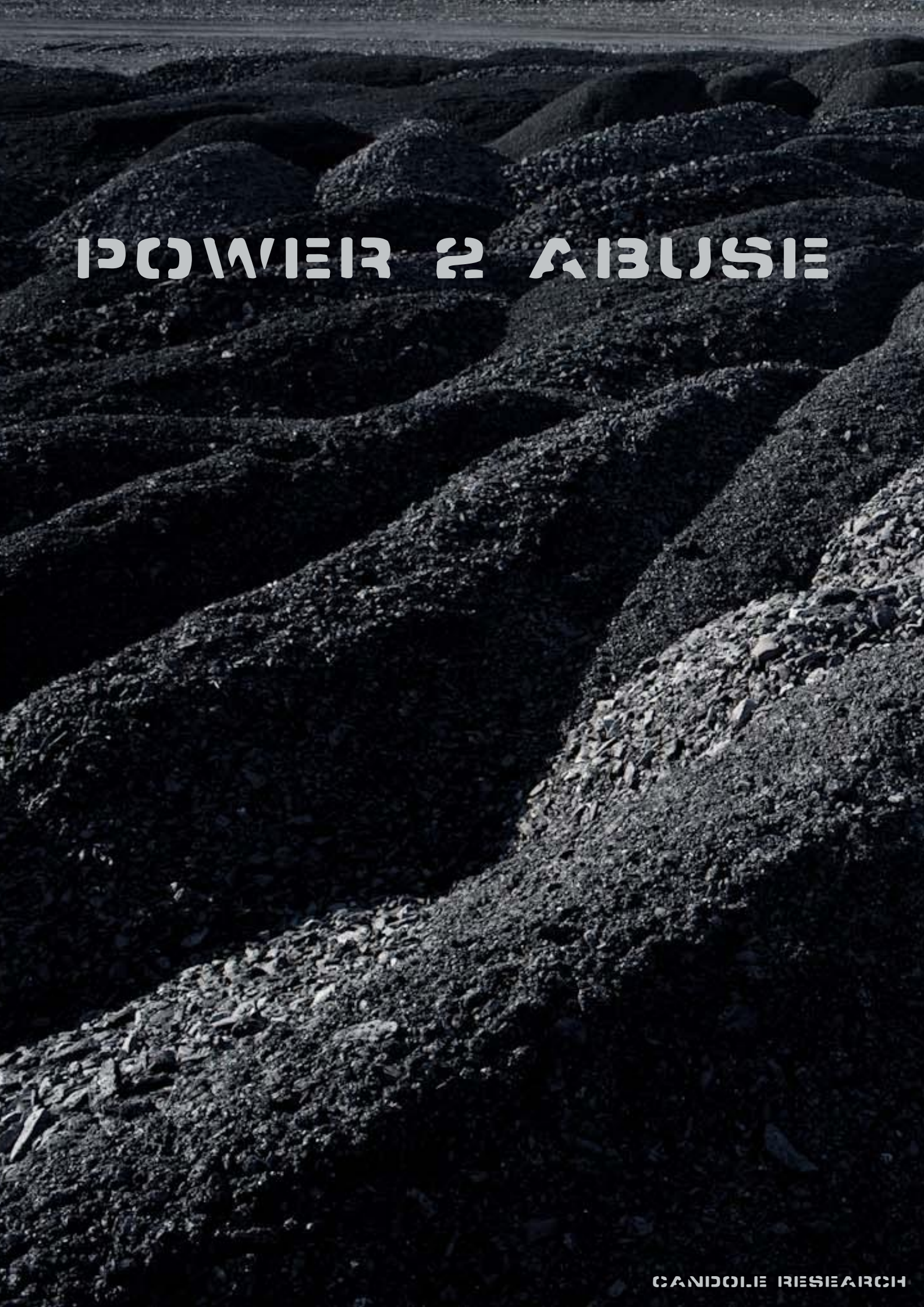
POWER 2 ABUSE
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Power 2 Abuse

The relevance of market coupling to ČEZ's relevant market

By Martin Bebiak

January 2012

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1. INTRODUCTION

In an earlier study, "Power Abuse" (June 2011), we showed how ČEZ's high profit margins might be the result of dominant market power. Using the Herfindahl Hirschman Index (HHI) and the Residual Supply Index (RSI), we proved that the Czech Republic has one of the most concentrated markets in Europe, comparable only to France and Belgium. And we concluded that, given the fact that ČEZ is the pivotal supplier of electricity in the Czech Republic, the potential for market abuse is high.

Furthermore, we argued that due to its dominance, ČEZ has significantly higher mark-ups (50%) than its competitors. In comparison, we calculated that German producers generally have price cost mark-ups of around 30% (including costs of C02 allowances). Additionally, we suggested that ČEZ is able to preserve its margin at the expense of other market participants and consumers by engaging in two forms of uncompetitive behaviour: vertical foreclosure and margin squeeze. We indicated that ČEZ is able to prevent new market entrants from accessing the market and enjoying the advantages of the unusually high spread between marginal costs of production and prevailing electricity price in the Czech Republic. ČEZ is able to accomplish this because it is vertically integrated and enjoys the dominant position on the most important market in the value chain - electricity generation.

In order to reach these conclusions, we had first to define the relevant market for ČEZ. We performed various tests commonly used by the US Justice Department, Ofgem and the European Commission and concluded that the Czech market is the relevant market for the purpose of competition analysis. ČEZ rejected our conclusions, maintaining that they were based upon an incorrect definition of its relevant market. It claimed that we had overlooked the market coupling mechanism between Slovakia and the Czech Republic, arguing that this mechanism makes ČEZ's relevant market the Czech-Slovak wholesale market at the very least.

In Power2Abuse, we address these criticisms. Referring to previous competition cases, we show why a sufficiency of interconnector capacity and price unity between two markets do not in themselves create one relevant market, and thus demonstrate why market coupling is no guarantee of such. We then demonstrate that, in a situation where the marginal costs of production differ significantly between market areas, as is the case with the Czech and Slovak markets, the market area with the lower production costs (i.e. the Czech market) should be treated for competition purposes as a separate relevant market regardless of market coupling. This is especially the case when the area with lower production costs represents its own bidding area. Lastly, we use the case study of Austria and Germany to provide an example of where market coupling is indeed a synonym for the relevant market.

