall U.S. automobile market. Whereas the turnover of passenger cars in the United States was generally lower in December 2015 than in July, Cadillac sold about 150% more cars in this month. GMC gained a high sales volume in December, too. The performance during the

other months in the period from July until March is developing in the same pattern than the market. The ruby-colored line of Chevrolet don't distinguish from the dotted line of the US market, rather it follows exactly the development of the market. The orange line of Buick is again showing a converse development. First it is underperforming the market, but in January and February it tops the weak sale figures of the market. In March all four brands sold approximately 10% less cars compared to the U.S. market and the lower performance characterizes the complete second quarter of the year 2016.

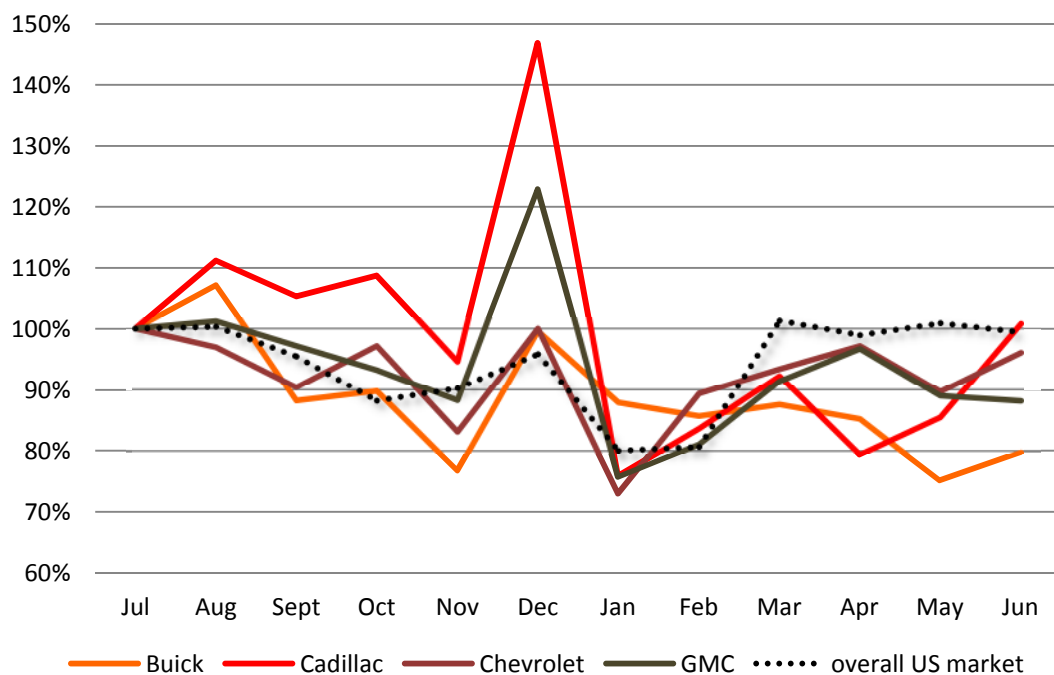


Figure 14: Performance in percentage of sales of GM since July 2015
Source: (General Motors, 2016) and (Automotive World (a)) – own illustration

4.1.2.3 Impact of the crisis on the sales volume of FCA

The concern Fiat Chrysler Automobile (FCA) is like GM a group including various brands. Thereof, Jeep is gaining the highest sales volume in the United States. Dodge and Ram are with roughly 40.000 sold cars per month also an essential component of the group. Furthermore, the brand Chrysler is considered as fourth brand. The other brands do not sell cars in the American market or have a market share which is of no scientific relevance.

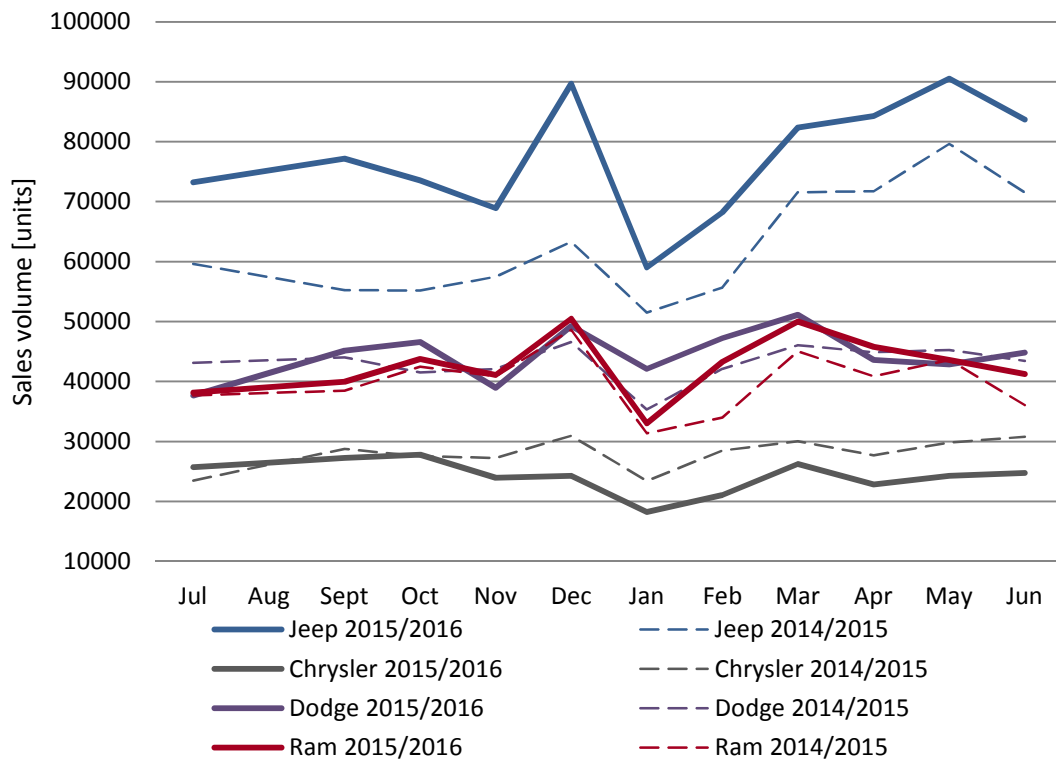


Figure 15: Sales volume in units per month of FCA in the U.S.

Source: (FCA US LLC., 2015) – own illustration

In the year 2015/2016 Jeep sold about 10.000 cars more each month compared to the year 2014/2015. In figure 15 it is clearly illustrated, that the light-blue continuous line for the actual sale figures of Jeep is over the complete time period far above the dashed line of the previous year. The purple line of Dodge distinguishes and outperforms the dashed line from January to March. Ram is represented by the magenta colored lines. The continuous and dashed lines of Ram are nearly congruent until January. In particular terms Ram is selling approximately 5.000 cars per month since February 2016 in comparison to the sales figures of February 2015. Within the FCA group the brand Chrysler is developing controversy. Chrysler achieved until October the same sales volume than in the year before. Since December 2015 the continuous line runs parallel but below the dashed line.

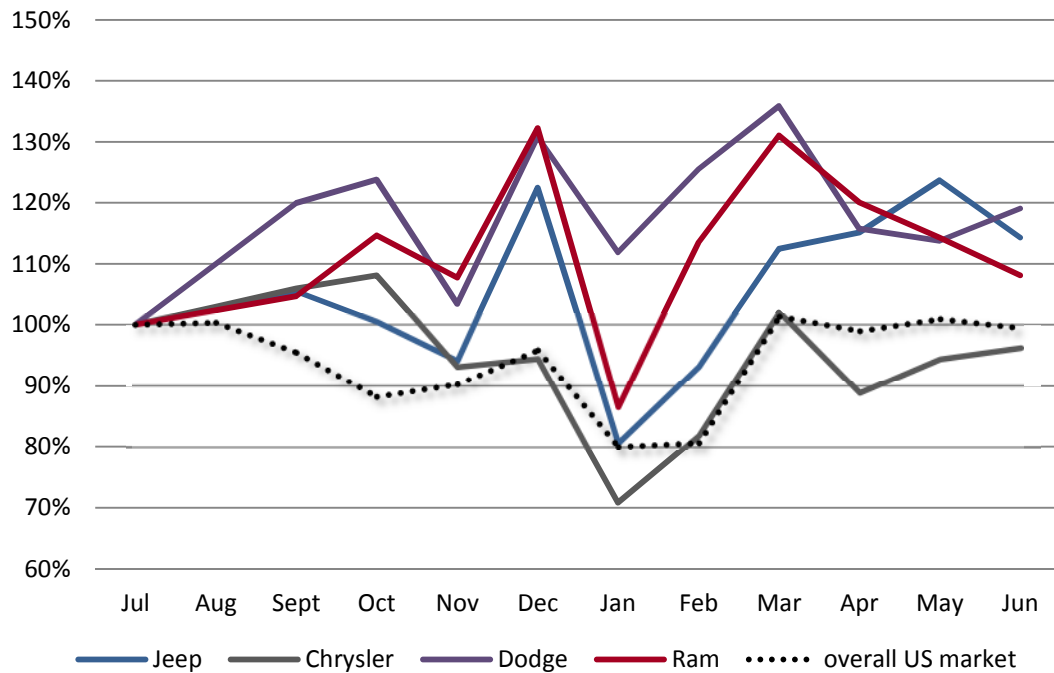


Figure 16: Performance in percentage of sales of FCA since July 2015

Source: (FCA US LLC., 2015) and (Automotive World (a)) – own illustration

Also in figure 16 it is visible, that Chrysler is underperforming since December. Until December, the brand developed still better than the market but since then Chrysler underperforms the U.S. market or is showing the identical growth rates. In March 2016 Jeep, Ram and especially Dodge have 110% to 135% more sales than in July 2015. This goes along with the increase of the sales volume and basically, the three brands outperformed the overall market for passenger cars in America during the complete illustrated period.

