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4 Diversification and the Achievement of Scope Economies

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Abstract

The utility industry is undergoing major regulatory changes, freeing up a competition between alternative business models. Diversification marks one of the main themes in this struggle for success. The question of how companies can add value by engaging in multiple businesses inevitably relates to the concept of economies of scope. This chapter introduces the concept as a rationale for diversification, highlights its practical limitations, and discusses whether it explains the exhibited diversification trends within the utility industry. The chapter concludes by supporting the relevance of the concept for explaining diversification in general and the trends within the utility industry in particular.

Keywords: diversification, economies of scope, utility industry

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4.1 Introduction

The deregulation of the electricity sector in the European Union has formulated new market rules for an industry that has long been dominated by regulated, state-owned monopolies. Hence, the introduction of a free-enterprise system is translating into a spate of strategic options that allows firms to redefine their strategic postures (Bausch et al., 2007). Some industry trends have emerged from these new opportunities and challenges. Faced with an enlarged international group of competitors, utility firms started to consider internationalization as the imperative to defend their national market positions, thereby initiating a process of concentration within the European market. Furthermore, a trend to unbundling and diversification arose (Bozem, 2004). Many electricity companies have started to enter into related network-based services, such as gas, giving rise to the so-called multi-utility business model. Both of these trends to scale and redefine the business models accounted and are still accounting for an increase in mergers and acquisitions (M&A) activity within the industry. Catalyzed by the rich amounts of funds accumulated in the past and the availability of capital for such a profitable industry, utility companies peaked their deal volume in 2007 (PWC, 2007).

From today's perspective, the regulatory shift and the succeeding rise of new firm strategies with their performance implications allow to investigate the relevance of some basic economic principles within this industry. In particular, the concept of economies of scope seems to offer a promising explanation for the diversification strategies exhibited within the utility industry. To explore this explanation, this chapter pursues two objectives. On a general level, it wants to illustrate the concept of economies of scope and its role within diversification strategies. Grounded on these thoughts, it then strives to identify the factors underlying the rationales for multi-utility business models.

The chapter is organized in three parts. First, it conveys the theoretical background relating to strategic management of diversification. In doing so, it focuses on three questions: How has the perception of diversification changed over time? What types of diversification exist? What are the implications of diversification for firm performance? Second, it elaborates on the concept of economies of scope, one of the main motivators for diversification. This is also carried out by focusing on three central questions: What are economies of scope according to economic theory? How does the concept have to be adjusted for it to yield valid arguments for diversification? What are potential sources of economies of scope? Having revisited these central ideas from strategic management and economics, we then pass on to an analysis of potential economies of scope in the utility industry.

4.2 Corporate Strategy and Diversification

The focus of strategy is on the search for competitive advantages as sources for superior firm performance. These advantages are assumed to originate from companies' distinct corporate- and business-level strategies (Porter, 1987). Andrews

(1971) defines corporate-level strategy as the discipline of identifying the businesses in which a firm should compete, whereas the business-level strategy formulates how this competition is to be structured. Thus, corporate strategy aims at ensuring that the company adds up to more than the sum of its business units. To justify the distinct accumulation of businesses and prevent a valuation discount, however, corporate strategy needs to do more. It needs to convince the company's shareholders that the business portfolio is worth more under the corporation's management than under any other ownership (Goold et al., 1994). Otherwise, companies run the risk of losing the mandates to operate their businesses to other, more capable parent companies. The means of adding value and counteracting the threat of a potential break-up are in the hands of the corporate headquarters and at the heart of its activities. However, the same applies to various kinds of costs. In consequence of this coexistence of upside and downside potentials, firms face the challenging question of the optimal size, composition, and management of their corporate portfolios.

The question of the size and composition of corporate portfolios is closely related to the concept of diversification. In his seminal work, Ansoff (1957) laid down four generic product-market strategies that also constitute capital allocation options and choices for strategic change. Out of these, diversification marks the process of entering new business markets with new products or services. In contrast to the strategies of product- or market-development, which focus solely on one dimension of change, diversification addresses both the market and the product dimension, thus constituting the most radical choice within the set of product market strategies. A company's choice from this set of alternatives is ideally driven by changing business opportunities and the company's assessment of these.

4.2.1 Historical Patterns of Firm Diversification

In previous decades, however, firms' diversification behavior was mainly governed by trends stemming from changing market beliefs about the optimal degree of diversification. During the 1950s and 1960s, "faith in general management skills seemed to justify a kind of virtuous circle of corporate growth and diversification" (Goold & Luchs, 1993). Yet, by the late 1960s, conglomerates were encountering profitability problems that resulted in large conglomerate discounts on the stock markets. The 1970s became the era of portfolio management tools which since then have directed portfolio decision making. Performance results improved as underperforming businesses were systematically divested and the corporate portfolios were kept balanced with growth- and cash-generating businesses. However, the technocratic approach was short sighted, as it neglected questions concerning both the fit between the businesses and the need for business-specific management approaches (Ghoshal & Nohria, 1989; Hamermesh & Roderick, 1984). Performance again declined. To relieve the issue of information asymmetry between the corporate center and the firm divisions, value-based planning techniques became the guiding principles for capital allocation choices across a corporation's units. But also these tools did not help in defining the content of corporate

