

STRATEGIC GROUPS AS SUBSETS OF STRATEGIC SCOPE GROUPS IN THE BELGIAN BREWING INDUSTRY

NOËL HOUTHOOFD¹* AND AIMÉ HEENE²

¹VLEKHO, Brussels, Belgium

²De Vlerick School voor Management, Ghent, Belgium

This research report proposes a distinction between strategic scope groups and strategic groups whereby strategic groups are delineated within strategic scope groups. A strategic scope group (SSG) includes firms within an industry that define their business using a four-dimensional 'strategic space' consisting of buyer types, product types, geographical reach and level of vertical integration, in a similar way. Within each SSG there may be several strategic groups (SGs). An SG includes firms within an SSG that deploy their resources in a similar way and that compete in the same way. While all firms within an SSG may compete against each other, firms within the same SG compete against each other in a similar way. Within the brewing industry in Belgium five SSGs could be identified. These SSGs differ statistically significantly on a risk-adjusted return on assets measure. SGs themselves did not differ on this performance measure. One may therefore conclude that mobility barriers between SSGs are higher than they are between SGs. © 1997 by John Wiley & Sons, Ltd.

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INTRODUCTION

In prior research,¹ the concept of strategic groups was operationalized in a number of ways which had in common that the groups of firms are often rather loosely delineated. Members of a strategic group were not necessarily in competition with each other. That is why, in this paper, a distinction is made between strategic scope groups (SSGs) and strategic groups (SGs), whereby strategic groups are delineated within strategic scope groups. An SSG includes firms within an industry that define their business in a similar way. Within

each SSG there may be several SGs. An SG includes firms within an SSG that deploy their resources in a similar way and that compete in the same way. While all firms within an SSG may compete against each other, firms within the same SG compete against each other in a similar way. This implies that competition within an SG is more intense than between SGs within an SSG. Strong mobility barriers are assumed to exist between SSGs, shielding all firms within the SSG from competition from outside, discouraging shifts from one SSG to another. Mobility barriers are thought to be less insurmountable between SGs within an SSG than between SSGs. These rivalry patterns may have performance implications which are also addressed in this paper.

The purpose of this paper is threefold. First, we wish to introduce a distinction, at conceptual level, between *strategic scope groups* and *strategic groups*. Second, a three-stage research procedure is operationalized to delineate the SSGs and SGs. A basic part of the research method is

Key words: Strategic scope groups, strategic groups, SCP-paradigm, mobility barriers

* Correspondence to: Noël Houthoofd, VLEKHO, Koningstraat 336, 1030 Brussels, Belgium.

¹An overview of SG research can be found in McGee and Thomas (1986), Thomas and Venkatraman (1988), and Reger and Huff (1993). An overview of the current perspectives on SGs can be found in Tallman and Atchison (1994), and in Bogner, Mahoney, and Thomas (1994).

a concise but sophisticated and industry-specific operationalization of the strategic variables. Third, the performance implications of SSG membership as well as SG membership are examined. The concepts and analytical procedure are applied to the Belgian beer-brewing industry.

In the first section of this paper the conceptual framework is established. The second section describes the brewing industry in Belgium. The research method is presented in a third section. In the final section, the research results are presented and some conclusions are drawn.

THE CONCEPTUAL FRAMEWORK

In a resource-based approach to strategy, the essence of strategy formulation is to design a strategy that makes the most effective use of the firm's² core resources and capabilities. Designing strategy around the most critically important resources and capabilities may imply that the firm limits its strategic scope to those activities where it expects to establish and sustain a clear competitive advantage. The starting point for the formulation of a strategy should be a definition of its business (either explicitly in the form of a 'mission statement' or implicitly).

The competitive arena is determined at first by the borders of the industry itself. Drawing industry boundaries is always a matter of degree. In fact, in the case of the brewing industry in Belgium, we accepted the classification of firms from the NACE code³ as a useful and practical starting point. The NACE classification is primarily based on product similarity. Firms producing products that are viewed as close substitutes are classified within the same NACE class. Such

a grouping of firms is too crude, making it necessary to *add additional criteria to arrive at a more homogeneous pool of firms from which to draw strategic groups*. As it is our ultimate purpose to group firms which are really competing against each other, the buyer types targeted should be taken into account as a second dimension of the competitive arena. Only when firms, producing similar products, focus on the same buyer types, they see themselves as rivals. Incumbent firms also talk about each other in terms of 'locals' or 'regionals' or 'nationals.' This geographical reach, which is essentially a size dimension as well, constitutes the third dimension of the 'strategic space.' The level of vertical integration (e.g. the number of cafés owned) indicates which value activities are performed within the company. This variable plays an important role in competitive rivalry within the Belgian brewing sector (see the next section), and is used as the fourth dimension of the strategic space.

A categorization of firms in terms of scope on the four dimensions constituting the competitive arena (buyer groups, product types, geographical reach and level of vertical integration) results in what we call strategic scope groups. SSGs identify clusters of firms in a strategic space which can be thought of as a four-dimensional graph composed of the four scope dimensions. An SSG includes firms within an industry that define their scope, using this four-dimensional 'strategic space,' in a similar way.