2. MARKET COUPLING: ONE RELEVANT MARKET?

The definition of the relevant product and geographical markets is the first step in competition analysis. Before analysing whether a company is abusing its dominant position, or whether a merger should be approved, the competition office must understand which companies or products are the real competitors of the firm in question. By defining the relevant market, the competition office sets the boundaries within which a company can exercise market influence. Only once the relevant market is defined can the competition office calculate the market shares or identify market abuse. This is to be determined very carefully, as a wide market definition can underestimate the market share and the possible existence of market abuse. (European Commission 2011)

In the electricity markets, defining the product market is a simple task, since electricity is a homogenous good and impossible to differentiate by the end-consumer. On the other hand, defining the geographic market is a trickier task. According to European legislation, the relevant geographic market consists of an "area in which the firms concerned are involved in the supply of products and in which the conditions of competition are sufficiently homogeneous." (European Commission 2011)

As in "Power Abuse", here we shall seek correctly to define the relevant market for ČEZ. And by putting forward new arguments, we shall address the criticisms made of our previous study as well.

In this first Chapter, we address the main criticism, that following the establishment of a market coupling mechanism between Slovakia and the Czech Republic in 2009, the relevant market for ČEZ must be at least the Czech-Slovak wholesale market. This Chapter will focus on both theoretical and practical examples found in the reference literature in order to demonstrate that market coupling is no guarantee of one relevant market.

2.1. The Cellophane Fallacy

To understand the importance of the correct market definition, we present a famous case in competition law. This helps us to understand the electricity specific lessons of "The Power Fallacy", a study we refer to later in this Chapter.

The Cellophane Fallacy is a competition case famous for its incorrect definition of the relevant market and consequent lenient ruling. DuPont, a monopoly producer of cellophane in the 1950s, was accused of market power abuse by the U.S. Department of Justice. In its final ruling, the U.S. Supreme Court ruled that DuPont could not be found guilty of market power abuse, since its share in the wrapping materials market was small. According to the ruling, there were many wrapping materials that could

substitute cellophane, meaning the relevant product market for DuPont was not the cellophane market, but the wrapping materials market. (Office of Fair Trading 2001)

A SSNIP test was used to quantify the extent to which customers would react to DuPont's price increase of cellophane. Generally, competition offices use the SSNIP test (Small but Significant Non-transitory Increase in Price) to define the relevant market. The purpose of this test is to establish whether a small change in price would motivate the customer to switch his supplier. Thus, the products or companies the customers switch to belong to the relevant market of the company in question. The Supreme Court concluded that consumers would react strongly to a price increase of DuPont by switching to other wrapping materials. As a result, the Supreme Court assumed that the producers of wrapping materials are DuPont's competitors, indicating its relevant market was the market for wrapping materials. (Office of Fair Trading 2001) This ruling was later challenged by economists, who protested against the method used to define the relevant market.

Many economists, including Turner or Posner, argued that the test was set wrong, as it used the monopoly price instead of the competitive market price for cellophane. Since DuPont was the monopoly producer of cellophane, it had the power to elevate cellophane prices above the competitive market price: the monopoly price. As a monopolist, DuPont could increase its prices to a level where consumers are indifferent to switching to substitutes of cellophane. The mistake of the U.S. Supreme court was that it included the already high (monopoly) price for cellophane in their SSNIP test. This incorrect test showed them that a price increase to the cellophane (monopoly) price would encourage consumers to shift from cellophane to its substitutes. Because of the cellophane price increase, customers would buy other cheaper substitutes (wrapping material). If a theoretical competitive price were used instead, the results would have been completely different, as a slight increase to a competitive cellophane price would not force customers to switch to substitutes of cellophane. A (correct) SSNIP test using competitive prices would have resulted in the conclusion that the relevant market for DuPont was the cellophane market. The ensuing ruling with this narrowly defined relevant market would have resulted in much more serious consequences for DuPont. (Olesen and Sundahl 2006)

2.2. Nordpool market coupling

The Power Fallacy transposes lessons learnt from the Cellophane Fallacy onto the electricity markets. The Cellophane Fallacy identified the complications in defining the relevant product market for a good with many possible substitutes. On the other hand, the Power Fallacy addresses the critical issues when defining the geographic market. Specifically, it challenges the assertion that the relevant market for an electricity producer is at the very least the area which is market coupled.

The study describes the functioning of the West-Danish market as part of the Nord Pool market coupling area and addresses several competition deficiencies that could result from this arrangement. In particular, the study strives to explain why the area price in West-Denmark (with lower production costs) frequently follows the highest prices observed in the neighbouring market sectors (with higher production costs).

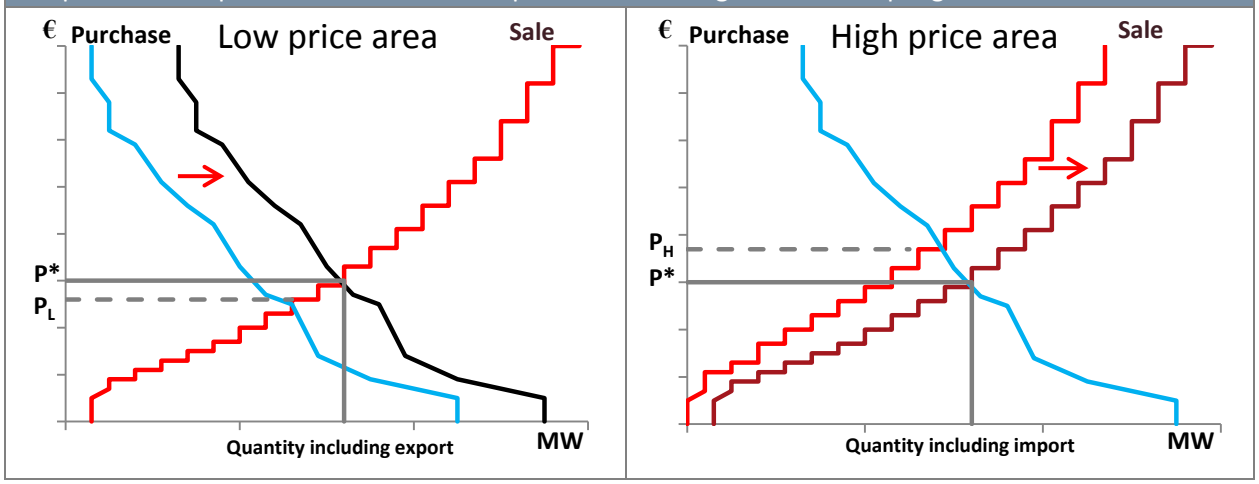
To understand the way the Nord Pool works, it is important to understand the mechanism of market coupling, since its arrangement varies between different regions of Europe. Market coupling can be arranged in several forms (tight or loose volume coupling, price coupling and market splitting). Normally it links the day-ahead markets of several countries through the implicit auctioning of cross-border transmission capacity. This means traders buying electricity do not have to buy interconnector capacities when selling electricity to another country, as this is settled by the market coupling authority automatically (implicitly).

