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by

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Relevance and Detection Problems of Margin Squeeze – The Case of German Gasoline Prices

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Abstract

In contrast to the United States, Germany decided to add margin squeeze as a legal offense to German competition law. In response to this, the problems in the gasoline market have caused major debates. This paper examines the pricing strategies by gasoline retailers and discusses the difficulties experienced by regulators dealing with cases of margin squeeze occurrence of the phenomenon and outlines the dilemma of the margin squeeze. First the three possibilities to detect margin squeezes are presented. Afterwards the problems in applying the concept in case of the gasoline market, for which it was initially designed, are discussed. On the one hand, there are very few obvious cases in the gasoline market in which retail prices and wholesale prices are a clear indicator for margin squeeze. On the other hand, applying the "equally-efficient" approach always involves assumptions of having knowledge of the companies' cost functions. When applying the "equally-efficient"-approach, there are cases of margin squeezes at the cost of having only educated guesses and no solid proof. When considering the wholesale price to detect margin squeeze cases on the gasoline retail market, there are nearly no cases of margin squeezes. The difficulty to find a proper way of calculating equal efficiency or reasonable efficiency and the lack of margin squeeze cases when referring to wholesale and retail prices of gasoline constitute the dilemma of the element of offence "margin squeeze".

JEL-Classification: K21, L12, L42

I. Introduction[†]

To prevent the abuse of market dominance, competition rules concerning margin squeeze may be a necessary and suitable solution. Margin squeeze may occur in vertical-related markets in which a dominant integrated firm charges exceedingly high upstream prices and exceedingly low downstream prices, a practice that leads to the result that downstream competitors are no longer able to earn an adequate margin. Downstream competitors have to leave the market because they cannot acquire the downstream output from another firm. If the dominant firm follows the strategic objective and restricts the economic life of competitors, margin squeeze must be seen as an unlawful instrument of foreclosure to push competitor out of the market and to prevent new entrants from entering the market.

The academic discussion about margin squeezes started when traditional state monopolies such as telecommunications or energy were privatized. Geradin/O'Donoghue (2005) described margin squeezes as "a product of the liberalized telecommunication sector" and mentioned the difficulty to prove margin squeezes as a legal offence. Hovenkamp/Hovenkamp (2009) demanded that if it were allowed to charge dominant firms with margin squeeze claims, it would have also be prohibited to refuse to deal with a particular company. Otherwise, dominant firms would refrain from squeezing margin and instead simply refuse to supply a fringe firm competitor. Hou (2014) argued that the offence of margin squeeze protects inefficient small firms, because they have to have a sufficient margin between the wholesale and the retail price. Prosecuting margin squeezes would put the burden of inefficient competitors on the dominant firm (Hou, 2014, 71).

The non-allowance of an excessive upstream price or predative downstream prices can be seen as common sense of competition laws. Different approaches are realized whether margin squeeze should be or not a standalone matter of fact.

Following the US opinion (Carlton, 2008; Sidak, 2008) margin squeeze should not be a separate rule; too high upstream ("access") prices may be relevant for the question of abuse of market power, and too low downstream prices can be regarded as one case of predatory pricing. The US-opinion sees no relevance of margin squeeze if no market power is given on the upstream stage.

Analyzing European Competition Law margin squeeze is regarded as a standalone matter of fact (Hay/McMahon, 2012; Heimler, 2010). The European Commission imposed a fine on Deutsche Telekom, because of a violation of Art. 82 EC Treaty when setting up unfair charges for access to the local networks (European Commission, 2003). This violation was in the proceeding which followed the complaint by Deutsche Telekom and in the decision itself referred to as a "margin squeeze". The court found in the case Deutsche Telekom/Commission that margin squeezes constituted a violation of Art. 102 TFEU (then Art. 82 TEC) and are an abuse of market dominance. Consequently, margin squeezes are an unwritten element of the European Union's competition law.

Paragraph 20 of the German Act against Restraints of Competition (in German: Gesetz gegen Wettbewerbsbeschränkungen, GWB) defines behavioural patterns such as margin squeezes that are prohibited for firms with relative or superior market power. These patterns are perceived as an abuse of a dominant market position which is prohibited by Paragraph 19 German Act against

[†] We would like to thank Andreas Reindl. He had made the proposal to discuss this topic and helped to find out the main economic and legal points.

Restraints of Competition. This prohibition is based on the assumption that a high market share of a company involves obligations, because small and medium-sized enterprises (SME) are strongly dependent on those companies. Especially prohibited for companies with superior market power are the sale of food below its cost price, the non-occasional sale of goods below the cost price, the unjustified unequal treatment of companies to harm a certain company in competition. Furthermore, Paragraph 20 Section 4 shifts the burden of proof to the enterprises with market power. The former German Cartel law forbade margin squeeze (in Germany: "Preis-Kosten-Schere") at the expense of small and medium-sized companies (Paragraph 20, Section 4, Sentence 2, No. 3 GWB), but enforcement of the law was limited until the end of 2012. The German government and the German Federal Cartel Office (in German: "Bundeskartellamt") argued the rule should continue without a time limitation, because the gasoline market prevents margin squeeze behavior without office involvement (Monopoly Commission 2012, Note 86). In June 2013 the Federal Republic of Germany established margin squeeze as a permanent element of offence when amending the German Act against Restraints of Competition (Paragraph 20 Section 3, No. 3 German Act against Restraints of Competition). The Federal Cartel Office (2011, 142-157) described how the rule can be applied on the gasoline industry. In 2012, the German Federal Cartel Office announced they were once again investigating possible margin squeeze activities in the gasoline market. They focused on the prices independent gasoline station owners pay to refineries owned by multinational oil companies with whom they also compete in gasoline retail markets. The investigation was part of a broader effort to protect competition, to protect SMEs and lower the prices in gasoline retail markets. Protecting independent retailers is one of the tasks of the German Federal Cartel Office. Until recently, the Cartel Office has not taken any actions and not changed rules with margin squeezes. This political decision has caused an economic debate.

The fact that the Federal Cartel Office has not or did not have to act has led to a debate among economists on the concept of margin squeeze. Consequently it is not clear that a margin squeeze case in the gasoline industry would be economically sound or that it would be legally possible to detect such a case and consequently fine the violator of the margin squeeze norm. Out of the different elements of offence that are prohibited according to Paragraph 20 German Act against Restraints of Competition for enterprises with relative or superior market power, we decided to examine the "margin squeeze", because it was newly introduced with a time limitation. After a few years its impact was supposed to be examined. We conduct the analysis whether or not its introduction into the law without time limitation was reasonable.

