



EVA, ECONOMIC PROFIT AND CASH VALUE ADDED
DO **NOT** MEASURE SHAREHOLDER VALUE
CREATION

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Abstract

We analyze 582 American companies using EVA, MVA, NOPAT and WACC data provided by Stern Stewart. For each of the 582 companies, we have calculated the 10-year correlation between the increase in the MVA (Market Value Added) each year and each year's EVA, NOPAT and WACC. For 296 (of the 582) companies, the correlation between the increase in the MVA each year and the NOPAT was greater than the correlation between the increase in the MVA each year and the EVA. There are 210 companies for which the correlation with the EVA has been negative! The average correlation between the increase in the MVA and EVA, NOPAT and WACC was 16%, 21% and -21.4%. The average correlation between the increase in the MVA and the increases of EVA, NOPAT and WACC was 18%, 22.5% and -4.1%.

We also find that the correlation between the shareholder return in 1994-1998 and the increase in the CVA (according to the Boston Consulting Group) of the world's 100 most profitable companies was 1.7%.

We have also analyzed the relationship between shareholder value creation and various other parameters, including Economic Profit and EVA, during the period 1991-1997. In this case, the sample consisted of the 28 largest Spanish companies. Economic Profit had the highest correlation with shareholder value creation in only 4 companies (EVA in only 2), while in 18 companies the highest correlation was found for the interest rate.

A firm's value and the increase in the firm's value over a certain period are basically determined by the changes in expectations regarding the growth of the firm's cash flows and also by the changes in the firm's risk, which lead to changes in the discount rate. However, accounting only reflects the firm's history. Both the items of the income statement, which explain what has happened during a certain year, and those of the balance sheet, which reflect the state of a firm's assets and liabilities at a certain point in time, are historic data. Consequently, it is impossible for accounting-based measures, such as those we have seen (EVA, economic profit, cash value added), to measure value creation.

We finish the paper with an anecdote about EVA: an e-mail written by an analyst at Stern Stewart & Co. in response to an article, written by me, questioning the ability of EVA to measure shareholder value creation.

EVA, ECONOMIC PROFIT AND CASH VALUE ADDED DO NOT MEASURE SHAREHOLDER VALUE CREATION (1)

1. Accounting-based measures cannot measure value creation

A firm's value and the increase in the firm's value over a certain period are basically determined by the changes in expectations regarding the growth of the firm's cash flows and also by the changes in the firm's risk, which lead to changes in the discount rate. However, accounting only reflects the firm's history. Both the items of the income statement, which explain what has happened during a certain year, and those of the balance sheet, which reflect the state of a firm's assets and liabilities at a certain point in time, are historic data. Consequently, it is impossible for accounting-based measures, such as those we have seen (EVA, economic profit, cash value added), to measure value creation.

It is simple to verify this statement in quantitative terms: one has only to analyze the relationship between the shareholder value creation, or the shareholder value added, and the EVA, economic profit and cash value added. This is what we will do in the following sections.

2. EVA does not measure the shareholder value creation by American companies

Stern Stewart & Co's advertising contains such eye-catching statements as the following:

- “The EVA is the measure that correctly takes into account value creation or destruction in a company.”
- “There is evidence that increasing the EVA is the key for increasing the company's value creation.”
- “Forget about EPS (earnings per share), ROE and ROI. The true measure of your company's performance is the EVA.”
- “The EVA is the only measure that gives the right answer. All the others, including operating income, earnings growth, ROE and ROA, may be erroneous.”
- “The EVA is the parameter that is most directly linked to the creation of shareholder wealth over time.”(2)

(1) I would like to thank my colleagues, Professors Josep Faus, M^a Jesús Grandes and Toni Dávila, for their discerning comments, which have helped me improve this paper.

(2) See www.eva.com

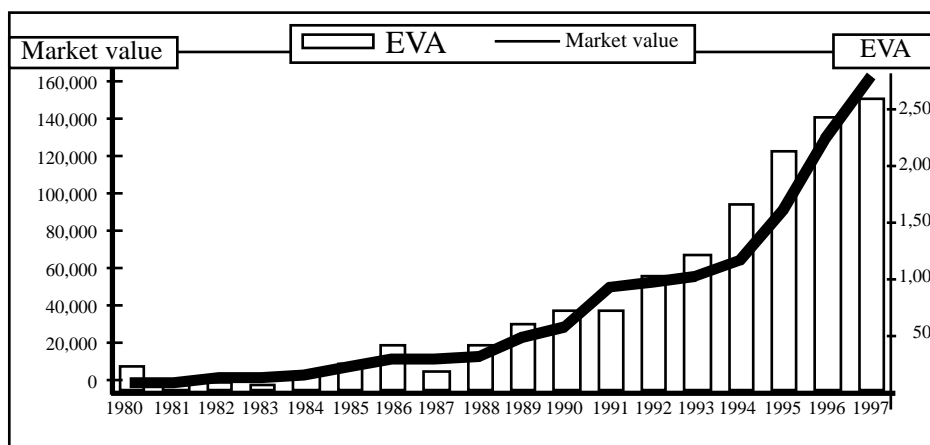
A communiqué issued in February 1998 by Monsanto's management to its employees says: "The larger the EVA, the more wealth we have created for our shareholders".

Roberto Goizueta, Coca-Cola's CEO, said, referring to EVA, that "it is the way to control the company. It's a mystery to me why everyone doesn't use it" (3).

So much for the testimonials praising the EVA. We will now present evidence that enables these testimonials to be questioned. All of the data used here are taken from data calculated and published by Stern Stewart (4). Stern Stewart makes adjustments both to the NOPAT and to the book value to calculate the EVA.

Figure 1 shows the evolution of Coca-Cola's EVA and market value. In the case of Coca-Cola, it is possible to detect a correlation between the EVA and equity value. PriceWaterhouseCoopers (5) interprets this figure by saying that "Coca-Cola created enormous wealth for the shareholder through the appropriate implementation of EVA in 1987".

Figure 1. Evolution of Coca-Cola's EVA and market value (million dollars). *Source: Stern Stewart*



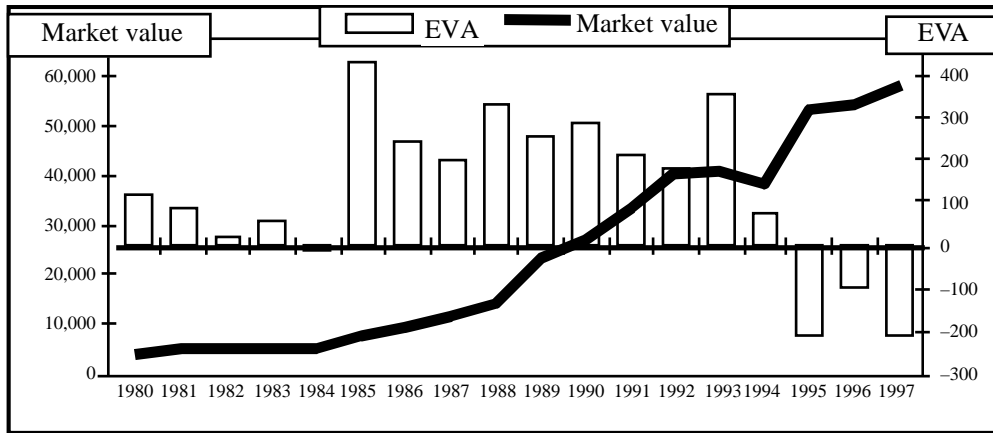
However, in Figure 2 (which shows the evolution of PepsiCo's EVA and market value), the correlation between EVA and equity value is much less clear.

(3) "The Real Key to Creating Wealth", *Fortune*, 20 September 1993.