1. Loose volume coupling: Net export positions are calculated by the market coupling authorities and are sent to exchanges which incorporate them in their price bids. The exchanges calculate their prices in the second step. The trading rules and algorithms between the coupling areas do not have to be exactly the same.
2. Tight volume coupling: Net export positions are calculated by the market coupling authorities and are sent to exchanges which incorporate them in their price bids. The exchanges calculate their prices in the second step. The trading rules and algorithms are matched between the coupling areas. An example is European Market Coupling Company (Germany - Nordic)
3. Price coupling: Net export flows and prices between the various areas are set by the power exchanges of the individual market areas. An example of this is the Central West Europe market (Germany, Austria, France, Benelux). Another example is the Czech and Slovak market.
4. Market splitting: Similar to price coupling, but there is one power exchange for all market areas. Nordic (Denmark, Sweden, Norway, Finland, Estonia) and Mibel (Portugal, Spain) (APX-ENDEX 2010)

In the Nord Pool market, market coupling is arranged through the market splitting system. This means the power exchange (Nord Pool Spot) collects all bids and offers for the entire Nordic Region (Denmark, Sweden, Norway, Finland, Estonia), from which it derives a system price for the whole region. Accordingly, the area prices of each area are calculated taking into account the bids and offers submitted in each region. When different market area prices occur, the power exchange calculates the trading capacity between the different areas necessary to align the prices of all areas to the system price. Some area prices will be above the system price (P_H), others below (P_L). To achieve the system

price in all trading areas, the power exchange adds a 'price independent purchase' on the low price area which corresponds to the size of the necessary trading capacity, and a 'price independent sale' in the high price zone. As a result, the area price is lowered in the high price zone, and is increased in the low price zone, both equalling the system price. Prices will equalize, and the system price (P*) will prevail. This situation is depicted in Graph 1. If the necessary trading capacity is higher than the interconnector capacity allows, bottlenecks are created and the markets are decoupled. (Nord Pool Spot 2011)

Graph 1: Price equalisation between two price areas through market coupling



Source: Nord Pool Spot 2011

2.3. The Power Fallacy

"The Power Fallacy" is a study written by the Danish consultancy Copenhagen Economics for Energinet.dk, the Danish transmission system operator (TSO). The study looks at the competition aspects of market coupling, referring to the specifics of the Nordic market. The title of the study refers to the Cellophane Fallacy, also known as the Cellophane Paradox. The main argument of the study is that price unity and a sufficiency of interconnector capacity do not create one relevant market. It explains that in a situation where the marginal costs of production differ significantly between market areas, incentives for anti-competitive behaviour arise. Regulatory and competition authorities must therefore be careful when defining the relevant market. Later in this paper, we point out the parallels between the Nordic and Czech-Slovak markets, and explain how the conclusions of "The Power Fallacy" may be applied to Czech-Slovak market.

As mentioned above, Nord Pool Spot is a system by which interconnector capacities are allocated in order to minimise the price differences between its separate market areas. Under normal circumstances, when the transmission and interconnection capacities are sufficient to carry flows

between the various price regions, all market regions will have one price. In contrast, where transmission and interconnection capacities are insufficient, the price between the market regions will not be equal, leading to market decoupling. The study argues that sufficient transmission and interconnector capacity do not prove that both regions belong to the same relevant market. (Olesen and Sundahl 2006)

Therefore, the assumption that the market coupling area automatically defines the relevant market for a producer in one of its market regions is false. In fact, this assumption may create an illusion in which the relevant market seems larger than it is in reality. As a result, national and European competition authorities may be inclined to misjudge or be too lenient in merger and antitrust cases. (Olesen and Sundahl 2006)

Generally, competition offices use a SSNIP- test to define the relevant market. In the case of electricity markets, the SSNIP test is used to show whether the electricity price in two areas is the same. If it is, both areas belong to the same relevant market. This approach is based on the theory of arbitrage in international trade: If there is free trade, arbitrage between the markets will erode price difference, and prices in the two markets would become equal. (Zachmann 2005) In market coupling this is a given: When price coupling of the markets is successful, prices in all trading areas will be the same. And this is why an analysis of interconnector capacity and its capability to equalise prices between market areas is usually taken as sufficient. However, “The Power Fallacy” explains why an analysis of price alone is not sufficient when analysing the relevant market of market coupled areas.

In Nord Pool, a producer in one market area receives the area price for his electricity regardless of the quantity of electricity produced for a different market area. This means, if a producer in a market area with a lower market price exports its electricity to a region with a higher market price, his export will be priced at the lower price. Since all electricity is sold for the lower price in his market region, the generator’s incentive to produce for the market regions with a higher price is significantly reduced.

The study defines the West-Danish electricity market with the following characteristics:

1. The market region is strongly interconnected with the other regions of Nord Pool
2. The electricity generation technology in Denmark differs strongly from the other regions.
3. The Danish market is dominated by one incumbent. (Olesen and Sundahl 2006)

A large share of Nordic electricity is produced by hydro power plants, making production capacities and so production costs strongly dependent on hydrology. Days with unfavourable hydrologic conditions,

such as long spells of dry weather, can lead to higher production costs for Nordic producers; likewise, days when water reservoir levels are high may help reduce production costs.

In a competitive electricity market, the market price is set by the marginal costs of the marginal power plant. The marginal power plant is the last and most expensive power plant put online to satisfy demand. Marginal costs are the extra costs of production a producer has to pay when he wants to produce one extra MWh of electricity. Typically, marginal costs include fuel costs, variable operation and maintenance costs, as well as emission fees.

