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# EURO STOXX 50: 1997-2005 SHAREHOLDER VALUE CREATION IN EUROPE

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## Abstract

2005 was a very good year for the shareholders of the companies in the Euro Stoxx 50. The shareholder value creation of these 50 companies was €292.9 billion. The companies that created most value for their shareholders were Total (€30 billion), Sanofi-Synthelabo (€23.2 billion) and Eni (€20.7 billion). The companies that destroyed most value were telecoms: Deutsche Telekom (-€14.8 billion), France Telecom (-€11.8 billion) and Telecom Italia (-€7.1 billion). In 2005, the Euro Stoxx 50 was slightly more volatile than the S&P 500.

Shareholder value creation in the three-year period 2003-2005 was €551 billion. The market value of the 50 companies included in the Euro Stoxx 50 was €2.1 trillion in 2005, although only €1.8 trillion were included in the index.

SAP was the top shareholder value creator and Deutsche Telekom the top shareholder value destroyer during the eight-year period 1997-2005.

A portfolio long in the companies that entered the index and short in the companies that abandoned the index had on average a 6.85% return in the 20 days prior to the index recomposition and a 0.97% return in the 20 days after the index recomposition.

JEL Classification: G12, G31, M21

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# EURO STOXX 50: 1997-2005

## SHAREHOLDER VALUE CREATION IN EUROPE

In this paper we quantify shareholder value creation for the 50 companies included in the Euro Stoxx 50 in December 2005. We provide the created shareholder value for 2005, and also for the periods 1997-2005, 1998-2005, 1999-2005, 2000-2005, 2001-2005, 2002-2005, 2003-2005 and 2004-2005. The top shareholder value destroyers in 2005 were: Deutsche Telekom (€14,813 million), France Telecom (-€11,761 million) and Telecom Italia (-€7,067 million). The percentage of value creators was 89%, 72%, 63%, 51%, 12%, 2%, 72%, 58% and 88% for 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 and 2005.

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 2005. 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 belong. 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 since 1996. 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 2005.

### 1. Definition of created shareholder value

We define shareholder value created 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 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 required return to equity.

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

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

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

## 2. Evolution of the Euro Stoxx 50

Figure 1 shows the evolution of the Euro Stoxx 50 price index since 1992. It stood at 1,000 points in December 1991 and 3,578 in December 2005. The historic maximum value was 5,464 (March 6, 2000).

**Figure 1**

Evolution of the Euro Stoxx 50 index

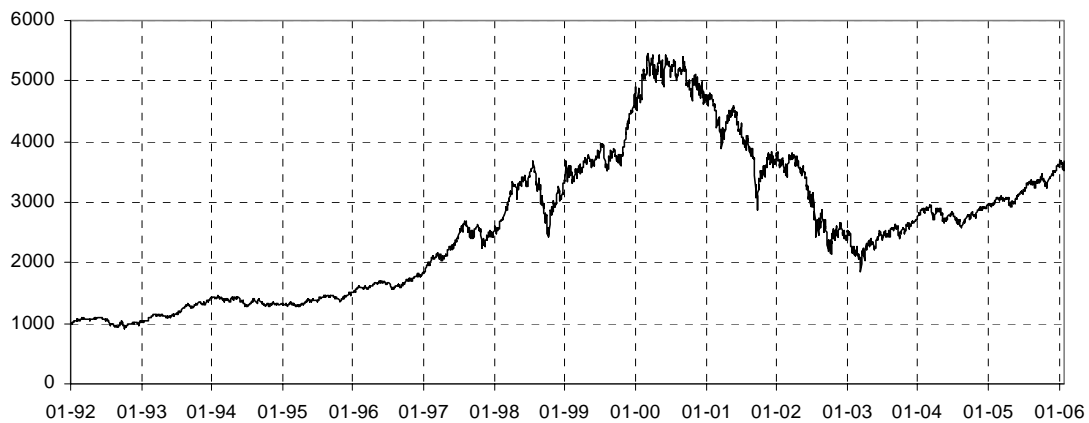


Table 2 contains the evolution of increase of capitalization, shareholder value added and shareholder value creation for the Euro Stoxx 50 since 1993.

**Table 2**

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

<b>Euro Stoxx 50</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>Total</b>
Capitalization	472	441	512	684	1,074	1,529	2,691	2,119	1,796	1,148	1,379	1,536	1,828	
Δ Capitalization	142	-31	71	172	389	454	1163	-571	-322	-647	231	156	291	1,498
Shareholder value added	143	-23	79	135	274	374	743	-45	-405	-648	212	130	373	1,342
Shareholder value creation														
in current euros	97	-75	18	74	197	271	629	-275	-600	-813	116	15	253	-93
in euros of 2005	287	-196	41	154	373	479	1022	-409	-819	-1,024	135	16	253	312
Return (includes dividends.)	44%	-5%	18%	26%	40%	35%	49%	-2%	-19%	-36%	18%	9%	24%	15%
Price Index	1,433	1,321	1,507	1,850	2,532	3,342	4,904	4,772	3,806	2,386	2,761	2,951	3,579	

### 3. Comparison between Euro Stoxx 50 and other world indexes

Table 3 contains the comparison between the return of the Euro Stoxx 50 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 2005.

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 2005.

**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
	Return	Return	Return	Return	Return	Return	Return	Return	Return
1993	44%	49%	26%	63%	52%	47%	25%	10%	17%
1994	-5%	3%	-14%	-10%	2%	-7%	-7%	1%	5%
1995	18%	21%	3%	25%	0%	8%	26%	38%	37%
1996	26%	38%	28%	48%	14%	27%	17%	23%	29%
1997	40%	44%	33%	46%	62%	47%	29%	33%	25%
1998	35%	32%	34%	43%	44%	19%	17%	29%	18%
1999	49%	27%	54%	21%	25%	39%	21%	21%	27%
2000	-2%	-3%	1%	-17%	4%	-8%	-8%	-9%	-5%
2001	-19%	-19%	-20%	-8%	-24%	-20%	-14%	-12%	-5%
2002	-36%	-34%	-32%	-26%	-23%	-44%	-22%	-22%	-15%
2003	19%	8%	20%	30%	17%	37%	18%	29%	28%
2004	9%	7%	11%	21%	21%	7%	11%	11%	5%
2005	24%	31%	27%	19%	18%	27%	21%	5%	2%
93-2005	14%	14%	11%	18%	15%	11%	10%	11%	13%
97-2005	4%	2%	6%	5%	5%	2%	3%	3%	4%
99-2005	-4%	-5%	-2%	1%	0%	-5%	-1%	-1%	1%
Nº companies	50	25	40	35	30	30	100	500	30
Market Capitalization	1,827,777	449,801	821,531	411,712			1,409,757	11,258,048	3,755,050

### 4. Shareholder value creators and shareholder value destroyers in the Euro Stoxx 50 in 2005

The top shareholder value creator in 2005 was Total SA (€30,003 million). The companies that destroyed most value in 2005 were: Deutsche Telekom (-€14,813 million), France Telecom (-€11,761 million) and Telecom Italia (-€7,067 million).

Table 4 contains the capitalization, shareholder value creation and shareholder return of the 50 companies in 2005. 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, only with the percentages that appear in the last column.

The three companies in the Euro Stoxx 50 that created most shareholder value in 2005 were French (Total SA, Sanofi-Synthelabo) and Italian (Eni).

Rwe (60%) was the most profitable company. The least profitable company in 2005 was Telecom Italia (-15%). Forty-four companies had positive returns, and all of them created shareholder value. The four least profitable companies were: Telecom Italia (-15%), Deutsche Telekom (-14%), France Telecom (-12%) and Alcatel (-9%). Thirty-three companies had a shareholder return higher than 20% in 2005, and 22 higher than 30%.

**Table 4**

Capitalization, shareholder value creation and return for the companies of the Euro Stoxx 50 in December 2005

