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SHAREHOLDER VALUE CREATION IN EUROPE.
EUROSTOXX 50: 1997-2003

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SHAREHOLDER VALUE CREATION IN EUROPE. EUROSTOXX 50: 1997-2003

Abstract

2003 was a good year for the shareholders of the companies in the Euro Stoxx 50: the shareholder value creation of these 50 companies was €150,016 million. The companies that created most value for their shareholder were Siemens (€18,778 million), Telefonica (15,382) and BSCH (12,443). The companies that destroyed most shareholder value were Nokia (-€12,051 million), L'Oreal (-8,089) and Ahold (-5,427). None of the Spanish companies in the Euro Stoxx 50 destroyed shareholder value in 2003.

Shareholder value destruction in the three-year period 2001-2003 was €-1.75 trillion. The market value of the 50 companies was €1.65 trillion in 2003, and €1.4 trillion in 2002.

We also calculate the created shareholder value of the 50 companies during the seven-year period 1997-2003. Siemens was the top shareholder value creator and Nokia the top shareholder value destroyer during the seven-year period.

A portfolio long in the companies that entered the index and short in the companies that abandoned the index had on average a 6% return in the 20 days prior to the index recomposition and a 7% return in the 20 days after the index recomposition.

In 2003, the Euro Stoxx 50 was much more volatile than the S&P 500 or the Dow Jones.

JEL Classification: G12, G31, M21

Keywords: shareholder value creation, created shareholder value, shareholder value added, shareholder return, required return to equity.

SHAREHOLDER VALUE CREATION IN EUROPE. EUROSTOXX 50: 1997-2003

In this paper we quantify shareholder value creation for the 50 companies included in the Euro Stoxx 50 in December 2003. We provide the created shareholder value for 2003, and also for the periods 1997-2003, 1998-2003, 1999-2003, 2000-2003, 2001-2003 and 2002-2003. The top shareholder value destroyers in 2003 were Nokia (-€12,051 million), L'Oreal (-€8,089 million), and Ahold (-€5,427 million). The percentage of value creators was 38%, 25%, 18%, 6%, 2% and 6% in 1997, 1998, 1999, 2000, 2001 and 2002, respectively.

In section 1 we define created shareholder value. Section 2 has the evolution of the Euro Stoxx 50 index since 1992. Section 3 has the comparison between the Euro Stoxx 50 and another world index. Section 4 has the ranking of created shareholder value and return for the companies in 2003. Section 5 has the ranking of created shareholder value and return from the previous years. Section 6 splits the shareholder value creation by the country to which the 50 companies belonged. Section 7 shows the relation between Shareholder Return and size. Section 8 is an analysis of the companies that entered and abandoned the Euro Stoxx 50 since 1997. Section 9 compares the Euro Stoxx 50 with other European and US indexes in terms of volatility and correlation.

Appendix 1 contains the evolution of the market value of the companies in the Euro Stoxx 50 in December 2003. Appendix 2 contains the evolution of shareholder value creation since 1997. Appendix 3 shows the evolution of shareholder return since 1997. Finally, Appendix 4 contains the volatility for the 50 companies in the Euro Stoxx 50 in December 2003.

1. Definition of created shareholder value

We define created shareholder value following Fernández (2002, chapter 1). To obtain the created shareholder value, we must first define the increase of equity market value, the shareholder value added, the shareholder return, and the required return to equity.

The equity market value of a listed company is the company's market value, that is, each share's price multiplied by the number of shares. The **increase of equity market value** in one year is the equity market value at the end of that year less the equity market value at the end of the previous year.

Shareholder value added is the term used for the difference between the wealth held by the shareholders at the end of a given year and the wealth they held the previous year.

The shareholder value added is calculated as follows:

$$\begin{aligned}
 & \text{Shareholder value added} = \\
 & \text{Increase of equity market value} \\
 & + \text{Dividends paid during the year} \\
 & - \text{Outlays for capital increases} \\
 + & \text{Other payments to shareholders (discounts on par value, share buy-backs....)} \\
 & - \text{Conversion of convertible debentures}
 \end{aligned}$$

The **shareholder return** is the shareholder value added in one year, divided by the equity market value at the beginning of the year.

$$\text{Shareholder return} = \text{Shareholder value added} / \text{Equity market value}$$

The **required return to equity** is the sum of the interest rate of long-term Treasury bonds plus a quantity which is usually called the company's risk premium and which depends on the company's risk.

$$\text{Required return to equity} = \text{return of long-term treasury bonds} + \text{risk premium}$$

A company creates value for its shareholders when the shareholder return exceeds the share cost (the required return to equity). In other words, a company creates value in one year when it outperforms expectations.

The **created shareholder value** is quantified as follows:

$$\text{Created shareholder value} = \text{Equity market value} \times (\text{Shareholder return} - K_e)$$

As we already saw that the shareholder return is equal to the shareholder value added divided by the equity market value, the created value can also be calculated as follows:

$$\text{Created shareholder value} = \text{Shareholder value added} - (\text{Equity market value} \times K_e)$$

Consequently, the value created is the shareholder value added above expectations, which are reflected in the required return to equity.

Table 1 shows in simplified form the relationship between three variables, which are sometimes confused: increase of equity market value, shareholder value added, and created shareholder value.

Table 1. Increase of equity market value, shareholder value added, and created shareholder value

| | |
|--|---|
| <i>Increase of equity market value</i> | Equity market value _t - Equity market value _{t-1} |
| | ↓ |
| <i>Shareholder value added</i> | <i>Increase of equity market value</i> - payments from shareholders + dividends + repurchases - conversions |
| | ↓ |
| <i>Created shareholder value</i> | Shareholder value added - (Equity market value x Ke) |

2. Evolution of the Euro Stoxx 50

Figure 1 shows the evolution of the Euro Stoxx 50 price index since 1992. It had 1,000 points in December 1991 and 2,761 in December 2003. The historic maximum value was 5,464 (March 6, 2000).

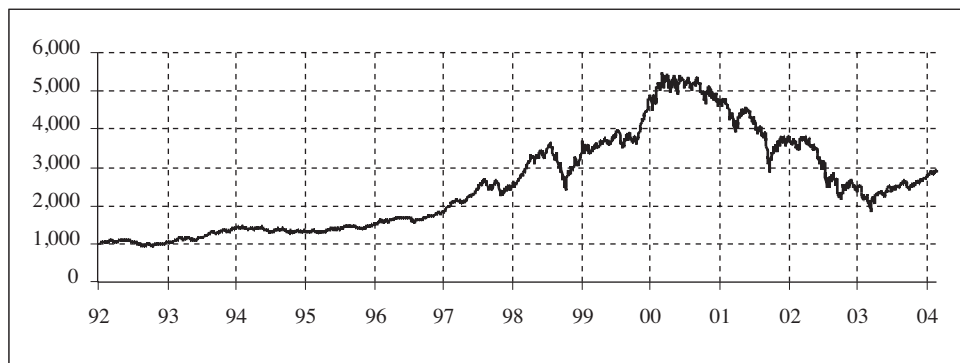
Figure 1. Evolution of the Euro Stoxx 50 index

Table 2 contains the evolution of increase of capitalization, shareholder value added and shareholder value creation for the Euro Stoxx 50 since 1993. It is interesting to see the accumulated values; all of them are positive. If you compare the total of shareholder value added and the shareholder value creation, you can appreciate a big difference. This is because the shareholder value added so often does not meet the shareholders' expectations.

Table 2. Increase of capitalization, shareholder value added, and created shareholder value in the Euro Stoxx 50 (€ billion)

| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | Total |
|------------------------------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| capitalization | 472 | 441 | 512 | 685 | 1,074 | 1,529 | 2,691 | 2,119 | 1,796 | 1,148 | 1,38 | |
| Δ capitalization | 142 | -31 | 71 | 173 | 389 | 454 | 1,163 | -572 | -323 | -648 | 231 | 1,05 |
| Shareholder value added | 144 | -23 | 79 | 136 | 275 | 375 | 743 | -46 | -406 | -649 | 212 | 839 |
| Created shareholder value | | | | | | | | | | | | |
| in current euros | 93 | -74 | 14 | 73 | 204 | 279 | 637 | -301 | -598 | -812 | 126 | -359 |
| in euros of 2003 | 241 | -173 | 28 | 132 | 335 | 420 | 897 | -388 | -705 | -877 | 126 | 35 |
| Return (including dividends) | 44% | -5% | 18% | 26% | 40% | 35% | 49% | -2% | -19% | -36% | 19% | 12% |
| Price Index | 1,433 | 1,321 | 1,507 | 1,85 | 2,532 | 3,342 | 4,904 | 4,772 | 3,806 | 2,386 | 2,761 | |

3. Comparison between Euro Stoxx 50 and other world indexes

Table 3 shows a comparison between the Euro Stoxx 50 return and the returns of the main indexes of the main European countries: AEX (Holland), CAC 40 (France), IBEX 35 (Spain), Mibtel 30 (Italy), Xetra-Dax (Germany), FTSE 100 (UK), S&P 500 (USA) and Dow Jones (USA), and the market capitalization in December 2003.

The most profitable index in the whole period was the IBEX 35 and the least profitable was the FTSE 100. The S&P 500 was the biggest in capitalization in 2003.

Table 3. Comparison between the Euro Stoxx 50 and the AEX, CAC 40, IBEX 35, Mibtel 30, Xetra-Dax, FTSE 100, S&P 500 and Dow Jones (returns include dividends)

| | Euro Stoxx 50 | AEX | CAC 40 | IBEX 35 | Mibtel 30 | Xetra-Dax | FTSE 100 | S&P 500 | Dow Jones |
|------------------------|---------------|------|--------|---------|-----------|-----------|----------|---------|-----------|
| 1993 | 44% | 49% | 26% | 63% | 8% | 47% | 25% | 10% | 17% |
| 1994 | -5% | 3% | -14% | -10% | 3% | -7% | -7% | 1% | 5% |
| 1995 | 18% | 21% | 3% | 25% | -7% | 8% | 26% | 38% | 37% |
| 1996 | 26% | 38% | 28% | 48% | 12% | 27% | 17% | 23% | 29% |
| 1997 | 40% | 44% | 33% | 46% | 59% | 47% | 29% | 33% | 25% |
| 1998 | 35% | 32% | 34% | 43% | 41% | 19% | 17% | 29% | 18% |
| 1999 | 49% | 27% | 54% | 21% | 22% | 39% | 21% | 21% | 27% |
| 2000 | -2% | -3% | 1% | -17% | 5% | -8% | -8% | -9% | -5% |
| 2001 | -19% | -19% | -20% | -8% | -25% | -20% | -14% | -12% | -5% |
| 2002 | -36% | -34% | -32% | -26% | -23% | -44% | -22% | -22% | -15% |
| 2003 | 19% | 8% | 20% | 30% | 14% | 37% | 18% | 29% | 28% |
| 93-2003 | 15% | 15% | 12% | 20% | 10% | 13% | 9% | 13% | 15% |
| 99-2003 | 2% | -4% | 5% | 0% | -1% | 1% | -1% | 1% | 6% |
| Number of companies | 50 | 25 | 40 | 35 | 30 | 30 | 100 | 500 | 30 |
| Market Capitalization* | 1,380 | 354 | 605 | 316 | 381 | 639 | 1,544 | 8,154 | 2,506 |

*December 2003. In billions

The return of Mibtel 30 for the year 1993 was calculated from 16/07/1993 because that is the date when it first began to quote.

4. Shareholder value creators and shareholder value destroyers in the Euro Stoxx 50 in 2003

The top shareholder value creator in 2003 was Siemens (€18,778 million). The top shareholder value destroyers in 2003 were Nokia (-€12,051 million), L'Oreal (-€8,089 million), and Ahold (-€5,427 million).

