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SHAREHOLDER VALUE CREATORS AND SHAREHOLDER  
VALUE DESTROYERS IN EUROPE.  
YEAR 2002

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**SHAREHOLDER VALUE CREATORS AND SHAREHOLDER  
VALUE DESTROYERS IN EUROPE.  
YEAR 2002**

**Abstract**

2002 was a bad year for the shareholders of the companies in the Euro Stoxx 50: the shareholder value destruction of the companies in the Euro Stoxx 50 was 958,968 million euros. In 2002 only ENI created value (3,374 million euros). The remaining 49 companies destroyed value and had negative returns. Alcatel had the lowest shareholder return in 2002 (-77.9%).

Shareholder value destruction in the 3-year period 2000-2002 was 1.9 trillion euros. The market value of the 50 companies was 1.42 trillion euros in 2002, 2.24 trillion euros in 2001, and 2.75 trillion euros in 2000.

We also calculate the created shareholder value of the 50 companies during the six-year period 1997-2002. Nokia was the top shareholder value creator and Allianz the top shareholder value destroyer during the six-year period.

We find a very weak relationship between return and size.

A portfolio long in the companies that entered the index and short in the companies that abandoned the index had on average a 10% return in the 16 days prior to the index recomposition and a -6% return in the 12 days after the index recomposition.

In 2002, the Euro Stoxx 50 was much more volatile than the S&P 500 or the Dow Jones.

**JEL Classification:** G12, G31, M21

# SHAREHOLDER VALUE CREATORS AND SHAREHOLDER VALUE DESTROYERS IN EUROPE. YEAR 2002

## Introduction

In this paper, we quantify shareholder value creation for the 50 companies included in the Euro Stoxx 50 in December 2002. We provide the created shareholder value for 2002, and also for the periods 1996-2002, 1997-2002, 1998-2002, 1999-2002, and 2000-2002. The only company that created value in 2002 was ENI (3,374 million euros). The top shareholder value destroyers in 2002 were Nokia (-78,081 million euros), Vivendi Universal (-55,332 million euros), and Allianz (-52,141 million euros). The percentage of value creators was 2%, 2%, 4%, 8%, 17% and 43% for 2002, 2001, 2000, 1999, 1998 and 1997.

In section 1 we define created shareholder value. Section 2 has the ranking of created shareholder value for the 50 companies in 2002 and in the 6-year period 1996-2002. Section 3 has the ranking of shareholder return for the 50 companies in 2002 and in other periods finishing in 2002. Section 4 splits the shareholder value creation by the country to which the 50 companies belong. Section 5 shows the relation between Shareholder Return and size. Section 6 is an analysis of the companies that entered and abandoned the Euro Stoxx 50 since 1997. Section 7 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 2002. **Appendix 2** contains the evolution of the Euro Stoxx 50 index from 1997 to 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:

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

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 that is usually called the company's risk premium and which depends on its 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 2 contains the 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).

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

|  |   |
|--|---|
| <i>Increase of equity market value</i> | Equity market value <sub>t</sub> – Equity market value <sub>t-1</sub>   |
| <i>Shareholder value added</i>         | ↓<br>Increase of equity market value – payments from<br>shareholders + dividends + repurchases – conversions. |
| <i>Created shareholder value</i>       | ↓<br>Shareholder value added – (Equity market value x K <sub>e</sub> )  |

**Table 2. Comparison between the returns of the Euro Stoxx 50 and the returns of AEX, CAC 40, IBEX 35, Mibtel 30, Xetra-Dax, FTSE 100, S&P 500 and Dow Jones (returns include dividends).**

|         | <b>Euro Stoxx 50</b> | <b>AEX</b>    | <b>CAC 40</b> | <b>IBEX 35</b> | <b>Mibtel 30</b> | <b>Xetra-Dax</b> | <b>FTSE 100</b> | <b>S&amp;P 500</b> | <b>Dow Jones</b> |
|---------|----------------------|---------------|---------------|----------------|------------------|------------------|-----------------|--------------------|------------------|
|         | <b>Return</b>        | <b>Return</b> | <b>Return</b> | <b>Return</b>  | <b>Return</b>    | <b>Return</b>    | <b>Return</b>   | <b>Return</b>      | <b>Return</b>    |
| 94      | -5%                  | 0%            | -15%          | -10%           | 5%               | -5%              | -7%             | 1%                 | 5%               |
| 95      | 18%                  | 20%           | 2%            | 25%            | -5%              | 10%              | 26%             | 38%                | 37%              |
| 96      | 26%                  | 38%           | 26%           | 48%            | 14%              | 30%              | 17%             | 23%                | 29%              |
| 97      | 40%                  | 45%           | 32%           | 46%            | 61%              | 49%              | 29%             | 33%                | 25%              |
| 98      | 35%                  | 26%           | 33%           | 43%            | 43%              | 20%              | 17%             | 29%                | 18%              |
| 99      | 48%                  | 27%           | 53%           | 21%            | 24%              | 41%              | 21%             | 21%                | 27%              |
| 2000    | -2%                  | -1%           | 0%            | -17%           | 6%               | -7%              | -8%             | -9%                | -5%              |
| 2001    | -19%                 | -19%          | -21%          | -8%            | -24%             | -19%             | -14%            | -12%               | -5%              |
| 2002    | -36%                 | -33%          | -33%          | -26%           | -22%             | -43%             | -22%            | -22%               | -15%             |
| 94-2002 | 102%                 | 109%          | 57%           | 136%           | 98%              | 50%              | 54%             | 122%               | 166%             |
| 99-2002 | -25%                 | -31%          | -18%          | -22%           | -32%             | -39%             | -26%            | -42%               | -26%             |

## 2. Shareholder value creators and Shareholder value destroyers in the Euro Stoxx 50

Table 3 shows the top ten value creators and value destroyers during the period December 1996-December 2002, and in the year 2002.

**Table 3. Top ten value creators and value destroyers during the period Dec 1996-Dec 2002 and in the year 2002 (million euros).**

| <b>Top Shareholder value creators. Shareholder value created in € million</b> |                    |           |        |
|---|--------------------|-----------|--------|
|   |                    | 1996-2002 | 2002   |
| 1   | NOKIA              | 37,054    | 3,374  |
| 2   | ENI                | 21,312    | -1,970 |
| 3   | L'OREAL            | 17,717    | -2,331 |
| 4   | TOTAL SA           | 14,784    | -4,788 |
| 5   | TELECOM ITAL.MOBL. | 13,406    | -4,853 |
| 6   | SANOFI-SYNTHELABO  | 13,355    | -4,882 |
| 7   | TELECOM ITALIA     | 12,516    | -5,054 |
| 8   | SOCIETE GENERALE   | 11,477    | -5,235 |
| 9   | UNILEVER CERTS.    | 11,075    | -5,380 |
| 10  | DANONE             | 8,311     | -5,702 |

| <b>Top shareholder value destroyers. Shareholder value created in € million</b> |                   |           |         |
|---|-------------------|-----------|---------|
|   |                   | 1996-2002 | 2002    |
| 1   | ALLIAN            | -32,698   | -78,081 |
| 2   | BAYER             | -20,497   | -55,332 |
| 3   | ALCATEL           | -16,211   | -52,141 |
| 4   | VIVENDI UNIVERSAL | -13,580   | -37,986 |
| 5   | E ON              | -12,885   | -37,512 |
| 6   | LVM               | -12,427   | -36,552 |
| 7   | CARREFOUR         | -10,173   | -36,138 |
| 8   | ENDESA            | -9,703    | -34,815 |
| 9   | ING GROEP CERTS.  | -8,420    | -34,671 |
| 10  | BAYER.HYPO U VBK. | -8,312    | -28,859 |

The only shareholder value creator in 2002 was ENI (3,374 million euros). The top shareholder value destroyers in 2002 were Nokia (-78,081 million euros), Vivendi Universal (-55,332 million euros), and Allianz (-52,141 million euros). During the six-year period 1996-2002 Nokia was the top shareholder value creator and Allianz was the top shareholder value destroyer.

Tables 4 and 5 show the created shareholder value of the companies in the Euro Stoxx 50 during the six-year period 1997-2002 (1). Nokia was the top shareholder value creator (37,054 million euros) and Allianz was the top shareholder value destroyer (-32,698 million euros). In 2002 only one of the companies created value (ENI), and the remaining 49 companies destroyed value. The percentage of value creators was 2%, 2%, 4%, 8%, 17% and 43% for 2002, 2001, 2000, 1999, 1998 and 1997.