At the same time, the number of SME gasoline stations, which are primarily organized in the Bundesverband freier Tankstellen (BfT; in English: Federal Association of Independent Gasoline Stations), has remained stable from 2008 to 2010. Its numbers changed from 1,659 gasoline station in 2008 to 1,660 in 2010 (Federal Statistical Office 2015). The first sector report, which described the results of the close monitoring of gasoline market, was released by the German Federal Cartel Office in 2010. Since late 2013, the gasoline prices of all gas stations have been made available to the general public, especially to consumers, by the market transparency unit of the German Federal Cartel Office. The number of independent gasoline stations increased to 2,251 in 2013 and 2,337 in 2015 (Federal Statistical Office 2015). As this trend indicates, it has been possible to enter and remain on the gasoline market as an independent gasoline station even before the German Federal Cartel Office started monitoring these markets.

The trend described above and conspicuous absence of cases of margin squeezes maybe raise questions concerning the issue of causality: If individuals follow the law, is it due to a legal rule or regulation or due to individual patterns of behaviour? In other words, is behaviour determined by the law or by different behavioural pattern? It is impossible to answer this question conclusively, but economic analyses of criminal law show that rational criminal behaviour depends on expected costs and benefits, especially regarding the detection probability (Cooter/Ulen, 2012). The following section will show that it is difficult to define margin squeeze.

To determine whether there are instances of undesirable market behaviour in general and margin squeeze in particular in the German gasoline market, we take the following steps: Section II discusses several competing definitions of margin squeeze and summarizes the academic debate on this topic. Then, using the narrowest definition of margin squeeze, we empirically test whether there are any instances of this undesirable behaviour in the German gasoline retail sector (Section III). In Section IV, we discuss the findings and consider whether or not the offence of margin squeezes is a useful tool of German competition law. Section V summarizes the main results of the study.

II. Definition and Standards for Margin squeeze

Price squeezing or margin squeezing is defined as undesirable market behaviour leading to an environment in which the margin between the wholesale and the retail price is too small for competitors to be able to continue operating on the market (Bouckaert/Verboven, 2004). Using this basic definition for our investigation of the German gasoline retail sector, we start with the assumption that the observed gasoline station is part of the integrated firm i (Dunne, 2011, 16+21; Vickers, 2005, 250; Meisel, 2012, 304). Firm i has significant market power in the upstream market and directly delivers gasoline from its refinery to its own retail stations or indirectly to independent gasoline stations j to n with the price P^{i}_{Up} using wholesalers. The pump stations generators have the constant marginal costs MC^{i}_{Down} and MC^{j}_{Down} to MC^{n}_{Down}. Customers have to pay retail prices, denoted as P^{i}_{Down} and P^{j}_{Down} to P^{n}_{Down}. Assuming it follows the strategic objective to predate competitors, firm i tries to create losses for competitors, for example for competitor j:

$$(1)\quad P^{j}_{Down}-[P^{i}_{Up}+MC^{j}_{Down}] < 0,$$

which is equivalent to:

$$(2)\quad P^{j}_{Down}-P^{i}_{Up} < MC^{j}_{Down}.$$

The left hand side of Equation 2 can be described as the margin. Drawing on the oligopolistic price setting model according to Bertrand (Belleflamme/Peitz, 2010, 45-47), we assume firm i serves the entire market if $P^{i}_{Down} < P^{j}_{Down}$ to $P^{n}_{Down.}$ Firm i receives a share equal to the total market divided by the number of competing firms in case of equal downstream prices and provides nothing, if $P^{i}_{Down} > P^{j}_{Down}$ to P^{n}_{Down}. Hence, we expect the Nash-equilibrium prices to be equivalent to $P^{i}_{Down} = P^{j}_{Down} = P^{n}_{Down}$. Based on these assumptions, Equation 2 can be written as follows:

$$(3)\quad P^{i}_{Down}-P^{i}_{Up} < MC^{j}_{Down}$$

This definition of margin squeeze is also graphically outlined in Figure 1.

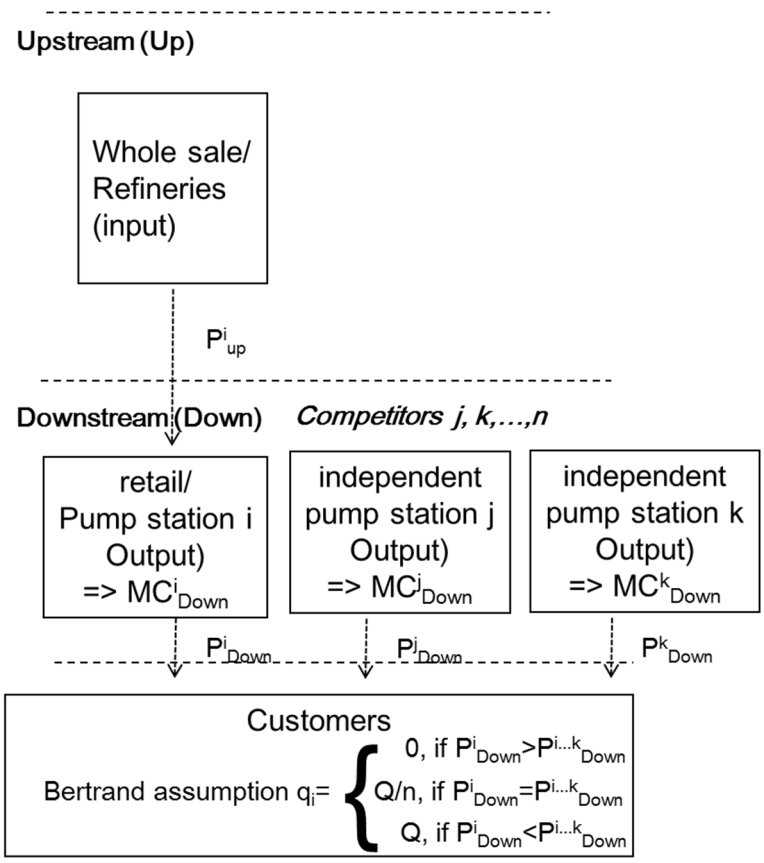

Figure 1: Margin Squeeze Problem

The basic definition given above applies three distinct points when margins are squeezed: These margins can be reasonably too low. They can be too low for equally-efficient competitors, and the sale price can be below the cost price. Reasonably too low margins are given if competitors make non-viable (non-living) profits (Meisel, 2012, 385, and Sidak, 2008, 303 f.). To calculate this type of margin squeeze, Equation 3 is modified as follows:

$$(4)\quad P^j_{Down}-P^j_{Up} < MC^j_{Down}.$$

Measuring MC^j_{Down} is difficult for people outside of the firm. The crucial question is, how can firm i be informed about the marginal costs of their competitors (MC^j_{Down}). If the law or the competition authority accept a competitor's costs as a benchmark, it is possible that inefficient competitors may be protected. The equally-efficient competitor test (Dunne 2011, 10; Vickers 2005, 256; Meisel, 2012, 395-397; Hay/MacMahon 2012, 271, and Sidak, 2008, 300-303) can be used to detect margin squeeze in the following manner:

$$(5)\quad P^i_{Down}-P^i_{Up} < MC^i_{Down}$$

As before, outsiders will have difficulties to determine MC^i_{Down}. However, the dominant firm i can calculate prices without having information about a competitor's costs. Set prices in according with Equation 5 can be a safeguard that only efficient petrol stations are protected. Preventing negative margins means that the wholesale price must not exceed the retail price. This principle can be stated as follows:

(6) $P^i_{Down}-P^i_{Up} < 0 \Leftrightarrow P^i_{Down}<P^i_{Up}$

The dominant firm i and all outsiders must not calculate or evaluate any downstream costs. Hence, private enforcement is easier possible. However, it is possible that efficient competitors are excluded if this standard is applied.