Within each SSG there may be several strategic groups (SGs). An SG includes firms within an SSG that deploy their resources in a similar way and that compete in the same way. While all firms within an SSG may compete against each other, firms within the same SG compete against each other in a similar way. This implies that competition within an SG is more intense than between SGs within an SSG. Mobility barriers are supposed to exist between SSGs as well as between SGs within an SSG. Mobility barriers at the level of an SSG are shielding all firms within the SSG from competition from outside, discouraging shifts from one SSG to another. Mobility barriers at the level of an SG within an SSG are shielding all firms within the SG from competition from outside the SG, discouraging inter-SSG shifts.

Performance differences are expected to exist as a correlative of these mobility barriers and

²The term 'firm' refers to the company itself for single business firms or an SBU in multiple business firms. An SBU is an organizational unit that has a single product or product line that serves a well-defined product-market combination, and has a well-defined set of competitors. Following Rumelt's classification, a firm is a 'single business' or 'dominant business' when at least 70 percent of its sales take place within a given industry, specified at 4-digit SIC code level (Rumelt, 1982; Montgomery, 1982: 301). This is the case here for every firm included in the sample.

³The NACE code is the EC classification of industries. The brewing industry has NACE code 4271. All the firms classified as breweries, indicated, during our inquiry, that brewing was their main or exclusive activity. Most of these firms (even Interbrew) are family owned, and, to our knowledge, do not search for any activity outside this (core) business.

isolating mechanisms between SSGs as well as between SGs and within SGs. The hypotheses to be tested are:

Hypothesis 1: Performance differences between the SSGs will occur.

Hypothesis 2: Performance differences between the SGs⁴ within an SSG will occur.

These hypotheses are tested within the Belgian brewing industry. We shall now turn to a description of the empirical setting.

THE BREWING INDUSTRY IN BELGIUM

The pils segment is by far the largest segment of the Belgian brewing industry as it accounts for 70 percent of total sales. The two largest breweries, Interbrew and Alken-Maes, have a share in the pils market of about 90 percent. Their share in this segment is larger than their overall share of the market, which is 78 percent, reflecting their power in this segment of the market and reflecting the huge barriers protecting this segment of the market. Their power in the other segments of the market is much smaller. The huge entry barriers in the pils segment are associated with several factors. First, there is the system of tied outlets.⁵ The number of 'free cafés' is very limited. Starting up a new network of tied outlets is theoretically possible, but that would require huge capital injections. Such an undertaking seems doomed to fail as the best locations are already taken by the existing cafés.

Second, the brand recognition and reputation of the existing pils brewers works as a strong

⁴ The resource-based view highlights firm differences in performance, while the mobility barriers view leads to expectations of strategic group differences in performance. As the empirical findings cast doubts on the existence of a link between SG membership and performance (Cool and Dierickx, 1993), the formal hypothesis remains valid in this context as it is assumed that the findings concerning the links between SG membership and performance are that meager because of an improper conceptualization of SG.

⁵ The exclusive agreement between the brewer and the café owner relates to the beers produced by the brewer himself as well as to the beers this brewer buys from other breweries to fill up his product line. As such, the brewer has complete control over the café owner's sales. Only the sale of brands, often 'special beers', for which the brewer has no alternative, cannot be forbidden in a tied outlet.

Moreover, the food distribution channel, the second most important distribution channel, is not at all inclined to free some shelf space for unknown pils brands. A potential entrant is forced 'to buy his place' on the shelves by charging 'predatory prices' to the distributors, limiting his own profit potential.

Third, the capital requirements are high to keep pace with technological evolution (e.g., large fermentation and storage tanks, large brewing vessels, high-speed bottling lines, and so on). The production of pils needs to be done on a large scale in order to be price competitive, to justify the advertising expenses, to be able to give the needed promotional support (other than advertising), and to justify the needed investments in manufacturing. Taking into account the poor chances of success of a new pils brand as it is launched by a new firm, any serious investment analysis will drop such a project.

So, non-pils brewers can hardly penetrate into the pils segment, but the strong pils brewers can enter the non-pils market, precisely thanks to the system of the tied outlets. In a way, they only have to introduce a non-pils brand to chase off a similar brand of a small competitor.

Life is different for the (mostly smaller) firms in the other segments of the market. Selling prices are often higher here, so unit costs may also be higher. On the one hand, production on a small scale is a disadvantage from the viewpoint of costs (in the long run), but on the other hand it is a commercial trump card. The image that non-pils beers are produced according to traditional methods is a source of differentiation that can offset the differentiation of the pils beers of larger firms, built up by large advertising campaigns. A local anchorage makes it possible to overcome entry barriers, if any, in the non-pils segments.

From Tables 1-3 the following conclusions can be drawn:

1. The production level is stabilizing around 14 million hectoliters per year.
2. The imports decreased over time and for the larger part occur via a license or commercial agreement with domestic firms.
3. The export level as a percentage of total production, viz. 18-20 percent, largely exceeds the EC average export level of beer, which is 8 percent.

