Davids Against Goliath? Collective Identities and
the Market Success of Peripheral Organizations during Resource Partitioning

Abstract

This paper contributes to the sociology of markets literature by arguing that collective identities sustain the market success of peripheral producers during the process of resource partitioning. Two conditions underlie the positive returns obtained by peripheral producers from their identity claims. First, the demise of near-center producers crystallizes the difference among classes of organizations which benefits the market success of peripheral producers. Second, individual peripheral producers that face an audience that values their identity claims and exhibit credible engagement with their claimed identity, encounter greater market success. Our contributions to the literature are discussed.

Key words: resource partitioning, producers' identities, and audience preferences

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Introduction

Resource partitioning theory (Carroll, 1985) depicts economic action as socially situated, a conception widely held in the sociology of markets literature (Smesler & Swedberg, 1994; Smesler & Swedberg, 2005; Fligstein & Dauter, 2007). The theory proposes a robust explanation for the co-existence of a few center market players and many peripheral organizations in mature industries. Competition for scale economies among market leaders, coupled with the existence of diverse and unmet preferences among consumers, feed the market success of peripheral organizations.

This rationale has been tested in various settings (Carroll et al., 2002) and was recently enriched by reflections concerning the benefits obtained by peripheral producers from their collective identity. Carroll and Swaminathan (2000) were the first to highlight collective identities as benefitting peripheral producers – above and beyond the returns generated by market concentration. The faith of consumers in authentic producers and the status spillovers accruing from the consumption of sophisticated products emerged as additional reasons to justify the market success of peripheral producers. McKendrick and Hannan (2013) further confirm that the distinct identity of peripheral producers protects them from being subject to attack by dominant organizations within the industry.

A thorough understanding of the conditions under which a collective identity sustains the market success of peripheral producers, holds the promise of qualifying received wisdom about market concentration as the primary mechanism of resource partitioning. Unfortunately, research on the identity mechanism falls short on three accounts. First, a focus on producers' identities requires placing audience members (i.e., consumers and other relevant stakeholders) at the center of our theorizing. From this perspective, market concentration alone cannot be responsible for sustaining the identity mechanism. Clear lines of demarcation among classes of producers are required. However, our understanding of the conditions under which such distinctions are crystallized in the eyes of audience members remains limited. Second, current research presumes the existence of a peripheral audience marked by distinct preferences, but fails to acknowledge the extent to which the matching of audience member preferences is a key source of variation in the returns obtained by peripheral producers from a claimed identity. Finally, existing research is unable to distinguish between the

effects of "preferences for the identity of producers" and those related to "preferences for products" or to "status consumption" (Carroll and Swaminathan, 2000).

This paper aims to fill these gaps and advance our understanding of how peripheral producers leverage their clams of distinctiveness during the resource partitioning process. To achieve this goal, we conceptualize collective identities as resting on the beliefs and perceptions of audience members (Hannan et al., 2007; Pólos et al., 2010). We then elaborate on the failure of near-center players (i.e., of mid-sized firms) as contributing to the success of peripheral organizations by crystallizing identity distinctions among classes of producers. To deepen our understanding of the organizational differences in the returns obtained from a collective identity, we argue that individual peripheral producers that (i) encounter an audience that values their identity claims, and; (ii) exhibit credible engagement with their claimed identity are expected to achieve greater market success.

To distinguish the consequences induced by the "preferences for the identity of producers" from those associated with "preferences for products" or "status consumption", we locate our study in an empirical setting marked by homogeneous products and non-public consumption: the German electricity industry after deregulation. As market deregulation called for a collective effort from peripheral producers (i.e., from municipal utilities, henceforth MUs), a focus on the years after deregulation allows exploration of the conditions under which the identity claims of peripheral players meet market success. As the market success of MUs primarily concerned incumbent organizations, we frame our hypotheses with respect to organizational growth rates. As the theoretical development is anchored in the empirical context, the next section introduces the reader to our setting.

The Empirical Setting

The German electricity retail market after deregulation represents an ideal context in which to study the effects of organizational identities during resource partitioning. As in many other commodity markets, strong scale economies due to large sunk costs coexist with decreasing transmission and distribution costs (Christensen and Greene, 1976; Thompson 1997). In addition, the perceived homogeneity of electricity hinders the development of distinct preferences among audience

members. Thus, product differentiation is negligible in this market – compared, for instance, with beer or wine – and organizational identities may be the primary source of distinction among producers.

The empirical counterparts of peripheral organizations in the German electricity market are MUs. MUs in Germany have a long history. Since the late 19th century, the urbanization of German cities has been prompted by concern for residents' wellbeing and the local authorities started to provide gas, electricity, heating, water supply and such services as sewage, waste removal and public transport through local MUs. In providing these services, local authorities acted in the interests of "the common good of the local community" (Wollmann, 2002). The surpluses generated by the profitable aspects of the MUs like electricity, gas and water supply, were used to cross-subsidize the deficits incurred by public transportation or sport facilities (Wollman, 2002; Püttner, 1999: 543) and reinvested in kindergartens, schools and maintenance of local streets.

Before deregulation in 1998, approximately 900 electricity suppliers served German end users in regional monopolies defined by the demarcation agreements (Die Welt, 1998). The *Energiewirtschaftsgesetz* of 1935 established geographically demarcated monopoly rights (Padgett, 1990; Monstadt, 2004). The demarcation agreements guaranteed each utility the exclusive rights to serve all end users located within a specified geographical area — being one or more municipalities within a county; one or multiple regions within a federal state; or even involved several federal states. As a result, a three level system evolved in Germany (Monstadt, 2004: 82-84). First, the eight supra-regional utilities (the "Big Eight" or Verbundunternehmen) generated over 80% of German electricity and served about 1/3 of the end users, extending their operations across several federal states. Second, around 80 regional utilities distributed electricity to lower level suppliers such as MUs and served about 1/3 of the end users, mainly restricting their activities within a federal state. Some regional utilities were connected to the "Big Eight" through minority shareholding, although most of them were legally separate organizations and also had a separate trade body. Last, more than 700 MUs served end users in their municipalities (BDEW, 1998). MUs were owned by municipalities and restricted their operations to one or more municipalities within a given county. Besides the supra-regional, regional utilities and MUs, the population of electricity suppliers includes a small number of

cooperatives and private firms, usually small in size. Because of the difficulties surrounding systematic data collection from this latter group of small firms, we have excluded them from our empirical study.

To develop an internal market for electricity, the European Union (EU) introduced the Electricity Directive in 1996. Following its introduction, the EU member states started to deregulate their national electricity markets. In 1998, Germany opened its electricity market to competition meaning that all end users could purchase electricity from any supplier in the market. Before deregulation, many experts expected high mortality rates among the MUs because of the strong economies of scale witnessed in this market (Die Welt, 1998; 1999). Indeed, since 1998, market concentration has increased considerably (German Monopoly Commission, 2007). In particular, from 1998 to 2002, the "Big Eight" became the "Big Four" (E.ON, RWE, EnBW and Vattenfall Europe) and began to operate nationwide (thereafter NWUs for nationwide utilities). Out of the original 80 regional utilities recorded in 1998, half of them have been fully or partially absorbed by NWUs. Many regional utilities have also changed their names to adopt the new strong corporate identity. For example, Hanseatische Energieversorgung became part of E.ON Edis and Energieversorgung Oberfranken became part of E.ON Bayern. Eventually, the demise of the regional utilities was sealed in 2002 by the merge of their trade body with that of the supra-regional utilities.

MUs reacted to this competitive threat by reinforcing their collective identity. For instance, as the marketing manager of the MU cooperation group "Local Energy" (established in 1999) revealed, "*Uncertainty prevailed. As the first newcomers came to the market, for example, Yello (a subsidiary of an NWU). We were totally flustered ... (laugh). Then very quickly, we formed with other municipal utilities, hmm, let me say, our Yello-rival association… ".* Cooperation agreements among MUs and substantial support from end users prevented the widely anticipated death of the MUs. Instead, "a renaissance of municipal utilities" emerged (Die Welt, 2010): hardly any MUs exited the market and several new foundings took place. Overall, the aggregated retail market share of MUs increased from 33% in 1997 to 40% in 2006 (VKU, 2007). Currently, MUs enjoy a good reputation and the loyalty of their customers (Die Welt, 2009). The surprising strength of the MUs has been widely discussed in

the mass media (Financial Times Deutschland, 2008; Frankfurter Rundschau, 2009; Die Tageszeitung, 2010). In the next section, we elaborate on the conditions that facilitated the market success of MUs. First, we review the existing literature on resource partitioning. Next, we advance a novel set of hypotheses anchored in the empirical setting we just described.