The study further analyses the marginal costs the West-Danish incumbent may be confronted with and how these costs affect his market behaviour. According to the study, either the West-Danish producer has *higher* marginal costs than his Nordic counterparts or he has *lower* marginal costs than his Nordic counterparts.

In the first case, where costs in Denmark are much higher than Nordic costs, large flows from Nordic countries will lead to possible congestion of interconnectors. As a result, the market decouples, making West-Denmark a separate price area. According to the study, this scenario is not relevant for the Danish producer since it cannot in any way influence the situation through its own behaviour. (Olesen and Sundahl 2006)

The second scenario, where the West-Danish incumbent has lower marginal costs, is more interesting for the Danish producer. According to the authors, the West-Danish incumbent is faced with an alternative, which we illustrate in Graph 2:

Graph 2: Strategic choices of a monopolistic electricity producer in market coupling

Source: Olesen and Sundahl 2006

Either the West-Danish incumbent can behave *competitively* and bid to reflect his real marginal costs (MC=PDK). This will lead to high demand for his cheap electricity. Thus, there will be a large flow of electricity (exports) from Denmark to the other Nordic areas, causing a congestion of the interconnector and transmission lines. This will result in market decoupling, where prices will vary between the different market areas (PN≠PDK). The price in Denmark will be MC=PDK, while the price in the other Nordic areas will be PN. The West-Danish producer will be paid the market price set in his market area (MC=PDK) for all of his production, regardless of how much electricity he exports to the other market regions.

Or the West-Danish incumbent can engage in *uncompetitive* behaviour and increase his price to levels similar in the other Nordic regions. He can do this by lowering his generation output. As a result, the decongestion of the transmission line is avoided. The market price in Denmark increases to the Nordic price (PN=PDK). Consequently, the West-Danish incumbent receives a higher electricity price for his production. Since all market regions are cleared at the same price (PN=PDK), market coupling between the trading areas remains intact.

It is clear that a profit maximising producer will choose the second, uncompetitive option, since it grants the producer higher profits. Moreover, this uncompetitive behaviour creates the illusion of a competitive market made possible by market coupling since the same price prevails in all price areas. As mentioned above, competition authorities usually use a SSNIP-test to define the relevant market. In the case of electricity markets, they test whether the electricity price in two areas is the same. If it is, both areas belong to the same relevant market. However, it is the uncompetitive behaviour practiced by the West-Danish producer, which we describe above, that creates the same price in all price areas. Prices are the indeed same in all price areas but while the price in other price areas is the result of competitive bidding, in the West-Danish area it is the monopolistic price resulting from uncompetitive behaviour. As with the “Cellophane Fallacy” where the cellophane dominant DuPont raised its prices to the monopoly price, so with the “Power Fallacy” where the West-Danish incumbent raised its price to the higher price area. Both were able to do this because they enjoyed a dominant market share in their market area. (Olesen and Sundahl 2006)

The authors of “The Power Fallacy” conclude that it is inadequate to calculate whether there is sufficient interconnector capacity and price unity when defining the relevant market. When production costs differ significantly between market areas, competition authorities should consider the market area with the lower production costs as a separate relevant market, despite there being market coupling. (Olesen and Sundahl 2006)

4. ČEZ AND ITS RELEVANT MARKET

We shall now apply the lessons learnt above to the Czech-Slovak market, and in this way reach a correct definition of ČEZ's relevant market. We shall demonstrate that, due to differing production costs between the two countries caused by different marginal cost curves, only the Czech market can be classified as the relevant market for ČEZ.

4.1. Czech-Slovak market coupling

As in Chapter 2.2, where we described the functioning of the Nordic market coupling, in this Chapter we show how market coupling between the Czech and Slovak markets works in practice. Our intention is to show the parallels between the Czech-Slovak and Nordic markets, and explain why the conclusions of "The Power Fallacy" may be applied to the Czech market as well.

Market coupling between the Czech and Slovak electricity wholesale markets was established in 2009. The system selected to couple the two national markets was price coupling. As stated in Chapter 2.2, this means that market participants each trade electricity in their own areas. There is a power exchange in each market area. Prices and flows between the two areas are set by the power exchanges of the individual market areas. Each power exchange (OTE[1] and OKTE[2]) collects the corresponding bids for their market areas and sets its own area price. When different market area prices occur, the power exchanges calculate the trading capacity between the two market areas necessary to equalise the price between the two areas, thus creating a system price. To achieve this system price, the power exchange adds a 'price independent purchase' on the low price area corresponding to the size of the necessary trading capacity, and a 'price independent sale' in the high price zone. As a result, the area price is lowered in the high price zone, and is increased in the low price zone, both equalling the system price. If the necessary trading capacity is higher than the interconnector capacity allows, bottlenecks are created and the markets are decoupled. Prices between the two areas will differ and there will be no system price. (OKTE, a. s. 2010)

It seems plausible that the risk of market abuse that the authors of "The Power Fallacy" identify in the case of the Nordic market is present in the Czech-Slovak market as well. This is because in both, market participants can only bid in their respective bid areas and this area is dominated by one producer of electricity. The third condition, which we shall now investigate in the case of the Czech-Slovak market, is where production costs in one area are significantly lower. These conditions together allow the dominant producer to engage in uncompetitive behaviour.

[1] *Operátor trhu s elektřinou, the Czech electricity and gas market operator*
[2] *Organizátor krátkodobého trhu s elektrinou, the Slovak electricity market operator*

Generally, there are two ways an electricity generation firm can exercise market power:

1. Reducing its supply of production capacity on the market (withholding capacity)
2. Raising the price at which they are willing to produce electricity, typically over their marginal costs. (Short and Swan 2002)

To find out if such a situation prevails in the Czech-Slovak market, we must first determine whether such market conditions exist in this market. We must investigate whether marginal costs are significantly different between the two countries. Additionally, we must establish whether market coupling is successful, by which we mean that the system price prevails and there are no bottlenecks between the countries.

Already at first glance, it is possible to confirm the existence of a market coupling price (system price). With very few exceptions, the Slovak and Czech price are consistently identical (see Graph 3).