Even if one uses the most narrow definition of margin, monitoring for margin squeezes remains a challenges when it comes to the following scenarios:

- If dominant firms were ordered by court to avoid pricing strategies that lead to margin squeezes, dominant firms could increase retail prices (P^i_{Up}) (Dunne; 2011, 14). Hence, consumers will be harmed by higher prices/less consumer surplus, at least in the short run.
- Carlton (2008, 275) argues that monopoly profits can only be reaped once. If dominant firms are able to receive monopoly profits on the upstream level, they have no incentive to charge monopoly downstream prices as well (avoiding double marginalization).
- Furthermore, some practical problems might be relevant (Monopoly Commission, 2012, marginal note 90 and UNITI 2012): How can authorities detect and enforce margin squeeze rules if upstream and downstream prices change very often, for example between days or during the day? Which upstream price is relevant if the dominant firm delivers to a wholesaler? How can regulators detect whether margins are systematically exceedingly low, especially if negative margins only occur at special days or during special time slots, e.g. in early evening during a high-sale period)?
- At the same time, a retail price or a retail margin below the margin of a competitor can be due to margin squeezes, but it can also be the result of realizing economies of scope or economies of scale by the dominant firms (Hovenkamp/Hovenkamp, 2014, 30). The Monopoly Commission (2012, marginal notes 86-89) argues that the dominant firm will be reluctant to pass on these savings to consumers, if doing so could be construed as margin squeezing.
- Integrated firms will not reduce prices as a reaction to lower prices on a short notice because they might be afraid of violating the margin squeeze regulations.

III. Data and Methods

For the purpose of preparing an opinion on the development of business concentration, the German Federal Authorities can request, as guaranteed by § 47k of the German Act against Restraints of Competition, the firms in a particular sector to submit business statistics and related data. The underlying idea is to provide consumers with data that will allow them to make an informed decision where to purchase gasoline at the lowest price. To increase consumers' level of knowledge, the Market Transparency Unit for Gasoline was established and legally operates in accordance with the Market Transparency Unit for Gasoline Regulation. As required by this regulation, every entity setting gasoline prices has to notify the Market Transparency Unit within five minutes of the prices of diesel fuel, E5, E10, the location of the gas station, the name, the opening hours as well as the name of the company.

The data on retail gasoline prices analysed here was made available by Clever Tanken, a company that provides information on gasoline prices to consumers. The data covers the months March, April, May and September 2014. Some single dates are missing due to technical problems experienced by

Clever Tanken. The data contains every gasoline station (motorway and street gasoline stations), and it covers all prices available during the time period mentioned above.

The data on the wholesale (refinery) prices were received from "O.M.R. Notierungen", a company providing information to businesses on wholesale prices of gasoline. Table 1 shows descriptive statistics for the refinery zones in Germany. Standard deviations, minima and maxima indicate a nearly stable price trend for both major types of gasoline, Diesel and Super E 10.

Table 1: Wholesale Prices

	Mean	**Standard Deviation**	**Min.**	**Max.**
Refineries	*Diesel*			
North	1.255066	0.0083496	1.23879	1.277465
East	1.268662	0.0087554	1.248905	1.2852
Seefeld	1.259274	0.0085376	1.24117	1.278952
South-East	1.272999	0.0089787	1.25188	1.292935
West	1.25968	0.0107071	1.22522	1.285498
East	1.268662	0.0087554	1.248905	1.2852
Rhine-Main	1.266268	0.01ß4622	1.24236	1.28758
South	1.272031	0.0101676	1.24355	1.290852
	Super E 10			
North	1.415003	0.0166927	1.377425	1.4399
East	1.427835	0.0148015	1.397655	1.452395
Seefeld	1.417018	0.0169692	1.380995	1.44347
South-East	1.434674	0.0136335	1.409585	1.45656
West	1.419896	0.0185341	1.377425	1.44466
East	1.427835	0.0148015	1.397655	1.452395
Rhine-Main	1.421254	0.020233	1.376235	1.4518
South	1.41363	0.0210992	1.370285	1.44823

The prices by OMR include the lowest and highest one per day per 100 l. Values in table reflect the average price level per 1 l in €. Wholesale transactions have been made from Monday to Friday, available for calendar weeks 10 to 15, 19 to 21, 36 to 39; calendar week 16 did not include data for Good Friday, week 17 did not include Easter Monday, week 18 did not include Labor Day, week 22 did not include Ascension Day, and first two days of week 40 were not included. In total 83 days were available in our sample. Value Added Taxes (19 percent) are included. Own calculations, using Stata 13.1.

To determine whether or not there are instances of margin squeezing in the German gasoline market, we empirically tested pricing patterns. Therefore, the German gasoline stations were assigned to the refinery within the closest distance. The refinery price is subtracted from the retail price at the gasoline station. There are two different approaches to identify an instance of margin squeezing. The German Act against Restraints of Competition defines margin squeeze as a negative margin between the wholesale price of gasoline and the retail price of gasoline at a particular time t. If gas stations are expected to calculate the downstream price in t based on the expected cost of replacing the gasoline sold, they need the current refinery price at t. In our analysis of the data another definition of negative margins was also used; a negative margin is one between the wholesale price between one (t-1) and four days prior (t-4) to the date of purchase and the recent retail price. This definition is based on the assumption that companies calculate the price levels by

considering the amount of money they had to spend when purchasing gasoline. Since it takes up to four days to order, deliver and sell the gasoline to customers, we assume as longest time lag is t-4. If gas stations calculate their prices based on the price for which they bought the gasoline, then they need the refinery price on the previous days. If in both cases the margin is negative, then this is an instance of margin squeeze as defined above.

Based on these definitions, there can be two different types of errors (see Table 2). If there was a negative margin in reality because of a negative margin prior to the date, but a positive margin at that particular date, there is false negative decision or ß-error. If the definition of the German Federal Cartel Office indicates a negative margin, but there is not a negative margin that matches our definition, there is a false positive decision or an α-error. When presenting the negative margins, we will also present the α-errors and ß-errors. Furthermore, we will describe unclear cases in which e.g. on the third and fourth day prior to the date there is a negative margin, and on the first and second day prior to that date, there is a positive margin.

Table 2: Possible Outcomes of Margin Squeeze Tests

		Negative Margin in reality (retail price in t < wholesale price in t-1/t-2/t-3/t-4)?	
		Yes	No
Negative margin as defined by the German Federal Cartel Office (retail price in t < wholesale price in t)?	Yes	Correct (I)	False positive (α-error) (II)
	No	False negative (β-error) (IV)	Correct (III)

The refinery data on upstream prices covers the time periods from Monday to Friday. Downstream (retail) gasoline prices are given for all days and at maximum four days prior to these dates in order to subtract the wholesale price from the retail price. Table 3 shows the possible calculations that can be made based on our data.