Theory and Hypotheses

Inspired by Carroll's seminal study on the U.S. newspaper industry (1985), resource partitioning explains the co-existence of large center players (generalists) with the small, thriving peripheral producers (specialists). The theory hinges on several assumptions, it presumes: (i) the existence of heterogeneous audience preferences and of a clear peak in the distribution of preferences ― i.e., of a high concentration of resources; (ii) the market is divided into center, near-center and peripheral positions, each served by a respective group of producers; (iii) resources as finite and niches overlap across neighboring segments: while center and peripheral forms do not overlap each other, near-center producers overlap with both center and peripheral producers; (iv) scale advantages do exist in the market jointly with; (v) scope limitations – i.e., "restrictions on the range of preferences to which any one producer can appeal" (Reis et al., 2013: 6).

Under these assumptions, the theory predicates the following. Initially, a group of producers competes for resources (i.e., customers), while slightly differentiating from each other. Under the effect of scale-based competition, the smaller organizations exit the market, while surviving ones grow larger and move towards the market center. The market periphery is not exploited by market center producers who offer generic products and focus on the most bountiful portion of the market. As a result, differentiated organizations emerge to fulfil the unmet demands of the market periphery. By targeting different market locations, market center and peripheral producers do not directly compete and the market is therefore partitioned.

The basic prediction of resource partitioning is that increasing market concentration leads to improved prospects for peripheral producers. Empirical support for resource partitioning has been obtained from a wide variety of industries such as banking, airline, beer brewing, wine making,

newspaper, auditing and car manufacturing (Carroll et al., 2002). Carroll and Swaminathan (2000) were the first to reflect on the additional benefits provided by the enactment of a collective identity by peripheral producers. The faith of consumers in small organizations and the status spillovers associated with the display of expert knowledge during the consumption of specialty products were argued to explain the positive returns gained by peripheral producers from their collective identity. The variation of social visibility among organizational sub-forms (i.e., brewpubs vs. contract breweries) was highlighted as relevant to interpret the heterogeneous returns from the collective identity gathered by peripheral organizations during resource partitioning (Carroll and Swaminathan, 2000).

We advance our understanding of the identity mechanism in two ways. First, we contend that the claims of distinctiveness of peripheral producers meet with greater market success, when a cognitive split among classes of organizations crystallizes in the eyes of audience members — i.e., with the creation of "different" mental clusters in our minds (Zerubavel, 1996). This cognitive split is created by the failure of near-center producers which provides distinctiveness to the identity of peripheral producers (Pólos et al., 2010). Second, in alignment with recent research on organizational identities (Hsu et al., 2009; Hannan et al., 2007), we argue that the returns obtained by each organization from a collective identity remain contingent upon the endorsement of a target audience. Such endorsements are more easily achieved when there is a correspondence between the identity claims of the peripheral organization and the perceived value of the organization by its target audience, and in presence of the active engagement by the peripheral producer with the claimed identity.

In the next section, we develop our hypotheses by leveraging the qualitative data collected from our fieldwork. In particular, we make use of (i) reports based on several large scale customer surveys which were funded by the umbrella trade association BDEW and the MU trade association VKU (BDEW household customer survey, 1999-2009; BDEW commercial customer survey 2000-2009;TNS Emnid survey, 1999, 2003, 2005, 2009; ifm, 2006); (ii) 11 semi-structured in-depth interviews carried out with industry experts and a considerable number of unstructured interviews at

trade conferences or via telephone; (iii) the information collected via utilities' customer magazines, promotional materials, German national and local newspapers.

The Value of Distinctiveness: Competitive Release and the Consolidation of Distinct Identities

As a clear distinction between market center and peripheral producers arises in the eyes of audience members it becomes easier for peripheral producers to reap the benefits of their collective identity. Thus, we argue that the claims of distinctiveness of peripheral organizations become more effective through the failure of near-center producers (Pólos et al., 2010). Thanks to the demise of near-center producers, the "perceived unity" of the market is disrupted (Hannan et al., 2007: 227): a cognitive "splitting" (Zerubavel, 1996; 1997) occurs and the distinct identity of peripheral producers compared to that of market leaders becomes apparent to audience members.

Let us elaborate on this argument by returning to our empirical context. Recall, that the retail market for electricity was initially populated by NWUs (nationwide utilities), regional utilities and MUs (municipal utilities). Our fieldwork suggests that these types of organizations are valid counterparts of center, near-center and peripheral organizations. Qualitative evidence from the German electricity industry supports the connection between the demise of near-center producers and the consolidation of oppositional identities between NWUs and MUs. Figure 1 below, illustrates the evolution of the number of regional utilities from 1998 to 2008. Figure 2, marks the trend of perceived oppositional identities during the same period, based on our coding of a German national newspaper *Die Welt* (for a similar approach see Kennedy, 2008). As the distinctiveness of MUs hinged on the oppositional values endorsed by these organizations compared to those of market leaders, we aggregated the annual number of articles describing NWUs and MUs identities as oppositional and divided it by the total number of articles that co-mentioned NWUs and MUs.

Insert Figure 1 and 2 about here

Figure 1 and 2 suggest that the perceived difference between NWUs and MUs sharply increased with the failure of regional utilities. The first surge of perceived opposition occurred in 1998-1999, coinciding with 12 regional utilities exiting the market. From 2000 to 2003, 27 of the

remaining 66 regional utilities exited the market, and the perception of oppositional identities increased. At the same time, market concentration rose as a result of mergers. The eight supra-regional utilities became the Big Four NWUs, which then acquired a number of failed regional utilities.

As the oppositional identities of center and peripheral firms reached a threshold, audiences started to perceive the market as partitioned along distinct organizational identities. A survey based on 60 interviews carried out by psychologists in 2006 concluded that a "partitioned market picture" had already emerged (ifm, 2006: 59). Whereas, NWUs were described as embodying the omnipotent, uncontrollable, and abstract aspects of electricity, MUs lent a tangible and familiar face to electricity and were associated with a 'cosy' and pleasant, everyday life. The contrast between NWUs and MUs identities is vividly illustrated by the drawings of interviewees reported in Figure 3.

Insert Figure 3 about here

The market returns obtained by peripheral producers from their distinct identity increased with the demise of regional utilities whose market location was between NWUs and MUs. Therefore, we argue that the beneficial effects accruing to peripheral organizations from competitive release are in addition to those elicited by market concentration (Carroll and Swaminathan, 2000: 733). Building on this rationale, we propose the following hypothesis:

H1. Net of market concentration, the larger the release of resources through the failure of regional utilities, the higher the growth rates of MUs.

Leveraging the Identity Claims: Matching and Engagement

The returns from the identity claims of peripheral producers are larger in the presence of an endorsement from a target audience combined with active engagement by producers with their claimed identity. Building on previous research that has explored the appeal of organizational identities (Hannan et al., 2007), we propose that peripheral organizations that (i) target audience members with preferences aligned to values associated with their identity and (ii) credibly engage

with that claimed identity are more likely to achieve greater market returns. The next section further elaborates on these arguments.

Variations in identity matching

Extant research on resource partitioning presumes the existence of a peripheral audience segment marked by distinct preferences. But it fails to theorize about the relevance of the match between producers and audience members for interpreting the variation in the success of peripheral producers. The endorsement of audience members becomes even more important when considering the returns obtained from collective identities. Matching the preferences of audience members matters when reaping identity benefits, because the material and symbolic support of audience members allows a producer "to thrive within its environment – to obtain necessary resources, to persist, and to grow" (Hannan 2010: 169). To capture the essence of matching in a context marked by localized production and consumption, we anchor the discussion of variations in values and preferences of audience members within geographical communities.