(4) Stern Stewart has calculated and sold the EVA, market value, MVA and annual NOPAT of 1000 US companies since 1978. These are the data that appear in the graphs in this section.

(5) See Corporate Valuation Guide, page 324.

Figure 2. Evolution of PepsiCo's EVA and market value (million dollars). *Source: Stern Stewart*



The correlation between EVA and equity value is not clear in Figures 3, 4 and 5 either, which show the evolution of the EVA and market value of Walt Disney, Boeing and General Electric.

Figure 3. Evolution of Walt Disney's EVA and market value (million dollars). *Source: Stern Stewart*

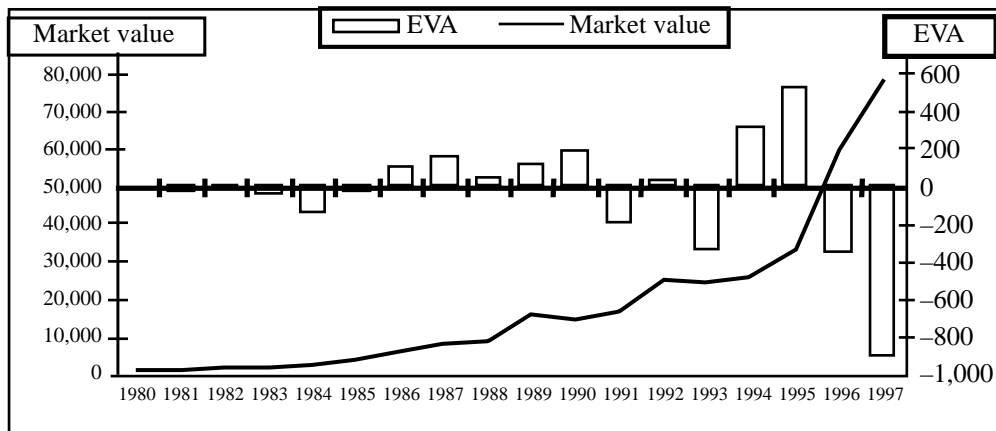


Figure 4. Evolution of Boeing's EVA and market value (million dollars). Source: Stern Stewart

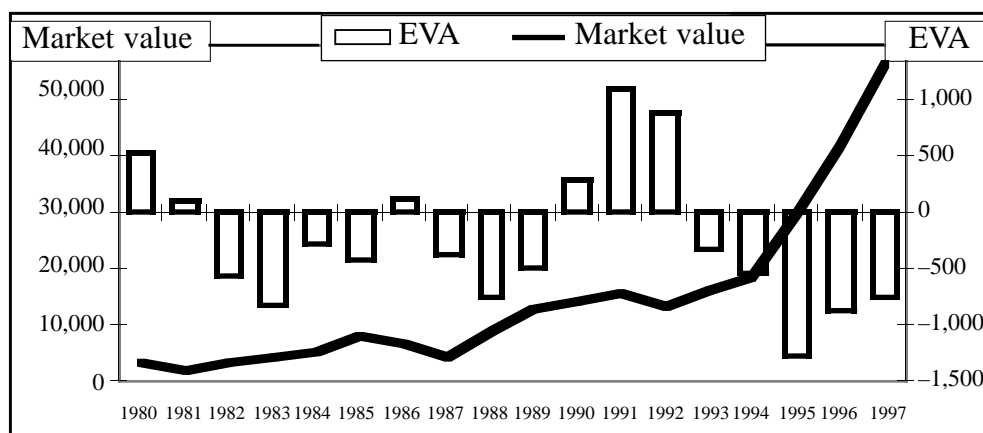
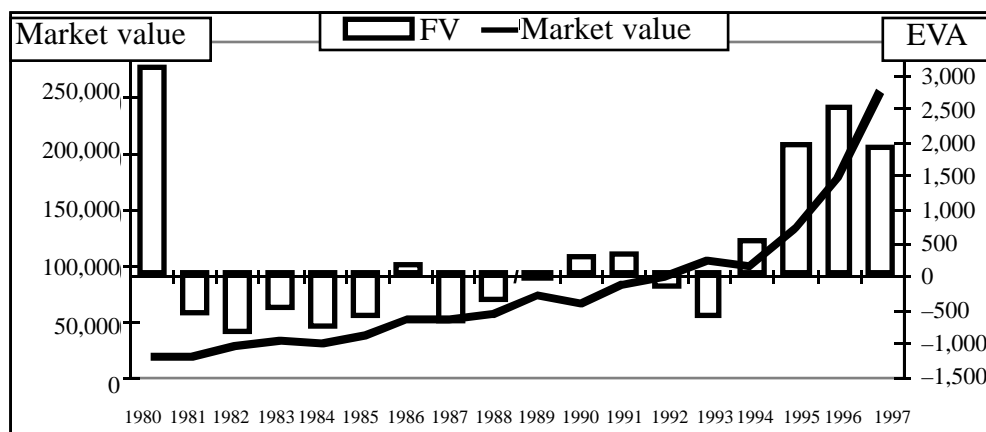


Figure 5. Evolution of General Electric's EVA and market value (million dollars). Source: Stern



Of the 1000 American companies for which Stern Stewart provides data, 582 with data from at least 1987 to 1997 have been selected. For each of the 582 companies, we have calculated the correlation between the increase in the MVA each year and each year's EVA, NOPAT and WACC. One surprising piece of information emerged: for 296 (of the 582) companies, the correlation between the increase in the MVA each year and the NOPAT was greater than the correlation between the increase in the MVA each year and the EVA. The NOPAT is a purely accounting parameter, while the EVA seeks to be a more precise indicator of the increase in the MVA.

The correlations are summarized in Table 1. There are only 18 companies for which the correlation with the EVA has been significant (between 80% and 100%). There are 210 companies for which the correlation with the EVA has been negative!

Table 1 also shows how the correlation between the increase in the MVA and the NOPAT has been greater for more companies than the correlation between the increase in the MVA and the EVA. The third column of Table 1 shows the correlation between the

increase in the Market Value Added and the WACC. Although it is a rather meaningless correlation, both variables show a not insignificant correlation. Walt Disney had a negative –although near zero– correlation between the EVA and the increase in the MVA.

Table 1. Summary of the correlations between the increase in the MVA each year and each year's EVA, NOPAT and WACC for 582 American companies. Source: Stern Stewart

Correlation of Δ MVA with	Number of companies					
	EVA	NOPAT	WACC	Δ EVA	Δ NOPAT	Δ WACC
Between 80 and 100%	28	53	0	22	39	2
Between 60 and 80%	68	81	13	72	72	18
Between 40 and 60%	94	98	20	94	89	51
Between 20 and 40%	96	72	44	101	105	68
Between 0 and 20%	86	80	79	108	114	124
Between -20 and 0%	83	73	94	74	79	126
Between -40 and -20%	59	70	144	60	50	94
Between -60 and -40%	44	42	111	36	24	71
Between -80 and -60%	22	12	67	13	9	24
Between -100 and -80%	2	1	10	2	1	4
<i>Total</i>	582	582	582	582	582	582
<i>Average</i>	16.0%	21.0%	-21.4%	18.0%	22.5%	-4.1%
<i>Standard deviation</i>	41.7%	43.6%	35.0%	39.3%	38.4%	35.1%

Table 2. Correlations between the increase in the MVA each year and each year's EVA, NOPAT and WACC for the largest American companies. Source: Stern Stewart

