

LIBERALIZATION OF ELECTRICITY RETAILING IN EUROPE: WHAT TO DO NEXT?

SILVIA CONCETTINI

UNIVERSITÀ DEGLI STUDI DI MILANO AND

UNIVERSITÉ PARIS OUEST NANTERRE LA DÉFENSE

ANNA CRETI

UNIVERSITE PARIS DAUPHINE AND ÉCOLE

POLYTECHNIQUE

ABSTRACT

The aim of this article is to provide a mid-term evaluation of liberalization of electricity retailing in Europe, taking into account four limitations to policy analysis: different and often conflicting theoretical points of view, shortage of routinely collected data, problems in disentangling the effect of retail liberalization from those of other related reforms and pervasive regulatory interventions. Lacking a common analytical framework to assess the costs and benefits of electricity retail competition, we firstly built a comprehensive theory on retail liberalization and we then use European Union data on market structure and its dynamics to test the consistency of theory and practice. The analysis highlights the presence of an oligopolistic supply structure, as well as a limited level of customer engagement in the market, which in the case of small consumers is partially justified by the presence of switching costs and informational complexities. Asymmetries in the rate and speed of cost-pass through make the market opaque, challenging the sole reliance on “light-hand” regulation to guarantee a sound market functioning. We identify the situations in which some form of “hard” regulation appear to be necessary to secure the continuity of supply even after the introduction of competition and we propose several implementation solutions according to the weight attributed to the objectives of supply continuity and customer protection. In the light of evidences about European markets, we suggest that the attribution of the Default/Last Resort service through an auction mechanism may favor both the development of upstream and downstream competition, without deterring customer switching.

Keywords

Economics and Policy, Liberalization, Electricity retail markets, Regulation

Corresponding Author:

Silvia Concettini, 200 Avenue République, 92001 Nanterre (France)

Email : silvia.concettini@unimi.it

1. INTRODUCTION

In any industry the role of retailers is to provide final customers with added-value services. The types and magnitudes of the costs and benefits of retailing adding-value activities vary widely across sectors, final customer dimensions and characteristics, periods, geographical locations and market structures.¹ In the electricity industry, retailers perform two main activities: on the one hand, they provide final customers a complex service by aggregating inputs from all upstream actors (generation, transport and distribution); on the other hand, they facilitate upstream firms' sales by finding, arranging and managing relationships with potential and actual buyers. In the liberalization process of power sector, retailing and generation have been opened to competition, whereas grid operation, maintenance and investments have remained under regulatory oversight. In Europe the opening of retail electricity markets has progressively entitled eligible customers to freely purchase retail services from a supplier of their choice: this right was first awarded to industrial consumers with annual consumption above a certain threshold² and then to all non-household consumers from the 1st of July, 2004, followed by all consumers since the 1st of July, 2007.

Before and during the process of liberalization several arguments have been put forth on the costs and benefits of retail electricity competition. Despite the non negligible academic and political interest on this topic, there has never been a consensus on the theoretical framework that should be used to examine retail activities in this type of market. The lack of a shared vision has challenged the definition of a common set of indicators for assessing the success or the failure of the reform. Two additional limitations have discouraged empirical impact analyses: on the one hand, the scarcity of data on European retail markets which prevents a systematic market oversight; on the other hand, the difficulty of disentangling the effects of retail liberalization from those of other related reforms (e.g. liberalization of generation) when using available data. On top of that, powerful regulatory interventions in this business compound the evaluation of retail competition's outcome. Indeed, liberalization goals of improving efficiency and effectiveness in electricity retailing have been frequently counterbalanced, both at European and at national level, by the political requirement of ensuring that no consumers were excluded from trade. This objective has often been translated in the co-existence of market prices and regulated tariffs, the latter being kept artificially low with a clear impact on competition's dynamics.

The aim of this article is to provide a mid-term evaluation of liberalization of electricity retailing in Europe taking into account the mentioned analytic constraints: different and often conflicting theoretical points of view, shortage of routinely collected data, problems in isolating the impact of a single reform, pervasive regulatory interventions. We focus on European Union experience where a common framework on competition and regulation exists, differently from the US where the extent of liberalization results from State level regulation. Our objective is

¹Retailing activities add-value optimizing consumers' allocations of time; increasing consumer awareness of product features, price and quality; offering customer assistance; reducing searching, switching, transportation, transaction and stock-out costs (Joskow, 2000).

² See Directive 96/92/EC.

twofold: drawing the attention to a relevant topic which has been overlooked in recent debates on power markets and suggesting a set of actions that should be undertaken by policy makers in order to give electricity retail business a clearer status. In doing so we essentially compare theory and practice, trying to answering to the question: what to do next?

Our analysis suggest that direct benefits of retail competition have been often overstated, particularly for small and residential customers. Final market has proven to be less dynamic than forecast and new entry in supply more difficult to sustain in the medium-long run, notably for small, non integrated companies. The disappearance of captive market seems to have benefited more integrated generators willing to sell their power to newly attracted customers than pure retailers competing on a retail margin. At the same time, European regulators seem to have proceeded without truly questioning liberalization paradigm, even when some shortcomings have revealed. They have lacked both the courage to let the market freely work and the strength to take a step back when it did not.

Our main conclusion is that it seems unlikely that “light-hand regulation” may fully substitute for “hard regulation”³ in this sector, especially for small and residential customers. In the light of this limitation, further actions appear to be required to give a thorough organization to this business able to let expected outcomes of other related reforms (e.g. liberalization of generation) a stronger impact on final customers’ welfare. In our opinion, the removal of tariffs, although desirable in a long run, does not appear at present to be the best incentive to boost competition, given possible market power of providers and difficulties in monitoring the market; on the contrary a Default service assigned through an auction mechanism may favor both the development of upstream and downstream competition.

The discussion is organized as follows. Next section summarizes the theory on competition in electricity retailing while the third section provides an overview of European retail electricity markets. Section 4 discusses market characteristics which may undermine the development of a sound retail competition in electricity retailing. The analysis of Default and Last Resort services and the implementation of protection mechanisms for “vulnerable customers” is included in the fifth section with some suggestions about how to improve reform’s outcomes. Some final remarks close.

2. RETAIL ELECTRICITY COMPETITION

The expected impacts of competition on electricity retailing are summarized in Table 1. Some of the benefits concern efficiency gains, while others are more related to the aspect of differentiation; the remaining benefits are associated with equipment innovation. The academic debate on retail competition has generally

³ By “light-hand regulation” we mean market monitoring and ex-post enforcement, while by “hard regulation” we mean ex-ante regulatory interventions.

been of a qualitative nature⁴ although there have been some econometric attempts aimed at examining consumer behavior and at measuring the impact of retail competition on final prices.

Table 1: Expected impacts of retail electricity competition

Dimension	Expected impact
Efficiency	Direct gains on retail services
	Indirect gains on wholesale, transport and distribution services
	Systemic gains (elimination of double marginalization effect)
Differentiation	New offers and contractual arrangements
	Wider range of services (risk-hedging services, energy management)
Equipment innovation	Innovative measuring and reading devices
	Empowered equipment for quality services

2.1 Efficiency

Increasing competitive pressure on electricity retailers is likely to improve the efficiency of retailing. Direct gains have two sources: a more efficient organization of retailing activities and a larger use of cost-based pricing.⁵ The first source of efficiency has proven to be negligible according to the estimates of Joskow (2000) in US, and OFGEM (2004) and Littlechild (2005) in UK.

