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**Article**

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# Effects of the M&A Wave in the Global Brewing Industry 2000-2010

## Auswirkungen der Welle von Fusionen und Übernahmen (F&Ü) in der internationalen Brauindustrie in den Jahren 2000 bis 2010

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### Abstract

*The brewing industry has experienced massive changes over the last decade. Industry concentration has increased dramatically, and the leading brewing groups have globalised their operations across virtually all continents. Based on a major data base the paper traces some causes and assesses the main effects of the M&A strategies in the global beer industry. The results verify that the 4 large acquiring brewing groups are more efficient than a control group of 200 large breweries but they have not performed significantly better in the period. This gives some evidence for the market power hypothesis which seems to work in the brewing industry in this period.*

### Key words

*M&A policy; globalization; brewing industry; market power; merger effects*

### Zusammenfassung

*Im ersten Jahrzehnt dieses Jahrhunderts setzten sich in der internationalen Brauindustrie tiefe Veränderungen durch. Die Unternehmenskonzentration stieg dramatisch, und die führenden Brauereigruppen globalisierten ihre Aktivitäten und sind heute auf fast allen Kontinenten tätig. Basierend auf Informationen aus der Orbis-Datenbank beschäftigt sich dieser Beitrag mit einigen Ursachen der F&Ü-Strategien und insbesondere mit deren Auswirkungen. Die Untersuchung bestätigt, dass die vier großen und F&Ü-aktiven Unternehmensgruppen zwar effizienter sind als die 200 großen Brauereien in der Kontrollgruppe, aber keine deutlich bessere Performance aufweisen. Die Ergebnisse der Untersuchung unterstützen die aus der Literatur der industriellen Organisation bekannte Marktmacht-Hypothese.*

### Schlüsselwörter

*F&Ü-Politik; Globalisierung; Brauindustrie; Marktmacht; Auswirkungen von Fusionen*

## 1 Introduction

Beers constitute the largest market for alcoholic drinks measured in quantities and the last decade has seen a considerable concentration in the global industry where the top four brewery groups account for more than 40% of the production. The increasing concentration has been caused by mergers and acquisitions rather than by organic growth, and consolidation is likely to continue, if at a somewhat lower speed.

The industry structure has been changed by aggressive policies of the top ranking breweries, and by acquiring Anheuser-Busch in 2008, Interbrew assumed a dominating role with a close to 20% global market share. In 2000 Anheuser-Busch had a global market share (in volume) of 8.8% and Interbrew one of 4.0%. In 2009 the combined 12.8% of the world market had grown to 19.5%. Similarly, Miller Brewing and South African Breweries commanded 3.6% and 3.3% respectively with a combined market share of 6.9% back in 2000. Nine years later the combined share had grown to respectable 9.5%. Heineken and Carlsberg had grown from 4.3% to 6.9%, and from 1.7% to 5.9% over the same period.

The aggressive merger and acquisition policy by the now dominating brewing groups have dramatically changed the competition environment in the global brewing industry and table 1 gives a more complete picture by the concentration figures for the years 2000, 2004 and 2009. The 5 largest breweries have in 9 years increased their world market share from 25.4% to 46.3% close to a doubling and the 10 largest breweries now hold about 60% of the total world market.

**Table1. Concentration rates CR 5 and CR 10 in the global brewery industry (by volume)**

Year	CR 5	CR 10
2000	25.4%	37.3%
2004	36.2%	48.0%
2009	46.3%	59.3%

Note. The two concentration measures indicate the market share of the 5 or 10 largest companies in the world wide industry.

Source: EUROMONITOR INTERNATIONAL (2010)

It was not least the opening of several major markets like China, Russia, Eastern Europe and India just before the turn of the century, which shaped the opportunities of globalization. Some leading breweries at that time grasped the opportunity and through an aggressive acquisition strategy become leading global players. The restructuring of the brewing industry in this short period puts a number of questions on the table. What are the motives of the main players behind these aggressive merger and acquisition strategies? What is the impact of these merger and acquisition strategies on the performance of the breweries and the performance of the whole brewing industry? These questions are highlighted in the following by use of a large company database, which offers an excellent opportunity to study the effects of merger and acquisitions strategies.