4.1.3 Impact of the crisis on the sales volume of further competitors

The following chapters are focusing on further competitors with high market shares, which are all located originally in Far East. Toyota is with roughly 180.000 sold cars per month in the U.S. one of the most important competitor, followed by Honda and Nissan. The final brands that have to be considered are Hyundai and Kia with a sales volume of 50.000 to 70.000 sold cars, each. In the next chapter Toyota,

Nissan and Honda are pooled together and afterwards the evaluation of Hyundai and Kia can be found in a common chapter.

	Month-End Days' Supply				
	March 2016	February 2016	March 2015	Plus/Minus Prior	Year-Ago
Honda	69	66	60	2	8
Hyundai	57	74	50	-17	7
Kia	57	74	50	-17	7
Nissan	53	59	56	-7	-3
Toyota	50	50	42	0	8
Light Vehicle Total	65	69	58	-4	7

Table 4: Month-End Days' Supply of Honda, Hyundai, Kia, Nissan and Toyota

Source: (WardsAuto (b), 2016) – own illustration

In table 4 the Days' Supply of the competitors from Far East are listed. Compared to the values from March 2015, the current Days' Supply is constant and with exception of Honda the values are even below the average. To highlight Hyundai and Kai, there was even a reduction of 17 days compared to the prior month.

4.1.3.1 Impact of the crisis on the sales volume of Toyota, Honda and Nissan

In the American automobile market Toyota is an important participant with a high market share and regarding the worldwide sales Toyota is even the main competitor to Volkswagen and GM. Honda and Nissan, both also gaining a high sales volume, have to be considered in the U.S. market, as well. The following evaluations are without the sales volume of Lexus, which is a part of the Toyota concern and without Infiniti, which is a part of the Nissan concern. Both brands, Lexus and Infiniti, achieve sales volumes that are too low in the context of the entire corporate group.

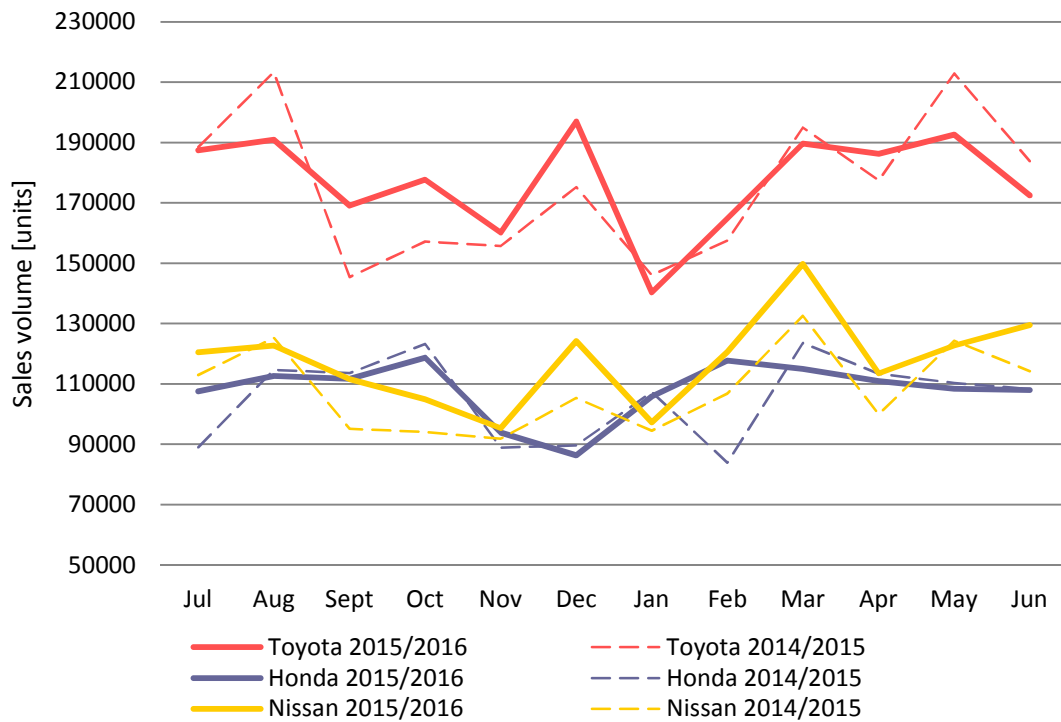


Figure 17: Sales volume in units per month of Toyota, Honda and Nissan in the U.S.

Source: (Toyota Motor Sales, USA., Inc., 2016), (Honda Motor Co., Ltd., 2016) and (Nissan, 2016) – own illustration

Stating with Toyota, the rose-colored line, which is visible in figure 17, shows that the sales volume was firstly in the year 2015/2016 below the sales volume of the previous year. The situation changed in August, where the continuous line crosses the dashed one. Since January 2016, both lines run in the same manner. The lines representing Honda rise slightly. In October a decrease of the sales volume starts and in December 2014 as well as December 2015 the sales figures achieve its lowest point and recovers afterwards again. In comparison to the weak number of sales of Honda in December, the yellow line of Nissan has a peak in December. In total, Nissan sold more cars each month in the period 2015/2016 than in the period of the previous year.

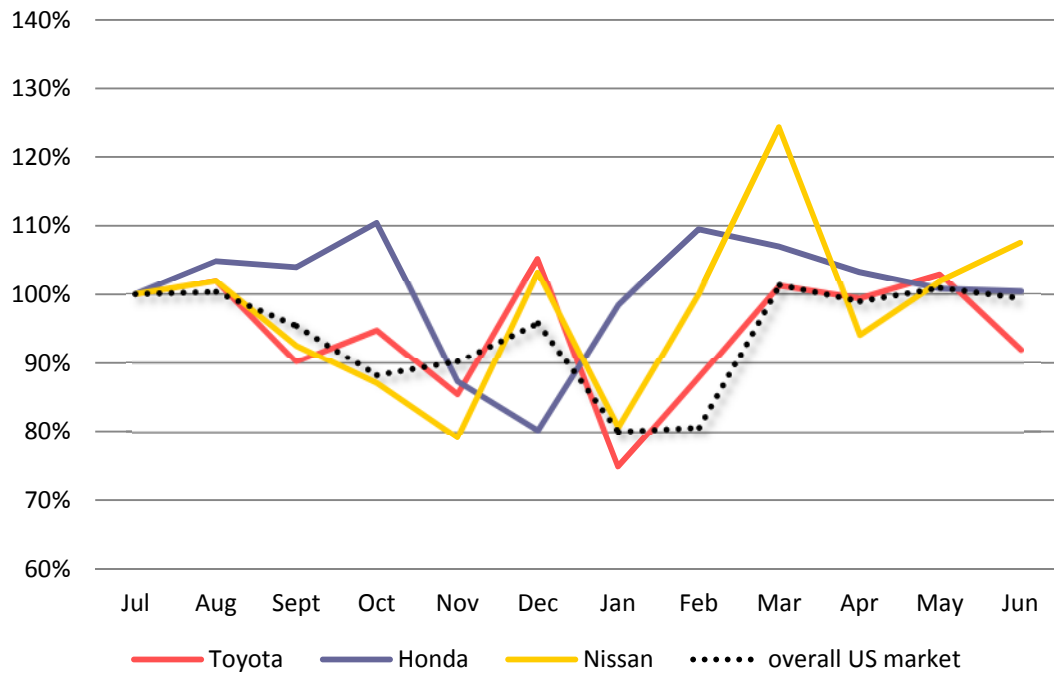


Figure 18: Performance in percentage of sales of Toyota, Honda and Nissan since July 2015

Source: (Toyota Motor Sales, USA., Inc., 2016), (Honda Motor Co., Ltd., 2016), (Nissan, 2016) and (Automotive World (a)) – own illustration

In the diagram above (figure 18) it is illustrated, that Toyota as well as Nissan is showing a similar development regarding the sales figures of the year 2015/2016. Both brands develop in the manner of the overall U.S. automobile market, which is represented as black, dotted line. The biggest visible difference is that the yellow line of Nissan has a 20% larger increase in the months of February and March 2016. Honda develops controversially during the period. The American market is decreasing until October and in contrast, Honda sold more vehicles in the third quarter of 2015. Then, the dotted line recovers, whereas the line of Honda drops until December. In January it is again exactly the other way round, so the U.S. market has lower sale figures but Honda is recovering and outperforming the market until June.