		Capitalization December 2005		CSV 2005		Return 2005		Free Float	Capitalization in the Index
		€	Rank	€	Rank	%	Rank		
TOTAL SA	FRANCE	130.278	1	30.003	1	36%	14	100%	130.278
SANOFI-SYNTHELABO	FRANCE	103.656	2	23.208	2	35%	17	78%	80.333
ENI	ITALY	93.845	3	20.668	3	35%	15	65%	60.999
AXA	FRANCE	60.201	11	16.322	4	55%	2	86%	51.773
NOKIA	FINLAND	68.502	5	15.766	5	37%	12	93%	63.707
ING GROEP CERTS.	NETHERLANDS	64.601	6	14.897	6	38%	9	84%	54.265
E ON	GERMANY	60.474	9	14.547	7	38%	10	96%	58.055
SOCIETE GENERALE	FRANCE	45.043	18	12.480	8	45%	4	93%	41.890
BNP PARIBAS	FRANCE	57.294	13	12.114	9	33%	20	90%	51.565
RWE	GERMANY	32.739	33	11.406	10	60%	1	90%	29.465
ALLIANZ	GERMANY	50.797	16	10.995	11	37%	13	100%	50.797
BSCH	SPAIN	69.735	4	10.404	12	26%	27	100%	69.735
UNICREDITO ITALIANO	ITALY	60.347	10	9.799	13	44%	5	100%	60.347
FORTIS	BELGIUM	34.987	28	8.985	14	41%	7	89%	31.138
LVMH	FRANCE	36.770	26	7.630	15	35%	16	53%	19.488
PHILIPS ELTN.KON	NETHERLANDS	34.547	29	7.509	16	37%	11	100%	34.547
BAYER	GERMANY	25.774	38	7.396	17	48%	3	95%	24.485
DAIMLERCHRYSLER	GERMANY	43.693	20	6.804	18	27%	25	95%	41.509
SUEZ	FRANCE	33.387	30	6.763	19	41%	8	93%	31.050
DEUTSCHE BANK	GERMANY	44.542	19	6.615	20	27%	26	100%	44.542
SIEMENS	GERMANY	64.515	7	5.611	21	18%	36	94%	60.644
AEGON	NETHERLANDS	21.986	41	5.500	22	43%	6	84%	18.468
REPSOL YPF	SPAIN	30.119	35	5.467	23	31%	22	82%	24.697
BBVA	SPAIN	51.134	15	5.117	24	19%	35	100%	51.134
CREDIT AGRICOLE	FRANCE	39.844	24	4.937	25	22%	30	40%	15.937
ENDESA	SPAIN	23.525	39	4.796	26	33%	19	96%	22.584
BASF	GERMANY	36.020	27	4.618	27	23%	28	96%	34.580
DANONE	FRANCE	23.319	40	4.608	28	32%	21	100%	23.319
MUNCH.RUCK.	GERMANY	26.259	37	4.541	29	29%	23	90%	23.633
GENERALI	ITALY	37.667	25	4.373	30	20%	33	86%	32.394
SAP	GERMANY	48.399	17	4.289	31	18%	37	67%	32.427
UNILEVER CERTS.	NETHERLANDS	33.066	31	4.090	32	21%	32	100%	33.066
SAN PAOLO IMI	ITALY	20.964	42	3.961	33	33%	18	53%	11.111
ABN AMRO HOLDING	NETHERLANDS	42.186	21	3.873	34	19%	34	94%	39.655
IBERDROLA	SPAIN	20.817	43	3.562	35	28%	24	95%	19.776
L'OREAL	FRANCE	41.370	22	2.595	36	14%	42	45%	18.617
AIR LIQUIDE	FRANCE	17.727	45	2.359	37	23%	29	100%	17.727
CARREFOUR	FRANCE	27.900	36	2.278	38	16%	39	85%	23.715
ALLIED IRISH BANKS	IRELAND	15.687	47	1.963	39	22%	31	95%	14.903
VIVENDI UNIVERSAL	FRANCE	30.514	34	1.767	40	16%	40	100%	30.514
SAINT GOBAIN	FRANCE	17.349	46	1.326	41	17%	38	95%	16.482
RENAULT	FRANCE	19.632	44	1.276	42	15%	41	70%	13.743
LAFARGE	FRANCE	13.344	49	484	43	11%	44	100%	13.344
AHOLD KON.	NETHERLANDS	9.844	50	378	44	11%	43	59%	5.808
ALCATEL	FRANCE	13.688	48	-2.485	45	-9%	47	95%	13.004
ENEL	ITALY	40.852	23	-3.209	46	-1%	45	69%	28.188
TELEFONICA	SPAIN	62.548	8	-5.842	47	-1%	46	89%	55.667
TELECOM ITALIA	ITALY	32.891	32	-7.067	48	-15%	50	82%	26.971
FRANCE TELECOM	FRANCE	54.593	14	-11.761	49	-12%	48	68%	37.123
DEUTSCHE TELEKOM	GERMANY	59.106	12	-14.813	50	-14%	49	65%	38.419
Sum		2.128.078		292.902					1.827.617





Table 6

Shareholder Return for the companies in the Euro Stoxx 50 in 1997-2005 and other selected periods

	1997-2005		1998-2005		1999-2005		2000-2005		2001-2005		2002-2005		2003-2005		2004-2005		2005		
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	
UNICREDITO ITALIANO	774%	1	161%	11	44%	23	47%	14	26%	16	51%	14	74%	28	49%	17	44%	5	
SOCIETE GENERALE	607%	2	365%	1	311%	1	138%	2	99%	3	101%	2	118%	7	63%	10	45%	4	
NOKIA	523%	3	324%	2	31%	27	-62%	43	-65%	45	-42%	45	9%	47	18%	39	37%	12	
BNP PARIBAS	498%	4	262%	3	147%	6	84%	9	75%	4	58%	13	98%	15	48%	18	33%	20	
RENAULT	405%	5	233%	5	122%	8	73%	10	45%	14	99%	3	71%	29	34%	30	15%	41	
ALLIED IRISH BANKS	382%	6	171%	10	49%	21	98%	7	75%	5	61%	11	58%	36	54%	14	22%	31	
SANOFI-SYNTHELABO	349%	7	240%	4	147%	5	110%	4	21%	18	1%	33	44%	40	37%	26	35%	17	
SAP	348%	8	75%	31	32%	26	-2%	28	29%	15	8%	29	107%	11	17%	42	18%	37	
TOTAL SA	347%	9	180%	9	216%	2	101%	6	65%	6	58%	12	80%	25	59%	11	36%	14	
TELECOM ITALIA	320%	10	228%	6	-46%	43	-50%	40	-44%	40	-10%	38	33%	41	16%	43	-15%	50	
ENI	310%	11	211%	8	181%	3	180%	1	118%	1	105%	1	81%	23	74%	6	35%	15	
BBVA	293%	12	83%	25	34%	25	25%	20	10%	25	23%	25	81%	24	46%	20	19%	35	
SAN PAOLO IMI	284%	13	111%	18	22%	31	28%	17	-3%	29	34%	23	147%	4	42%	22	33%	18	
DANONE	283%	14	151%	12	66%	18	70%	11	21%	17	39%	19	46%	39	41%	24	32%	21	
PHILIPS ELTN.KON	254%	15	100%	22	90%	13	-18%	36	-29%	38	-18%	40	62%	34	14%	44	37%	11	
BSCHE	239%	16	80%	26	58%	20	18%	24	14%	23	35%	22	88%	22	26%	35	26%	27	
SIEMENS	237%	17	124%	15	119%	9	-6%	32	-15%	33	5%	31	89%	21	18%	40	18%	36	
TELEFONICA	206%	18	108%	19	35%	24	-34%	38	-7%	30	5%	30	78%	26	21%	37	-1%	46	
REPSOL YPF	194%	19	120%	16	85%	14	20%	22	59%	8	62%	10	108%	10	66%	8	31%	22	
AXA	187%	20	97%	23	11%	32	-3%	29	-16%	34	35%	21	139%	5	71%	7	55%	2	
ING GROEP CERTS.	185%	21	103%	21	48%	22	25%	19	-13%	31	25%	24	114%	8	76%	5	38%	9	
IBERDROLA	175%	22	145%	14	80%	15	105%	5	104%	2	81%	4	92%	19	58%	12	28%	24	
BASF	172%	23	147%	13	140%	7	48%	13	53%	10	72%	8	93%	18	51%	16	23%	28	
DEUTSCHE BANK	168%	24	51%	36	92%	12	9%	25	1%	26	12%	28	98%	14	29%	32	27%	26	
FORTIS	168%	25	79%	28	0%	35	-1%	27	0%	28	15%	27	94%	17	90%	2	41%	7	
AIR LIQUIDE	157%	26	116%	17	73%	16	59%	12	47%	11	45%	17	57%	37	35%	28	23%	29	
SUEZ	154%	27	79%	30	1%	34	9%	26	-13%	32	-4%	36	92%	20	85%	3	41%	8	
ABN AMRO HOLDING	153%	28	75%	32	71%	17	20%	21	18%	20	51%	15	67%	32	33%	31	19%	34	
E.ON	150%	29	79%	29	114%	11	122%	3	62%	7	76%	7	159%	2	85%	4	38%	10	
SAINT GOBAIN	146%	30	105%	20	117%	10	36%	16	46%	13	38%	20	102%	13	39%	25	17%	38	
RWE	143%	31	63%	34	64%	19	95%	8	54%	9	71%	9	184%	1	115%	1	60%	1	
LAFARGE	137%	32	79%	27	27%	28	-11%	34	12%	24	-9%	37	29%	43	17%	41	11%	44	
GENERALI	134%	33	53%	35	-10%	37	-3%	30	-25%	36	0%	34	58%	35	45%	21	20%	33	
L'OREAL	132%	34	91%	24	10%	33	-15%	35	-27%	37	-18%	39	-9%	49	0%	47	14%	42	
LVMH	126%	35	220%	7	181%	4	-5%	31	18%	21	79%	5	104%	12	35%	29	35%	16	
UNILEVER CERTS.	108%	36	25%	38	-4%	36	26%	18	0%	27	0%	35	10%	46	20%	38	21%	32	
ENDESA	108%	37	74%	33	23%	30	38%	15	47%	12	47%	16	124%	6	57%	13	33%	19	
BAYER	48%	38	36%	37	26%	29	-7%	33	-23%	35	16%	26	95%	16	64%	9	48%	3	
AEGON	44%	39	-14%	42	-67%	47	-64%	44	-62%	44	-46%	47	29%	42	27%	33	43%	6	
MUNCH.RUCK.	35%	40	-25%	43	-38%	40	-50%	39	-66%	46	-58%	49	11%	45	23%	36	29%	23	
ALLIANZ	14%	41	-32%	45	-50%	44	-53%	42	-60%	43	-41%	44	71%	30	36%	27	37%	13	
CARREFOUR	7%	42	14%	39	-16%	38	-51%	41	-34%	39	-26%	42	1%	48	-4%	50	16%	39	
DEUTSCHE TELEKOM	1%	43	-5%	40	-43%	41	-78%	48	-52%	41	-22%	41	19%	44	-1%	48	-14%	49	
VIVENDI UNIVERSAL	-3%	44	-28%	44	-59%	46	-67%	45	-59%	42	-54%	48	76%	27	41%	23	16%	40	
ALCATEL	-9%	45	-51%	46	-46%	42	-76%	47	-82%	49	-45%	46	151%	3	3%	46	-9%	47	
AHOLD KON.	-50%	46	-66%	47	-75%	48	-73%	46	-77%	48	-77%	50	-39%	50	3%	45	11%	43	
DAIMLERCHRYSLER					-33%	39	-28%	37	18%	19	4%	32	67%	33	26%	34	27%	25	
CREDIT AGRICOLE												77%	6	111%	9	52%	15	22%	30
ENEL							18%	23	16%	22	42%	18	70%	31	47%	19	-1%	45	
FRANCE TELECOM			-11%	41	-57%	45	-78%	49	-69%	47	-39%	43	52%	38	-3%	49	-12%	48	