The article throws some light on the relative impact of M&A versus organic growth strategy on company performance in terms of market share. It also addresses the link between M&A activity and profitability and further implications for self sustained M&A waves in the future. The econometric method used is a simple OLS estimation controlling for country heterogeneity through fixed effects. A dif-in-dif analysis is applied in order to assess the market power hypothesis. The next part discusses from a theoretical point of view the main economic effects following a horizontal merger and the existing empirical evidence. Part 3 draws a picture of the largest surviving breweries and their globalization strategies in this period and discusses future possibilities for further restructuring of the industry. Part 4 analyses the impact of the M&A wave on growth and performance of the four largest brewing groups and compare their results with a control group of other breweries. Part 5 concludes and discusses the main results.<sup>1</sup>

## 2 Some Theoretical Consideration

Horizontal mergers may have two main effects in the market. First, the market power hypothesis states, that the reduced number of competitors is likely to induce a higher degree of collusion among the supplier with an increase in prices and profits in the industry. There are a large number of empirical studies starting with BAIN (1951) that has verified a positive relationship between profitability and market concentration and

market shares. Second, the efficiency hypothesis states, that a merger may release some cost savings through synergies at different levels of the corporate organization. Cost savings come often through economies of scale in different part of the business and through multiplant operation.

The empirical studies in general verify that a horizontal merger releases some economic gains to the companies involved but it is unclear whether the acquiring company reaps any of the gains. In a large event study of more than 937 acquisitions of listed firms in the US, AGRAWAL et al. (1992) found that the acquiring firms on average suffer a wealth loss of about 10% when correcting for firm size bias. ROLER et al. (2001) survey a large number of studies and find average gains for the acquired firm of 30% whereas the acquiring firms on average just break even. This verifies that the owners of the acquired firms on average walked away with almost all the net benefit from the merger.

The price effect of a merger is unclear as the cost savings can reduce the price whereas the higher degree of collusion may increase the price. Therefore a number of studies have focused on the price effects of mergers to examine more directly the market power hypothesis. GUGLER et al. (2003) find some evidence by studying 15,000 mergers worldwide from 1981 to 99 where half of the cases experience rising profits and falling sales consistent with the market power hypothesis. However, WEINBERG (2007) surveys 9 studies testing for pre and post merger prices and finds that only a minority of mergers resulted in higher prices.

The market power hypothesis offers a clear motive for firms M&A strategy but DEMSETZ (1973) gives an alternative explanation by the efficiency hypothesis. The most efficient firms would gain market share through low cost competition and they would probably also be the most able firms to acquiring other firms, and there is a lot of evidence showing that the acquiring firms in general are more efficient than the acquired firms in terms of market growth and profitability. DEMSETZ found in his study, that only the largest firms earn high profit in concentrated industries, which was in accordance with the efficiency hypothesis but not the market power hypothesis. The efficiency hypothesis has been verified by a number of other studies, see e.g. SMIRLOCK et al. (1984) or ECKARD (1995). Also the competition policies in EU and US have been adapted afterwards so that efficiency gains now can be used to justify horizontal mergers.

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<sup>1</sup> The authors extend their gratitude to two anonymous referees for a number of useful suggestions.

Finally, mergers can also be a result of failing firms where it is a preferred alternative to a bankruptcy process which involve large legal costs. TREMBLAY et al. (1988) studied the performance of acquiring and acquired breweries in the US from 1950 to 1984 and found growth rates were significantly lower in the acquired breweries. GREER (1993) further found that the acquiring breweries in the US have performed poorly and lost market shares to Anheuser-Busch which has pursued a strategy of organic growth. The failing firm hypothesis seems to explain the restructuring of the national brewing industries right after the World War II.

### 3 Strategy and Globalization – an Overview

The “globalization” – that followed upon the opening of several major markets like China, Russia, Eastern Europe and India – has greatly impacted the international beer industry. While in 2000 most breweries were focused on the home market and a limited number of neighboring countries, there has been a race among industry leaders for global reach.

Table 2 shows a matrix of the leading brewing companies in 2000 and 2009 with regional market shares above 5%. In the table all cases are indicated in which a brewery has at least five per cent market share of the regional beer market. The table shows how fragmented the world market for beers was in year 2000 with only local market leaders and no global leaders. Of the 10 largest breweries observed in 2000, only two were present in more than one of the 6 regional markets: Heineken in three regions and Inbrew in two. All eight remaining companies were limited to having significant presence in only one region.

