

# VALUE MANAGEMENT IN WEAKLY GROWING INDUSTRIES AN EMPIRICAL ANALYSIS USING THE CHEMICAL INDUSTRY AS AN EXAMPLE

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## Abstract

In the literature, growth is discussed as a key value lever within the framework of value-based management as it creates opportunities to generate additional free cash flow and thus to increase the value of the company. However, opportunities for high growth rates, for example through technical innovations or the creation of new customer groups, are not equally distributed across industries. Using 61 companies from the chemical industry as an example, it is shown that above average capital market performance is possible also in industries with below average growth rates. The requirement for this to take place is the consistent exploitation of all available levers of value management. In contrast, a pure focus on increasing profitability has not proven to be a sustainable value creation strategy.

**Keywords:** value management, shareholder value, growth strategy, total shareholder return, chemical industry

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## 1. Introduction

The development of new products or services on the basis of technological innovations, the creation of new sales channels or new product or customer segments represent discontinuities in industries that offer additional opportunities for growth to the companies active in these markets. Examples of such industries in recent years include the pharmaceutical industry (e.g. drugs based on new biotechnologies), the automotive industry (e.g. creation of the SUV segment) or the telecommunications industry (e.g. setting up mobile phone networks). From a value management perspective, these industry-specific growth opportunities represent a massive opportunity to generate value; revenue growth is one of the key value management levers for companies. In industries with below average growth opportunities (low growth rates in industry turnover can be used as an indicator) management is challenged to increasingly exploit other value management levers in order to increase corporate value. By using an empirical analysis of the effectiveness of the various value management levers, with the chemical industry as an example, it is shown that a consistent execution of all value levers can compensate for below average industry growth and provide for above average capital market performance.

The next chapter lays the theoretical basis for the empirical analysis. The term “value management” is

briefly defined within the context of the shareholder value approach. The “TSR decomposition” framework is introduced; it provides a segregation of total shareholder return into the key value components. Based on this framework, the third chapter presents the results of the empirical analysis of the chemical industry in two steps. First, the chemical industry is compared with 13 other industries in terms of turnover growth and capital market performance. Then the total shareholder return of 61 chemical companies is analysed in more detail. The use of the available value levers by the 10 companies with the highest capital market performance is compared with the total sample. The results of the empirical analysis are interpreted in the fourth chapter. Finally, there is a summary of the key results with a perspective on potential future research and analysis requirements.

## 2. Study methodology and scope

### 2.1 Study methodology and approach

In the 1980s the capital market-led perspective on companies substantially increased in importance and found its expression in the shareholder value approach.<sup>4</sup> This increase in importance not only continues today but has even strengthened as a result of the increasing internationalisation and deregulation

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<sup>4</sup> Cf. e.g. Rappaport (1983) and (1986); Fruhan (1988); Copeland, Koller, Murrin (1994).

of the capital markets. The fundamental idea is to use external value creation (i.e. total return to shareholders) as a simple and objective yardstick for managing a company. The theoretical core of this approach is the cash flow-based concept of corporate valuation (e.g. the classical DCF models<sup>5</sup>). The connection between external value creation and internal controlling metrics is provided by a number of different value-based management concepts, such as the CVA<sup>6</sup> or EVA<sup>7</sup> approach.<sup>8</sup> The shareholder value approach and the different levers to increase company value are the basis for the empirical analysis in this paper.

A useful framework for analysing company performance from a value management perspective must combine two views: how much value is created for the company's shareholders (external capital market perspective) and which management levers are used in order to generate this value (internal management perspective). The "TSR decomposition" framework (TDF) by The Boston Consulting Group combines these two perspectives.<sup>9</sup>

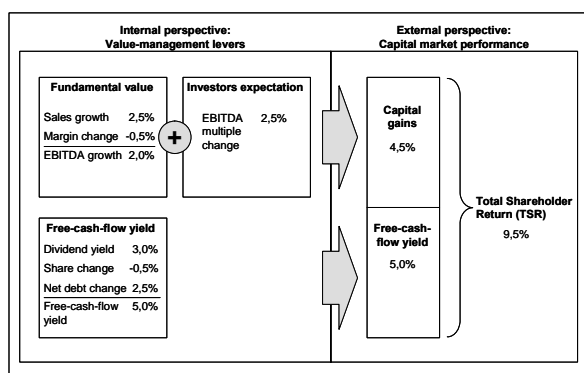
The starting point for the TDF is the capital market perspective in the form of a company's total shareholder return. The total shareholder return (TSR), i.e. the period-specific growth in a company's value from the shareholders' perspective, comprises two components: the change in the share price ("capital gain") and the dividends paid ("dividend gain"). If the share price at the end of the study period is above the initial price the value has increased and shareholders could realise this gain by selling their shares. A dividend payment represents a direct increase in value for the shareholders as it is paid out to them in cash.<sup>10</sup>