Using 1996 data, Joskow estimates the potential savings for the average customer in United States from switching to a competitive retailer that is responsible for all retailing services⁶ and is able to provide them at a 25% discount compared to

⁴ The contributions of Borenstein and Holland (2005) and Joskow and Tirole (2006) are, to the best of our knowledge, the only attempts to formalize models of retail electricity competition. In these papers, the authors estimate the price distortions arising when competitive retailers are active and settlement obligations for wholesale power purchases are determined on the basis of load profiles when final customers do not react to real time prices. For models of retail competition in the gas industry, see for instance Cremer et al. (2006) and Polo and Scarpa (2011).

⁵ Real time pricing is one of the possibilities.

⁶ It should be noted that, even after full unbundling, distributors will continue to be responsible for, and thus will bear the costs of, some retailing services such as requests to connect, disconnect, or change the level of service, resolve outages and power quality problems, and interface with competitive retailers (Joskow, 2000).

distributors. He finds that the average customer's bill might be reduced by less than 1% or approximately 2 dollars per month if the competitive retailer were to pass all of its cost savings through to the customer. In the same vein OFGEM, the British energy regulator, roughly calculates for different payment methods⁷ the retail margin on which the entrants are supposed to undercut incumbents. Littlechild provides a downward revision of OFGEM's estimates, mainly reflecting larger than forecast costs for credit cover and initial IT and billing system settlement. The author concludes that the retail margin may be positive only for direct debit contract, regardless the size of the entrant, while it is negative (small suppliers) or zero (large and medium sized suppliers) for standard credit contracts. Prepayment contracts may entail negative margins for all types of new entrants.

According to Littlechild (2000), however, total efficiency gains may be more significant because they originate not only from direct retail operations but also from an improved upstream procurement.⁸ Fierce competition for end customers may also place downward pressure on transmission and distribution costs. Moreover in the long run, competition reintroduces the proper incentives for dynamic efficiency: with competition only the best offers from the efficient suppliers can survive and expand at the expense of unwanted contracts or/and inefficient sellers.

A last source of efficiency, which we may call systemic, has been envisioned in the elimination of the double marginalization effect (Goulding et al., 1999). This effect arises as a consequence of the vertical unbundling of supply activities along the value chain when firms in different segments retain some degree of market power. Economic theory states that when vertical relations do not exist, firms can exercise their market power at all successive stages of the value chain, generating a negative impact on aggregate firm profits and on consumer welfare.⁹ From this perspective, retail competition *per se* is perceived to be a positive element of liberalization reforms: with retail competition, the double (retail) margin is eliminated or at least reduced.¹⁰

For the supporters of full retail competition, in principle efficiency gains may be passed through to customers in the form of lower final prices.¹¹ Some authors have attempted to estimate the impact of reforms such as privatization and liberalization on final prices and efficiency. See for instance Newbery and Pollitt (1997) on British

⁷ Standard credit, direct debit and prepayment.

⁸ Littlechild (2000) provides some quantitative estimations of this effect in the United Kingdom, while recognizing the inherent difficulty of such an exercise.

⁹ The double marginalization problem may also be overcome by reestablishing vertical contractual relationships between actors (with some side-effects) or by using special types of contracts, e.g., two-part tariffs (Motta, 2004).

¹⁰An empirical paper by von der Fehr and Hansen (2010) reveals that when fierce competition has been introduced in Norwegian retail electricity market, firms have begun to behave as in a standard Bertrand setting, which has ensured cost-reflective pricing, even in the presence of a small number of competitors.

¹¹ It is worthy to highlight that a larger use of cost-based pricing to improve efficiency may translate into higher prices for those customers whose consumption has been subsidized through below-cost tariffs before liberalization.

data, Steiner (2001) and Hattori and Tsutsui (2004) on OECD Countries¹² and Joskow (2006) on US data. Joskow's paper is the only one that properly accounts for retail competition. The author compares changes in real electricity prices between 1996 and 2004 for US states that introduced retail competition and for those that have not. He finds evidence that households in the states where the reform was adopted benefited from larger reductions in prices (with the exception of Texas), while this trend is not apparent for industrial customers. However, this result cannot be attributed *tout court* to retail competition, as in the same period, several other reforms were implemented in the electricity sector (increased competition in generation, improvements in the regulation of distribution and transmission services, etc.).

On the downside, several authors agree that opening the market is likely to produce larger advertising, promotional, transactional, and system duplication (e.g. billing or customer assistance) costs, while there is no consensus on the final balance between these costs and the benefits of competition.¹³ For instance, Littlechild (2000) finds that in the long term, efficiency gains may offset increased advertising and promotional costs, whereas Joskow (2000) and Defeuilley (2009) are more skeptical of this prediction.

2.2 Differentiation and equipment innovation

Theoretically speaking, retail competition is expected to bring new offers and contractual arrangements to the market and broaden the range of available services, such as risk-hedging or energy management. Furthermore, competitive pressures on retailers may indirectly force other actors, such as distributors or equipment providers, to develop and install new measuring and reading devices and the equipment necessary to improve service quality.

According to Joskow (2000) and Defeuilley (2009), the potential for product differentiation and developments in the range of value-added services for which small and residential customers are willing to pay an additional fee appears constrained in the electricity industry. Empirical evidence in Europe partly contradicts this pessimistic view on limited scope for product differentiation.¹⁴ Even though additional services such as energy management were primarily demanded by larger customers, competition in electricity retailing also stimulate the demand for new types of products (mainly with green and dual fuel options) and innovative contractual arrangements for pricing (wholesale price plus mark-up contracts, fixed-

¹² The first paper presents a social cost-benefit analysis, while the others perform regressions using panel data. Both approaches present specific limitations: cost-benefit analyses require the assessment of a credible counterfactual; in the regressions, endogeneity issues are likely to arise.

¹³ Advertising and marketing are useful tools for spreading information about products, prices and competitors. However, a general mistrust toward electricity retailers, energy brokers and their advertising campaigns endures, undermining the engagement of consumers and the gains from communication (OFGEM, 2012b). Consumer attitude has been sometimes exacerbated by misleading advertising campaigns which have been fined worldwide by competition authorities (see for instance the cases of ENI in Italy and Airtricity in Ireland).

¹⁴ The analysis of the relationship between the numbers and types of available contracts and the ability of consumers to seize the better market opportunities by switching supplier is postponed to section 4.2.

price contracts, standard variable contracts, time-of-use contracts, and flat contracts) among small and residential customers. The diffusion of these products remains nonetheless heterogeneous.¹⁵

The installation of smart metering and reading devices seems to represent an essential condition for extending the range of products and services offered by electricity retailers as well as for enabling an active demand side participation. Intelligent equipments may foster the development of contracts with dynamic pricing options and the adoption of more efficient consumption behaviors; moreover they may simplify the process of billing and information exchange between retailers and distributors, with a positive impact on competition dynamics.¹⁶ Even so the adoption of this new technology seems to have been prompted more by binding legal framework than by competitive forces. Indeed it is the European Directive 2009/72/EC which has established that 80% of total consumers should have been equipped with an intelligent metering system by 2020. The decision to roll-out smart metering systems has been subject to a preliminary economic assessment at national level, which has resulted in a variety of coverage choices, technical designs and implementation schedules (ERGEG, 2013). At present only Italy and Sweden have completed their roll-out with a 95% and 100% coverage respectively¹⁷ while Belgium, Czech Republic, Portugal and Lithuania have decided not to invest at all in smart meter deployment. This situation highlights the lack of agreement on the final balance between costs and benefits of smart meter adoption especially in the case of small and residential customers (on this debate see for instance Léautier, 2014).