The last four rows of the table show how radically a decade of aggressive merger and acquisition strategy has changed the global picture. The four leading breweries have picked a strategy of going global and are now present in several local markets. A-B InBev is the leading global

player and present in 5 of the 6 regional markets. SABMiller is present in four regional markets, Heineken in three and Carlsberg in two. The number of regional markets that the four largest breweries have challenged also reflects to some extent the current size of the companies. While in 2000 only Anheuser-Busch had a *global* market share in excess of 5%, now all of the four leading companies command above 5% of the world market. This globalization is reflected in tough regional competitions where Eastern Europe has become oligopolistic, and Western Europe is much more concentrated than previously, with C3 moving from 0.25 to 0.40.

The restructuring of the brewing industry following the Second World War with increasing concentration in the individual national markets was to a large extent driven by the emergence of national beer brands following the invention of broadcasting. As expenses for branding to a large degree are fixed costs and independent of the production scale, the larger brands earned a competitive advantage. For a discussion of the main drivers behind the emergence of these large regional breweries, see ADAMS (2006). While the innovation of broadcasting triggered the regional brands, the political changes that opened the possibilities of going global may at the same time have released some advantages related to economies of scale and scope for a global competitor. As beer often has to be produced locally due to high distribution costs, there is still economies of scale to be

**Table 2. Regional market shares above 5% for leading breweries in 2000 and 2009**

	Asia	Eastern Europe	Middle East/Africa	Western Europe	Latin America	North America
<b>10 leading breweries in 2000</b>						
Anh.-Busch						45
Amr. Bevr.					30	
Heineken		7	8	11		
Inbrew		11		8		
Miller						18
S. African		11	35			
Coors						11
Modelo					14	
Asahi	8					
Kirin	7					
<b>4 leading breweries in 2009</b>						
A-B InBev	8	17		11	35	50
SABMiller		15	39		12	16
Heineken		17	18	17		
Carlsberg		25		11		

Source: EUROMONITOR INTERNATIONAL (2010)

reaped in management, technology and branding of a global competitor.

Table 3 takes a closer look at the acquisition strategy of the four leading breweries since 1997 using the Orbis<sup>2</sup> database of merger and takeovers. In the period since 1997 the four companies have made a total of 57 acquisitions amounting to 82 billion EUR. A-B InBev has been the largest player in this strategy with 21 acquisitions amounting to 56 billion EUR, SAB-Miller and Heineken have made 15 acquisitions each amounting to about 10 billion EUR and Carlsberg only executed 7 acquisitions amounting to 7 billion EUR in the period.

The largest amounts of deals took place in the Americas, while Western and Eastern Europe accounted for 12 respectively 10 billion EUR. The four leading breweries are all headquartered in Western Europe from where they became global through acquisitions. A-B InBev misses the Middle East, Heineken misses Asia and Carlsberg is conspicuously absent from both the Middle East and the Americas. Carlsberg is therefore less global but probably well positioned for future growth.

A distinction can be made between mature markets and emerging markets. The former are close to the peak of the Product Life Cycle or on the declining part of it, while emerging markets experience growth. Mature markets typically consume beer of a higher quality (and margin), while emerging markets are characterized by growth in volume and in a long-run perspective by increasing product value. The distinction is not quite unambiguous, as some markets have segments of both kinds (Brazil may be a case in point). Table 4 gives an impression of major markets of both kinds, and contributes to our understanding of the leading groups' fight for global reach.

The table compares the seven leading markets in each category. Among the top-four national markets, three belong to the emerging ones which illustrates the importance of the "new" markets. The Chinese market is now five times larger than the German market and close to twice the American. Further, expected

**Table 3. Acquisitions of the four leading breweries worldwide (in mill. EURO)**

	A-B InBev	SABMiller	Heineken	Carlsberg	Total
Asia	786	199		397	1,382
M. East		718	228		947
EEU	1,861	837	1,879	5,361	9,938
WEU	7,614	1,543	1,828	1,225	12,210
Latin A.	4,867	6,628	4,881		16,377
North A.	41,174	167	237		41,578
<b>Total</b>	<b>56,303</b>	<b>10,094</b>	<b>9,053</b>	<b>6,982</b>	<b>82,432</b>

Notes: the figures are all deal value in mill. EURO. Only deals above ½ mill. EURO are included.