(million dollars) Company	Market value 1997	MVA 1997	Shareholders return		correlation (1988-1997) of Δ MVA with					
			5 years	10 years	EVA	NOPAT	WACC	Δ EVA	Δ NOPAT	Δ WACC
General Electric	255,081	195,830	30.8%	24.0%	73.2%	80.3%	-10.1%	-24.2%	-6.4%	31.5%
Exxon	173,680	85,557	19.2%	17.1%	29.4%	40.8%	-18.2%	-33.7%	-32.0%	-12.2%
Coca-Cola	169,204	158,247	27.6%	32.1%	78.2%	76.6%	-71.9%	4.4%	29.5%	-19.9%
Microsoft	152,416	143,740	43.4%	45.6%	90.7%	90.5%	-48.9%	83.9%	84.4%	36.8%
Merck	130,530	107,418	22.3%	22.3%	29.4%	44.4%	27.4%	52.1%	35.8%	-10.3%
Philip Morris	125,557	82,412	16.8%	24.8%	22.8%	28.5%	58.1%	29.8%	50.6%	16.2%
IBM	115,521	49,101	34.8%	9.8%	13.3%	20.1%	19.0%	1.6%	18.4%	78.7%
Procter & Gamble	113,125	88,706	26.4%	24.7%	44.2%	68.3%	28.6%	-4.1%	-4.2%	26.9%
Intel	111,446	90,010	45.6%	35.9%	54.2%	53.6%	-69.2%	61.0%	63.3%	-40.2%
AT&T	105,621	35,214	6.3%	11.8%	37.0%	2.9%	-29.0%	55.9%	29.3%	-63.8%
Wal-Mart Stores	103,568	69,678	5.1%	20.5%	69.8%	7.6%	0.8%	71.1%	51.7%	46.4%
Bell Atlantic	99,757	48,414	17.1%	15.8%	89.3%	93.8%	-14.4%	87.8%	96.0%	9.5%
Bristol-Myers Squibb	95,939	81,312	27.5%	20.6%	49.9%	47.4%	0.6%	60.0%	53.6%	-14.4%
Johnson & Johnson	91,236	71,433	23.2%	23.7%	60.1%	61.6%	-20.7%	18.0%	56.4%	-10.6%
SBC Communications	86,395	45,136	18.3%	20.1%	77.7%	82.5%	-38.6%	88.5%	94.4%	1.6%
Walt Disney	79,576	46,869	18.8%	21.5%	-57.8%	75.2%	-62.4%	-34.8%	42.3%	-38.1%
Ford Motor	62,696	3,183	22.0%	15.5%	8.0%	7.6%	-55.8%	43.3%	33.3%	-31.3%
General Motors	61,478	-13,876	16.1%	11.7%	-2.4%	-10.3%	-31.5%	33.9%	21.8%	-64.9%
PepsiCo	59,251	40,743	13.5%	22.5%	-54.9%	14.3%	77.5%	-41.2%	-16.7%	43.7%
Boeing	56,887	28,725	21.4%	21.8%	-82.0%	-64.7%	-66.4%	-3.3%	-11.9%	-4.0%
Time Warner	53,032	20,020	17.2%	12.7%	-50.8%	2.5%	-52.0%	-9.1%	-19.3%	14.0%
McDonald's	41,763	22,817	15.2%	16.8%	2.2%	10.8%	-20.3%	37.7%	18.8%	-58.2%
3M	36,838	25,162	13.4%	13.2%	-42.2%	29.1%	-7.1%	-55.9%	-27.3%	36.5%
WorldCom	35,062	11,823	31.2%	64.2%	-78.1%	59.8%	5.2%	-28.5%	32.1%	-47.8%
CBS	27,626	10,103	18.8%	4.9%	-36.2%	-29.0%	8.4%	-34.85	-33.2%	8.6%
Chrysler	27,096	2,570	20.8%	17.0%	-28.5%	-32.6%	-45.7%	21.3%	6.8%	-77.9%
Coca-Cola Enterprises	23,075	5,896	54.6%	22.7%	-71.6%	89.1%	2.2%	-69.8%	54.5%	63.8%
Apple Computer	2,734	-1,594	-25.4%	-10.1%	-7.3%	-5.6%	19.7%	4.3%	8.3%	27.4%

Table 2 shows the results obtained for a number of companies. Microsoft was the company with the highest correlation (90.8%). Coca-Cola also had a very high correlation (85.5%), as we saw in Figure 1. Table 2 also shows that the correlation between the increase in the MVA and the EVA is not necessarily greater than the correlation between the MVA and the NOPAT.

Another item of evidence. Two studies performed by Richard Bernstein, from Merrill Lynch (19/12/97 and 2/3/98), showed that:

- 1) The portfolio composed of the 50 American companies with the highest EVA gained 0.2% less than the S&P500; and
- 2) The portfolio composed of the 50 American companies with the largest increase in the EVA gained 0.3% less than the S&P500.

3. EVA does not measure the shareholder value creation by Spanish companies

Table 3 shows the MVA and EVA (according to Stern Stewart) of 19 Spanish companies in 1997. Table 3 also includes shareholder value added and shareholder value creation. The table also enables the conclusion to be drawn that the economic value added (EVA) has little in common with shareholder value added or shareholder value creation. Indeed, there are companies with a positive shareholder value added and shareholder value creation but a negative EVA, such as Iberdrola, Aguas de Barcelona, Viscofán, Unión Fenosa...

Table 3. MVA and EVA of Spanish companies in 1997 according to Stern Stewart. Comparison with shareholder value added and shareholder value creation (million euros)

	MVA 97 (Stern Stewart)	EVA 97 (Stern Stewart)	Shareholder Value Added	Shareholder Value Creation
Telefónica	13,164	790	8,040	6,064
Endesa	5,886	419	2,925	1,321
Iberdrola	5,231	-107	1,294	164
Repsol	4,406	140	3,067	2,024
Gas Natural	4,142	-90	373	-379
Acesa	1,220	204	600	345
Aguas de Barcelona	768	-26	284	121
Hidrocantábrico	744	3	440	312
Asturiana de Zinc	407	16	216	169
Amper	383	26	116	72
Viscofán	336	-11	494	397
Tubacex	272	11	151	121
Dragados	245	-37	461	372
Unión Fenosa	214	-58	290	19
Puleva	142	2	190	158
Uralita	73	-15	237	183
Tabacalera	-63	48	1,535	1,388
Aumar	-321	-98	320	235
Acerinox	-596	39	296	118
SUM	36,652	1,256	21,328	13,204

Sources: MVA and EVA. Data from Stern Stewart published in *Expansión* on 20/11/1998.

Value added and value creation calculated by the author according to definitions published in Fernández, Pablo (2001), "A Definition of Shareholder Value Creation". SSRN

4. The CVA does not measure the shareholder value creation of the world's 100 most profitable companies

Table 4. The world's 100 most profitable companies for their shareholders during the period 1994-1998.

Source: Boston Consulting Group, *The Value Creators*.