4.1.3.2 Impact of the crisis on the sales volume of Hyundai and Kia

Hyundai and Kia are part of a common concern. Nevertheless, they are listed separately because of an individual sales volume of approximately 50.000 to 70.000 units per month.

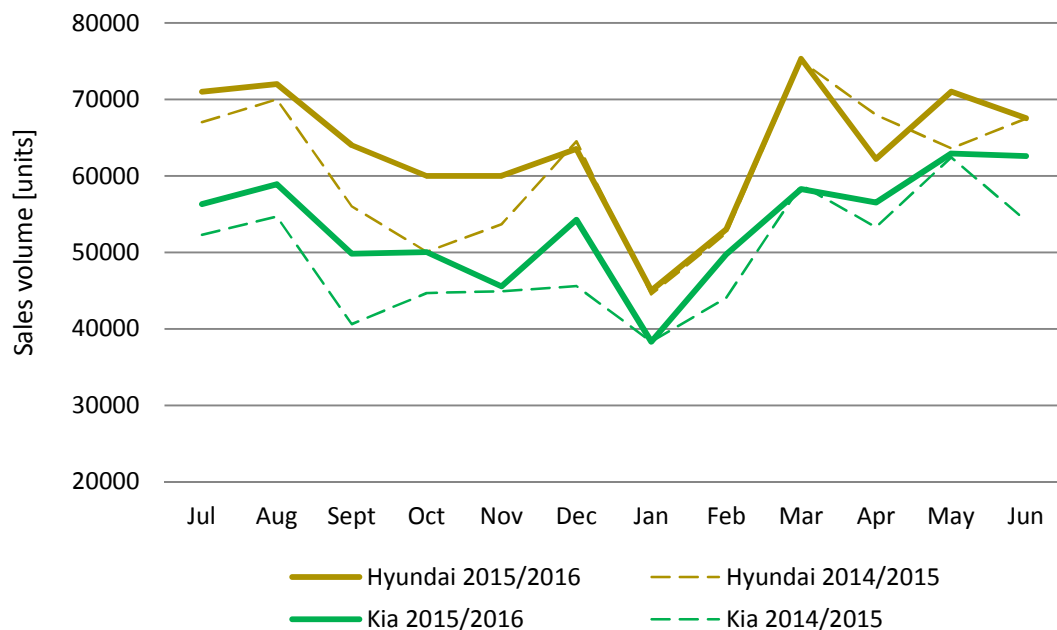


Figure 19: Sales volume in units per month of Hyundai and Kia in the U.S.

*Source: (Hyundai Motor America , 2016) and
(Kia Motors America, 2016) – own illustration*

Both brands visible in figure 19, record a decreasing sales volume in units per month until November 2015, however they are still outperforming the sales volume of the previous year. After a recovery of the sales figures in December, the lines of Hyundai and of Kia drop to the lowest point in January. Since then the lines rise markedly but the difference between the continuous lines of the year 2015/2016 and the dashed lines of the year 2014/2015 is not that big anymore. Hyundai is even recording the identical values in both years, so the lines run exactly on top of each other.

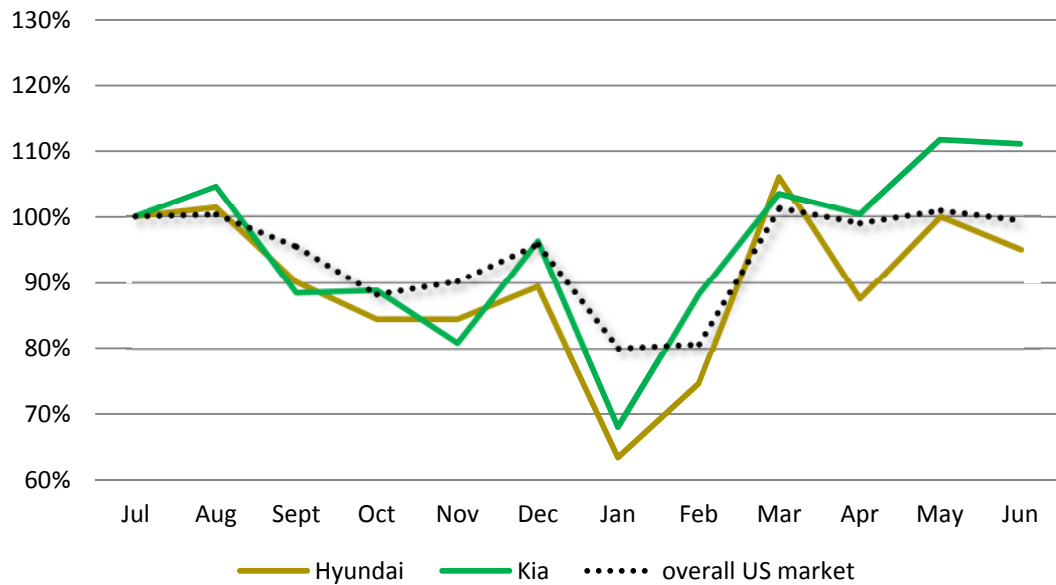


Figure 20: Performance in percentage of sales of Hyundai and Kia since July 2015

Source: (Hyundai Motor America, 2016), (Kia Motors America, 2016) and (Automotive World (a)) – own illustration

In figure 20, the lines of Hyundai and Kia show similar courses, which are also comparable with the dotted line of the overall U.S. automobile market. Although in the main time, both brands underperformed the market. For example in January, the sales of the U.S. market is 80% of the value from July, but Hyundai and Kia sold less than 70% of the volume they sold in July. The green line of Kia gains a higher increase in percentage in February 2016 and since it stays on a slightly higher level with its biggest difference in June 2016.

4.2 Analysis of the market share

In order to bring the latest results into the right context, it is necessary to have first a look into the past and to evaluate the U.S. automobile market in the long term and therefore, again a report from WardsAuto is chosen. The approach is to show the development of the market shares of the main car manufacturers from beginning of the 1960s until 2015. Afterwards, a precise analysis of the market share during the Volkswagen-crisis, so from beginning of October 2015 until end of June 2016, is considered.

4.2.1 Analysis of the market share in the long term

In an analysis of the market shares of the U.S. automotive market published by WardsAuto, all OEMs and their market shares between 1961 and 2015 are listed in detail. The below inserted figure 21 shows the development of the market shares back into the year 1961 and includes only the car manufacturers, which are from relevance for this work and which have been evaluated in the previous chapter. First, in the 1960s, there are three main players in the market: GM, Ford and the todays FCA group. Especially GM has to be highlighted with a market share of over 40% in the year 1961. Volkswagen has already entered the market and was participating with roughly 3% of the market, which went down until the 1990s to only 0.44%. In the 1970s, Toyota and Honda gained shares and in the 1980s Hyundai and Daimler joined. Volkswagen had its comeback in the 1990s and also Kia and BMW gained more market shares. Then in the years around 2009, the drop of GM, Ford and FCA due to the financial crisis is clearly recognizable and around 2011 the season of recalls which caused a drop of Toyotas market share can be seen, too. Although, there was a time of recovery afterwards, the level previous to the crisis has not been achieved anymore. In fact, the other OEMs have slightly increased their market shares in the United States.

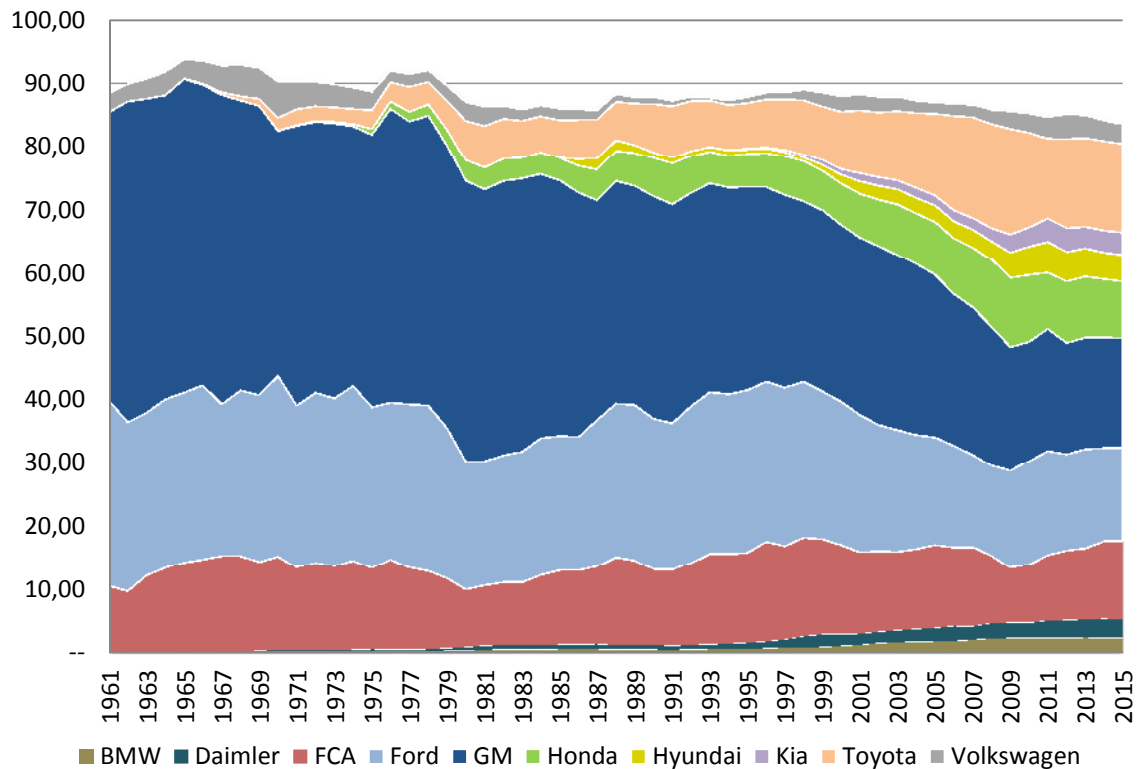


Figure 21: U.S. Total Vehicle Sales Market Share in percentage by selected companies from 1961 to 2015