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

Table 7 contains some statistics on the companies in the Euro Stoxx 50 grouped by country. The first two columns show the market capitalization at the end of 2005. French companies account for 36% of total market capitalization. The third column also shows that there are 18 French companies.

**Table 7**

Shareholder Value Creation and Shareholder Return by country of the 50 companies in the Euro Stoxx 50 at the end of 2005

	Market Capitalization 2005		No. Companies	Return 2005	Return 1997-2005	CSV 05	
	€ million	%				€ million	%
France	758,718	36%	18	28.4%	18.3%	115,904	40%
Germany	447,435	21%	11	25.5%	13.5%	62,01	21%
Italy	306,422	14%	6	30.6%	22.2%	28,524	10%
Netherlands	266,577	13%	6	30.7%	14.5%	36,247	12%
Spain	245,437	12%	6	19.4%	15.6%	23,504	8%
Belgium	34,987	2%	1	41.4%	11.6%	8,985	3%
Finland	68,502	3%	1	36.6%	22.5%	15,766	5%
Ireland	15,687	1%	1	21.8%	19.1%	1,963	1%
Total	2,128,078	100%	50			292,902	100%

## 7. Shareholder Return and size

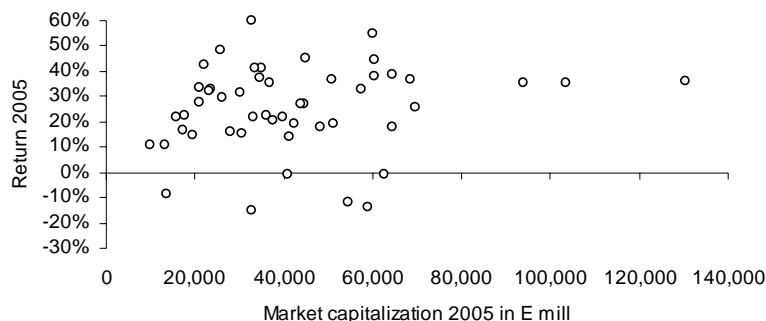
Figure 2 shows the relationship of shareholder return to size (measured as market capitalization) in 2005. There is not a close relationship. The R-squared is 2.8% (that is, the difference in size explained only 2.8% of the return).

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

Figure 4 shows the relationship of shareholder return in the eight-year period 1997-2005 to size (measured as market capitalization at the beginning of the period, in 1996). Again, no significant relationship is found. In this sample, difference in size explained 20,89% of the return.

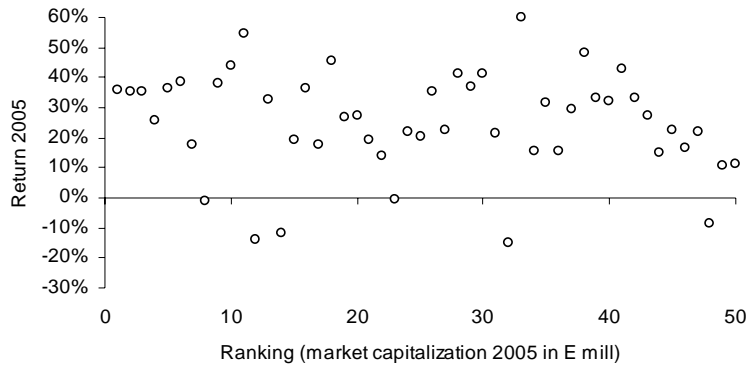
**Figure 2**

Shareholder return and size of the companies in the Euro Stoxx 50 in 2005



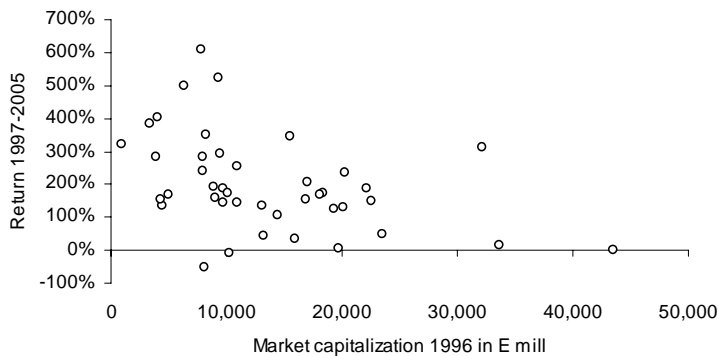
**Figure 3**

Ranking of shareholder return and size of the companies in the Euro Stoxx 50 in 2005



**Figure 4**

Relationship of shareholder return to size of the companies in the Euro Stoxx 50 in the period 1997-2005



## 8. Additions and deletions of companies in the Euro Stoxx 50 during the eight-year period 1997-2005

Table 8 contains the companies added 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 4.82% (4.73 % above 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 4.79%.

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 -2.03%. It may be seen, also, that the average cumulative return in the 20 days after the deletion was 3.82%.

Figure 7 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 6.85%, and that the average cumulative return in the 20 days after the addition/deletion date was 0.97%.

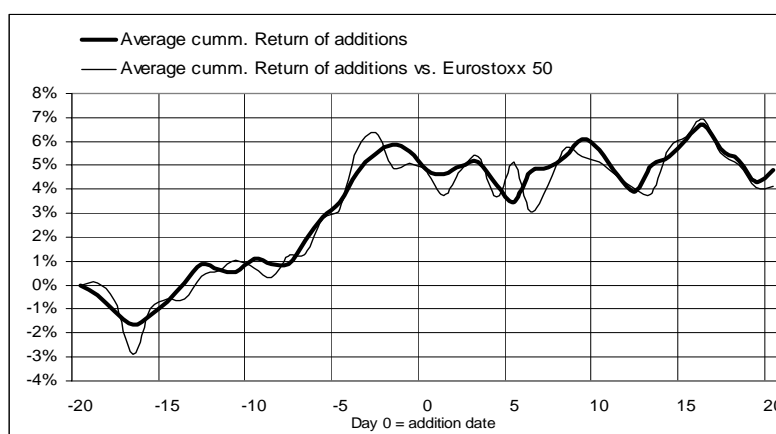
**Table 8**

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

	Deletions	Additions
22/09/1997	Sanofi, Schering AG, Thyssen AG	Paribas, L'Oreal, Portugal Telecom
22/12/1997	Pinault-Printemps-La Redoute	France Telecom
20/09/1999	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
01/11/1999	Paribas, ELF Aquitaine	Pinault-Printemps-La Redoute, BNP
20/12/1999	Rhone-Poulenc	Aventis
14/02/2000	Mannesmann	Canal +
20/03/2000	Saint Gobain	Enel
18/09/2000	Electrabel, Metro	Groupe Danone, San Paolo-Imi
11/12/2000	Canal +	Volkswagen
23/07/2001	Dresdner Bank	TIM
24/09/2001	KPN	Saint Gobain
23/09/2002	Pinault-Printemps-La Redoute	Lafarge
22/09/2003	Bayer. Hypo- und VereinsBank	Iberdrola
28/07/2004	Aventis	SAP
20/06/2004	Volkswagen	Credit Agricole
30/06/2005	Telecom Italia Mobile-Dead	Allied Irish Banks
20/07/2005	Royal Dutch Shell A	Renault