strategies (Goold et al., 1993). Addressing this important gap, in 1982 Peters and Waterman gave the initial but nonetheless abstract advice "to stick to the knitting" (Peters & Waterman, 1982). As their advice left plenty of room for elaboration, subsequent years brought up further content-related concepts and theories, which were welcomed by practice and led to refocusing. In particular, the notions of synergy and core competences put forward by Prahalad and Hamel (1990) offered additional guidance in assessment of the fit and quality of diversification plans. In recent years, strategy research stepped beyond the content dimension and started identifying factors relevant to the crafting of better processes of strategic decision making. Innovative ideas such as that of a dominant logic restricting the perception of a company (Prahalad & Bettis, 1986) began to offer some help in reflecting the cognitive and behavioral routines that restrict companies trying to achieve their optimal strategies, including those concerning diversification.

4.2.2 Diversification Types and Their Implications for Corporate Management

So far, the concept of diversification has been introduced, but not further specified. Yet, diversification strategies can take various forms, which may pose different challenges to the corporation's management. As a framework for these, four dimensions can be identified by which diversification strategies can be distinguished: (1) the degree of concentration (Jacquemin & Berry, 1979); (2) the relatedness of the businesses to be combined (Barney & Hesterley, 2006); (3) the direction of diversification (Hitt et al., 2003); and (4) the mechanisms to implement the diversification (Müller-Stewens & Lechner, 2005). The degree of concentration is defined by the number of businesses a company is engaged in and shows how its turnover is composed of the divisions' individual turnovers. The degree of relatedness indicates how similar the businesses are in the corporate portfolio. At this, similarity needs to be operationalized by a set of criteria that is deemed to be relevant for the aimed analysis. The criteria may vary and include indicators for the material relatedness of the products from the different divisions (such as distribution channels) or intangibles (such as required management know-how). The direction of diversification can be divided into three types: vertical diversification, product diversification, and geographic diversification. Vertical diversification refers to the question of the stages of the industry's value chain at which a company wants to be active. Product diversification relates to the span of products and services a company decides to offer. In this, it is not necessary that the products stretch across different industries; even within an industry diversification is possible. For example, within banking a company could offer products in classic retail banking, asset management, and investment banking. The geographic diversification addresses the question of the geographic extent over which firms should engage themselves. The means of implementing the diversification plans are internal development or external sourcing in the form of acquisitions, mergers, joint ventures, or licensing agreements. Considering the dynamism of change and the time-consuming path dependence in investment chains, the alternative of internal de-

velopment is less frequently chosen than the one available in external sources, which provide a rich menu of ready-prepared diversification options (Müller-Stewens & Lechner, 2005).

Table 4.1: Diversification levels and management complexity (Müller-Stewens & Brauer, 2009)

Level of complexity	Type of diversification	Description
1	Nondiversified company	The company focuses on a section of a value chain within one industry only.
2	Vertically diversified company	The company generates more than 90% of its turnover with one core business that stretches over the whole value chain of one industry segment.
3	Horizontally diversified within one industry	The company generates more than 90% of its turnover with one core business that stretches across several industry segments (such as cars and trucks in the automotive industry) that show different success factors and competitors. It is vertically focused.
4	Horizontally and vertically diversified within one industry	The company generates more than 90% of its turnover with one core business that covers several industry segments. Within the different segments, the company is widely integrated.
5	Diversified into unrelated businesses from various industries	The sales are distributed between businesses from different industries in such a way that no business contributes more than 70% to the corporation's turnover. The businesses are strategically and operationally independent.
6	Diversified into strategically related businesses from various industries	The sales are distributed between businesses from different industries in such a way that no business contributes more than 70% to the corporation's turnover. The businesses draw strategically on common intangible resources.
7	Diversified into strategically and operationally related businesses from various industries	The sales are distributed between businesses from different industries in such a way that no business contributes more than 70% to the corporation's turnover. The businesses are widely interlinked in terms of both strategy and operations.

The aforementioned characteristics of diversification strategies help to identify types that may pose greater challenges to management than others. It is proposed that the level of management complexity, and with it the chances of justifying such a company set-up to the shareholders, is in direct proportion to the criteria

developed above. Table 4.1 displays the assumed relationship, which finds support in both theory and practice.

4.2.3 The Performance Implications of Diversification

The relationship between diversification and performance has been intensively investigated in recent decades. Management, finance, and industrial economics scholars have tried to answer two basic questions: First, how does the performance of diversified multi-business firms differ from the performance of specialized nondiversified companies? And second, what type of diversification yields the highest returns? Despite a variety of empirical studies, these questions have been left unanswered. It has not proved possible to establish either the relationship between diversification and performance or the performance implications of different diversification types in a consistent manner.