**Table 4. Shareholder value creation for the companies in the Euro Stoxx 50 in December 2002**

| Company                | 1997-2002 |      | 1998-2002 |      | 1999-2002 |      | 2000-2002 |      | 2001-2002 |      | 2002      |      |
|------------------------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|
|                        | € million | rank | € million | rank | € million | rank | € million | rank | € million | rank | € million | rank |
| NOKIA                  | 37,054    | 1    | 32,268    | 1    | -12,245   | 22   | -205,017  | 48   | -196,645  | 50   | -78,081   | 50   |
| ENI                    | 21,312    | 2    | 10,773    | 3    | 9,977     | 1    | 13,233    | 1    | 2,941     | 1    | 3,374     | 1    |
| L'OREAL                | 17,717    | 3    | 13,880    | 2    | -7,418    | 15   | -19,174   | 23   | -22,733   | 23   | -9,605    | 17   |
| TOTAL SA               | 14,784    | 4    | 3,501     | 6    | 9,545     | 2    | -10,763   | 12   | -27,005   | 27   | -21,716   | 35   |
| TELECOM ITAL.MOBL.     | 13,406    | 5    | -7,541    | 23   | -23,304   | 36   | -61,057   | 39   | -42,432   | 36   | -16,038   | 24   |
| SANOFI-SYNTHELABO      | 13,355    | 6    | 10,606    | 4    | 6,837     | 3    | 7,843     | 2    | -14,691   | 15   | -21,694   | 34   |
| TELECOM ITALIA         | 12,516    | 7    | -2,874    | 14   | -9,710    | 17   | -52,292   | 37   | -31,991   | 31   | -14,167   | 23   |
| SOCIETE GENERALE       | 11,477    | 8    | 6,074     | 5    | 5,628     | 4    | -6,346    | 6    | -8,527    | 6    | -4,882    | 6    |
| UNILEVER CERTS.        | 11,075    | 9    | -7,682    | 24   | -17,899   | 30   | -3,329    | 5    | -9,565    | 9    | -6,209    | 12   |
| DANONE                 | 8,311     | 10   | 3,078     | 7    | -3,696    | 12   | -1,471    | 3    | -7,708    | 5    | -2,331    | 3    |
| BNP PARIBAS            | 8,101     | 11   | 2,296     | 8    | -3,408    | 11   | -17,043   | 20   | -13,618   | 14   | -13,313   | 21   |
| UNICREDITO ITALIANO    | 6,382     | 12   | -306      | 10   | -13,497   | 25   | -10,770   | 13   | -12,690   | 12   | -4,853    | 5    |
| BBV ARGENTARIA         | 4,928     | 13   | -10,036   | 28   | -17,586   | 29   | -17,889   | 21   | -28,805   | 29   | -18,233   | 28   |
| AVENTIS                | 4,266     | 14   | -2,075    | 13   | -1,871    | 6    | -15,028   | 17   | -43,432   | 37   | -25,999   | 37   |
| PHILIPS ELTN.KON       | 4,242     | 15   | -7,527    | 22   | -6,127    | 13   | -38,245   | 31   | -39,855   | 35   | -26,300   | 39   |
| SIEMENS (XET)          | 2,182     | 16   | -10,738   | 29   | -8,142    | 16   | -61,643   | 41   | -62,240   | 42   | -36,138   | 44   |
| SANTANDER CTL.HISPANO  | 1,244     | 17   | -8,066    | 25   | -10,778   | 18   | -27,242   | 27   | -29,553   | 30   | -16,179   | 25   |
| TELEFONICA             | 1,231     | 18   | -8,320    | 26   | -24,705   | 37   | -74,048   | 45   | -50,111   | 38   | -34,815   | 43   |
| AIR LIQUIDE            | 1,187     | 19   | -183      | 9    | -2,425    | 8    | -2,793    | 4    | -2,816    | 2    | -1,970    | 2    |
| LAFARGE                | 1,034     | 20   | -457      | 11   | -2,972    | 9    | -6,987    | 7    | -2,844    | 3    | -5,054    | 7    |
| SAN PAOLO IMI          | -453      | 21   | -4,839    | 17   | -19,267   | 33   | -14,863   | 16   | -19,335   | 18   | -9,298    | 16   |
| GENERALI               | -1,094    | 22   | -9,390    | 27   | -27,978   | 38   | -21,445   | 25   | -36,197   | 33   | -17,175   | 27   |
| FORTIS (AMS)           | -1,287    | 23   | -4,379    | 16   | -11,470   | 20   | -12,833   | 14   | -12,853   | 13   | -18,491   | 29   |
| SUEZ                   | -1,295    | 24   | -6,928    | 21   | -20,890   | 35   | -21,364   | 24   | -27,035   | 28   | -19,609   | 30   |
| REPSOL YPF             | -2,097    | 25   | -5,300    | 18   | -6,734    | 14   | -18,674   | 22   | -8,612    | 7    | -6,158    | 11   |
| ABN AMRO HOLDING       | -3,636    | 26   | -13,631   | 34   | -10,955   | 19   | -22,328   | 26   | -18,178   | 17   | -5,380    | 9    |
| BASF (XET)             | -3,806    | 27   | -3,776    | 15   | -2,242    | 7    | -15,760   | 19   | -11,007   | 11   | -4,788    | 4    |
| SAINT GOBAIN           | -4,075    | 28   | -5,630    | 19   | -3,268    | 10   | -9,857    | 9    | -6,472    | 4    | -5,702    | 10   |
| VOLKSWAGEN (XET)       | -4,135    | 29   | -10,752   | 30   | -17,418   | 28   | -10,723   | 11   | -8,975    | 8    | -6,604    | 13   |
| AX                     | -4,710    | 30   | -16,498   | 35   | -39,828   | 43   | -43,304   | 35   | -52,756   | 39   | -21,185   | 32   |
| DEUTSCHE BANK (XET)    | -5,807    | 31   | -26,821   | 43   | -11,822   | 21   | -39,122   | 33   | -37,737   | 34   | -26,092   | 38   |
| AHOLD KON.             | -6,122    | 32   | -11,184   | 31   | -18,021   | 31   | -15,158   | 18   | -20,957   | 19   | -20,728   | 31   |
| MUNCH.RUCK. (XET)      | -6,502    | 33   | -24,593   | 42   | -29,705   | 41   | -37,383   | 30   | -58,685   | 41   | -37,986   | 47   |
| AEGON                  | -6,867    | 34   | -19,906   | 38   | -69,090   | 46   | -65,152   | 43   | -52,854   | 40   | -28,859   | 41   |
| RWE (XET)              | -7,567    | 35   | -13,540   | 33   | -16,471   | 26   | -10,003   | 10   | -15,157   | 16   | -10,367   | 18   |
| ROYAL DUTCH PTL.       | -7,753    | 36   | -51,417   | 47   | -19,400   | 34   | -63,804   | 42   | -65,573   | 43   | -37,512   | 46   |
| BAYER.HYO U VBK. (XET) | -8,312    | 37   | -20,879   | 39   | -29,002   | 40   | -27,749   | 29   | -21,655   | 21   | -11,222   | 19   |
| ING GROEP CERTS.       | -8,420    | 38   | -22,323   | 40   | -36,829   | 42   | -42,948   | 34   | -66,139   | 44   | -28,768   | 40   |
| ENDESA                 | -9,703    | 39   | -11,548   | 32   | -17,000   | 27   | -13,208   | 15   | -9,622    | 10   | -7,735    | 14   |

(1) Only 46 companies (out of the 50) traded as of December 21, 1996.

| Company                | 1997-2002      |      | 1998-2002       |      | 1999-2002       |      | 2000-2002         |      | 2001-2002         |      | 2002            |      |
|------------------------|----------------|------|-----------------|------|-----------------|------|-------------------|------|-------------------|------|-----------------|------|
|                        | € million      | rank | € million       | rank | € million       | rank | € million         | rank | € million         | rank | € million       | rank |
| ENDESA                 | -9,703         | 39   | -11,548         | 32   | -17,000         | 27   | -13,208           | 15   | -9,622            | 10   | -7,735          | 14   |
| CARREFOUR              | -10,173        | 40   | -5,877          | 20   | -12,514         | 24   | -48,092           | 36   | -23,534           | 25   | -13,913         | 22   |
| LVM                    | -12,427        | 41   | -566            | 12   | -1,522          | 5    | -39,104           | 32   | -22,382           | 22   | -5,235          | 8    |
| E ON (XET)             | -12,885        | 42   | -22,444         | 41   | -12,271         | 23   | -9,093            | 8    | -25,495           | 26   | -17,128         | 26   |
| VIVENDI UNIVERSAL      | -13,580        | 43   | -19,198         | 36   | -40,680         | 44   | -58,533           | 38   | -71,873           | 45   | -55,332         | 49   |
| ALCATEL                | -16,211        | 44   | -29,899         | 45   | -28,773         | 39   | -61,183           | 40   | -88,623           | 47   | -21,321         | 33   |
| BAYER (XET)            | -20,497        | 45   | -19,828         | 37   | -19,086         | 32   | -27,573           | 28   | -31,992           | 32   | -12,842         | 20   |
| DEUTSCHE TELEKOM (XET) | -31,698        | 46   | -29,578         | 44   | -65,879         | 45   | -231,023          | 49   | -74,525           | 46   | -34,671         | 42   |
| ALLIANZ (XET)          | -32,698        | 47   | -61,205         | 48   | -83,514         | 48   | -81,958           | 46   | -92,154           | 48   | -52,141         | 48   |
| DAIMLERCHRYSLER (XET)  |                |      |                 |      | -91,267         | 49   | -70,032           | 44   | -22,829           | 24   | -23,481         | 36   |
| ENEL                   |                |      |                 |      |                 |      |                   |      | -21,237           | 20   | -8,490          | 15   |
| FRANCE TELECOM         |                |      | -37,060         | 46   | -79,429         | 47   | -159,737          | 47   | -107,675          | 49   | -36,552         | 45   |
| <b>Sum</b>             | <b>-48,007</b> |      | <b>-492,318</b> |      | <b>-976,120</b> |      | <b>-1,902,068</b> |      | <b>-1,776,437</b> |      | <b>-958,968</b> |      |

**Table 5. Created shareholder value (CSV) in the 6-year period 1997-2002 of the companies in the Euro Stoxx 50 as of December 2002 (million euros).**

| Company                 | 1997-2002      |                |                             |      |
|-------------------------|----------------|----------------|-----------------------------|------|
|                         | CSV            |                | Return                      |      |
|                         |                | rank           | %                           | rank |
| NOKIA                   | 37,054         | 1              | 471.5%                      | 1    |
| ENI                     | 21,312         | 2              | 126.1%                      | 11   |
| L'OREAL                 | 17,717         | 3              | 155.6%                      | 9    |
| TOTAL SA                | 14,784         | 4              | 148.2%                      | 10   |
| TELECOM ITAL.MOBL.      | 13,406         | 5              | 167.0%                      | 6    |
| SANOFI-SYNTHELABO       | 13,355         | 6              | 212.5%                      | 4    |
| TELECOM ITALIA          | 12,516         | 7              | 162.9%                      | 7    |
| SOCIETE GENERALE        | 11,477         | 8              | 224.2%                      | 3    |
| UNILEVER CERTS.         | 11,075         | 9              | 108.5%                      | 15   |
| DANONE                  | 8,311          | 10             | 162.7%                      | 8    |
| BNP PARIBAS             | 8,101          | 11             | 202.2%                      | 5    |
| UNICREDITO ITALIANO     | 6,382          | 12             | 401.6%                      | 2    |
| BBV ARGENTARIA          | 4,928          | 13             | 116.6%                      | 13   |
| AVENTIS                 | 4,266          | 14             | 110.0%                      | 14   |
| PHILIPS ELTN.KON        | 4,242          | 15             | 118.6%                      | 12   |
| SIEMENS (XET)           | 2,182          | 16             | 78.3%                       | 18   |
| SANTANDER CTL.HISPANO   | 1,244          | 17             | 80.5%                       | 17   |
| TELEFONICA              | 1,231          | 18             | 72.0%                       | 19   |
| AIR LIQUIDE             | 1,187          | 19             | 64.2%                       | 20   |
| LAFARGE                 | 1,034          | 20             | 87.5%                       | 16   |
| SAN PAOLO IMI           | -453           | 21             | 55.1%                       | 21   |
| GENERALI                | -1,094         | 22             | 48.2%                       | 23   |
| FORTIS (AMS)            | -1,287         | 23             | 38.0%                       | 27   |
| SUEZ                    | -1,295         | 24             | 32.4%                       | 30   |
| REPSOL YPF              | -2,097         | 25             | 41.3%                       | 25   |
| ABN AMRO HOLDING        | -3,636         | 26             | 51.4%                       | 22   |
| BASF (XET)              | -3,806         | 27             | 40.9%                       | 26   |
| SAINT GOBAIN            | -4,075         | 28             | 21.6%                       | 31   |
| VOLKSWAGEN (XET)        | -4,135         | 29             | 19.2%                       | 34   |
| AXA                     | -4,710         | 30             | 20.0%                       | 33   |
| DEUTSCHE BANK (XET)     | -5,807         | 31             | 35.4%                       | 28   |
| AHOLD KON.              | -6,122         | 32             | -17.5%                      | 42   |
| MUNCH.RUCK. (XET)       | -6,502         | 33             | 21.6%                       | 32   |
| AEGON                   | -6,867         | 34             | 11.8%                       | 35   |
| RWE (XET)               | -7,567         | 35             | -14.5%                      | 40   |
| ROYAL DUTCH PTL.        | -7,753         | 36             | 44.0%                       | 24   |
| BAYER.HYPO U VBK. (XET) | -8,312         | 37             | -46.4%                      | 46   |
| ING GROEP CERTS.        | -8,420         | 38             | 33.7%                       | 29   |
| ENDESA                  | -9,703         | 39             | -7.3%                       | 39   |
| CARREFOUR               | -10,173        | 40             | 6.4%                        | 37   |
| LVMH                    | -12,427        | 41             | 10.4%                       | 36   |
| E ON (XET)              | -12,885        | 42             | -3.8%                       | 38   |
| VIVENDI UNIVERSAL       | -13,580        | 43             | -45.1%                      | 45   |
| ALCATEL                 | -16,211        | 44             | -63.6%                      | 47   |
| BAYER (XET)             | -20,497        | 45             | -24.5%                      | 43   |
| DEUTSCHE TELEKOM (XET)  | -31,498        | 46             | -15.4%                      | 41   |
| ALLIANZ (XET)           | -32,698        | 47             | -33.6%                      | 44   |
| FRANCE TELECOM          |                |                | Started trading in 20-10-97 |      |
| ENEL                    |                |                | Started trading in 02-09-99 |      |
| DAIMLERCHRYSLER (XET)   |                |                | Started trading in 13-03-97 |      |
| <b>Sum</b>              | <b>-47,807</b> | <b>Average</b> | <b>75.1%</b>                |      |



### 3. Shareholder return

Table 6 shows the shareholder return in 2002 of the 50 companies. It can be seen that ENI (12.8%) was the most profitable company and that Alcatel (-77.9%) was the least profitable company in 2002. One company had positive return and 49 companies had negative return.