In order to discuss the relevance of identity matching to audience preferences, the feature values of the MU's identity ought to be introduced. According to a series of customer surveys (TNS Emnid, 1999; 2003; 2005; 2009), two main features differentiate the MUs identity from that of NWUs namely, *localness* and *environmental friendliness*. In these surveys, customers described MUs as associated with "orientation on the common welfare of the local region", "support for the local region" as well as "environmental friendly behavior". Issues of "supply security" and "reliability" also figured prominently in the perception of audience members, but appeared to be captured by the localness of MUs (ifm, 2006). In contrast, the NWUs were defined by "profit seeking", "flexibility", and "customer orientation" (Figure 4).

Insert Figure 4 about here

According to the TNS Emnid surveys (1999; 2003; 2005; 2009) *localness* emerged as the most prominent MU identity feature. As Figure 4 shows, 45% of the interviewees expect "orientation on the common welfare of the local region" and "support for the local region" from the MUs.

Conversely only 9% expressed similar views towards NWUs and other private utilities. This is consistent with the results of the ifm psychological survey (ifm, 2006). According to this survey MUs are a symbol of the community itself with which citizens strongly identify. Alternative offerings from the NWUs are perceived as an "assault" from the outside, attacking one's own living space and should be fended off. It is therefore, unsurprising that attempts to privatize MUs are likened to "selling off family jewelry" (Tafelsilber in German) and have triggered referendums and demonstrations in several communities (Energie & Management, 2001; Süddeutsche Zeitung, 2008). Local pride also led customers to attach emotions to electricity. As a customer of the MU Dresden proudly declared: "this is Dresdener electricity" (ifm, 2006). An energy expert further confirmed "the idea of 'we are from here' is very powerful" and associated this with the surprising vitality of MUs (Die Welt, 2010). Due to the strong emotional attachment to their MUs local customers disregarded market information. They showed no interest in alternative offerings and appeared relatively insensitive to price: they are willing to pay a bit more for "local" electricity and are tolerant toward price differences (ifm, 2006) even though it is technically impossible to discriminate between whether one receives "local" or "nonlocal" electricity.

Environmental friendliness ('Greenness') is the second pivotal feature of the MU identity. Whereas 35% of the consumers associated environmental friendliness with MUs, only 8% of respondents associated 'greenness' with NWUs and other private utilities. The early years of the BDEW customer survey pointed out that both NWUs and MUs showed an image deficit in environmental friendliness and urged its members to react BDEW household customer survey, 1999; BDEW commercial customer survey, 2000). MUs started to provide energy saving tips in their customer magazines, built photovoltaic arrays on the roof of the local kindergarten and constructed environmental friendly combined heat and power (CHP) generation capacity. In contrast, even when actively portraying themselves as environmentally friendly (Die Welt, 2001), NWUs' efforts at reinforcing their 'green' image proved unsuccessful. The high percentage of electricity generated through coal plants and investments in nuclear power plants rendered their claims anything but authentic. Indeed, NWUs are called "nuclear utilities" (Der Spiegel, 2002; Financial Times Deutschland, 2010).

While the identity claims of every MU revolved around localness and greenness, variations in the endorsement of these feature values by their target audience explain the different market returns obtained by each MU from the collective identity. Questions may be raised on how MUs embedded in more supportive counties are able to sell more electricity. Considering that after deregulation MUs served a territory that proxies a county and that German counties include multiple municipalities or cities. MUs realized their growth in sales in two ways: high customer loyalty in home municipalities and new customer acquisition in neighboring municipalities, often within the same county and usually within the same federal state. While the first way is rather straightforward, the second requires clarification. While some municipalities had their own MUs, others did not and were supplied either by regional utilities or the supra-regional ones before deregulation. After deregulation, a large number of regional utilities were acquired by NWUs. Several customers, witnessed their regional utilities became a local branch of the NWUs and experienced the changing of the traditional regional names for corporate ones, expressed a decreasing identification with their suppliers. The alienation or even resentment became most apparent in municipalities located within a county which demonstrated a high preference for localness or greenness. This offered the neighboring MUs the opportunity to expand and increase their sales.

Building on this evidence, we propose that the more a community (a county in this context) espouses localness and greenness, the higher the growth rate of an MU is expected:

H2. *Net of market concentration, the more the local community endorses localness and greenness, the higher the growth rate of the focal MU.*

Variations in organizational engagement

Research on organizational identities suggests that the engagement of producers indicates a credible commitment towards the claimed identity should be rewarded by a target audience (Hannan et al., 2007; Hsu and Hannan, 2005; Carroll and Swaminathan, 2000). In our setting, cooperation among MUs represented a credible commitment to their collective identity. After deregulation, the Big Four NWUs emerged as a substantial threat to MUs. Due to MU's prominent position in the retail market, NWUs attempted to lure MUs to "cooperate" with them. However, many MUs feared these

alliances as a direct threat to their identity. MUs perceived that they have "a fundamentally different organizational philosophy and mission" and felt deeply committed to their identity (Zeitung fuer Kommunale Wirtschaft, 2007). Therefore, MUs preferred to cooperate with each other.

Cooperation among MUs not only suggested a credible commitment to the MU identity, it also serves to augment the salience of the MU identity in the eyes of audience members. Most cooperative activities placed an emphasis upon localness and greenness as key values to MUs. For instance, investments in power generation represented a genuine commitment to preserve local independence from NWUs and the development of environmentally friendly generation capacity (Energie & Management, 2005; Energie & Management, 2008). Or they stated that the goal behind the cooperation between the MUs in Krefeld and Neuss was "the maintenance of a customer-near, municipal oriented energy supply" (Energie & Management 2006). Similarly, the mission statement of KOS, a cooperation group of 14 MUs from Upper Bavaria and Swabia (KOS Web page), is "the development of the local economic and living environment for a strong and worth-living region… strengthening the economic independent future of the municipal companies in a changing energy market". The municipal cooperation groups see themselves as "Robin Hood against the Big Four" (Zeitung fuer Kommunale Wirtschaft, 2006). Another example is the MU cooperation group named SüdWestStrom, aspires to the hope to "remain competitive and independent of the NWUs" (Stuttgarter Zeitung, 2008). The members of this cooperation group are committed to supporting their respective local communities through sponsoring local events, and more importantly, by building environmental-friendly power generation capacity (SüdWestStrom web page). Compared to MU's well-received engagement, NWU's efforts were perceived to lack credibility and authenticity in the eyes of local audience members. For example, EnBW conducted a costly campaign in the local press within the federal state of Baden-Württemberg, claiming local and environmental friendly investments. The director of MU Tübingen labelled this effort as inauthentic: "we pay dividend in Tübingen and not in Paris", pointing to EnBW's shareholder - the French nuclear giant EdF (Stuttgarter Zeitung, 2008).

Building upon these arguments, we propose that the more an MU engages in cooperative activities consistent with claims of localness and greenness, the greater its growth rate:

H3. Net of market concentration, the more the focal MU engages in cooperative activities consistent with its claims of localness and greenness, the higher its growth rate.

Identity matching and engagement jointly at work

Conceptually, matching and engagement represent two independent effects that influence the returns obtained from a collective identity (Hannan et al., 2007). The simultaneous existence of both conditions represents the ideal scenario for peripheral players. Indeed, the returns obtained from a claimed identity should be highest when both matching audience preferences and organizational engagement are non-zero. Engagement plays a crucial role in the relationship between matching and market success: the co-existence of a good match and credible engagement should boost the success of peripheral organizations. Similarly, matching should amplify the benefits obtained from engagement by making a good fit to local preferences even more convincing. Using an extreme example, consider that a large NWU invested a great deal of effort and money in extensive marketing campaigns to convince their target audience that the NWU has a local image. However, the lack of matching the perceived NWU identity to that of the preferences held by local audience members significantly hinders the returns obtained from the marketing campaign. Thus, we propose the following interaction between matching and engagement on MU's growth rates:

H4. Net of market concentration, the growth rate exhibited by the focal MU that engages in cooperative activities consistent with its claims of localness and greenness are amplified by the extent to which the local community values localness and greenness.