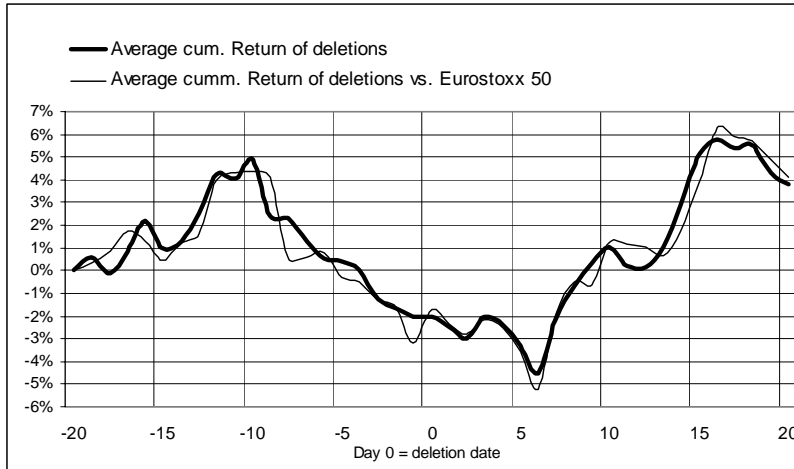
**Figure 5**

Average Cumulative Return of additions to the Euro Stoxx 50



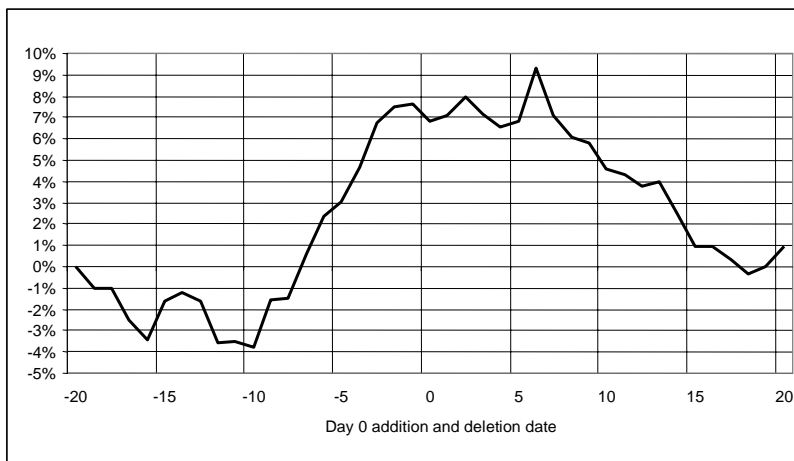
**Figure 6**

Average Cumulative Return of deletions from the Euro Stoxx 50



**Figure 7**

Average cumulative return of a portfolio long in the companies added and short in the companies deleted from the Euro Stoxx 50



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

Figure 8 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 U.S. 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 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 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 last 20 days (instead of the last year).

Table 9 offers the correlation among the indexes using daily returns of the eight-year period 1997-2005. 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: 0.477 and 0.464.

Tables 10 and 11 split the period used for calculating the correlation in two sub-periods. Table 10 shows the correlation of the 3-year sub-period 1997-1999, and Table 11 shows the correlation of the 5-year sub-period 2000-2005. Table 12 is the difference between Tables 10 and 11. It may be seen that the correlation of the Euro Stoxx 50 with all other indexes was higher in 2000-2005 than in 1997-1999.

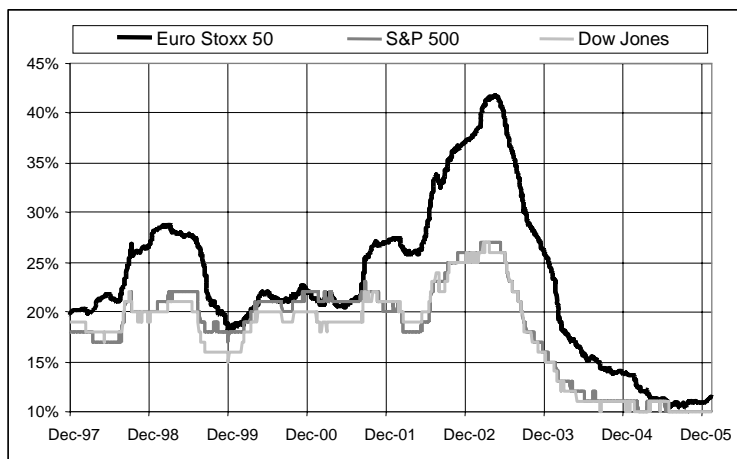
Tables 13, 14, 15 and 16 are the same as Tables 9, 10, 11 and 12 but the correlations are calculated using monthly returns.

Figures 14 to 18 show the evolution of the correlations. Figures 14 and 15 contain the correlations of the daily returns of the last 20 days, while Figures 16 and 17 contain the correlations of the daily returns of the last year. Figure 18 contains correlations of the monthly returns of the last year.

## Figure 8

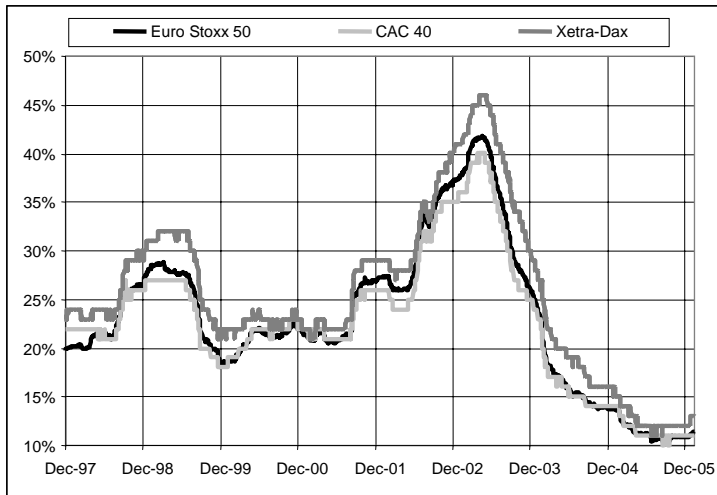
Volatility of Euro Stoxx 50, S&P 500 and Dow Jones

(Annualized rolling standard deviation calculated with daily data of the last year)



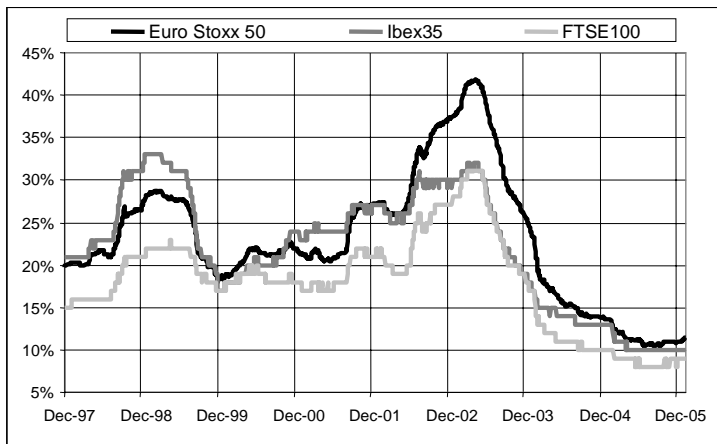
**Figure 9**

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



**Figure 10**

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

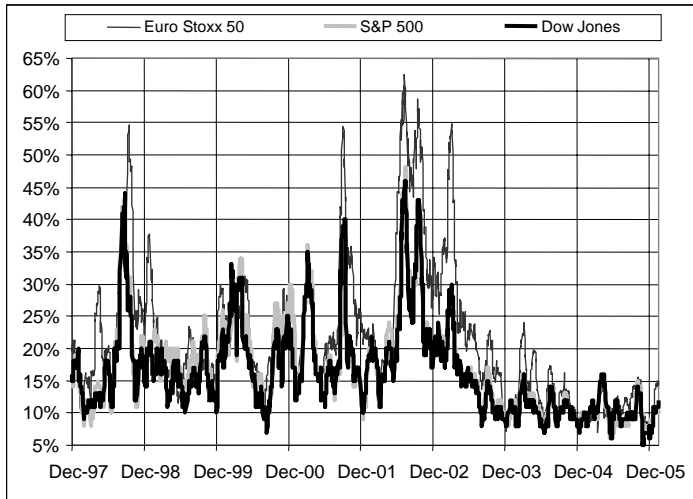




**Figure 11**

Volatility of Euro Stoxx 50, S&P 500 and Dow Jones

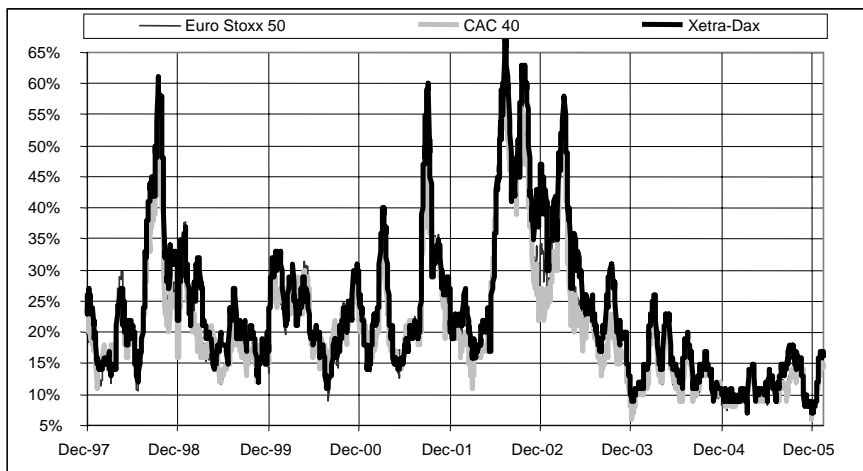
(Annualized rolling standard deviation calculated with daily data of the last 20 days)