**Table 6. Shareholder return in 2002 of the 50 companies in the Euro Stoxx 50**

| Company                 | 2002<br>Return | Country |
|-------------------------|----------------|---------|
| ENI                     | 12.8%          | Italy   |
| DANONE                  | -4.4%          | France  |
| AIR LIQUIDE             | -7.5%          | France  |
| SOCIETE GENERALE        | -7.9%          | France  |
| UNILEVER CERTS.         | -9.0%          | Holland |
| L'OREAL                 | -9.4%          | France  |
| ABN AMRO HOLDING        | -9.6%          | Holland |
| BASF (XET)              | -10.8%         | Germany |
| TOTAL SA                | -12.3%         | France  |
| LVM                     | -12.4%         | France  |
| UNICREDITO ITALIANO     | -13.1%         | Italy   |
| ENEL                    | -16.6%         | Italy   |
| TELECOM ITALIA          | -19.2%         | Italy   |
| BNP PARIBAS             | -20.2%         | France  |
| TELECOM ITAL.MOBL.      | -21.5%         | Italy   |
| REPSOL YPF              | -22.2%         | Spain   |
| ROYAL DUTCH PTL.        | -23.8%         | Holland |
| CARREFOUR               | -26.1%         | France  |
| SANTANDER CTL.HISPANO   | -28.2%         | Spain   |
| LAFARGE                 | -29.3%         | France  |
| SANOFI-SYNTHELABO       | -29.4%         | France  |
| SAINT GOBAIN            | -31.5%         | France  |
| E ON (XET)              | -32.0%         | Germany |
| VOLKSWAGEN (XET)        | -32.0%         | Germany |
| BBV ARGENTARIA          | -32.4%         | Spain   |
| ENDESA                  | -34.2%         | Spain   |
| AVENTIS                 | -34.3%         | France  |
| DEUTSCHE TELEKOM (XET)  | -34.4%         | Germany |
| GENERALI                | -36.5%         | Italy   |
| DAIMLERCHRYSLER (XET)   | -37.5%         | Germany |
| RWE (XET)               | -39.8%         | Germany |
| FORTIS (AMS)            | -40.7%         | Belgium |
| BAYER (XET)             | -40.8%         | Germany |
| TELEFONICA              | -41.0%         | Spain   |
| ING GROEP CERTS.        | -41.5%         | Holland |
| AX                      | -43.5%         | France  |
| DEUTSCHE BANK (XET)     | -43.5%         | Germany |
| SIEMENS (XET)           | -44.5%         | Germany |
| SAN PAOLO IMI           | -45.8%         | Italy   |
| NOKIA                   | -47.1%         | Finland |
| PHILIPS ELTN.KON        | -49.5%         | Holland |
| SUEZ                    | -49.7%         | France  |
| BAYER.HYPO U VBK. (XET) | -54.0%         | Germany |
| AEGON                   | -57.8%         | Holland |
| FRANCE TELECOM          | -59.8%         | France  |
| AHOLD KON.              | -61.7%         | Holland |
| MUNCH.RUCK. (XET)       | -62.4%         | Germany |

Table 7 shows the historical shareholder return of the companies. In the six-year period 1997-2002, 37 companies had positive shareholder return. In the three-year period 2000-2002, only 7 companies had positive shareholder return. In the two-year period 2001-2002, only 1 company (ENI) had positive shareholder return.

**Table 7. Shareholder Return for the companies in the Euro Stoxx 50 in 1996-2002 and other selected periods**

| Company                 | 1997-2002  |      | 1998-2002  |      | 1999-2002   |      | 2000-2002   |      | 2001-2002   |      | 2002        |      |
|-------------------------|------------|------|------------|------|-------------|------|-------------|------|-------------|------|-------------|------|
|                         | %          | rank | %          | rank | %           | rank | %           | rank | %           | rank | %           | rank |
| NOKIA                   | 472%       | 1    | 289%       | 1    | 20%         | 10   | -65%        | 43   | -67%        | 43   | -47%        | 40   |
| UNICREDITO ITALIANO     | 402%       | 2    | 50%        | 10   | -17%        | 26   | -15%        | 12   | -28%        | 14   | -13%        | 11   |
| SOCIETE GENERALE        | 224%       | 3    | 113%       | 3    | 89%         | 1    | 9%          | 6    | -9%         | 3    | -8%         | 4    |
| SANOFI-SYNTHELABO       | 213%       | 4    | 136%       | 2    | 72%         | 3    | 46%         | 2    | -16%        | 8    | -29%        | 21   |
| BNP PARIBAS             | 202%       | 5    | 83%        | 5    | 25%         | 6    | -7%         | 9    | -11%        | 6    | -20%        | 14   |
| TELECOM ITAL.MOBL.      | 167%       | 6    | 24%        | 17   | -18%        | 27   | -54%        | 37   | -41%        | 26   | -22%        | 15   |
| TELECOM ITALIA          | 163%       | 7    | 46%        | 11   | 15%         | 13   | -41%        | 25   | -32%        | 18   | -19%        | 13   |
| DANONE                  | 163%       | 8    | 72%        | 6    | 13%         | 14   | 16%         | 3    | -17%        | 9    | -4%         | 2    |
| L'OREAL                 | 156%       | 9    | 110%       | 4    | 22%         | 9    | -7%         | 8    | -19%        | 10   | -9%         | 6    |
| TOTAL SA                | 148%       | 10   | 55%        | 9    | 75%         | 2    | 12%         | 5    | -9%         | 4    | -12%        | 9    |
| ENI                     | 126%       | 11   | 71%        | 7    | 55%         | 4    | 54%         | 1    | 20%         | 1    | 13%         | 1    |
| PHILIPS ELTN.KON        | 119%       | 12   | 23%        | 18   | 18%         | 11   | -49%        | 32   | -56%        | 36   | -49%        | 41   |
| BBV ARGENTARIA          | 117%       | 13   | 1%         | 25   | -26%        | 29   | -31%        | 18   | -40%        | 25   | -32%        | 25   |
| AVENTIS                 | 110%       | 14   | 34%        | 14   | 24%         | 8    | -7%         | 10   | -43%        | 28   | -34%        | 27   |
| UNILEVER CERTS.         | 109%       | 15   | 25%        | 16   | -4%         | 21   | 15%         | 4    | -9%         | 5    | -9%         | 5    |
| LAFARGE                 | 88%        | 16   | 42%        | 12   | 1%          | 19   | -31%        | 17   | -13%        | 7    | -29%        | 20   |
| SANTANDER CTL.HISPANO   | 80%        | 17   | -4%        | 27   | -16%        | 23   | -37%        | 22   | -39%        | 24   | -28%        | 19   |
| SIEMENS (XET)           | 78%        | 18   | 19%        | 19   | 16%         | 12   | -50%        | 33   | -55%        | 35   | -45%        | 38   |
| TELEFONICA              | 72%        | 19   | 17%        | 20   | -24%        | 28   | -63%        | 42   | -48%        | 30   | -41%        | 34   |
| AIR LIQUIDE             | 64%        | 20   | 38%        | 13   | 11%         | 15   | 2%          | 7    | -6%         | 2    | -8%         | 3    |
| SAN PAOLO IMI           | 55%        | 21   | -15%       | 32   | -51%        | 39   | -48%        | 30   | -61%        | 39   | -46%        | 39   |
| ABN AMRO HOLDING        | 51%        | 22   | 5%         | 23   | 2%          | 18   | -28%        | 15   | -29%        | 16   | -10%        | 7    |
| GENERALI                | 48%        | 23   | -3%        | 26   | -43%        | 33   | -39%        | 24   | -53%        | 33   | -36%        | 29   |
| ROYAL DUTCH PTL.        | 44%        | 24   | -5%        | 28   | 10%         | 16   | -25%        | 14   | -32%        | 17   | -24%        | 17   |
| REPSOL YPF              | 41%        | 25   | 6%         | 22   | -11%        | 22   | -42%        | 27   | -23%        | 12   | -22%        | 16   |
| BASF (XET)              | 41%        | 26   | 28%        | 15   | 24%         | 7    | -23%        | 13   | -20%        | 11   | -11%        | 8    |
| FORTIS (AMS)            | 38%        | 27   | -8%        | 31   | -48%        | 38   | -49%        | 31   | -49%        | 31   | -41%        | 32   |
| DEUTSCHE BANK (XET)     | 35%        | 28   | -24%       | 36   | -3%         | 20   | -45%        | 29   | -49%        | 32   | -44%        | 37   |
| ING GROEP CERTS.        | 34%        | 29   | -5%        | 29   | -31%        | 30   | -41%        | 26   | -59%        | 37   | -42%        | 35   |
| SUEZ                    | 32%        | 30   | -7%        | 30   | -47%        | 37   | -43%        | 28   | -55%        | 34   | -50%        | 42   |
| SAINT GOBAIN            | 22%        | 31   | 1%         | 24   | 7%          | 17   | -33%        | 20   | -28%        | 13   | -32%        | 22   |
| MUNCH.RUCK. (XET)       | 22%        | 32   | -32%       | 40   | -44%        | 34   | -55%        | 38   | -70%        | 44   | -62%        | 47   |
| AX                      | 20%        | 33   | -17%       | 33   | -53%        | 41   | -59%        | 41   | -65%        | 42   | -43%        | 36   |
| VOLKSWAGEN (XET)        | 19%        | 34   | -25%       | 37   | -45%        | 35   | -33%        | 21   | -34%        | 20   | -32%        | 24   |
| AEGON                   | 12%        | 35   | -33%       | 41   | -74%        | 46   | -72%        | 44   | -70%        | 45   | -58%        | 44   |
| LVM                     | 10%        | 36   | 56%        | 8    | 37%         | 5    | -54%        | 36   | -42%        | 27   | -12%        | 10   |
| CARREFOUR               | 6%         | 37   | 13%        | 21   | -17%        | 24   | -52%        | 34   | -35%        | 22   | -26%        | 18   |
| E ON (XET)              | -4%        | 38   | -31%       | 39   | -17%        | 25   | -15%        | 11   | -37%        | 23   | -32%        | 23   |
| ENDESA                  | -7%        | 39   | -22%       | 35   | -45%        | 36   | -38%        | 23   | -34%        | 21   | -34%        | 26   |
| RWE (XET)               | -14%       | 40   | -43%       | 43   | -42%        | 32   | -31%        | 19   | -46%        | 29   | -40%        | 31   |
| DEUTSCHE TELEKOM (XET)  | -15%       | 41   | -20%       | 34   | -52%        | 40   | -81%        | 48   | -59%        | 38   | -34%        | 28   |
| AHOLD KON.              | -17%       | 42   | -45%       | 44   | -58%        | 42   | -56%        | 39   | -63%        | 41   | -62%        | 46   |
| BAYER (XET)             | -24%       | 43   | -30%       | 38   | -35%        | 31   | -52%        | 35   | -61%        | 40   | -41%        | 33   |
| ALLIANZ (XET)           | -34%       | 44   | -60%       | 46   | -71%        | 44   | -72%        | 45   | -77%        | 48   | -66%        | 48   |
| VIVENDI UNIVERSAL       | -45%       | 45   | -59%       | 45   | -76%        | 48   | -81%        | 47   | -76%        | 47   | -74%        | 49   |
| BAYER.HYPO U VBK. (XET) | -46%       | 46   | -72%       | 47   | -75%        | 47   | -76%        | 46   | -73%        | 46   | -54%        | 43   |
| ALCATEL                 | -64%       | 47   | -81%       | 48   | -79%        | 49   | -90%        | 50   | -93%        | 50   | -78%        | 50   |
| DAIMLERCHRYSLER (XET)   |            |      |            |      | -60%        | 43   | -57%        | 40   | -29%        | 15   | -38%        | 30   |
| ENEL                    |            |      |            |      |             |      | -31%        | 16   | -32%        | 19   | -17%        | 12   |
| FRANCE TELECOM          |            |      | -41%       | 42   | -72%        | 45   | -86%        | 49   | -80%        | 49   | -60%        | 45   |
| <b>Average</b>          | <b>75%</b> |      | <b>14%</b> |      | <b>-15%</b> |      | <b>-36%</b> |      | <b>-41%</b> |      | <b>-33%</b> |      |
| <b>Weighted average</b> | <b>42%</b> |      | <b>2%</b>  |      | <b>-25%</b> |      | <b>-49%</b> |      | <b>-48%</b> |      | <b>-36%</b> |      |