Data and Methods

Data Sources

To test our hypotheses we have compiled several datasets. The first data set relates to the annual electricity retail sales to household customer from 2001 to 2008 ─ the period in which such

data are available. We focus on the household segment as the hypothesized effects should not apply to large commercial and industrial customers due to economic considerations, such as cost savings (see robustness check section). The data were primarily from the annual data of the BDEW (the umbrella trade association for the German electricity and water industry, BDEW Jahresdaten der Stromversorger, 2001-2008). The final data set consists of 573 MUs within the German electricity industry which corresponds to approximately 80% of the MU population.

To measure the matching of MUs' identity to audience preferences, we collected socio-demographic statistics of 439 German counties from the German Federal Statistical Office. As for the identity claims of each MU, we obtained information on cooperative activities from the data collected by BDEW and VKU. To ensure the robustness of the information collected, we also consulted the websites of many MUs and cooperation groups, as well as various German national and local newspaper articles gathered through LexisNexis.

Variables

Dependent Variable

Because the market success of MUs is primarily concerned with the growth of incumbent organizations, the dependent variable of this study is the change in size of each MU in our sample. We measure *Size* using the retail sales of electricity to households in MWh (megawatt hour). Other common size measures are annual revenues and number of employees. The use of annual revenues from electricity retail sales was not feasible because electricity prices exhibited substantial volatility over the period of study (German Monopoly Commission, 2007). The number of employees turned out to be not suitable either because MUs are often involved in other business areas such as gas, water and heating and the allocation of employees to the different business areas is problematic.

Independent Variables

Competitive Release. Our argument about the disruption of the perceived unity of the market – i.e., regarding the cognitive split — revolves around the failure of near-center producers. We measure competitive release through the amount of resources released by near-center producers

(Hannan et al., 2007), represented by the aggregated amount of sales to tariff customers freed by the failed regional utilities in a given year. Tariff customers include household customers and small commercial customers. The unit of measurement employed in the construction of this measure is 10 million MWh (megawatt hour).

Matching to local values and preferences. To test our second Hypothesis, we need to map the extent to which localness and greenness – i.e., the features of the MU identity ― are endorsed by the target audience of each MU. Remember that most MUs serve a local market. In particular, our qualitative evidence suggests that the primary audience of each MU belongs to a rather limited geographical space, namely to the several municipalities of a county. In particular, we expect the extent of localness and greenness exhibited by the inhabitants of the county to which each MU belongs to explain differences in market success among MUs.

Localness was measured as the difference in voter turnout between county and national level elections in each county; *Greenness* as the proportion of people in a county voting for the German Green Party in the Bundestag (the lower house of the federal parliament) election. Bundestag elections are held every four years and linear interpolation was used for the missing years (see the robustness check section). Particular attention was dedicated towards assessing the validity of the measure of localness. Three main sources of variation may drive voter turnout (Blais, 2006, Geys, 2006): (1) electoral institutions such as compulsory voting and unicameralism; (2) the specificity of party systems, and; (3) the socioeconomic environment. In Germany, because electoral institutions and party systems are similar across counties, variations in socioeconomic factors should provide the main source of variation in our context. When considering how differences in turnout are driven by socioeconomic factors, the following explanations are routinely advanced (Geys, 2006; Henderson and McEwen, 2009): (a) social pressure to participate, and; (b) a genuine attachment to the local community. Because there is no clear reason to believe that social pressures differ across national and local elections in a given county, any variation in the difference between local and national elections should capture the variation in the attachment of voters towards their local community. The results obtained when using the sheer percentage of voters in local elections proved to be consistent with

those reported in Table 3. As elections are held every 4 or 5 years, we filled the missing years through linear interpolation (see Boone et al, 2012; Schneiberg and Bartley, 2001)[1].

Engagement. Remember that market success should be larger for those MUs that credibly engage with their claimed identity. Our field study suggests that engaging in cooperative activities with other MUs represents a fundamental way to demonstrate commitment towards the claimed identity. Engagement in terms of cooperative activities among MUs took different forms (Zeitung fuer Kommunale Wirtschaft, 2001; Energie & Management, 2005; Energie & Management, 2008). If the focal MU engages in any cooperative activity that signals a commitment to Localness and/or Greenness, we coded the dummy variable *Engagement* as 1. Such activities include for example, collective marketing and sales, as well as the building of shared generation capacities. The latter represents the most genuine commitment to the MU identity in preserving local energy independence from NWUs. MUs' collective marketing and sales efforts are also indicative of a credible engagement with the MU identity. For instance, after MU Wedel's successful marketing campaign in Hamburg, MU Elmshorn and MU Schleswiger - two other members of the cooperation group Nordverbund, joined the battle of "David against Goliath" (Hamburg Abendblatt, 2008; taz, 2008). The three MUs expanded the campaign "Switch Electricity" (Wechselstrom in German) from Hamburg to their home federal state of Schelswig-Holstein, attacking the territory of E.ON Hanse – an NWU local subsidiary. Carrying out a marketing campaign together with the local bakeries, they emphasized their localness and independence, guaranteeing an offering to be "100% free of the energy giants". With a surcharge of only 2 Euros per month they also actively promoted 100% green electricity. When an MU did not engage in any cooperative activity that signalled a commitment to localness and/or greenness, we coded the *Engagement* variable as zero. For instance, collective purchasing of electricity was also coded as zero, as being inspired by the willingness to increase their collective bargaining power, rather than by a genuine commitment to the MU identity. In the robustness check section, we discuss the results obtained from alternative coding strategies for the *Engagement* variable. All independent variables were lagged by one year.

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[1] For the filling of missing years in-between elections, we also experimented with different discount rates, from fast to slow adjustments in the early years after an election. Although weaker in the case of the (less likely) fast adjustment, the results turned out to be qualitatively similar to those reported in Table 3.

Control Variables

Several control variables were included in our models to rule out alternative explanations. To hold constant the effects of market concentration, we controlled for the aggregated market share of the four largest firms in the industry (*C4 Market Share*). Linear interpolation was used for the year 2000. We also controlled for *MU density* and *MU density squared* at the state level (*MU Density, MU Density^2*) because competition may negatively affect organizational growth (Barnett and Carroll, 1987). Furthermore, the sales of electricity to household customers is proportional to the number of inhabitants of a given county and, indeed, densely populated areas are considered in the industry as profitable "fillet pieces" (Stuttgarter Nachrichten, 2010). We thus created a control variable that measures the population of inhabitants per square kilometre (sqkm) in the focal county (*Population Density*). Since various socio-demographic characteristics might influence the consumption of electricity, we controlled for the average *Population Age* and *Disposable Income* observed in a given county (Tonn and Eisenberg, 2006; Hamza and Gilroy, 2011). In addition, the municipal debt level (*Municipal Debt*) in the focal county might be informative about the resourcefulness of the local institutional environment. To reduce the skewness of their distributions, we log-transformed several control variables (see Tables). Table 1 and 2 present the descriptive statistics and bivariate correlations among the variables included in our database.

Insert Table 1 & 2 about here

Model Specification

The most common model of organizational growth is the one proposed by Gibrat (1931) that presumes size-independent growth (Barnett and Carroll, 1987; Barron et al., 1995). Following previous studies (Sørensen, 1999; Greve, 2008), we model organizational growth rates as a function of organizational size and of a number of covariates:

$$\frac{S_{i,t+1}}{S_{it}} = S_{it}^{\alpha-1} exp\big(\beta x_{it} + \varepsilon_{i,t+1}\big)$$

where S is firm size, α is an adjustment parameter indicating the dependence of growth on organizational size, and β is a vector of parameters characterizing the influence of organizational and environmental covariates. By transforming the equation into its natural logarithm, the following log-linear model which can be estimated through linear regression:

$$ln\big(S_{i,t+1}\big) = \alpha \ln(S_{it}) + \beta x_{it} + \varepsilon_{i,t+1}$$

Because the Hausman test rejected a random effects specification at p<0.0001, we employ fixed effect regression to isolate unobserved differences across MUs. Robust standard errors are reported to correct for potential biases due to heteroskedasticity.