As far as the question of how diversification affects performance is concerned, no single generally valid relationship seems to exist (Lubatkin & Chatterjee, 1994; Markides & Williamson, 1996; Montgomery & Wernerfelt, 1988). However, the hypotheses proposed and tested in the various attempts to reveal such causalities have provided several elements that are relevant in many diversification–performance relationships. Yet, it is necessary to assume varying degrees of relevance for the cause–effect relationships identified, depending on the individual context and the specifics of each diversification strategy. Assessing the role of the individual up- and downside potentials for specific strategies requires an overview of these elements. In terms of aspects revealing positive performance implications, the literature provides the following: Diversification establishes a wider set of resources that offers a larger degree of flexibility in the face of market dynamics; companies may be capable of adapting faster to changes as they can draw on a wider base of experience and become more skilled in handling and reconfiguring diverse resources (Helfat & Eisenhardt, 2004); furthermore, there might be various types of synergies for a specific set of businesses, which would render a merged unit more profitable (Chatterjee, 1986; Leland, 2007). Negative performance implications can be expected from the increasing level of management complexity and its constituents, such as increasing market distance and bureaucratic inefficiencies (Markides, 1995; Prahalad & Bettis, 1995).

When we come to the question of which type of diversification is superior, research also does not provide a straight answer. Researchers initially focused on the intuitive idea that related businesses most probably offer the highest potential for synergies (Collis & Montgomery, 1998; Rumelt, 1974; Wrigley, 1970). Though the first empirical studies supported the suggested relationship (Rumelt, 1974; Wrigley, 1970), later ones refuted this idea and have even claimed the opposite (Michel & Shaked, 1984). Reasons for this dismal record can be sought in various areas. First, 'relatedness', as a concept commonly focusing on products, might be ill-defined and distract from the real sources of upside potential, such as intangible management resources (Miller, 2006). Yet, chances of finding a universally valid operationalization that yields unequivocal empirical findings for all possible sam-

ples seem to be small. Second, some researchers consider relatedness research is flawed as it is based on a level of analysis too abstract to provide reliable antecedents of performance outcomes (King et al., 2004; Ramanujam & Varadarajan, 1989). Even if related mergers tend to imply a larger synergy potential, why should performance gains result from this potential in an unconfined and cost-free way? Again, it seems more probable that management needs to work hard to realize the synergies (Chatterjee, 2007). This might create direct and indirect costs that could exceed the expected benefits and thus turn the ultimate balance into a negative one (Kanter, 1998; St. John & Harrison, 1999).

Table 4.2: Diversification patterns of European energy giants (Müller-Stewens & Brauer, 2009)

Company	Number of divisions	Divisions (turnover 2005 in € bn)	Direction of diversification	Part of largest division
Royal Dutch Shell (NL)	5	Oil products (200.3), Chemicals (26.2), Exploration & Production (20.2), Gas and Power (11.6), Others (0.8)	Vertical diversification	77 %
BP (GB)	4	Refining & Marketing (170.6), Gas, Power & Renewable (19.0), Exploration & Production (12.3), Others (11.0)	Vertical diversification	81%
Total (F)	3	Downstream (99.9), Chemicals (22.3), Upstream (20.9)	Vertical diversification	70%
E.ON (G)	5	E.ON Energie (24.1), E.ON Ruhrgas (16.8), E.ON UK (10.1), E.ON Nordic (3.5), E.ON US (2.1)	Market diversification	43%

Though some see these contradictory findings as proof enough to claim that research which assumes “that the degree of diversity and profitability are cross-sectionally related [...] fail[s] to provide generalizable conclusions” (Datta et al., 1991; King et al., 2004), another interpretation is possible. The mechanisms which the conflicting articles yield in combination with the fact that multiproduct firms are the rule rather than the exception in today’s economy allows some valuable, albeit general, statements on diversification: Large companies tend to engage in several businesses that benefit from each other in various and very different ways. What rationale gives reason for a distinct grouping of businesses depends largely on the context and the specific capabilities of the company under investigation. Hence, diversification patterns vary, even within industries. There are no uncon-

defined rules for success. Research can yield lists of potential up- and downsides, of pitfalls within the realization processes and of valuable capabilities that catalyze success in a range of contexts. Value creation, however, largely remains the result of the firm specific diversification process that needs to be in line with the corporation's strategy and various context factors.

Yet, industry factors matter, as they define an important part of a company's context and therewith ultimately strategic decision making within an industry (Bain, 1968). Table 4.2 illustrates how some of the largest European companies in the energy sector have settled in their quest for performance. The small sample indicates that the firms rely on similar strategies for facing the above-mentioned questions and challenges.

4.3 Economies of Scope as an Imperative for Diversification

Ignoring such industry patterns for a long time, economic theory viewed the distribution of economic activities among firms as given (Nelson, 1972). Enterprises were regarded as black boxes. It was not until Williamson (1975) published his transaction cost theory that economics reached out to explain the varying configuration patterns of enterprises within different industries. In 1979, Williamson noted that firms and markets "evolve in active juxtaposition with one another" in an effort "to reach a complementary configuration that economizes on [production and] transaction costs" (Williamson, 1979b). The scope of business activities of modern companies moved into researchers' focus. It turned out that the theoretical framework used by Williamson to explain vertical integration (Williamson, 1975) could be extended to explain multiproduct diversification. While the analysis of vertical integration rests on questions about the internalization of the supply of inputs (such as raw materials) to a single production process, diversification "represent[s] a mechanism for capturing integration economies with the simultaneous supply of inputs common to a number of production processes geared to distinct final product markets" (Teece, 1980). As a production process that capitalizes on these economies is more efficient than separate production processes, it becomes clear why the presence of such economies gives rise to multiproduct firms (Panzar & Willig, 1975).