Table 1. Belgian beer production, consumption and foreign trade (in thousands of hectoliters)

Year	Production	Imports	Exports	Consumption
1980	14,291	969	2315	12,945
1981	13,811	871	2432	12,250
1982	14,629	818	2419	13,028
1983	14,224	775	2389	12,610
1984	14,311	715	2585	12,441
1985	13,931	623	2632	11,922
1986	13,715	568	2462	11,821
1987	13,987	565	2635	11,917
1988	13,792	554	2636	11,710
1989	13,164	642	2394	11,412
1990	14,141	648	2752	12,037
1991	13,799	459	3145	11,113

Table 2. Estimated production of the 10 largest Belgian brewers (in hectoliters)

Company name	Production	Cum. prod.	Cum. prod. (% tot. prod.)
Interbrew	9,000,000	9,000,000	64.2
Alken-Maes	2,000,000	11,000,000	78.6
Haacht	600,000	11,600,000	82.9
Palm	450,000	12,050,000	86.1
Moortgat	240,000	12,290,000	87.8
De Koninck NV	135,000	12,425,000	88.8
De Brabandere	120,000	12,545,000	89.6
Riva	100,000	12,645,000	90.3
Rodenbach	100,000	12,745,000	91.0
Trappisten Westmalle	100,000	12,845,000	91.8

4. The consumption is stabilizing around 120 liters per head. The stagnation for the sector as a whole dissimulates substantial internal shifts within the demand for the different beer types.

- The cumulative production as a share of total production (14 million hectoliters) is a measure of the concentration level. The share of the four largest producers (the C_4) exceeds 85 percent. The eight largest producers (the C_8) produce more than 90 percent of the total beer output. The Belgian brewing industry is highly concentrated, both in terms of output produced by the largest breweries and in terms of their control over the distribution channels (vertical integration, see above).
- As already mentioned the pils segment is by far the largest, but, nevertheless, sales are declining. The 'geuze' segment is also getting smaller. The sourish taste of this beer type seems to be less marketable than in former times, and as such pure 'geuze' is pushed off the market by the so-called fruit beers, which are sweetened. The decline in the demand for 'table beer' can be explained by their substitution by waters and lemonades. The growing interest in top fermentation beers is striking. The increasing demand for 'special beers' is also spectacular.

ANALYTICAL FRAMEWORK

Data sources and sample

Multiple data sources were used to test the research hypotheses: financial statement data, questionnaire data and data on the advertising

Table 3. Consumption per beer type as a percentage of total beer consumption

Year	Pils	Trappist	Geuze	Special beers	Abbey beers	Table beers	Alcohol free
1985	77.24	1.84	4.13	9.70	5.82	5.82	0
1986	76.82	1.86	4.31	10.17	5.39	5.39	0
1987	76.5	1.84	4.37	10.63	5.01	5.01	0
1988	74.15	2.14	4.20	12.90	4.76	4.76	0.19
1989	72.68	2.19	3.88	14.27	4.21	4.21	0.89
1990	73.70	2.10	3.53	12.31	3.82	3.82	1.87
1991	71.99	2.27	3.11	13.96	3.70	3.70	1.99

budgets. The financial statement data of those firms that are obliged, under Belgian law, to disclose their annual accounts, were taken from the CD-ROM of the 'Balanscentrale' of the National Bank of Belgium. Firms above a certain size and with a certain legal status are obliged to give a full disclosure of their annual accounts while smaller ones only need to disclose shortened annual accounts. The sample consisted of 36 firms. As the nonparticipants and the firms not on the CD-ROM were mainly smaller firms, over 95 percent of the market, in terms of output, was covered by the sample.

In the course of an interview lasting on average 3 hours, a questionnaire was completed. For the seven breweries in southern Belgium, the French-speaking part of Belgium, and for three brewers in Flanders, the Dutch-speaking part of Belgium, the questionnaire was mailed to the CEO. Since the CEOs were asked for data, not for interpretations or perceptions, the task was not too demanding and the response rate was high (seven questionnaires out of 10 returned).⁶ Data on the amounts spent on advertising were provided by Media Marketing Belgium, a private bureau specializing in the research of advertising budgets.

The data analysis uses as input the 4-year averages for the period 1985-88 for the different variables of the different firms where financial statement data are concerned. Also the amounts spent on advertising were averaged for the 4 years under investigation. The data asked for in the questionnaire also looked for the average situation during that 4-year period.⁷

Operationalization of the strategic scope variables

A basic part of the research method is a concise but sophisticated and industry-specific operationalization of the strategic scope variables. We propose here a four-dimensional 'strategic space' constituting the arena within which firms can

successfully. The particular choice of these four dimensions is based upon a study of the literature concerning business definition in general and the brewing industry in particular as well as on an exploratory study of the Belgian brewing industry itself. Discussions with CEOs of five major breweries as well as former top managers who left the industry guided the choice and their operationalization. The variables are summarized in Table 4.