Graph 3: Difference between Czech and Slovak area prices in 2011

Source: OKTE and OTE, Own calculations

In the 365 days of the year 2011 prices differed only in 18 days, or around 5% of the time. Under competitive market conditions, such a statistic would indicate that the competitive price between the countries is very similar, and that the interconnector capacity is sufficient to equalise any such variation of the price. Another possibility is that prices vary significantly, but are made to look similar through uncompetitive bidding, with the dominant producer artificially increasing its prices to the prices in the higher price area. Additionally, this behaviour helps decongest interconnectors and creates an illusion of one relevant market (see Graph 2). Now let us define the competitive price in both areas by looking at marginal costs in the price areas and confirm whether these are comparable.

4.2. Czech-Slovak price setting plants

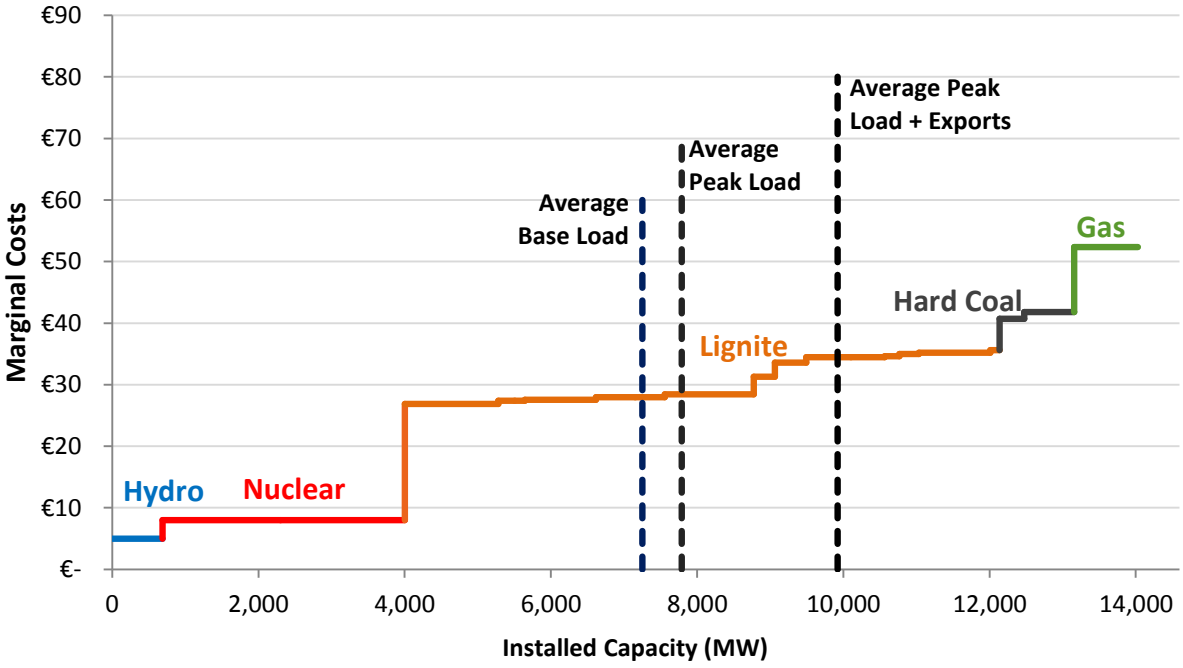
In a competitive electricity market, the market price is set by the marginal costs of the marginal power plant. The marginal power plant is the last and most expensive power plant put online to satisfy demand. The marginal power plant is usually depicted in a merit-order curve by a line which depicts all power plants in a country listed by their marginal costs. Marginal costs are the extra costs of production a producer has to pay when he wants to produce one extra MWh of electricity. In this study, marginal costs include fuel costs, fuel transportation costs and emission fees.

We calculate the national merit-order curve on a power plant basis, and focus on representative plants of larger installed capacity (>100MW). To identify the marginal power plant, the merit-order curve must be representative of the whole power plant fleet of the country. And because the sum of all power plants we used (>100MW) did not total the entire installed capacity of the country, we multiplied the installed capacity of each plant by a factor (total installed capacity of the country/total installed capacity of selected plants), taking into account fuel-mix of the country, and so reached the actual installed capacity of the country. This way we obtain a merit-order curve which is representative for the country's entire fleet.

Additionally, in our merit-order curve the capacity of each power plant is multiplied by the load factor typical for this type of power plant, as we want to estimate the average availability of this plant –plants have differing availabilities due to planned and unplanned outages. And in this way we derive an average yearly merit-order curve for Slovakia and the Czech Republic. Since renewable sources, such as solar and wind plants, do not participate on the free market, we disregard them. Renewable sources enjoy preferential grid access through feed-in tariffs, and since they are always 'in-the-merit', they are irrelevant for the estimation of the merit-order curve. Lastly, we do not take into account pump-storage hydro power plants due to their limited availability, as they are mostly used for grid balancing and ancillary services.

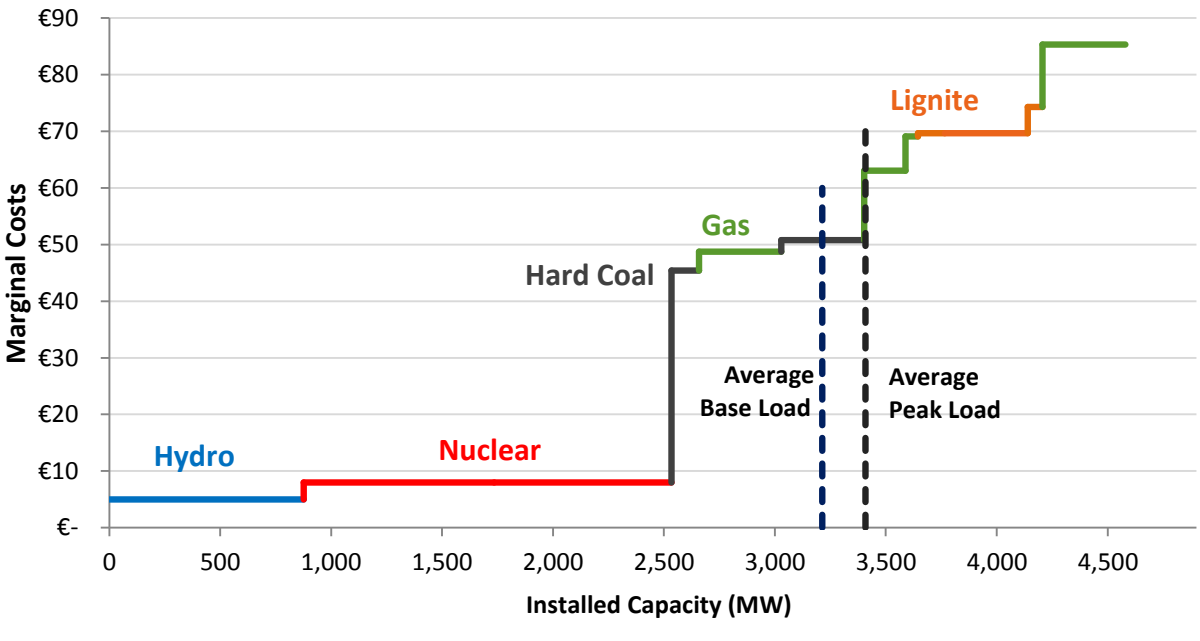
Fuel and carbon dioxide emission (CO_2) costs were obtained from market participants and publicly available data. Load curves were calculated from data obtained from ENTSO-E, which provided hourly data for 2011.