Source: the Orbis company database covering more than 8,000 breweries worldwide.

**Table 4. Market volume and growth potential in selected markets**

Country	2009 mill. liters	Growth 2009-2014 mill. liters	Beer consumption liters per capita 2009
<b>Mature markets</b>		<b>(150)</b>	
USA	25,200	350	82.0
Germany	8,800	(200)	107.2
Japan	7,000	(200)	55.2
U.K.	5,000	(300)	81.6
Canada	2,400	200	72.4
Australia	1,900	200	86.9
France	1,900	(200)	30.2
<b>Emerging markets</b>		<b>22,400</b>	
China	43,000	18,200	32.3
Brazil	11,700	1,500	59.4
Russia	10,900	400	77.6
Mexico	6,500	700	59.5
Ukraine	2,400	(200)	52.4
Vietnam	1,600	700	18.5
India	1,500	1,100	1.3

Notes: figures have been rounded off.

Source: EUROMONITOR INTERNATIONAL (2010)

volume growth in the seven emerging markets over the next 5 years approaches the total size of the American market in 2009, while consumption in mature markets is expected to decrease slightly. Part of the Product Life Cycle for beer is explained by substitution to other alcoholic drinks. Spirits like vodka and gin are quite cheap to produce and are substituted by beer when income per capita begins to grow in emerging markets while in mature markets beer is substituted by wine with decreasing beer consumption.

The figures for the growth potential in the beer market in table 4 illustrate how important it is that the breweries have chosen the right direction in their globalization strategy. Taking a look at the leading breweries' exposition to the emerging market, it seems that

<sup>2</sup> Orbis is a large company database product including data from various sources.



SABMiller and Carlsberg have the best strategic positions. As the smallest of the large four groups, Carlsberg has a large part of its revenue from Eastern Europe and Asia. Also SABMiller has a large share of its revenue from emerging markets in Asia, Africa and Latin America, and this position in the emerging market could explain the company's relatively high organic growth in the period since 2000 as pointed out below. In contrast, A-B InBev now has its main revenue source from the American market while Heineken has a wide global coverage not focused on emerging markets.

Concerning further consolidation in the industry the sheer size of the largest brewery groups, in combination with legal barriers to M&A activity, makes further jumbo take-overs fairly unlikely. Filling the geography gaps, then, may be obtained by alternative avenues. FEMSA was a slow growing Mexico based brewery covering Latin America (particularly Mexico and Brazil) and with a recognizable export to the USA. After having negotiated with Kirin, SABMiller and Heineken, a deal with the latter was announced in early 2010. The beer unit of FEMSA was acquired towards a 20% equity stake in the Dutch family company that allowed the family to just keep control of the firm. Thus, Heineken managed to cover one of its important geographical holes and offset, in part, the adverse tendency in its traditional European main markets. A final strategic advantage for Heineken has been that other major brewery groups without a foothold in Latin America now find it much more difficult to penetrate Middle and South America by a single take-over.

By volume and the prospect for future growth, it is no wonder that China has been the center point in much strategic planning. The vast market is dominated by local players, but a number of the leading local breweries have foreign ownership shares, for instance China Resources (SABMiller 49%), Tsingtao (Asahi 20%), Zhuijiang (A-B InBev 25%), Chongqing (Carlsberg 30%) and Kingway (Heineken 21%). Foreign *brands* such as A-B InBev's and Carlsberg's account for 14.2% of the volume, while joint-ventures and ownership shares account for roughly 15% of the market. There seems to be space for expansion, but local breweries are very quick in tapping technology from partners, and Chinese business policy can be quite tricky.

## 4 Effects of the M&A Wave

Having verified the large M&A wave in the last ten years and the resulting restructuring of the global beer market this part analyses and compares the effects for the by now four leading brewing groups with the rest of the brewing industry. Table 5 shows the results of the merger and acquisition strategy by the four leading breweries, which were about the same size in 2000. The acquisition period has dramatically changed the situation and A-B InBev became the market leader with the combined size of SABMiller and Heineken in turnover and has grown by more than 300% over the period. Also SABMiller experienced a very fast growth, but from a lower level in 2000.