Table 4. Capitalization, created shareholder value and return of the companies in the Euro Stoxx 50 in December 2003

| | | Capitalization | | CSV | | Return | | Free Float |
|--------------------|---------|----------------|------|---------|------|--------|------|------------|
| | | € | Rank | € | Rank | % | Rank | |
| TOTAL SA | France | 95,519 | 1 | 6,295 | 13 | 14% | 33 | 100% |
| ROYAL DUTCH PTL. | Holland | 87,09 | 2 | -2,32 | 44 | 4% | 39 | 100% |
| NOKIA | Finland | 65,757 | 3 | -12,051 | 50 | -8% | 46 | 100% |
| DEUTSCHE TELEKOM | Germany | 60,909 | 4 | 5,974 | 15 | 20% | 27 | 57% |
| ENI | Italy | 59,883 | 5 | -2,109 | 43 | 4% | 38 | 64% |
| TELEFONICA | Spain | 57,687 | 6 | 15,382 | 2 | 46% | 9 | 94% |
| SIEMENS | Germany | 56,57 | 7 | 18,778 | 1 | 60% | 3 | 93% |
| FRANCE TELECOM | France | 54,436 | 8 | 9,554 | 5 | 57% | 4 | 41% |
| BNP PARIBAS | France | 45,086 | 9 | 8,813 | 6 | 34% | 14 | 94% |
| BSCH | Spain | 44,775 | 10 | 12,443 | 3 | 49% | 7 | 100% |
| L'OREAL | France | 43,944 | 11 | -8,089 | 49 | -9% | 48 | 46% |
| SANOFI-SYNTHELABO | France | 43,751 | 12 | -1,025 | 39 | 5% | 37 | 50% |
| AVENTIS | France | 42,023 | 13 | -1,796 | 42 | 4% | 41 | 87% |
| ALLIANZ | Germany | 38,503 | 14 | 4,477 | 17 | 26% | 20 | 85% |
| DEUTSCHE BANK | Germany | 38,228 | 15 | 12,293 | 4 | 54% | 5 | 100% |
| ING GROEP CERTS. | Holland | 38,12 | 16 | 4,293 | 19 | 22% | 26 | 88% |
| DAIMLERCHRYSLER | Germany | 37,697 | 17 | 7,083 | 11 | 32% | 17 | 81% |
| TIM | Italy | 36,349 | 18 | -2,736 | 45 | 0% | 45 | 44% |
| E ON | Germany | 35,804 | 19 | 8,765 | 7 | 40% | 12 | 94% |
| BBVA | Spain | 34,995 | 20 | 4,425 | 18 | 24% | 24 | 100% |
| ENEL | Italy | 32,68 | 21 | 2,647 | 28 | 16% | 30 | 32% |
| CARREFOUR | France | 31,166 | 22 | -583 | 37 | 5% | 36 | 80% |
| SOCIETE GENERALE | France | 30,637 | 23 | 6,161 | 14 | 34% | 15 | 100% |
| PHILIPS ELTN.KON | Holland | 30,467 | 24 | 7,402 | 9 | 42% | 11 | 100% |
| AXA | France | 30,173 | 25 | 7,125 | 10 | 40% | 13 | 79% |
| ABN AMRO HOLDING | Holland | 29,958 | 26 | 4,251 | 21 | 26% | 21 | 94% |
| UNILEVER CERTS. | Holland | 29,636 | 27 | -5,092 | 47 | -8% | 47 | 100% |
| LVMH | France | 28,269 | 28 | 8,207 | 8 | 51% | 6 | 48% |
| UNICREDITO ItalyNO | Italy | 26,926 | 29 | 2,21 | 29 | 17% | 29 | 76% |
| GENERALI | Italy | 26,796 | 30 | 396 | 34 | 9% | 35 | 86% |
| BASF | Germany | 25,425 | 31 | 4,284 | 20 | 28% | 19 | 100% |
| TELECOM Italy | Italy | 24,21 | 32 | 489 | 33 | 14% | 32 | 89% |
| MUNCH.RUCK. | Germany | 22,067 | 33 | -3,648 | 46 | -10% | 49 | 72% |
| FORTIS | Holland | 20,687 | 34 | -1,181 | 41 | 2% | 43 | 93% |
| VIVENDI UNIVERSAL | France | 20,648 | 35 | 2,734 | 25 | 25% | 22 | 100% |
| REPSOL YPF | Spain | 18,875 | 36 | 2,66 | 26 | 25% | 23 | 77% |
| DANONE | France | 17,686 | 37 | -560 | 36 | 4% | 40 | 93% |
| AEGON | Holland | 17,609 | 38 | -1,13 | 40 | 1% | 44 | 88% |
| BAYER | Germany | 16,959 | 39 | 1,73 | 30 | 19% | 28 | 94% |
| RWE | Germany | 16,419 | 40 | 3,264 | 24 | 32% | 16 | 77% |
| ENDESA | Spain | 16,146 | 41 | 4,108 | 22 | 43% | 10 | 90% |
| SUEZ | France | 15,998 | 42 | -681 | 38 | 3% | 42 | 93% |
| SAN PAOLO IMI | Italy | 14,981 | 43 | 5,855 | 16 | 74% | 2 | 83% |
| VOLKSWAGEN | Germany | 14,141 | 44 | 2,656 | 27 | 32% | 18 | 69% |
| IBERDROLA | Spain | 14,127 | 45 | 1,714 | 31 | 22% | 25 | 86% |
| AIR LIQUIDE | France | 13,988 | 46 | 1,079 | 32 | 16% | 31 | 100% |
| SAINT GOBAIN | France | 13,491 | 47 | 3,623 | 23 | 46% | 8 | 100% |
| ALCATEL | France | 13,113 | 48 | 6,96 | 12 | 144% | 1 | 89% |
| LAFARGE | France | 11,798 | 49 | 313 | 35 | 10% | 34 | 100% |
| AHOLD KON. | Holland | 9,378 | 50 | -5,427 | 48 | -41% | 50 | 100% |
| Sum | | 1,651,580 | | 150,02 | | | | |

Table 4 shows the capitalization, created shareholder value and shareholder return of the 50 companies in 2003. The sum of the capitalization of the 50 companies is higher than the capitalization of the Euro Stoxx 50 that appears in Table 3. This is because the capitalization of the index was not calculated with the whole capitalization of the companies, but only with the percentages that appear in the last column.

Two of the three companies that created the most shareholder value in the Euro Stoxx 50 in 2003 were Spanish: Telefónica and BSCH.

Alcatel (144.4%) was the most profitable company, after having been the one with lowest return of the 50 companies in 2002 (-77.9%). The least profitable company was Ahold (-41%). Forty-five companies had positive returns, but only 35 created shareholder value. The five companies with a negative return were: Nokia, Unilever, L'Oreal, Münchener, and Ahold. Thirteen companies had a shareholder return of 40% or more in 2003.

5. Shareholder return, and shareholder value creators and destroyers in the previous years

Table 5 shows the shareholder value creation of the companies in the Euro Stoxx 50 during the seven-year period 1997-2003. Siemens was the top shareholder value creator (€20,921 million) and Vivendi the top shareholder value destroyer (-€64,605 million). The percentage of companies that created value were 38%, 25%, 18%, 6%, 2% and 6% in the years 1997, 1998, 1999, 2000, 2001, and 2002, respectively.

Table 6 shows the historic shareholder return. In the period 1997-2003, 42 companies had positive shareholder returns. In the period 2001-2003 only 8 companies had positive shareholder returns. Forty-five companies had positive shareholder returns in 2003.

Table 5. Shareholder value creation of the companies in the Euro Stoxx 50 in December 2003

| | 1997-2003 | | 1998-2003 | | 1999-2003 | | 2000-2003 | | 2001-2003 | | 2002-2003 | |
|---------------------|-----------|------|-----------|------|------------|------|------------|------|------------|------|-----------|------|
| | € million | rank | € million | rank | € million | rank | € million | rank | € million | rank | € million | rank |
| SIEMENS | 20,921 | 1 | 7,702 | 5 | 10,919 | 2 | -45,85 | 37 | -46,708 | 37 | -19,573 | 33 |
| SOCIETE GENERALE | 20,017 | 2 | 14,691 | 1 | 14,017 | 1 | 1,204 | 3 | -1,905 | 3 | 1,267 | 2 |
| PHILIPS ELTN.KON | 17,243 | 3 | 5,044 | 6 | 6,411 | 6 | -30,442 | 33 | -34,161 | 34 | -20,427 | 35 |
| ENI | 15,502 | 4 | 4,128 | 7 | 3,738 | 7 | 8,695 | 1 | -1,823 | 2 | 29 | 3 |
| SANOFI-SYNTHELABO | 15,268 | 5 | 12,357 | 2 | 7,839 | 5 | 5,578 | 2 | -19,057 | 21 | -25,656 | 39 |
| TOTAL SA | 13,008 | 6 | 1,079 | 10 | 7,872 | 4 | -6,419 | 8 | -22,928 | 25 | -17,905 | 29 |
| L'OREAL | 12,192 | 7 | 8,516 | 4 | -14,299 | 22 | -27,461 | 28 | -31,923 | 32 | -18,373 | 32 |
| BNP PARIBAS | 9,754 | 8 | 3,871 | 8 | -2,1 | 11 | -7,711 | 10 | -4,683 | 7 | -5,435 | 17 |
| DANONE | 8,236 | 9 | 2,904 | 9 | -4,391 | 14 | -2,205 | 5 | -8,991 | 12 | -3,215 | 10 |
| TIM | 3,805 | 10 | -18,641 | 32 | -36,32 | 40 | -77,557 | 44 | -47,806 | 38 | -19,844 | 34 |
| UNILEVER CERTS. | 3,536 | 11 | -16,07 | 26 | -27,352 | 30 | -8,271 | 11 | -15,229 | 19 | -11,784 | 22 |
| UNICREDITO ITALIANO | 3,32 | 12 | -3,73 | 16 | -12,498 | 18 | -9,102 | 13 | -11,6 | 14 | -3,131 | 9 |
| AIR LIQUIDE | 1,915 | 13 | 598 | 12 | -1,907 | 10 | -2,311 | 6 | -2,271 | 4 | -1,255 | 6 |
| ABN AMRO HOLDING | 945 | 14 | -8,766 | 21 | -6,08 | 16 | -18,673 | 21 | -14,813 | 16 | -1,514 | 7 |
| BASF | 630 | 15 | 729 | 11 | 2,415 | 8 | -12,698 | 18 | -7,729 | 11 | -1,045 | 5 |
| SAINT GOBAIN | 541 | 16 | -924 | 14 | 1,602 | 9 | -6,258 | 7 | -3,037 | 5 | -2,607 | 8 |
| LAFARGE | 377 | 17 | -1,1 | 15 | -3,682 | 12 | -7,666 | 9 | -3,267 | 6 | -5,068 | 16 |
| DEUTSCHE BANK | -385 | 18 | -21,179 | 35 | -4,367 | 13 | -30,049 | 32 | -28,918 | 29 | -16,042 | 27 |
| IBERDROLA | -393 | 19 | -618 | 13 | -4,907 | 15 | -1,161 | 4 | 334 | 1 | -255 | 4 |
| SAN PAOLO IMI | -1,759 | 20 | -6,52 | 18 | -13,501 | 20 | -9,485 | 15 | -14,83 | 17 | -4,254 | 11 |
| BBVA | -2,222 | 21 | -19,142 | 34 | -27,575 | 31 | -27,46 | 27 | -28,793 | 28 | -16,295 | 28 |
| TELEFONICA | -2,878 | 22 | -13,495 | 23 | -30,241 | 34 | -85,984 | 45 | -43,099 | 36 | -23,456 | 38 |
| VOLKSWAGEN | -2,994 | 23 | -10,101 | 22 | -15,638 | 24 | -8,469 | 12 | -6,851 | 8 | -4,41 | 14 |
| LVMH | -3,91 | 24 | 9,228 | 3 | 8,388 | 3 | -31,766 | 34 | -14,938 | 18 | 2,888 | 1 |
| REPSOL YPF | -4,018 | 25 | -7,411 | 19 | -9,18 | 17 | -18,409 | 20 | -6,869 | 9 | -4,272 | 12 |
| TELECOM ITALIA | -5,006 | 26 | -5,291 | 17 | -14,915 | 23 | -14,749 | 19 | -11,237 | 13 | -4,29 | 13 |
| ENDESA | -6,35 | 27 | -8,488 | 20 | -16,779 | 26 | -11,106 | 17 | -6,882 | 10 | -4,617 | 15 |
| BSCH | -6,946 | 28 | -17,559 | 28 | -18,61 | 28 | -26,27 | 24 | -22,325 | 23 | -6,535 | 18 |
| ING GROEP CERTS. | -6,994 | 29 | -18,481 | 31 | -33,037 | 37 | -39,691 | 35 | -65,481 | 42 | -26,57 | 40 |
| ROYAL DUTCH PTL. | -7,066 | 30 | -53,988 | 45 | -20,519 | 29 | -70,062 | 42 | -72,725 | 44 | -43,049 | 46 |
| AVENTIS | -7,084 | 31 | -13,827 | 24 | -13,494 | 19 | -19,576 | 22 | -50,83 | 40 | -31,051 | 43 |
| GENERALI | -9,958 | 32 | -18,772 | 33 | -36,623 | 41 | -29,708 | 31 | -38,83 | 35 | -18,28 | 31 |
| RWE | -11,365 | 33 | -17,996 | 29 | -15,996 | 25 | -9,111 | 14 | -13,238 | 15 | -8,107 | 20 |
| AXA | -12,711 | 34 | -18,291 | 30 | -42,4 | 42 | -46,623 | 38 | -50,461 | 39 | -15,673 | 26 |
| MUNCH.RUCK. | -13,104 | 35 | -30,363 | 42 | -35,241 | 39 | -43,359 | 36 | -67,028 | 43 | -45,013 | 47 |
| SUEZ | -13,728 | 36 | -15,942 | 25 | -28,467 | 32 | -23,665 | 23 | -30,281 | 30 | -22,095 | 37 |
| E ON | -14,805 | 37 | -25,397 | 39 | -14,213 | 21 | -10,754 | 16 | -19,364 | 22 | -10,181 | 21 |
| NOKIA | -15,672 | 38 | -21,477 | 36 | -69,059 | 43 | -239,217 | 49 | -226,839 | 50 | -97,315 | 50 |
| AEGON | -17,648 | 39 | -29,872 | 41 | -82,108 | 44 | -70,465 | 43 | -58,204 | 41 | -32,095 | 44 |
| BAYER | -17,891 | 40 | -17,198 | 27 | -16,833 | 27 | -26,84 | 26 | -32,445 | 33 | -12,185 | 23 |
| FORTIS | -18,335 | 41 | -21,567 | 37 | -29,067 | 33 | -27,921 | 29 | -25,94 | 26 | -21,104 | 36 |
| AHOLD KON. | -22,698 | 42 | -27,729 | 40 | -32,212 | 36 | -28,895 | 30 | -31,403 | 31 | -27,977 | 41 |
| ALCATEL | -25,61 | 43 | -38,715 | 44 | -33,261 | 38 | -67,054 | 40 | -81,478 | 46 | -15,008 | 24 |
| CARREFOUR | -28,709 | 44 | -23,674 | 38 | -31,067 | 35 | -53,247 | 39 | -26,254 | 27 | -15,672 | 25 |
| ALLIANZ | -37,111 | 45 | -67,526 | 47 | -90,006 | 48 | -88,291 | 46 | -99,608 | 48 | -52,054 | 48 |
| DEUTSCHE TELEKOM | -63,623 | 46 | -60,199 | 46 | -103,445 | 49 | -267,169 | 50 | -87,607 | 47 | -32,401 | 45 |
| VIVENDI UNIVERSAL | -64,605 | 47 | -69,247 | 48 | -86,328 | 47 | -95,621 | 47 | -75,274 | 45 | -57,86 | 49 |
| FRANCE TELECOM | | | -33,234 | 43 | -83,753 | 45 | -172,593 | 48 | -104,181 | 49 | -29,393 | 42 |
| DAIMLERCHRYSLER | | | | | -85,992 | 46 | -67,312 | 41 | -16,391 | 20 | -17,998 | 30 |
| ENEL | | | | | | | -26,512 | 25 | -22,733 | 24 | -7,389 | 19 |
| Sum | -298,371 | | -711,682 | | -1,184,263 | | -2,035,743 | | -1,758,934 | | -875,547 | |