Volume is a measure of firm size and used as a proxy for the geographical reach of the firm. Instead of working with three categories (e.g., national, regional and local), we asked for the average output level. The natural logarithm of this level was used in the study.⁸

Apart from the scope of the business, the volume variable has other implications for the strategic management of a brewery. On the one hand, this variable includes *possible economies of scale* for larger firms in the analysis. On the other hand, small firms can reduce shipping costs thanks to their close proximity of their markets to their plants. They also rely more heavily on word-of-mouth advertising than on advertising campaigns. All this can create potential cost advantages for small firms (Boeker, 1991: 617).

Volume has already been used in prior studies as an indicator of the strategic stock of 'image' or 'loyalty to the firm' (Martens, 1988,

Table 4. Variables used to measure strategic scope

Variables	Operational definition
1. Volume*	1. Ln (quantity)
2. Number of product types*	2. Count
3. Type of firm*	3. % of pils in total volume
4. Channel control*	4. Number of outlets owned

*Questionnaire data are needed for this measure

⁶ Twenty-nine firms were interviewed by the authors themselves.

⁷ Four-year averages as variable measures were used to cope with variations in accounting practice, to give long-term measures, to mitigate the effects of various leads and lags, and to average the effects of swings in the economy (Hambrick, 1983; Hambrick and MacMillan, 1985; Zeithaml and Fry, 1984; Bettis, 1981: 384; Barton and Gordon, 1988: 627; Sousa de Vasconcelos e Sá and Hambrick, 1989: 367). However, as a consequence of this choice, the analysis is cross-sectional.

⁸ The natural logarithm was taken as an attempt to normalize the size variable (Miller and Dröge, 1986: 547). Johnson and Thomas (1987) use the logarithm of sales in their study of the U.K. brewing industry, while Hatten, Schendel and Cooper (1978) use the logarithm of total assets in the study of the U.S. brewing industry. Miller and Dröge use the natural logarithm of the number of full-time employees. In this case, the logarithm of (average) output volume was used, as the brewers themselves commonly use output volume to compare their firm sizes.

1989: 260). So, besides the use of volume as an indicator of size and hence of overall resource commitments, volume is also used in this paper as a *measure of the strategic stock 'reputation.'*

The *number of product types*, which was asked for in the questionnaire, is in the first place used as a measure of competitive scope, but as with the variable volume it also has implications for the potentiality of arriving at competitive advantages. It was hypothesized in advance that firms looking for a cost advantage (e.g., economies of scope) should produce more types to fill capacity while differentiators should be focused more to enhance their distinctive profile.

Rather than using a categorization into 'mainly pils brewers' and 'mainly non-pils brewers,' a distinction that appeared to be very important in the light of the industry analysis discussed in the previous section, the *type of firm* is operationalized as the percentage of pils brewed relative to the total volume of beer produced of whatever type.

Channel control is a measure of the resources committed to gain control over the distribution channels. This variable is operationalized as the number of cafés owned by the brewery or privately owned by the top management team. The number of tied outlets via subtenancy, financial support, etc., has not been incorporated. It is a measure of forward vertical integration, but a measure (of one source) of seller power as well.

Variable selection for strategic group delineation

The particular choice of these strategic variables is based upon a study of the literature concerning strategic management in general and the brewing industry in particular as well as on an exploratory study of the Belgian brewing industry itself. Discussions with practitioners and ex-practitioners guided the choice and their operationalization. The measures chosen reflect potential bases for establishing competitive advantage in the brewing industry. The variables are summarized in Table 5.

Fixed capital intensity has potential effects on efficiency and thus on the search for a cost advantage. Some brewers try to obtain efficiency by committing large amounts of resources to fixed assets (e.g., in bottling and packaging lines), while others seek efficiency and low cost by

fixed asset parsimony. Major pils brewers deploy resources on large fermentation tanks and storage tanks, large brewing vessels, high-speed bottling lines, and so on, as it is becoming a competitive necessity in the pils sector to be well equipped to be sustainable in business. Brewers with a non-pils tradition do not feel the need to enhance fixed capital intensity, believing it could actually harm the image of 'quality product.' For the mainly non-pils brewers, the emphasis lies in the first place on quality control and improvement, and only in the second place on cost efficiency programs. There is less pressure to lower costs as the selling price is high. With a parsimonious use of fixed assets, the ROE can be leveraged.

The denominator of this measure consists of value added, not sales, since this allows a better comparison between the firms within the brewing sector. Interfirm sales inflate the output measured in terms of sales but not if measured as value added. The appropriation cost of the fixed tangible assets is used as the numerator.

The *nonfinancial assets turnover* captures the effect of trade-offs between asset utilization and operating costs (delivery time, customer service, and quality considerations may be considered) (Porter, 1985: 84). A large-scale firm may have low operating costs but less asset turnover than a small one, depending on the strategy followed, explicit or implicit. The financial assets do not rotate via sales, so they cannot be included in this measure. Nonfinancial assets (used here as an accounting term) are composed of formation expenses, intangible assets, tangible assets, stocks and contracts in progress, amounts receivable within 1 year and deferred charges and accrued income.

Gross working capital intensity is a measure of the resource commitments to inventories, to amounts receivable and cash. These elements are important for a differentiation strategy and for flexibility. Some brewers are prepared to commit a large amount of money to inventories in order to assign a *quality* label to their brands. Other brewers commit few resources to stocks and concentrate on quick movement from production to sales. Large credit periods can be used as an element of after-sales service, and thus become an element of a differentiation advantage.