Table 3: Time Structure of Calculable Margins

	Upstream Prices						
	This week					Week before	
Downstream Prices	Mondays	Tuesdays	Wednesdays	Thursdays	Fridays	Mondays	Tuesdays
Mondays	T	-	-	-	-	t-3	t-4
Tuesdays	t-1	T	-	-	-	t-4	-
Wednesdays	t-2	t-1	T	-	-	-	-
Thursdays	t-3	t-2	t-1	t	-	-	-
Fridays	t-4	t-3	t-2	t-1	t	-	-

We assessed the price policy of Aral and Shell, which were, as suggested by the sector report of the German Federal Cartel Office, the price leaders. The prices of gasoline (E10) and diesel were examined.

IV. Descriptive Results

IV.1 Relevance

Our empirical findings indicated that negative margin squeezes rarely occur on the German gasoline market (Table 4). The findings suggest that there is only a very small number of negative margins. For March 2014 there was a total of 1.188.966 observations. Among these more than one million observations, there were 51 cases of negative margins. This means a share of margin squeezes of 0.004 %. The absolute number of negative margins in the time period examined is between 10 and 51. In other words, less than one percent of all price observations involve negative margins. More specifically: Among 100,000 observations there are between 1 and 5 negative margins.

Table 4: Summary of negative margins

Month	Negative margins	Total observations	Share of margin squeeze cases
March 2014	51	1.188.966	0.004 %
April 2014	10	1.058.792	0.0009 %
May 2014	12	1.117.231	0.001 %
September 2014	21	1.037.196	0.002 %

Own calculations, using Stata 13.1.

Other definitions of margin squeeze may yield in different results and for this reason we calculated the percentages of margins at or below a certain profit margin, ranging from 4 to 7 ct. The results are show in Table 5. If a profit margin of 4 ct. is defined as marginal downstream costs, less than one percent of all calculated margins are detected, independent of the day. If we assume that reasonably efficient competitors need 5 to 6 ct. to recuperate their downstream costs (see ED 2015), approximately two and five percent of margins are too low. Both values do not indicate a significant relevance of margin squeeze. On average the limit of 7 ct. increases the statistical relevance to 10 percent. In this case, we are, however, not able to rule out the possibility that inefficient petrol station are protected by competition law.

Table 5: Relevance of Margin Squeeze in 2014, Aral and Shell only

	Negative margin	Margin – 4 ct	Margin – 5 ct	Margin – 6 ct	Margin – 7 ct	Number of days
	Number of prices in percent					
Mondays[1]	0.02	0.72	2.24	5.62	11.62	16
Tuesdays[1]	0.00	0.49	1.69	4.63	10.38	17
Wednesdays[1]	0.00	0.41	1.34	3.82	8.18	15
Thursdays[1]	0.00	0.60	1.86	4.72	9.87	15
Fridays[1]	0.00	0.54	1.80	5.05	10.89	15

[1]Average values. *Mondays:* 03/31, 03/24, 03/17, 03/10, 03/03, 04/28, 04/14, 04/07, 05/26, 05/19, 05/12, 05/05, 09/29, O9/22, 09/15, 09/08, 09/01. *Tuesdays:* 03/25, 03/18, 03/11, 03/04, 04/29, 04/22, 04/15, 04/08, 05/27, 05/20, 05/13, 05/06, 09/30, 09/23, 09/16, 09/09, 9/02. *Wednesdays:* 03/26, 03/19, 03/12, 03/05, 04/30, 04/23, 04/09, 04/02, 05/28, 05/21, 05/14, 05/07, 09/24, 09/17, 09/10, 09/03. *Thursdays:* 03/27, 03/20, 03/13, 03/06, 04/24, 04/17, 04/10, 04/03, 05/22, 05/15, 05/08, 09/25, 09/18, 09/11, 09/04. *Fridays:* 03/28, 03/21, 03/14, 03/07, 04/25, 04/11, 04/04, 05/30, 05/23, 05/16, 05/09, 05/02, 09/26, 09/19, 09/12, 09/05. Own calculations, using Stata 13.1.

As of these results show, negative margins are not relevant for the German gasoline market. If we assume that marginal downstream costs do not exceed 4 ct., then there seems to be no instances of

problematic margin squeezes. Without being able to measure the counterfactual situation we cannot find evidence for the use of negative margins as predatory instruments by dominant firms Aral and Shell, because there are very few instances of profit margins below 4 ct. This might be an argument that the German competition law did not require the dominant firms to set these prices: If Aral and Shell had an incentive to predate independent gasoline retailers, they would try to approximate to set prices as close to the legal limits as possible, that is, a profit margin between 0 and 4 ct.

IV.2 Detection Problems

Tables 6-9 show the percentages of correctly classified prices, cases of false positive and false negative, if we compare the method used by the Federal German Cartel Office (wholesale and retail prices in t) to our method of linking retail prices in t and wholesale prices in t-1 to t-4 (as shown in Tables 2 and 3). We also considered different margins, the brands, and examined whether Aral or Shell are charging prices that are exceedingly low. In the case of correctly classified non-negative margins, we only showed the lowest margin in t, the type of gasoline, and whether Shell or Aral applied the lowest margin. Our approach can be a tool to determine whether or not one of the powerful players on the German gasoline market, Aral or Shell, uses the tool of margin squeeze to the extent that it possibly harms smaller companies.

This tool can be used for example to analyse the last day in March (Monday, 31$^{th.}$). As shown in Table 6, there were 44 instances of negative margins, if we consider the wholesale price at the same day, Monday, or alternatively, if we used the previous retail prices three or four days prior to that day (Friday, March 28, and Thursday, March 27). Most of these negative margins were found at Shell gas stations (S). There were groups of two to six gasoline stations whose prices reflected negative margins. In fourteen cases, the approach used by the German Federal Cartel Office led to a false positive decision: For this day we found a negative margin of -0.19 ct. by using the wholesale price of the same day. Recalculating the profit margin with the wholesale prices of the previous Friday or Thursday, a positive margin was detected. More than 50,000 margins were positive that day, regardless of the particular calculation method used. The lowest positive margin was 3.05 ct., for Diesel by Aral. Using the definition of margin squeeze by the Federal German Cartel Office we found 95 cases of margin squeeze, but all margins had been positive going back to Thursday, March 27. Negative margins are again only relevant if we correlate the retail prices with wholesale prices of Friday. On several days in March there are no instances of negative margins and therefore they included in Table 6. In summary, in March 2014, there were 1,188,966 observations. Among these more than one million observations, there were only 51 cases of negative margins. This means a percentage of margin squeezes of 0.004%. In 95 cases, it is unclear whether or not a margin squeeze took place. In 14 cases, there was a false positive decision (α-error), because these were instance of margin squeeze as defined by the Federal German Cartel Office. There was no case of a false negative decision (ß-error) in which the definition of the Federal German Cartel Office detects a negative margin.