3. RETAIL MARKETS IN EUROPE

European Union represents an unique case study for the analysis of electricity retail liberalization. All Member States have indeed adopted a common legal framework to open both the wholesale and retail markets to competition. Therefore, if there are country-specific aspects of retail competition, they reflect different realities in terms of generation mix, political and strategic objectives, and consumers' attitudes and awareness *vis-a-vis* the market. In this section we provide an overview of European retail electricity markets and we calculate a few economic indicators of market structure to test some of the theoretical predictions about liberalization's outcome.

3.1 The supply side

Over the whole 2003-2011 period the total number of electricity retailers has decreased from about 3379 to about 3242.¹⁸ The figures for main retailers, i.e. those

¹⁵ For a survey of newly introduced products, see for instance von der Fehr and Hansen (2010) on the Norwegian market and Littlechild (2002) on British market.

¹⁶ Littlechild (2005) discusses in details the importance of metering and data communication in the process of entry. For a recent consultation of stakeholders on this topic see CEER (2014).

¹⁷ In both cases the distributor is in charge for the roll-out and the investment is financed through regulated tariffs.

¹⁸ Source Eurostat.

accounting for at least 5% of total national electricity consumption, reveal that in 2011 only one country, Slovenia, has eight big players, while most of sample Countries show three to six main retailers. From 2003 to 2011 the total number of main retailers has remained relatively constant, from about 102 companies in 2003 to 100 companies in 2011.¹⁹ A relevant indicator of market structure is provided by the cumulative market share of main retailers. The difference between the total market and the cumulative market share of main retailers indicates the size of the residual market, or the market available to minor competitors. The cumulative market share of main retailers in 2011 is reported in Figure 1.²⁰

According to the size of the residual market, European countries can be classified into three groups:

- Countries where the market covered by minor retail companies is large, i.e., between 45% and 60% of the total market: Germany (58%), Norway (55.1%), Italy (54%) and Sweden (50.4%);
- Countries where smaller retailers cover between 45% and 20% of the total market: Bulgaria (38.5%), Austria (38%), Romania (33.1 %), Poland (26.3 %), Netherlands (26%), Estonia (21.4%), France (21%);
- Countries characterized by a small residual market (below 20%):²¹ Hungary (17.3%), Czech Republic (15.4%), Lithuania (15.2%), Slovakia (13.8%), United Kingdom (12.4%), Spain (11.7%), Belgium (11%), Luxembourg (8.7%), Portugal (4%), Ireland (3%), Slovenia (2.8%) and Latvia (0.1%).

Although from 2009 to 2011 the cumulative market share of mail retailers has decreased in 17 out of 25 Countries,²² the market for “minor competitors” remains below 20% in 14 out of 25 Countries in 2011.

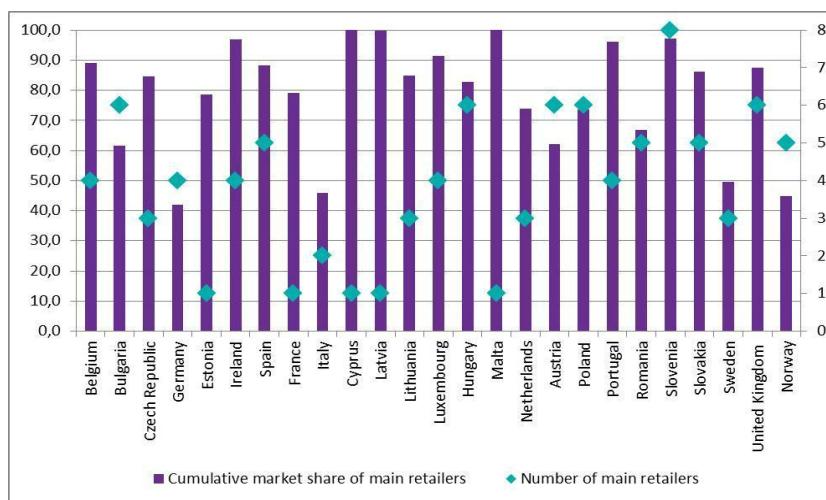


Figure 1: Cumulative market share of retailers (%), 2011.

Source: Authors' elaboration on Eurostat data.

¹⁹ The relevant market for retailers is the national market. Detailed data are reported in Figures 3, 4 and 5 in the Appendix.

²⁰ Denmark, Finland and Greece are excluded because of missing data.

²¹ Cyprus and Malta have one retailer serving all the market.

²² The data are reported in Figure 6 in the Appendix.

These figures indicate that European electricity retail markets have an oligopolistic structure rather than a competitive one. Small and independent retailers have often experienced unsuccessful entry attempts, horizontal consolidations or acquisitions by larger and vertically integrated firms. Some of the difficulties faced by small companies in running a retail business alone have been highlighted in Littlechild (2005): limited profitability of entry (especially in residential markets) and high cost of credit cover; excessive regulatory and compliance burdens; scarce quality of data and metering services; low liquidity of wholesale markets and large exposure to spot price volatility. The presence of economies between retail and generation activities has also favored the integration of upstream and downstream businesses (Pollitt, 2008): if owning a retail firm has the potential to increase generators' investments by limiting overall business risk, the reduction in the number of independent upstream providers amplifies the risk of foreclosure and facilitates the inflation of retail margin (Jamasb and Pollitt, 2005). Therefore if on the one hand vertical integration may be detrimental to retail competition on the other hand its effects on electricity wholesale and, especially, final prices remain ambiguous (Mansur, 2007; Bushnell et al., 2008; Giulietti et al., 2010).

3.2 The demand side

On the demand side, the switching rate of final customers is a commonly used indicator for the level of buyer commitment in a market: it calculates the number of end users who decide to change suppliers when retail services are liberalized. The main idea conveyed by this indicator is that if consumers can easily change service providers when they wish to, producers are less prone to engage in exploitative behaviors, such as imposing high final prices or low quality, and hence the market may be considered more competitive.²³ Figure 2 shows the latest available data on the annual switching rates for household customers.²⁴

Belgium, Great Britain, Ireland, Spain, Netherlands, Portugal and Norway present switching rates between 10% and 15%, followed by Czech Republic, Germany, Italy, Slovenia, Finland and Sweden whose rates range between 5% and 10%. The remaining 8 Countries have registered rates below the 5% threshold while other 7 Countries (Bulgaria, Estonia, Cyprus, Latvia, Lithuania, Romania and Malta) have registered no switchings. The trend in the indicator is positive overall, with the exception of a few countries. Interestingly, it is not possible to identify a clear relationship between household switching rates and saving potentials, given the fact that countries with larger gains in moving from the incumbent supplier to the cheapest available option in the market are not systematically characterized by higher switching rates (ACER, 2013). Moreover, only in 6 countries, namely Malta,

²³ The switching rate does not account for the number of customers who have chosen another contract offered by their current supplier. This number also represents an indicator for customer awareness that is not accounted for in official figures which may somehow underestimate customers' market participation.

²⁴ Switching rates by end user category are reported in the Appendix (Figures 7 to 9). Note that the figures refer to the period 2008-2009 and the source is the European Commission. Large and medium-sized firms generally present higher switching rates than households, indicating a more active participation of larger customers in retail electricity markets.

Cyprus, Ireland, Great Britain, Northern Ireland and Greece, the energy component²⁵ accounts for more than 50% of the post-tax price for electricity (Eurostat). When competition may have an impact only on a small share of the total bill, the incentives for customers' active participation remain somehow weak.