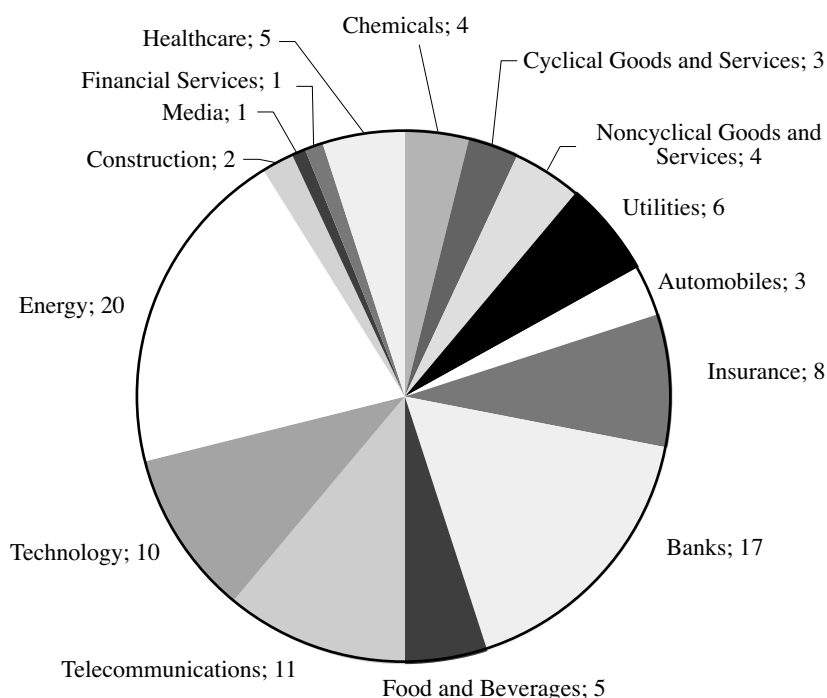
#### 4. Shareholder Value Creation and Shareholder Return by country

Table 8 shows some statistics of the companies in the Euro Stoxx 50 grouped by country. The first two columns show the market capitalization at the end of 2002. 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 French and German companies accounted for 59% of the shareholder value destruction in 2002. In the six-year period 1997-2002, German companies were the ones that destroyed most value.

**Table 8. Shareholder Value Creation and Shareholder Return by country of the 50 companies in the Euro Stoxx 50 at the end of 2002**

| Countries   | Market Capitalization 2002 |      | N° Companies | Return 2002 | Return 97-2002 | CSV 02    |      | CSV 97-02 |
|-------------|----------------------------|------|--------------|-------------|----------------|-----------|------|-----------|
|             | € million                  | %    |              |             |                | € million | %    | € million |
| France      | 465,205                    | 33%  | 17           | -32%        | 76%            | -285,413  | 30%  | 17,761    |
| Germany     | 283,529                    | 20%  | 12           | -44%        | 2%             | -273,460  | 29%  | -100,027  |
| Netherlands | 249,810                    | 18%  | 8            | -35%        | 51%            | -172,248  | 18%  | -18,768   |
| Italy       | 223,264                    | 16%  | 7            | -16%        | 248%           | -66,647   | 7%   | 52,069    |
| Spain       | 128,981                    | 9%   | 5            | -34%        | 56%            | -83,119   | 9%   | -4,398    |
| Finland     | 72,476                     | 5%   | 1            | -47%        | 472%           | -78,081   | 8%   | 37,054    |
| Total       | 1,423,263                  | 100% | 50           |             |                | -958,968  | 100% | -16,309   |

#### Sector Weighting (%)



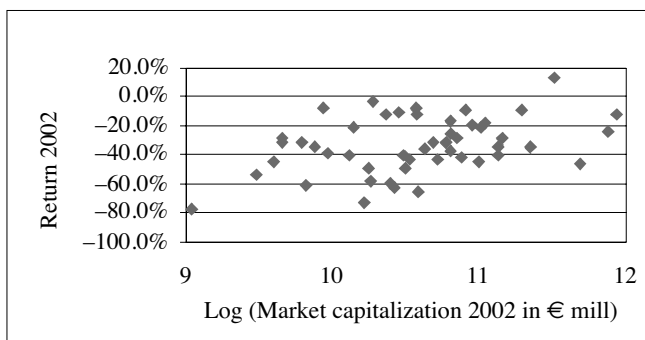
#### 5. Shareholder Return and size

Figure 1 shows the relation between shareholder return and size (measured as the log of market capitalization) in 2002. There is not a close relation. The slope of the regression is 0.126 and the R-squared is 15.98% (that is, the difference in size explained only 15.98% of the return).

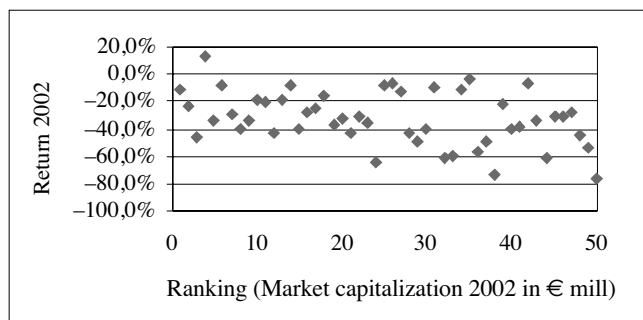
Figure 2 plots the relation between the ranking of shareholder return and the ranking of size. Again, the relation is very weak.

Figure 3 shows the relation of shareholder return in the six-year period 2002 and size (measured as the log of the market capitalization at the beginning of the period, in 1996). Again, no significant relation is found. Difference in size explained only 12.36% of the return.

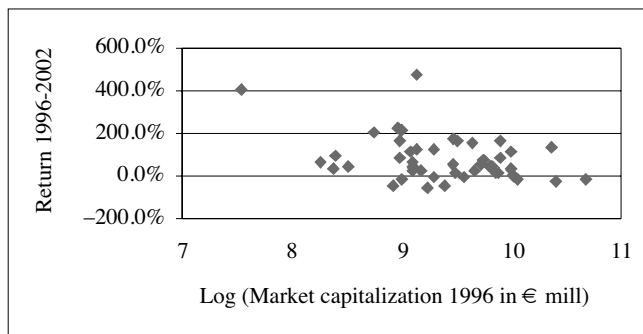
**Figure 1. Relation of shareholder return and size of the companies in the Euro Stoxx 50 in 2002**



**Figure 2. Relation of the rankings of shareholder return and size of the companies in the Euro Stoxx 50 in 2002**



**Figure 3. Relation of shareholder return and size of the companies in the Euro Stoxx 50 in the period 1997-2002**



## 6. Addition and deletion of companies in the Euro Stoxx 50 during the six-year period 1996-2002

Table 9 shows the companies added and removed from the Euro Stoxx 50.

Figure 4 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 6% (12% 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 -19% less than the return of the Euro Stoxx 50.

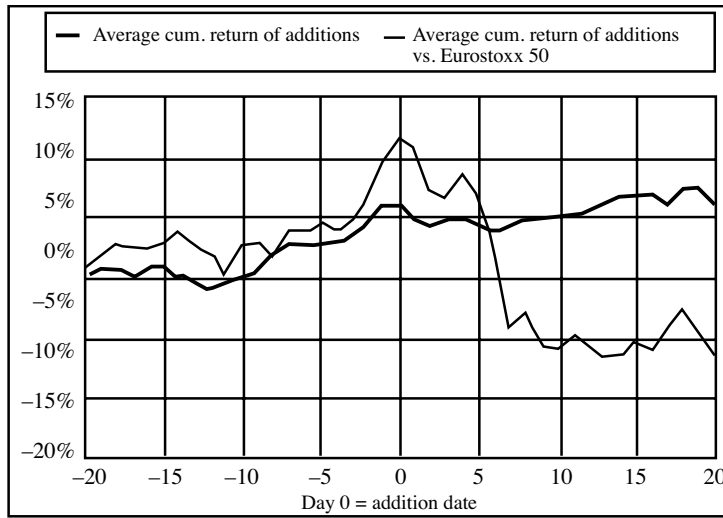
Figure 5 shows the average cumulative return of the companies removed from the Euro Stoxx 50 in the 40 days around the deletion date (day 0). It may be seen that the average cumulative return in the 20 days before the deletion was -3%. It may be seen, also, that the average cumulative return in the 13 days after the deletion was -14% less than the return of the Euro Stoxx 50.