**Figure 12**

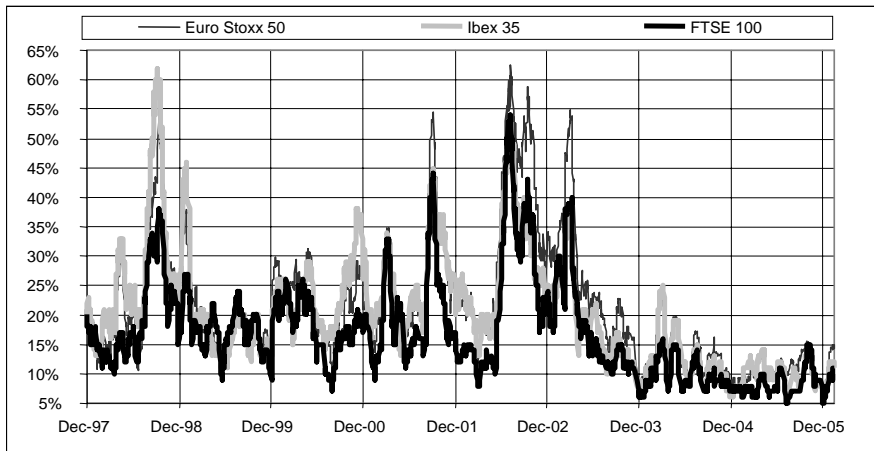
Volatility of Euro Stoxx 50, CAC 40 and Xetra-Dax

(Annualized rolling standard deviation calculated with daily data of the last 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 last 20 days)



**Table 9**

Correlation of the Euro Stoxx 50 with other main world indexes. Correlation calculated with daily data in the period Jan 1997–Dec 2005

	ES50	AEX	CAC 40	Ibex35	Mibtel 30	Xetra-Dax	FTSE 100	S&P 500	Dow Jones
ES50	1.000	0.920	0.946	0.855	0.851	0.907	0.833	0.477	0.464
AEX	0.920	1.000	0.861	0.768	0.759	0.811	0.803	0.431	0.424
CAC 40	0.946	0.861	1.000	0.814	0.811	0.843	0.808	0.459	0.447
Ibex35	0.855	0.768	0.814	1.000	0.787	0.762	0.716	0.414	0.405
Mibtel 30	0.851	0.759	0.811	0.787	1.000	0.774	0.723	0.408	0.400
Xetra-Dax	0.907	0.811	0.843	0.762	0.774	1.000	0.746	0.529	0.516
FTSE 100	0.833	0.803	0.808	0.716	0.723	0.746	1.000	0.417	0.424
S&P 500	0.477	0.431	0.459	0.414	0.408	0.529	0.424	1.000	0.944
Dow Jones	0.464	0.424	0.447	0.405	0.400	0.516	0.417	0.944	1.000

**Table 10**

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

	ES50	AEX	CAC 40	Ibex35	Mibtel 30	Xetra-Dax	FTSE 100	S&P 500	Dow Jones
ES50	1.000	0.887	0.899	0.820	0.811	0.904	0.789	0.405	0.420
AEX	0.887	1.000	0.760	0.710	0.681	0.800	0.744	0.375	0.387
CAC 40	0.899	0.760	1.000	0.750	0.744	0.828	0.736	0.417	0.429
Ibex35	0.820	0.710	0.750	1.000	0.739	0.758	0.656	0.392	0.405
Mibtel 30	0.811	0.681	0.744	0.739	1.000	0.727	0.648	0.327	0.343
Xetra-Dax	0.904	0.800	0.828	0.758	0.727	1.000	0.745	0.426	0.443
FTSE 100	0.789	0.744	0.736	0.656	0.648	0.745	1.000	0.410	0.392
S&P 500	0.405	0.375	0.417	0.392	0.327	0.426	0.392	1.000	0.944
Dow Jones	0.420	0.387	0.429	0.405	0.343	0.443	0.410	0.944	1.000

**Table 11**

Correlation of the Euro Stoxx 50 with other main world indexes. Correlation calculated with daily data in the period Jan 2000–Dec 2005

	ES50	AEX	CAC 40	Ibex35	Mibtel 30	Xetra-Dax	FTSE 100	S&P 500	Dow Jones
ES50	1.000	0.935	0.966	0.879	0.891	0.908	0.852	0.509	0.483
AEX	0.935	1.000	0.905	0.803	0.818	0.815	0.830	0.456	0.440
CAC 40	0.966	0.905	1.000	0.852	0.864	0.849	0.841	0.477	0.454
Ibex35	0.879	0.803	0.852	1.000	0.824	0.768	0.750	0.426	0.406
Mibtel 30	0.891	0.818	0.864	0.824	1.000	0.815	0.779	0.462	0.440
Xetra-Dax	0.908	0.815	0.849	0.768	0.815	1.000	0.746	0.577	0.550
FTSE 100	0.852	0.830	0.841	0.750	0.779	0.746	1.000	0.419	0.438
S&P 500	0.509	0.456	0.477	0.426	0.462	0.577	0.438	1.000	0.943
Dow Jones	0.483	0.440	0.454	0.406	0.440	0.550	0.419	0.943	1.000

**Table 12**

Correlation of Table 9 (97-99) minus correlation of Table 10 (2000-2005)

	ES50	AEX	CAC 40	Ibex35	Mibtel 30	Xetra-Dax	FTSE 100	S&P 500	Dow Jones
ES50	0.000	-0.048	-0.067	-0.059	-0.080	-0.004	-0.063	-0.104	-0.063
AEX	-0.048	0.000	-0.145	-0.093	-0.137	-0.015	-0.086	-0.082	-0.053
CAC 40	-0.067	-0.145	0.000	-0.102	-0.120	-0.020	-0.105	-0.060	-0.026
Ibex35	-0.059	-0.093	-0.102	0.000	-0.084	-0.010	-0.094	-0.034	-0.001
Mibtel 30	-0.080	-0.137	-0.120	-0.084	0.000	-0.088	-0.131	-0.135	-0.097
Xetra-Dax	-0.004	-0.015	-0.020	-0.010	-0.088	0.000	0.000	-0.151	-0.107
FTSE 100	-0.063	-0.086	-0.105	-0.094	-0.131	0.000	0.000	-0.009	-0.045
S&P 500	-0.104	-0.082	-0.060	-0.034	-0.135	-0.151	-0.045	0.000	0.001
Dow Jones	-0.063	-0.053	-0.026	-0.001	-0.097	-0.107	-0.009	0.001	0.000

**Table 13**

Correlation of the Euro Stoxx 50 with other main world indexes. Correlation calculated with monthly data in the period Jan 1997–Dec 2005

	ES50	AEX	CAC 40	Ibex35	Mibtel 30	Xetra-Dax	FTSE 100	S&P 500	Dow Jones
ES50	1.000	0.932	0.969	0.829	0.856	0.951	0.845	0.801	0.732
AEX	0.932	1.000	0.885	0.770	0.766	0.900	0.820	0.744	0.707
CAC 40	0.969	0.885	1.000	0.812	0.840	0.918	0.823	0.778	0.707
Ibex35	0.829	0.770	0.812	1.000	0.782	0.786	0.771	0.693	0.635
Mibtel 30	0.856	0.766	0.840	0.782	1.000	0.800	0.734	0.642	0.539
Xetra-Dax	0.951	0.900	0.918	0.786	0.800	1.000	0.784	0.779	0.731
FTSE 100	0.845	0.820	0.823	0.771	0.734	0.784	1.000	0.814	0.768
S&P 500	0.801	0.744	0.778	0.693	0.642	0.779	0.814	1.000	0.923
Dow Jones	0.732	0.707	0.707	0.635	0.539	0.731	0.768	0.923	1.000

**Table 14**

Correlation of the Euro Stoxx 50 with other main world indexes. Correlation calculated with monthly data in the period Jan 1997–Dec 1999

	ES50	AEX	CAC 40	Ibex35	Mibtel 30	Xetra-Dax	FTSE 100	S&P 500	Dow Jones
ES50	1.000	0.903	0.953	0.828	0.802	0.952	0.842	0.836	0.809
AEX	0.903	1.000	0.814	0.744	0.674	0.881	0.783	0.763	0.798
CAC 40	0.953	0.814	1.000	0.804	0.789	0.897	0.776	0.772	0.741
Ibex35	0.828	0.744	0.804	1.000	0.763	0.764	0.826	0.697	0.705
Mibtel 30	0.802	0.674	0.789	0.763	1.000	0.709	0.727	0.667	0.597
Xetra-Dax	0.952	0.881	0.897	0.764	0.709	1.000	0.804	0.816	0.810
FTSE 100	0.842	0.783	0.776	0.826	0.727	0.804	1.000	0.807	0.781
S&P 500	0.836	0.763	0.772	0.697	0.667	0.816	0.807	1.000	0.916
Dow Jones	0.809	0.798	0.741	0.705	0.597	0.810	0.781	0.916	1.000

**Table 15**

Correlation of the Euro Stoxx 50 with other main world indexes. Correlation calculated with monthly data in the period Jan 2000–Dec 2005