Source: (WardsAuto (a), 2016) – own illustration

It is worth to have a closer look on the distribution of the market shares in the last 10 years. In order to do so, the underlying table has been stripped down, so that only the last 10 years and the car manufactures with a market share bigger than 0.5% are shown (table 5). Currently, the companies with market shares above 10% are GM, Ford, Toyota and FCA. 10 years ago, the same companies can be found on top of the list; however, the American OEMs recorded heavy losses of market shares in this period of time and especially in the financial crisis in the years 2007 and 2008. The financial crisis is not obvious in the figures of other companies, for example Toyota increased its market share during the crisis. Toyota has a downwards trend in sales in the years 2010 and 2011 with its down point in 2011. In contrary the American OEMs – GM, Ford and FCA – have a upward trend in the two years with a strong year and gains of market share in the year 2011. Also Honda gained market shares in the U.S. market in these years. Nissan and Daimler recorded a constant growth over the last years. A similar development can be recognized by Hyundai, Subaru, Volkswagen and BMW, although the gain in market share stagnated in the last two years.

Company	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
GM	25,59	23,89	23,24	21,93	19,58	18,81	19,20	17,55	17,54	17,43	17,28
Ford	17,01	16,04	14,59	14,19	15,29	16,44	16,48	15,22	15,70	14,73	14,65
Toyota	12,98	14,95	15,96	16,47	16,72	15,01	12,65	14,12	14,12	14,15	14,08
FCA	13,21	12,57	12,62	10,77	8,79	9,22	10,50	11,17	11,33	12,41	12,58
Honda	8,38	8,85	9,43	10,59	10,85	10,45	8,80	9,62	9,60	9,15	8,90
Nissan	6,17	5,98	6,49	7,05	7,26	7,72	7,99	7,72	7,86	8,23	8,33
Hyundai	2,61	2,67	2,84	2,98	4,10	4,57	4,95	4,75	4,54	4,31	4,27
Kia	1,58	1,73	1,86	2,03	2,83	3,03	3,72	3,77	3,37	3,44	3,51
Subaru	1,12	1,18	1,14	1,39	2,04	2,24	2,05	2,28	2,67	3,05	3,27
Volkswagen	1,76	1,91	1,97	2,30	2,79	3,04	3,39	3,90	3,56	3,26	3,09
Daimler	2,16	2,37	2,14	2,41	2,43	2,48	2,71	2,76	2,90	2,96	2,98
BMW	1,76	1,84	2,04	2,25	2,28	2,26	2,34	2,35	2,37	2,35	2,27
Mazda	1,48	1,58	1,80	1,96	1,96	1,95	1,92	1,87	1,79	1,82	1,79
Mitsubishi	0,71	0,70	0,78	0,72	0,51	0,47	0,61	0,39	0,39	0,46	0,53
Other	3,48	3,74	3,10	2,96	2,57	2,31	2,69	2,53	2,26	2,25	2,47
Total Vehicles	100	100	100	100	100	100	100	100	100	100	100

Table 5: U.S. Total Vehicle Sales Market Share by Company [%]

Source: (WardsAuto (a), 2016) – own illustration

4.2.2 Analysis of the market share in the short term

The sales volumes and its development during the crisis have been precisely evaluated in chapters 4.1 and as a consequence the market shares of the brands may have changed, which is going to be analyzed in this chapter. As a basis, the sales figures of the first three quarters of 2015 are added up. The point where the crisis started is set on 22nd September, 2015, so end of September. Thus, September is counted to the months without special influences of the crisis. Out of the cumulative sales volumes, the market share is calculated and is illustrated in figure 22. Basically, only the brands where the development of the sales volumes is described precisely in the upper chapters are considered. At this starting-point the further sales volumes of the fourth quarter of the year 2015 as well as the first half of 2016 are added up and show the market share in figure 23. Both illustrations are

similar structured. The brands belonging to a common corporate group have an additional colored background. For example, the brands Buick, Cadillac, Chevrolet and GMC, which are all members of GM, are pooled together with help of a common, dark blue background. Below, the market shares of the automobile market in the United States in advance of the Volkswagen-Crisis (figure 22) and the market share nine months later (figure 23) are visualized.

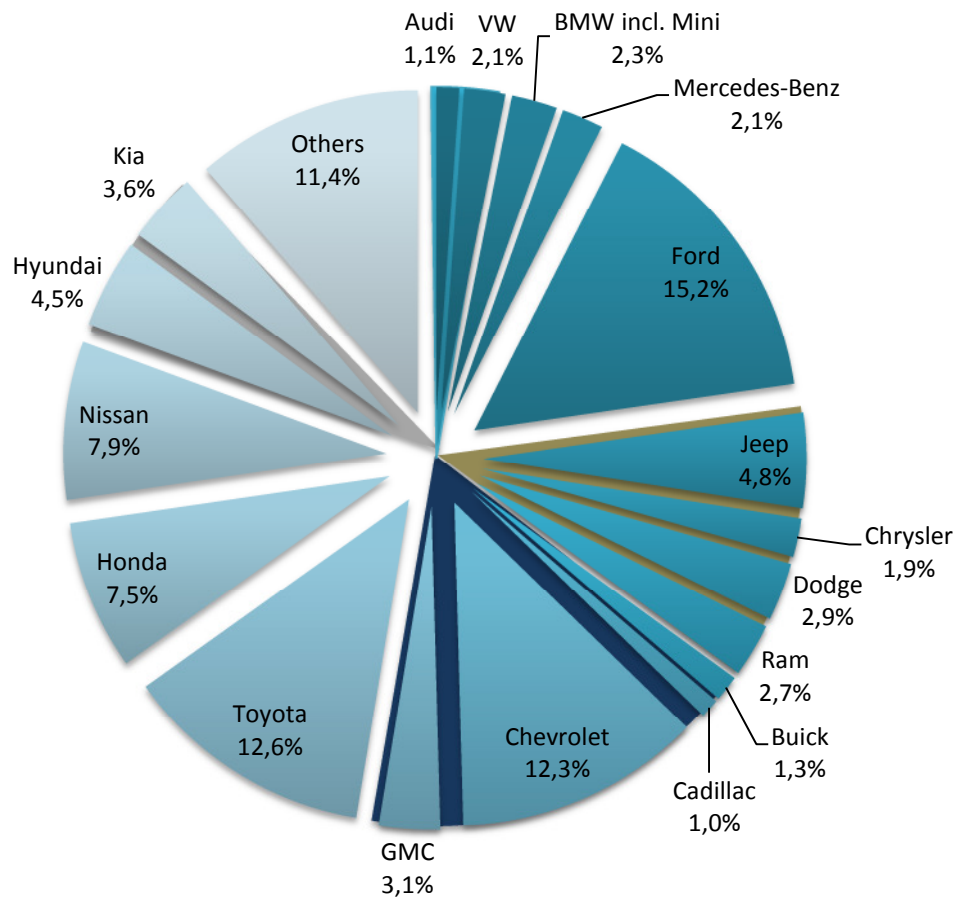


Figure 22: Market shares in the US (1st-3rd quarter of the year 2015)

Source: Referring to data from the previous chapters – own illustration

In the period of nine months after beginning of the diesel- and CO₂-issue, the market share of Volkswagen in the U.S. decreases from 2.1% to 1.9%. In comparison, the market share of Audi is 0.1% higher. BMW and Mercedes-Benz stay on the same percentage. Changes are recognizable for the American car manufacturers. The market share of Ford rises from 15.2% to 15.4%. FCA with its brands Jeep, Chrysler, Dodge and Ram raises its market share to 13%, which is a plus of 0.7%

within this short period of time. It has to be noted, that Jeep, Dodge and Ram gained market shares and only Chrysler lost 0.1%. As third American car manufacturer GM with its brands Buick, Cadillac, Chevrolet and GMC stay with 17.6% of market share on the same level. Only Chevrolet records a small downturn of 0.1%. So in total, the American OEMs gained plus 0.8% market shares of the U.S. automobile market within the nine months after beginning of the crisis. Honda stays with 7.5% on the same level. Toyota with a market share of 12.5% and Hyundai with a market share of 4.4% lose 0.1% each. Nissan improved its market share from 7.9% to 8.1%, which is a plus of 0.2% and Kia gained 0.1%, which results in a market share of 3.7%. The other car manufacturers of the American market, which are pooled in the part 'Others', had a reduction of 1%.