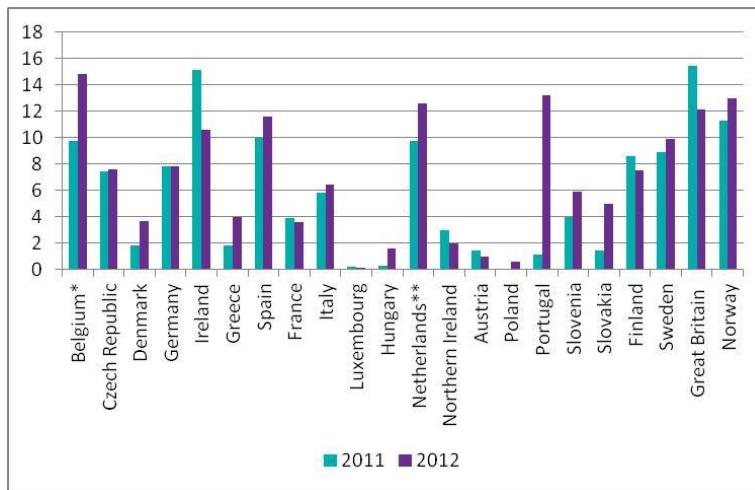


Figure 2: Annual switching rate for household consumers (%), 2011/2012.

Source: Authors' elaboration on CEER data.

* For Belgium the 2012 rate is a weighted average for the Flanders and Brussels regions.

** Data for Netherlands refer to all segments of retail markets.

Three considerations are noteworthy. First, there is no consensus on the level of the switching rate at which the market can be considered "sufficiently competitive". Littlechild (2009) considers a residential customer switching rate of 10% a sufficient threshold to justify the liberalization of retailing. Therefore, according to the data very few countries seem to have developed an acceptable level of competition. To the best of our knowledge, this is the only author providing a basis for comparison with real data. Second, the difference in switching rates between residential and large customers seems to indicate that there exists a two-tier market according to the size of final customers. We address this issue in detail in the next section. Finally, the most recent publicly available figures, from 2012, reveal that 17 countries in the group of EU-27 Member States, Norway and Northern Ireland, keep regulated prices for households, while only 12 do so for small and medium enterprises and 5 for large industry. Where tariffs are available, a large share of residential customers continue to purchase electricity under regulated conditions;²⁶ moreover the average switching rate in these countries results to be lower than in full liberalized countries (ACER, 2013). It is worthy to note, however, that with very few exceptions, the pre-

²⁵ The energy component includes the commodity price and the costs for marketing, billing, other related business costs and a fair margin.

²⁶ For the proportion of SMEs and large industry on regulated tariffs see EC (2011).

tax price²⁷ of electricity in countries where at least 90% of residential consumers were on regulated tariffs has been lower than the EU-27 Member State average in 2012.²⁸ While it is true that regulation and competition are two sides of the same coin, there is still no general consensus regarding the necessity of eliminating end-user price regulations to allow the retail market to operate effectively. We will further explore this topic in the last section.

4. COMPETITION WITH MARKET IMPERFECTIONS

Some authors have claimed that the presence of market imperfections, such as switching costs, informational complexity and a “consumer preference not to choose”, may negatively affect the outcomes of competition in the electricity sector, at least regarding small and residential customers (Joskow, 2000; Brennan, 2006; Defeuilley, 2009). Others have found that the introduction of competition may entail a negative externality, namely customer’s segmentation (Defeuilley, 2009; von der Fehr and Hansen, 2010). Furthermore, a last group of authors has highlighted the shortfalls of employing traditional measures of competition in this sector, such as the rate and the speed of cost pass trough. In the following paragraphs, we present a summary of the main findings regarding these issues.

4.1 Switching Costs

Theoretically speaking, in markets characterized by repeated interactions between buyers and sellers, a consumer who has previously purchased a product from a supplier may incur costs when switching to a competitor, despite the firms’ products being identical (Klemperer, 1995). Switching costs arise for the following reasons:

- searching costs to identify offers and the suppliers;
- learning costs to become familiar with the supplier;
- transactional costs to sign and resolve a contract.

Switching costs may be real or perceived and lead to a situation in which “*products that are ex ante homogenous become, after the purchase of one of them, ex post heterogeneous*” (Klemperer, 1995). These costs prevent customers from changing suppliers even if they are offered a better priced deal and thus have the same effects on market dynamics as a barrier to entry. In the electricity industry, where consumers have long-lasting supply relationships with the incumbent, switching costs may deter complete consumer mobility, leading to under-switching despite the presence of substantial savings (Defeuilley, 2009). Moreover, the situation may be exacerbated if the switching process is delayed or blocked by suppliers without specific reasons.²⁹

Giulietti et al. (2010) analyze the influence of searching and switching costs in the UK retail electricity market by studying the trend in price convergence between new entrants and the incumbent. The authors find that, in line with the general

²⁷ The pre-tax price includes the commodity price, regulated transmission and distribution charges, and retail components (billing, metering, customer services and a fair margin).

²⁸ Only four Countries without price regulation, namely Finland, Slovenia, Czech Republic and Norway, have pre-tax price below the average (ACER, 2013).

²⁹ Compare for instance OFGEM (2012a).

predictions of competition models with switching costs, even after the entry of new competitors, incumbents are able to enjoy a consistent price advantage. Moreover, new entrants, as soon as they are established in the market, tend to exploit the presence of consumer searching and switching costs: over time, new firms' incentives to offer lower prices to gain additional customers are more than offset by the benefits of keeping prices high to increase margins on previously served customers.

4.2 Informational complexities

In some sectors, consumers may also be unwilling to change suppliers because they face relevant difficulties in evaluating and comparing suppliers' offers. This might be the case in the electricity industry, where consumers are generally offered two-or multi-part tariffs, which reduce their ability to estimate the per-unit price of the product. This situation might be further complicated if supply contracts contain other advantages that cannot be straightforwardly translated into electricity price savings (e.g. discounts on dual fuel contracts). This limitation may imply the following:

- consumers switch to a more expensive supplier (over-switching);
- consumers switch to a cheaper but not the cheapest available supplier (inaccurate switching).

Errors in consumers' switching decisions damage their welfare both directly, as they cannot obtain the maximum surplus provided by existing retailers, and indirectly, by increasing retailers' market power due to a weakened relationship between firms' sales and surplus provision.

Empirical evidence on electricity sector is provided in Wilson and Waddam-Price (2010). The authors employ a sample of more than five thousand face-to-face surveys of UK households, 16% of which has switched suppliers.³⁰ They find that nearly 20% of households switched to a more expensive supplier, while inaccurate switching led customers to only obtain half of the gains available on the market. The authors do not find evidence for misselling causing such effects; rather they suggest that complexity and consumer confusion may cause switching decisions to be less efficient when the number of options in the market is large. As a consequence, while competition may have a positive effect on the total gain available on the market, informational complexity may limit the ability of consumers to appropriate it.

Recently, OFGEM (2012a), the British Regulator, published a package of proposals designed to eliminate, or at least reduce, informational complexities that constrain households' participation in electricity markets. The proposals include a limitation on the number of tariffs that suppliers can offer and the types of tariffs (only two part-tariffs are allowed), and impose specific layouts and contents for communications from suppliers to consumers.

³⁰The sample is biased toward low-income customers.

4.3 Consumer preference not to choose

In open opposition to the assumptions of the standard economic model, Brennan (2006) attributes the likely scarce success of competition in retail electricity market to the consumer preference for not making a choice, which can be considered a type of market failure. While liberalized markets have forced consumers to make informed choices that in turn presuppose increasing efforts at understanding and comparing contract conditions and terms of trade, the experience in electricity, and previously in telecommunication markets, seems to suggest that consumers in these sectors do not always consider having additional options from which to choose an advantage. Brennan's opinion stems from an accurate analysis of the marketing literature which indicates that consumers generally exhibit a limited propensity to revise their choices or change the goods and services in their consumption bundles.