Graph 4: Czech merit-order curve



Source: Own calculations

Graph 5: Slovak merit-order curve



Source: Own calculations

From the intersection of the load curve with the merit-order curve, it is visible that the Czech merit-order plant has significantly lower marginal costs than the Slovak merit-order curve. The Slovak marginal power plant corresponds to the price of electricity products in Slovakia whereas the Czech curve is significantly below this level.

Table 1: Selected electricity products (2011 average)				
	Czech Year Future 2012[3]	Czech Day-ahead	Slovak Year Future 2012[4]	Slovak Day-ahead
Baseload price (per MWh)	€ 53.99	€ 50.60	€ 54.01	€ 50.90
Peakload price (per MWh)	€ 68.38	€ 56.90	€ 68.67	€ 57.50

Source: PXE, OTE and OKTE

For comparison, we show the marginal power plants of both countries. This is the power plant on the intersection between the merit-order and load curves.

Table 2: Marginal power plants			
	Fuel type	Baseload	Peakload
Czech Republic	Lignite	€ 27.98	€28.44
Slovak Republic	Hard Coal/Gas	€ 50.77	€ 63.07

Source: Own calculations

A possible explanation for this difference between the Czech and Slovak marginal plants could be the large interconnector capacity which connects the two markets. Due to this large capacity, the higher Slovak price and the lower Czech price will be equalised. We may check this explanation by looking at the interconnector capacity available for market coupling - known as the Market Coupling Capacity - and observe its use for each hour. We show the capacity and usage of this capacity in both directions between the countries.

Table 3: 2011 average MCC and usage		
Market Coupling Capacity (MCC)	CZ → SK	SK ← CZ
Available MCC (MW)	**1063**	**1864**
Used MCC (MW)	**175**	**109**
Used MCC (% of Available MCC)	**16.5%**	**5.8%**

Source: OKTE

Table 3 demonstrates that, despite significant market coupling capacity, there is hardly any use being made of this capacity. This is puzzling and may be explained by the fact that day-ahead prices in both areas are so similar and so there is little need for price equalisation between the two areas, even though the marginal power plants are significantly different. This creates the suspicion that, as in the Danish case, prices in the lower price area are artificially increased to the higher price area. ČEZ possesses the means to do this, as it is the dominant supplier of electricity in the Czech wholesale market, the only market it can bid in.

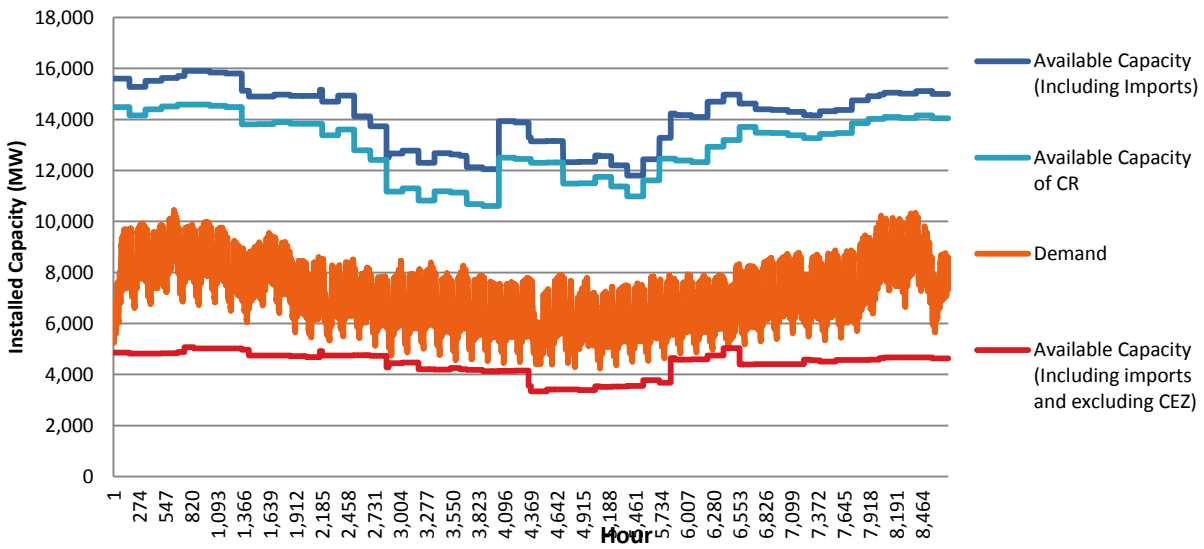
To emphasise this argument, we demonstrate how dependant the Czech wholesale market is on ČEZ using the Residual Supply Index (RSI). The Residual Supply Index is a measure of market concentration specific for the electricity sector. It shows how dependent the market is on the supply of the largest

[3] *Trading period: 01.01.2011-31.12.2011*
[4] *Trading period: 01.01.2011-31.12.2011*

generator. This indicator is calculated by dividing the available installed capacity (excluding the capacity of the largest generator) by the demand. If the resulting value is lower than 1, then there is not enough available capacity to satisfy demand. As a result, the largest generator is essential (pivotal) for the functioning of the market and has the opportunity to abuse his dominant position.

We use several sources to compile the index. Data for demand was obtained from ENTSO-E hourly load values. Import values[5] were obtained from ENTSO-E. Supply was calculated by subtracting available capacities of ČEZ (largest generator) from the total available capacities. Available capacity is measured on an average weekly basis and takes planned outages into consideration.