From the perspective of value-based management it is now important to positively influence both of these TSR components. According to the TDF, there are three value levers for this:<sup>11</sup>

- *Improving fundamental value:* Fundamental value creation can be approximated by an increase in company earnings. In this study earnings are measured as EBITDA. An increase in EBITDA can be traced back to sales growth and change in EBITDA margin.

- *Increasing investor expectations:* A company's valuation by the capital market also depends on the investors' expectations at a specific point in time. Different expectations will lead to differences in valuation multiples between companies. Therefore changes to the EBITDA multiple are used in the following as an approximation for changes in investor expectations.
- *Paying out free cash flow:* From the corporate management perspective free cash flow can be invested within the company itself (e.g. to build up production capacities or to take over other companies) or paid-out to the equity or debt investors. Options for distributing free cash flow include not only dividend payments, but also share repurchase and repayment of liabilities.

The three value levers described above are shown in summary form in Figure 1. In addition, the calculation logic of the TDF is explained using fictitious sample numbers.



**Figure 1.** Elements of the "TSR decomposition" framework and sample calculation<sup>12</sup>

Figure 1 also shows how the connection between the internal value management levers and the external success factors on the capital market is established. This logic is used in Chapter 3 for the empirical analysis of the chemical industry.

## 2.2 Scope of study

In Chapter 3 a sample of 61 chemical industry companies is analysed in detail. This includes companies from all key geographies. Figure 2 shows the geographic distribution of the sample based on market capitalisation (to 29.03.2007).

The starting point for deriving the sample of 61 companies is the *Thomson Financial Worldscope* database. All companies that could be assigned to the chemical industry on the basis of their industry code were filtered out. All companies that were not listed on a stock market throughout the study period (2002 –

<sup>5</sup> For a detailed description of the DCF methodology and the various approaches, cf. for example Copeland, Koller, Murrin (1994); Brealey, Myers (2000).

<sup>6</sup> The CVA approach was developed by The Boston Consulting Group (BCG). Cf. e.g. Lewis (1995) and Lewis, Lehmann (1992).

<sup>7</sup> The EVA approach was developed by management consultants Stern Stewart & Co. and is a registered trademark. Cf. Stewart, Bennett (1994), Grant (1997), Stewart (1999).

<sup>8</sup> Cf. Davis (1996), Rappaport (1998).

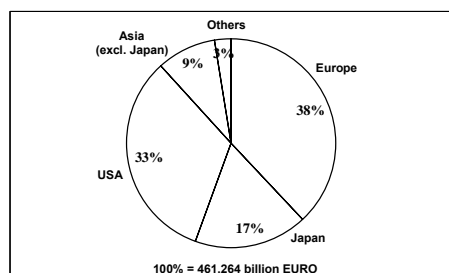
<sup>9</sup> Cf. Olson et al. (2004).

<sup>10</sup> Cf. Abowd (1990), Elali (2006).

<sup>11</sup> Cf. Olson (2004).

<sup>12</sup> With reference to Olson (2004).

2006) or whose free float was under 25% were removed from this sample. Then all companies whose market capitalisation was under €2 billion in March 2007 were also filtered out



**Figure 2.** Geographical distribution of the companies studied based on the market value

### 3. Empirical analysis

In the first part of the empirical analysis the chemical industry is compared with thirteen other industries in terms of its growth and value creation. In the second part the value creation patterns of the companies of the chemical industry are analysed in detail.

#### 3.1. Industry comparison

The industry comparison is conducted on the basis of the BCG Value Creators Report 2006, which investigates the capital market performance and value creation strategies of 14 industries during the period of 2001-2005.<sup>13</sup> In numerous strategic management approaches turnover growth is used as an indicator to assess the attractiveness of the industry being studied.<sup>14</sup> When compared with the other thirteen industries, the chemical industry only ranks tenth in terms of sales growth, with a median annual growth rate of 5.3% (Table 1). However, in terms of capital market performance the chemical companies outperform their average peers from other industries, with an annual TSR of 8.6% that leads to a number 5 position in the industry comparison.