4.3.1 Production Economics and the Relationship Between Economies of Scale and Scope

The essential simplicity of this idea becomes clear when the concept of economies of scope is revisited from a production economics perspective. This will also formally clarify the link with the concept of economies of scale and thus demonstrate that both notions draw on a common idea, namely that of subadditivity. Production economics generally distinguishes three types of productions: Parallel produc-

tion, combined production, and joint production. The first type, parallel production, refers to production processes that are independent from each other and offer no economies. The second type, combined production, characterizes production processes that necessarily yield different products. A common example of such a production is the distillation process of oil yielding various kinds of fuels, ranging from heavy oil to petrol. The third type, joint production, is central to this chapter and refers to all cases of production for which the costs of producing two products are lower than the combined costs of producing each product separately. The formal expression of the cost function for a superior joint production of two products is (Panzar & Willig, 1981):

$$C(Y_1, Y_2) < C(Y_1, 0) + C(0, Y_2)$$

where C = costs of production, Y_1 = output of product 1, and Y_2 = output of product 2.

The left side of the inequation expresses the costs of the joint production within one company, whereas the right side adds up the costs for the same output coming from two distinct productions, probably occupied by two companies. The inequation shows a special case of a more general concept, that of subadditivity. Subadditivity extends the argument above to nonspecialized productions and is the condition in place for natural monopolies (Faulhaber, 1975). The following inequation with the firm index in the superscript states the proposed relationship between the productions.

$$C(Y_1, Y_2) < C(Y_1^1, Y_2^1) + C(Y_1^2, Y_2^2) \quad \forall \quad Y_1 = Y_1^1 + Y_1^2 ; Y_2 = Y_2^1 + Y_2^2$$

The concept of subadditivity has the appeal that it is the origin of two important concepts frequently applied in strategic management. If the inequation refers to the production of homogeneous goods, then it presents the idea of scale effects, whereas with its polar case of the exclusive production of heterogeneous goods it represents the idea of economies of scope (Baumol et al., 1982; Faulhaber, 1975). Hence, both types of economies are based on the idea of a cost reduction induced by a change in the production output, whether this change is merely quantitative or also qualitative. Although both economies are formally specified as cost advantages stemming from a more efficient use of input factors, both economies can also be interpreted from a demand-side perspective relating to outputs rather than costs (Helfat & Eisenhardt, 2004). For example, if a firm uses excess resources to diversify, it generates greater revenues per unit of input. This is logically equivalent to the inequation for economies of scope, in which the firm achieves lower costs per unit of output by allocating the costs of a set of inputs to a greater number of output units. Hence, economies of scope can describe both demand-side revenue enhancements from greater output and cost reductions from shared inputs (Helfat & Eisenhardt, 2004).

4.3.2 Economies of Scope in Management Research

Economies of scope form the core element in a theory of multiproduct firms authored by Baumol et al. in 1982. This theory sets assumptions that also underlie the conclusions which follow directly from the production functions in the previous section. It is important to revisit these assumptions, as they stem from a neo-classical school of thought and cloud some factors that need to be taken into account when arguments are to be based on economies of scope. First, the concept assumes that no mobility barriers exist. Firms are assumed to be able to freely enter and exit industries, their decisions on whether to do so being solely made on price information. Second, there are no transaction costs for changing the scope. The integration of resources comes without any friction. In sum, these assumptions constitute a perfectly contestable market (Baumol et al., 1982). Though necessary for crafting a model that yields such fundamental insights, these conditions do not hold in reality.

Relaxing them will complement the notion of economies of scope with some restrictions that render it more valid for its practical application. Entry barriers in the form of direct costs created by the internalization of productions increase the amount of economies required to justify internalization. Furthermore, market alternatives may exist that also allow capture of the economies of scope (Helfat & Eisenhardt, 2004; Teece, 1980). A market-based alternative referred to by Williamson (1979a) as 'relational contracting' is a form of bilateral governance in which the autonomy of the parties is maintained. With these two relaxations of the initial assumptions at hand, i.e., the one of costs for the internalization and that of market alternatives for realization of the economies by means of cooperation, Teece (1980) concludes that economies of scope from joint production do not necessarily call for a joint production within one company. Rather, internalization within one company only proves efficient if the transaction costs for realization of the economies under separate ownership, such as costs from contracting and opportunism, are higher than the costs for the integration (Helfat & Eisenhardt, 2004). Hence, this economic justification of diversification depends on the costs associated with the different alternatives to exploit the economies of scope. From this perspective, strategic alliances or other forms of cooperation become substitutes for diversification. The question of by which of these means (i.e., diversification or cooperation) the economies of scope are to be captured translates into the question of which alternative promises the largest amount of economies of scope after costs.