The number of *new brands* is a measure of the resources committed to (product) *innovation*. The number of new brands was asked for during

Variables	Operational definition
5. Fixed capital intensity ^a	$\frac{\text{Gross fixed assets}}{\text{Value added}}$
6. Nonfinancial assets turnover ^a	$\frac{\text{Sales revenues}}{\text{Total non - financial assets}}$
7. Variable costs ^a	$\frac{\text{Operating costs} - \text{depreciations} - \text{personnel costs}}{\text{Sales revenues}} \cdot \left(1 - \frac{\text{number of workers}}{\text{total employment}}\right)$
8. Gross working capital intensity ^a	$\frac{\text{Gross working capital}}{\text{Value added}}$
9. New brands ^b	Count
10. Advertising ^c	Advertising per sales
11. Export ^b	% of total sales abroad
12. Investment intensity ^a	$\frac{\text{Capital expenditures}}{\text{Sales revenues}}$
13. Own products ^b	% of own products per sales

^aFinancial statement data are needed for this ratio

^bQuestionnaire data are needed for this measure.

^cData provided by Media Marketing Belgium.

the interview or was based on secondary data. 'New' is operationalized as 'launched since 1983 and still existing in 1988.'

Advertising intensity is supposed to be the single best indicator of a differentiation strategy (Harrigan, 1985: 64; Bettis, 1981: 390; Varadarajan, 1985: 359; Johnson and Thomas, 1987: 351; Schendel and Patton, 1978: 1616; Hergert, 1987: 30). Advertising can be used to create a unique position in the minds of customers, which Porter (1980: 127) calls 'brand identification,' to implement a pull strategy or to signal product quality. The advertising expenses data were obtained from Media Marketing Belgium. This is a private agency specializing in gathering data on the advertising expenses per brand.

Export intensity was operationalized as the percentage of the sales revenues from exports, a percentage which was asked for in the questionnaire. *Investment intensity* is supposed to have a positive relationship with innovation (product or process). The *own product intensity* is operationalized as the percentage of the sales derived from self-made output. The extent to which the firm operates as a real brewer as opposed to a wholesaler of beer has important strategic conse-

quences. A low ratio places high constraints on the power of the firm. A low ratio may create ambiguities in the mission statement. A low ratio hampers the distinctive profile of the firm relative to its competitors. *The variability of costs* is measured with a proxy.⁹

Performance measurement

For testing the formal research hypotheses stated above, a risk-adjusted profitability measure was operationalized (see Table 6). A commonly used profitability measure is return on assets (ROA). Here, as the focus is on *intrinsic* profitability, a risk-adjusted ROA is calculated before taxes and debt charges. ROA is taken before taxes to exclude tax policy considerations and differences in tax rates. ROA is computed before debt charges to cope with differences in capital structure. A risk-adjusted measure is needed, for the data should not be confounded with differences in risk exposure. By adjusting ROA for risk

⁹ Fixed costs are used as a proxy for sunk costs (i.e., irreversible investments in firm-specific assets with low salvage values) and captured with the fixed capital intensity measure.

Table 6. Operationalization of the performance variable

Variable	Operational definition
Risk-adjusted return on non-financial assets (ROAra)	$ROAvar = \sum_{t=Rb}^{88} ROA_t - ROA_{t-1} $
(= intrinsic profitability)	$ROAra = \frac{ROA}{ROAvar}$

exposure, it is expected that the 'hard core' of the performance can be observed.

First, the average ROA is computed by dividing the (average) gross operating profit in the numerator by the (average) amount of non-financial assets.¹⁰

Second, a risk measure is computed. A commonly used measure of risk exposure is the standard deviation of ROA about its temporal mean (Cool, Dierickx, and Jemison, 1989: 519; Cool and Schendel, 1987: 1112; Miller and Bromiley, 1990). We decided not to use the standard deviation as the 4-year period is seen as too short to compute standard deviations. Thus, the measure of ROA variability as proposed in Table 6 is used in this paper as a proxy for risk.¹¹

Finally, the risk-adjusted ROA measure is computed by dividing the 4-year average ROA by the variability of ROA during the period of investigation (1985–88) (see Table 6). This weighting of the ROAs with the variability of the ROAs has the effect of enlarging the range of the (intrinsic) profitability data observed in the sample: unstable results are deflated while stable results are augmented. It is clear that two firms with the same average ROA may face totally different situations: one firm attains this result in the midst of a turbulent environment; the other gets the same result in a stable environment.

¹⁰ ROA is a commonly used performance measure in strategy research. In other research, however, the return on *total* assets is used in most instances. In the present study, ROA is computed on *nonfinancial* assets, so as to avoid the potential influence of participations (though this is not a serious problem in the brewing industry).

¹¹ The absolute value of the differences in ROA between each pair of two succeeding years are totalled per firm (see Table 6). Elsewhere, the variability in ROA has been computed as the sum of the absolute differences between the 4-year average and each year's ROA (Hambrick, MacMillan and Day, 1982).