Results

Table 3 below, shows the estimates obtained from the fixed effects models of growth rates for MUs during the period 2001-2008. A few results from Model 1 are worth noting. First, the estimates of the controls appear aligned with our expectations: *Population Age* exhibits a negative and significant effect on growth rates. Increasing *Disposable Income* is instead positively associated with organizational growth rates. The effects of *MU Density* and *MU Density[2]* are consistent with the existing evidence concerning the consequences of density-dependent legitimation and competition on organizational growth rates. *C4 Market Concentration* exhibits a positive and significant effect on MU growth — a result aligned with the current understanding of resource partitioning. On a marginal note, consider that the coefficient of the lagged size variable is lower than the unit. We read this finding as suggesting that smaller MUs exhibited a faster growth compared to their larger counterparts.[2]

Insert Table 3 about here

Model 2 tests Hypothesis 1 concerning the consequences of *Competitive Release* while holding constant the effect of market concentration. The estimate of the *Competitive Release* variable

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[2] This result should be interpreted with care as the coefficient estimate of the lagged dependent variable increases in magnitude when moving to alternative estimation methods such as FGLS or GEE.

(see H1) is positive, but marginally falls out of the conventional threshold of statistical significance (p = 0.109). Model 3 tests Hypothesis 2 on the impact of matching to local preferences. As predicted by our hypotheses, matching along each of the identity features of MUs (i.e., *Localness* and *Greenness*) provides an independent, positive and significant effect on MUs growth rates. H2 therefore is supported. Model 4 tests H3 by adding the *Engagement* variable. The coefficient estimate of this variable is positive and statistically significant: engagement activities that signal greater commitment to the claimed identity of MUs contributes to subsequent growth rates. Upon controlling for matching and engagement, the coefficient estimate of the *Competitive Release* variable becomes statistically significant, and similarly, it remains as such in the full model.[3] As predicted by Hypothesis 4 (Model 5), the joint presence of matching and engagement reinforces MUs growth rates – especially in the case of *Localness* although less so regarding *Greenness* (see Model 3). A graphical inspection of the interaction, not reported here, confirmed our interpretation. Notice also that when adding the interaction effect to our models, the main effect of engagement loses statistical significance. Consistent with our conceptual argument, this finding suggests that at the hypothetical value of zero intrinsic appeal, engagement does not exhibit any effect on organizational growth.

Validity issues and robustness checks

We carried out several additional analyses. A first set of checks concerned issues of internal validity. First, our theoretical arguments imply that the hypothesized effects apply to the household customer segment and not to the industrial and commercial customer segments. Additional tests reported in Table 4 below, confirm that the postulated effects appear either non-significant or even turn negative (see *Greenness*) when modelling the growth rates of MUs in the industrial and commercial segments. Second, our theoretical argument about MU identity as embedded in local communities (i.e., in a few neighboring municipalities) implies a decline in the returns when growth in geographical scope beyond their local environment is present. As spanning the boundaries of the home state represents a significant expansion of MUs and a potential threat to their claims of localness, we collected additional data to measure whether or not the focal MU sells electricity

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[3] Analyses not reported here that included NWUs in the sample suggest that both types of organizations benefitted from competitive release. MUs however benefited (proportionally) the most from competitive release.

outside their federal state. Less than 5% of MUs sell outside their federal state. By splitting the sample according to whether or not the focal MU sells electricity outside its home state, we obtained results consistent with our expectations: in the subsample of MUs that sell outside their state, localness and greenness are not statistically significant and engagement even exhibits a negative and significant effect on growth. Third, instead of a dummy variable coding, we recoded the *Engagement* variable by assigning a larger value to cooperative activities of increasing commitment to the MU identity, in accordance with the opinion of industrial experts (Energie & Management, 2005; Energie & Management, 2008). The results appear to be qualitatively similar to those presented in Table 3. Fourth, MU marketing efforts may increase the awareness among audience members of localness and greenness, leading them to vote and so support MUs. To attenuate this concern, we identified an ecological incident and used it as an instrument for capturing a quasi-exogenous rise in greenness: in 2004, the Brunsbuettel nuclear power plant experienced a reactor shutdown due to a short circuit. We created a dummy variable coded 1 for all the MUs located within the same federal state of Brunsbuettel and for the year 2005 (immediately after the accident and the next election year) and 2008 (our last year of observation and the year when public debate on the incident was reignited by the upcoming 2009 elections). We used this dummy variable to instrument *Greenness* by employing the Stata routine xtivreg fe. As the results reported in Table 5 illustrate, the beneficial effects of increases in *Greenness* for MUs growth hold in this model specification as well. The Brunsbuettel dummy works well in the first stage (positive, $p<0.01$). As the accident may have also ignited a sense of localness among citizens and engagement with MUs, we used the same dummy variable to instrument *Localness* and *Engagement* as well. The result concerning localness is in line with our expectation – less so that concerning engagement. The Brunsbuettel dummy works as expected in the first stage in the case of *Localness* (positive, $p<0.01$) but not *Engagement* ($p>0.1$). While interesting, the results of these analyses should include two caveats: the Brunsbuettel accident was rather minor in magnitude and more severe ecological accidents took place outside our observation window; the results are also sensitive to the coding of the instruments and, therefore, not as stable as we wished.

A second set of robustness checks regarded our model specification. Two main issues were potentially concerning: (i) our models included a lagged dependent variable and autocorrelation could affect the reported estimates (Greene, 1997); (ii) cross-sectional correlation may exist in the growth of MUs. We checked the robustness of our results against these potential biases in various ways. Feasible generalized least squares (FGLS) estimation seems a natural solution for the problem of cross-sectional and temporal correlation. However, the limits of FGLS are substantial (Beck and Katz 1995). The method proposed by Driscoll and Kraay's (1998) overcomes many of the limitations of FGLS (Hoechle, 2007) while controlling for cross-sectional and temporal dependence in the context of a fixed effect estimator. We employed the xtscc routine available in Stata to re-estimate the models presented in Table 3. The results obtained from this procedure proved to be consistent with those reported in the paper. Moreover, the same estimation method was applied to the modelling of a dependent variable computed as the difference between the logs of contemporaneous and lagged size. The findings obtained from these additional models support the hypotheses advanced in this paper – except for H3 and for the fact that the effects of localness become weaker. Finally, the addition of the lagged dependent variable is a solution to the problem of unobserved heterogeneity, yet inferior to within estimation, dropping the lagged dependent variable from our fixed effects specification represents a possible remedy to both endogeneity and autocorrelation. Although this procedure alters the model (not a growth model) and the interpretation of results, it serves as an extreme test of the potential bias induced by the addition of the lagged DV. Besides H3 not receiving support the results of this extreme procedure appear aligned with those discussed in this paper.

Last, additional qualitative evidence was collected to rule out alternative explanations. For example, customers may not necessarily prefer the identity of MUs, but their customized services (Boone et al., 2000). Data shows that approximately 70% of household customers never had direct contact with their electricity suppliers (BDEW household customer survey, 1999 to 2006). Furthermore, Figure 4 clearly indicates that private utilities such as NWUs are perceived as exhibiting

more "customer orientation" than MUs. The inertia in switching suppliers may well be another alternative explanation for the vitality of MUs. The BDEW household customer surveys (1999 to 2006) indicate however, that this is not the case. The proportion of customers who did not switch suppliers because they "have a close relationship with my current supplier, which I do not want to give up" increased from 35% in 1999 to around 80% in 2001 and remained relatively stable afterwards. In contrast, the proportion of customer fearing "high efforts involved in switching" and "risk of lower supply security" has remained rather low, at around 40%. A final alternative explanation pertains to diseconomies of scale, i.e. NWUs did not bother to expand into MU territories because these markets are not sufficiently profitable. Converging evidence seems to point in the opposite direction. For instance, in 2008, the largest of the Big Four NWUs – E.ON attempted to lure MU customers by undercutting every local MU's price of 1 cent/KWh (Sueddeutsche Zeitung, 2007). The campaign did not prove to be successful, as confirmed by our interviews with industry experts.

Discussion and Conclusions

This paper starts from a well-known premise of the sociology of markets literature: the structure and values endorsed by a social community contribute to alter market exchanges. In particular, we focused on the benefits accruing to peripheral organizations from claiming a distinct identity during the resource partitioning process. The results of our analyses suggest that the mass exit of regional utilities benefitted MUs by crystalizing the distinctiveness of their identity. Moreover, MUs located in communities, in which audience members endorsed their identity features and that engaged with their claimed identity, exhibited higher growth rates. The coexistence of identity matching and engagement produced the best market outcomes for MUs. We believe that the findings of this paper have profound implications for our understanding of the resource partitioning process and contribute to broaden the applicability of the theory to a wider set of contexts.