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 -6%.

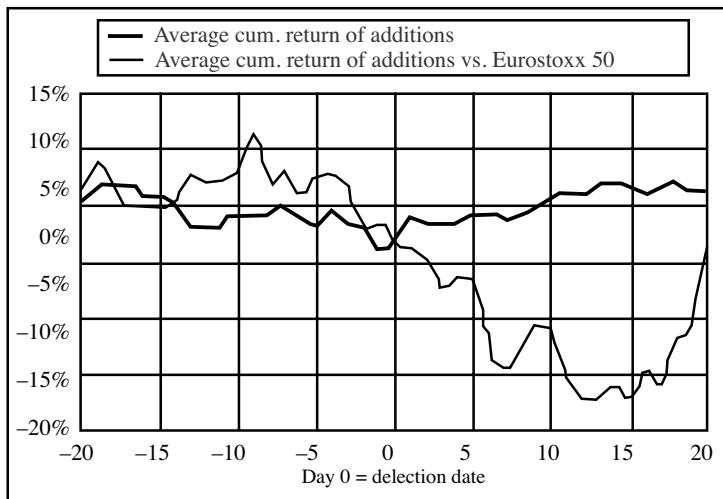
**Table 9. Additions and deletions, companies in the Euro Stoxx 50 since 1997**

| Date       | Deletions from the Euro Stoxx 50 | Additions to the Euro Stoxx 50    |
|------------|----------------------------------|-----------------------------------|
| 22/09/1997 | Sanofi                           | Paribas (Compagnie Financiere de) |
| 22/09/1997 | Schering AG                      | L'Oreal (Ordinary)                |
| 22/09/1997 | Thyssen AG                       | PORTUGAL TELECOM S.A.             |
| 22/12/1997 | Pinault-Printemps-La Redoute     | France Telecom                    |
| 26/10/1998 | Credito Italiano                 | UniCredito                        |
| 16/06/1999 | PETROFINA SA                     | TOTALFINA                         |
| 20/09/1999 | LUFTHANSA AG -B-                 | BASF AG                           |
| 20/09/1999 | SCHNEIDER ELECTRIC               | BAYERISCHE HYPO-&VEREINSBANK      |
| 20/09/1999 | ALLIED IRISH BANKS PLC           | DRESDNER BANK AG                  |
| 20/09/1999 | FIAT SPA                         | MUENCHENER RUECKVER AG-REG        |
| 20/09/1999 | AKZO NOBEL                       | BANCO SANTANDER CEN               |
| 20/09/1999 | ELSEVIER                         | SUEZ LYONNAISE DES EAUX           |
| 20/09/1999 | PORTUGAL TELECOM SA -R-          | SANOFI-SYNTHELABO                 |
| 01/11/1999 | PARIBAS                          | PINAULT-PRINTEMPS-REDOUTE         |
| 01/11/1999 | ELF AQUITAINE                    | BNP                               |
| 20/12/1999 | RHONE-POULENC                    | AVENTIS                           |
| 14/02/2000 | MANNESMANN AG -R-                | CANAL +                           |
| 20/03/2000 | SAINT GOBAIN                     | ENEL                              |
| 19/06/2000 | VEBA                             | E.ON                              |
| 18/09/2000 | ELECTRABEL SA                    | GROUPE DANONE                     |
| 18/09/2000 | METRO AG                         | SAN PAOLO-IMI                     |
| 11/12/2000 | CANAL +                          | VOLKSWAGEN AG                     |
| 23/07/2001 | DRESDNER BANK                    | TI                                |
| 24/09/2001 | KPN                              | SAINT GOBAIN                      |
| 23/09/2002 | PINAULT PRINTEMPS REDOUTE        | LAFARGE                           |

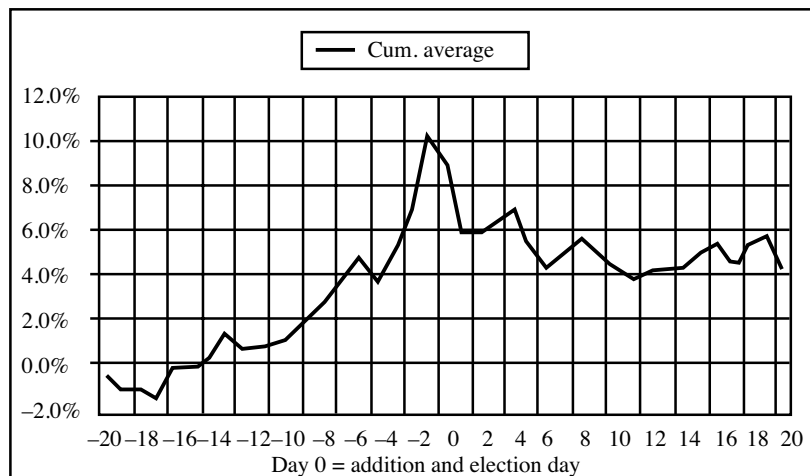
**Figure 4. Average Cumulative Return of additions to the Euro Stoxx 50**



**Figure 5. Average Cumulative Return of deletions from the Euro Stoxx 50**



**Figure 6. Cumulative Average return of a portfolio long in the company added and short in the company deleted from the Euro Stoxx 50**



## 7. Volatility correlation comparison of Euro Stoxx 50 with other indexes

Figure 7 compares the volatilities (annualized standard deviation of the daily returns of the last 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 8 and 9 compare the volatility (annualized standard deviation of the daily returns of the last year) of the Euro Stoxx 50, with the volatilities of the national indexes of France (CAC 40), Germany (Dax), Spain (Ibex 35), and 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.

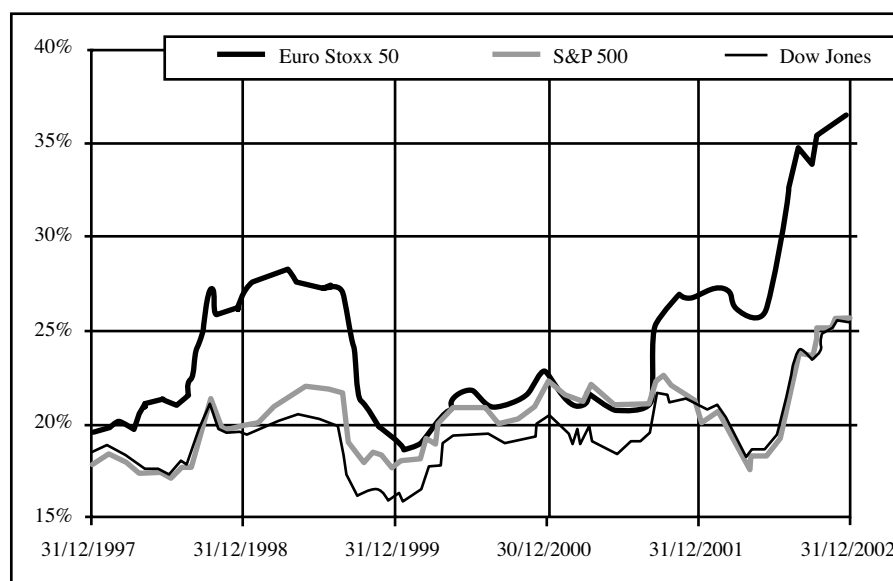
Figures 10, 11, and 12 offer the same comparison as Figures 7, 8 and 9, but the volatility is the annualized standard deviation of the daily returns of the last 20 days (instead of the last year).

Table 10 offers the correlation among the indexes using daily returns of the 6-year period 1997-2002. The correlation of the Euro Stoxx with the continental indexes is higher than 0.84. 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: 0.465 and 0.446.

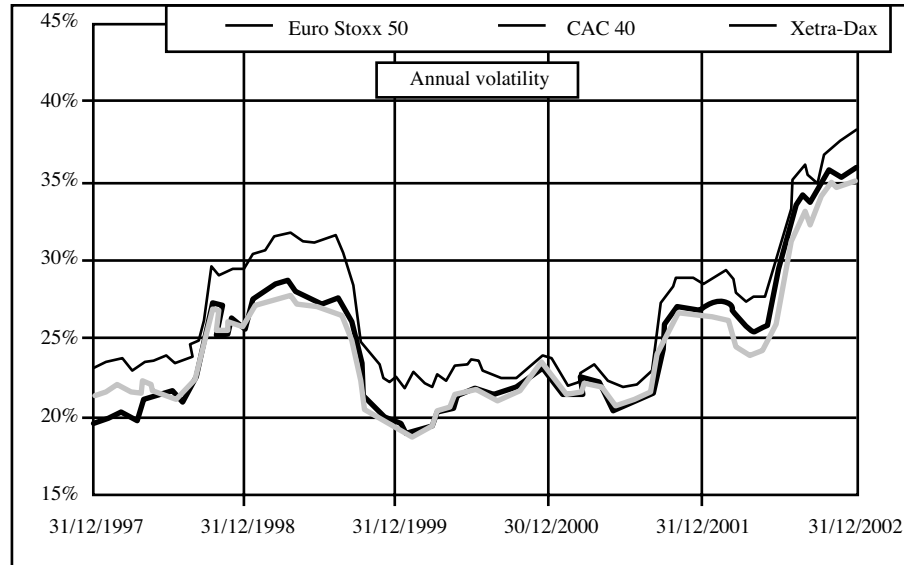
Tables 11 and 12 split the period used for calculating the correlation in two sub-periods. Table 11 shows the correlation of the 3-year sub-period 1997-1999, and Table 12 shows the correlation of the 3-year sub-period 2000-2002. Table 13 is the difference between Tables 11 and 12. It may be seen that the correlation of the Euro Stoxx 50 with all other indexes (except the Dax) was higher in 2000-2002 than in 1997-1999.

Figures 13 to 16 show the evolution of the correlations. Figures 13 and 14 contain the correlations of the daily returns of the last 20 days, while Figures 15 and 16 contain the correlations of the daily returns of the last year.