**Table 5. Growth and M&A strategies of the four leading breweries**

	Turnover Bill. EURO		Growth in Turnover	Acquisitions Bill. EURO	Ratio of acq. to Turnover in
	2000	2009	2000 - 09	1997 - 10	2000
A-B Inbev	5.9	26.0	323%	56.3	9.54
SABMiller	3.4	14.7	300%	10.1	2.97
Heineken	7.0	13.6	110%	9.1	1.45
Carlsberg	4.8	8.0	67%	7.0	1.46

Source: the Orbis company database covering more than 8000 breweries worldwide.

The last two columns list the size of the acquisitions made of the four breweries in the period since 1997 and relate the total bill for acquisition to the turnover in 2000. The relative amounts spent on acquisitions definitely correlate with the growth of the companies. Thus the strategy of acquisition has been a lead way to increase the market shares of the breweries. However, it has not been equally efficient across the four breweries. Comparing A-B InBev and SABMiller they hold about the same growth rate over the period but SABMiller's accumulated deal value of acquisitions are only 1/3 of A-B InBev's when measured relative to turnover in 2000. Therefore, SABMiller has been more successful in organic growth compared to A-B InBev. Also Heineken has had a higher organic growth compared to Carlsberg as the accumulated acquisition rates are the same but the growth rate much higher for Heineken. The higher organic growth for SABMiller and Heineken could be a consequence of their strategic positions in regions with higher growth in beer consumption but it could just as well be a result of a more efficient production and market management.

The four leading breweries have played a major role in the restructuring of the global brewing industry but has this acquisition strategy also made a payoff to the stake holders of these companies? To highlight this question, table 6 takes a look at some of the key financial results for the four companies in the acquisitions period from 2000 to 2009. The figures are compared to the average for the 200 largest breweries worldwide in the Orbis database, most of them regional in market coverage.<sup>3</sup>

Measuring profitability by the Earning Before Interest and Taxes (EBIT), A-B InBev and Heineken have a better performance than the large regional breweries, SABMiller is only marginally better and Carlsberg has a lower earning. However, concerning the return on total assets and the return on shareholder funds, SABMiller outperform the 3 other while Heineken still earns a higher return than the 200 largest breweries on average.

The fact that the company which has the highest growth through acquisitions, A-B InBev, also posts a low return on the assets poses some questions to the acquisition strategy. An acquisition strategy may be a fast but expensive road to growth. If market shares are bought at a high price, the strategy will put a lot of goodwill on their books and thereby reduce the return on assets and the return on the shareholder funds. The last column of table 6 verifies that this could be the case for A-B InBev as its book value of assets per employee is rather high. One interpretation of the low return is, that the local share holder has reaped most of the benefit from the synergies emerging from the acquisitions only leaving a normal return to the acquirer. These results for the brewery industry are in line with the general empirical evidence of the performance of acquiring firms post the acquisitions listed above. An alternative interpretation could be, that it may take some time to reap the benefits of the globalization strategy and it would pay off in the future.

An alternative method to examine potential synergies in the brewing industry, which could be reaped by further acquisitions and restructuring, would be to determinate the effects from economies of scale on the

**Table 6. Performance of the four leading breweries, 2000 to 2009**

	EBIT margin	Return Total Assets	Return on shareholder funds	Total Assets per employee
A-B InBev	19.3	6.9	17.4	367
SABMiller	12.9	11.6	32.8	203
Heineken	17.4	9.4	19.7	284
Carlsberg	10.7	5.1	19.4	269
Very large breweries*	12.6	7.6	18.5	272

Notes: \* the largest 200 breweries excluding the 4 largest in 2009.  
Source: the Orbis company database covering more than 8000 breweries worldwide.

performance of the industry. The fast development in information and communication technologies in recent years has probably induced scale effects in production, distribution and administration. The centralization of information makes further automation possible in production planning, logistics, electronic ordering and payments and enhances the quality of the information available for the managers' decision at all levels. Also the development in broadcasting and branding over the internet may contribute to increasing economies of scale in marketing and branding.

In order to examine whether larger breweries are more efficient the following models has been estimated, where a beta coefficient larger than zero proves that larger breweries are more efficient:

$$(1) \text{ Performance}_i = \alpha + \beta \text{ Size}_i + \gamma X_i + u_i$$

The size of the breweries is measured by the number of employees, and four different performance measures have been used in the estimation.  $X$  is a vector of other control variables and  $u$  is the normal error term.