4.4 Customers' segmentation

Some authors note that a possible side-effect of introducing competition in the retail electricity market is the segmentation of active and passive customers (Defeuilley, 2009; von der Fehr and Hansen, 2010). Consumers are active in a market when they exercise their freedom of choice by switching suppliers or by renegotiating their contractual conditions without changing retailer. Differences in customers' willingness to switch suppliers or renegotiate contractual arrangements may create the potential for a two-tiered retail market. In this case, active consumers who are consistently involved in market dynamics may benefit from the introduction of competition in retailing because they can obtain access to deals with prices that tend to be more cost-reflective. The inactive customers, conversely, may end up paying prices that are above their pre-liberalization levels, as firms may exploit consumers' reluctance or inability to switch to cross-subsidize their entry to the competitive sub-markets. Empirical evidence from the Norwegian and United Kingdom markets seems to confirm this prediction (OFGEM, 2007; OFGEM 2012b; von der Fehr and Hansen, 2010).

4.5 Speed and rate of cost pass through

The speed and the rate of procurement cost pass through is often used to proxy the level of competitive pressure faced by suppliers when fixing their price. We would expect that in a competitive retail market wholesale cost increases and decreases are passed through customers punctually and symmetrically for positive and negative shocks. Nevertheless, analyzing UK final bills³¹ from 2004 to 2010, OFGEM (2011) finds evidence that the speed and the rate of pass-through results to be higher and the final price adjustment faster in periods of growing wholesale prices compared to falling or stable wholesale prices. As a consequence, downstream competition seems to be tighter when procurement costs are rising and weaker when costs are falling. The British regulator envisages two main possible

³¹ The retail price is built using standard regional tariffs.

explanations. First, consumer engagement in the market flags in period of decreasing prices, relaxing competition in the downstream market; second, the vertically integrated companies tend to balance the profits across business: when wholesale prices are low a larger retail margin may compensate for the loss in profits from generation and vice versa. Using data on variable price contracts in Norway from 2000 to 2010, Mirza and Bergland (2012) confirm the presence of an asymmetric speed in the pass-through of wholesale shocks. They find a stronger evidence of this behavior among suppliers which do not charge a fixed fee as the five dominant national level retailers. The authors claim that these suppliers, albeit apparently cheaper, delay the pass-through of wholesale price decrease to earn extra-profits. The asymmetric price adjustment strategy is seen therefore as a mean for covertly exerting market power.

5. REGULATION IN COMPETITIVE RETAIL MARKETS

We claim that some regulatory measures which ensure the continuity of supplies remain necessary even after the introduction of competition in electricity retailing. It is worth noting that the need to provide an uninterrupted service may be counterbalanced by the objective of ensuring a certain level of customer protection, especially in terms of price, when the market is not yet sufficiently developed. Three situations are at stake. First, in the aftermath of market opening, customers may decide to switch to a new supplier or can be passive and do nothing. In the latter case, the continuity of supply can be guaranteed by assigning passive customers to a so called Default Supplier (DS).³² As competition expands and more consumers participate in the market, demand for the Default service should fall and nearly disappear in the long run. Default service may be also employed when competition strives to develop or “light-hand” regulation is difficult to enforce. Second, customers served by a competitive retailer may face the risk of being interrupted if the supplier becomes unable to provide the service, for instance because it is insolvent or bankrupt. In this case, regulators must arrange for the transition of customers to a temporary supplier, the so called Last Resort Supplier (LRS), which ensures service continuity. There may be a third group of customers, often called “vulnerable”, that struggles to obtain a counterpart in the market, notably because these customers are not profitable. The lack of profitability may depend on customers’ social and economic backgrounds or on the costliness of supply. In the transition to competitive retail markets, these customers face a serious risk of exclusion.

European legislation fails to thoroughly address these issues, a situation that is mirrored in the heterogeneity of national regulations concerning DS, LRS and mechanisms for “vulnerable” customer protection. The term Default Supplier does not appear in the Directives, and ERGEG (2009) reports that most European Countries (11 over 27) do not use this term in their national regulations. When employed, it generally refers to the provider serving passive and “vulnerable” customers. Conversely, the Supplier of Last Resort is explicitly mentioned in

³² An alternative is the immediate disconnection of passive customers, but we do not consider this hypothesis politically feasible.

European Directives as the provider of Universal Service.³³ The majority of European Countries (20 out of 27) use this label to indicate the provider of both “vulnerable” customers and consumers whose retailer exited the market. According to ACER (2013), the concept of “vulnerable” customers is present in 18 over 27 countries although with very different interpretations. It is common that the terms DS and LRS are employed synonymously and that a unique supplier is designated to ensure the continuity of supply in each of the three cases examined above. When national regulations do not employ these labels, other forms of interventions are designed to overcome the three possible situations where a retailer is absent. DS and LRS are usually selected by the regulator: commonly the incumbent is the DS, while in the half of the countries it also performs the role of LRS. The length of Default service provision is not temporarily limited in most countries.

More interestingly for the analysis of competition dynamics, Universal Service provision frequently coincides with end-user price regulation for small and residential customers.³⁴ In this case, the justification for end-price regulation seems to rely on the need to reduce the exploitation of final customers resulting from retailers’ market power after the introduction of competition (Littlechild, 2000; OFGEM, 2002; ERGEG, 2007) and thus regulation appears to have similar objectives of DS provision. In our opinion, European regulation may be substantially improved by targeting each of the situations described above with a specific intervention, having made clear in advance the objectives that are to be pursued. We shed some light in this debate by discussing possible interventions and their impact on competition in the next paragraph.

5.1 How to improve market functioning?

According to the relative weight placed on the objectives of securing service continuity and protecting customers from exploitation, and considering several possible providers, a wide array of implementation patterns of DS and LRS are feasible (Table 2). In addition, three procedures are in principle available to assign these services to retailer:

1. a direct “ex ante” entitlement, typically granted to the incumbent firm;
2. a periodic rotating obligation imposed on competitive suppliers;
3. a bidding process based on the competitive selection of the provider.³⁵

³³ The Directive 2009/72/EC states, “Member States shall ensure that all household customers, and, where Member States deem it appropriate, small enterprises, enjoy universal service, that is the right to be supplied with electricity of a specified quality within their territory at reasonable, easily and clearly comparable, transparent and non-discriminatory prices. To ensure the provision of universal service, Member States may appoint a supplier of last resort”.

³⁴ The French government, for instance, in 2010 passed the NOME law, which prescribes the complete removal of tariffs for industrial customers beginning in June 2011 and allows residential customers to choose between signing contracts at market prices or being supplied by the incumbent firm, EDF, at regulated tariffs through to 2015, when all end-user regulated tariffs will disappear. The law also entitles competitive retailers to withdraw a share of EDF nuclear generation at a regulated price to supply final consumers. For further details see Creti et al. (2013).

³⁵ An empirical application of this measure can be found in Italy, where non-residential customers who temporarily lack a retailer can benefit from a “safeguard service”, the supply of which is assigned for a period of two years to the winner of a reverse auction, where the participants offer to provide the service at a mark up with respect to the wholesale price of electricity.