Table 6. Shareholder Return of the companies in the Euro Stoxx 50 in 1997-2003 and other selected periods

| | 1997-2003 | | 1998-2003 | | 1999-2003 | | 2000-2003 | | 2001-2003 | | 2002-2003 | |
|-------------------------|-------------|------|------------|------|------------|------|-------------|------|-------------|------|-------------|------|
| | % | rank | % | rank | % | rank | % | rank | % | rank | % | rank |
| UNICREDITO ITALIAN | 487% | 1 | 75% | 13 | -3% | 25 | -1% | 12 | -16% | 21 | 2% | 11 |
| NOKIA | 428% | 2 | 260% | 1 | 11% | 22 | -68% | 44 | -70% | 45 | -51% | 45 |
| SOCIETE GENERALE | 333% | 3 | 185% | 2 | 152% | 1 | 46% | 4 | 22% | 4 | 23% | 3 |
| BNP PARIBAS | 304% | 4 | 145% | 6 | 67% | 8 | 24% | 7 | 18% | 5 | 7% | 10 |
| TELECOM ITALIA | 260% | 5 | 182% | 3 | -54% | 44 | -57% | 41 | -52% | 40 | -23% | 34 |
| TELEFONICA | 250% | 6 | 170% | 4 | 111% | 2 | 54% | 2 | 76% | 1 | 86% | 1 |
| SANOFI-SYNTHELABC | 228% | 7 | 148% | 5 | 80% | 6 | 53% | 3 | -12% | 16 | -26% | 35 |
| PHILIPS ELTN.KON | 210% | 8 | 75% | 14 | 67% | 7 | -28% | 30 | -38% | 32 | -28% | 36 |
| SIEMENS | 186% | 9 | 90% | 9 | 86% | 5 | -20% | 26 | -28% | 27 | -11% | 21 |
| TOTAL SA | 182% | 10 | 77% | 12 | 99% | 4 | 27% | 6 | 4% | 8 | 0% | 13 |
| DANONE | 173% | 11 | 78% | 11 | 18% | 17 | 21% | 8 | -14% | 20 | -1% | 14 |
| SAN PAOLO IMI | 170% | 12 | 48% | 19 | -14% | 28 | -10% | 19 | -32% | 31 | -6% | 18 |
| BBVA | 168% | 13 | 25% | 25 | -8% | 26 | -15% | 22 | -25% | 25 | -16% | 23 |
| BSCH | 168% | 14 | 43% | 21 | 25% | 16 | -7% | 16 | -10% | 14 | 7% | 9 |
| TIM | 168% | 15 | 24% | 26 | -17% | 30 | -54% | 40 | -40% | 33 | -21% | 31 |
| ENI | 136% | 16 | 79% | 10 | 62% | 9 | 61% | 1 | 25% | 3 | 18% | 4 |
| L'OREAL | 133% | 17 | 91% | 8 | 11% | 23 | -15% | 23 | -26% | 26 | -18% | 26 |
| AVENTIS | 118% | 18 | 39% | 22 | 29% | 13 | -4% | 15 | -41% | 34 | -32% | 40 |
| DEUTSCHE BANK | 108% | 19 | 17% | 28 | 49% | 12 | -15% | 24 | -22% | 24 | -13% | 22 |
| LAFARGE | 103% | 20 | 53% | 18 | 9% | 24 | -24% | 28 | -4% | 10 | -22% | 32 |
| ABN AMRO HOLDING | 91% | 21 | 32% | 24 | 29% | 14 | -10% | 18 | -11% | 15 | 14% | 7 |
| AIR LIQUIDE | 90% | 22 | 60% | 16 | 28% | 15 | 17% | 10 | 9% | 6 | 7% | 8 |
| BASF | 80% | 23 | 64% | 15 | 59% | 10 | -2% | 13 | 2% | 9 | 14% | 6 |
| SAINT GOBAIN | 77% | 24 | 48% | 20 | 56% | 11 | -2% | 14 | 5% | 7 | 0% | 12 |
| REPSOL YPF | 77% | 25 | 32% | 23 | 11% | 21 | -28% | 29 | -4% | 11 | -3% | 15 |
| IBERDROLA | 74% | 26 | 55% | 17 | 15% | 20 | 30% | 5 | 30% | 2 | 15% | 5 |
| UNILEVER CERTS. | 74% | 27 | 4% | 33 | -20% | 31 | 5% | 11 | -17% | 22 | -17% | 24 |
| AXA | 68% | 28 | 15% | 30 | -35% | 36 | -43% | 36 | -51% | 38 | -21% | 29 |
| LVMH | 67% | 29 | 137% | 7 | 108% | 3 | -30% | 32 | -13% | 18 | 32% | 2 |
| ING GROEP CERTS. | 63% | 30 | 15% | 29 | -16% | 29 | -29% | 31 | -51% | 37 | -29% | 37 |
| GENERALI | 61% | 31 | 5% | 32 | -38% | 37 | -33% | 33 | -49% | 36 | -31% | 39 |
| VOLKSWAGEN | 57% | 32 | -1% | 35 | -27% | 35 | -12% | 21 | -14% | 19 | -10% | 20 |
| ROYAL DUTCH PTL. | 50% | 33 | -1% | 34 | 15% | 19 | -22% | 27 | -29% | 29 | -21% | 28 |
| FORTIS | 41% | 34 | -6% | 39 | -47% | 41 | -48% | 38 | -47% | 35 | -39% | 42 |
| SUEZ | 37% | 35 | -4% | 38 | -45% | 39 | -41% | 34 | -53% | 42 | -48% | 44 |
| E ON | 35% | 36 | -4% | 36 | 16% | 18 | 20% | 9 | -12% | 17 | -5% | 17 |
| ENDESA | 33% | 37 | 11% | 31 | -22% | 32 | -12% | 20 | -6% | 12 | -6% | 19 |
| AEGON | 13% | 38 | -32% | 43 | -74% | 48 | -72% | 45 | -70% | 44 | -57% | 47 |
| RWE | 13% | 39 | -24% | 42 | -24% | 34 | -9% | 17 | -28% | 28 | -20% | 27 |
| CARREFOUR | 12% | 40 | 19% | 27 | -13% | 27 | -49% | 39 | -31% | 30 | -22% | 33 |
| MUNCH.RUCK. | 9% | 41 | -39% | 44 | -49% | 43 | -59% | 42 | -73% | 48 | -66% | 48 |
| DEUTSCHE TELEKOM | 2% | 42 | -4% | 37 | -43% | 38 | -78% | 50 | -51% | 39 | -21% | 30 |
| BAYER | -10% | 43 | -17% | 41 | -23% | 33 | -43% | 35 | -53% | 41 | -29% | 38 |
| ALCATEL | -11% | 44 | -52% | 47 | -48% | 42 | -77% | 47 | -83% | 50 | -46% | 43 |
| ALLIANZ | -16% | 45 | -50% | 46 | -63% | 46 | -65% | 43 | -71% | 47 | -57% | 46 |
| VIVENDI UNIVERSAL | -31% | 46 | -49% | 45 | -71% | 47 | -77% | 48 | -71% | 46 | -67% | 49 |
| AHOLD KON. | -51% | 47 | -67% | 48 | -75% | 49 | -74% | 46 | -78% | 49 | -77% | 50 |
| FRANCE TELECOM | | | -8% | 40 | -56% | 45 | -78% | 49 | -68% | 43 | -37% | 41 |
| DAIMLERCHRYSLER | | | | | -47% | 40 | -43% | 37 | -6% | 13 | -17% | 25 |
| ENEL | | | | | | | -20% | 25 | -21% | 23 | -3% | 16 |
| Average | 113% | | 43% | | 6% | | -20% | | -26% | | -16% | |
| Weighted average | 84% | | 27% | | -6% | | -32% | | -34% | | -19% | |

6. Shareholder Value Creation and Shareholder Return by country

Table 7 shows some statistics for the companies in the Euro Stoxx 50 grouped by country. The first two columns show the market capitalization at the end of 2003. French companies account for 33% of total market capitalization. The third column also shows that there are 17 French companies. It may be seen that the French and the German companies accounted for 76% of the shareholder value creation in 2003.

Table 7. Shareholder Value Creation and Shareholder Return by country of the 50 companies in the Euro Stoxx 50 at the end of 2003

| | Capitalization 2003 | | Number of companies | Return 2003 | Return 97-2003 | CSV 03 | |
|---------|---------------------|------|---------------------|-------------|----------------|-----------|------|
| | € million | % | | | | € million | % |
| France | 551,727 | 33% | 17 | 28% | 10% | 48,13 | 32% |
| Germany | 362,721 | 22% | 11 | 30% | 5% | 65,656 | 44% |
| Holland | 262,946 | 16% | 8 | 6% | 6% | 798 | 1% |
| Italy | 221,825 | 13% | 7 | 19% | 17% | 6,751 | 5% |
| Spain | 186,604 | 11% | 6 | 35% | 11% | 40,732 | 27% |
| Finland | 65,757 | 4% | 1 | -8% | 27% | -12,051 | -8% |
| Total | 1,651,580 | 100% | 50 | | | 150,016 | 100% |

7. Shareholder Return and size

Figure 2 shows the relation between shareholder return and size (as measured by market capitalization) in 2003. There is not much relation. The slope of the regression is 0.277 and the R-squared is 0.58% (that is, differences in size explained only 0.58% of the return).

Figure 3 plots the relation of the ranking of shareholder return to the ranking of size. Again, the relation is very weak.

Figure 4 shows the relation of shareholder return in the seven-year period 2003 to size (as measured by market capitalization at the beginning of the period, in 1996). Again, no significant relation is found. Difference in size explained only 8.85% of the return.

Figure 2. Shareholder return and size of the companies in the Euro Stoxx 50 in 2003

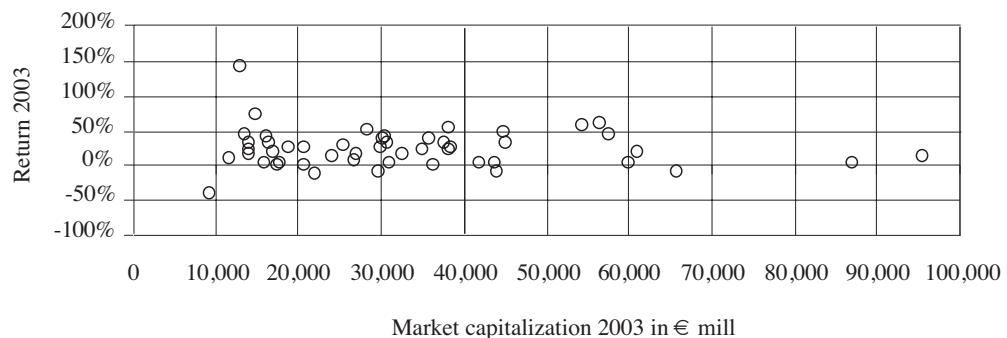


Figure 3. Ranking of shareholder return and size of the companies in the Euro Stoxx 50 in 2003

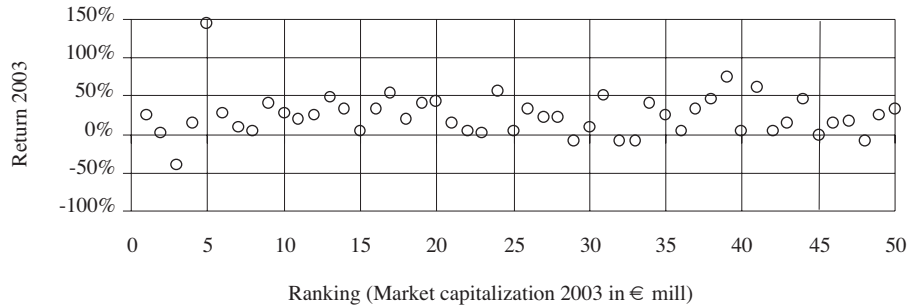
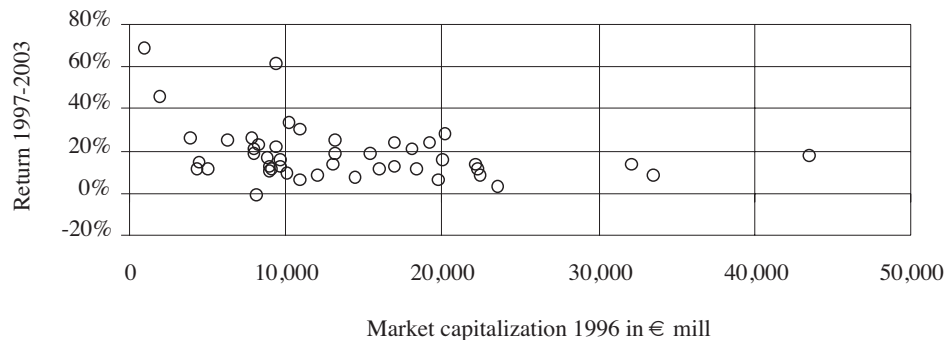


Figure 4. Relation of shareholder return to size of the companies in the Euro Stoxx 50 in the period 1997-2002



8. Additions and deletions of companies in the Euro Stoxx 50 during the six-year period 1997-2003

Table 8 shows the companies added to and removed from the Euro Stoxx 50.