To assess the costs associated with the distinct alternatives, some initial thoughts on potential sources of costs are necessary. As concerns the internalization of a new product-market combination the potential downsides depend on the vehicle of the diversification strategy. As discussed, firms can either develop the product-market combination internally or enter it directly by means of M&A. The former induces a longer time-to-market than does the acquisition of an existing market participant, and costs can arise in the sense of missed market opportunities during this lead-time. M&A transactions, however, may reduce the potential net amount of economies by involving other costs, such as overpayment and unreal-

ized potentials during the post-merger integration phase (Sirower, 1997; Varaiya & Ferris, 1987). As far as the market-based alternative, relational contracting, is concerned, transaction costs move into focus. These relate back to transaction cost economics, which names the dimensions of transactions that constitute the costs of them. Hence, transaction frequency, uncertainty, and asset specificity (Williamson, 1975 & 1979a) come into play in decisions on whether market contracting can be the superior means of capturing economies of scope.

4.3.3 Potential Sources of Economies of Scope

In the sections above, the idea of economies of scope was introduced as an efficiency-measure from production economics in order to help to explain the existence of multibusiness firms and also such forms of cooperation as alliances. In addition, factors were identified that determine the costs of capturing these economies in dependence on whether the production is internalized or the economies are realized by means of cooperation. What have not been discussed so far are the actual sources of economies of scope. What reasons does economic theory state for the existence of scope economies? What practical counterparts does management research offer?

The existence of economies of scope is theoretically based on input factors that have the characteristic of not becoming entirely consumed in a distinct production process, so that they can be simultaneously deployed in several such processes (Panzar & Willig, 1975; Willig, 1979). Regarding the possibilities for such a simultaneous use, Baumol et al. (1982) differentiate two types of factors that display the required characteristic: public and quasi-public factors of production. Public factors have the characteristic that, once acquired, they can be freely deployed for the production of other outputs (Baumol et al., 1982). Hence, the production processes can still be executed individually. Quasi-public factors, in contrast, are factors that share the trait of indivisibility. This means they are physically not available in smaller units. In consequence, their acquisition often results in overcapacities that can be exploited for further purposes, such as the production of another product (Baumol et al., 1982; Willig, 1979).

Management scholars have come up with classifications and groupings of factors that build upon the two abstract categories mentioned above. Teece (1980) translates public factors into 'know-how'. More specifically, he refers to technological know-how, management know-how, organizational know-how and goodwill, for example that stemming from brand-induced customer loyalty. All these knowledge assets can be leveraged across multiple production processes without being consumed. However, this statement only holds true as long as the deployment of the know-how does not draw on other resources than information. As soon as managers or other resources become involved, their capacity constraints become relevant and the public factor know-how is turned into a scarce resource. With respect to quasi-public factors, Teece (1980) refers to "two types of indivisibilities", which he finds prevalent in some physical assets and distinct types of information. He counts machines and other long-term assets such as plants and

equipment as some of these physical assets. With regard to the indivisibility associated with information, the constraint already mentioned applies: Know-how is generally attached to people, whose time is restricted, and forms the indivisible capacity, rendering many forms of know-how to quasi-public factors. Bailey and Friedlaender (1982) compiled an even more concrete list of reasons for which economies of scope could arise. These include: (1) The presence of a fixed factor of production (e.g., a distribution channel) that is not fully occupied by the production of one product; (2) economies of networking in industries where capacity slacks can be taken up by linking network parts via hubs (e.g., the airline industry); (3) reuse of inputs in more than one product (e.g., abstracts of articles can be reused in various outlets); and (4) sharing of intangible assets (e.g. research or other forms of business know-how).

4.4 Diversification and the Achievement of Economies of Scope in the Utility Industry

An industry in which diversification strategies have gained more and more importance within recent years is the utility industry, which is the main theme of this book. As the thoughts presented above offer the tools needed to investigate whether economies of scope account for the diversification trend within the utility industry, the general sections give way to an analysis of the industry. First, the directions for diversification are derived from the industry structure of energy utilities with reference to the opportunities provided by other related utility sectors. Concrete potentials for economies of scope are then identified, yielding valuable insights into the observable diversification patterns of the industry.

4.4.1 The Utility Industry and Potential Directions of Diversification

Utility industries are typically characterized by vertical production processes producing intermediate products at upstream stages, which are then transferred downstream, often based on a network infrastructure. Downstream, these intermediate products are then used with other input factors to generate a final output. The output frequently consists of one or more services to the final customer. For electricity markets, the vertical structure exhibits a four-tier structure. At the upper end of the production stream the generation of electricity takes place, which is then transmitted via high-voltage networks at the second level of value creation. The third level, further downstream, covers the distribution of electricity to the end-consumer. The fourth level, which is often combined with the third or excluded from the discussion, is that of commercial activities surrounding the retailing of energy (Crew & Kleindorfer, 1986; Wild, 2000). Though the traditional structure of the electric utility is that of a vertically integrated entity, competition could be introduced in most parts of the value chain, with a few exceptions. Technical constraints, efficiency considerations based on economies of scale, and the need for