The database used in the estimation is Orbis which holds information on more than 8,000 breweries worldwide and facilitates a study of their efficiency. However, a large part of the breweries are fairly small and information is also missing for key variables for a large number of the smaller firms. Therefore, a sample of 347 breweries are used, excluding breweries with less than 50 employees and an EBIT below or equal to zero or greater than 50%. Table 7 shows some estimates of the scale elasticity from four models where all variables are in a log transformation, i.e. the estimated coefficients are elasticities.

The first model estimates the labour productivity measured with the turnover per employee and the estimated size elasticity of 0.122 is positive and significant. This implies that breweries with 100% more

<sup>3</sup> When interpreting the figures in table 6 some caution has to be kept in mind as the differences in the average performance is not exclusively a result of the merger and acquisitions activities. However, the limited number of variables in the Orbis database do not allow for a propensity score matching approach, which could have given a more precise estimate of the effects.

**Table 7. Estimates of the scale elasticity in 2008**

	Turnover per employee (log)	EBIT margin (log)	Return on total assets (log)	Return on shareholder funds (log)
Intercept	3.607* (0.484)	0.532 (0.346)	-1.235* (0.471)	3.126* (0.471)
Employee (log)	<b>0.122*</b> (0.071)	<b>0.117*</b> (0.032)	<b>0.039</b> (0.043)	<b>0.050</b> (0.043)
Solvency (log)		0.218* (0.076)	0.725* (0.103)	-0.227* (0.103)
R-square	0.015	0.054	0.123	0.012
Observations	347	347	347	347

Notes: \* significant at least at the 5% level. All coefficients are OLS estimates.  
Source: the Orbis company database covering more than 8,000 breweries world-wide.

employees also have a 12.2% higher labour productivity on average. This indicates that there may still be scope for some restructuring in the industry where efficiencies of smaller breweries can be increased through mergers to the benefit of their owners.

However, part of the higher turnover per employee could be a result of more capital equipment used per employee in the larger breweries, which besides increasing the turnover per employee also increases the costs per employee.<sup>4</sup> The last three models therefore look at the financial results and introduce solvency as a control variable. The estimated scale elasticity is positive for all three financial performance measures but only significant for the EBIT. As EBIT is earning before interest expenses, it does not include the costs of capital either, and as a result, capital deepening in larger breweries would blow up too. This is probably what happened, as the return on total assets and the return on shareholder funds has a much lower scale elasticity not significantly different from zero. The control variables are significant in all the financial models and turned out with the right sign. Higher solvency has a large effect on the return on total assets, as it reduces the expenses for interests on debts. The significantly higher return on shareholder funds in companies with low solvency is a compensation for the higher risk of bankruptcy associated.

Large breweries seem to be more efficient than the smaller breweries in a technical sense,

but as they use more capital they are only marginally better off in economic performance. Therefore, the possibility for further restructuring seems to be exhausted. However, one has to be careful when interpreting the results. The regression analysis only represents a simple correlation and does not verify anything about the causality between performance and the size of the breweries. If the efficiency hypothesis works in the brewing industry and the restructuring is a result of efficiency advantages the estimated scale elasticity

would over predict the effects of a simple merger without efficiency gains.

Even if there are only small scale advantages to the owner of the breweries, there may still be some advantage in the market through a merger and acquisition strategy as it will reduce the number of competitors and thereby increase market power. However, the higher degree of collusion and prices of beers on the market will also be to the benefit of breweries not participating in merger activities, and this is mainly the smaller breweries. To further highlight this market power hypothesis, table 8 lists the results from a difference in difference approach by comparing the development in performance from 2000 to 2007 of the four largest breweries with the control group of the 200 second largest breweries.<sup>5</sup>

**Table 8. Change in market performance from 2000 to 2007**

	2000	2007	Changes percent
<b>4 largest breweries</b>			
EBIT margin	13.40	16.83	25.59
Return on total asset	9.65	10.27	6.42
Return on shareholder funds	23.77	24.85	4.54
<b>Very large breweries*</b>			
EBIT margin	11.70	13.23	13.0
Return on total asset	6.53	8.55	30.09
Return on shareholder funds	16.46	20.34	23.57

Notes: \* the largest 200 breweries excluding the 4 largest in 2009.  
Source: the Orbis company database covering more than 8,000 breweries worldwide.