	ES50	AEX	CAC 40	Ibex35	Mibtel 30	Xetra-Dax	FTSE 100	S&P 500	Dow Jones
ES50	1.000	0.948	0.980	0.831	0.892	0.955	0.837	0.766	0.667
AEX	0.948	1.000	0.932	0.799	0.826	0.906	0.833	0.719	0.640
CAC 40	0.980	0.932	1.000	0.810	0.874	0.939	0.849	0.769	0.669
Ibex35	0.831	0.799	0.810	1.000	0.789	0.820	0.724	0.683	0.563
Mibtel 30	0.892	0.826	0.874	0.789	1.000	0.864	0.729	0.607	0.473
Xetra-Dax	0.955	0.906	0.939	0.820	0.864	1.000	0.766	0.752	0.676
FTSE 100	0.837	0.833	0.849	0.724	0.729	0.766	1.000	0.807	0.750
S&P 500	0.766	0.719	0.769	0.683	0.607	0.752	0.807	1.000	0.927
Dow Jones	0.667	0.640	0.669	0.563	0.473	0.676	0.750	0.927	1.000

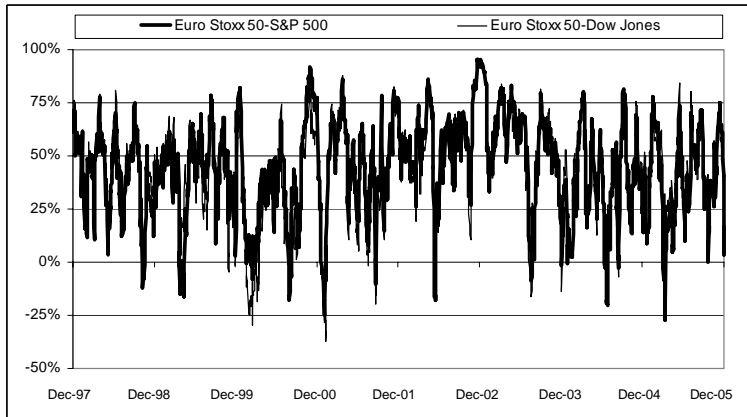
**Table 16**

Correlation of Table 9 (97–99) minus correlation of Table 10 (2000–2005)

	ES50	AEX	CAC 40	Ibex35	Mibtel 30	Xetra-Dax	FTSE 100	S&P 500	Dow Jones
ES50	0.000	-0.045	-0.027	-0.002	-0.090	-0.003	0.005	0.070	0.142
AEX	-0.045	0.000	-0.118	-0.055	-0.152	-0.025	-0.050	0.045	0.158
CAC 40	-0.027	-0.118	0.000	-0.006	-0.085	-0.041	-0.073	0.004	0.073
Ibex35	-0.002	-0.055	-0.006	0.000	-0.026	-0.056	0.101	0.014	0.142
Mibtel 30	-0.090	-0.152	-0.085	-0.026	0.000	-0.156	-0.002	0.060	0.123
Xetra-Dax	-0.003	-0.025	-0.041	-0.056	-0.156	0.000	0.037	0.064	0.134
FTSE 100	0.005	-0.050	-0.073	0.101	-0.002	0.037	0.000	0.000	0.031
S&P 500	0.070	0.045	0.004	0.014	0.060	0.064	0.000	0.000	-0.011
Dow Jones	0.142	0.158	0.073	0.142	0.123	0.134	0.031	-0.011	0.000

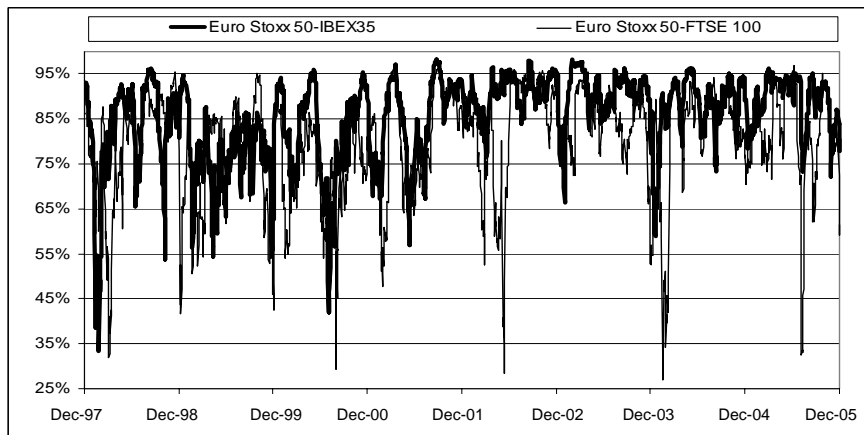
**Figure 14**

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



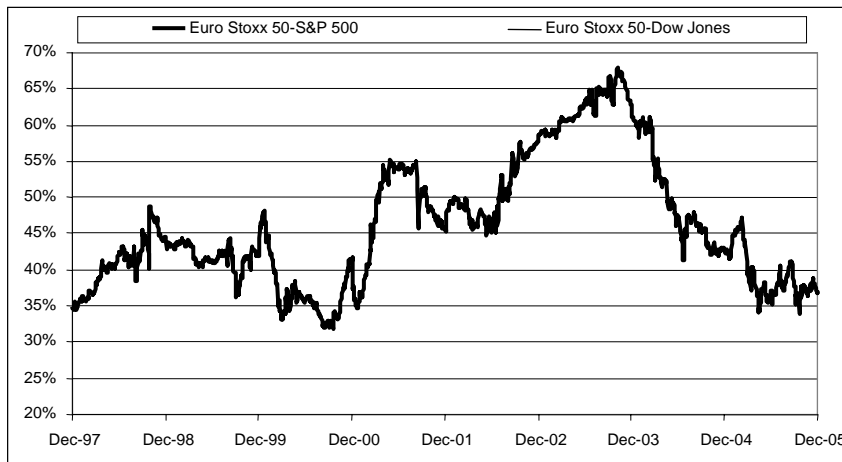
**Figure 15**

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



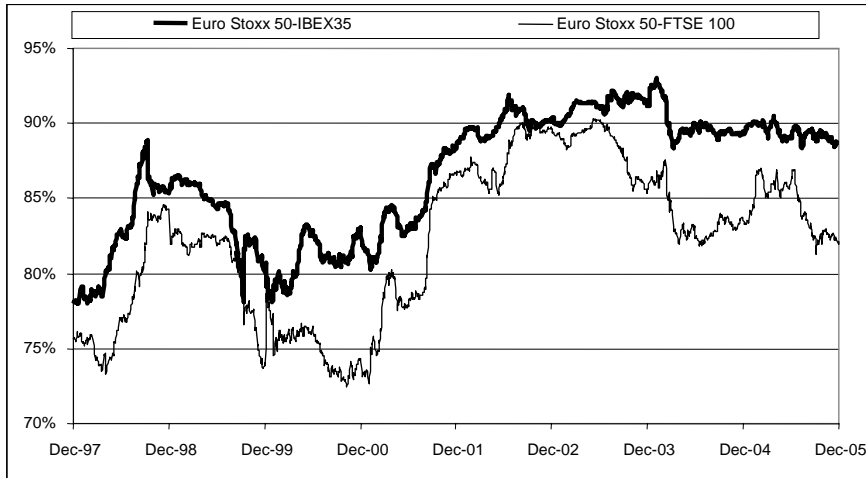
**Figure 16**

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



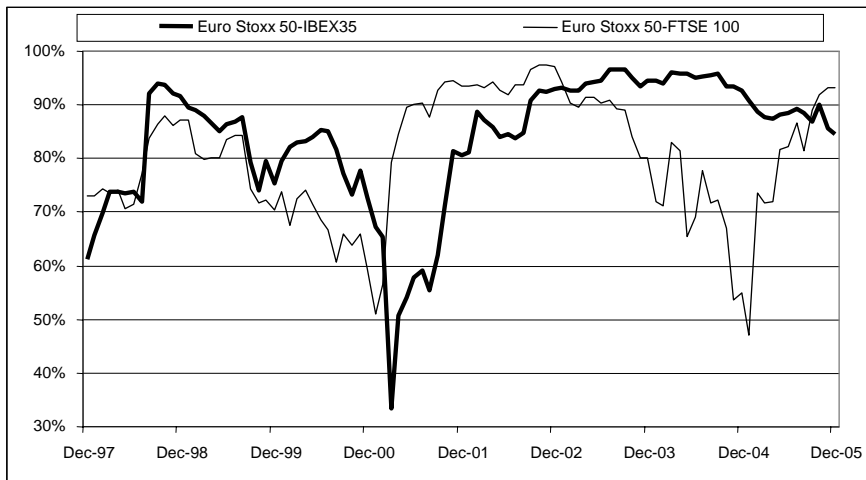
**Figure 17**

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



**Figure 18**

Correlation between Euro Stoxx and Ibox 35. Correlation between Euro Stoxx 50 and FTSE 100  
(Annual rolling monthly correlations)