When the two rankings are compared with each other in Table 1 they vary only slightly for most of the industries. This observation supports the hypothesis that was already stated in the summary and is frequently discussed in the literature: growth is a particularly important lever for creating value. However four industries in particular fall out of this framework as their rankings each vary by more than four positions: chemicals, retail, pharmaceuticals and transport & logistics. Companies from the pharmaceutical and retail industries could therefore achieve relatively high turnover growth rates but have created below average value. The companies in the chemical and transport & logistics industries in contrast have created above average value as defined

by the TSR in spite of below average growth rates. Using the chemical industry as an example there follows an analysis of how this above-average value creation was possible.

#### 3.2 Company analysis for the chemical industry

The starting point for the chemical industry analysis is the average annual TSR scores of the 61 companies<sup>15</sup> in the sample for the period 2002-2006<sup>16</sup>. For the complete sample this results in a weighted average annual TSR of 13.7%, whereby the upper quartile has a median value of 30.2% and the lower quartile a median of 6.7% (cf. Figure 3). The highest value is for Mitsubishi Gas Chemical, Japan at 48.5%; the lowest for Rhodia, France with -11.2%.

In the following, the 10 companies with the highest TSR performance are summarised in a sub-sample of top performers. In Figure 4 the TSR is segregated according to the *TSR decomposition* framework both for the complete sample of 61 companies and for the top performers. On the basis of Figure 4 it is possible to identify common features as well as differences for the two groups of companies. The first common feature of the two groups is that growth is still a key value lever even in this industry that is experiencing rather weak growth opportunities. In addition, there is apparently no trade-off between the various value levers but the companies in both groups rather reached the corresponding TSR values through a combination of value levers. A comparison of the four key features over time provides the following patterns (cf. Figures 5-8):

- *Superior growth of the top performers:* The top performers did not have to accept a fall in turnover in 2001 to 2002 during regressive development in turnover throughout the industry and produced higher growth rates than the other companies in the growth phase from 2003 (cf. Figure 5).
- *Constantly higher dividend yield of the top performers:* The top performers recorded a constantly higher dividend yield throughout the whole period under review. The difference in the dividend yield reached a maximum of 1.4% in 2003 and continuously decreased in the later years due to increasing stock prices (cf. Figure 6).
- *Top performers with lower EBITDA margin:* It is remarkable that the top performers had on average a lower EBITDA margin than the overall chemicals peer group. Neither group managed to substantially increase their

<sup>13</sup> Cf. Olson et al. (2006).

<sup>14</sup> Cf. e.g. Porter (2004), Grant (2005).

<sup>15</sup> A summary of the 61 companies is found in the Appendix.

<sup>16</sup> A cross-industry comparison was only available for the years 2001-2005 so the period reviewed in the corporate analysis varies from this.

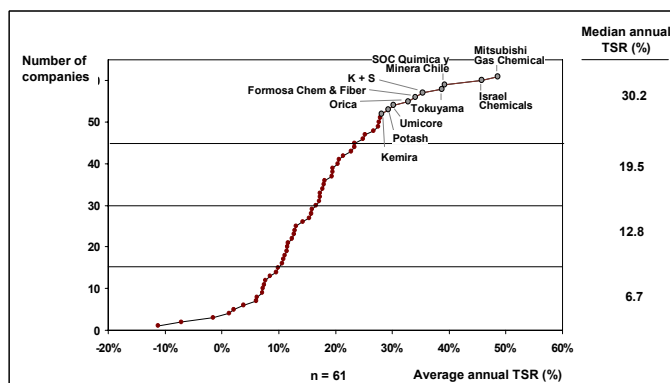
EBITDA margin over the study period (cf. Figure 7).

- *Strong increase in investor expectations for top performers:* With initially rather similar EBITDA multiples, the top performers

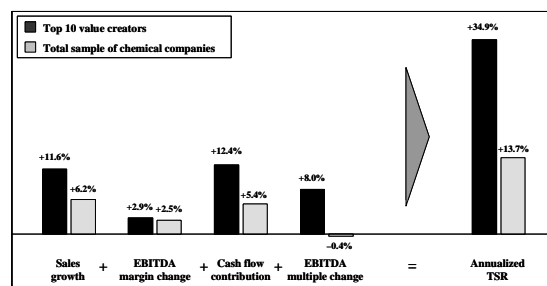
managed to substantially increase investor expectations, which is reflected in a strong rise in multiples in the later years of the study period (cf. Figure 8).