Analysis

In a first stage, a factor analysis (principal components extraction method) was performed on the full set of variables to reveal the underlying dimension hidden in the variables and to remove multicollinearity. The factor analysis was performed on the full set of variables at the same time because scope also has implications on the competitive advantage potential and vice versa. The factor scores per dimension per firm were then computed and stored in the data base. *It was expected that one of the resulting factors should reflect the business definition (or scope/scale) dimension.*

In the second stage of the analysis, a cluster analysis (CA) was performed on the factor scores of the factor reflecting this scope/scale dimension to derive the groups of firms with a similar business definition.¹² A cluster analysis was subsequently performed on the factor scores of the remaining factors in a third stage of the analysis.¹³ These remaining factors reflect routes for competitive advantages. The resulting clusters

¹² Cool and Schendel (1987) and Fiegenbaum and Thomas (1990, 1993), among others, also make use of scope variables, respectively to define strategic groups in the pharmaceutical industry and the insurance industry. In contrast to the analytical procedure presented in this paper, they perform a CA on all of the raw variables, scope commitments and resource commitments, at the same time. Compared with the procedure in present research, the tightness of the resulting clusters is presumably lower from the viewpoint of business definition despite the inclusion of scope variables. The inclusion of scope variables is a prerequisite but not a sufficient condition to form tight clusters of firms really competing against each other. The absence of a preliminary factor analysis may even distort the CA results if multicollinearity between the variables exists.

¹³ As only one SSG had sufficient cases, this third stage could only be applied on the second SSG (SSG2, see above).

within a scope group can be denoted as strategic groups.

Since it has been established that Ward's method best uncovers the 'natural structure' in the data among the class of hierarchical cluster algorithms, this agglomerative method was preferred (Punj and Stewart, 1983; Lawless and Finch Tegarden, 1991; Cool and Schendel, 1987; Van Kenhove, 1989).¹⁴ For testing the cluster significance, the Kruskal-Wallis analysis of variance is used. This method is appropriate here since the data are ratios and the number of cases is rather small, so normal distribution properties cannot be expected. The Kruskal-Wallis analysis is a distribution-free nonparametric test (Van Der Zwan and Verhulp, 1980: 721).

RESEARCH RESULTS

When using the stopping rule that the eigenvalue must be greater than one, the factor analysis revealed a 5-factor solution to be appropriate (see Table 7). However, as the cases-to-variables ratio was rather small, a jackknife procedure was started to test the stability of the model. The

Table 7. Factor analysis of the strategic variables: Eigenvalues and variance explained

Factor	Eigenvalue	Pct of Var.	Cum. pct
1	2.96028	22.8	22.8
2	2.15713	16.6	39.4
3	1.91826	14.8	54.1
4	1.36164	10.5	64.6
5	1.22501	9.4	74.0
6	0.95689	7.4	81.4
7	0.67015	5.2	86.5
8	0.53027	4.1	90.6
9	0.42022	3.2	93.8
10	0.26433	2.0	95.9
11	0.23946	1.8	97.7
12	0.18900	1.5	99.2
13	0.10736	0.8	100.0

¹⁴ The K-means clustering method from the BMDP statistical software package was also used to check the CA results. In the K-means clustering method, the hierarchical cluster solution is only used as preliminary input to reallocate individuals between clusters afterwards, if necessary, to enhance the tightness of the clusters. The CA results from the K-means procedure in BMDP were identical to the SPSS cluster procedure using Ward's method.

jackknife procedure revealed that only the 4-factor model (based on the full sample of 36 cases) could be accepted. From the runs, leaving out one case per time, only two runs differed slightly from the run based on the full sample of 36 cases.

The four factors could be identified as scope and scale (factor 1), corporate identity (factor 2), marketing differentiation (factor 3) and innovative differentiation (factor 4) (see Table 8). The variables volume, number of product types, type of firm (percentage of pils production in total output) and channel control all load on the first factor, *scope/scale*, as expected. The negative loading of investment intensity may signal a strategy of asset parsimony, for example the efficient use of fixed assets. The negative loading of working capital intensity signals a striving for efficient use of working capital. All in all, this *scale/scope* dimension seems to reflect some cost control as well. The variables loading on factor 1 reveal a positive relationship between scale and scope. The larger the brewery, measured in terms of output volume, the larger its product range is (an element of competitive scope). Larger breweries also emphasize pils production as pils consumption is still the largest market segment. To remain competitive in the pils market, a large number of tied outlets is needed to stabilize output at an interesting level from the viewpoint of costs.

The second factor, *corporate identity*, is considered as a differentiation dimension. The higher the importance of self-made output, the more important is the capital intensity and the investment intensity. The end result is a slow asset turnover, as indicated by the high negative loading of this variable on the second dimension.

The third factor is labeled as '*marketing differentiation*' in light of the high loading of the advertising intensity. The positive loading of the volume variable clearly indicates that larger firms spend more on advertising. The positive loadings of working capital intensity and variable costs are also in line with what can be expected from firms seeking a marketing differentiation advantage.