Each intervention creates however market distortions and has a different level of political and social acceptability, as well as technical feasibility. For instance, when ensuring the continuity of supply is the only regulatory goal and the market seems to be quite competitive, network system operator may provide Last Resort services as part of its balancing activity while the local retailer may freely set the price for the Default service. Price formation for Last Resort Service occurs in real time: the consumers pay an imbalance payment, which is generally burdensome, to discourage imbalances from the day-ahead production plan. Conversely, if a regulator wishes to guarantee a high level of customer protection, Default and Last Resort services may be offered at a tariff and provided by a retailer or the local distributor. Relevant market distortions are created when Default and Last resort services are offered at a tariff that does not reflect its underlying costs (Joskow 2006; EC, 2007): the first is to provide customers with inaccurate price signals for their withdrawals; the second is that the tariff becomes the reference price for market contracts, i.e. the so called "*price-to-beat*". It is likely that consumers may be deterred from switching and new entry may be hampered if tariffs do not reflect the underlying costs. However, there is no consensus regarding the necessity to withdraw electricity tariffs to allow the market to operate effectively. For instance, Vásquez et al. (2006) maintain that a permanent, well-calculated tariff including a shopping credit which is an extra charge over the regulated tariff that creates a retail margin over which new entrants can compete, achieves the objective of guaranteeing the supply to all customers without deterring consumer switching. Other authors such as Joskow (2000) and Littlechild (2000) are more skeptical of the benefits of including a shopping credit in regulated tariffs.

Table 2: Patterns for the organization of Default and Last Resort services

Responsible subject	Price for electricity	Price formation	Focus
Transmission system operator	Imbalance payment	Real time	Supply continuity
Local distributor	Regulated tariff or price cap	Historic (cost)	Consumer protection
	Freely set price	Real time	Supply continuity
Retailer	All retailers (or only the incumbent) offer a tariff	Historic (cost)	Consumer protection
	Supplier resulting from auction	Real time	Supply continuity

Evidences from our analysis suggest that, if some form ex-ante regulatory interventions is still required, the assignation of the Default (and/or Last Resort) service through an auction mechanism reduces market distortions and may favor both the development of upstream and downstream competition, while avoiding the problem of deterring customer migration to the market since the tariff is cost-reflective.

Finally, the problem of “vulnerable” customers is slightly different and may be better understood within the Universal Service Obligations (USOs) framework. The primary argument in favor of USOs has been a concern for full market coverage at reasonable prices, including more costly market segments such as rural areas. Accordingly, some obligations have been imposed on network service providers in the form of restrictions on price discrimination (“non-discrimination” constraint) or obligations to provide the service regardless a customer’s geographical location (“ubiquity” constraint). Often, the two constraints have been combined, asking the firms to ensure full market coverage at a uniform price. Prior to liberalization, vertically integrated monopolies were able to finance USOs by cross-subsidizing unprofitable and profitable market segments in their customer portfolio.

From a theoretical perspective, when competition is introduced in markets with profitable and unprofitable end users, new entrants only compete with the incumbent for profitable customers, generating the so-called “cream skimming” phenomenon, which challenges the incumbent’s ability to finance USOs through cross-subsidies (Laffont and Tirole, 2000). Several authors (see for instance Anton et al., 2002; Choné et al., 2000; Choné et al. 2002; Mirabel and Poudou, 2004) have attempted to assess the welfare effects and distortionary impacts of different regulatory instruments that governments may implement to allocate and finance USOs. However, none of these papers question the economic rationale behind keeping USOs in liberalized markets. In particular, while the “ubiquity” constraint may continue to be imposed on regulated network operators, “non-discrimination” constraint is at odds with the concept of competitive markets with efficient cost-reflective prices.

Panzar (2000) stresses that there is an unavoidable trade-off between competition and universal service provision in liberalized markets. If there is a need for a universal service policy, this means that the competitive market cannot deliver socially acceptable allocations without direct public intervention. We argue that the need for USOs exists if the transition to competitive retail markets may exclude “vulnerable” or unprofitable customers from the trade of an essential good such as electricity. However, in line with ERGEG (2007), we suggest that to avoid the risk of exclusion more targeted and less distortionary interventions are preferable, such as social tariffs³⁶ or direct transfers to customers.

6. CONCLUSIONS

Assessing the impact of electricity retailing liberalization is a rather complex task. We identified four main limitations to policy analysis: different and often conflicting

³⁶ For instance, the duty of serving customers through social tariffs may be allocated to the local distributor, to all retailers or to the incumbent.

theoretical points of view, shortage of routinely collected data, problems in disentangling the effect of retail liberalization from those of other related reforms and pervasive regulatory interventions. Therefore, to provide a mid-term evaluation of the reform, we firstly built a comprehensive theory on liberalization of electricity retailing and then we used European Union data on market structure and its dynamics to test the consistency of theory and practice. We decided to focus on European Union experience where, differently from North America, a common framework on competition and regulation exists.

The analysis of supply has revealed that European retail markets have an oligopolistic structure rather than a competitive one. We identified strong incentives for retailers to horizontal and vertical integrations. The participation of small customers, captured by switching rates, appears scarce, although partially justified by the presence of switching costs and informational complexities which seem to limit the capability of these consumers to fully exploit market benefits. Asymmetries in the rate and speed of cost-pass through make the market opaque, challenging the sole reliance on “light-hand” regulation to guarantee a sound market functioning.

To complete our analysis, we identified also those situations in which some form of “hard” regulation appear to be necessary to secure the continuity of supply even after the introduction of competition. The objective of ensuring supply continuity may be however counterbalanced by the need of protecting customer from exploitation, especially in terms of price. According to the relative weight attributed to these objectives, several implementation solutions are presented. In the light of evidences about European markets, we suggested that the removal of tariffs, although desirable in a long run, does not appear at present to be the best incentive to boost competition, given possible market power of providers, limited awareness of consumers and difficulties in monitoring the market; on the contrary a Default/Last Resort service assigned through an auction mechanism may favor both the development of upstream and downstream competition, without limiting customer switching if the tariff is cost-reflective.

ACKNOWLEDGEMENTS

A. Creti gratefully acknowledges financial support from the École Polytechnique Chair EDF-Sustainable Development, and the Business Sustainability Initiative at Europlace Institute of Finance.

REFERENCES

- ACER/CEER, 2013, "Annual Report on the results of monitoring the internal electricity and natural gas markets in 2012", November.
- Anton, J.J., Vander Weide, J.H. and Vettas, N., 2002, "Entry auctions and strategic behavior under cross-market price constraints", *International Journal of Industrial Organization*, 20 (5), 611-629.
- Borenstein, S. and Holland, S., 2005, "On the efficiency of competitive electricity markets with time-invariant retail prices", *Rand Journal of Economics*, 36 (39), 469-493.
- Brennan, T., 2006, "Consumer preference not to choose: methodological and policy implications", *Energy Policy*, 35 (3), 1616-1627.
- Bushnell, B., Mansur, E. and Saravia, C., 2008, "Vertical arrangements, market structure and competition: an analysis of restructured U.S. electricity markets", *American Economic Review*, 98 (1), 237-266.
- CEER, 2014, "Draft Advice on Data Management for Better Retail Market Functioning", March.
- Choné, P., Flochel, L. and Perrot, A., 2000, "Universal Service Obligations and Competition", *Information Economics and Policy*, 12 (3), 249-259.
- Choné, P., Flochel, L. and Perrot, A., 2002, "Allocating and funding universal service obligations in a competitive market", *International Journal of Industrial Organization*, 20 (9), 1247-1276.
- Creti, A., Pouyet, J. and Sanin, M-E., 2013, "The law NOME: some implications for the French electricity markets", *Journal of Regulatory Economics*, 43 (2), 196-213.
- Defeuilley, C., 2009, "Retail competition in electricity markets", *Energy Policy*, 37 (2), 377-386.
- European Commission, 2007, "Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors", Brussels.
- European Commission, 2011, "2009-2010 Report on progress in creating the internal gas and electricity market", Brussels.
- European Regulators' Group for Electricity and Gas, 2007, "End-user energy price regulation: an ERGEG position paper", E07-CPR-10-03, Brussels.
- European Regulators' Group for Electricity and Gas, 2009, "Status review of the definitions of vulnerable customer, default supplier and supplier of last resort", Brussels.
- Giulietti, M., Grossi, L. and Waterson, M., 2010, "Price transmission in the UK electricity market: Was NETA beneficial?", *Energy Economics*, 32 (5), 1165-1174.
- Giulietti, M., Otero, J. and Waterson, M., 2010, "Pricing behavior under competition in the UK electricity supply industry", *Oxford Economic Papers*, 62 (3), 478-503.