## Appendix 1

Market Value for the companies in the Euro Stoxx 50 in December 2005 (million euros)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ABN AMRO HOLDING	16,927	25,266	25,835	36,375	36,373	27,898	24,027	29,958	33,189	42,186
AEGON	13,249	23,724	61,004	64,090	59,488	43,236	17,437	17,609	15,573	21,986
AHOLD KON.	8,171	12,489	19,720	18,819	26,729	30,046	11,125	9,378	8,855	9,844
AIR LIQUIDE	9,029	10,506	12,957	13,772	14,528	14,295	12,673	13,988	14,849	17,727
ALCATEL	10,280	18,978	20,717	45,307	73,289	23,333	5,116	13,113	14,937	13,688
ALLIANZ	33,598	55,698	77,445	81,920	97,956	70,682	24,152	38,503	37,652	50,797
GENERALI	13,095	19,787	36,558	33,650	53,002	39,094	25,004	26,796	31,862	37,667
CREDIT AGRICOLE						16,995	13,980	27,894	32,712	39,844
AXA	9,716	23,522	42,727	48,925	63,526	40,288	22,537	30,173	34,692	60,201
BASF	18,445	19,739	19,940	31,446	29,585	25,642	21,049	25,425	29,620	36,020
BAYER	23,525	24,870	26,192	34,399	40,804	26,146	14,935	16,959	18,215	25,774
BBVA	9,468	20,040	27,316	29,878	50,654	44,422	29,146	34,995	44,251	51,134
BSCH	7,977	14,658	19,837	41,226	51,477	44,871	31,185	44,775	57,102	69,735
BNP PARIBAS	6,350	10,400	15,323	41,204	41,894	44,520	34,734	45,086	47,155	57,294
CARREFOUR	19,795	18,418	24,984	62,711	46,680	41,531	30,175	31,166	25,094	27,900
DAIMLERCHRYSLER			83,741	77,133	45,354	49,261	29,903	37,697	35,712	43,693
DEUTSCHE BANK	18,133	34,336	26,570	51,445	54,990	49,352	27,287	38,228	35,525	44,542
DEUTSCHE TELEKOM	43,554	46,686	76,987	214,749	97,250	81,017	51,422	60,909	69,893	59,106
E ON	22,536	30,903	25,531	24,361	49,462	44,409	26,607	35,804	46,406	60,474
ENDESA	14,439	16,908	21,577	20,868	19,216	18,602	11,805	16,146	18,306	23,525
ENEL				50,445	50,202	38,379	30,073	32,680	44,128	40,852
ENI	32,162	41,436	44,623	43,692	54,415	56,338	60,627	59,883	73,761	93,845
FORTIS	5,001	7,388	13,089	16,449	19,294	37,643	21,551	20,687	26,444	34,987
FRANCE TELECOM		33,280	69,353	134,532	106,093	51,807	19,886	54,436	60,099	54,593
DANONE	8,005	11,964	17,971	17,171	23,937	20,484	17,785	17,686	18,217	23,319
SOCIETE GENERALE	7,835	11,942	14,084	24,018	28,003	27,068	23,853	30,637	33,093	45,043
IBERDROLA	10,168	10,864	14,386	12,405	12,036	13,181	12,036	14,127	16,859	20,817
ING GROEP CERTS.	22,174	35,629	49,090	57,943	83,164	56,435	32,162	38,120	48,371	64,601
L'OREAL	20,134	24,266	41,629	53,848	61,724	54,693	49,048	43,944	37,758	41,370
LAFARGE	4,478	5,683	8,312	12,104	9,772	13,639	9,534	11,798	12,122	13,344
LVMH	19,302	13,341	15,001	43,556	34,535	22,388	19,181	28,269	27,608	36,770
MUNCH.RUCK.	15,951	28,460	36,037	45,034	67,428	53,961	20,368	22,067	20,766	26,259
NOKIA	9,388	14,079	48,687	206,903	222,981	137,087	72,476	65,757	54,193	68,502
PHILIPS ELTN.KON	11,013	19,534	21,069	45,776	51,353	43,930	21,978	30,467	25,677	34,547
REPSOL YPF	8,979	11,720	13,649	26,243	20,779	19,998	15,383	18,875	23,392	30,119
ALLIED IRISH BANKS	3,398	5,875	13,121	9,737	10,858	11,523	11,538	10,743	13,294	15,687
RWE	10,939	15,962	22,371	18,353	25,270	22,309	12,928	16,419	21,303	32,739
SAINT GOBAIN	9,694	11,627	10,858	16,272	14,361	14,446	9,534	13,491	15,108	17,349
SAN PAOLO IMI	3,919	7,122	21,146	18,915	24,177	16,924	8,983	14,981	15,636	20,964
SANOFI-SYNTHELABO	8,232	10,797	15,171	30,222	51,932	61,340	42,659	43,751	81,866	103,656
SIEMENS	20,272	30,595	32,233	75,537	82,802	66,341	36,060	56,570	55,585	64,515
SUEZ	4,355	12,780	25,756	31,439	38,780	34,681	17,138	15,998	20,018	33,387
TELECOM ITALIA	976	1,248	8,377	13,574	12,505	10,494	8,598	24,210	31,049	32,891
TELEFONICA	17,024	24,562	39,645	80,918	76,396	70,219	41,461	57,687	68,689	62,548
RENAULT	4,076	6,189	9,176	11,477	13,309	9,593	12,759	15,586	17,538	19,632
TOTAL SA	15,489	24,241	21,084	95,552	117,162	113,098	93,267	95,519	101,673	130,278
UNICREDITO ITALIANO	1,911	8,052	23,569	24,178	27,864	22,661	23,839	26,926	26,712	60,347
UNILEVER CERTS.	22,277	36,312	46,624	31,345	38,524	37,638	33,466	29,636	28,196	33,066
VIVENDI UNIVERSAL	12,019	17,172	35,152	52,843	75,710	67,022	16,749	20,648	25,189	30,514
SAP	6,564	16,686	22,144	29,585	22,379	46,079	23,786	41,937	41,386	48,399
Sum	614,021	925,731	1,418,369	2,302,343	2,430,003	2,027,038	1,283,005	1,568,138	1,737,326	2,128,078