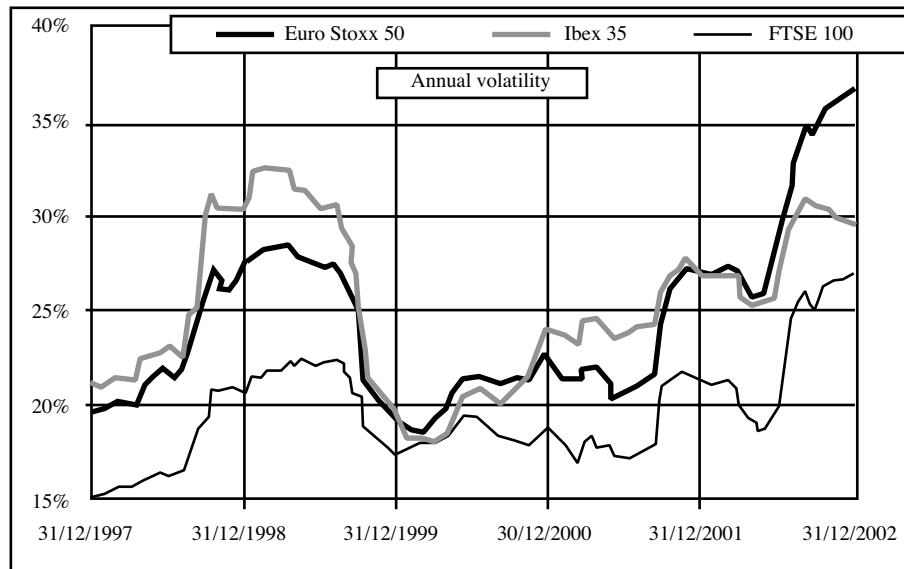
**Figure 7. Volatility of Euro Stoxx 50, S&P 500 and Dow Jones**  
(Annualized rolling standard deviation calculated with daily data of the last year)



**Figure 8. Volatility of Euro Stoxx 50, CAC 40 and Xetra-Dax**  
 (Annualized rolling standard deviation calculated with daily data of the last year)

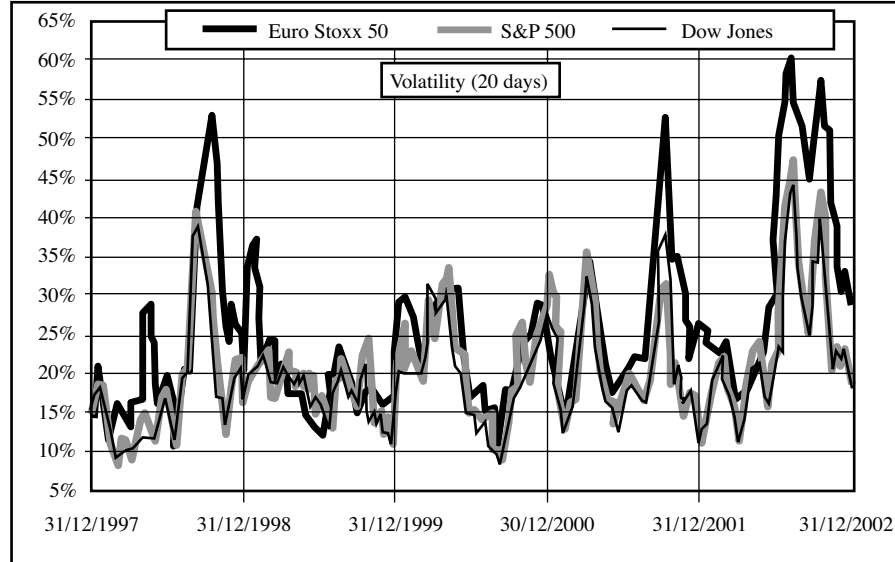


**Figure 9. Volatility of Euro Stoxx 50, Ibex 35 and FTSE 100**  
 (Annualized rolling standard deviation calculated with daily data of the last year)

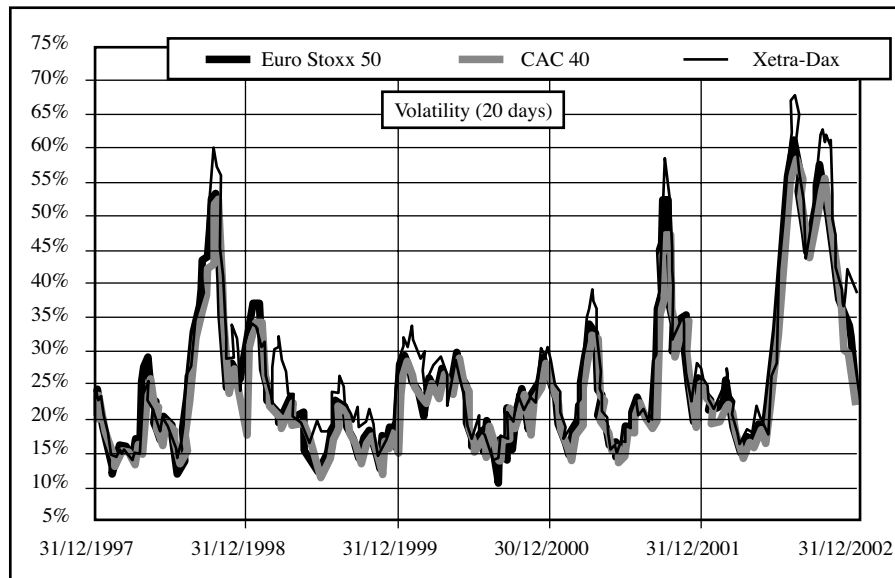




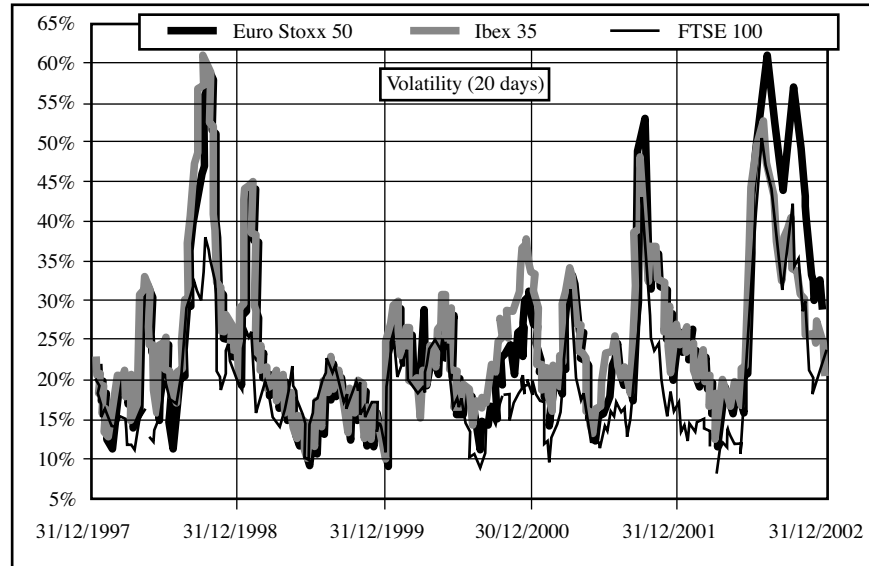
**Figure 10. Volatility of Euro Stoxx 50, S&P 500 and Dow Jones**  
 (Annualized rolling standard deviation calculated with daily data of the last 20 days)



**Figure 11. Volatility of Euro Stoxx 50, CAC 40 and Xetra-Dax**  
 (Annualized rolling standard deviation calculated with daily data of the last 20 days)



**Figure 12. Volatility of Euro Stoxx 50, Ibex 35 and FTSE 100 (20 days)**  
**(Annualized rolling standard deviation calculated with daily data of the last 20 days)**



**Table 10. Correlation of the Euro Stoxx 50 with other main world indexes.**  
**Correlation calculated with daily data in the period Jan 1997-Dec 2002**

|               | Euro Stoxx 50 | AEX   | CAC 40 | Ibex 35 | Mibtel 30 | Xetra-Dax | FTSE 100 | S&P 500 | Dow Jones |
|---------------|---------------|-------|--------|---------|-----------|-----------|----------|---------|-----------|
| Euro Stoxx 50 | 1.000         | 0.911 | 0.941  | 0.849   | 0.845     | 0.902     | 0.830    | 0.465   | 0.446     |
| AEX           | 0.911         | 1.000 | 0.840  | 0.750   | 0.751     | 0.792     | 0.796    | 0.413   | 0.407     |
| CAC 40        | 0.941         | 0.840 | 1.000  | 0.806   | 0.807     | 0.837     | 0.805    | 0.451   | 0.434     |
| Ibex 35       | 0.849         | 0.750 | 0.806  | 1.000   | 0.778     | 0.756     | 0.706    | 0.404   | 0.393     |
| Mibtel 30     | 0.845         | 0.751 | 0.807  | 0.778   | 1.000     | 0.770     | 0.716    | 0.390   | 0.380     |
| Xetra-Dax     | 0.902         | 0.792 | 0.837  | 0.756   | 0.770     | 1.000     | 0.748    | 0.517   | 0.499     |
| FTSE 100      | 0.830         | 0.796 | 0.805  | 0.706   | 0.716     | 0.748     | 1.000    | 0.423   | 0.411     |
| S&P 500       | 0.465         | 0.413 | 0.451  | 0.404   | 0.390     | 0.517     | 0.423    | 1.000   | 0.939     |
| Dow Jones     | 0.446         | 0.407 | 0.434  | 0.393   | 0.380     | 0.499     | 0.411    | 0.939   | 1.000     |

**Table 11. 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         | 0.886 | 0.899  | 0.820   | 0.818     | 0.905     | 0.790    | 0.406   | 0.420     |
| AEX           | 0.886         | 1.000 | 0.757  | 0.705   | 0.685     | 0.792     | 0.745    | 0.371   | 0.387     |
| CAC 40        | 0.899         | 0.757 | 1.000  | 0.750   | 0.753     | 0.829     | 0.736    | 0.417   | 0.429     |
| Ibex 35       | 0.820         | 0.705 | 0.750  | 1.000   | 0.738     | 0.758     | 0.656    | 0.392   | 0.405     |
| Mibtel 30     | 0.818         | 0.685 | 0.753  | 0.738   | 1.000     | 0.731     | 0.656    | 0.325   | 0.341     |
| Xetra-Dax     | 0.905         | 0.792 | 0.829  | 0.758   | 0.731     | 1.000     | 0.745    | 0.426   | 0.443     |
| FTSE 100      | 0.790         | 0.745 | 0.736  | 0.656   | 0.656     | 0.745     | 1.000    | 0.392   | 0.410     |
| S&P 500       | 0.406         | 0.371 | 0.417  | 0.392   | 0.325     | 0.426     | 0.392    | 1.000   | 0.946     |
| Dow Jones     | 0.420         | 0.387 | 0.429  | 0.405   | 0.341     | 0.443     | 0.410    | 0.946   | 1.000     |