<sup>4</sup> Orbis does not hold information on capital used in the breweries. However, technology used and capital intensity may vary across countries, but an estimation with fixed effects for countries does not change the estimated scale parameter significantly, except for the turnover per employed which falls and turns insignificant; this is due to a significantly lower productivity in China and Russia which hold a lot of the smaller breweries.

<sup>5</sup> As company performance is quite sensitive to the business cycle, the beginning and the end year are just before the recession in 2001-2003 and the financial crisis beginning in 2008.



The figures give some evidence for the market power hypothesis as the EBIT margin has increased in the period, also for the control group which reaped the benefit of higher market concentration. Further, their returns on total asset and shareholder funds have increased with 30% and 24% in the period compared to only 6% and 4% for the big four breweries. This again verifies, that the shareholders of the big four breweries probably have paid the bill of restructuring the industry while the shareholders of other breweries have shared most of the return. This is further underlined by the relatively dramatic rise in the EBIT margin for the big four breweries in this period, reflecting the economies of scale they earned through their expansive strategy. However, one has to keep in mind, that investment in M&A is a long run project; even if the relatively large rise in the EBIT margin for the larger breweries cannot cover the investment cost in this period, the opportunity exists that they may harvest some of the return in the future.

The M&A strategies among the leading breweries may have spread also to the rest of the industry and could have affected the returns in our control group through some scale effects. To check for this bias the average size of a brewery in the control group has been calculated and there is no evidence of increasing size and efficiency gain in the period. Contrary, the operating revenue per employed decreased by 15% from 211,000 Euro to 181,000 Euro per employed. In the same period the 4 largest breweries grew by more than 200%, mainly by M&A, and increased labour productivity as proved above.

Finally, a last caveat to the analysis above has to be mentioned. Other competition factors could have changed as well in the period and affected the performance of the leading breweries as well as the performance in the control group. GREER (1971) has documented the importance of advertising and product differentiation for the restructuring of the American brewing industry after World War II. Contrary to the expected impact, that advertising reduces competition through product differentiation, he finds that the increasing concentration in the period from 1947 to 1966 was followed by an escalation of promotion costs which outstripped the price increases and cut into profits. It seems that advertising has been used aggressively by some breweries in their fight for larger market share in the American market in the initial period. IWASAKI et al. (2008) also find a tough competition in the American market using yearly data

from 1950 to 2004, but do not find that advertising has contributed to the concentration of the industry. Whether advertising played a significant role in restructuring of the global brewing industry in the last 10 years has yet to be studied.

## 5 Conclusions and Discussion

On the basis of recent developments in the international brewing industry, the analysis of the M&A behavior of the leading brewing groups raises some general as well as more specific questions. First, in terms of global market share the opening of the international beer market has caused astonishing consolidation among the leading breweries.

Second, the opening has initiated a positioning race between the top breweries. Competitors have weighted organic growth and M&A differently, but it is still too early to draw firm conclusions on the merits of the two growth strategies.

Third, performance measures do not indicate that the four top brewers have done significantly better than a control group of 200 “large breweries”. This finding can be interpreted as evidence for the market power hypothesis and further indicate that scale advantages are emptied at much smaller capacities than those commanded by the top breweries.

Fourth, while figures of increasing concentration indicate that first movers in the industry gained advantages by spotting and exploiting new business opportunities in the gale of globalization, the relative performance of the second and third tier of breweries raises doubt if the concentration drive will continue.

Fifth, in the continued debate between industrial economists whether structure determines conduct, or conduct determines structure, we seem to have a case in favor of the latter. On the eve of globalization, around 1990, the industry was fragmented in predominantly national markets. Political and economic changes opened up for a *global structure*, and the first and fast movers reaped the gains of globalization. Conduct – i. e. strategic behavior – impacted Structure as well as Performance. Performance in terms of (global) market share dominated performance in financial terms.

However, these conclusions should be interpreted with some cautions due to the limited information available for the breweries in the database, which exclude controlling for reverse causality and a proper identification of the merger effects.

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