Company	Country	Equity		$\Delta CVA = CVA_{98} - CVA_{94}$ (million euros)	Company	Country	Equity		$\Delta CVA = CVA_{98} - CVA_{94}$ (million euros)
		Market value (million euros) 31/12/1998	Shareholder return 1994-1998				Market value (million euros) 31/12/1998	Shareholder return 1994-1998	
1 Dell Computer	USA	78,936	152.9%	1,088	51 Ericsson	S	36,231	37.9%	940
2 America Online	USA	60,249	143.1%	149	52 Clorox	USA	10,252	37.4%	139
3 Sap	D	17,991	90.6%	445	53 Smithkline Beecham	UK	65,746	37.1%	717
4 Nokia	FIN	48,687	78.8%	1,778	54 Merck	USA	148,933	36.9%	1,98
5 H&M	S	14,386	69.2%	147	55 Ahold	NL	19,720	36.9%	354
6 Microsoft	USA	293,173	68.9%	2,178	56 Mannesmann	D	38,019	36.8%	1,26
7 Cisco Systems	USA	124,241	66.8%	604	57 Legal & General	UK	13,982	36.8%	65
8 Aegon	NL	61,004	66.2%	521	58 Home Depot	USA	81,081	36.5%	831
9 Charles Schwab	USA	19,907	64.7%	134	59 Fortis	B	24,547	36.2%	431
10 Compuware	USA	12,170	64.4%	226	60 Mellon Bank	USA	15,220	36.2%	371
11 Clear Channel Corp.	USA	12,172	63.9%	75	61 Cardinal Health	USA	12,912	35.3%	135
12 Sun Microsystems	USA	27,626	63.7%	464	62 Sanofi	F	15,171	35.2%	197
13 Tellabs	USA	11,293	63.3%	225	63 Xerox	USA	32,803	34.6%	471
14 Safeway	USA	25,117	62.9%	517	64 Applied Mats.	USA	13,301	34.5%	115
15 Emc Corp.	USA	36,162	59.4%	370	65 Williams Companies	USA	11,310	34.4%	-14
16 Firststar*	USA	17,156	55.3%	-102	66 General Electric	USA	283,348	34.1%	3,96
17 Staples	USA	11,381	54.0%	127	67 Carnival	USA	24,229	33.9%	332
18 Compaq	USA	60,529	53.6%	-1,356	68 Progressive Corp.	USA	10,409	33.7%	75
19 Tyco	USA	41,397	52.3%	402	69 Heineken	NL	16,080	33.7%	116
20 Pfizer	USA	137,525	51.2%	795	70 Cigna	USA	13,533	33.6%	865
21 Intel	USA	167,551	50.6%	2,586	71 Monsanto	USA	24,324	33.6%	253
22 Gas Natural	Spain	13,860	49.8%	-25	72 Fannie Mae	USA	64,239	33.5%	940
23 Warner Lambert	USA	52,357	49.5%	601	73 Amgen	USA	22,561	33.4%	337
24 Medtronic	USA	30,816	49.5%	256	74 American Express	USA	39,284	33.1%	601
25 BBV	Spain	27,316	48.7%	645	75 Takeda*	JP	28,909	32.9%	109
26 Schering-Plough	USA	68,834	48.3%	712	76 Bellsouth	USA	82,685	32.8%	815
27 Ritet Aid	USA	10,901	47.5%	11	77 Chase Manhattan	USA	50,908	32.8%	1,29
28 IBM	USA	144,245	47.1%	7,672	78 Waste Management In.	USA	22,703	32.6%	768
29 Eli Lilly	USA	82,855	46.7%	919	79 Citigroup*	USA	95,700	32.5%	-41
30 Gap	USA	27,163	46.3%	475	80 American Home Prds.	USA	62,990	32.4%	918
31 Bank of New York	USA	25,955	45.7%	497	81 Johnson & Johnson	USA	95,612	32.4%	1,43
32 Pinault Printemps	F	19,121	45.6%	319	82 Household Int.	USA	16,218	32.3%	-29
33 Mbna Corp.	USA	15,813	44.2%	389	83 Rentokil Initial	UK	18,201	32.3%	352
34 Walgreen	USA	24,759	43.5%	209	84 Sprint	USA	24,568	32.2%	134
35 Mci Worldcom	USA	111,519	43.2%	-4,428	85 Ameritech	USA	59,273	31.8%	476
36 Kroger	USA	13,141	43.2%	232	86 Telefonica	Spain	39,645	31.7%	1,56
37 Banca Intesa	I	11,401	43.1%	270	87 US Bancorp*	USA	21,840	31.6%	374
38 Texas Instruments	USA	28,303	41.4%	113	88 Northern Telecom	CN	28,091	31.4%	311
39 Freddie Mac	USA	37,009	40.9%	424	89 United Technologies	USA	20,819	31.3%	820
40 Micron Technology	US	10,567	40.6%	-448	90 Promodes	F	11,684	31.3%	6
41 Rolo Banca 1473	I	10,060	40.5%	393	91 Telecom Italia	I	38,268	30.8%	3,05
42 Bristol Myers Squibb	USA	112,710	40.3%	1,208	92 3Com	USA	13,624	30.7%	19
43 British Aerospace	UK	12,603	40.2%	783	93 American Inter. Group	USA	86,006	30.5%	979
44 Vodafone	UK	42,361	40.0%	234	94 KBC	B	19,984	30.5%	69
45 Dayton-Hudson	USA	20,274	39.7%	506	95 Suntrust Banks	USA	13,591	30.4%	178
46 Unicredito Italiano	I	23,569	39.2%	296	96 Costco Companies	USA	13,360	30.3%	146
47 Swiss Re	CH	32,426	39.1%	1,208	97 Banco Santander	Spain	19,837	30.2%	199
48 Lloyds Tsb	UK	65,193	38.8%	1,112	98 Wells Fargo*	USA	54,752	30.2%	58
49 Fifth Third Bancorp.	USA	16,127	38.4%	125	99 Bank of Scotland	UK	12,442	29.8%	481
50 Oracle	USA	35,086	38.3%	398	100 Abbott Laboratories	USA	63,041	29.7%	681

Table 4 shows the equity value, shareholder return and increase in the CVA (according to the Boston Consulting Group) of the world's 100 most profitable companies for their shareholders during the period 1994-1998. The 100 companies were chosen from a sample consisting of the 5,316 largest listed companies in the world. The median return for all 5,316 companies was 13%.

In both cases, the correlation between the shareholder return in 1994-1998 and the increase in the CVA is 1.7%. The low correlation between the shareholder return and the increase in the cash value added is striking. Table 4 is interesting for making comparisons between companies. Another interesting finding is the large number of American companies in the top 100 during the period 1994-1998.

5. The economic profit does not measure the shareholder value creation

The relationship between shareholder value creation and various other parameters, including EP and EVA, during the period 1991-1997, has been analyzed. In this case, the sample consisted of the 28 largest Spanish companies. The relationship between economic profit and Shareholder Value Added and Shareholder Value Creation is rather tenuous. In fact, in 1993 and 1995, there was value creation in spite of a negative economic profit.

Table 5 shows that the EVA had the highest correlation with shareholder return in only 2 companies, while in 16 companies the highest correlation was found for the variation in interest rates. The EVA had the highest correlation with shareholder value added or shareholder value creation in only 2 companies, while the variation in the interest rates had the highest correlation in 8 companies and the level of interest rates in 10 companies. The last column shows the correlation between value creation not due to interest rates (thereby eliminating the influence of interest rates) and the variables. Once again, the EVA had the highest correlation in only 2 companies, while the adjusted ROE had the highest correlation in 7 companies. Table 5 also shows that the economic profit obtained the highest correlation in more companies than the EVA did.

Table 5. Number of companies that obtained the highest correlation between the parameters indicated. 28 Spanish companies. 1992-1998.

	Shareholder return	Shareholder Value Added	Shareholder Value Created	Shareholder Value Created without interest rate effect
Economic Profit	3	4	5	9
EVA	2	2	2	2
Profit after taxes	0	0	0	0
ROE	0	1	1	3
Equity cash flow	2	1	1	2
Interest rate	1	10	10	5
Adjusted ROE	4	2	1	7
Δ Interest rate	16	8	8	0
Number of companies	28	28	28	28

Table 6 shows the mean correlation between the parameters indicated for the 28 companies. It can be seen that, on average, the economic profit and the EVA had the better correlation with shareholder value added and shareholder value created than the other two parameters, but a lower mean correlation than the correlation with interest rates.