Graph 6: Depiction of the residual generation supply in 2010



Source: ČEPS and ENTSO-E, Own calculations

The above graph shows the supply and demand in the Czech Republic throughout 2010. It is a graphical representation of RSI as well. The graph reveals the extent to which ČEZ's competitors, taking also imports into account, are unable to cover demand throughout the year. This allows ČEZ to abuse its dominant position all year round, for example by reducing supply to increase prices. A description of the actual RSI calculations is presented in Table 4.

Table 4: Residual Supply Index for the Czech electricity generation sector in 2010

	ČEZ Pivotal	Median	Peak	Low
Czech Republic	99.99%	0.6093	1.002	0.4312

Source: ČEPS and ENTSO-E, Own calculations

[5] *Actual average monthly import flows values (MW) were used.*

4.3. Market coupling: Austria And Germany

We shall now present an example of two countries connected through market coupling that are in fact part of one relevant market rather than merely appearing to be so, as is the case with the Czech and Slovaks republics. Market coupling between Germany and Austria is based on the price coupling system and has been in operation for many years, expanding in 2010 to embrace France and the Benelux countries, creating the Central West Europe (CWE) trading area. (EPEXSPOT 2011)

Physical and financial electricity products for Austria and Germany are mostly traded on the European Energy Exchange (EEX) in Leipzig under the "Phelix" name. Since the liberalisation of the electricity market, no congestion has been observed between Austria and Germany, as demand for interconnector capacity has never exceeded transmission capacity. This explains why EEX has been offering energy contracts for Austria, since April 2005. (Nitsche, et al. 2010) The existence of one trading platform EEX (EPEX Spot) for both Austria and Germany is the main difference between Austrian-German market coupling, and Slovak-Czech market coupling or Nordpool. It means both Austrian and German producers can bid on the same energy exchange –Austria has its own energy exchange, but very little Austrian electricity is traded there. (Bundeskartellamt 2011) The possibility of market abuse is much smaller since Austrian and German firms bid on the same energy exchange and no producer is dominant on the EEX. For comparison, Czech producers bidding on the day-ahead market can only bid on the Czech trading platform, which increases the possibility of market abuse as there is one dominant producer on this market.

Our hypothesis is that the price setting power plant in both Austria and Germany will have similar costs, and these will represent the market price on EEX, which is what you would expect in a competitive market. In Table 5 we present the trading results of selected products on the EEX.

Table 5: Selected electricity products (2011 average)

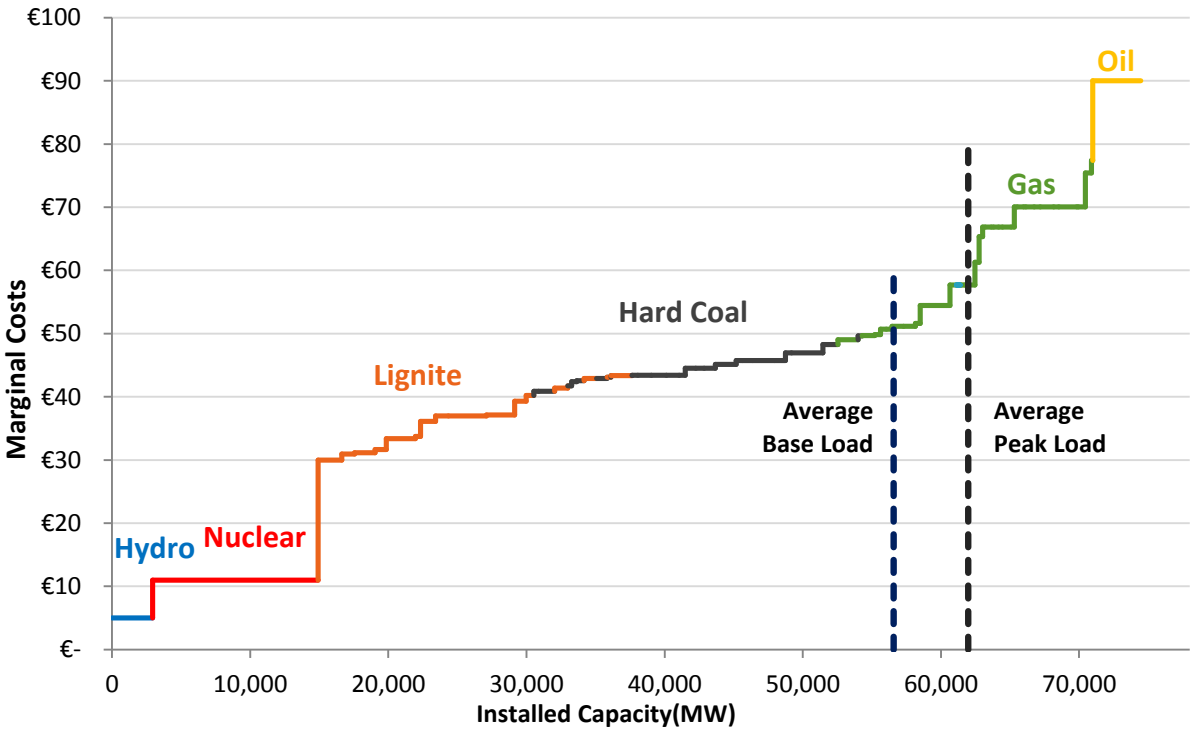
	Phelix Day-ahead	Phelix Year Future 2012[6]
Baseload price (per MWh)	€ 51.12	€ 56.05
Peakload price (per MWh)	€ 57.12	€ 68.99

Source: EEX

We shall investigate whether the market price is set by the marginal costs of the marginal power plant. We calculate the marginal costs of the power plants using the same methodology that we adopted for the Czech and Slovak marginal power plants in section 4.2.

[6] Trading period: 01.01.2011-31.12.2011

Graph 7: German merit-order curve



Source: Own calculations

From Graphs 7 and 8 it is obvious that in both countries the gas power plant is the marginal one. This is because both Austrian and German producers bid on the same exchange. Technology and gas supply costs are similar between the countries, as well as production costs from these plants. Therefore the price equality between the two market coupling regions is not surprising.