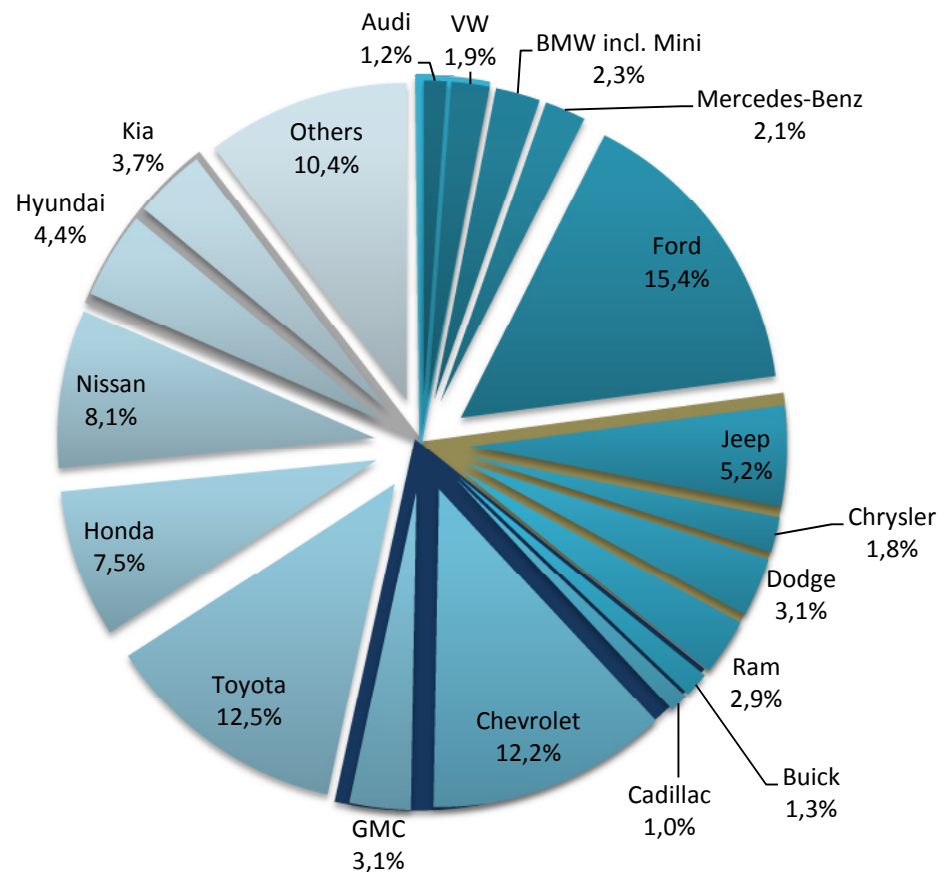


Figure 23: Market shares in the US (entire year 2015 and 1st half of the year 2016)

Source: Referring to data from the previous chapters – own illustration

In summarization, 9 months after the beginning of the diesel- and CO₂-issue of Volkswagen, the market share in the U.S. of most companies did not change significantly. The American OEMs gained market shares, especially Ford and FCA and also Nissan outperformed the overall market. Volkswagen lost market shares.

4.3 Summary

In order to analyze the impact of the Volkswagen crisis, the official sales figures of Volkswagen are compared with the sales figures of the previous year and additionally, the performance of the company in comparison to the performance of the overall automobile market in the U.S. is figured out. The same approach is done for Audi that is also affected by the accusations of the EPA and for Mercedes-Benz and BMW, which are both also well-known for diesel powered engines. Further the domestic competitors, GM, FCA and Ford are analyzed in the same manner as well as competitors from Far East. The sales volume of Volkswagen is significantly reduced and the other German OEMs are lowered from better sales figures to the same level of the previous year. The domestic competitors are mainly outperforming the American market and the impact on the further competitors from Far East is not of greater relevance.

In the long-term the impact of the crisis is not foreseeable. A long-term analysis of the market shares is showing that the American OEMs are not dominating the market by themselves anymore and another strong participant, Toyota, is not able to achieve the market share, which the company had before its crisis in 2009 until 2011. Moreover, in times where a competitor struggled with a crisis, the American companies increased their shares in the domestic market. An evaluation of the market shares before and nine months after the Volkswagen diesel- and CO₂-issue is figuring out that Volkswagen lost shares in this time frame, whereas the American OEMs gained market shares. The development of other brands isn't showing scientific significance. Even Audi, Mercedes-Benz and BMW are staying on the same level of market shares although they recognized a reduction in their sales volumes.

5 Validation and interpretation of the results

5.1 What impact crises have on market share

For the interpretation and classification of the results, a view on Volkswagen in the short term is chosen first. Although it might not be necessarily imperceptible on the first glance, the crisis is reducing the sales figures of the affected company. The crisis has thwarted the plan of Volkswagen to grow in the American market, which is closely described in the following sections. The current sales figures are supporting the thesis because Volkswagen is not able to sell as many cars per month as they did in the year before the crisis and they also do not grow in the same speed of the overall U.S. automobile market. Especially the performance in the year 2016 is significantly lower compared to the American market. For the evaluation of the change of the market share during the first nine months of the diesel- and CO₂-issue, the officially published sales figures of Volkswagen are also used and the Days' Supply Rate indicates that not all sold cars have been delivered to a customer and in turn the higher Days' Supply Rate equals a rise of the stock. The actual sales figures can be dressed up by increasing the stock. Another lever is the discount for a product to push the sales, but this lever is not taken into account for this work. Summarizing, the crises is reducing the sales figures of the affected company in the short term.

The long term impact of crises is getting more significant, which can be seen with help of the Toyota crisis of the years 2009 until 2011. Toyota lost in the first calendar year after beginning of the crisis 1.7% of market shares in the United States. In the second year, when another recall took place, the loss amounts already 2.3%. The long duration of the crisis is caused by a failure in Toyotas communication strategy of the crisis. Volkswagen is showing a different approach by acting quickly, providing a maximum of transparency and professing strictly to the U.S. market. Although the impact of the diesel crisis cannot be completely measured yet, it has to be expected that the lower monthly sale volumes will further strengthen the loss of market shares, but a reasonable approach in the crisis communication could reduce the impact by keeping the duration of the crisis in a faceable dimension.

The impact on Audi is not that clearly recognizable. The better sales figures are lowered to the level of the previous year due to the crisis. In turn, this does not lead to a scientific impact on market shares. One reason can be that in the luxury segment of the bigger cars and SUVs, which is Audi mainly selling in the U.S., the share of gasoline powered engines is higher and the lower fuel consumption is not of great relevance. The same is true for the brands Mercedes-Benz and BMW, however it is interesting that both brands are recording lower sales even they are not affected by the Notification of Violation by the EPA. Since the German OEMs are strongly offering diesel technology, these engines are perceived as a German innovation and this is named as the reason why the above-average growth is reduced or stopped by the Volkswagen diesel- and CO₂-issue. A similar pattern cannot be found in the past Toyota crisis, but of course the basic of the crisis was of a different nature. Instead of a technology, the reason for the Toyota crisis was a defective throttle, which is part of each car and therefore the throttle issue had to be associated with one specific company. Otherwise the entire automobile industry would have recorded a reduction in sales volumes, but in contrast the U.S. market recorded one of the strongest increases in these years.

By construing the impact of the Volkswagen crisis on American OEMs, the characteristics of these companies should be considered first. The Days' Supply Rate of all three U.S. car manufacturers is on a relatively high level, weather in the year 2014 or 2015. Thus for the American OEMs the inventory doesn't indicate a covering of lower sales volumes. In fact, Ford increased its sales, GM stayed more or less on the same level and FCA increased the sales as well. The strong growth of FCA is mainly driven by the brand Jeep, which offered many new products in this period. In the six months after beginning of the emission crisis, three American companies gained significantly 0.8% of market shares in total. The comparison with the Toyota crisis serves again as support for this study. During the first year of the Toyota crisis, the mentioned companies gained +0.81% of shares of the U.S. automobile market and a loss of 0.77% of GM, due to the bankruptcy of GM is already included in this calculation. From 2010 to 2011 the additional gain of market shares accounts even 1.71%. Summarizing it is obvious, that the American car manufacturers are gaining market shares in the U.S. market during crises of competitors.

The impact for the competitors from Far East is not relevant for further scientifically studies, since the impact is too small. Nor in the Volkswagen emission crisis, neither in the Toyota crisis, an extraordinary development is recognizable.