Table 6. Mean correlation between the parameters indicated. 28 Spanish companies. 1992-1998

	Shareholder return	Shareholder Value Added	Shareholder Value Created	Shareholder Value Created without interest rate effect
Economic Profit	26%	50%	45%	14%
EVA	28%	56%	50%	20%
Profit after taxes	19%	44%	38%	7%
ROE	11%	19%	16%	14%
Equity cash flow	16%	39%	33%	0%
Interest rate	5%	-64%	-59%	-14%
Adjusted ROE	27%	5%	8%	22%
Δ Interest rate	-57%	-48%	-48%	-13%

The basic conclusion to be drawn from this analysis is that the EVA is not the parameter that had the highest correlation with shareholder value creation. The EP and several other parameters had a higher correlation than the EVA did, although the EP was not the most highly correlated parameter either. The interest rates and the changes in interest rates were the variables showing the highest correlation.

Given what we have seen in this paper, it is difficult to argue that the EVA, the CVA or the economic profit measure each year's value creation.

6. Usefulness of EVA, EP and CVA

In spite of this, companies are increasingly using the EVA, EP and CVA. In 1993, only 25 companies used the EVA; by 1996, they had increased to 250.

6.1. The EVA, the EP and the CVA can be used to value companies

The present value of the future EPs, EVAs and CVAs matches the MVA (market value added). Consequently, it is also possible to value companies by updating the EVA, EP or CVA (6).

(6) It is easy to prove that: $MVA = E - E_{bv} = \text{Net Present Value [WACC; expected EVAs]}$
 $MVA = E - E_{bv} = \text{Net Present Value [WACC; expected CVAs]}$
 $MVA = E - E_{bv} = \text{Net Present Value [Ke; expected economic profits]}$

This fact that the present value of the EVA, discounted at the WACC, matches the market value added leads some to say that each period's EVA can be interpreted as the increase in the MVA or the shareholder value creation during each period. However, this is a tremendous mistake: it is one thing to say that the present value of the future EVAs matches the MVA (equity's market value - equity's book value) and another very different thing to say that each period's EVA is the value created during that period.

6.2. EVA, EP and CVA as management performance indicators

Many firms use EVA, EP and CVA as better management performance indicators than earnings because they "refine" earnings with the quantity and risk of the resources used to obtain such earnings.

The main advantage that these parameters have over book profit is that they take into account both the resources used to obtain the profit and these resources' risk (which determines their cost or required return).

We have already seen that the fact that a firm's EVA, EP or CVA increase does not mean that the firm is creating value.

Usefulness of EVA, EP and CVA as management performance indicators	
Advantages	They take into account not only the earnings but also the cost of the resources used to generate those earnings.
Usefulness	They may be better management performance indicators than book profit and they may be useful as benchmarks for their remuneration.
Caution	Do not pay the entire bonus to the manager immediately but rather keep it as a provision which shall be paid if the following years' goals are also met.

This is the usefulness of EVA, EP and CVA: their use in valuing companies and as a performance indicator. The problems with these parameters start when people wish to give these numbers a meaning they do not have: that of value creation.

7. Consequences of the use of EVA, EP or CVA for executive remuneration

A policy of maximizing the EVA each year may not be positive for the company, as the EVA may increase for several reasons:

1. Increase in the NOPAT. There may be increases in the NOPAT that decrease the cash flow and the company's value. For example, when depreciation is less.
2. Decrease in the cost of capital. This may decrease, for example, due to a drop in interest rates or in the market premium, which has nothing to do with management performance.
3. Decrease in the assets employed or a deferral of profitable investments.

Biddle, Bowen and Wallace (1999) (7) conducted a study on 40 companies that used EVA, economic profit or CVA as parameters for their executives' remuneration, that is, as the basis for calculating their variable compensation. They compared these 40 companies' progress with another 40 companies in which these parameters were not used for calculating remuneration and found the following differences:

Table 7. Difference between the 40 companies that used EVA, economic profit or CVA as executive remuneration parameters and those that did not

Sales of assets	100%
Investments	-21%
Share repurchases	112%
Dividends per share	1%

Table 7 shows that the companies that used EVA, economic profit or CVA as parameters for their executives' remuneration.

- Sold (or withdrew) 100% more assets (in order to decrease the book value of the assets employed) than those which did not use these parameters;
- Bought 21% less assets (in order to increase less the book value of the assets employed) than those which did not use these parameters;
- Bought 112% more shares on the market (in order to decrease WACC) than those which did not use these parameters.

The effect on dividends is not significant.

Kleiman (1999) (8) compared the performance of 71 companies that adopted the EVA between 1987 and 1996 with that of their most direct competitors that did not adopt the EVA. The following table is a summary of his conclusions.

Differential shareholder return	Year after (before) the introduction of EVA						
	-3	-2	-1	0	1	2	3
	0.9%	-0.4%	1.5%	2.6%	5.7%	-1.0%	11.1%
Debt / (Debt + Equity book value)	34.5%	35.8%	32.3%	31.9%	34.3%	36.6%	35.4%
Sales of assets / Initial assets	17.2%	1.0%	1.0%	25.0%	14.8%	30.3%	19.4%
Investments / Initial assets	6.1%	5.9%	6.3%	6.4%	6.2%	6.7%	6.2%
Increase of headcount	t0.2%	-1.6%	-1.4%	-1.0%	1.1%	0.0%	1.7%

The first line shows that the companies that introduced EVA had, on average, a higher shareholder return than their immediate competitors: 2.6% in the year of introduction, and 5.7%, -1% and 11.1% during the following years. We can also see that debt ratio increases slightly. Sale of assets increases significantly after introduction of the EVA.

(7) Biddle G., R. Bowen and J. Wallace (1999), Evidence on EVA.

(8) Kleiman (1999), "Some New Evidence on EVA Companies", *Journal of Applied Corporate Finance*, Summer, pp. 80-91.

An anecdote to close this section. M. Volkema, CEO of Herman Miller, says that: “the analysis of the EVA showed that debt was cheaper than equity.” And: “the analysis of the EVA enabled us to identify where we were overinvesting. We cut down inventory by 24% and accounts receivable by 22%.” (9)

8. Measures proposed for measuring shareholder return

The measures proposed for measuring the shareholder return or return on investment by the consulting firms that use the economic value added (EVA), economic profit (EP) or cash value added (CVA) are:

- ROA (*return on assets*)
- ROE (*return on equity*)
- CFROI (*cash flow return on investment*)

	EVA	EP	CVA
Measure of Shareholder Value Creation	EVA = (D+Ebv) (ROA - WACC)	EP = Ebv (ROE - Ke)	CVA = (Do+Ebv) (CFROI - WACC)
Measure of Shareholder Return	Return on Investment ROA = NOPAT / (D + Ebv)	Shareholder return ROE = BFO / Ebv	Return on Investment CFROI = (NOPAT + AM - AE) (Do+Ebv)
Assets in Place	(D+ Ebv) = adjusted book value of debt and equity	Ebv = adjusted book value of equity	(Do + Ebv) = Working capital requirements + Fixed assets + Cum. depreciation + Inflation adjustment

However, it can be said that the correlation between ROA and CFROI, on the one hand, and return on the investment during the project’s life, on the other hand, is equally low. The return on the investment and the shareholder return in any given year depend basically on the changes that have taken place in expectations during the year, and the ROA, ROE and CFROI are calculated using accounting parameters that are completely unrelated to the changes in these expectations.

9. What is shareholder value creation?

When managers try to increase the EVA, EP and CVA, are they really creating value for the shareholders?

A company creates value for the shareholders when the shareholder return exceeds the equity’s cost (the required return to equity). A company destroys value when the opposite occurs.