Figure 5 shows the average cumulative return of the companies added to the Euro Stoxx 50 in the 40 days around the addition date (day 0). It may be seen that the average cumulative return in the 20 days before the addition was 5.5% (6.5% on top of the return of the Euro Stoxx 50). It may be seen, also, that the average cumulative return in the 20 days after the addition was 5.5%.

Figure 6 shows the average cumulative return of the companies removed from the Euro Stoxx 50 in the 40 days around the deletion date (day 0). It may be seen that the average cumulative return in the 20 days before the deletion was -4%. It may be seen, also, that the average cumulative return in the 20 days after the deletion was 2%.

Figure 6 shows the average cumulative return of a portfolio equally weighted long in the companies added, and short in the companies removed from the Euro Stoxx 50 in the 40 days around the addition/deletion date (day 0). It may be seen that the average cumulative return in the 20 days before the addition/deletion date was 10%, and that the average cumulative return in the 20 days after the addition/deletion date was 4%.

Table 8. Additions and deletions of companies in the Euro Stoxx 50 since 1997

| | Deletions | Additions |
|------------|--|---|
| 22/9/1997 | Sanofi, Schering AG, Thyssen AG | Paribas, L'Oreal, Portugal Telecom |
| 22/12/1997 | Pinault-Printemps-La Redoute | France Telecom |
| 20/9/1999 | Lufthansa, Schneider Electric, Allied Irish Banks, Fiat, Spa, Akzo Nobel, Elsevier, Portugal Telecom | Basf, Bayerische Hypo-& Vereinsbank, Dresdner Bank, Muenchener Rueckver, BSCH, Suez Lyonnaise Des Eaux, Sanofi-Synthelabo |
| 1/11/1999 | Paribas, ELF Aquitaine | Pinault-Printemps-La Redoute, BNP |
| 20/12/1999 | Rhone-Poulenc | Aventis |
| 14/2/2000 | Mannesmann | Canal + |
| 20/3/2000 | Saint Gobain | Enel |
| 18/9/2000 | Electrabel, Metro | Groupe Danone, San Paolo-Imi |
| 11/12/2000 | Canal + | Volkswagen |
| 23/7/2001 | Dresdner Bank | TIM |
| 24/9/2001 | KPN | Saint Gobain |
| 23/9/2002 | Pinault-Printemps-La Redoute | Lafarge |
| 22/9/2003 | Bayer | Iberdrola |
| 22/9/2003 | Bayer | Iberdrola |

Figure 5. Average Cumulative Return of additions to the Euro Stoxx 50

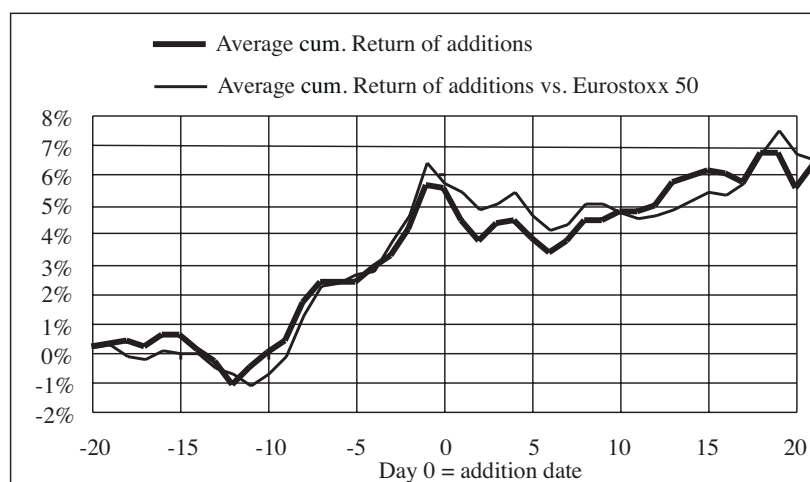


Figure 6. Average Cumulative Return of deletions from the Euro Stoxx 50

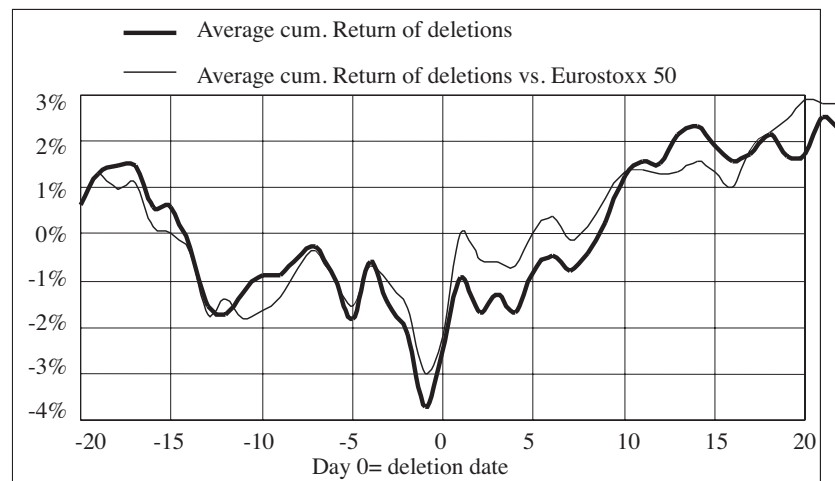
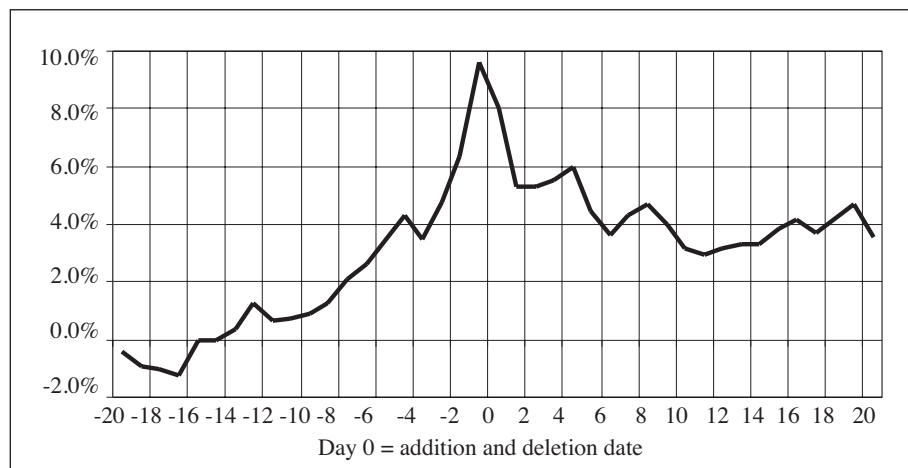


Figure 7. Average cumulative return of a portfolio long in the company added and short in the company deleted from the Euro Stoxx 50



9. Volatility of the Euro Stoxx 50 and correlation with other indexes

Figure 8 compares the volatilities (annualized standard deviation of the daily returns of the previous year) of the Euro Stoxx 50, of the S&P 500 and of the Dow Jones. It may be seen that the Euro Stoxx 50 has been much more volatile than the American indexes, especially in 1999 and after September 11, 2001.

Figures 9 and 10 compare the volatility (annualized standard deviation of the daily returns of the previous year) of the Euro Stoxx 50 with the volatilities of the national indexes of France (CAC 40), Germany (Dax), Spain (Ibex 35), and the UK (FTSE 100). The FTSE 100 (there are no UK companies in the Euro Stoxx 50) has been much less volatile than the Euro Stoxx 50.

Figures 11, 12, and 13 offer the same comparison as Figures 8, 9 and 10, but the volatility is the annualized standard deviation of the daily returns of the previous 20 days (instead of the previous year).

Table 8 offers the correlation among the indexes using daily returns of the seven-year period 1997-2003. The correlation of the Euro Stoxx with the continental indexes are higher than 0.83. The correlation of the Euro Stoxx 50 with the FTSE 100 is 0.83. The correlation of the Euro Stoxx 50 with the American indexes is much lower: 0.483 and 0.468.

Tables 9 and 10 split the period used for calculating the correlation into two sub-periods. Table 9 shows the correlation of the 3-year sub period 1997-1999, and Table 10 shows the correlation of the four-year sub period 2000-2003. Table 11 is the difference between Tables 9 and 10. It may be seen that the correlation of the Euro Stoxx 50 with all other indexes (except the Dax) was higher in 2000-2003 than in 1997-1999.

Figures 12 to 15 show the evolution of the correlations. Figures 12 and 13 contain the correlations of the daily returns of the previous 20 days, while Figures 14 and 15 contain the correlations of the daily returns of the previous year.

Figure 8. Volatility of Euro Stoxx 50, S&P 500 and Dow Jones
(Annualized rolling standard deviation calculated with daily data of the previous year)

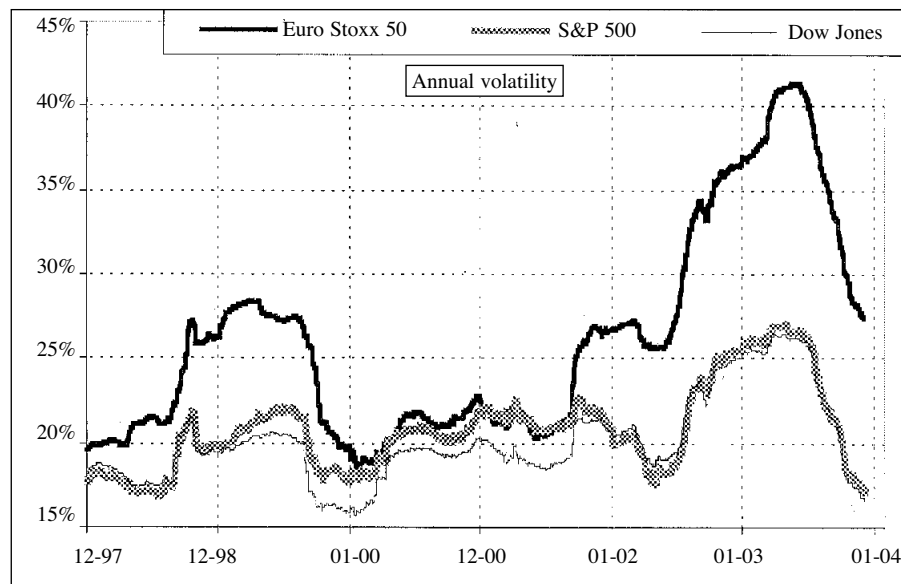


Figure 9. Volatility of Euro Stoxx 50, CAC 40 and Xetra-Dax
 (Annualized rolling standard deviation calculated with daily data of the previous year)

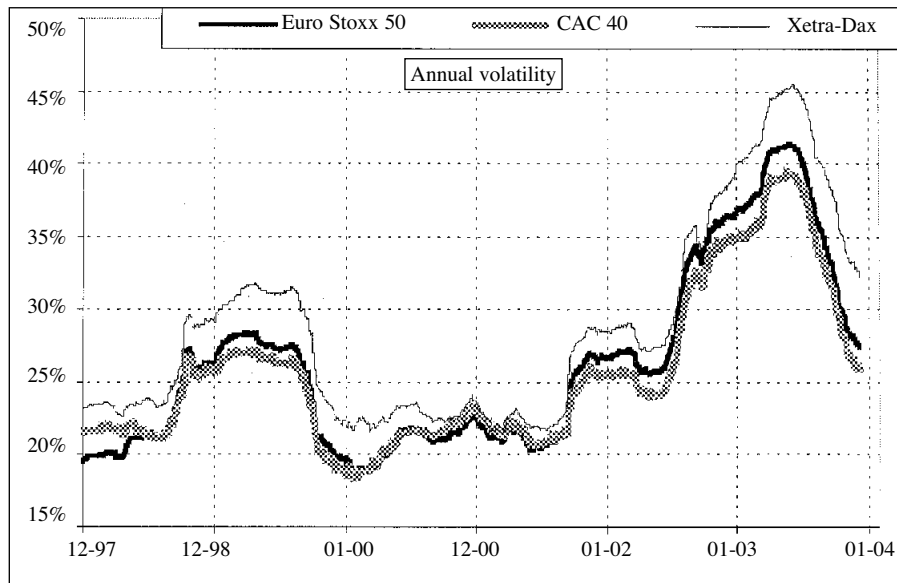


Figure 10. Volatility of Euro Stoxx 50, Ibex 35 and FTSE 100
 (Annualized rolling standard deviation calculated with daily data of the previous year)