5.2 To what extent is the U.S. defending its automobile market?

First there are regulations set by the U.S. Government which can be associated to protectionism actions with the aim to protect the American automobile industry, for example tariffs or the local content requirement of 62.5%. Further, there is the Clean Air Act prescribing the amount of nitrous oxide released emissions. The level of nitrous oxide emissions have to be on a lower level than in Europe or other countries, which means that the obstacle to offer a diesel engine in the U.S. market is higher. The strong regulations seem to push some companies to prohibited measures, especially in combination with high costs pressures. With the mentioned regulations the U.S. defend its automobile industry but not precisely the automobile market and they cannot be linked directly to the Volkswagen crisis as they have been in place before, but at least the Clean Air Act was used as legal base for accusations.

The authorities of the United States of America use a point of time for sending out the Notifications of Violation, where the long term consequences can become more weight and in term this increases the character of defending the market. Although cars back from the year 2009 are affected by the accusations of the U.S. authorities, the detection of the defeat device has been published in September 2015. From then, the U.S. automobile market is expected to grow two more years until a cyclical downturn will set in, which means that there is the chance to gain market shares in the general growing American market for two years until it will be more difficult for a company to grow in a surrounding of a saturated or even decreasing market. Many sales will be driven by the replacement of older cars from the 2000s as the scrappage rate will reach its peak in the upcoming years. For a car manufacturer the focus during that time is not only to get new customers, but also to keep their existing customers and to convince them buying a new car from the same brand again. Volkswagen has not only the risk to acquire less customers until the cyclical downturn will set in, but also to loose many existing customers within a short time

because of a possible loss of confidence due to the emission crisis. In the upper chapter the analyses and studies show that the U.S. car manufacturers record a plus of sales volumes and market shares, whereas foreign competitors go through difficult times. The Toyota crisis took place at a similar important time, namely, after the financial crisis and therefore during a very strong time of recovery. Until today Toyota never achieved the market shares of the time before the crisis again. To summarize, the emission crisis of Volkswagen could not only have a defending character for the U.S. automobile market, moreover it could boost the domestic OEMs.

The U.S. defend its market by crossing out an advantage of a competitor, not by law but by creating bad publicity through the accusations of the U.S. authorities. Volkswagen had a competitive advantage by providing diesel technology. They differ in their portfolio from domestic OEMs and they offer diesel powered engines since many years. Thanks to the history of diesel and its high market share in Europe, Volkswagen is very experienced in this technology, which is also well known in the United States. Since only 3% of the American customers make a buying decision for a diesel powered engine, there is a high potential of new customers, which can switch from other car manufacturers famous for gasoline like the American OEMs to a diesel engine with lower fuel consumption. In the background of an increasing environmental awareness, the diesel technology was seen as the next step, because the technology has been promoted as cleaner and more eco-friendly. In an increasing market for cleaner technology, diesel had a high potential in the short-term, because in the long-term it is expected that there will be a competitive electrical engine. In such a surrounding Volkswagen had a competitive advantage through differentiation and a great possibility with their strategy to gain customers even in the cyclical downturn of the automobile market in the closer future. Now the EPA accused Volkswagen to cheat the technology with help of a defeat device and seems to prove that diesel is not as clean as promoted. Thus, the competitive advantage of Volkswagen, and the same is true for other brands that are well known for diesel technology, is less worth and it is not expected anymore that the market in the United States for diesel engines will grow that strong. In contrast, the diesel- and CO₂-issue will push the market for hybrid engines and electrical vehicles, a technology where mainly all OEMs are equals. With the crisis, the U.S. market defeats a technology and therefore companies that included the technology in their competitive strategy. An advantage is damaged and the defeat of

a technology becoming more popular enables the equaling of all competitors in the American automotive industry.

The impact of the Volkswagen crisis on the buying behavior of customers has a defending character as well. A buying decision of an individual customer is based on the maximization of the perceived customer value for this individual customer. By reporting the crisis in all media channels nationwide the total perceived customer value is reduced, that means the perceived benefits for a customer are reduced and in contrast the perceived sacrifices are raised. The positive image of diesel engines as a clean and eco-friendly technology is questioned critically since the EPA has published its analyses. The image benefits and the product benefits are reduced due to these reasons. Additionally, possible recalls are increasing the time costs and therefore the perceived sacrifices. The testimony of Michael Horn before the House Committee on Energy and Commerce on the Capitol Hill supports the described effect and changes in total the balance between perceived benefit and perceived sacrifices. For example the psychological costs for a customer are raised substantially if the producer is summoned before members of the U.S. Government. In conclusion, the total perceived customer value for Volkswagen is decreased by actions from the media and the government, which can lead to the cause that the buying decision is done against Volkswagen and for a competitive product. Furthermore, the U.S. gravity model explains another aspect of the buying decision of an American customer, which has to be considered. A crisis has a negative impact on the gut feeling of a customer and increases the risk that has to be accepted by the customer. In contrast the customer is focusing more on the domestic products on which he can rely and which is strongly supported by the U.S. focused ideology. As a result the sales figures and the market share of the company affected by the crisis decreases and the sales figures and market shares of the U.S. companies are pushed.

5.3 Conclusion

To conclude, the crisis is influencing the automotive industry. The analytical part shows that the sales volumes of Volkswagen decreased and that there is a danger that it decreased lastingly in the U.S. market. Other OEMs, which are also well known for the same suspected technology are recognizing the impacts and are struggling to grow further. In comparison the market shares of the American car manufacturers are pushed. Regarding this results, the United States defend its automobile market. The defense is caused by the use of publicity and media to reduce the perceived customer value of the suspected product as well as using the trust of the customer into domestic products. The impression is strengthened by the point of time, when the diesel- and CO₂-issue has started. In the background of the expected development of the U.S. automobile market, the crisis enables a long lasting impact with sustainable consequences for a company. The comparison with the Toyota crisis years ago shows objectively that it can be difficult to gain market shares again. Having a look on the Toyota crisis the importance of crisis communication becomes obvious, especially for the long term consequences. The longer the crisis lasts, the worse are the impacts. Toyota needed a lot of time for its admission of guilt and did not announced measures quickly. Volkswagen uses a different approach by informing all customers transparently and very fast on all available channels. Additionally, Volkswagen shows an interest in concluding the crisis as soon as possible, but in this case the American authorities are also part of the game as they are the counter part with whom Volkswagen has to come to an agreement. Nevertheless, Volkswagen strives for a fast conclusion and that is why the long term impact may not be as strong as Toyota has to cope with years ago.

Furthermore, the competitive environment is affected because the accusations of the EPA are attacking a part of the competitive strategy of companies and in turn a competitive advantage is crossed out. Due to the Volkswagen crisis, the future of the diesel technology will be questioned critically in the United States. In the meanwhile, investigations regarding the emitted emission values started as well at other brands and Opel, which is part of GM but only available in Europe, and Mitsubishi, both confirmed the use of a defeat device. However, the media response is not as high as it was after the first press release of Volkswagen confirming the accusation.

The target of my work is fulfilled and the analytical part shows not even the impact of the crisis on the market share of Volkswagen in the U.S., but also the impact on the market share of other brands. The comparison of the Toyota crisis and the Volkswagen crisis and its economical classification objectively permits that the U.S. activities have a market defending characteristic.

My opinion follows the above conclusion. It is clearly shown that both Volkswagen and other German OEMs are recognizing an impact on their sales figures in the United States. The technical component of the crisis, the diesel engine, seems to be connected to German OEMs. An environmental related and emotional accusation, like the diesel issue, can cause a big image loss for all mentioned car manufacturers and due to the buying behavior of American customers, Ford, GM and Chrysler have the chance to benefit lastingly. Further, the crisis enables American competitors to catch up a technical and innovative residues since diesel powered engines are not attractive anymore. Electric vehicles are pushed as the future technology where no competitor but Tesla, a new American brand, has an advantage yet. The U.S authorities are defending their automobile market in international legal means. In the background of the future economic development of the American automobile industry, the crisis can have an even bigger influence.

Volkswagen faces the crisis in a very transparent, cooperative and result-oriented way. In my point of view, this allows Volkswagen the chance to solve the crisis faster and to lose less customers. Volkswagen seems to have learned from the negative impact Toyota experienced in its crisis a couple of years ago. The longer the crisis lasts the bigger the impact and this is what Volkswagen tries to avoid. However, the financial consequences, the fines which will amount billions of dollars, can be again a setback for the company. Although I personally think that the crisis is not overcome yet and that the impact will be still recognized in the next years.

IV. Bibliography

Andrews, A. P., Simon, J., Feng, T. & Jun, Z., 2011. The Toyota crisis: an economic, operational and strategic analysis of the massive recall. *Management Research Review*, 34(10), pp. 1064 - 1077.

AUDI AG, 2016. *Vertrieb/Marketing - Audi Mediacenter*. [Online]
Available at: <https://www.audi-mediacycenter.com/de/vertrieb-marketing-228>
[Accessed 20 April 2016].