The fourth factor, *innovative differentiation*, is aimed at creating new product-market combinations. It resembles the prospector strategy of Miles and Snow (1978). The positive loading of channel control indicates that a strong home market supports innovation (e.g., new brands or

Table 8. Factor matrix of the strategic variables

Variable	Factor 1 Scope/scale	Factor 2 Corporate identity	Factor 3 Marketing differentiation	Factor 4 Innovative differentiation
Volume	0.82963		0.30481	
No. of product types	0.82278			
Type of firm	0.75405		0.34732	-0.35525
Channel control	0.63196			0.46102
Asset turnover		-0.83672		
Own product intensity		0.73134		
Fixed capital intensity		0.57057		
Investment intensity	-0.33837	0.56843		0.44411
Advertising intensity			0.84602	
Gross working capital intensity	-0.42998		0.71579	
Variability of costs			0.66160	
Export intensity				0.83884
Number of new brands				0.33240

Notes:

1. Data shown are factor loadings greater than or equal to 0.3
2. The matrix is sorted.
3. Blanks for loadings smaller than 0.3 to enhance readability.

exports). Innovation also goes hand in hand with investment intensity. The negative loading of the type of firm (percentage of pils production) indicates that an emphasis on pils does not stimulate exports or the creation of new beers (of the non-pils type).

The cluster analysis performed on the factor scores for factor 1 (scale and scope) resulted in the delineation of five SSGs (see Table 9). SSG1 consisted of two breweries, Alken-Maes and Interbrew, the two largest breweries in Belgium. SSG2 contains 11 firms and will be analyzed

more profoundly below. SSG3 consisted of 7 firms, SSG4 consisted of 9 firms, while SSG5 consisted of 7 firms. Kruskal-Wallis ANOVA revealed that the SSGs do differ statistically significantly at the 0.05 level on the first factor, scale/scope, but do not differ statistically significantly on any of the other factors (see Table 10). Thus, the grouping is indeed essentially a scale/scope categorization.

Performance does differ statistically significantly (at $p=0.05$ level) between the SSGs (see Tables 10 and 11). Scale and scope are important drivers of competition in the brewing industry, a finding in line with prior empirical research

Table 9. Sample and SSG membership

SSG	Company name
1	Interbrew; Alken-Maes
2	Palm (1); Moortgat (1); Riva (1); Bocker (2); De Brabandere (3); Roman (3); Bios (3); Louwaeghe (4); Slaghmuylder (4); Eupenoise (4); Huyghe (5)
3	Clarysse; Bosteels; Sterkens; Orval; St Bernard; De Keersmaker; De Ryck
4	De Troch; Cantillon; De Gouden Boom; Timmermans; Van den Bossche; D.D.B.; Vander Linden; Lindemans; Achouffe
5	Verhaeghe; Facon; De Koninck; Lefebvre; De Smedt; Van Honebrouck; Rodenbach

Note: For SSG2, the numbers in parentheses refer to SC membership.

Table 10. Kruskal-Wallis one-way ANOVA between SSG: Chi-square statistics

	Chi-square	Significance
Scale and scope	32.9595	0.0000 Sign. at 0.001 level
Corporate identity	2.8438	0.5843 n.s.
Marketing differentiation	6.1348	0.1893 n.s.
Innovative differentiation	3.6928	0.4492 n.s.
Risk-adjusted ROA	10.3861	0.0344 Sign. at 0.05 level

Table 11. Descriptive statistics of performance (risk-adjusted ROA) of SSG

	Percentiles				
	50				
	Min.	25	(median)	75	Max.
Pooled sample	0.0151	0.5685	1.3568	2.2035	11.6123
SSG1			1.0713		
SSG2	0.0219	0.7482	1.4022	2.0941	5.7555
SSG3	0.6407	0.8256	1.7864	1.9756	3.7753
SSG4	0.0151	0.1786	0.3386	1.1878	2.5914
SSG5	0.8697	1.1367	2.2673	3.8109	11.6123

concerning the brewing industry (Tremblay, 1985, 1987; Johnson and Thomas, 1987; Mark, 1974; Rysenaer, 1990; Müller and Schwalbach, 1980; Tremblay and Tremblay, 1988; Walsh, 1982; McGuinness, 1980; Kelton and Kelton, 1982; Hatten and Hatten, 1985; Schendel and Patton, 1978; Hatten *et al.*, 1978; Hatten and Schendel, 1977. According to the resource-based approach to strategy, heterogeneity of firm resources and capabilities, as a result of a more or less consciously followed acquisition or development path, rooted in cognitive beliefs about the industry environment, is the prerequisite for generating rents in excess of the cost of capital and thus for performance differences between groups of firms. For these rents to be lasting, the firm's stock of resources and capabilities should be durable, imperfectly transparent, imperfectly transferable and uneasy to replicate (Grant, 1991; Barney, 1991). In the absence of lasting heterogeneity in firm resources and capabilities, the market is contestable which leads to zero economic profits. Though the causes of success in the brewing sector in Belgium may be quite obvious to industry insiders (e.g., channel control in combination with size, product types), the unease in replicating this control, given the limits of the market and a fear of retaliation by the larger firms, may explain that this heterogeneity exists and is lasting.¹⁵

Within SSG2, the cluster analysis, performed

¹⁵ This is not to say that these differences in asset stocks will remain forever. Prior research has shown that industries evolve through periods of group stability occasionally alternating with periods of environmental discontinuity (Cool and Schendel, 1987; Fiegenbaum and Thomas, 1993).

on the factor scores per firm for the second, third and fourth factors, identified five SGs. The five groups can be defined and described as follows:

SG1 (Strategic Group 1): *differentiators*: firms with a heavy emphasis on the pursuit of a marketing differentiation advantage and a more than average pursuit of innovation.