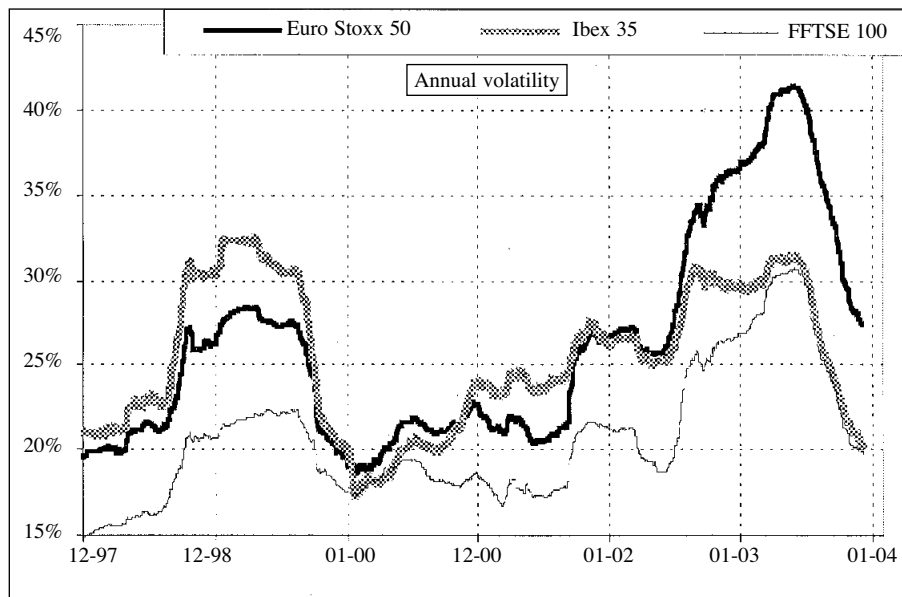


Figure 11. Volatility of Euro Stoxx 50, S&P 500 and Dow Jones
 (Annualized rolling standard deviation calculated with daily data of the previous 20 days)

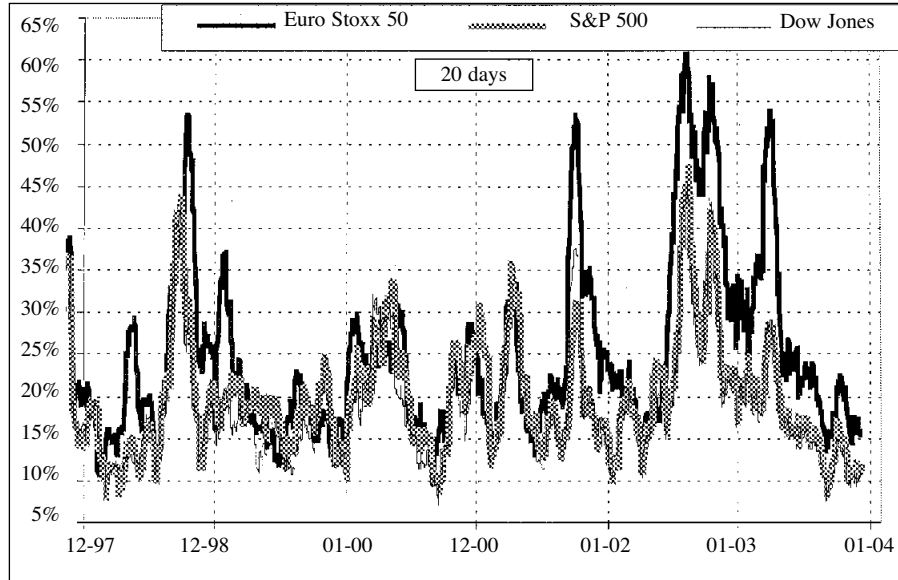


Figure 12. Volatility of Euro Stoxx 50, CAC 40 and Xetra-Dax
 (Annualized rolling standard deviation calculated with daily data of the previous 20 days)

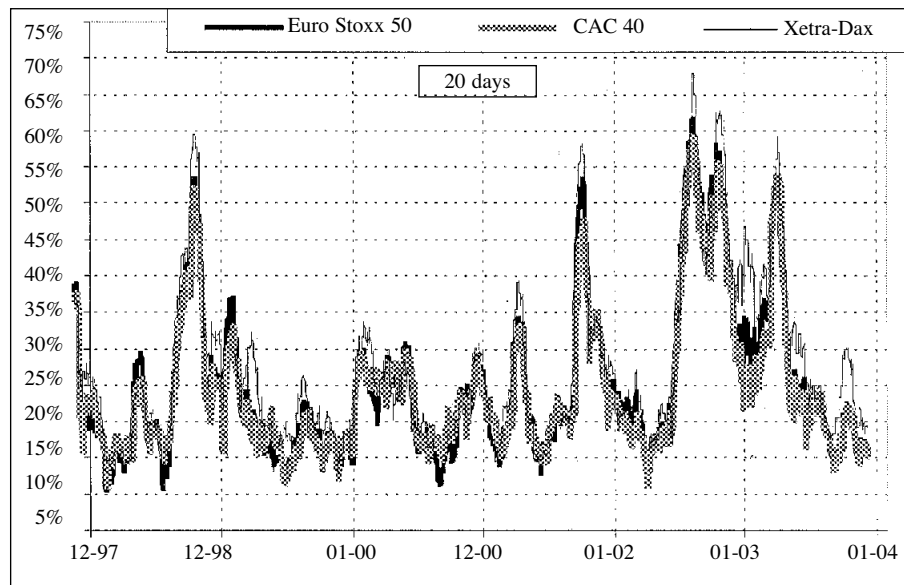


Figure 13. Volatility of Euro Stoxx 50, Ibex 35 and FTSE 100 (20 days)
 (Annualized rolling standard deviation calculated with daily data of the previous 20 days)

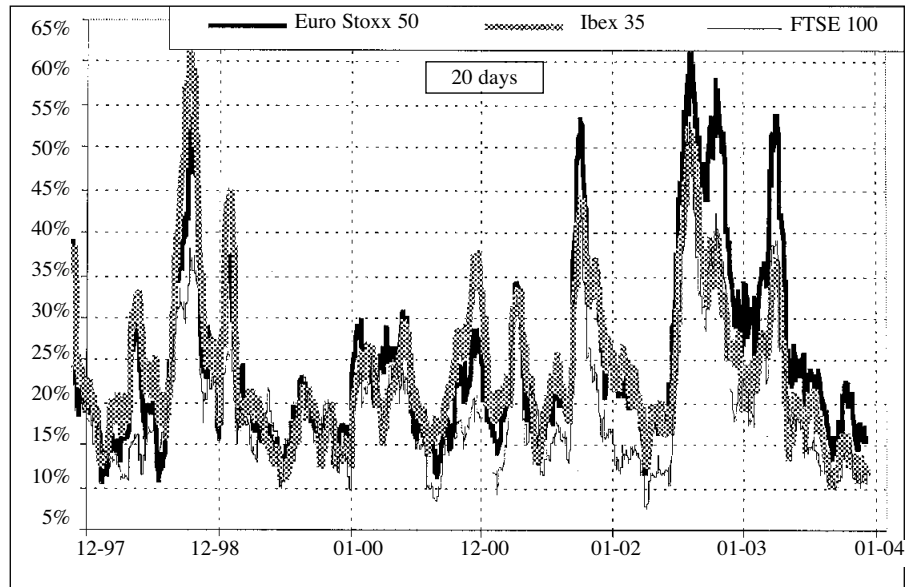


Table 8. Correlation of the Euro Stoxx 50 with other main world indexes. Correlation calculated with daily data in the period Jan 1997-Dec 2003

| | Euro Stoxx 50 | AEX | CAC 40 | Ibex 35 | Mibtel 30 | Xetra-Dax | FTSE 100 | S&P 500 | Dow Jones |
|---------------|---------------|-------|--------|---------|-----------|-----------|----------|---------|-----------|
| Euro Stoxx 50 | 1.000 | 0.919 | 0.944 | 0.853 | 0.849 | 0.903 | 0.833 | 0.483 | 0.468 |
| AEX | 0.919 | 1.000 | 0.857 | 0.765 | 0.761 | 0.805 | 0.803 | 0.435 | 0.427 |
| CAC 40 | 0.944 | 0.857 | 1.000 | 0.811 | 0.811 | 0.837 | 0.807 | 0.465 | 0.451 |
| Ibex 35 | 0.853 | 0.765 | 0.811 | 1.000 | 0.784 | 0.757 | 0.714 | 0.418 | 0.408 |
| Mibtel 30 | 0.849 | 0.761 | 0.811 | 0.784 | 1.000 | 0.768 | 0.723 | 0.407 | 0.398 |
| Xetra-Dax | 0.903 | 0.805 | 0.837 | 0.757 | 0.768 | 1.000 | 0.743 | 0.538 | 0.524 |
| FTSE 100 | 0.833 | 0.803 | 0.807 | 0.714 | 0.723 | 0.743 | 1.000 | 0.428 | 0.420 |
| S&P 500 | 0.483 | 0.435 | 0.465 | 0.418 | 0.407 | 0.538 | 0.428 | 1.000 | 0.943 |
| Dow Jones | 0.468 | 0.427 | 0.451 | 0.408 | 0.398 | 0.524 | 0.420 | 0.943 | 1.000 |

Table 9. Correlation of the Euro Stoxx 50 with other main world indexes. Correlation calculated with daily data in the period Jan 1997-Dec 1999

| | Euro Stoxx 50 | AEX | CAC 40 | Ibex 35 | Mibtel 30 | Xetra-Dax | FTSE 100 | S&P 500 | Dow Jones |
|---------------|---------------|-------|--------|---------|-----------|-----------|----------|---------|-----------|
| Euro Stoxx 50 | 1.000 | 0.887 | 0.899 | 0.821 | 0.819 | 0.905 | 0.788 | 0.406 | 0.421 |
| AEX | 0.887 | 1.000 | 0.760 | 0.710 | 0.693 | 0.800 | 0.743 | 0.375 | 0.388 |
| CAC 40 | 0.899 | 0.760 | 1.000 | 0.750 | 0.754 | 0.828 | 0.735 | 0.418 | 0.430 |
| Ibex 35 | 0.821 | 0.710 | 0.750 | 1.000 | 0.739 | 0.759 | 0.657 | 0.392 | 0.406 |
| Mibtel 30 | 0.819 | 0.693 | 0.754 | 0.739 | 1.000 | 0.732 | 0.657 | 0.325 | 0.341 |
| Xetra-Dax | 0.905 | 0.800 | 0.828 | 0.759 | 0.732 | 1.000 | 0.745 | 0.426 | 0.444 |
| FTSE 100 | 0.788 | 0.743 | 0.735 | 0.657 | 0.657 | 0.745 | 1.000 | 0.393 | 0.411 |
| S&P 500 | 0.406 | 0.375 | 0.418 | 0.392 | 0.325 | 0.426 | 0.393 | 1.000 | 0.946 |
| Dow Jones | 0.421 | 0.388 | 0.430 | 0.406 | 0.341 | 0.444 | 0.411 | 0.946 | 1.000 |

Table10. Correlation of the Euro Stoxx 50 with other main world indexes. Correlation calculated with daily data in the period Jan 2000-Dec 2003

| | Euro Stoxx 50 | AEX | CAC 40 | Ibex 35 | Mibtel 30 | Xetra-Dax | FTSE 100 | S&P 500 | Dow Jones |
|---------------|---------------|-------|--------|---------|-----------|-----------|----------|---------|-----------|
| Euro Stoxx 50 | 1.000 | 0.934 | 0.965 | 0.878 | 0.888 | 0.903 | 0.854 | 0.520 | 0.491 |
| AEX | 0.934 | 1.000 | 0.904 | 0.801 | 0.819 | 0.806 | 0.833 | 0.465 | 0.447 |
| CAC 40 | 0.965 | 0.904 | 1.000 | 0.851 | 0.864 | 0.840 | 0.842 | 0.488 | 0.462 |
| Ibex 35 | 0.878 | 0.801 | 0.851 | 1.000 | 0.821 | 0.759 | 0.751 | 0.433 | 0.410 |
| Mibtel 30 | 0.888 | 0.819 | 0.864 | 0.821 | 1.000 | 0.806 | 0.780 | 0.467 | 0.442 |
| Xetra-Dax | 0.903 | 0.806 | 0.840 | 0.759 | 0.806 | 1.000 | 0.741 | 0.596 | 0.565 |
| FTSE 100 | 0.854 | 0.833 | 0.842 | 0.751 | 0.780 | 0.741 | 1.000 | 0.445 | 0.424 |
| S&P 500 | 0.520 | 0.465 | 0.488 | 0.433 | 0.467 | 0.596 | 0.445 | 1.000 | 0.941 |
| Dow Jones | 0.491 | 0.447 | 0.462 | 0.410 | 0.442 | 0.565 | 0.424 | 0.941 | 1.000 |