For April 2014, there were1.058.792 observations of a particular gasoline brand at a particular station for a certain amount of time (Table 7). There were 10 cases of negative margins. This represents a share of 0.0009%. In April 2014 there were no cases of α-errors, no cases of ß-errors and no unclear cases.

Table 6: Correct Classified and Errors/March 2014

Retail prices t	Number of				
	negative margins		non-negative margins		unclear cases
	Correct classified (cell I)	False positive (α-error) (cell II) [values in t, t-1, t-2,…]	Correct classified (cell III) [lowest margin in t, if non-gative]	False negative (β-error) (cell IV) [values in t]	
03/31;Monday	44 [-7.02;-6.48^{-3};-4.58^{-4} G,S] [-6.96;-7.20^{-3};-6.19^{-4} G,S] [-6.09;-6.21^{-3};-5.32^{-4} G,S] [-4.76;-4.76^{-3};-3.03^{-4} G,S] [-4.09;-4.21^{-3};-3.32^{-4} G,S] [-3.09;-3.21^{-3};-2.32^{-4} G,S 2x] [-2.09;-2.21^{-3};-1.32^{-4} G,S 6x] [-1.96;-2.20^{-3};-1.19^{-4} G,S 4x] [-1.09;-1.21^{-3};-0.32^{-4} G,S]	14 [-0.19;0.52^{-3};2.42^{-4} G,S 14x]	53765 [3.05^{D,A}]	0	95 [-2.02;-1.48^{-3};0.42^{-4} G,S 14x] [-1.63;-1.54^{-3};0.21^{-4} G,S 5x] [-1.02;-0.48^{-3};1.42^{-4} G,S 14x] [-0.77;-0.95^{-3};0.044^{-4} G,S 6x] [-0.76;-0.76^{-3};0.96^{-4} G,S 5x] [-0.59;-0.83^{-3};2.42^{-4} G,S] [-0.47;-0.53^{-3};1.19^{-4} G,S 7x] [-0.09;-0.21^{-3};0.68^{-4} G,S 7x] [-0.38;-0.38^{-3};1.15^{-4} D,S 2x]

Table 6 continued: Correct Classified and Errors/March 2014

	[-4.09;-4.21^{-3};-3.32^{-4} G,S] [-0.96;-1.20^{-3};-0.19^{-4} G,S] [-6.26;-6.26^{-3};-5.55^{-4} D,S] [-5.19;-5.25^{-3};-4.66^{-4} D,S] [-4.95;-5.01^{-3};-4.48^{-4} D,S] [-4.19;-4.25^{-3};-3.66^{-4} D,S] [-3.38;-3.38^{-3};-2.85^{-4} D,S] [-1.38;-1.38^{-3};-0.85^{-4} D,S 3x] [-1.26;-1.26^{-3};-0.55^{-4} D,S 3x] [-0.95;-1.01^{-3};-0.48^{-4} D,S] [-0.49;-0.76^{-3};-0.07^{-4} D,S 4x] [-3.38;-3.38^{-3};-2.85^{-4} D,S] [-1.38;-1.38^{-3};-0.85^{-4} D,S 3x] [-1.26;-1.26^{-3};-0.55^{-4} D,S 3x] [-0.95;-1.01^{-3};-0.48^{-4} D,S]				[-0.26;-0.26^{-3};0.45^{-4} D,S 2x] [-0.20;-0.26^{-3};0.03^{-4} D,S 5x] [-0.19;-0.25^{-3};0.34^{-4} D,S 5x] [-0.07;-0.19^{-3};0.52^{-4} D,S] [-0.05;-0.01^{-3};0.52^{-4} D,S 21x]
03/28;Friday	1 [-5.78;-4.04^{-1};-3.41^{-2};-3.02^{-3};-2.90^{-4} G,A]	1 [-0.48;0.68^{-1};1.10^{-2};1.46^{-3};1.52^{-4} G,S]	54535 [2.99^{D,A}; 1.62^{D,2}]	0	0

Table 6 continued: Correct Classified and Errors/March 2014

03/21;Friday	1 [-7.97;-7.38^{-1};-6.84^{-2};-6.84^{-3};-7.74^{-4} G,A]	0	56920 [4.63^{D,A}; 2.35^{D,S}; 0.93^{G,A}]	0	0
03/19;Wednesday	1 [-1.38;-0.84^{-1};-2.03^{-2}G,S]]	0	57993 [5.18^{D,A}; 1.99^{D,S}; 1.41^{G,A}]	0	0
03/14;Friday	2 [-4.50;-4.32^{-1};-4.44^{-2};-4.79^{-3};-3.90^{-4} G,S]] [-0.44;-0.38^{-1};-0.97^{-2};-0,97^{-3};-0.97^{-4} G,S]]	0	57015 [4.70^{D,A}; 2.70^{D,S}; 3.94^{G,A}]	0	0
03/13;Thursday	1 [-1.38;-1.97^{-1};-1.97^{-2};-1.38^{-3} G,S]]	0	59775 [5.17^{D,A}; 2.17^{D,S}; 2.94^{G,A}]	0	0
03/05;Wednesday	1 [-0.73,-1.38^{-1}, -0.73^{-2} G,S]	0	58459 [5.56^{D,A}; 3.29^{G,A}; 0.67^{G,S}]	0	0

D=Diesel, G=Gasoline, A=Aral, S=Shell). Values in the exponent shows the period; for example xx^{-1}=Period t-1. Own calculations, using Stata 13.1.

Table 7: Correct Classified and Errors/April 2014

Retailprices t	Number of				
	negative margins		non-negative margins		unclear cases
	Correct classified (cell I)	False positive (α-error) (cell II) [values in t, t-1, t-2,…]	Correct classified (cell III) [lowest margin in t, if non-gative]	False negative (β-error) (cell IV) [values in t]	
04/29;Tuesday	1 [-12.23;-12.29^{-1};-11.63^{-2}G,S]]	0	53973 [2.01^{D,A}; 1.40^{D,S}, 1.39^{G,A}]	0	0
04/28;Monday	3 [-7.16;-7.34^{-3};-7.76^{-4} G,A] [-1.16;-1.34^{-3};-1.76^{-4} G,A] [-4.71;-4.53^{-3};-5.22^{-4} G,S]	0	53279 [1.52^{D,A}; 1.52^{D,S}]	0	0
04/23;Wednesday	1 [-9.41;-9.59^{-1};-9.77^{-2} G,S]	0	54635 [2.01^{D,A}; 2.71^{D,S}; 1.83^{G,A}]	0	0
04/22;Tuesday	1 [-5.59;-5.77^{-1};-5.77^{-4} G,S]	0	54635 [2.90^{D,A}; 2.18^{D,S}; 2.11^{G,A}]	0	0

Table 7 continued: Correct Classified and Errors/April 2014

04/11;Friday	2 [-4.50;-4.32^{-1};-4.44^{-2};-4.79^{-3};-3.90^{-4} G,S]] [-0.44;-0.38^{-1};-0.97^{-2};-0,97^{-3};-0.97^{-4} G,S]]	0	57015 [4.70^{D,A}; 2.70^{D,S}; 3.94^{G,A}]	0	0
04/10;Thursday	1 [-1.38;-1.97^{-1};-1.97^{-2};-1.38^{-3} G,S]]	0	59775 [5.17^{D,A}; 2.17^{D,S}; 2.94^{G,A}]	0	0
04/03;Thursday	1 [-0.73,-1.38^{-1}, -0.73^{-2} G,S]	0	58459 [5.56^{D,A}; 3.29^{G,A}; 0.67^{G,S}]	0	0

D=Diesel, G=Gasoline, A=Aral, S=Shell). Values in the exponent shows the period; for example xx^{-1}=Period t-1. Own calculations, using Stata 13.1.