**Table 1.** Industry comparison

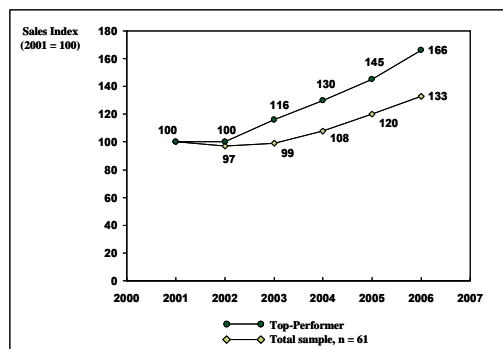
Industry	Sales growth p.a. 2001-2005	Sales rank	TSR p.a. 2001-2005	TSR rank	Rank difference
Pharmaceuticals & biotech	11,1%	1	-2,1%	12	-11
Mining & materials	10,3%	2	18,9%	1	1
Retail	8,6%	3	5,4%	8	-5
Automotive & supply	7,5%	4	9,3%	3	1
Machinery & constructions	7,5%	5	8,9%	4	1
Travel & Tourism	6,6%	6	5,9%	7	-1
Utility	6,1%	7	7,5%	6	1
Transport & Logistik	5,8%	8	12,2%	2	6
Technology	5,4%	9	-5,5%	13	-4
<b>Chemicals</b>	<b>5,3%</b>	<b>10</b>	<b>8,6%</b>	<b>5</b>	<b>5</b>
Consumer Goods	5,2%	11	5,2%	9	2
Media & Entertainment	4,6%	12	-5,6%	14	-2
Multibusiness	4,5%	13	-0,3%	11	2
Pulp & Paper	2,0%	14	4,9%	10	4



**Figure 3.** Distribution of the companies studied



**Figure 4.** TSR decomposition 2002-2006



**Figure 5.** Turnover development

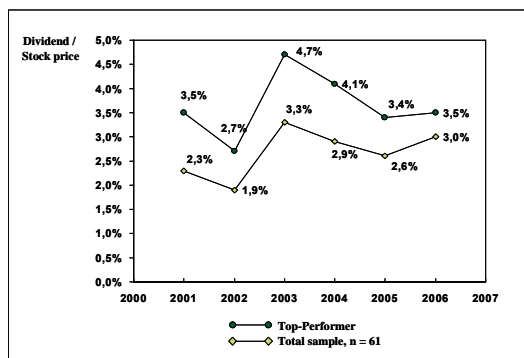


Figure 6. Development of dividend yield

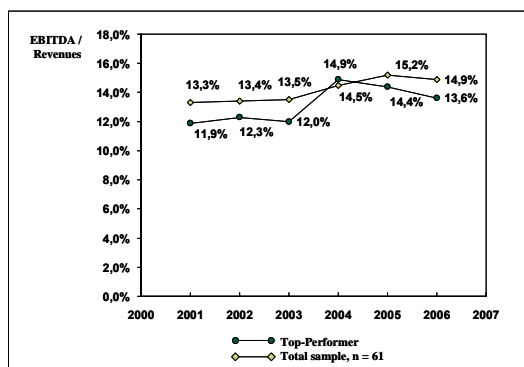


Figure 7. Development of the EBITDA margin

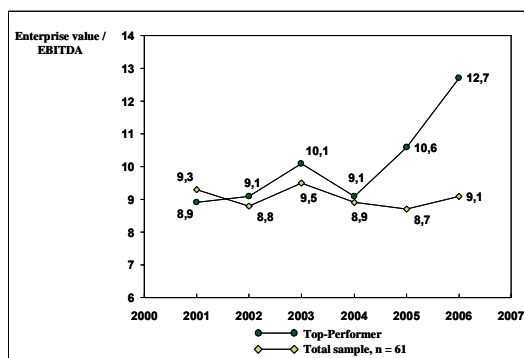


Figure 8. Development of the EBITDA multiples

The observations described above are discussed in the following.