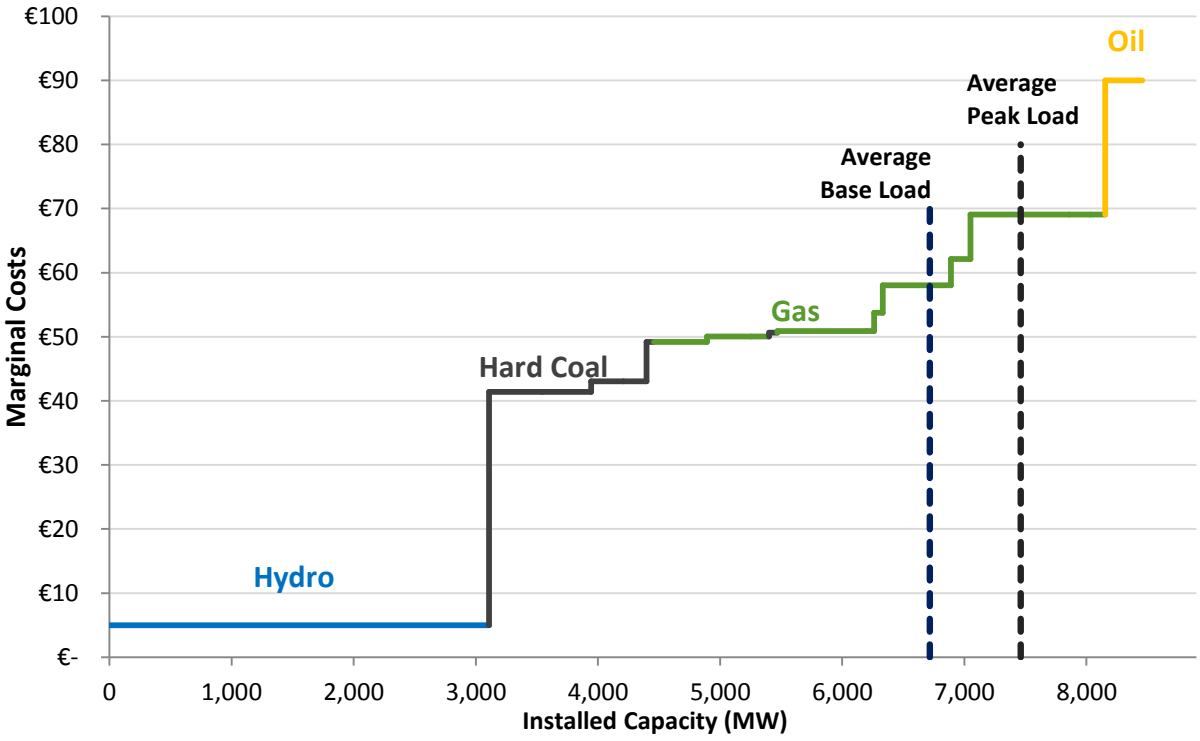
Table 6: Marginal power plants

	Fuel type	Baseload	Peakload
Germany	Gas	€ 51.15	€ 57.67
Austria	Gas	€ 58.02	€ 69.08

Source: Own calculations

Similarly in Slovakia, the marginal power plant is the gas and/or hard coal power plant. However, the marginal power plant in the Czech Republic is the lignite power plant, with completely different production costs. The differences in production costs are made greater by the fact that ČEZ sources most of its lignite from its own coal mines. Through its subsidiary, Severočeské doly, ČEZ owns 48.6% of the lignite market. Generally, the Czech lignite mining sector is an oligopolistic market, in which three companies cover almost the entire market; Czech Coal holds a market share of 31.9% and Sokolovska uhelna 18.9%. (Severočeské doly a.s. 2010) ČEZ can therefore supply its own coal fleet with up to 50% of its own coal supplies, guaranteeing low prices for its generation fleet. This explains the main difference in marginal costs between Czech Republic and its neighbours.

Graph 8: Austrian merit-order curve



Source: Own calculations

In conclusion, Austria and Germany belong to the same relevant market due to the fact that both share one trading platform for the day-ahead market. And both countries have price setting power plants with similar price levels. This is caused by the fact that technology and gas supply costs are similar in both countries.

In contrast, the Czech Republic and Slovakia have price setting power plants with significantly different price levels. This is caused by ČEZ owning most of the fuel it needs to produce electricity. Additionally, both countries have separate trading platforms on which the producers bid. This makes it easier for ČEZ to abuse the market, since it has a dominant position on the Czech trading platform.

5. CONCLUSIONS

In this study, we demonstrate that ČEZ's relevant market for the purpose of competition analysis is the Czech market. We build upon our conclusions from an earlier study, strengthening our argument by focusing on the effect of market coupling on ČEZ's relevant market. We show that in the countries where there is a lack of convergence in production costs and geographically separated trading areas, there cannot be one relevant market. By looking at the merit-order curves of the countries and identifying the price setting power plant (marginal power plant), we explain why this is so.

We have concentrated on the Czech Republic in this study. But the subject of market dominance has become more relevant across the EU than ever before. The European Commission has been pushing for reforms to create a single European electricity wholesale market through the coupling of national day-ahead markets, and it hopes to complete this ambitious project by 2014. This ambition is praiseworthy as it facilitates cross border trading of electricity and eliminates arbitrage opportunities between countries, thus creating one price for electricity in the day-ahead markets.

The European Commission's efforts have improved transparency in trading. And yet the definition of the relevant market is still far from straightforward for competition economists and lawyers. According to European legislation, the relevant geographic market consists of an "area in which the firms concerned are involved in the supply of products and in which the conditions of competition are sufficiently homogeneous." (European Commission 2011) Production costs differ from country to country, due to the use of different technologies, available resources, supplier structures and climate. Electricity generation markets remain highly concentrated; those in France and Belgium are as concentrated as the Czech market. Even more competitive markets like Germany are oligopolistic at best, and the incentive for market abuse remains.

Notwithstanding progress made in market integration in recent years, we consider investigation of country specific characteristics to be an indispensable part of the correct definition of relevant market for the purpose of competition analysis. In our view, the incorrect definition of ČEZ's relevant market has allowed the firm to escape adequate regulatory attention from the competition authorities in the past. Clearly, the fact that ČEZ's relevant market is Czech raises both the probability that the firm is abusing its dominant market power, as well as the need for tougher oversight from the regulator. And it will surely encourage ČEZ to take pre-emptive measures to avoid investigation and conviction for market abuse in the future.

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