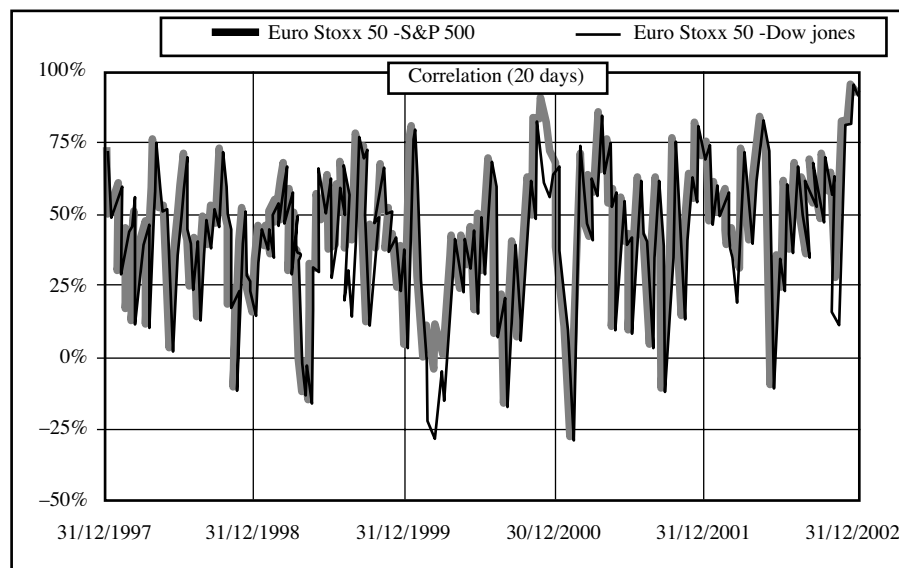
**Table12. Correlation of the Euro Stoxx 50 with other main world indexes.  
Correlation calculated with daily data in the period Jan 2000-Dec 2002**

|               | Euro Stoxx 50 | AEX   | CAC 40 | Ibex 35 | Mibtel 30 | Xetra-Dax | FTSE 100 | S&P 500 | Dow Jones |
|---------------|---------------|-------|--------|---------|-----------|-----------|----------|---------|-----------|
| Euro Stoxx 50 | 1.000         | 0.929 | 0.966  | 0.874   | 0.884     | 0.901     | 0.854    | 0.498   | 0.459     |
| AEX           | 0.929         | 1.000 | 0.895  | 0.783   | 0.814     | 0.791     | 0.831    | 0.440   | 0.418     |
| CAC 40        | 0.966         | 0.895 | 1.000  | 0.849   | 0.864     | 0.841     | 0.847    | 0.469   | 0.435     |
| Ibex 35       | 0.874         | 0.783 | 0.849  | 1.000   | 0.816     | 0.755     | 0.742    | 0.411   | 0.382     |
| Mibtel 30     | 0.884         | 0.814 | 0.864  | 0.816   | 1.000     | 0.812     | 0.774    | 0.445   | 0.415     |
| Xetra-Dax     | 0.901         | 0.791 | 0.841  | 0.755   | 0.812     | 1.000     | 0.748    | 0.573   | 0.534     |
| FTSE 100      | 0.854         | 0.831 | 0.847  | 0.742   | 0.774     | 0.748     | 1.000    | 0.439   | 0.410     |
| S&P 500       | 0.498         | 0.440 | 0.469  | 0.411   | 0.445     | 0.573     | 0.439    | 1.000   | 0.935     |
| Dow Jones     | 0.459         | 0.418 | 0.435  | 0.382   | 0.415     | 0.534     | 0.410    | 0.935   | 1.000     |

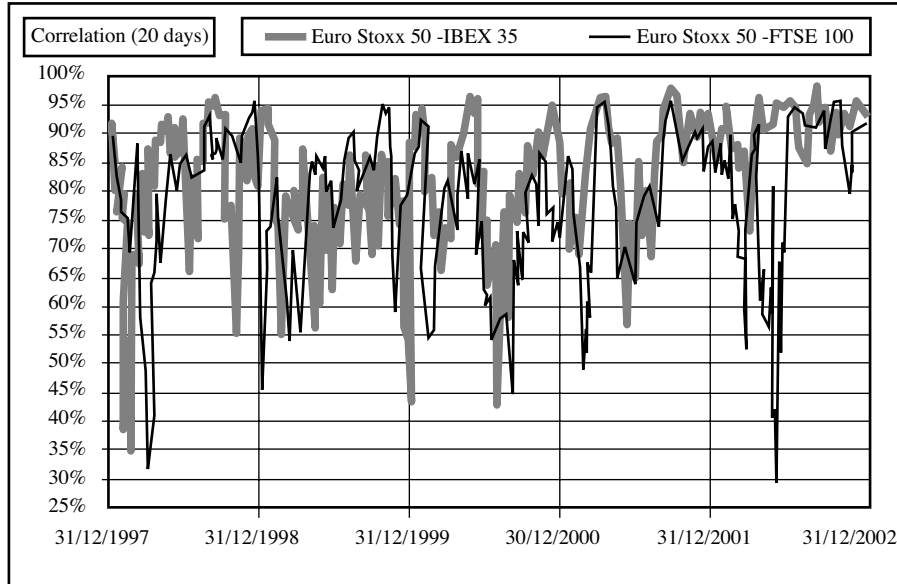
**Table 13. Correlation of Table 11 (97-98) – Correlation of Table 12 (200-2002)**

|               | Euro Stoxx 50 | AEX    | CAC 40 | Ibex 35 | Mibtel 30 | Xetra-Dax | FTSE 100 | S&P 500 | Dow Jones |
|---------------|---------------|--------|--------|---------|-----------|-----------|----------|---------|-----------|
| Euro Stoxx 50 | 0.000         | -0.043 | -0.067 | -0.054  | -0.066    | 0.003     | -0.064   | -0.092  | -0.039    |
| AEX           | -0.043        | 0.000  | -0.139 | -0.079  | -0.129    | 0.001     | -0.086   | -0.069  | -0.031    |
| CAC 40        | -0.067        | -0.139 | 0.000  | -0.099  | -0.111    | -0.012    | -0.110   | -0.052  | -0.006    |
| Ibex 35       | -0.054        | -0.079 | -0.099 | 0.000   | -0.078    | 0.003     | -0.086   | -0.019  | 0.023     |
| Mibtel 30     | -0.066        | -0.129 | -0.111 | -0.078  | 0.000     | -0.080    | -0.118   | -0.120  | -0.073    |
| Xetra-Dax     | 0.003         | 0.001  | -0.012 | 0.003   | -0.080    | 0.000     | -0.003   | -0.147  | -0.091    |
| FTSE 100      | -0.064        | -0.086 | -0.110 | -0.086  | -0.118    | -0.003    | 0.000    | -0.047  | 0.000     |
| S&P 500       | -0.092        | -0.069 | -0.052 | -0.019  | -0.120    | -0.147    | -0.047   | 0.000   | 0.011     |
| Dow Jones     | -0.039        | -0.031 | -0.006 | 0.023   | -0.073    | -0.091    | 0.000    | 0.011   | 0.000     |

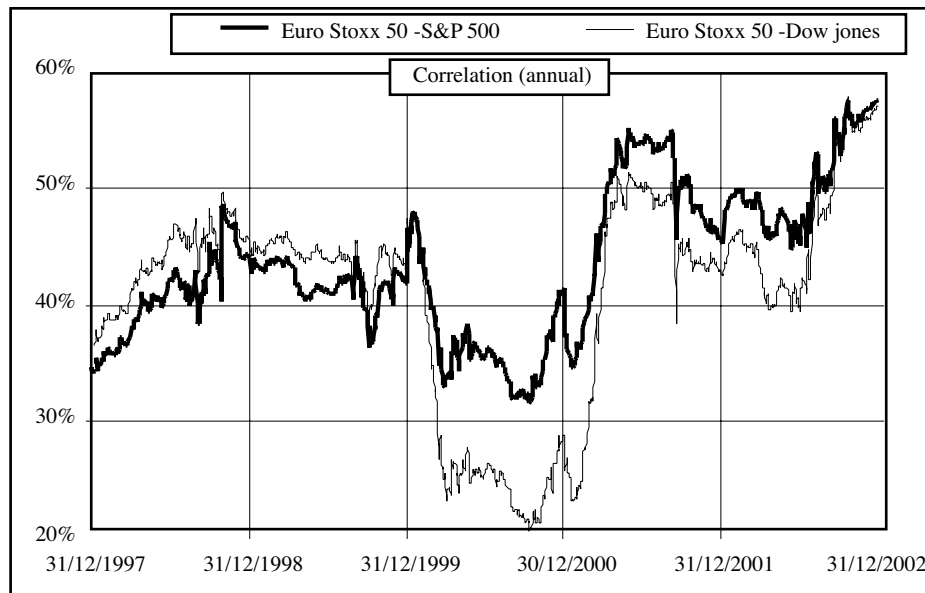
**Figure 13. Correlation between the Euro Stoxx 50 and the S&P 500. Correlation between Euro Stoxx 50 and Dow Jones (20-day rolling daily correlations)**



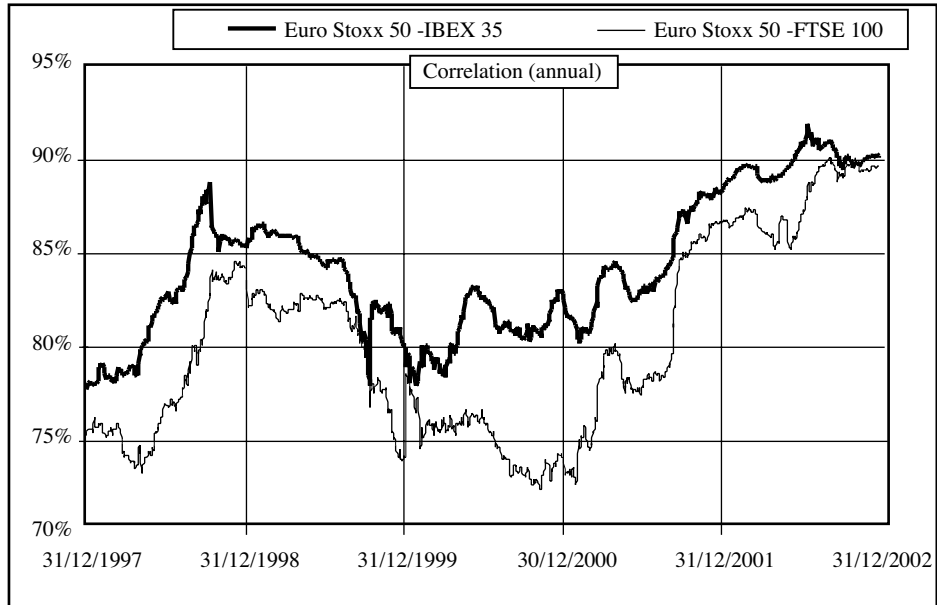
**Figure 14. Correlation between Euro Stoxx and Ibex 35.**  
**Correlation between Euro Stoxx 50 and FTSE 100 (20-day rolling daily correlations)**



**Figure 15. Correlation between Euro Stoxx and S&P 500.**  
**Correlation between Euro Stoxx 50 and Dow Jones (annual rolling daily correlations)**



**Figure 16. Correlation between Euro Stoxx and Ibox 35.**  
**Correlation between Euro Stoxx 50 and FTSE 100 (annual rolling daily correlations)**