Contributions to resource partitioning

Three gaps in the resource partitioning literature were highlighted in the introduction of this paper. We now return to them in order to highlight our contribution. The first gap pertained to how

distinctions among classes of producers were crystallized in the eyes of audience members. Our source of inspiration was the qualitative evidence of Carroll and Swaminathan (2000) on the beneficial effects of a collective identity of peripheral producers – additional to those of market concentration. Further elaborating on the conditions under which peripheral producers reap the benefits of a collective identity is important because simulation experiments demonstrate that resource partitioning is likely to materialize only in environments marked by *both* strong scale economies and a sufficient distinction in preferences (Kovacs and Carroll, 2010). The case of German electricity represents an interesting puzzle to resource partitioning; strong scale economies do exist but the development of distinct preferences is hindered by the perceived homogeneity of electricity. In the presence of strong scale economies and undifferentiated preferences, existing research predicts the emergence of an oligopolistic market structure, rather than a dual market structure (Kovacs and Carroll, 2010;van Witteloostuijn and Boone, 2006). We interpret this puzzle as a precious opportunity to advance our understanding of the conditions that may lead to the consolidation of distinct preferences among audience members during the resource partitioning process. This paper is one of the first to show the effects of competitive release during resource partitioning. The fact that the effects of competitive release are traceable even when holding constant for market concentration, suggests that some interesting avenues of development for the theory exist. Exploring if collective identities sustain partitioning even in industries marked by limited scale economies (Reis et al., 2013) would be especially interesting to clarify the scope conditions of the theory.

The second gap that inspired this paper was the lack of attention to matching between the identity claims of peripheral producers and preferences of the target audience. We addressed this gap by relying on recent developments in organization theory concerning the effects of matching and engagement (Hannan et al., 2007; Hsu et al., 2009). By highlighting variations in the endorsement by audience members and the engagement of producers, our paper contributes to the literature by providing a novel approach to explore differences in performance among peripheral producers during the partitioning process. Because of our conceptual focus on audience members and matching producers' identities, we collected data on both organizations (in the case of engagement) and the

preferences of audience members (concerning matching). In so doing, our paper moves the locus of attention of partitioning studies from differences in product space to the consideration of differences in organizational identities in the eyes of audience members. The empirical context chosen is ideal in order to address the third gap reported in the introduction because several alternative explanations (e.g., status consumption or product preferences) can be held constant. We believe that the shift is necessary and important: it not only provides more realism to the theory of partitioning (i.e., audience members control the resources crucial for organizational success, Hannan et al., 2007); but, more importantly, it contributes to deepen our understanding of the sociological – rather than the purely economic — forces that sustain partitioning.

We believe that the results of our paper contribute to expanding the agenda of resource partitioning. We see various areas of development for our work. For example, our focus on distinct producer identities as triggers of partitioning extends the applicability of the theory to a larger set of markets – including those where concentration does not increase. As Carroll (1985: 1264) pointed out, concentration is an important but not sufficient condition for partitioning. To understand why market concentration alone is unlikely to create distinctions among classes of producers, consider the following numerical example. The market center consists of 10 large firms each with 5% market share and 10 smaller ones each with 2% (70 % in total). The near-center segment includes 100 firms each with 0.2% (20% in total). The periphery is populated by 1,000 firms, each with 0.01% (10% in total). Now imagine two stylized scenarios: (i) market concentration increases but competitive release and cognitive split in audience's mind fails to take place, or; (ii) market concentration remains stable, but competitive release and cognitive split in the perception of audience members takes place. According to the first scenario, due to scale-based competition, the 10 smaller center firms with a total market share of 20% are acquired by the 10 larger center firms, while the near-center and periphery remain unchanged. This is plausible since during industry consolidation, organizational mortality decreases with increasing distance of position away from the market center (Dobrev et al., 2002). As a result, market concentration increases but competitive release does not take place. The market picture perceived by audience members remains uninterrupted due to the continuous existence of the near-

center organizations. Unless the consolidation expands further to the near-center segment, the identity mechanism is unlikely to unfold. In the second scenario, the near-center segment experiences a total demise. Of their 20% market share, 10% is swallowed by the 10 smaller centre firms, boosting each of their market shares from 2% to 3%. This may make sense for instance, if the regulators limit mergers and acquisition (M&As) involving the largest players, but are more lenient towards smaller center firms. The other 10% is absorbed by the periphery, boosting each of their market share from 0.01% to 0.02%. Only in this second scenario does competitive release takes place and the identity mechanism is activated. Notice however, that market concentration remains unchanged.

These simple numerical examples lie at the basis of our decision to focus on the effects of competitive release and identity matching while holding constant market concentration. The increase in the magnitude of the coefficient of market concentration upon controlling for the effects of identity (compare Model 1 to Model 2-5) is however interesting and suggests a potential underlying relationship among these forces. The study of the nature of this relationship was not the object of this paper and remains to be explored. As far as we can ascertain, two possible relationships appear consistent with our findings; the beneficial effects of market concentration could be amplified by the consolidation of a collective identity among peripheral organizations (i.e., moderation); alternatively, the effects of market concentration may directly affect the market success of peripheral organizations but also indirectly contribute to the consolidation of a collective identity (i.e., mediation). Exploratory analyses suggest that a moderation effect is not at work in our data. None of the interaction effects between market concentration and either competitive release or identity matching/engagement proved to be statistically significant. Instead, market concentration appears to significantly influence the mechanism of identity – and, in particular, the extent of competitive release observed. While only exploratory, these analyses point to an interesting avenue of development for our paper. Pursuing a thorough investigation of the relationship between market concentration and identity would be welcome to enrich our understanding of resource partitioning.

Recall also that our study focuses on a dependent variable relatively novel to the partitioning literature – i.e., organizational growth rates (Boone et al., 2002). As in this context the success of

peripheral producers primarily involved incumbent organizations, our choice was driven by empirical considerations. However, we believe that organizational growth may "extend the known implications of the theory by pushing it into a new domain" (Kovacs and Carroll, 2010: 57) and represents an interesting outcome for approaching novel questions concerning, for instance, the durability of resource partitioning (Pólos et al., 2010). Clearly, a reiterated and diffused growth of peripheral organizations may challenge the preservation of their image of 'small' and 'authentic' producers. The results of our additional analyses further confirm that MUs were rewarded for their identity and engagement only when these organizations remained anchored to a confined geographical locale. We read this finding as suggesting that, to avoid the potential pitfalls of growth, peripheral organizations are required to remain consistent with the underlying values that define their collective identity. Does the constrained growth of incumbent organizations favour the emergence of new entrants? And, more broadly, under which conditions new entrants or incumbents may appropriate the benefits of resource partitioning? We look forward to seeing research that addresses these questions.

Generalizability and potential limitations

While aware of the limitations of focusing on a single industry, we believe that the results of this paper are not idiosyncratic to the empirical context chosen and, instead, they contribute to extend the reach of resource partitioning theory. Various authors have already highlighted that market exchanges assume meaning and substance thanks to the attributions and motivations of social agents (Appadurai, 1986: 4, Zelizer, 1994; Simmel, 1900). Kopytoff (1986) for instance, argued that the same object of transaction can move smoothly between the two spheres of commoditization and singularization depending on the social actors involved in the transaction. Our paper shows that – very much like consumer goods --, commodities are imbued with meanings and values. We expect the identity mechanism to play an even greater role in industries marked by more differentiated products, such as newspapers (Carroll, 1985), banking (Lomi, 1995), beer (Carroll and Swaminathan, 2000), wine (Swaminathan, 1995, 2001) and auditing (Boone et al., 2001). In these contexts, we expect public consumption and product differentiation to amplify the returns from collective identities. Consider also that identity differences among producers are becoming a critical mechanism of

differentiation in many markets. The growing commoditization of products and the commercialization of societies contributes to standardize, homogenize, and rationalize market exchanges (for a discussion see Davenport, 2005), and to extend utilitarian markets to every corner of our social life. Elaborating on the conditions under which the returns from a collective identity are appropriated is thus important to extend the applicability of resource partitioning to novel markets not necessarily marked by strong scale economies, but by the substantial standardization and homogenization of the offerings in the eyes of audience members (Reis et al., 2013; Hannan, 1979).