We calculate shareholder value (10) creation in the following manner:

(9) See www.eva.com.

(10) Following Fernández, Pablo (2001), “A Definition of Shareholder Value Creation”. SSRN

Shareholder value creation = Equity market value x (Shareholder return - Ke)

Note the significant difference between the above formula and economic profit. Economic profit uses the equity book value instead of the equity market value, and the ROE instead of the shareholder return. It is not surprising that economic profit is very different from shareholder value creation.

Similarly, the EVA uses the book value of the company's debt and equity instead of the equity market value, and the ROA instead of the shareholder return. Therefore, it can come as no surprise that shareholder value creation has very little to do with the EVA, irrespective of whatever adjustments may be made to the accounting data used.

Measure of	EVA (Economic Value Added) EVA = NOPAT - (D+Ebv) WACC	EP (Economic Profit) EP = PAT - Ebv x Ke	CVA (Cash Value Added) CVA = NOPAT + DEP - EDEP - (Do+Ebv) WACC	Created Shareholder Value (CSV) CSV = Shareholder Value Added - E x Ke
Shareholder Value Creation	EVA = (D+Ebv) (ROA - WACC)	EP = Ebv (ROE - Ke)	CVA = (Do+Ebv) (CFROI - WACC)	CV = E (Shareholder return - Ke)
Measure of Shareholder Return	ROA = NOPAT / (D + Ebv)	ROE = PAT / Ebv	CFROI = (NOPAT + DEP - EDEP) / (Do+Ebv)	Shareholder return = Shareholder Value Added / E
Assets in Place	(D+ Ebv) = adjusted book value of debt and equity	Ebv = adjusted book value of equity	(Do + Ebv) = Working capital requirements + Fixed assets + Cum. depreciation + Inflation adjustment	E = Equity Market Value

Ebv = Book value of Equity E = Market value of Equity DEP = Depreciation EDEP = Economic Depreciation
PAT = Profit after Tax D = Debt

10. An anecdote about the EVA

In October 1998, I published a summary of the previous version of this paper in the Madrid Stock Market's journal (Bolsa de Madrid, No. 70, pages 20-23) under the title "EVA, economic profit and value creation". In reply to the article, the following e-mail was received by the journal, written by an analyst at Stern Stewart & Co.:

Dear Sir,

I am writing to you in my capacity as representative of the American firm Stern Stewart, creator of the "economic value added" concept or EVA, with reference to the article published in your journal last October under the title "EVA, economic profit and value creation" and in response to the article's critical tone, as indicated by statements such as the following:

“EVA is relegated to secondary positions with respect to other explanatory variables.” “Some consulting firms say that EP and EVA measure the company’s value creation in each period, and this is a tremendous error, as the study performed shows.” “EVA was not the parameter that had the highest correlation with shareholder value creation. Economic profit and other parameters had a higher correlation with shareholder value creation than EVA.” “One conclusion that can be drawn from this study is that EVA does not measure shareholder value creation in a period. But not only that: there are quite a few parameters that have had a much higher correlation with shareholder value creation than EVA.”

Statements such as these are a clear sign of a lack of understanding of the subject and contradict numerous studies and articles published by such renowned professors as Miller, Modigliani, Jensen, Drucker...

Your measure may be interesting from an academic viewpoint but, in addition to being useless for measuring value creation at operational level, that is, as a management tool targeting value creation, the definition of EVA used in the article is incorrect.

Finally, I would point out that by questioning EVA as a valuation tool, you are questioning in turn the method for updating cash flows (equivalent to EVA), which was the work of the Economics Nobel Prizewinner Merton Miller.

Thank you for your attention to this communication. I am at your disposal if you should wish to explore the issue in greater depth or would consider the possibility of publishing a different point of view.

Yours truly,
AA, Financial Analyst, Stern Stewart & Co.

To conclude with this anecdote, the author sent the following e-mail in reply:

Dear D (Madrid Stock Market) and AA:
I have the following comments to make about the e-mail from AA, which I have just received.

1. AA says: “Statements such as these are a clear sign of a lack of understanding of the subject and contradict numerous studies and articles published by such renowned professors as Miller, Modigliani, Jensen, Drucker...”

Answer: It just so happens that Modigliani and Jensen were tutors of mine when I was studying for my doctorate at Harvard. I still keep in touch with them. I shall be seeing them in Boston next July. I would like to be shown any study or article by these professors that says anything that disagrees with my statements, as AA suggests.

2. AA says: “Your measure may be interesting from an academic viewpoint but, in addition to being useless for measuring value creation at operational level, that is, as a management tool targeting value creation, the definition of EVA used in the article is incorrect.”

Answer: The definition of EVA used in the article is that given on page 192 of the book *The Quest for Value. The EVA Management Guide* (1991), by Stern Stewart & Co., published by Harper Business. The article does not propose any measure as an alternative to EVA; it simply shows that EVA is not the parameter that had the highest correlation with shareholder value creation. This contradicts certain statements by Stern Stewart & Co, such as, for example: “Forget about EPS (earnings per share), ROE and ROI. The true measure of your company’s performance is EVA” and “EVA is the only measure that gives the right answer. All the others –including operating income, earnings growth, ROE and ROA– may be erroneous.”

3. AA says: “Finally, I would point out that by questioning EVA as a valuation tool, you are questioning in turn the method for updating cash flows (equivalent to EVA), which was the work of the Economics Nobel Prizewinner Merton Miller.”

Answer: My article makes it quite clear that I do not question the usefulness of EVA as a valuation tool. Rather, I question the usefulness of EVA as a measure of value creation during a period. Discussing the usefulness of EVA as a value creation measure in a period has nothing to do with updating cash flows. Therefore, AA’s statement is incorrect.

Dear AA: Never in my experience as a consultant and professor have I received a letter anything like yours. If you should ever come to Madrid, I shall be delighted to chat with you and show you the IESE campus.

Kindest regards, Pablo Fernández

Exhibit 1. Correlation of increase of MVA with EVA and with the increase of EVA, and market value (MV) in 1997