Table 8: Correct Classified and Errors/May and June 1st. 2014

Retailprices t	Number of				
	negative margins		non-negative margins		unclear cases
	Correct classified (cell I)	False positive (α-error) (cell II) [values in t, t-1, t-2,…]	Correct classified (cell III) [lowest margin in t, if non-gative]	False negative (β-error) (cell IV) [values in t]	
05/27;Tuesday	1 [-12.23;-12.29^{-1};-11.63^{-2}G,S]]	0	53973 [2.01^{D,A}; 1.40^{D,S}, 1.39^{G,A}]	0	0
05/26;Monday	3 [-7.16;-7.34^{-3};-7.76^{-4}G,A] [-1.16;-1.34^{-3};-1.76^{-4}G,A] [-4.71;-4.53^{-3};-5.22^{-4}G,S]	0	53279 [1.52^{D,A}; 1.52^{D,S}]	0	0
05/21;Wednesday	1 [-9.41;-9.59^{-1};-9.77^{-2}G,S]	0	54635 [2.01^{D,A}; 2.71^{D,S}; 1.83^{G,A}]	0	0
05/20;Tuesday	1 [-5.59;-5.77^{-1};-5.77^{-4}G,S]	0	54635 [2.90^{D,A}; 2.18^{D,S}; 2.11^{G,A}]	0	0

Table 8 continued: Correct Classified and Errors/May and June 1st. 2014

05/16;Friday	2 [-4.50;-4.32^{-1};-4.44^{-2};-4.79^{-3};-3.90^{-4} G,S]] [-0.44;-0.38^{-1};-0.97^{-2};-0,97^{-3};-0.97^{-4} G,S]]	0	57015 [4.70^{D,A}; 2.70^{D,S}; 3.94^{G,A}]	0	0
05/14;Wednesday	1 [-12.23;-12.29^{-1};-11.63^{-2}G,S]]	0	53973 [2.01^{D,A}; 1.40^{D,S}, 1.39^{G,A}]	0	0
05/09;Friday	2 [-4.50;-4.32^{-1};-4.44^{-2};-4.79^{-3};-3.90^{-4} G,S]] [-0.44;-0.38^{-1};-0.97^{-2};-0,97^{-3};-0.97^{-4} G,S]]	0	57015 [4.70^{D,A}; 2.70^{D,S}; 3.94^{G,A}]	0	0
05/08;Thursday	1 [-1.38;-1.97^{-1};-1.97^{-2};-1.38^{-3} G,S]]	0	59775 [5.17^{D,A}; 2.17^{D,S}; 2.94^{G,A}]	0	0

D=Diesel, G=Gasoline, A=Aral, S=Shell). Values in the exponent shows the period; for example xx^{-1}=Period t-1 Own calculations, using Stata 13.1.

Table 9: Correct Classified and Mistakes/September 2014

Retailprices t	Number of				
	negative margins		non-negative margins		unclear cases
	Correct classified (cell I)	False positive (α-mistake,cell II) [values in t-1, t-2,…]	Correct classified (cell III) [lowest margin in t, if non-negative]	False negative β-mistake (cell IV) [values in t]	
09/30;Tuesday	3 [-1.46;-1.16^{-1};-1.34^{-4} G,A] [-8.73;-8.71^{-1};-8.53^{-4} G,S] [-4.74;-4.71^{-1};-4.53^{-4} G,S]	0	53279 [1.23^{D,A}; 0.63^{D,S}]	0	0
09/29;Monday	3 [-7.16;-7.34^{-3};-7.76^{-4} G,A] [-1.16;-1.34^{-3};-1.76^{-4} G,A] [-4.71;-4.53^{-3};-5.22^{-4} G,S]	0	53279 [1.52^{D,A}; 1.52^{D,S}]	0	0
09/24;Wednesday	1 [-9.41;-9.59^{-1};-9.77^{-2} G,S]	0	54635 [2.01^{D,A}; 2.71^{D,S}; 1.83^{G,A}]	0	0
09/23;Tuesday	1 [-5.59;-5.77^{-1};-5.77^{-4} G,S]	0	54635 [2.90^{D,A}; 2.18^{D,S}; 2.11^{G,A}]	0	0

Table 9 continued: Correct Classified and Mistakes/September 2014

09/22;Monday	1 [-3.77;-3.77^{-2};-4.24^{-3} G,S]	0	53056 [2.00^{D,A}; 2.00^{D,S}; 2.06^{G,A}]	0	0
09/19;Friday	1 [-10.77;-11.25^{-1};-12.23^{-2};-12.29^{-3};-11.63^{-4} G,A]	0	32400 [2.30^{D,A}; 1.88^{D,S}; 2.00^{G,A}]	0	0
09/17;Wednesday	1 [-12.23;-12.29^{-1};-11.63^{-2}G,S]]	0	53973 [2.01^{D,A}; 1.40^{D,S}, 1.39^{G,A}]	0	0
09/15;Monday	0	0	52437 [0.03^{D,A}; 0.02^{D,S}; 0.02^{G,A}]	0	1 [0.51;0.09^{-3};-0.209^{-4} G,S]
09/12;Friday	0	0	53351 [2.22^{D,A}; 1.51^{G,A}]	0	2 [0.87;1.29^{-1};0.63^{-2};-0.02^{-3};0.09^{-4} D,S] [0.51;0.09^{-1};-0.21;-0.33^{-3};-0.98^{-4} G,S]
09/11;Thursday	1 [-10.14;-10.23^{-1};-10.43^{-2};-10.67^{-3} G,S]]	0	53508 [3.28^{D,A}; 1.29^{G,A}]	1 [0.09;-0.21^{-1};-0.39^{--2};-0.98^{-3} G,S]	1 [1.28;0.63^{-1};-0.24^{-2};0.09^{-3} D,S]
09/10;Wednesday	2 [-6.44;-3.28^{-1};-6.67^{-2} G,S] [-0.21;-0.33^{-1};-0.98^{-2} G,S]	0	52235 [2.63^{D,A}; 1.67^{G,A}]	0	1 [0.63;-0.02^{-1};-0.09^{-2} D,S]