These reflections on generalizability should not be read as suggesting that our research context is immune from limitations. Revolving around a homogeneous good, the market for electricity is exposed to stronger and faster effects of competitive release because incumbents can easily poach the consumers of failed regional producers. Eventually, the rapid demise of regional producers was conducive to a swift consolidation of a distinct identity among peripheral organizations. In other markets, the effects of competitive release may be slowed down by the ability of near-center producers to exist for longer, thanks to the loyalty of their consumers. The relevance of the speed of competitive release for the effectiveness of the identity mechanism remains to be explored. A final potential limitation concerns the presence of various preferences within local communities. Indeed, the preferences of audience members may be numerous and partially divergent -- even within a confined geographical locale. For example, the communities receptive to localness and greenness may also endorse reliability, equality and individualism. As matching to audience preferences can unfold along various dimensions, what role does coherence among identity dimensions play in sustaining the market success of peripheral producers? We believe that addressing these limitations holds the promise of further improving our understanding of resource partitioning and, more broadly, of the processes of differentiation and competition within modern markets.

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FIGURE 1

Number of Regional Utilities in German Electricity Industry
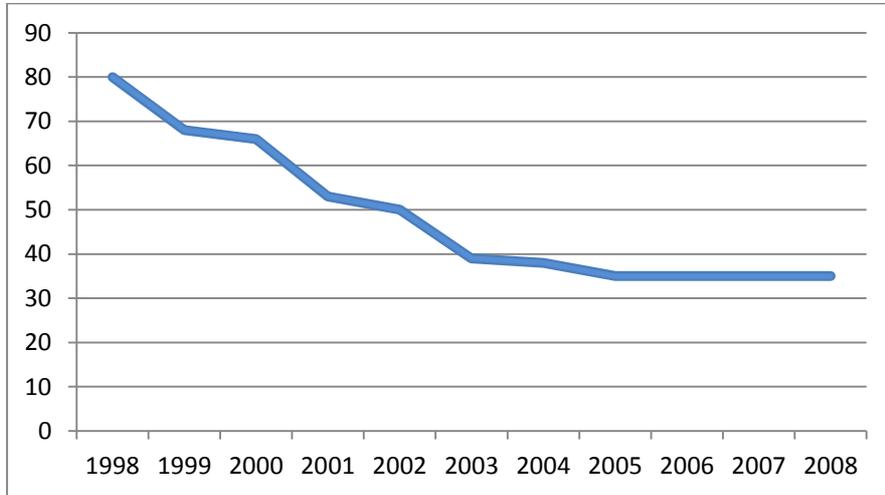

FIGURE 2

Oppositional Identities of NWU vs. MU
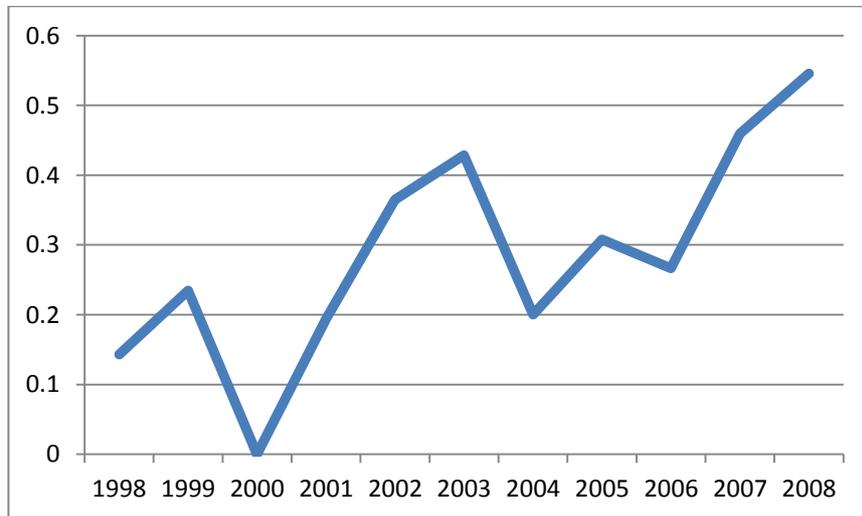
FIGURE 3

The NWUs representing the confusing market (left side) and

"own municipal utilities" (right side) (Source: ifm 2006)
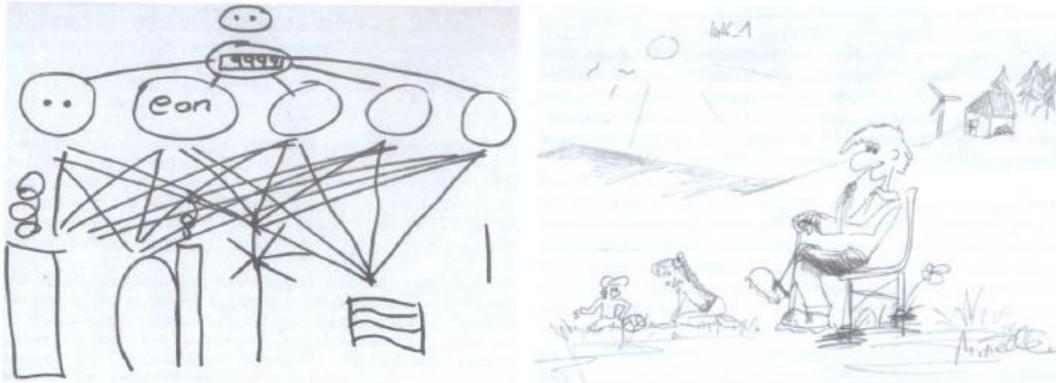
FIGURE 4

Customers' images of MUs and private utilities (Source: TNS Emnid survey 2009)
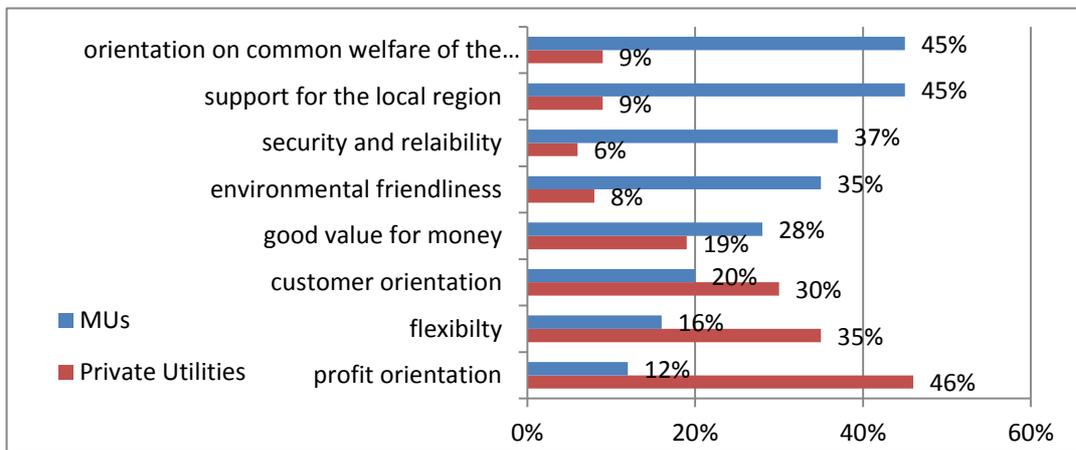
TABLE 1

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
1. Size (log)	4188.00	10.46	1.28	2.94	14.94
2. Lagged size (log)	4187.00	10.47	1.29	2.94	15.67
3. Localness	5638.00	-0.21	0.07	-0.39	0.09
4. Greenness	6198.00	0.07	0.03	0.02	0.23
5. Engagement	6303.00	0.38	0.48	0.00	1.00
6. Competitive release	6303.00	0.42	0.56	0.00	1.40
7. C4 market share	5730.00	0.48	0.11	0.25	0.59
8. Population age (log)	6280.00	3.74	0.04	3.61	3.89
9. Population density (log)	6248.00	5.51	0.93	3.66	8.35
10. MU density (log)	6303.00	4.17	0.69	0.69	5.04
11. MU Density^2/1000	6303.00	8.52	8.34	0.00	23.72
12. Disposable income (log)	6061.00	9.71	0.14	9.29	10.16
13. Municipal debt (log)	6224.00	11.96	0.72	7.27	15.04