supply guarantees directly or indirectly require that the transmission and distribution functions remain as regulated activities occupied by (local) monopolies. Hence, during past years, governmental initiatives have been aimed at establishing competition at the generation and retail levels. The precondition for this is seen in the separation of the natural monopoly from the other activities (International Energy Agency, 2005): "For this reason, transmission and distribution networks must be operated independently of generation and retail" (International Energy Agency, 2005). Besides these new vertical organization options, utilities can choose along the horizontal dimension which additional services they want to provide to their customer base. The set of meaningful options is generally defined from the customer's perspective. Based on the assumption that customers like to satisfy a wide range of related demands via a single provider, other services that are required to maintain a household become the intuitive areas for diversification. Hence, gas, water and waste markets, which have also faced liberalization, are in the focus of electricity firms pursuing a multi-utility strategy (Schmidt, 2003). However, it is not the intuitive appeal of providing one-stop shopping for multiple services to the customers that drives such diversification, but the rigorous economic analysis of which service bundle a distinct utility company should optimally provide.

The diversification options offered by both dimensions build the frame for this question, which was already asked earlier in this chapter on a more general level. When adapted to the utility industry, the question of how companies can generate value by diversification translates into the question of how electricity-based utilities can generate value by vertical and horizontal diversification in response to the new market opportunities arising from the deregulation of the utility markets. The answer to the general question has been given above and also forms the basis for the answer to the industry-specific question: Economies of scope.

4.4.2 Sources of Economies of Scope within the Utility Industry

Economies of scope are induced by operations in different product markets and arise between or on the different vertical levels of the value chain that a company has internalized. Hence, both dimensions are of relevance. To structure the following analysis, the potential for the achievement of economies of scope will be explored in two steps. First, there will be a short discussion of the potentials relevant to the whole value chain. In the second, more comprehensive, step each stage of production will be individually analyzed to yield sources of economies existing specifically at each. For both steps, the following utility combinations are assumed to be relevant: energy and gas, energy and water, energy and waste disposal. Depending on the applicability for the respective production stage, the emphasis lies on one or more of these distinct combinations. The question of vertical diversification is disregarded, as a discussion focusing on economies of scope would be less constructive.

Sources of economies of scope, which are relevant for all stages of production, are more general than those that are relevant to the specific stages. They stem from market power and know-how. In an unbundled business model, each stage

offers potentials arising from increased bargaining power if there are either common suppliers or common customers for the services provided. Shepard (1997) offers a detailed discussion on the specific means by which utilities can benefit from their market power. Similar benefits arise from know-how. Knowledge about suppliers, customers and technical knowledge may provide economies for multi-utilities if they can be shared between the different lines of business.

At production level, the utility combination of energy and gas in particular promises large economies of scope (Fraquelli et al., 2004). If the utility firm possesses a gas-fired power plant, the costs of the joint production of electricity and gas for the end-customer can be reduced by exploiting differences in the price fluctuations of gas and electricity. The operator of the gas-fired plant can benefit from rising gas prices by not using his stocked gas to produce electricity but selling it directly to his gas customers. To cover his customers' electricity demand he can then have recourse to the electricity market. Economically, such a plant provides the operator with a real option, allowing him to switch between different business models and take advantage of the so-called spark spread. Thus, this opportunity is named the spark spread option (Hsu & Quan, 1998). At the level of transmission and distribution, economies of scope arise from coordination of the infrastructural construction works that are necessary for the provision of the different services. Specifically pipeline-based services, such as gas and water, should be established in a joint effort in new areas. However, these economies of scope can be realized with no need for internalization of the services within one company. Market collaboration models between different providers are also able to realize such economies. Often, governmental institutions assist the coordination between the providers, as their interests are affected by the construction works (Thomas, 2006). At retail level a larger potential for economies of scope arises. Each contact with the customer can be used to promote not only one service but several. Knowledge about the customer gained from one service business can be exploited in the others. Cross-selling initiatives, such as distinct pricing for service bundles, could increase overall sales and reduce the joint costs of production. In this sense, the customer bases of existing utility firms may prove to be a particularly valuable asset for other utility firms in their own growth strategies. This type of economy of scope, however, is reserved for diversification strategies that are implemented by means of acquisitions.

4.5 Conclusion

The objective of this book chapter is to explore the role of economies of scope within diversification strategies of firms on a general and on an industry-specific level. As such, it places the concept of diversification in the overall context of management and links it by production economics to the concept of economies of scope. As the concept of economies of scope stems from neoclassical economics, it is then complemented with some constraints that originate from management research. In this way, an understanding of all factors necessary for basing argu-

ments on economies of scope is established. These factors include the different means by which the economies can be captured, the drivers of the costs that are associated with the different means, and the potential sources of economies of scope. Having established the relevant set of constructs and the relationships between them in a way that is of practical relevance, the chapter applies the ideas presented specifically to the utility industry.