Table 9 continued: Correct Classified and Mistakes/September 2014

09/09;Tuesday	3 [-6.43;-6.67^{-1};-7.18^{-4} G,S] [-0.43;-0.98^{-1};-1.22^{-4} G,S] [-0.33;-0.67^{-1};-1.18^{-4} G,S]	0	47009 [1.90^{D,A}; 1.67^{G,A}]	0	1 [-0.02;0.09^{-1};-0.80^{-4} D,S]
09/08;Monday	2 [-6.67;-7.18^{-3};-6.20^{-4} G,S] [-0.98;-1.22^{-3};-0.38^{-4} G,S]	0	52006 [1.21^{D,A}; 1.73^{G,A}]	1 [0.94;-0.80^{-3};-0.02^{-4} D,S]	0
09/05;Friday	1 [-7.17;-6.20^{-1};-5.04^{-2};-6.29^{-3};-6.47^{-4} G,S]	0	49004 [2.11^{D,A}; 0.77^{G,A}]	0	6 [-0.89;-0.12^{-1};0.89^{-2};0.24^{-3};-0.29^{-4} D,S, 2x] [-0.80;-0.02^{-1};1.05^{-2};0.33^{-3};-0.21^{-4}; D,S] [-1.73;-0.54^{-1};5.87^{-2};-0.36^{-3};-0.54^{-4}; G,S; 2x] [-1.22;-0.39^{-1};0.68^{-2};0.09^{-3};-0.21^{-4}; G,S]
09/04;Thursday	0	0	52735 [0.98^{D,A}; 0.61^{G,A}]	0	2 [-0.02, 1.05^{-1}, 0.33^{-2}, -0.20^{-3}; D, S) [-0.39, 0.68^{-1}, 0.09^{-2}, -0.21^{-3}; G, S)

Table 9 continued: Correct Classified and Mistakes/September 2014

09/03;Wednesday	1 [-5.41,-6.36^{-1}, -6.54^{-2}G,S]	0	52231 [2.04^{D,A}; 2.11^{G,A}]	1 [1.05; 0.33^{-1}; -0.20^{-2} D,S]	0
09/02;Tuesday	1 [-12.29, -12.47^{-1}G,S]	0	51498 [2.21^{D,A}; 1.33^{D,S}; 0.38^{G,A}]	1 [0.37, -0.43^{-1}; D, S)	0

D=Diesel, G=Gasoline, A=Aral, S=Shell). Values in the exponent shows the period; for example xx^{-1}=Period t-1. Own calculations, using Stata 13.1

In May 2014 (Table 8) there were a total of 1.117.231 observations. There were 12 negative margins, respectively margin squeeze cases, which represent a share of 0.001%. There were no α-error, no ß-error and no unclear case. In September 2014 (Table 9) there were total of 1.037.196 observations. Among these were 21 negative margins, respectively margin squeeze cases which represent a share of 0.002%. There were four ß-errors and 14 unclear cases. Summarizing the detection problems, we find little evidence that the calculation method will not detect a huge number of false negative or false positive decisions. If retail prices were more volatile compared to our nearly stable prices during the examined time period and/or if dominant firms conducted more often margin squeeze pricings, detection problems would become a serious question for applying and implementing margin squeeze rules.

Because of a relative high occurrence of negative margins in the last day of March 2014 a closer look on firm level may be useful. Table 10 shows the price development of a Shell station in Suhl, located in Thuringia. The price for gasoline Super E10 had been increased at midnight to 1 € 59. 9 ct. Roughly, two minutes after 5 AM the station decreased the price by twelve ct. Further price reduction by 4 cents had been done 15 minutes later. The firm realized a very low negative margin (-0.09 ct.) compared with the up-to-date wholesale price which was unknown at this moment. Looking back to the wholesale price of Friday or Thursday before a small negative (-0.21 ct.) or small positive (0.68 ct.) had been occurred. Hence, this case can´t be definetly detected as a negative margin. But, this economically irrelevant situation of a unclear negative margin only lasted 24 minutes and 54 seconds because of coming back to the price of 1 Euro 47.9 ct. Following the remaining day, we see nearly stable prices, at highest at 21.00 with 1 Euro 50.9 cent. Therefore, the subsequent

Table 10: Relevance of Negative Margin/Monday, March, 31th. 2014. Shell, Gasoline Super E10

			Margin in ct.		
Date	Time	Price in €	t (2014/03/31)	t-3 (2014/03/28)	t-4 (2014/03/28)
30.03.2014	12:00:00 AM	1.599	15.909996	15.791	16.6835
31.03.2014	5:01:48 AM	1.479	3.909996	3.791001	4.683497
31.03.2014	5:16:49 AM	1.439	-0.090004	-0.209	0.683497
31.03.2014	5:41:43 AM	1.479	3.909996	3.791001	4.683497
31.03.2014	8:01:44 AM	1.499	5.909996	5.791001	6.683497
31.03.2014	10:54:36 AM	1.479	3.909996	3.791001	4.683497
31.03.2014	12:00:37 PM	1.499	5.909996	5.791001	6.683497
31.03.2014	2:07:46 PM	1.479	3.909996	3.791001	4.683497
31.03.2014	3:44:37 PM	1.469	2.909996	2.791001	3.683497
31.03.2014	9:00:38 PM	1.509	6.909996	6.791001	7.683497

Data are given for Shell Station, Hauptstr. 3-9, D-98529 Suhl, Germany. Margins are calculated by using wholesale prices from the same day, three, or four days before. Own calculations, using Stata 13.1.

margins were certainly not negative. The same result can be shown for Diesel from price movements which had been made by another Shell station in Nuremberg, Franconia (table 11). Starting with high midnight price (€ 1.459), decreasing by twelve cents shortly after 5 AM, followed by an additional reduction by six cents 15 minutes later. This low price level again held exactly 24 minutes and 54 seconds and implicated negative margins 0.20 or 0.26 ct. The following prices of this day are fare away from negative margins.

Table 11: Relevance of Negative Margin/Monday. March, 31th. 2014, Shell, Diesel

			Margin in ct.		
Date	Time	Price in €	t (2014/03/31)	t-3 (2014/03/28)	t-4 (2014/03/28)
30.03.2014	12:00:00 AM	1.459	17.796505	17.737	18.03449
31.03.2014	5:01:48 AM	1.339	5.796505	5.736996	6.034495
31.03.2014	5:16:49 AM	1.279	-0.203495	-0.263	0.034495
31.03.2014	5:41:43 AM	1.339	5.796505	5.736996	6.034495
31.03.2014	7:01:48 AM	1.329	4.796505	4.736996	5.034495
31.03.2014	8:01:44 AM	1.349	6.796505	6.736996	7.034495
31.03.2014	8:57:46 AM	1.339	5.796505	5.736996	6.034495
31.03.2014	10:22:31 AM	1.329	4.796505	4.736996	5.034495
31.03.2014	12:00:37 PM	1.349	6.796505	6.736996	7.034495
31.03.2014	12:26:55 PM	1.339	5.796505	5.736996	6.034495
31.03.2014	2:25:46 PM	1.329	4.796505	4.736996	5.034495
31.03.2014	6:01:54 PM	1.369	8.796505	8.736996	9.034494
31.03.2014	7:25:48 PM	1.359	7.796505	7.736996	8.034494

Data are given for Shell Station, Eibacher Hauptstr. 17, D-90451 Nuremberg, Germany. Margins are calculated by using wholesale prices from the same day, three, or four days before. Own calculations, using Stata 13.1.