TABLE 2

Bivariate Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Size (log)	1.00												
2. Lagged size (log)	0.97	1.00											
3. Localness	-0.36	-0.36	1.00										
4. Greenness	0.29	0.29	-0.40	1.00									
5. Engagement	-0.05	-0.05	0.18	0.03	1.00								
6. Competitive release	0.00	-0.01	-0.06	-0.07	-0.05	1.00							
7. C4 market share	0.00	0.00	-0.08	-0.03	-0.02	-0.01	1.00						
8. Population age (log)	0.08	0.08	-0.17	-0.28	-0.15	-0.23	-0.14	1.00					
9. Population density (log)	0.62	0.62	-0.53	0.53	-0.07	0.01	0.00	0.09	1.00				
10. MU density (log)	-0.02	-0.02	0.42	0.24	0.23	0.00	-0.01	-0.49	0.08	1.00			
11. MU Density^2/1000	-0.07	-0.07	0.61	0.05	0.21	-0.01	-0.01	-0.36	-0.04	0.90	1.00		
12. Disposable income (log)	0.12	0.12	-0.08	0.58	0.08	-0.17	-0.15	-0.25	0.36	0.54	0.37	1.00	
13. Municipal debt (log)	0.31	0.31	-0.29	0.28	-0.11	0.01	0.01	-0.07	0.33	-0.02	-0.15	0.16	1.00

TABLE 3

Fixed Effects Models of Growth Rates of the MUs, 2001-2008

(MU Size in Household Customer Segment)

VARIABLES	(1) Controls	(2) H1	(3) H2	(4) H3	(5) H4
Lagged Size (log)	0.24512***	0.24593***	0.39606**	0.39580**	0.39519**
	(0.086)	(0.086)	(0.158)	(0.158)	(0.157)
Population Age (log)	-1.77671**	-1.29967*	-1.23998*	-1.25788*	-1.26672*
	(0.752)	(0.672)	(0.676)	(0.683)	(0.745)
Population Density (log)	0.01717	0.08821	-0.33528	-0.34471	-0.44902
	(0.274)	(0.251)	(0.410)	(0.412)	(0.447)
MU Density	0.76584**	0.73852*	1.04409**	1.05012**	1.02304**
	(0.387)	(0.378)	(0.480)	(0.481)	(0.481)
MU Density^2/1000	-0.01770*	-0.01619*	-0.02655**	-0.02670**	-0.02641**
	(0.010)	(0.010)	(0.013)	(0.013)	(0.013)
Disposable Income (log)	0.85780***	0.89645***	0.42869**	0.41063**	0.38054*
	(0.268)	(0.277)	(0.195)	(0.196)	(0.197)
Municipal Debt (log)	0.01228	0.00997	-0.00704	-0.00792	-0.01050
	(0.032)	(0.032)	(0.040)	(0.040)	(0.040)
C4 Market Share	0.19840*	0.28737**	0.30550**	0.30340**	0.31107**
	(0.111)	(0.136)	(0.134)	(0.134)	(0.135)
Competitive Release		0.01990	0.02394*	0.02456*	0.02342*
		(0.012)	(0.014)	(0.014)	(0.013)
Localness			1.03116*	1.02191*	0.60071
			(0.528)	(0.527)	(0.379)
Greenness			1.75272*	1.84540*	1.23200
			(0.982)	(0.992)	(1.097)
Engagement				0.02863*	0.19884
				(0.016)	(0.167)
LocalnessXEngagement					1.00700*
					(0.608)
GreennessXEngagement					0.90434
					(0.704)
Constant	2.77112	0.27923	4.45752*	4.71997*	5.70650**
	(1.816)	(2.435)	(2.626)	(2.666)	(2.774)
Observations	3,388	3,388	3,224	3,224	3,224
R-squared	0.072	0.072	0.169	0.169	0.171
Number of firm	540	540	532	532	532
df_m	7	8	10	11	13

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE 4

Robustness Check: Identity Effects do not Apply to Industrial & Commercial Customers

(MU Size in Industrial & Commercial Customer Segment)

VARIABLES	(1) Controls	(2) H1	(3) H2	(4) H3	(5) H4
Lagged Size (log)	0.30029***	0.30110***	0.31242***	0.31182***	0.31251***
	(0.051)	(0.052)	(0.060)	(0.060)	(0.059)
Population Age (log)	0.66821	1.78870	2.28986	2.42239	1.57215
	(1.982)	(2.035)	(2.173)	(2.191)	(2.300)
Population Density (log)	-0.30573	-0.14368	-0.56790	-0.54123	-0.51927
	(0.703)	(0.706)	(0.826)	(0.829)	(0.871)
MU Density	-0.34697	-0.42179	-0.88050	-0.88931	-0.79006
	(1.167)	(1.166)	(1.390)	(1.393)	(1.387)
MU Density^2/1000	-0.01564	-0.01177	0.00635	0.00665	0.00400
	(0.035)	(0.035)	(0.041)	(0.041)	(0.041)
Disposable Income (log)	-1.89834**	-1.79841**	-1.52949*	-1.49829*	-1.21847
	(0.824)	(0.830)	(0.903)	(0.905)	(0.938)
Municipal Debt (log)	-0.06919	-0.07443	-0.11010	-0.10909	-0.10675
	(0.095)	(0.095)	(0.113)	(0.112)	(0.112)
C4 Market Share	-0.68277**	-0.46813	-0.29945	-0.28960	-0.29690
	(0.320)	(0.346)	(0.399)	(0.400)	(0.400)
Competitive Release		0.04701**	0.03328	0.03101	0.02580
		(0.024)	(0.024)	(0.024)	(0.024)
Localness			1.18264	1.22990	0.67129
			(1.179)	(1.180)	(1.252)
Greenness			-9.57769**	-9.87811**	-7.29868
			(4.496)	(4.515)	(4.825)
Engagement				-0.11238	0.61326
				(0.079)	(0.454)
LocalnessXEngagement					1.13229
					(1.555)
GreennessXEngagement					-5.33823
					(3.809)
Constant	27.37759***	21.51078**	22.35578**	21.52016**	21.07214**
	(8.567)	(9.015)	(8.716)	(8.788)	(8.997)
Observations	3,137	3,137	3,000	3,000	3,000
R-squared	0.085	0.086	0.096	0.097	0.099
Number of firm	522	522	515	515	515
df_m	7	8	10	11	13

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE 5

Robustness Check: Instrumental Variable Estimation Leveraging the Brunsbuettel Incident

VARIABLES	(1) MU Size (log)	(2) MU Size (log)	(3) MU Size (log)
Lagged Size (log)	0.24571***	0.39472***	0.16825
	(0.018)	(0.018)	(0.130)
Population Age (log)	-1.24163	-1.20047	-5.77395
	(0.934)	(0.904)	(7.268)
Population Density (log)	0.11798	-0.45316	-2.92683
	(0.408)	(0.439)	(4.527)
MU Density	1.53909***	0.91868***	0.76630
	(0.448)	(0.324)	(1.346)
MU Density^2/1000	-0.04628***	-0.02229*	0.00738
	(0.017)	(0.013)	(0.063)
Disposable Income (log)	0.08351	0.49779	-2.33497
	(0.445)	(0.368)	(4.738)
Municipal Debt (log)	0.03204	-0.01132	-0.21575
	(0.045)	(0.042)	(0.356)
C4 Market Share	0.14739	0.36151**	0.43294
	(0.181)	(0.175)	(0.713)
Competitive Release	0.02804**	0.02319*	0.18550
	(0.014)	(0.013)	(0.239)
Greenness	9.72664***		
	(3.506)		
Localness		1.46535*	
		(0.881)	
Engagement			7.78988
			(10.963)
Constant	3.78608	5.04096	64.40502
	(3.941)	(4.277)	(91.427)
Observations	3,358	3,224	3,388
R-squared			
Number of firm	540	532	540

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1