Table 11. Correlation of Table 9 (97-98) minus correlation of Table 10 (2000-2003)

| | Euro Stoxx 50 | AEX | CAC 40 | Ibex 35 | Mibtel 30 | Xetra-Dax | FTSE 100 | S&P 500 | Dow Jones |
|---------------|---------------|--------|--------|---------|-----------|-----------|----------|---------|-----------|
| Euro Stoxx 50 | 0.000 | -0.047 | -0.066 | -0.057 | -0.069 | 0.002 | -0.066 | -0.115 | -0.069 |
| AEX | -0.047 | 0.000 | -0.144 | -0.091 | -0.126 | -0.006 | -0.089 | -0.090 | -0.059 |
| CAC 40 | -0.066 | -0.144 | 0.000 | -0.101 | -0.110 | -0.012 | -0.107 | -0.071 | -0.031 |
| Ibex 35 | -0.057 | -0.091 | -0.101 | 0.000 | -0.082 | 0.000 | -0.095 | -0.041 | -0.004 |
| Mibtel 30 | -0.069 | -0.126 | -0.110 | -0.082 | 0.000 | -0.075 | -0.123 | -0.141 | -0.100 |
| Xetra-Dax | 0.002 | -0.006 | -0.012 | 0.000 | -0.075 | 0.000 | 0.004 | -0.170 | -0.122 |
| FTSE 100 | -0.066 | -0.089 | -0.107 | -0.095 | -0.123 | 0.004 | 0.000 | -0.053 | -0.013 |
| S&P 500 | -0.115 | -0.090 | -0.071 | -0.041 | -0.141 | -0.170 | -0.053 | 0.000 | 0.004 |
| Dow Jones | -0.069 | -0.059 | -0.031 | -0.004 | -0.100 | -0.122 | -0.013 | 0.004 | 0.000 |

Figure 14. Correlation between the Euro Stoxx 50 and the S&P 500. Correlation between Euro Stoxx 50 and Dow Jones (20-day rolling daily correlations)

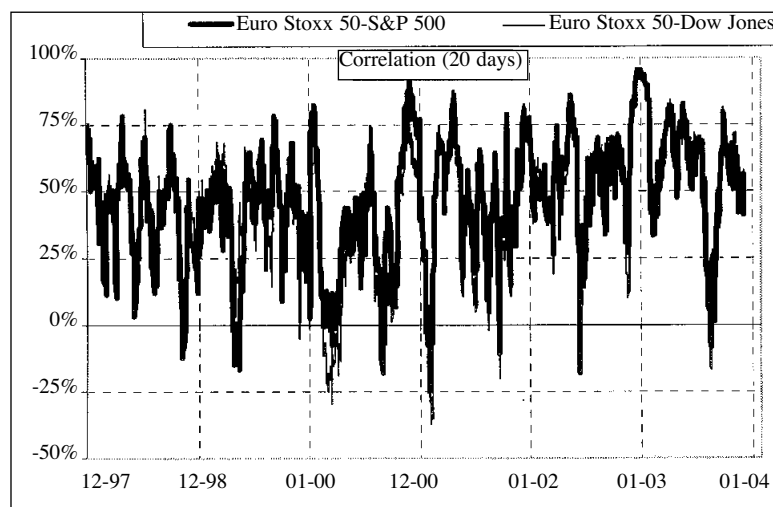


Figure 15. Correlation between Euro Stoxx and Ibex 35. Correlation between Euro Stoxx 50 and FTSE 100 (20-day rolling daily correlations)

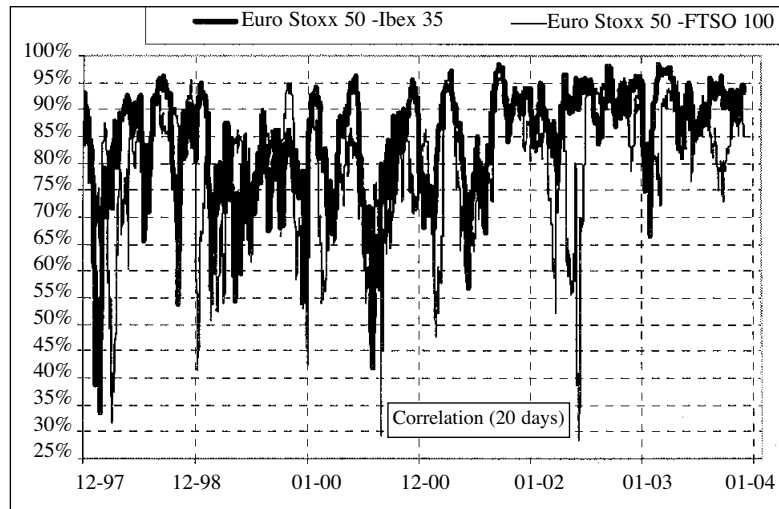


Figure 16. Correlation between Euro Stoxx and S&P 500. Correlation between Euro Stoxx 50 and Dow Jones (annual rolling daily correlations)

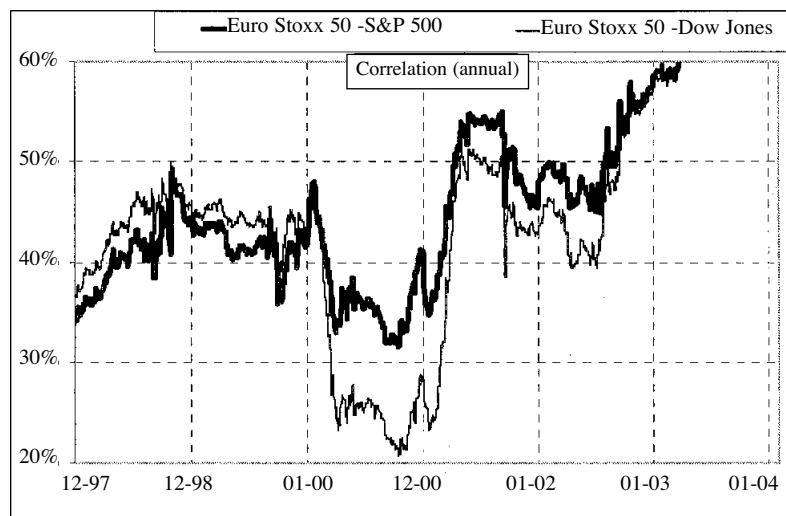
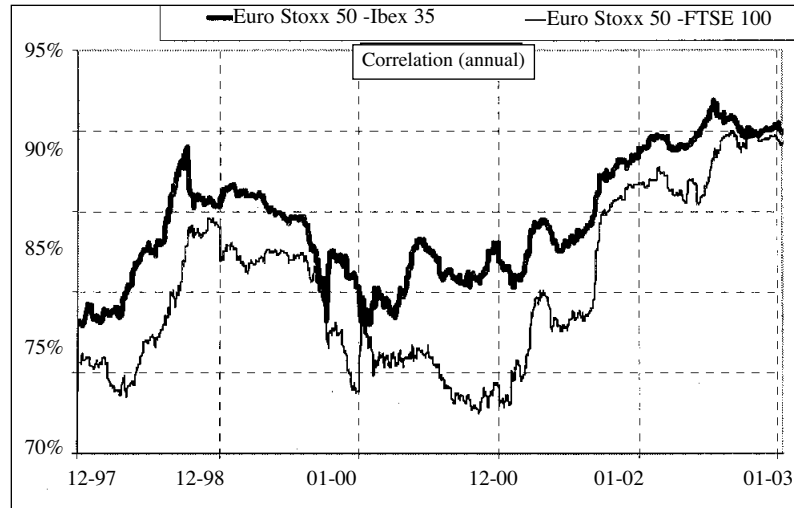


Figure 17. Correlation between Euro Stoxx and Ibex 35. Correlation between Euro Stoxx 50 and FTSE 100
(Annual rolling daily correlations)



References

Fernández, Pablo (2002), *Valuation and Shareholder Value Creation*. San Diego, CA: Academic Press.

Appendix 1. Market Value of the companies in the Euro Stoxx 50 in December 2002 and in previous years (million euros)

| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| ABN AMRO HOLDING | 16,927 | 25,266 | 25,835 | 36,375 | 36,373 | 27,898 | 24,027 | 29,958 |
| AEGON | 13,249 | 23,724 | 61,004 | 64,090 | 59,488 | 43,236 | 17,437 | 17,609 |
| AHOLD KON. | 8,171 | 12,489 | 19,720 | 18,819 | 26,729 | 30,046 | 11,125 | 9,378 |
| AIR LIQUIDE | 9,029 | 10,506 | 12,957 | 13,772 | 14,528 | 14,295 | 12,673 | 13,988 |
| ALCATEL | 10,280 | 18,978 | 20,717 | 45,307 | 73,289 | 23,333 | 5,116 | 13,113 |
| ALLIANZ | 33,598 | 55,698 | 77,445 | 81,920 | 97,956 | 70,682 | 24,152 | 38,503 |
| GENERALI | 13,095 | 19,787 | 36,558 | 33,650 | 53,002 | 39,094 | 25,004 | 26,796 |
| AVENTIS | 8,827 | 14,792 | 16,306 | 44,891 | 73,376 | 62,674 | 41,334 | 42,023 |
| AXA | 9,716 | 23,522 | 42,727 | 48,925 | 63,526 | 40,288 | 22,537 | 30,173 |
| BASF | 18,445 | 19,739 | 19,940 | 31,446 | 29,585 | 25,642 | 21,049 | 25,425 |
| BAYER | 23,525 | 24,870 | 26,192 | 34,399 | 40,804 | 26,146 | 14,935 | 16,959 |
| BBVA | 9,468 | 20,040 | 27,316 | 29,878 | 50,654 | 44,422 | 29,146 | 34,995 |
| BSCH | 7,977 | 14,658 | 19,837 | 41,226 | 51,477 | 44,871 | 31,185 | 44,775 |
| BNP PARIBAS | 6,350 | 10,400 | 15,323 | 41,204 | 41,894 | 44,520 | 34,734 | 45,086 |
| CARREFOUR | 19,795 | 18,418 | 24,984 | 62,711 | 46,680 | 41,531 | 30,175 | 31,166 |
| DAIMLERCHRYSLER | | | 83,741 | 77,133 | 45,354 | 49,261 | 29,903 | 37,697 |
| DEUTSCHE BANK | 18,133 | 34,336 | 26,570 | 51,445 | 54,990 | 49,352 | 27,287 | 38,228 |
| DEUTSCHE TELEKOM | 43,554 | 46,686 | 76,987 | 214,749 | 97,250 | 81,017 | 51,422 | 60,909 |
| E ON | 22,536 | 30,903 | 25,531 | 24,361 | 49,462 | 44,409 | 26,607 | 35,804 |
| ENDESA | 14,439 | 16,908 | 21,577 | 20,868 | 19,216 | 18,602 | 11,805 | 16,146 |
| ENEL | | | | 50,445 | 50,202 | 38,379 | 30,073 | 32,680 |
| ENI | 32,162 | 41,436 | 44,623 | 43,692 | 54,415 | 56,338 | 60,627 | 59,883 |
| FORTIS | 5,001 | 7,388 | 13,089 | 16,449 | 19,294 | 37,643 | 21,551 | 20,687 |
| FRANCE TELECOM | | 33,280 | 69,353 | 134,532 | 106,093 | 51,807 | 19,886 | 54,436 |
| DANONE | 8,005 | 11,964 | 17,971 | 17,171 | 23,937 | 20,484 | 17,785 | 17,686 |
| SOCIETE GENERALE | 7,835 | 11,942 | 14,084 | 24,018 | 28,003 | 27,068 | 23,853 | 30,637 |
| IBERDROLA | 10,168 | 10,864 | 14,386 | 12,405 | 12,036 | 13,181 | 12,036 | 14,127 |
| ING GROEP CERTS. | 22,174 | 35,629 | 49,090 | 57,943 | 83,164 | 56,435 | 32,162 | 38,120 |
| L'OREAL | 20,134 | 24,266 | 41,629 | 53,848 | 61,724 | 54,693 | 49,048 | 43,944 |
| LAFARGE | 4,478 | 5,683 | 8,312 | 12,104 | 9,772 | 13,639 | 9,534 | 11,798 |
| LVMH | 19,302 | 13,341 | 15,001 | 43,556 | 34,535 | 22,388 | 19,181 | 28,269 |
| MUNCH.RUCK. | 15,951 | 28,460 | 36,037 | 45,034 | 67,428 | 53,961 | 20,368 | 22,067 |
| NOKIA | 9,388 | 14,079 | 48,687 | 206,903 | 222,981 | 137,087 | 72,476 | 65,757 |
| PHILIPS ELTN.KON | 11,013 | 19,534 | 21,069 | 45,776 | 51,353 | 43,930 | 21,978 | 30,467 |
| REPSOL YPF | 8,979 | 11,720 | 13,649 | 26,243 | 20,779 | 19,998 | 15,383 | 18,875 |
| ROYAL DUTCH PTL. | 73,683 | 108,299 | 90,979 | 130,480 | 139,937 | 121,006 | 88,065 | 87,090 |
| RWE | 10,939 | 15,962 | 22,371 | 18,353 | 25,270 | 22,309 | 12,928 | 16,419 |
| SAINT GOBAIN | 9,694 | 11,627 | 10,858 | 16,272 | 14,361 | 14,446 | 9,534 | 13,491 |
| SAN PAOLO IMI | 3,919 | 7,122 | 21,146 | 18,915 | 24,177 | 16,924 | 8,983 | 14,981 |
| SANOFI-SYNTHELABO | 8,232 | 10,797 | 15,171 | 30,222 | 51,932 | 61,340 | 42,659 | 43,751 |
| SIEMENS | 20,272 | 30,595 | 32,233 | 75,537 | 82,802 | 66,341 | 36,060 | 56,570 |
| SUEZ | 4,355 | 12,780 | 25,756 | 31,439 | 38,780 | 34,681 | 17,138 | 15,998 |
| TELECOM ITALIA | 976 | 1,248 | 8,377 | 13,574 | 12,505 | 10,494 | 8,598 | 24,210 |
| TELEFONICA | 17,024 | 24,562 | 39,645 | 80,918 | 76,396 | 70,219 | 41,461 | 57,687 |
| TIM | 13,150 | 27,996 | 41,832 | 73,628 | 71,686 | 52,879 | 36,686 | 36,349 |
| TOTAL SA | 15,489 | 24,241 | 21,084 | 95,552 | 117,162 | 113,098 | 93,267 | 95,519 |
| UNICREDITO ITALIANO | 1,911 | 8,052 | 23,569 | 24,178 | 27,864 | 22,661 | 23,839 | 26,926 |
| UNILEVER CERTS. | 22,277 | 36,312 | 46,624 | 31,345 | 38,524 | 37,638 | 33,466 | 29,636 |
| VIVENDI UNIVERSAL | 12,019 | 17,172 | 35,152 | 52,843 | 75,710 | 67,022 | 16,749 | 20,648 |
| VOLKSWAGEN | 9,066 | 14,301 | 21,010 | 17,396 | 17,371 | 16,436 | 10,876 | 14,141 |
| Sum | 704,709 | 1,062,370 | 1,544,055 | 2,517,939 | 2,685,826 | 2,195,844 | 1,397,903 | 1,651,580 |