Automotive World (a), April 2016. *Passenger Car OEM Quarterly Data Book / Q1 - 2016*, Penarth (UK): Automotive World Ltd.

Automotive World (a), January 2016. *Passenger Car OEM Quarterly Data Book / Q4 - 2015*, Penarth (UK): Automotive World Ltd.

Automotive World (a), October 2015. *Passenger Car OEM Quarterly Data Book / Q3 - 2015*, Penarth (UK): Automotive World Ltd.

Automotive World (b), 2016. *NAFTA's new vehicle market: Prospects to 2020*, Penarth (UK): Automotive World Ltd.

BMW of North America, LCC., 2015. *BMW USA News*. [Online]
Available at: <http://www.bmwusanews.com/newsrelease.do?id=2574&mid=243>
[Accessed 25 April 2016].

BörseGo AG, 2016. *Analyse GMT - Guidants*. [Online]
Available at: [http://go.guidants.com/#c/Analyse/\[{"i":"118955:4:last"},1\]](http://go.guidants.com/#c/Analyse/[{)
[Accessed 05 May 2016].

Bowen, S. A. & Zheng, Y., 2015. Auto recall crisis, framing, and ethical responses: Toyota's missteps. *Public Relations Review*, Volume 41, pp. 40 - 49.

Chowdhury, S. D., 2014. Strategic roads that diverge or converge: GM and Toyota in the battle for the top. *Business Horizon - The Journal of the Kelley School of Business, Indiana University*, Issue 57, pp. 127 - 136.

Daimler AG - Steuerung Produktprojekte C-Klasse, 2015. *Zollkosten für Mexiko Fahrzeuge aus Südafrika oder Tuscaloosa*. Sindelfingen, Stuttgart: Daimler AG - International Customs Compliance.

Davenport, C. & Ewing, J., 2015. *The New York Times*. [Online]
Available at: http://www.nytimes.com/2015/09/19/business/volkswagen-is-ordered-to-recall-nearly-500000-vehicles-over-emissions-software.html?_r=1
[Accessed 18 July 2016].

Dr. Horváth, L. A., 2014. *Premium Brand Strategy in the Automotive Industry: What are the characteristics of a successful Premium automotive strategy?*. Vienna: Vienna University of Technology.

Drews, R. & Lamson, M., 2014. *Unternehmenserfolg in den USA: Strategie, Markteintritt, Kultur - die größten Fehler, die besten Praxistipps*. 1. ed. Wiesbaden: Springer Gabler.

Fadeev, D., 2014. *Wikimedia*. [Online]
Available at:
https://upload.wikimedia.org/wikipedia/commons/0/0b/Michael_Porter%27s_Three_Generic_Strategies.svg
[Accessed 07 April 2016].

FCA US LLC., 2015. *FCA US Media Website*. [Online]
Available at: <http://media.fcanorthamerica.com/newsroom.do?id=51&mid=425>
[Accessed 21 April 2016].

Frost & Sullivan, 2016. *2016 Outlook for the Global Automotive Industry*, Mountain View (USA, CA): Frost & Sullivan, MBDM-18.

Gemper, B. B. ed., 1984. *Protektionismus in der Weltwirtschaft - Verstöße gegen die Spielregeln der Marktwirtschaft und des Freihandelsprinzips*. Hamburg: Verlag Weltarchiv GmbH.

General Motors, 2016. *GM Media Online*. [Online]
Available at:
<http://media.gm.com/media/us/en/gm/news.filter.html/GM/EN/News/SalesandEarnings.html>
[Accessed 21 April 2016].

Gorzalany, J., 2014. *Forbes*. [Online]
Available at: <http://www.forbes.com/sites/jimgorzalany/2014/03/26/automakers-with-the-lowest-and-highest-recall-rates/#5b41ab520085>
[Accessed 18 July 2016].

Heller, V. L. & Darling, J. R., 2011. Toyota in crisis: denial and mismanagement. *Journal of Business Strategy*, 32(5), pp. 4 - 13.

Honda Motor Co., Ltd., 2016. *Honda Worldwide*. [Online]
Available at: http://world.honda.com/investors/financial_data/monthly/
[Accessed 21 April 2016].

Hyundai Motor America , 2016. *News - Sales Releases - Hyundai Motor America Newsroom*. [Online]
Available at: <http://www.hyundainews.com/us/en/corporate/salesreleases>
[Accessed 24 April 2016].

KCRA Television , 2016. *KCRA Home*. [Online]
Available at: <http://www.kcra.com/marketplace/automotive/biggest-auto-recalls/16928110>
[Accessed 18 July 2016].

Keegan, W. J., Schlegelmilch, B. B. & Stöttinger, B., 2002. *Globales Marketing-Management: Eine europäische Perspektive*. 1. ed. München: Oldenbourg Wissenschaftsverlag GmbH.

Kia Motors America, 2016. *News - Sales - Kia Motors America Newsroom*. [Online]
Available at: <http://www.kiamedia.com/us/en/media/sales/list>
[Accessed 24 April 2016].

Kotler, P., Keller, K. L. & Opresnik, M. O., 2015. *Marketing-Management*. 14. Hrsg. Hallbergmoos: Pearson Deutschland.

Maynard, M., 2010. *The New York Times*. [Online]
Available at:
http://www.nytimes.com/2010/02/25/business/global/25toyota.html?_r=0
[Accessed 19 July 2016].

Menk, D. M., Cregger, J. & Schultz, M., 2015. *Contribution of the Automotive Industry to the Economies of All Fifty States and the United States*. Ann Arbor (USA, MI): Center for Automotive Research.

Mercedes-Benz USA, LLC., 2016. *Mercedes-Benz Press Releases*. [Online]
Available at: https://www.mbusa.com/mercedes/about_us/press
[Accessed 25 April 2016].

Nissan, 2016. *Nissan Online Newsroom*. [Online]
Available at: <http://nissannews.com/en-US/nissan/usa/channels/U-S-Sales-Reports>
[Accessed 21 April 2016].

Porter, M. E., 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. 1. ed. New York: Free Press.

Porter, M. E., 2013. *Wettbewerbsstrategie: Methoden zur Analyse von Branchen und Konkurrenten*. 12. Edition ed. Frankfurt am Main: Campus Verlag.

Porter, M. E., 2014. *Wettbewerbsvorteile: Spitzenleistungen erreichen und behaupten*. 8. ed. Frankfurt am Main: Campus Verlag.

Prof. Dr. Bratzel, S., Hauke M.A., N. & Schindler B.A., E., 2015. *Center of Automotive Management (CAM)*. [Online]
Available at: www.auto-institut.de
[Accessed 05 May 2016].

red/rtr/dpa, 2015. *Stuttgarter-Nachrichten*. [Online]
Available at: <http://www.stuttgarter-nachrichten.de/inhalt.porsche-boss-matthias-mueller-soll-neuer-vw-chef-werden.90b00b09-5a58-48aa-a2f4-64b4859f2b74.html>
[Accessed 19 July 2016].

Staffordshire University, 2012. *Marketing for Managers*. [Online]
Available at: http://www.staffs.ac.uk/sgc1/faculty/market-for-mans/images/creating_customer_value.png
[Accessed 16 April 2016].

Statista GmbH, 2015. *Statista - Statistik*. [Online]
Available at: <http://sta.cir-mcs.e.corpintra.net/statistik/daten/studie/464204/umfrage/neuzulassungen-von-diesel-pkw-in-den-usa-volkswagen/>
[Accessed 12 May 2016].

The Ford Motor Company , 2016. *Ford Media Center*. [Online]
Available at: <https://media.ford.com/content/fordmedia/fna/us/en/news.sales-and-financial-results.latest.html>
[Accessed April 21 2016].

Toyota Motor Sales, USA., Inc., 2016. *Toyota - USA Newsroom - News Releases*. [Online]

Available at: http://corporatenews.pressroom.toyota.com/sales-financial/releases/?start_row=1

[Accessed 21 April 2016].

United States Environmental Protection Agency (a), 2015. *Notice of Violation*. [Online]

Available at: <https://www.epa.gov/sites/production/files/2015-10/documents/vw-nov-cao-09-18-15.pdf>

[Accessed 15 May 2016].

United States Environmental Protection Agency (b), 2015. *Notice of Violation*. [Online]

Available at: <https://www.epa.gov/vw/laws-and-regulations-related-volkswagen-violations#authorities>

[Accessed 15 May 2016].

United States Environmental Protection Agency, 2016. *US EPA: Volkswagen Light Duty Diesel Vehicle Violations for Model Years 2009 - 2016*. [Online]

Available at: <https://www.epa.gov/vw>

[Accessed 15 May 2016].

van Beers, C. & van den Bergh, J. C., 2001. Perseverance of perverse subsidies and their impact on trade and environment. *Ecological Economics*, Issue 36 (3), pp. 475-486 .