Company Name	EVA	Δ EVA	MV 97				
3Com	25.2%	71.2%	11,983	Baker Hughes	32.9%	53.1%	8,313
3M	-42.2%	-55.9%	36,838	Ball Corporation	26.3%	19.7%	2,080
A.H. Belo	0.1%	-35.2%	5,164	Banc One Corporation	18.4%	32.0%	31,822
Abbott Laboratories	27.1%	-39.7%	53,082	Bandag	-40.7%	-23.6%	1,402
Adaptec	39.6%	53.5%	4,214	Bank of New York	76.2%	50.7%	21,674
ADC Telecommunications	55.5%	47.7%	5,606	BankAmerica Corporation	58.6%	28.1%	50,228
Adelphia Communications	4.9%	-0.9%	3,298	BankBoston Corporation	72.3%	37.9%	13,687
Adobe Systems	8.6%	75.7%	2,644	Bankers Trust New York	1.7%	42.5%	10,902
Adolph Coors	-5.6%	-48.7%	1,362	Battle Mountain Gold	-45.3%	-28.2%	1,938
Advanced Micro Devices	-42.1%	-63.8%	2,664	Bausch & Lomb	20.2%	21.5%	3,559
Aeroquip-Vickers	-16.7%	1.6%	1,848	Baxter International	31.4%	73.1%	17,085
Air Products and Chemicals	30.4%	-0.4%	12,129	BB&T Corporation	80.9%	33.4%	8,716
Airborne Express	72.8%	71.0%	2,122	Becton Dickinson and Co	7.7%	48.0%	7,080
Airgas	21.5%	13.8%	1,756	Bell Atlantic	89.3%	87.8%	99,757
Alaska Air Group	40.7%	21.7%	1,814	BellSouth	42.7%	18.6%	70,049
Alberto-Culver	77.9%	32.7%	2,092	Bemis	34.7%	-13.6%	2,760
Albertson's	23.4%	-29.6%	13,514	Bergen Brunswig	53.8%	52.5%	2,614
Alcoa	-1.1%	54.3%	15,865	Best Buy Co.	-66.6%	-59.7%	2,775
Alexander & Baldwin	30.6%	-11.9%	1,732	Bestfoods	-21.5%	-38.3%	19,012
Allegheny Teledyne	47.3%	-0.6%	5,314	Bethlehem Steel	-65.1%	2.2%	2,398
AlliedSignal	35.0%	-15.1%	24,174	BetzDearborn	9.7%	47.2%	2,568
Alltel Corporation	-36.7%	-57.7%	9,721	Beverly Enterprises	10.1%	59.4%	2,314
ALZA Corporation	-26.2%	-34.1%	3,587	BF Goodrich	30.7%	33.6%	3,860
Amerada Hess	-19.9%	4.7%	8,396	Biogen	-57.1%	-18.4%	2,533
American Greetings	20.8%	1.6%	3,375	Biomet	-8.2%	-30.3%	2,828
American Home Products	-39.1%	11.0%	58,382	Black & Decker	41.6%	46.7%	5,955
American Stores Company	0.2%	-47.1%	10,028	Boeing	-82.0%	-3.3%	56,887
Ameritech	63.7%	57.5%	53,328	Boise Cascade	-40.9%	11.6%	4,223
Amgen	-20.9%	6.5%	13,010	Bowater	-60.5%	-13.4%	2,651
Amoco	11.8%	9.7%	48,668	Briggs & Stratton	1.3%	7.5%	1,396
AMP Incorporated	-36.9%	-12.2%	10,131	Brinker International	15.2%	-13.4%	1,435
AMR Corporation	7.9%	-9.4%	20,117	Bristol-Myers Squibb	49.9%	60.0%	95,939
AmSouth Bancorporation	59.2%	43.3%	4,374	Brown-Forman	38.5%	36.7%	4,158
Anadarko Petroleum	-37.4%	8.7%	4,776	Browning-Ferris Industries	-30.7%	2.4%	10,055
Analog Devices	68.8%	79.2%	4,856	Brunswick	-4.4%	4.1%	3,968
Andrew Corporation	-26.1%	-72.0%	2,196	Burlington Northern Sante Fe	-64.7%	-74.3%	22,731
Anheuser-Busch Companies	27.8%	31.2%	24,993	C.R. Bard	-6.9%	6.8%	2,351
Anixter International	-32.9%	-13.9%	1,373	Cablevision Systems	17.5%	72.3%	9,510
Apache	-43.8%	-5.2%	5,028	Cabot	-26.3%	-68.2%	2,512
Apple Computer	-7.3%	4.3%	2,734	Cadence Design Systems	74.4%	76.3%	5,061
Applied Materials	2.9%	-46.1%	10,674	Campbell Soup	47.6%	14.5%	29,268
Archer-Daniels-Midland	-19.3%	-37.5%	14,328	Canandaigua Brands	-16.0%	-54.5%	1,471
Armco	-72.9%	-46.4%	1,768	Carlisle Companies	63.7%	24.0%	1,574
Armstrong World Industries	-31.5%	-15.1%	3,746	Caterpillar	26.9%	60.2%	19,230
Arrow Electronics	39.4%	9.2%	4,305	CBS	-36.2%	-34.8%	27,626
Asarco	-22.7%	18.3%	2,432	CCB Financial Corporation	89.4%	80.6%	2,234
Ashland Inc.	-50.9%	-21.6%	7,453	Cendant	-64.6%	-90.4%	37,107
Associated Banc-Corp	89.9%	95.8%	2,777	Centocor	-1.6%	-15.0%	2,264
AT&T	37.0%	55.9%	105,621	Century Communications	-22.0%	-10.2%	3,247
Atlantic Richfield	18.9%	-7.0%	36,065	Century Telephone	-55.5%	-61.0%	5,873
Autodesk	8.9%	20.7%	1,715	Ceridian	-0.5%	-35.8%	3,629
Automatic Data Processing	50.3%	-34.9%	18,992	Champion International	-70.1%	-13.3%	8,068
Avery Dennison	57.5%	42.7%	5,101	Chevron	-1.5%	-7.2%	58,513
Avnet	71.1%	45.0%	3,206	Chiquita Brands	86.0%	60.9%	2,703
Avon Products	38.8%	30.6%	8,751	Chiron	-34.4%	-68.8%	3,480
				Chrysler	-28.5%	21.3%	27,096

Exhibit 1 (continued)