**Appendix 2. Evolution of the shareholder value creation of the companies in the Euro Stoxx 50
(€ million)**

| | 1997 | | 1998 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|---------------------|----------------|----|----------------|----|----------------|----|-----------------|----|-----------------|----|-----------------|----|----------------|----|
| SIEMENS | 7,967 | 8 | -2,122 | 43 | 40,378 | 4 | 668 | 25 | -23,031 | 41 | -35,461 | 43 | 18,778 | 1 |
| TELEFONICA | 5,980 | 17 | 10,677 | 11 | 38,103 | 5 | -32,517 | 47 | -16,417 | 35 | -35,739 | 44 | 15,382 | 2 |
| BSCH | 6,139 | 16 | 667 | 32 | 5,235 | 23 | -2,981 | 34 | -13,120 | 31 | -17,453 | 26 | 12,443 | 3 |
| DEUTSCHE BANK | 12,139 | 5 | -10,791 | 47 | 17,898 | 11 | -867 | 27 | -10,844 | 27 | -26,100 | 38 | 12,293 | 4 |
| FRANCE TELECOM | | | 32,696 | 2 | 62,212 | 3 | -52,606 | 49 | -62,918 | 49 | -35,815 | 45 | 9,554 | 5 |
| BNP PARIBAS | 3,434 | 24 | 3,833 | 23 | 3,909 | 26 | -2,333 | 31 | 635 | 4 | -13,153 | 22 | 8,813 | 6 |
| E ON | 6,773 | 14 | -7,750 | 46 | -2,559 | 38 | 6,903 | 10 | -7,949 | 23 | -17,690 | 27 | 8,765 | 7 |
| LVMH | -7,709 | 47 | 542 | 33 | 28,076 | 8 | -12,939 | 43 | -15,017 | 34 | -4,905 | 7 | 8,207 | 8 |
| PHILIPS ELTN.KON | 7,297 | 12 | -896 | 38 | 26,089 | 9 | 2,886 | 19 | -11,635 | 29 | -25,720 | 37 | 7,402 | 9 |
| AXA | 3,402 | 26 | 16,037 | 5 | 3,020 | 27 | 2,994 | 18 | -29,584 | 44 | -21,114 | 33 | 7,125 | 10 |
| DAIMLERCHRYSLER | | | | | -12,858 | 48 | -38,853 | 48 | 1,355 | 3 | -23,128 | 36 | 7,083 | 11 |
| ALCATEL | 7,852 | 9 | -3,579 | 44 | 23,937 | 10 | 11,191 | 6 | -56,280 | 48 | -20,280 | 31 | 6,960 | 12 |
| TOTAL SA | 7,691 | 10 | -4,739 | 45 | 10,632 | 14 | 13,292 | 5 | -4,361 | 16 | -22,632 | 34 | 6,295 | 13 |
| SOCIETE GENERALE | 3,235 | 28 | 448 | 34 | 9,169 | 16 | 2,432 | 20 | -2,703 | 12 | -4,539 | 6 | 6,161 | 14 |
| DEUTSCHE TELEKOM | -2,034 | 45 | 27,939 | 4 | 114,447 | 2 | -138,170 | 50 | -46,592 | 47 | -35,392 | 42 | 5,974 | 15 |
| SAN PAOLO IMI | 2,795 | 31 | 4,513 | 22 | -2,812 | 40 | 4,121 | 15 | -8,917 | 24 | -9,305 | 17 | 5,855 | 16 |
| ALLIANZ | 18,745 | 2 | 15,117 | 7 | -1,240 | 34 | 8,908 | 7 | -40,620 | 46 | -52,441 | 48 | 4,477 | 17 |
| BBVA | 9,804 | 7 | 5,358 | 18 | -78 | 31 | 1,008 | 24 | -10,402 | 26 | -19,055 | 29 | 4,425 | 18 |
| ING GROEP CERTS. | 6,789 | 13 | 9,484 | 12 | 4,709 | 24 | 20,028 | 2 | -32,970 | 45 | -28,506 | 40 | 4,293 | 19 |
| BASF | -61 | 43 | -1,137 | 39 | 10,939 | 13 | -3,918 | 39 | -5,721 | 19 | -4,946 | 8 | 4,284 | 20 |
| ABN AMRO HOLDING | 5,795 | 18 | -1,757 | 42 | 8,885 | 17 | -2,984 | 35 | -11,200 | 28 | -5,316 | 11 | 4,251 | 21 |
| ENDESA | 1,279 | 37 | 5,431 | 17 | -3,987 | 43 | -3,264 | 37 | -1,918 | 9 | -8,063 | 16 | 4,108 | 22 |
| SAINT GOBAIN | 912 | 39 | -1,718 | 41 | 5,731 | 22 | -2,553 | 32 | -368 | 6 | -5,777 | 12 | 3,623 | 23 |
| RWE | 4,252 | 22 | -1,389 | 40 | -5,104 | 44 | 3,314 | 17 | -4,446 | 17 | -10,624 | 20 | 3,264 | 24 |
| VIVENDI UNIVERSAL | 2,807 | 30 | 11,265 | 10 | 6,584 | 19 | -15,717 | 44 | -14,630 | 33 | -55,652 | 49 | 2,734 | 25 |
| REPSOL YPF | 2,071 | 33 | 1,175 | 31 | 6,540 | 20 | -8,930 | 40 | -2,189 | 11 | -6,428 | 14 | 2,660 | 26 |
| VOLKSWAGEN | 4,384 | 20 | 3,745 | 24 | -5,236 | 46 | -1,287 | 29 | -2,106 | 10 | -6,590 | 15 | 2,656 | 27 |
| ENEL | | | | | | | -3,037 | 36 | -13,303 | 32 | -9,380 | 18 | 2,647 | 28 |
| UNICREDITO ITALIANO | 4,299 | 21 | 5,821 | 16 | -2,434 | 36 | 1,957 | 23 | -7,223 | 22 | -4,954 | 9 | 2,210 | 29 |
| BAYER | -427 | 44 | -244 | 37 | 7,209 | 18 | 4,406 | 14 | -17,306 | 37 | -12,908 | 21 | 1,730 | 30 |
| IBERDROLA | 139 | 42 | 2,891 | 28 | -2,702 | 39 | -1,181 | 28 | 506 | 5 | -1,831 | 2 | 1,714 | 31 |
| AIR LIQUIDE | 848 | 40 | 1,746 | 30 | 301 | 30 | -32 | 26 | -881 | 7 | -2,179 | 3 | 1,079 | 32 |
| TELECOM ITALIA | 170 | 41 | 6,290 | 15 | -117 | 32 | -2,698 | 33 | -5,852 | 20 | -4,412 | 5 | 489 | 33 |
| GENERALI | 5,655 | 19 | 12,393 | 8 | -5,119 | 45 | 7,308 | 9 | -17,752 | 38 | -17,444 | 25 | 396 | 34 |
| LAFARGE | 940 | 38 | 1,794 | 29 | 2,966 | 28 | -3,554 | 38 | 1,568 | 2 | -5,038 | 10 | 313 | 35 |
| DANONE | 3,418 | 25 | 5,090 | 20 | -1,627 | 35 | 5,464 | 12 | -5,015 | 18 | -2,482 | 4 | -560 | 36 |
| CARREFOUR | -3,225 | 46 | 5,130 | 19 | 16,427 | 12 | -21,656 | 45 | -9,163 | 25 | -14,089 | 23 | -583 | 37 |
| SUEZ | 1,400 | 36 | 8,614 | 13 | -3,532 | 42 | 5,285 | 13 | -7,074 | 21 | -19,942 | 30 | -681 | 38 |
| SANOFI-SYNTHELABO | 1,843 | 35 | 3,106 | 26 | 1,662 | 29 | 19,660 | 3 | 5,695 | 1 | -22,968 | 35 | -1,025 | 39 |
| AEGON | 7,676 | 11 | 35,656 | 1 | -8,482 | 47 | -9,687 | 42 | -22,302 | 40 | -28,725 | 41 | -1,130 | 40 |
| FORTIS | 1,994 | 34 | 5,069 | 21 | -834 | 33 | -1,569 | 30 | -4,143 | 15 | -18,526 | 28 | -1,181 | 41 |
| AVENTIS | 4,080 | 23 | -220 | 36 | 4,338 | 25 | 24,376 | 1 | -16,810 | 36 | -27,068 | 39 | -1,796 | 42 |
| ENI | 6,762 | 15 | 255 | 35 | -3,502 | 41 | 8,159 | 8 | -1,572 | 8 | 1,983 | 1 | -2,109 | 43 |
| ROYAL DUTCH PTL. | 30,366 | 1 | -23,426 | 48 | 36,950 | 6 | 2,149 | 21 | -25,794 | 43 | -38,111 | 46 | -2,320 | 44 |
| TIM | 13,755 | 3 | 11,771 | 9 | 29,520 | 7 | -23,344 | 46 | -23,926 | 42 | -15,890 | 24 | -2,736 | 45 |
| MUNCH.RUCK. | 10,659 | 6 | 3,288 | 25 | 5,888 | 21 | 18,666 | 4 | -18,778 | 39 | -38,372 | 47 | -3,648 | 46 |
| UNILEVER CERTS. | 12,630 | 4 | 7,898 | 14 | -14,233 | 49 | 5,613 | 11 | -2,995 | 14 | -6,263 | 13 | -5,092 | 47 |
| AHOLD KON. | 3,198 | 29 | 3,083 | 27 | -2,436 | 37 | 1,996 | 22 | -2,945 | 13 | -20,919 | 32 | -5,427 | 48 |
| L'OREAL | 2,306 | 32 | 15,561 | 6 | 9,619 | 15 | 3,546 | 16 | -11,656 | 30 | -9,568 | 19 | -8,089 | 49 |
| NOKIA | 3,368 | 27 | 30,246 | 3 | 116,768 | 1 | -9,384 | 41 | -108,074 | 50 | -78,236 | 50 | -12,051 | 50 |
| Sum | 233,591 | | 254,858 | | 579,249 | | -209,728 | | -748,743 | | -949,146 | | 150,016 | |