Including these two cases negative margins had been found for 79 gasoline and for 27 diesel. Concerning two of gasoline prices negative margins lasted from 5.01.48 AM to 5:30:30 AM (28 min. 42 sec.) and one negative gasoline margin started at 8.39.05 AM until 1.01.07 PM (4 h., 22 min., 02 sec.). In all other cases time structure is exactly the same as described with the two tables above. Summarizing the “high density” day March, 31th, (unclear) negative margins seem to be rare event. There is no doubt that Shell was not able and had not tried to foreclosure any competitor at this day, neither at any other day.

VI Conclusions

The German Law against Restraints of Competition forbids downstream prices of integrated firms to be lower than their upstream prices. If they were to do so, competing downstream firms would incur a financial loss due to a negative profit margin and possibly could not survive on the market. Consequently, this kind of pricing behaviour is forbidden if the upstream firm is in a dominant market position and the downstream firm is small or medium-sized. The Federal German Cartel Office announced that it will examine whether this kind of market behaviour can be found on the German gasoline market. At the time of writing, no report has been released yet, and it is not clear whether or not margin squeezing occurs on the gasoline market in Germany. Our findings indicate that the actual number of negative margins is very low and there are no discernible patterns that would point to illegal market behaviour. Based on the data available to us, we conclude that the few negative margins in the German gasoline market are unlikely to be indicators of margin squeezing.

Using a different definition of margin squeeze, namely the equally efficient standard, do not yield different results if the downstream costs are equal to 4 ct. or lower. There are no hints that the prohibition of a negative margin affected the market behaviour of dominant gasoline retailers in Germany, because we found that margins were lower than 5 ct. in one percent of observations. Independent gasoline stations might not be able to earn living profits if downstream costs exceed 5 ct. Lowering this threshold would protect inefficient competitors and consequently allow them to stay in business. Detection problems (false positive or false negative) do not play a role either. But, higher volatility of the retail prices could, however, exacerbate the detection problem. This problem would be more important, if there were any indications that dominant firms use margin squeeze more often as a predatory instrument.

The low relevance of margin squeeze underlines the US-position that “price squeeze as a theory of antitrust liability should be abolished“ (Sidak, 2008). Detection problems may strengthen the US-position additionally. Three questions remain open. First, is the non-relevance topic also valid for other time periods in the gasoline markets or in other markets? Second, why did Germany switch to a permanent legislation, especially if the problem seems not to be relevant and detection problems are obvious? Third, does verdict of margin squeeze deter margin squeeze behaviour? Especially, the low relevance of margins near by the limit “negative margin” gives a strong hint that there is no real incentive for dominant gasoline firms to predate by “creating” margin squeeze. Assuming that dominant gasoline firms are able to reap monopoly prices on the upstream level might explain this interpretation.

Literature:

Baumol, W.J./Sidak, J. G. (1994): The Pricing of Inputs Sold to Competitors, Yale Journal on Regulation, 11, 1, 172-202.

Bouckaert, J./Verboven, F. (2004). Price Squeezes in a Regulatory Environment. Journal of Regulatory Economics, 26, 321-351.

Carlton, D. W. (2008), Should “Price Squeeze” Be a Recognized Form of Anticompetitive Conduct?. Journal of Competition Law and Economics, 4, 271-278.

Dunne, N. (2011), Margin Squeeze: Theory, Practice, Policy, EUSA-Conference, March 2011, mimeo.

ED 2015, http://www.ed-info.de/tankstellen/tankstellen_preise.htm, used 2015/09/14.

European Commission (2003): Commission Decision of 21 May 2003 relating to a proceeding under Article 82 of the EC Treaty, 2003/707/EC.

Federal Cartel Office (2011), Sektoruntersuchung Kraftstoffe – Abschlussbericht, Bonn, Mai 2011, http://www.bundeskartellamt.de/SharedDocs/Publikation/DE/Sektoruntersuchungen/Sektoruntersuchung%20Kraftstoffe%20-%20Abschlussbericht.pdf;jsessionid=ADF3A4233EA3DC9A927D9F3657BD98CF.1_cid387?__blob=publicationFile&v=5, used 2014/05/10.

Federal Cartel Office (2012), Bundeskartellamt untersucht Fälle der Behinderung freier Tankstellen, press release 2012/04/04, http://www.bundeskartellamt.de/SharedDocs/Meldung/DE/Pressemitteilungen/2012/04_04_2012_Freie-Tankstellen.html, used 2014/05/12.

Federal Statistical Office (2015), Anzahl der Straßentankstellen nach jeweiligem Betreiber von 2008 bis 2015, http://de.statista.com/statistik/daten/studie/29906/umfrage/anzahl-der-strassentankstellen-in-deutschland-nach-betreiber/, used 2015/11/20.

Geradin, D./O'Donoghue, R. (2005): The Concurrent Application of Competition Lae and Regulation: The Case of Margin Squeeze Abuses in the Telecommunications Sector, Journal of Competition Law and Economics, 1, 2, 355-425.

Hay, G. A./McMahon, K. (2012), The Diverging Approach to Price squeezes in the United States and Europe, Journal of Competition Law and Economics, 8, 259-296.

Heimler, A. (2010), Is a Margin Squeeze an Antitrust or a Regulatory Violation?. Journal of Competition Law and Economics, 6, 879-890.

Hou, L. (2014): The Abusive Nature of Price Squeezes in the EU, International Review of Intellectual Property and Competition, 45, 43-74.

Hovenkamp, H. J./Hovenkamp, E. N. (2009): The Viability of Antitrust Price Squeeze Claims, University of Iowa Legal Studies Research Paper, The University of Iowa College of Law, Iowa City.

Monopoly Commisson (2012), Sondergutachten 8. GWB-Novelle, Bonn, Februar 2012, http://www.monopolkommission.de/sg_63/s63_volltext.pdf; used 2015/09/08.

Meisel, J. B. (2012), The Law and Economics of Margin Squeezes in the US versus the EU, European Competition Journal, 8, 383-402.

Sidak, J. G. (2008), Abolishing the Price squeeze as a Theory of Antitrust Liability." Journal of Competition Law and Economics, 4, 279-309.

Uniti (2012), http://www.uniti.de/presse/pressemitteilungen/nachrichten-2012.html, used 2015/09/24.

Vickers, J. (2005), Abuse of Market Power, The Economic Journal, 115(504), F244-F261.

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