The theoretical discussion in the chapter underlines the importance of economies of scope for diversification strategies. Yet it also suggests, particularly in the face of market imperfections, that there are alternatives to diversification. The potential sources of economies of scope are also crying out to be scrutinized. It has been shown that it is advisable to suspect public factors of actually being quasi-public factors. The application of these concepts to the utility industry provides further insights: First, the electricity industry's value chain generally offers a wide set of choices to define strategic positions. Furthermore, the relatedness to other utility services, such as gas, water, and waste disposal, means there are various sources of economies of scope that support the idea of the multi-utility business model. Overall, the chapter therewith underlines the relevance of economies of scope for diversification in general and for the utility industry in particular.

References

- Andrews, K. R. 1971. The concept of corporate strategy. Homewood, Ill.: Dow Jones-Irwin.
- Ansoff, I. 1957. Strategies for diversification. *Harvard Business Review*, 35: 113-124.
- Bain, J. S. 1968. *Industrial organization*. New York: Wiley.
- Bailey, E. E. & Friedlaender, A. F. 1982. Market structure and multiproduct industries. *Journal of Economic Literature*, 20: 1024-1048.
- Barney, J. B. & Hesterly, W. S. 2006. *Strategic management and competitive advantage: concepts and cases*. Upper Saddle River, NJ: Pearson/Prentice Hall.
- Baumol, W. J., Panzar, J. C., & Willig, R. D. 1982. *Contestable markets and the theory of industry structure*. New York: Harcourt Brace Jovanovich.
- Bausch, A., Fritz, T., Werthschulte, S., Schumacher, T., Holst, A. & Schiegg, T. 2007. Wettbewerbsmarkt Energie – Managementkompetenzen werden Schlüsselfaktor für Erfolg. *EW – Das Magazin für die Energiewirtschaft*, 13-14: 34-39.
- Bozem, K. 2004. Unbundling – Gesetzlicher Zwang oder Chance? In J. Grewe, D. Flandrich & N. Ellwanger (Eds.), *Energiewirtschaft im Wandel*: 101-110. Münster: Agenda Verlag.
- Chatterjee, S. 1986. Types of synergy and economic value: the impact of acquisitions on merging and rival firms. *Strategic Management Journal*, 7: 119-139.

- Chatterjee, S. 2007. Why is synergy so difficult in mergers of related businesses? *Strategy and Leadership*, 35: 46-52.
- Collis, D., Young, D. & Goold, M. 2007. The size, structure, and performance of corporate headquarters. *Strategic Management Journal*, 28: 383-405.
- Collis, D. J. & Montgomery, C. A. 1998. Creating corporate advantage: the key is learning how to differentiate truly great corporate strategies from those that are merely adequate. *Harvard Business Review*, 76: 70-83.
- Crew, M. A. & Kleindorfer, P. R. 1986. *The economics of public utility regulation*. Cambridge, Mass.: MIT Press.
- Datta, D. K., Rajagopalan, N. & Rasheed, A. M. A. 1991. Diversification and performance: critical review and future directions. *Journal of Management Studies*, 28: 529-558.
- Faulhaber, G. R. 1975. Cross-subsidization: pricing in public enterprises. *The American Economic Review*, 65: 966-977.
- Fraquelli, G., Piacenza, M. & Vannoni, D. 2004. Scope and scale economies in multi-utilities: evidence from gas, water and electricity combinations. *Applied Economics*, 36: 2045-2057.
- Ghoshal, S. & Nohria, N. 1989. *Internal differentiation within multinational corporations*. Boston, Mass.: Division of Research, Harvard Business School.
- Goold, M. G. & Luchs, K. 1993. Why diversify? Four decades of management thinking. *Academy of Management Executive*, 7: 7-25.
- Goold, M. G., Campbell, A. & Alexander, M. 1994. How corporate parents add value to the stand-alone performance of their businesses. *Business Strategy Review*, 5: 33-55.
- Hamermesh, R. G. & Roderick, E. W. 1984. Manage beyond portfolio analysis. *Harvard Business Review*, 62: 103-109.
- Helfat, C. E. & Eisenhardt, K. M. 2004. Inter-temporal economies of scope, organizational modularity, and the dynamics of diversification. *Strategic Management Journal*, 25: 1217-1232.
- Hitt, M. A., Ireland, R. D. & Hoskisson, R. E. 2003. *Strategic management: competitiveness and globalization* (5th ed.). Mason, Ohio: Thomson.
- Hsu, M. C. & Quan, N. T. 1998. Spark spread options: linking spot and futures markets for gas and electricity. *Public Utilities Fortnightly*, 136: 26-30.
- International Energy Agency (IEA). 2005. *Lessons from liberalized electricity markets*. Paris: OECD/IEA.
- Jacquemin, A. P. & Berry, C. H. 1979. Entropy measure of diversification and corporate growth. *The Journal of Industrial Economics*, 27: 359-369.
- Kanter, R. M. 1998. Seeking and achieving synergies. In A. Campbell & K. Luchs (Eds.), *Strategic Synergy* (2nd ed.): 146-170. London: International Thomson Business Press.
- King, D. R., Dalton, D. R. & Daily, C. M. 2004. Meta-analysis of post-acquisition performance: indications of unidentified moderators. *Strategic Management Journal*, 25: 187-200.
- Leland, H. E. 2007. Financial synergies and the optimal scope of the firm: implications for mergers, spinoffs, and structured finance. *The Journal of Finance*, 62: 765-807.