Appendix 3. Evolution of the shareholder return of the companies in the Euro Stoxx 50

| | 1997 | | 1998 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|-----------------------------|------------|----|------------|----|------------|----|------------|----|-------------|----|-------------|----|------------|----|
| ALCATEL | 87% | 5 | -9% | 44 | 123% | 6 | 34% | 7 | -68% | 50 | -78% | 50 | 144% | 1 |
| SAN PAOLO IMI | 82% | 6 | 73% | 10 | -5% | 39 | 32% | 8 | -28% | 39 | -46% | 40 | 74% | 2 |
| SIEMENS | 50% | 21 | 3% | 41 | 133% | 4 | 10% | 24 | -19% | 34 | -45% | 39 | 60% | 3 |
| FRANCE TELECOM | | | 108% | 4 | 98% | 8 | -29% | 48 | -50% | 49 | -60% | 45 | 57% | 4 |
| DEUTSCHE BANK | 78% | 8 | -21% | 48 | 76% | 10 | 8% | 26 | -10% | 18 | -44% | 38 | 54% | 5 |
| LVMH | -29% | 47 | 14% | 33 | 196% | 2 | -20% | 41 | -34% | 44 | -12% | 11 | 51% | 6 |
| BSCH | 88% | 4 | 14% | 32 | 34% | 22 | 3% | 30 | -16% | 31 | -28% | 19 | 49% | 7 |
| SAINT GOBAIN | 20% | 39 | -6% | 43 | 60% | 14 | -7% | 39 | 5% | 7 | -32% | 22 | 46% | 8 |
| TELEFONICA | 47% | 25 | 54% | 14 | 104% | 7 | -29% | 47 | -11% | 25 | -41% | 35 | 46% | 9 |
| ENDESA | 19% | 40 | 42% | 18 | -11% | 45 | -6% | 37 | 0% | 11 | -34% | 27 | 43% | 10 |
| PHILIPS ELTN.KON | 77% | 9 | 5% | 38 | 132% | 5 | 16% | 20 | -13% | 29 | -49% | 42 | 42% | 11 |
| E ON | 40% | 31 | -17% | 47 | -3% | 38 | 37% | 6 | -8% | 16 | -32% | 23 | 40% | 12 |
| AXA | 45% | 27 | 77% | 7 | 15% | 29 | 15% | 22 | -38% | 46 | -43% | 37 | 40% | 13 |
| BNP PARIBAS | 65% | 13 | 47% | 17 | 34% | 23 | 5% | 29 | 11% | 5 | -20% | 14 | 34% | 14 |
| SOCIETE GENERALE | 52% | 19 | 13% | 34 | 73% | 11 | 19% | 17 | -1% | 12 | -8% | 5 | 34% | 15 |
| RWE | 49% | 24 | 0% | 42 | -16% | 47 | 26% | 11 | -10% | 17 | -40% | 32 | 32% | 16 |
| DAIMLERCHRYSLER | | | | | -6% | 41 | -40% | 49 | 13% | 3 | -38% | 31 | 32% | 17 |
| VOLKSWAGEN | 59% | 15 | 36% | 25 | -17% | 48 | 1% | 32 | -4% | 15 | -32% | 24 | 32% | 18 |
| BASF | 10% | 43 | 3% | 39 | 62% | 13 | -4% | 36 | -11% | 24 | -11% | 9 | 28% | 19 |
| ALLIANZ | 67% | 12 | 36% | 23 | 6% | 33 | 20% | 16 | -33% | 42 | -66% | 48 | 26% | 20 |
| ABN AMRO HOLDING | 45% | 28 | 3% | 40 | 42% | 19 | 1% | 33 | -22% | 36 | -10% | 8 | 26% | 21 |
| VIVENDI UNIVERSAL | 34% | 32 | 75% | 9 | 26% | 25 | -21% | 42 | -11% | 21 | -74% | 49 | 25% | 22 |
| REPSOL YPF | 34% | 33 | 19% | 31 | 55% | 16 | -25% | 45 | -2% | 13 | -22% | 16 | 25% | 23 |
| BBVA | 115% | 3 | 36% | 22 | 7% | 31 | 14% | 23 | -11% | 20 | -32% | 25 | 24% | 24 |
| IBERDROLA | 12% | 42 | 36% | 26 | -12% | 46 | 0% | 34 | 13% | 4 | -6% | 3 | 22% | 25 |
| ING GROEP CERTS. | 41% | 30 | 37% | 21 | 18% | 27 | 44% | 4 | -31% | 41 | -42% | 36 | 22% | 26 |
| DEUTSCHE TELEKOM | 5% | 45 | 69% | 13 | 157% | 3 | -54% | 50 | -38% | 47 | -34% | 29 | 20% | 27 |
| BAYER | 8% | 44 | 8% | 36 | 35% | 20 | 22% | 15 | -34% | 43 | -41% | 34 | 19% | 28 |
| UNICREDITO ITALIANO | 235% | 1 | 81% | 5 | -2% | 36 | 17% | 19 | -17% | 32 | -13% | 12 | 17% | 29 |
| ENEL | | | | | | | 2% | 31 | -19% | 33 | -17% | 13 | 16% | 30 |
| AIR LIQUIDE | 19% | 41 | 25% | 29 | 9% | 30 | 8% | 27 | 2% | 9 | -8% | 4 | 16% | 31 |
| TELECOM ITALIA | 28% | 37 | 513% | 1 | 6% | 32 | -11% | 40 | -37% | 45 | -32% | 26 | 14% | 32 |
| TOTAL SA | 60% | 14 | -11% | 45 | 57% | 15 | 22% | 14 | 4% | 8 | -12% | 10 | 14% | 33 |
| LAFARGE | 32% | 35 | 41% | 19 | 43% | 18 | -21% | 43 | 24% | 1 | -29% | 20 | 10% | 34 |
| GENERALI | 53% | 18 | 71% | 12 | -7% | 44 | 30% | 9 | -26% | 38 | -36% | 30 | 9% | 35 |
| CARREFOUR | -6% | 46 | 36% | 24 | 72% | 12 | -26% | 46 | -12% | 26 | -26% | 18 | 5% | 36 |
| SANOFLI-SYNTHELABO | 32% | 34 | 37% | 20 | 18% | 28 | 74% | 1 | 19% | 2 | -29% | 21 | 5% | 37 |
| ENI | 32% | 36 | 10% | 35 | 0% | 35 | 28% | 10 | 7% | 6 | 13% | 1 | 4% | 38 |
| ROYAL DUTCH PTL. | 51% | 20 | -13% | 46 | 47% | 17 | 10% | 25 | -11% | 23 | -24% | 17 | 4% | 39 |
| DANONE | 53% | 17 | 51% | 15 | -2% | 37 | 40% | 5 | -13% | 27 | -4% | 2 | 4% | 40 |
| AVENTIS | 57% | 16 | 8% | 37 | 34% | 21 | 64% | 2 | -14% | 30 | -34% | 28 | 4% | 41 |
| SUEZ | 42% | 29 | 76% | 8 | -7% | 42 | 25% | 13 | -10% | 19 | -50% | 43 | 3% | 42 |
| FORTIS | 50% | 22 | 78% | 6 | 1% | 34 | -1% | 35 | -13% | 28 | -41% | 33 | 2% | 43 |
| AEGON | 67% | 10 | 159% | 3 | -7% | 43 | -7% | 38 | -29% | 40 | -58% | 44 | 1% | 44 |
| TIM | 115% | 2 | 51% | 16 | 78% | 9 | -22% | 44 | -24% | 37 | -22% | 15 | 0% | 45 |
| NOKIA | 47% | 26 | 224% | 2 | 248% | 1 | 6% | 28 | -38% | 48 | -47% | 41 | -8% | 46 |
| UNILEVER CERTS. | 67% | 11 | 30% | 28 | -24% | 49 | 26% | 12 | 0% | 10 | -9% | 6 | -8% | 47 |
| L'OREAL | 22% | 38 | 73% | 11 | 30% | 24 | 15% | 21 | -11% | 22 | -9% | 7 | -9% | 48 |
| MUNCH.RUCK. | 79% | 7 | 21% | 30 | 24% | 26 | 50% | 3 | -20% | 35 | -62% | 47 | -10% | 49 |
| AHOLD KON. | 49% | 23 | 33% | 27 | -6% | 40 | 19% | 18 | -3% | 14 | -62% | 46 | -41% | 50 |
| Average | 51% | | 49% | | 41% | | 9% | | -14% | | -33% | | 24% | |
| Weighted average | 44% | | 33% | | 45% | | 1% | | -19% | | -34% | | 19% | |
| Euro Stoxx 50 | 40% | | 35% | | 49% | | -2% | | -19% | | -36% | | 19% | |
| N° companies with return >0 | 45 | | 41 | | 35 | | 34 | | 9 | | 1 | | 45 | |

Appendix 4. Volatility of the companies in the Euro Stoxx 50
(calculated at the end of each year with monthly data of the previous 12 months)

| | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|----------------------|------------|----|------------|----|------------|----|------------|----|------------|----|
| AHOLD KON. | 19% | 44 | 34% | 18 | 16% | 49 | 43% | 24 | 104% | 1 |
| MUNCH.RUCK. | 38% | 12 | 26% | 34 | 16% | 48 | 55% | 12 | 93% | 2 |
| ALLIANZ | 31% | 22 | 25% | 35 | 24% | 23 | 54% | 13 | 83% | 3 |
| AEGON | 31% | 20 | 36% | 14 | 32% | 17 | 77% | 4 | 67% | 4 |
| ALCATEL | 41% | 6 | 52% | 1 | 69% | 2 | 147% | 1 | 63% | 5 |
| ING GROEP CERTS. | 26% | 28 | 22% | 44 | 20% | 37 | 54% | 14 | 58% | 6 |
| SUEZ | 20% | 40 | 23% | 41 | 20% | 38 | 41% | 28 | 57% | 7 |
| BAYER | 27% | 26 | 37% | 11 | 31% | 18 | 46% | 22 | 53% | 8 |
| FRANCE TELECOM | 40% | 8 | 39% | 8 | 64% | 3 | 138% | 2 | 51% | 9 |
| VOLKSWAGEN | 38% | 11 | 36% | 13 | 35% | 13 | 34% | 32 | 43% | 10 |
| LAFARGE | 32% | 17 | 36% | 16 | 25% | 22 | 24% | 40 | 40% | 11 |
| FORTIS | 19% | 43 | 28% | 29 | 22% | 31 | 48% | 18 | 37% | 12 |
| RWE | 20% | 39 | 33% | 19 | 19% | 41 | 32% | 34 | 37% | 13 |
| PHILIPS ELTN.KON | 30% | 23 | 43% | 6 | 48% | 9 | 59% | 10 | 36% | 14 |
| AXA | 21% | 36 | 22% | 42 | 34% | 14 | 78% | 3 | 36% | 15 |
| NOKIA | 51% | 4 | 28% | 28 | 80% | 1 | 52% | 15 | 35% | 16 |
| VIVENDI UNIVERSAL | 32% | 19 | 40% | 7 | 37% | 11 | 62% | 7 | 35% | 17 |
| SIEMENS | 37% | 14 | 49% | 2 | 60% | 4 | 61% | 9 | 34% | 18 |
| SAINT GOBAIN | 24% | 32 | 36% | 15 | 21% | 35 | 61% | 8 | 33% | 19 |
| SOCIETE GENERALE | 40% | 7 | 25% | 36 | 26% | 20 | 46% | 21 | 32% | 20 |
| BBV ARGENTARIA | 21% | 35 | 20% | 48 | 31% | 19 | 47% | 19 | 32% | 21 |
| DEUTSCHE BANK | 40% | 9 | 38% | 10 | 40% | 10 | 42% | 25 | 32% | 22 |
| GENERALI | 25% | 30 | 22% | 43 | 21% | 34 | 40% | 29 | 31% | 23 |
| BSCH | 17% | 48 | 27% | 31 | 26% | 21 | 51% | 16 | 31% | 24 |
| DAIMLERCHRYSLER | 38% | 13 | 29% | 25 | 51% | 8 | 36% | 31 | 31% | 25 |
| BASF | 32% | 18 | 31% | 23 | 24% | 24 | 29% | 35 | 28% | 26 |
| CARREFOUR | 33% | 16 | 29% | 26 | 18% | 42 | 34% | 33 | 28% | 27 |
| L'OREAL | 31% | 21 | 34% | 17 | 21% | 33 | 19% | 46 | 28% | 28 |
| AVENTIS | 24% | 31 | 21% | 47 | 18% | 43 | 26% | 36 | 28% | 29 |
| SANOFI-SYNTHELABO | 28% | 24 | 25% | 38 | 24% | 25 | 15% | 50 | 27% | 30 |
| SAN PAOLO IMI | 23% | 33 | 46% | 3 | 23% | 28 | 59% | 11 | 27% | 31 |
| DEUTSCHE TELEKOM | 56% | 1 | 45% | 4 | 52% | 7 | 64% | 5 | 26% | 32 |
| ABN AMRO HOLDING | 26% | 29 | 29% | 24 | 32% | 16 | 64% | 6 | 26% | 33 |
| LVMH | 48% | 5 | 26% | 33 | 53% | 6 | 41% | 27 | 26% | 34 |
| E ON | 21% | 38 | 32% | 20 | 17% | 44 | 22% | 42 | 25% | 35 |
| BNP PARIBAS | 26% | 27 | 25% | 37 | 22% | 32 | 44% | 23 | 25% | 36 |
| UNICREDITO ITALIANO | 20% | 42 | 27% | 30 | 20% | 39 | 22% | 43 | 24% | 37 |
| TELECOM ITAL.MOBL. | 53% | 3 | 38% | 9 | 33% | 15 | 37% | 30 | 22% | 38 |
| TOTAL SA | 27% | 25 | 19% | 49 | 23% | 27 | 17% | 49 | 21% | 39 |
| TELEFONICA | 40% | 10 | 31% | 21 | 36% | 12 | 48% | 17 | 21% | 40 |
| AIR LIQUIDE | 20% | 41 | 21% | 45 | 17% | 45 | 19% | 47 | 21% | 41 |
| ENDESA | 21% | 37 | 29% | 27 | 12% | 50 | 42% | 26 | 20% | 42 |
| ENI | 18% | 46 | 24% | 40 | 16% | 47 | 18% | 48 | 20% | 43 |
| ROYAL DUTCH PTL. | 35% | 15 | 21% | 46 | 20% | 40 | 25% | 38 | 19% | 44 |
| UNILEVER CERTS. | 14% | 49 | 36% | 12 | 23% | 26 | 23% | 41 | 19% | 45 |
| DANONE | 19% | 45 | 27% | 32 | 23% | 30 | 21% | 44 | 18% | 46 |
| TELECOM ITALIA | 55% | 2 | 44% | 5 | 57% | 5 | 46% | 20 | 18% | 47 |
| REPSOL YPF | 23% | 34 | 31% | 22 | 23% | 29 | 25% | 37 | 17% | 48 |
| ENEL | | | 17% | 50 | 17% | 46 | 21% | 45 | 15% | 49 |
| IBERDROLA | 17% | 47 | 24% | 39 | 20% | 36 | 24% | 39 | 14% | 50 |
| Average | 30% | | 31% | | 30% | | 45% | | 35% | |
| Euro Stoxx 50 | 19% | | 15% | | 22% | | 31% | | 21% | |