SG2: *specialist*: one firm with a high score on corporate identity, an average score on innovative differentiation, but scoring below average on marketing differentiation.

SG3: *defensive marketing differentiators*: more than average marketing differentiators, but rather conservative as far as innovation is concerned.

SG4: *reactors*: low pursuit of marketing differentiation as well as innovative differentiation.

SG5: *prospector*: this firm emphasizes innovation.

The 11 firms of SSG2 do *not* use mixes of the three routes to strategic advantages *randomly spread* within the competitive space. Instead, particular bundles of advantages seem to be viable/attainable/defensible: the firms 'cluster together' in five groups. These five strategic groups differ statistically significantly on the third (marketing differentiation) and fourth factors (innovative differentiation), not on the second factor (corporate identity) (see Table 12). However, these five strategic groups do not differ statistically significantly, at the 0.1 level, on the performance variable (see Table 12).¹⁶ This may

¹⁶ This finding is in line with the results of many previous studies where no differences in performance could be found. In previous research, classification is based on 'where to compete' and 'how to compete' in one run. The end result is not the same as when classifications are performed in the sequence described above. Negative aspects of clustering in one run may be that (1) clusters are not as tight as in the procedure followed here; and (2), as a consequence, a strategic group might consist of firms competing in the same way, but not necessarily against each other. The fact that in much previous SG research no performance implications of SG membership could be found may be due to the one-step procedure these researchers were using. In the present research, no performance differences could be detected with the one-step procedure (results not reported).

mean that mobility barriers shielding a strategic group are, contrary to mobility barriers protecting SSGs, easier to circumvent. SGs are more contestable than SSGs, hence performance differentials cannot last.

CONCLUSIONS

This study shows that mobility barriers surrounding SSGs give most protection which leads to significant performance differentials. It seems that size (scale and scope) is a strong mobility barrier and isolating mechanism. Size on its own may generate monopoly rents linked with market power. The correlates of size, for example the cost structure, ad spending, tied outlets, brand reputation, generate rents of the Ricardian and Schumpeterian type (Mahoney and Pandian, 1992).

Mobility barriers between SGs are not accompanied by performance differentials. SGs are subgroups within an SSG depending on the mix of three strategic advantages, which they pursued deliberately or not. As such, an SG is a group of firms with communality in the scope (strategic breadth) and communality in their way of competing. It can be argued that, as performance differences do not exist, mobility barriers protecting SG offer only moderate protection against intruders from firms already within the SSG but belonging to another SG. An SG seems to be more contestable than an SSG. If there are performance differences between SGs, shifts between the SGs in the direction of the SG with the highest performance may occur, which enhances competition within this SG and absorbs the economic rents.

Within an SG, performance differences

Table 12. Kruskal-Wallis one-way ANOVA between SG: Chi-square statistics

	Chi-square	Significance
Corporate identity	3.8788	0.4227 n.s.
Marketing differentiation	9.2121	0.0560 sign. at 10% level
Innovative differentiation	8.6061	0.0717 sign. at 10% level
Risk-adjusted ROA	7.3939	0.1165 n.s.

Table 13. Descriptive statistics of performance (risk-adjusted ROA) of SG

	N	Min.	Median	Max.
Pooled	11	0.0219	1.4022	5.7555
SG1	3	1.3195	1.5460	5.7555
SG2	1		2.0941	
SG3	3	1.4022	1.4150	4.3923
SG4	3	0.4151	0.7482	1.0394
SG5	1		0.0219	

between firms (see Table 13) reveal the existence of isolating mechanisms. The presence of a single-member SG may indicate that some firms use a unique mix of resources and capabilities aimed at a sustainable competitive advantage. The presence of a single-member SG can also be a sign of luck, chance or hazard, or a sign of the movement of a firm from one SG towards another.

Our findings show that SSGs exist in the sense that they conform to common sense and that SSG membership does have performance implications. One of the original motives of the SG concept was to 'patch up' the structure-conduct-performance paradigm. In particular, the SG concept was intended to provide increased explanatory and predictive power on performance. Several studies have not found performance effects for SGs and some have argued (for this, and other reasons) for the abandonment of the SG concept. However, even where there are no performance effects for SGs there are performance effects for SSGs. SSGs capture mobility barriers more effectively. Thus, a call for the abandonment of the strategic (scope) group concept may be premature. Nevertheless, the empirical findings need confirmation in other industries. The findings should, however, urge managers to carefully (re)consider where they are competing *within the industry*.

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