- Lubatkin, M. & Chatterjee, S. 1994. Extending modern portfolio theory into the domain of corporate diversification: does it apply? *Academy of Management Journal*, 37: 109-136.
- Markides, C. C. 1995. Diversification, restructuring and economic performance. *Strategic Management Journal*, 16: 101-118.
- Markides, C. C. & Williamson, P. J. 1996. Corporate diversification and organizational structure: a resource-based view. *The Academy of Management Journal*, 39: 340-367.
- Michel, A. & Shaked, I. 1984. Does business diversification affect performance? *Financial Management*, 13: 18-25.
- Miller, D. J. 2006. Technological diversity, related diversification, and firm performance. *Strategic Management Journal*, 27: 601-619.
- Montgomery, C. A. & Wernerfelt, B. 1988. Diversification, ricardian rents and Tobin's q. *Rand Journal of Economics*, 19: 623-632.
- Müller-Stewens, G. & Lechner, C. 2005. *Strategisches Management: Wie strategische Initiativen zum Wandel führen* (3rd ed.). Stuttgart: Schäffer-Poeschel.
- Müller-Stewens, G. & Brauer, M. 2009. Corporate Management im diversifizierten Unternehmen. In G. Müller-Stewens & M. Brauer (Eds.), *Corporate Management* (forthcoming).
- Nelson, R. R. 1972. Issues and suggestions for the study of industrial organization in a regime of rapid technical change. In V. R. Fuchs (Ed.), *Policy Issues and Research Opportunities in Industrial Organization*: 34-58. New York: National Bureau of Economic Research.
- Panzar, J. & Willig, R. 1975. Economies of scale and economies of scope in multi-output production. Unpublished Bell Laboratories Economic Discussion Paper (33).
- Panzar, J. & Willig, R. 1981. Economies of scope. *American Economic Review*, 71: 268-272.
- Peters, T. J. & Waterman, R. H. 1982. *In search for excellence*. New York: Free Press.
- Porter, M. E. 1987. From competitive advantage to corporate strategy. *Harvard Business Review*, 65: 43-59.
- Prahalad, C. K. & Bettis, R. A. 1986. The dominant logic: a new link-age between diversity and performance. *Strategic Management Journal*, 7: 485-501.
- Prahalad, C. K. & Hamel, G. 1990. The core competence of the corporation. *Harvard Business Review*, 68: 79-91.
- Prahalad, C. K. & Bettis, R. A. 1995. The dominant logic. A new linkage between diversity and performance. *Strategic Management Journal*, 7: 485-501.
- PricewaterhouseCoopers (PWC). 2007. Power deals – 2007 annual review. PricewaterhouseCoopers.
- Ramanujam, V. & Varadarajan, P. 1989. Research on corporate diversification: a synthesis. *Strategic Management Journal*, 10: 523-551.
- Rumelt, R. P. 1974. *Strategy, structure, and economic performance*. Cambridge: Harvard University Press.
- Schmidt, C. 2003. Multi-Utility – Erfolgsrezept für Energieversorger? *EW – Das Magazin für die Energiewirtschaft*, 102: 58-63.

- Shepard, W. G. 1997. Market power in the electric utility industry: an overview. 12. National Council on Competition in the Electric Industry.
- Sirower, M. L. 1997. The synergy trap: how companies lose the acquisition game. New York: Free Press.
- St. John, C. H. & Harrison, J. S. 1999. Manufacturing-based relatedness, synergy, and coordination. *Strategic Management Journal*, 20: 129-145.
- Teece, D. J. 1980. Economies of scope and the scope of the enterprise. *Journal of Economic Behavior and Organization*, 1: 223-247.
- Thomas, T. W. 2006. Unternehmenszusammenschlüsse in der Energiewirtschaft: Empirische Analyse der Übernahmewelle der 1990er Jahre in Nordamerika und Europa. Wiesbaden: Deutscher Universitätsverlag.
- Varaiya, N. & Ferris, K. 1987. Overpaying in corporate takeover: the winner's curse. *Financial Analysts Journal*, 43: 64-70.
- Wild, J. 2000. Deregulierung und Regulierung der Elektrizitätsverteilung – Eine mikroökonomische Analyse mit empirischer Anwendung für die Schweiz. Zürich: Hochschulverlag an der ETH.
- Williamson, O. E. 1975. Markets and hierarchies, analysis and antitrust implications: a study in the economics of internal organization. New York: Free Press.
- Williamson, O. E. 1979a. Transactions-cost economics: the governance of contractual relations. *Journal of Law and Economics*, 22: 233-263.
- Williamson, O. E. 1979b. Assessing vertical market restrictions: anti-trust ramifications of the transaction cost approach. *University of Pennsylvania Law Review*, 127: 953-993.
- Willig, R. 1979. Multiproduct technology and market structure. *The American Economic Review*, 69: 346-351.
- Wrigley, L. 1970. Divisional autonomy and diversification. Cambridge: Harvard University.