- Goulding A.J., Ru n, C. and Swinand, G., 1999, "The role of vibrant retail electricity markets in assuring that wholesale power markets operate effectively", *The Electricity Journal*, 12 (10), 61-73.
- Hattori, T. and Tsutsui, M., 2004, "Economic impact of regulatory reforms in the electricity supply industry: a panel data analysis for OECD countries", *Energy Policy*, 32 (6), 823-832.
- Jamasb, T. and Pollitt, M., 2005, "Electricity market reform in the European Union: review of progress toward liberalization and integration", *The Energy Journal*, 26 (Special Issue), 11-41.
- Joskow, P.L., 2000, "Why do we need electricity retailers? or can you get it cheaper wholesale?", MIT working paper.
- Joskow, P.L., 2006, "Markets for power in the United States: an interim assessment", *The Energy Journal*, 27 (1), 1-36.
- Joskow, P.L. and Tirole, J., 2006, "Retail electricity competition", *Rand Journal of Economics*, 37 (4), 799-815.
- Klemperer, P., 1995, "Competition When Consumers Have Switching Costs: An Overview with Applications to Industrial Organization, Macroeconomics, and Inter-national Trade", *Review of Economic Studies*, 62 (4), 515-39.
- Laffont, J.J. and Tirole, J., 2000, "Competition in Telecommunications", MIT Press, Cambridge, MA.
- Léautier, T.O., 2014, "Is mandating "smart meters" smart?", *The Energy Journal*, 35 (4).
- Littlechild, S., 2000, "Why we need electricity retailers: a reply to Joskow on wholesale spot price pass-through", Cambridge Working Paper in Economics.
- Littlechild, S., 2002, "Competition in retail electricity supply", *Journal des Economistes et des Etudes Humaines*, Berkeley Electronic Press, 12 (2).
- Littlechild, S., 2005, "Smaller suppliers in the UK domestic electricity market: experience, concerns and policy recommandations", OGFEM Report, London.
- Littlechild, S., 2009, "Retail competition in electricity markets - expectations, outcomes and economics", *Energy Policy*, 37 (2), 759-763.
- Mansur, E., 2007, "Upstream competition and vertical integration in electricity markets", *Journal of Law & Economics* 50 (1), 125-156.
- Mirabel, F. and Poudou, J.C. , 2004, "Mechanisms of funding for Universal service obligations: the electricity case", *Energy Economics*, 26 (5), 801-823.
- Mirza, F. M. and Bergland, O., 2012, "Pass-through of wholesale price to the end user retail price in the Norwegian electricity market", *Energy Economics*, 34 (6), 2003-2012.

- Newbery, D.M. and Pollitt, M.G., 1997, "The restructuring and privatisation of Britain's CEGB: was it worth it?", *The Journal of Industrial Economics*, 45 (3), 269-303.
- OFGEM, 2002, "Review of domestic gas and electricity competition and supply price regulation: conclusion and final proposals", London.
- OFGEM, 2004, "Domestic Competitive Market Review", London.
- OFGEM, 2007, "Domestic retail market report", London.
- OFGEM, 2011, "Do energy bills respond faster to rising costs than falling cost?", London.
- OFGEM, 2012a, "The retail market review - updated proposals for businesses", London.
- OFGEM, 2012b, "The retail market review - updated domestic proposals", London.
- Panzar, J., 2000, "A methodology for measuring the costs of universal service obligations", *Information Economics and Policy*, 12 (3), 211-220.
- Pollitt, M., 2008, "Liberalization and regulation in electricity systems: how can we get the balance right?", in "Competitive electricity markets: design, implementation, performance", Sioshansi, F.P., Elsevier Science, Oxford.
- Polo, M. and Scarpa, C., 2011, "Liberalizing the gas industry: take-or-pay contracts, retail competition and wholesale trade", IEFE Working Paper n. 49.
- Steiner, F., 2001, "Regulation, industry structure and performance in the electricity supply industry", *OECD Economic Studies*, No. 32, 2001/I .
- Vazquez, C., Batlle, C., Lumbreiras, S. and Perez Arriaga, I.J., 2006, "Electricity retail regulation in a context of vertical integration: the debate on regulated tariffs", IIT Working Paper.
- von der Fehr, N.H. M. and Hansen, P.V., 2010, "Electricity retailing in Norway", *The Energy Journal*, 31 (1), 26-45.
- Wilson, C. and Waddams Price, C., 2010, "Do consumers switch to the best supplier?", *Oxford Economic Papers*, 62 (4), 647-668.

APPENDIX



Figure 3: Number of main retailers, 2011.

Source: Authors' elaboration on Eurostat data.

Note: Denmark is excluded because of missing information.

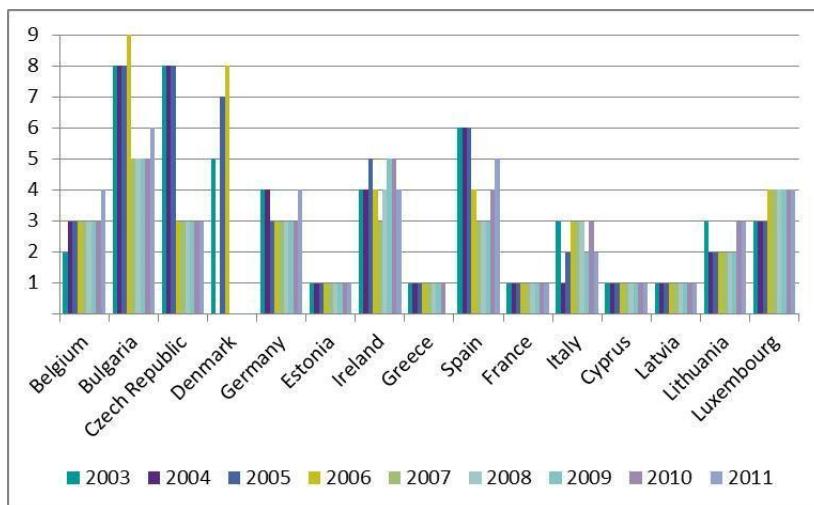
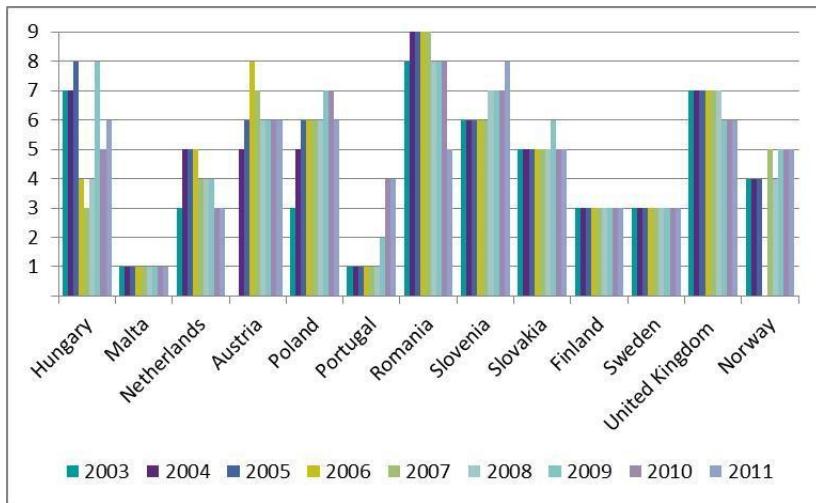