## Appendix 3

Evolution of shareholder return in the companies of the Euro Stoxx 50

	1997		1998		1999		2000		2001		2002		2003		2004		2005	
	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank
RWE	49%	23	0%	42	-16%	44	26%	10	-10%	17	-40%	33	32%	17	34%	5	60%	1
AXA	45%	26	77%	8	15%	26	15%	23	-38%	43	-43%	38	40%	13	11%	28	55%	2
BAYER	8%	43	8%	37	35%	18	22%	14	-34%	40	-41%	35	19%	29	10%	30	48%	3
SOCIETE GENERALE	52%	18	13%	35	73%	10	19%	17	-1%	13	-8%	9	34%	16	12%	24	45%	4
UNICREDITO ITALIANO	235%	1	81%	6	-2%	33	17%	20	-17%	29	-13%	16	17%	30	3%	35	44%	5
AEGON	67%	11	159%	3	-7%	40	-7%	38	-29%	37	-58%	45	1%	44	-11%	46	43%	6
FORTIS	50%	21	78%	7	1%	31	-1%	35	-13%	26	-41%	34	2%	43	34%	3	41%	7
SUEZ	42%	28	76%	9	-7%	39	25%	12	-10%	19	-50%	44	3%	41	31%	6	41%	8
ING GROEP CERTS.	41%	29	37%	21	18%	24	44%	3	-31%	38	-42%	37	22%	27	27%	8	38%	9
E.ON	40%	30	-17%	46	-3%	35	37%	5	-8%	16	-32%	26	40%	12	34%	4	38%	10
PHILIPS ELTN.KON	77%	9	5%	38	132%	5	16%	21	-13%	27	-49%	43	42%	11	-17%	49	37%	11
NOKIA	47%	25	224%	2	248%	1	6%	29	-38%	45	-47%	42	-8%	46	-14%	48	37%	12
ALLIANZ	67%	13	36%	23	6%	30	20%	16	-33%	39	-66%	49	26%	21	-1%	42	37%	13
TOTAL SA	60%	15	-11%	45	57%	14	22%	13	4%	9	-12%	14	14%	34	17%	21	36%	14
ENI	32%	35	10%	36	0%	32	28%	9	7%	7	13%	4	4%	39	28%	7	35%	15
LVMH	-29%	46	14%	34	196%	2	-20%	42	-34%	41	-12%	15	51%	6	0%	40	35%	16
SANOFI-SYNTHELABO	32%	33	37%	20	18%	25	74%	1	19%	2	-29%	24	5%	38	1%	37	35%	17
SAN PAOLO IMI	82%	5	73%	10	-5%	36	32%	7	-28%	36	-46%	41	74%	2	7%	32	33%	18
ENDESA	19%	39	42%	18	-11%	42	-6%	37	0%	12	-34%	29	43%	10	18%	18	33%	19
BNP PARIBAS	65%	14	47%	17	34%	20	5%	30	11%	5	-20%	19	34%	15	11%	26	33%	20
DANONE	53%	16	51%	15	-2%	34	40%	4	-13%	25	-4%	6	4%	40	6%	33	32%	21
REPSOL YPF	34%	31	19%	32	55%	15	-25%	44	-2%	14	-22%	20	25%	23	26%	9	31%	22
MUNCH.RUCK.	79%	6	21%	31	24%	23	50%	2	-20%	32	-62%	48	-10%	49	-5%	44	29%	23
IBERDROLA	12%	41	36%	25	-12%	43	0%	34	13%	4	-6%	7	22%	26	24%	12	28%	24
DAIMLERCHRYSLER					-6%	38	-40%	48	13%	3	-38%	32	32%	18	-1%	41	27%	25
DEUTSCHE BANK	78%	8	-21%	47	76%	9	8%	27	-10%	18	-44%	39	54%	5	2%	36	27%	26
BSCH	88%	3	14%	33	34%	19	3%	31	-16%	28	-28%	22	49%	7	0%	38	26%	27
BASF	10%	42	3%	39	62%	12	-4%	36	-11%	22	-11%	13	28%	19	23%	15	23%	28
AIR LIQUIDE	19%	40	25%	30	9%	27	8%	28	2%	10	-8%	8	16%	32	11%	29	23%	29
CREDIT AGRICOLE											-16%	17	39%	14	25%	11	22%	30
ALLIED IRISH BANKS	78%	7	81%	5	-24%	48	13%	25	9%	6	2%	5	3%	42	26%	10	22%	31
UNILEVER CERTS.	67%	12	30%	28	-24%	46	26%	11	0%	11	-9%	10	-8%	47	-1%	43	21%	32
GENERALI	53%	17	71%	12	-7%	41	30%	8	-26%	34	-36%	31	9%	36	21%	16	20%	33
ABN AMRO HOLDING	45%	27	3%	40	42%	17	1%	33	-22%	33	-10%	12	26%	22	11%	27	19%	34
BBVA	115%	2	36%	22	7%	28	14%	24	-11%	20	-32%	27	24%	24	23%	13	19%	35
SAP	33%	32	34%	26	-24%	47	20%	15	-48%	46	77%	1	-1%	45	18%	19	18%	36
SIEMENS	50%	20	3%	41	133%	4	10%	26	-19%	31	-45%	40	60%	3	0%	39	18%	37
SAINT GOBAIN	20%	38	-6%	43	60%	13	-7%	39	5%	8	-32%	25	46%	9	19%	17	17%	38
VIVENDI UNIVERSAL	75%	10	26%	29	-21%	45	-11%	40	-74%	49	25%	2	22%	25	16%	22	16%	39
CARREFOUR	-6%	45	36%	24	72%	11	-26%	45	-12%	24	-26%	21	5%	37	-17%	50	16%	40
RENAULT	52%	19	50%	16	28%	22	19%	19	-27%	35	16%	3	28%	20	17%	20	15%	41
L'OREAL	22%	37	73%	11	30%	21	15%	22	-11%	21	-9%	11	-9%	48	-13%	47	14%	42
AHOLD KON.	49%	22	33%	27	-6%	37	19%	18	-3%	15	-62%	47	-41%	50	-7%	45	11%	43
LAFARGE	32%	34	41%	19	43%	16	-21%	43	24%	1	-29%	23	10%	35	6%	34	11%	44
ENEL							2%	32	-19%	30	-17%	18	16%	31	48%	1	-1%	45
TELEFONICA	47%	24	54%	14	104%	7	-29%	46	-11%	23	-41%	36	47%	8	23%	14	-1%	46
ALCATEL	87%	4	-9%	44	123%	6	34%	6	-68%	48	-78%	50	144%	1	12%	25	-9%	47
FRANCE TELECOM			108%	4	98%	8	-29%	47	-50%	47	-60%	46	57%	4	10%	31	-12%	48
DEUTSCHE TELEKOM	5%	44	69%	13	157%	3	-54%	49	-38%	44	-34%	30	20%	28	15%	23	-14%	49
TELECOM ITALIA	28%	36	513%	1	6%	29	-11%	41	-37%	42	-32%	28	14%	33	37%	2	-15%	50

## Appendix 4

Volatility in the companies of the Euro Stoxx 50 in December 2005.  
(calculated at the end of the year with monthly data of the previous 12 months)

	1999		2000		2001		2002		2003		2004		2005	
ALCATEL	36%	7	50%	2	69%	2	127%	2	49%	7	40%	2	31%	1
AHOLD KON.	19%	39	32%	20	15%	47	45%	25	133%	1	23%	4	28%	2
DAIMLERCHRYSLER (XET)	36%	8	29%	24	53%	9	37%	32	29%	25	18%	13	24%	3
ENDESA	21%	34	26%	32	11%	49	43%	28	19%	43	13%	33	24%	4
RENAULT	52%	1	38%	10	40%	11	30%	35	46%	9	13%	29	22%	5
ING GROEP CERTS.	25%	23	21%	42	20%	36	57%	15	49%	8	16%	18	21%	6
BAYER (XET)	25%	24	35%	15	33%	17	47%	19	51%	6	25%	3	20%	7
MUNCH.RUCK. (XET)	36%	9	24%	35	15%	48	62%	8	81%	2	20%	8	20%	8
PHILIPS ELTN.KON	25%	25	39%	9	49%	10	58%	12	34%	16	13%	31	20%	9
CARREFOUR	30%	15	28%	26	18%	40	33%	33	25%	30	18%	14	19%	10
BASF (XET)	29%	20	29%	25	23%	26	29%	36	26%	28	11%	42	19%	11
SAN PAOLO IMI	23%	31	41%	7	22%	28	61%	9	23%	34	19%	10	18%	12
TELECOM ITALIA	50%	3	42%	5	58%	5	46%	22	17%	46	15%	25	18%	13
AEGON	30%	16	36%	13	31%	18	76%	4	63%	4	22%	6	18%	14
SAP (XET)	52%	2	65%	1	62%	4	87%	3	37%	12	15%	21	18%	15
LAFARGE	30%	17	35%	14	25%	22	24%	40	38%	11	13%	30	18%	16
LVMH	41%	6	25%	33	55%	8	40%	30	23%	35	13%	32	18%	17
CREDIT AGRICOLE							42%	29	20%	38	12%	37	18%	18
REPSOL YPF	21%	35	30%	22	23%	25	25%	39	16%	49	12%	40	18%	19
GENERALI	24%	30	21%	43	21%	35	39%	31	30%	20	13%	28	17%	20
AXA	21%	36	21%	44	36%	14	73%	5	34%	15	17%	15	17%	21
L'OREAL	28%	21	32%	18	21%	32	19%	46	26%	29	15%	24	17%	22
SANOFI-AVENTIS	25%	26	23%	38	23%	27	15%	50	27%	26	12%	36	17%	23
SIEMENS (XET)	33%	14	46%	3	57%	6	57%	13	32%	19	11%	41	17%	24
SAINT GOBAIN	22%	32	34%	16	19%	38	61%	10	29%	23	9%	47	17%	25
UNICREDITO ITALIANO	19%	40	26%	31	19%	37	22%	41	23%	36	12%	34	16%	26
NOKIA	44%	5	27%	28	80%	1	51%	16	33%	17	49%	1	16%	27
ALLIANZ (XET)	30%	18	23%	37	25%	24	57%	14	75%	3	22%	5	16%	28
DEUTSCHE BANK (XET)	35%	12	38%	11	39%	12	43%	27	30%	22	19%	12	16%	29
DANONE	18%	43	25%	34	22%	30	22%	44	19%	44	12%	39	16%	30
ABN AMRO HOLDING	24%	28	28%	27	31%	19	63%	6	24%	31	11%	43	16%	31
TOTAL	25%	27	18%	48	22%	31	16%	49	18%	45	8%	49	16%	32
VIVENDI UNIVERSAL	30%	19	39%	8	36%	13	62%	7	32%	18	19%	11	15%	33
BBV ARGENTARIA	22%	33	19%	47	31%	20	45%	23	30%	21	12%	35	15%	34
ENI	17%	46	22%	40	16%	45	17%	48	20%	41	11%	45	14%	35
FRANCE TELECOM	36%	10	37%	12	68%	3	135%	1	43%	10	21%	7	14%	36
RWE (XET)	20%	37	32%	19	18%	39	32%	34	35%	14	15%	22	14%	37
BNP PARIBAS	24%	29	23%	39	21%	34	47%	20	22%	37	8%	48	14%	38
DEUTSCHE TELEKOM (XET)	47%	4	43%	4	56%	7	60%	11	24%	32	17%	16	13%	39
BNC.SANTANDER CTL.HISP.	16%	47	27%	30	25%	23	50%	17	29%	24	15%	23	13%	40
AIR LIQUIDE	19%	41	20%	46	16%	44	18%	47	20%	40	12%	38	13%	41
IBERDROLA	18%	44	24%	36	18%	41	26%	38	13%	50	11%	44	13%	42
E ON (XET)	20%	38	30%	23	17%	43	22%	45	24%	33	10%	46	13%	43
SOCIETE GENERALE	36%	11	22%	41	26%	21	46%	21	26%	27	6%	50	13%	44
SUEZ	18%	45	21%	45	18%	42	44%	26	56%	5	20%	9	12%	45
UNILEVER CERTS.	15%	48	34%	17	22%	29	22%	43	20%	39	17%	17	12%	46
FORTIS (AMS)	19%	42	27%	29	21%	33	45%	24	35%	13	16%	19	11%	47
ALLIED IRISH BANKS	28%	22	42%	6	34%	15	28%	37	17%	47	16%	20	11%	48
TELEFONICA	34%	13	31%	21	34%	16	47%	18	19%	42	14%	26	10%	49
ENEL	0%	49	16%	49	16%	46	22%	42	17%	48	13%	27	7%	50

## REFERENCES

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