Volkswagen AG (a), 2015. *Volkswagen Media Services: Volkswagen AG has issued the following information*. [Online]

Available at: https://www.volkswagen-media-services.com/en/detailpage/-/detail/Volkswagen-AG-has-issued-the-following-information/view/2715181/6e1e015af7bda8f2a4b42b43d2dcc9b5?p_p_auth=1jg2nLsn

sn

[Accessed 19 February 2016].

Volkswagen AG (b), 2015. *Volkswagen Media Services: Federal Motor Transport Authority (KBA) decides on recall for affected EA 189 diesel vehicles*. [Online]
Available at: https://www.volkswagen-media-services.com/en/detailpage/-/detail/Federal-Motor-Transport-Authority-KBA-decides-on-recall-for-affected-EA-189-diesel-vehicles/view/2803458/6e1e015af7bda8f2a4b42b43d2dcc9b5?p_p_auth=0JxzXOXE
[Accessed 19 February 2016].

Volkswagen AG (c), 2015. *Volkswagen Media Services: Clarification moving forward: internal investigations at Volkswagen identify irregularities in CO2 levels*. [Online]
Available at: https://www.volkswagen-media-services.com/en/detailpage/-/detail/Clarification-moving-forward-internal-investigations-at-Volkswagen-identify-irregularities-in-CO2-levels/view/2857367/6e1e015af7bda8f2a4b42b43d2dcc9b5?p_p_auth=0JxzXOXE
[Accessed 19 February 2016].

Volkswagen AG (d), 2015. *Volkswagen Media Services: CO2 issue largely concluded*. [Online]
Available at: https://www.volkswagen-media-services.com/en/detailpage/-/detail/CO2-issue-largely-concluded/view/2966215/6e1e015af7bda8f2a4b42b43d2dcc9b5?p_p_auth=0JxzXOXE
[Accessed 19 February 2016].

Volkswagen AG (e), 2016. *Volkswagen Media Services: Statement by Volkswagen AG regarding the status of the comprehensive investigation in connection with the diesel matter*. [Online]
Available at: https://www.volkswagen-media-services.com/en/detailpage/-/detail/Statement-by-Volkswagen-AG-regarding-the-status-of-the-comprehensive-investigation-in-connection-with-the-diesel-matter/view/3414210/6e1e015af7bda8f2a4b42b43d2dcc9b5?p_p_auth=yCgJ1t0l
[Accessed 16 May 2016].

Volkswagen AG (f), 2016. *Volkswagen Media Services: Video statement of the CEO of Volkswagen AG*. [Online]

Available at: https://www.volkswagen-media-services.com/en/detailpage/-/detail/Text-video-statement-of-the-CEO-of-Volkswagen-AG/view/2718956/6e1e015af7bda8f2a4b42b43d2dcc9b5?p_p_auth=yCgJ1t0l
[Accessed 19 February 2016].

Volkswagen AG (g), 2016. *Volkswagen Media Services: Matthias Müller: "The USA is and remains a core market for the Volkswagen Group."* [Online]

Available at: https://www.volkswagen-media-services.com/en/detailpage/-/detail/Matthias-Müller-The-USA-is-and-remains-a-core-market-for-the-Volkswagen-Group/view/3061225/6e1e015af7bda8f2a4b42b43d2dcc9b5?p_p_auth=6vnQ1Uge
[Accessed 19 February 2016].

Volkswagen AG (h), 2015. *Volkswagen Media Service: Matthias Müller appointed CEO of the Volkswagen Group*. [Online]

Available at: https://www.volkswagen-media-services.com/en/detailpage/-/detail/Matthias-Müller-appointed-CEO-of-the-Volkswagen-Group/view/2726856/6e1e015af7bda8f2a4b42b43d2dcc9b5?p_p_auth=L2wkQkWY
[Accessed 19 July 2016].

Volkswagen Aktiengesellschaft, 2015. *moving people - Annual Report 2015*, Wolfsburg: Volkswagen AG - Group Communications.

Volkswagen of America, Inc. (a), 2016. *Volkswagen Diesel Information - FAQs*. [Online]

Available at: <https://www.vwdieselinfo.com/faqs/>
[Accessed 15 May 2016].

Volkswagen of America, Inc. (b), 2016. *Volkswagen Diesel Information - Updates*. [Online]

Available at: <https://www.vwdieselinfo.com/updates/>
[Accessed 16 May 2016].

Volkswagen of America, Inc. (c), 2015. *Volkswagen Diesel Information: Testimony of Michael Horn, President and CEO of Volkswagen Group of America, Inc. before the House Committee on Energy and Commerce*. [Online]
Available at: <https://www.vwdieselinfo.com/wp-content/uploads/2015/10/Testimony-of-Michael-Horn-Before-House-Committee-on-Energy-and-Commerce-October-8-2015.pdf>
[Accessed 16 May 2016].

Volkswagen of America, Inc. (d), 2016. *Releases: Volkswagen US Media Newsroom*. [Online]
Available at: <http://media.vw.com/releases/category/4/>
[Accessed 20 April 2016].

Vousden, N., 1990. *The economics of trade protection*. 1. ed. Cambridge: Cambridge University Press.

WardsAuto (a), 2016. *U.S. Vehicle Sales Market Share by Company, 1961-2015 - WardsAuto*. [Online]
Available at: <http://wardsauto.com/datasheet/us-vehicle-sales-market-share-company-1961-2014>
[Accessed 03 May 2016].

WardsAuto (b), 2016. *US Light Vehicle Inventory Summary, March 2016 - WardsAuto*. [Online]
Available at: <http://wardsauto.com/datasheet/us-light-vehicle-inventory-summary-march-2016>
[Accessed 03 May 2016].

WTO - World Trade Organization (a), 2016. *Tariffs*. [Online]
Available at: https://www.wto.org/english/tratop_e/tariffs_e/tariffs_e.htm
[Accessed 09 April 2016].

WTO - World Trade Organization (b), 2016. *Quantitative restrictions*. [Online]
Available at: https://www.wto.org/english/tratop_e/markacc_e/qr_e.htm
[Accessed 09 April 2016].

WTO - World Trade Organization (c), 2016. *Standards and safety*. [Online]
Available at: https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm4_e.htm#TRS
[Accessed 10 April 2016].

WTO - World Trade Organization (d), 2016. *Non-tariff barriers: red tape, etc..* [Online]

Available at:

https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm9_e.htm#import

[Accessed 10 April 2016].

WTO - World Trade Organization (e), 2016. *Government Procurement*. [Online]

Available at: https://www.wto.org/english/tratop_e/gproc_e/gproc_e.htm

[Accessed 10 April 2016].

Youngs, J., 2015. *J.D. Power Cars*. [Online]

Available at: <http://www.jdpower.com/cars/articles/car-news/american-drivers-increasingly-adopting-diesel-cars-and-suvs>

[Accessed 18 July 2016].

V. List of figures

Figure 1: Three generic strategies	12
Figure 2: Creating Customer Value diagram	14
Figure 3: US Cultural Gravity Model.....	15
Figure 4: NAFTA light vehicle demand, 1990-2020	18
Figure 5: Martin Winterkorn, resigned CEO of Volkswagen Group and Matthias Müller, appointed as the new CEO of Volkswagen Group	22
Figure 6: Akio Toyoda, the president of Toyota, at a hearing of the House Committee in the U.S.	26
Figure 7: Sales volume in units per month of Volkswagen and Audi in the U.S.	31
Figure 8: Performance in percentage of sales of Volkswagen and Audi since July 2015	32
Figure 9: Sales volume in units per month of BMW and Mercedes-Benz in the U.S.	33
Figure 10: Performance in percentage of sales of BMW and Mercedes-Benz since July 2015	34
Figure 11: Sales volume in units per month of Ford in the U.S.	36
Figure 12: Performance in percentage of sales of Ford since July 2015	37
Figure 13: Sales volume in units per month of GM in the U.S.	38
Figure 14: Performance in percentage of sales of GM since July 2015	39
Figure 15: Sales volume in units per month of FCA in the U.S.	40
Figure 16: Performance in percentage of sales of FCA since July 2015	41
Figure 17: Sales volume in units per month of Toyota, Honda and Nissan in the U.S.	43
Figure 18: Performance in percentage of sales of Toyota, Honda and Nissan since July 2015	44
Figure 19: Sales volume in units per month of Hyundai and Kia in the U.S.	45

Figure 20: Performance in percentage of sales of Hyundai and Kia since July 2015	46
Figure 21: U.S. Total Vehicle Sales Market Share in percentage by selected companies from 1961 to 2015.....	48
Figure 22: Market shares in the U.S. (1 st -3 rd quarter of the year 2015).....	50
Figure 23: Market shares in the U.S. (entire year 2015 and 1 st half of the year 2016)	51

VI. List of tables

Table 1: Registration numbers of cars with diesel engines in the U.S. until 2014	19
Table 2: Month-End Days' Supply of Audi, BMW, Daimler and Volkswagen	30
Table 3: Month-End Days' Supply of FCA, Ford and GM	35
Table 4: Month-End Days' Supply of Honda, Hyundai, Kia, Nissan and Toyota	42
Table 5: U.S. Total Vehicle Sales Market Share by Company [%]	49