#### 4. Discussion of empirical results

The purpose of this paper is to study the options for successful value management in industries with weak growth. With the background of the empirical results it must first be stated that weak growth opportunities are no impediment to superior value creation. This is demonstrated by the comparison of 14 industries whereby the companies in the chemical industry achieved above average capital market performance in spite of below average industry growth rates.

A more detailed comparison of chemicals top performers with the industry average (cf. Figures 5-8) shows how it was possible for these companies to

achieve superior performance and how the different value levers were employed.

The first ingredient for successful value management is the consistent utilization of the growth lever. The top performers were superior in exploiting the limited growth opportunities of the industry and could record higher turnover growth than the industry average; in the years when the industry shrank they were able to prevent a fall in revenues (cf. Figure 5).

The second ingredient is the consistent distribution of excess free cash flow that is not needed to finance growth opportunities. The constantly higher dividend yields of the top performers in the analysis period emphasise the importance of this value lever (cf. Figure 6). The combination of these two ingredients constitutes the recipe for success of the top performing chemical companies: They managed to

better exploit existing growth opportunities while at the same time returning cash to their shareholders. This value creation strategy sends two very positive signals to capital markets. Firstly, growth is not achieved through excessive lending but could be financed in a sustainable way through the cash flows from the companies' own operations. Secondly, the companies demonstrated that they would not pursue growth for its own sake, but that they would only invest in value creating opportunities with an expected return above the cost of capital and return the remaining free cash flow to investors.

Capital markets understood these strong signals: The value-based growth policy of the chemical top performers not only resulted in an increasing fundamental value but also in a positive effect on investor expectations, as reflected in increasing EBITDA multiples (cf. Figure 8). In contrast to common paradigms for low growth industries, the empirical analysis showed no sustained differentiation between the top performers and the overall sample through superior profitability management. The top performers had on average a lower EBITDA margin than their peers and also did not achieve a stronger improvement in margin (cf. Figure 7). A focus on operational excellence and productivity improvement did not provide the key to superior value creation for the chemical industry during the study period.

## 5. Conclusion

With the help of the *TSR decomposition* framework developed by The Boston Consulting Group, value creation strategies for weakly growing industries were investigated. The basic value levers available for management are always the same: growing sales, improving margins, returning cash to investors and

raising valuation multiples through improving investor expectations. Successful value management leading to superior capital market performance therefore requires corporate management to permanently check which value levers promise the greatest positive effect in the given industry and company situation.

The detailed analysis of 61 companies from the chemical industry demonstrated that low industry growth is no impediment to superior value creation. The top performing chemical companies in the period 2002-2006 used all value levers at the same time but followed a clear value creation strategy: They succeeded in exploiting the limited available growth opportunities but did not pursue growth at all cost. In fact, they financed their growth with cash from their own operations and even managed to pay a higher dividend yield than their peers. The top performers also did not trade-off growth against profitability but were able to even slightly increase margins. This sustainable approach to growth was rewarded with a substantial increase in valuation multiples.

There is a need for further research, especially on two levels. Firstly, the importance of the value levers discussed could be analysed for other industries to validate the patterns identified. Secondly the individual company level could be investigated to see what is required to successfully coordinate the use of the competing value levers. So, for example, the question of the extent to which these companies ensure that they only exploit profitable growth opportunities through the use of value-driven indicators (e.g. EVA, CVA) or use active investor relationship management to influence the expectations of investors to their benefit is of interest.