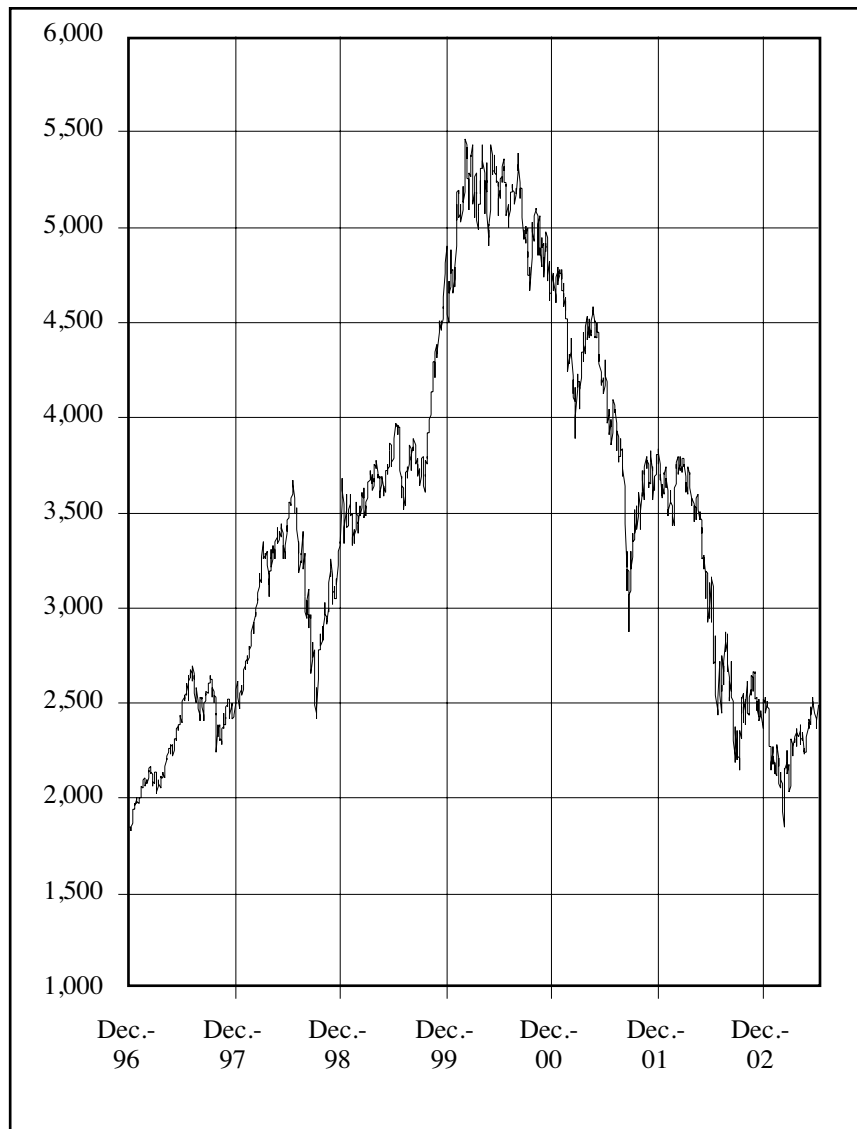


## Appendix 1

SHAREHOLDER VALUE CREATORS AND SHAREHOLDER  
VALUE DESTROYERS IN EUROPE. YEAR 2002**Market Value of the companies in the Euro Stoxx 50 in December 2002 and in previous  
years (million euros)**

|                         | 2002             | %           | 2001             | 2000             | 1999             | 1998             | 1997             | 1996           |
|-------------------------|------------------|-------------|------------------|------------------|------------------|------------------|------------------|----------------|
| TOTAL SA                | 93,267           | 6.6%        | 113,098          | 117,162          | 95,552           | 21,084           | 24,241           | 15,489         |
| ROYAL DUTCH PTL.        | 88,065           | 6.2%        | 121,006          | 139,937          | 130,480          | 90,979           | 108,299          | 73,683         |
| NOKIA                   | 72,476           | 5.1%        | 137,087          | 222,981          | 206,903          | 48,687           | 14,079           | 9,388          |
| ENI                     | 60,627           | 4.3%        | 56,338           | 54,415           | 43,692           | 44,623           | 41,436           | 32,162         |
| DEUTSCHE TELEKOM (XET)  | 51,422           | 3.6%        | 81,017           | 97,250           | 214,749          | 76,987           | 46,686           | 43,554         |
| L'OREAL                 | 49,048           | 3.4%        | 54,693           | 61,724           | 53,848           | 41,629           | 24,266           | 20,134         |
| SANOFI-SYNTHELABO       | 42,659           | 3.0%        | 61,340           | 51,932           | 30,222           | 15,171           | 10,797           | 8,232          |
| TELEFONICA              | 41,461           | 2.9%        | 70,219           | 76,396           | 80,918           | 39,645           | 24,562           | 17,024         |
| AVENTIS                 | 41,334           | 2.9%        | 62,674           | 73,376           | 44,891           | 16,306           | 14,792           | 8,827          |
| TELECOM ITALIA          | 38,051           | 2.7%        | 50,511           | 62,823           | 73,572           | 38,268           | 30,669           | 13,664         |
| TELECOM ITAL.MOBL.      | 36,688           | 2.6%        | 52,881           | 71,686           | 73,628           | 41,832           | 27,996           | 13,150         |
| SIEMENS (XET)           | 36,060           | 2.5%        | 66,341           | 82,802           | 75,537           | 32,233           | 30,595           | 20,272         |
| BNP PARIBAS             | 34,734           | 2.4%        | 44,520           | 41,894           | 41,204           | 15,323           | 10,400           | 6,350          |
| UNILEVER CERTS.         | 33,466           | 2.4%        | 37,638           | 38,524           | 31,345           | 46,624           | 36,312           | 22,277         |
| ING GROEP CERTS.        | 32,162           | 2.3%        | 56,435           | 83,164           | 57,943           | 49,090           | 35,629           | 22,174         |
| SANTANDER CTL.HISPANO   | 31,185           | 2.2%        | 43,903           | 51,477           | 41,226           | 19,837           | 14,658           | 7,977          |
| CARREFOUR               | 30,175           | 2.1%        | 41,531           | 46,680           | 62,711           | 24,984           | 18,418           | 19,795         |
| ENEL                    | 30,073           | 2.1%        | 38,379           | 50,202           | 50,445           |                  |                  |                |
| DAIMLERCHRYSLER (XET)   | 29,903           | 2.1%        | 49,261           | 45,354           | 77,133           | 83,741           |                  |                |
| BBV ARGENTARIA          | 29,146           | 2.0%        | 44,422           | 50,004           | 29,878           | 27,316           | 20,040           | 9,468          |
| DEUTSCHE BANK (XET)     | 27,287           | 1.9%        | 49,352           | 54,990           | 51,445           | 26,570           | 34,336           | 18,133         |
| E ON (XET)              | 26,607           | 1.9%        | 44,409           | 49,462           | 24,361           | 25,531           | 30,903           | 22,536         |
| GENERALI                | 25,004           | 1.8%        | 39,094           | 53,002           | 33,650           | 36,558           | 19,787           | 13,095         |
| ALLIANZ (XET)           | 24,152           | 1.7%        | 70,682           | 97,956           | 81,920           | 77,445           | 55,698           | 33,598         |
| ABN AMRO HOLDING        | 24,027           | 1.7%        | 27,898           | 36,373           | 36,375           | 25,835           | 25,266           | 16,927         |
| SOCIETE GENERALE        | 23,853           | 1.7%        | 27,068           | 28,003           | 24,018           | 14,084           | 11,942           | 7,835          |
| UNICREDITO ITALIANO     | 23,839           | 1.7%        | 22,661           | 27,864           | 24,178           | 23,569           | 8,052            | 1,911          |
| AX                      | 22,537           | 1.6%        | 40,288           | 63,526           | 48,925           | 42,727           | 23,522           | 9,716          |
| PHILIPS ELTN.KON        | 21,978           | 1.5%        | 43,930           | 51,353           | 45,776           | 21,069           | 19,534           | 11,013         |
| FORTIS (AMS)            | 21,551           | 1.5%        | 37,643           | 19,294           | 16,449           | 13,089           | 7,388            | 5,001          |
| BASF (XET)              | 21,049           | 1.5%        | 25,642           | 29,585           | 31,446           | 19,940           | 19,739           | 18,445         |
| MUNCH.RUCK. (XET)       | 20,368           | 1.4%        | 53,961           | 67,428           | 45,034           | 36,037           | 28,460           | 15,951         |
| FRANCE TELECOM          | 19,886           | 1.4%        | 51,807           | 106,093          | 134,532          | 69,353           | 33,280           |                |
| LVMH                    | 19,181           | 1.3%        | 22,388           | 34,535           | 43,556           | 15,001           | 13,341           | 19,302         |
| DANONE                  | 17,785           | 1.2%        | 20,484           | 23,937           | 17,171           | 17,971           | 11,964           | 8,005          |
| AEGON                   | 17,437           | 1.2%        | 43,236           | 59,488           | 64,090           | 61,004           | 23,724           | 13,249         |
| SUEZ                    | 17,138           | 1.2%        | 34,681           | 38,780           | 31,439           | 25,756           | 12,780           | 4,355          |
| VIVENDI UNIVERSAL       | 16,749           | 1.2%        | 67,022           | 75,710           | 52,843           | 35,152           | 17,172           | 12,019         |
| REPSOL YPF              | 15,383           | 1.1%        | 19,998           | 20,779           | 26,243           | 13,649           | 11,720           | 8,979          |
| BAYER (XET)             | 14,935           | 1.0%        | 26,146           | 40,804           | 34,399           | 26,192           | 24,870           | 23,525         |
| RWE (XET)               | 12,928           | 0.9%        | 22,309           | 25,270           | 18,353           | 22,371           | 15,962           | 10,939         |
| AIR LIQUIDE             | 12,673           | 0.9%        | 14,295           | 14,528           | 13,772           | 12,957           | 10,506           | 9,029          |
| ENDESA                  | 11,805           | 0.8%        | 18,602           | 19,216           | 20,868           | 21,577           | 16,908           | 14,439         |
| AHOLD KON.              | 11,125           | 0.8%        | 30,046           | 26,729           | 18,819           | 19,720           | 12,489           | 8,171          |
| VOLKSWAGEN (XET)        | 10,876           | 0.8%        | 16,436           | 17,371           | 17,396           | 21,010           | 14,301           | 9,066          |
| SAINT GOBAIN            | 9,534            | 0.7%        | 14,446           | 14,361           | 16,272           | 10,858           | 11,627           | 9,694          |
| LAFARGE                 | 9,534            | 0.7%        | 13,639           | 9,772            | 12,104           | 8,312            | 5,683            | 4,478          |
| SAN PAOLO IMI           | 8,983            | 0.6%        | 16,924           | 24,177           | 18,915           | 21,146           | 7,122            | 3,919          |
| BAYER.HYPO U VBK. (XET) | 7,941            | 0.6%        | 17,906           | 23,790           | 26,584           | 25,686           | 17,096           | 7,624          |
| ALCATEL                 | 5,116            | 0.4%        | 23,333           | 73,289           | 45,307           | 20,717           | 18,978           | 10,280         |
| <b>Sum</b>              | <b>1,423,263</b> | <b>100%</b> | <b>2,239,620</b> | <b>2,747,247</b> | <b>2,592,115</b> | <b>1,585,246</b> | <b>1,098,022</b> | <b>714,853</b> |

## Appendix 2

SHAREHOLDER VALUE CREATORS AND SHAREHOLDER  
VALUE DESTROYERS IN EUROPE. YEAR 2002**Evolution of the Euro Stoxx 50 index****References**

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