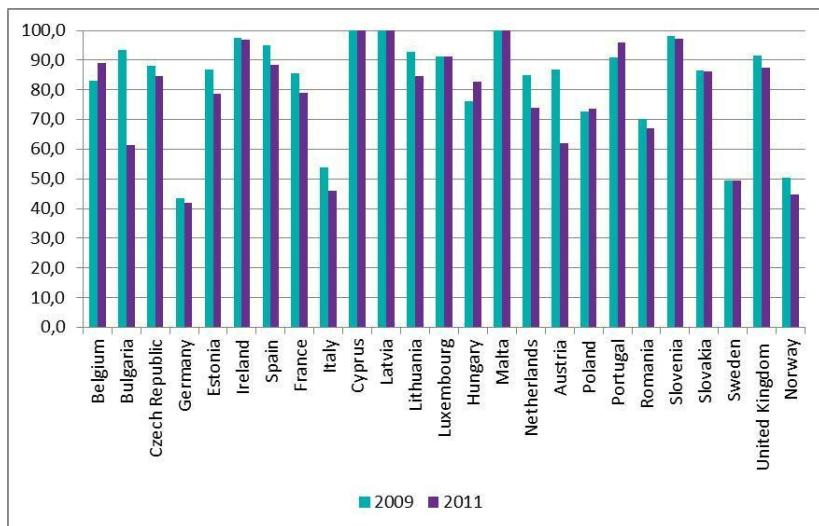
Figure 4: Number of main electricity retailers, 2003-2011.

Source: Authors' elaboration on Eurostat data.

**Figure 5: Number of main electricity retailers, 2003-2011.**

Source: Authors' elaboration on Eurostat data.

Note: Some information about Denmark are missed.

**Figure 6: Evolution of cumulative market share of main retailers (%), 2009/2011.**

Source: Authors' elaboration on Eurostat data.

Note: Denmark, Finland and Greece are excluded because of missing information.

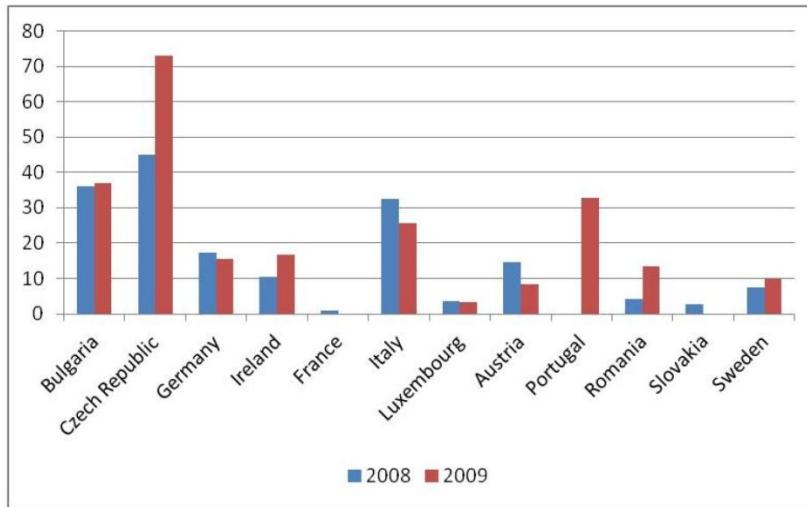


Figure 7: Annual switching rate for large industry (by eligible meter points; %), 2008-2009.

Source: Authors' elaboration on European Commission data.

Note: Belgium, Denmark, Estonia, Finland, Great Britain, Greece, Hungary, Norway, Poland, Spain and the Netherlands are excluded because of missing data; Cyprus, Latvia, Lithuania, Malta and Slovenia have registered zero switchings.

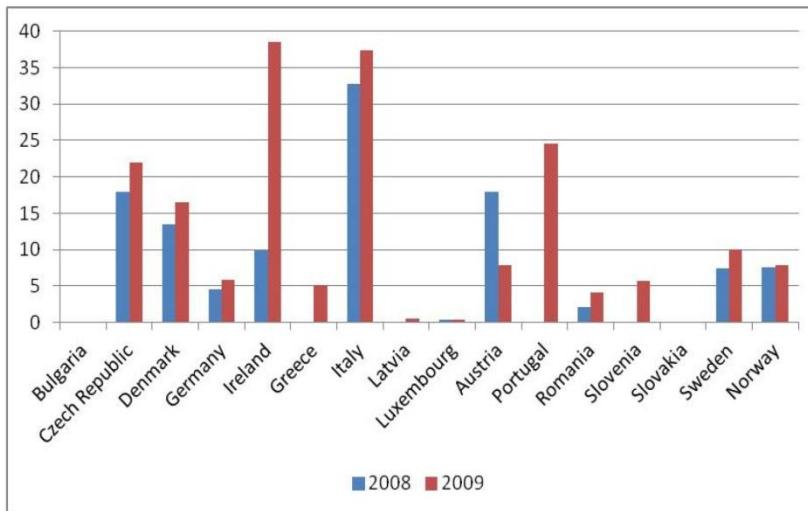


Figure 8: Annual switching rate for medium sized industry (by eligible meter points; %), 2008-2009.

Source: Authors' elaboration on European Commission data.

Note: Belgium, Estonia, Finland, France, Great Britain, Hungary, Poland, Spain and the Netherlands are excluded because of missing data; Cyprus, Lithuania and Malta have registered zero switchings.

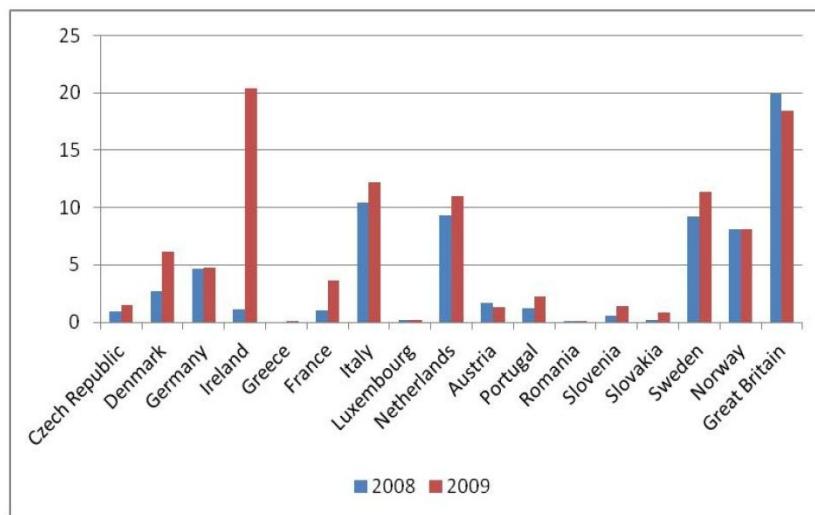


Figure 9: Annual switching rate for small industry and households (by eligible meter points; %), 2008-2009.

Source: Authors' elaboration on European Commission data.

Note: Belgium, Finland, Hungary, Poland and Spain are excluded because of missing data; Bulgaria, Cyprus, Estonia, Latvia, Lithuania and Malta have registered zero switchings.