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## Appendices

Table 2. Summary of the complete sample

	Company	Country	Marketvalue(B€) March 2007	Annual TSR (%) 2002-06
1	Mitsubishi Gas Chemical	Japan	3.519	48,5%
2	Israel Chemicals	Israel	6.289	45,8%
3	Soc Quimica Y Minera Chile	Chile	2.757	39,2%
4	Tokuyama	Japan	3.686	38,8%
5	K+S	Germany	3.304	35,4%
6	Formosa Chemicals & Fibre	Taiwan	7.877	34,1%
7	Orica	Australia	4.782	32,8%
8	Umicore	Belgium	3.468	30,2%
9	Potash Corp Of Saskatchewan	Canada	12.196	29,3%
10	Kemira	Finland	2.126	28,1%
11	Nan Ya Plastics	Taiwan	10.557	27,9%
12	Monsanto	US	22.125	27,6%
13	Showa Denko	Japan	3.367	27,5%
14	Albemarle	US	2.947	26,7%
15	Novozymes	Denmark	4.236	25,2%
16	Syngenta	Switzerland	14.254	24,9%
17	Makhteshim-Agan Industries	Israel	2.005	23,3%
18	Formosa Plastics	Taiwan	8.000	23,3%
19	Hitachi Chemical	Japan	3.618	22,8%
20	Dainippon Ink and Chemicals	Japan	2.369	21,4%
21	Sherwin-Williams	US	6.611	20,6%
22	Mitsubishi Rayon	Japan	3.032	20,4%
23	FMC	US	2.168	19,5%
24	Givaudan	Switzerland	5.039	19,5%
25	Ashland	US	3.074	19,3%
26	Mitsui Chemicals	Japan	5.226	18,1%
27	Lyondell Chemical	US	5.876	17,9%
28	Agrium	Canada	3.728	17,7%
29	Tosoh	Japan	2.332	17,3%
30	Sumitomo Chemical	Japan	9.363	17,2%
31	Koninklijke DSM	Netherlands	6.570	17,1%
32	Cytec Industries	US	2.042	16,5%
33	Sigma-Aldrich	US	4.064	15,8%
34	BASF	Germany	41.530	15,7%
35	Nitto Denko	Japan	6.206	15,4%
36	Solvay	Belgium	9.616	14,2%
37	Eastman Chemical	US	3.978	13,1%
38	Asahi Kasei	Japan	7.726	12,8%
39	Intl Flavors & Fragrances	US	3.182	12,7%
40	Kuraray	Japan	3.145	12,3%
41	Shin-Etsu Chemical	Japan	19.618	11,6%
42	RPM International	US	2.079	11,5%
43	ICI	United Kingdom	8.740	11,4%
44	Johnson Matthey	United Kingdom	4.979	11,1%
45	Rohm and Haas	US	8.462	10,8%
46	Lubrizol	US	2.699	10,6%
47	Ems-Chemie	Switzerland	2.344	9,9%
48	Teijin	Japan	3.947	9,6%
49	Valspar	US	2.181	8,5%
50	PPG Industries	US	8.693	7,7%
51	Kaneka	Japan	2.529	7,5%
52	Dow Chemical	US	33.341	7,2%
53	Bayer	Germany	35.924	7,1%
54	Du Pont	US	34.161	6,2%
55	Cabot	US	2.275	6,1%
56	Chemtura	US	2.049	3,8%
57	Akzo Nobel	Netherlands	16.210	2,1%
58	Lonza Group	Switzerland	3.515	1,3%
59	Ciba Specialty Chemicals	Switzerland	3.371	-1,5%
60	Clariant	Switzerland	2.905	-7,2%
61	Rhodia	France	3.251	-11,2%

Table 3. Detailed information on the top performers

#	Company	Country	Market value (bn€) <sup>(1)</sup>	TSR (%) <sup>(2)</sup>	TSR decomposition <sup>(1)</sup>			
					Sales growth (%)	EBITDA margin change (%)	Free CF yield	EBITDA multiple change
1	Mitsubishi Gas Chemical	Japan	3.495	48,5%	7,3%	6,4%	25,9%	8,9%
2	Israel Chemicals	Israel	6.029	45,8%	13,3%	4,3%	20,2%	8,0%
3	Soc Quimica Y Minera Chile	Chile	2.685	39,2%	15,4%	2,9%	10,2%	10,7%
4	Tokuyama	Japan	3.155	38,8%	1,7%	1,6%	17,8%	17,7%
5	K+S	Germany	3.393	35,4%	6,6%	3,8%	4,7%	20,2%
6	Formosa Chemicals & Fibre	Taiwan	7.007	34,1%	21,1%	1,3%	16,6%	-4,9%
7	Orica	Australia	4.491	32,8%	3,5%	15,7%	10,6%	3,0%
8	Umicore	Belgium	3.270	30,2%	20,1%	-8,7%	2,8%	15,9%
9	Potash Corp Of Saskatchewan	Canada	11.406	29,3%	13,7%	6,7%	6,2%	2,7%
10	Kemira	Finland	2.060	28,1%	0,6%	1,9%	12,1%	13,5%

<sup>1</sup> Contribution of each factor shown in percentage points of five-year average annual TSR; apparent discrepancies with TSR total due to rounding.<sup>2</sup> Average annual total shareholder return, 2002-2006.<sup>3</sup> As of December 31, 2006.