Cincinnati Bell	21.4%	47.6%	4,978	Dow Jones & Co	19.2%	12.4%	5,803
Cincinnati Milacron	-23.9%	9.9%	1,591	Dresser Industries	44.3%	3.7%	8,725
Cintas	88.4%	88.9%	3,827	DSC Communications	47.0%	87.5%	3,352
Circuit City Stores	-15.8%	1.8%	4,849	Dun & Bradstreet	13.9%	-12.4%	6,450
Circus Circus Enterprises	41.4%	-17.5%	3,436	E.I. Du Pont De Nemours	39.0%	2.1%	84,708
Citicorp	61.2%	31.2%	57,282	Eastman Kodak	24.1%	60.4%	20,877
City National Corporation	38.7%	47.2%	1,704	Eaton	24.8%	24.0%	8,374
CKE Restaurants	-30.1%	-27.4%	2,317	Echlin	-41.6%	-18.5%	3,133
Clear Channel Comm.	-65.1%	-73.1%	9,539	Ecolab	44.7%	22.1%	4,054
Clorox	72.2%	3.7%	9,192	EEX	-64.9%	-49.0%	1,571
CNF Transportation	61.4%	73.0%	2,982	Electronic Data Systems	31.4%	27.8%	24,638
Coca-Cola	78.2%	4.4%	169,204	Eli Lilly	-12.9%	28.0%	80,253
Coca-Cola Enterprises	-71.6%	-69.8%	23,075	EMC	54.7%	-8.7%	13,831
Colgate-Palmolive	-15.5%	-59.1%	25,116	Emerson Electric	67.7%	48.0%	28,282
Colonial BancGroup, Inc.	84.5%	74.5%	1,465	Engelhard	12.9%	5.0%	3,084
COMAIR Holdings	59.6%	48.7%	2,001	Enron	61.8%	71.8%	24,825
Comcast	-41.5%	-12.6%	19,600	ENSCO International	76.3%	83.4%	5,235
Comdisco	-11.1%	16.9%	7,585	Equifax	73.5%	1.7%	5,546
Comerica Incorporated	70.1%	40.2%	9,435	EVI Weatherford	57.4%	-14.1%	3,017
Commerce Bancshares, Inc.	70.4%	49.4%	2,618	Exxon	29.4%	-33.7%	173,680
Compaq Computer	88.4%	77.3%	42,857	Family Dollar Stores	-23.7%	17.1%	2,691
Computer Associates	35.1%	-41.1%	31,681	Fastenal	-10.8%	-7.5%	1,479
Computer Sciences	-34.2%	-28.0%	7,533	FDX Corp	-25.8%	13.3%	12,731
ConAgra	69.3%	80.2%	20,060	Federal-Mogul	-10.7%	50.8%	2,707
Consolidated Papers	18.0%	62.9%	3,642	Fifth Third Bancorp	67.0%	55.0%	12,690
Consolidated Stores	49.6%	-3.2%	4,536	FINA	-8.7%	-33.6%	2,820
Cooper Industries	42.7%	46.7%	7,346	First American Corporation	63.5%	51.4%	2,899
Cooper Tire & Rubber	16.8%	34.4%	2,224	First Chicago NBD Corp	26.4%	-1.7%	24,143
Cordant Technologies	67.0%	39.9%	1,664	First Commerce Corporation	62.8%	28.4%	2,638
CoreStates Financial Corp	26.5%	-26.0%	15,956	First Commercial Corporation	86.4%	79.6%	2,203
Corning	-43.1%	-29.9%	11,128	First Empire State Corp	46.7%	18.7%	3,074
Corrections Corporation of America	-2.0%	-22.7%	3,261	First Security Corporation	60.0%	16.4%	4,844
Cracker Barrel	25.4%	22.1%	2,117	First Tennessee National Cor	60.1%	16.2%	4,279
Crane	51.6%	-20.3%	2,334	First Union Corporation	48.9%	20.0%	32,615
Crompton & Knowles	59.0%	76.5%	3,156	First Virginia Banks, Inc.	23.7%	27.3%	2,678
Crown Cork & Seal	77.1%	88.1%	12,748	FirstMerit Corporation	68.5%	61.0%	1,758
CSX	-56.7%	-66.4%	21,239	Fiserv Inc	-45.6%	53.4%	4,279
Cullen/Frost Bankers, Inc.	56.7%	14.5%	1,351	Fleetwood Enterprises	21.0%	24.6%	1,527
Cummins Engine	-39.7%	25.7%	2,949	Fleming Companies	8.6%	-42.7%	2,753
CVS Corp	-15.1%	46.2%	13,448	Flowers Industries	-39.1%	-25.8%	2,144
Cyprus AMAX Minerals	13.6%	-16.8%	4,870	Flowserve	79.1%	57.6%	1,436
Dana	15.5%	21.2%	6,562	Fluor Corp	-17.4%	54.9%	4,100
Danaher	64.9%	16.2%	4,157	FMC Corp	17.7%	14.7%	4,085
Dayton Hudson	47.5%	5.9%	20,430	Food Lion	36.6%	40.7%	5,803
Dean Foods	16.9%	73.3%	2,700	Ford Motor	8.0%	43.3%	62,696
Deere & Company	37.0%	18.6%	15,518	Forest Laboratories	-63.1%	-52.9%	1,968
Delta Air Lines	52.0%	23.2%	16,050	Fort James	57.0%	70.2%	13,070
Deluxe Corp	4.8%	37.3%	3,032	Fortune Brands	27.9%	41.3%	7,604
Dentsply International	60.5%	95.2%	1,834	Foster Wheeler	6.9%	15.7%	2,113
Dexter	47.1%	33.4%	1,349	Fred Meyer	19.8%	-8.1%	5,952
Diebold	80.7%	69.4%	3,507	Frontier	22.2%	47.4%	5,048
Digital Equipment	-66.7%	35.4%	6,645	Fruit Of The Loom	14.5%	19.5%	3,473
Dillard's	73.6%	71.3%	5,346	Gannett Co	28.6%	-43.5%	19,627
DIMON	-16.3%	33.4%	2,406	GATX	-74.0%	-81.1%	5,810
Dole Food	36.7%	34.7%	4,164	GenCorp	-42.2%	12.3%	1,468
Dollar General	84.5%	92.0%	4,990	Genentech	-15.0%	22.2%	7,037
Dover Corp	59.6%	0.6%	8,842	General Dynamics	-13.5%	27.7%	5,908
Dow Chemical	-24.3%	-3.2%	31,461	General Electric	73.2%	-24.2%	255,081
				General Mills	12.2%	11.2%	13,354

Exhibit 1 (continued)

General Motors	-2.4%	33.9%	61,478	J.P. Morgan & Company	-7.2%	37.4%	19,902
General Signal	40.4%	54.1%	2,198	Johns Manville	-53.8%	11.8%	2,554
Genuine Parts	34.5%	46.2%	6,476	Johnson & Johnson	60.1%	18.0%	91,236
Genzyme	-26.4%	-48.1%	2,993	Johnson Controls	15.5%	4.8%	5,938
Georgia Gulf	-20.2%	16.2%	1,446	Jones Intercable	-42.9%	3.7%	1,754
Georgia-Pacific	-55.0%	-36.5%	11,109	Kansas City Southern	12.8%	-26.3%	4,620
Giant Food	2.3%	44.4%	2,281	Keane	87.2%	52.8%	2,723
Gillette	83.3%	80.0%	59,933	Kellogg	-1.3%	-33.1%	22,310
Global Marine	48.1%	25.1%	4,749	Kennametal	40.5%	-10.2%	1,577
Goodyear Tire & Rubber	-2.6%	27.7%	12,028	Kerr-McGee	-30.8%	1.8%	3,938
Great Atlantic & Pacific Tea	-39.7%	2.1%	2,883	Kimberly-Clark	62.2%	79.2%	30,338
Great Lakes Chemical	4.8%	34.9%	3,135	King World Productions	64.8%	42.4%	1,896
GTE	30.0%	30.7%	72,235	KLA Instruments	46.2%	0.3%	3,249
H&R Block	-62.4%	-49.6%	5,278	Kmart	39.6%	21.1%	12,473
H.J. Heinz	-10.2%	-41.7%	22,497	Knight-Ridder	8.3%	31.1%	5,952
Halliburton	81.6%	66.9%	14,906	Kroger	33.3%	12.5%	13,928
Hannaford Brothers	30.9%	-41.3%	2,255	La Quinta Inns	31.3%	43.7%	2,249
Harcourt General	-57.7%	-44.7%	5,907	Lafarge	11.9%	36.7%	2,136
Harley-Davidson	55.1%	71.4%	4,407	Lancaster Colony	29.0%	61.9%	1,663
Harnischfeger	-16.3%	34.0%	2,866	Lee Enterprises	51.5%	56.3%	1,552
Harris Corp	34.9%	-12.9%	4,656	Leggett & Platt	47.2%	54.2%	4,627
Harsco	41.6%	-9.6%	2,256	Limited	27.3%	10.4%	9,852
Hasbro	25.3%	37.2%	4,446	Linear Technology	65.8%	16.4%	3,977
HBO & Company	91.5%	78.1%	10,208	Litton Industries	15.2%	31.5%	3,486
HEALTHSOUTH	59.1%	18.6%	13,142	Liz Claiborne	67.2%	87.6%	2,773
Heilig-Meyers	14.9%	7.2%	1,731	Lockheed Martin	50.9%	-1.9%	34,150
Helmerich & Payne	40.5%	53.4%	1,726	Longs Drug Stores	-33.0%	35.7%	1,424
Hercules	-24.5%	-1.9%	5,488	Longview Fibre	-2.5%	10.9%	1,367
Herman Miller	39.9%	32.3%	2,681	Louisiana-Pacific	8.5%	49.6%	2,808
Hershey Foods	63.4%	39.4%	10,376	Lowe's	32.9%	53.1%	9,854
Hewlett-Packard	46.8%	54.8%	69,122	LSI Logic	13.4%	57.5%	2,114
Hibernia Corporation	28.8%	51.7%	2,470	Lubrizol	-57.4%	-43.7%	2,347
Hillenbrand Industries	-24.0%	11.9%	3,511	M.A. Hanna	9.6%	64.4%	1,797
Hilton Hotels	-13.2%	-23.2%	10,193	Magna Group, Inc.	50.0%	17.7%	1,503
Home Depot	44.3%	7.0%	45,401	Mallinckrodt	-23.1%	-29.5%	3,503
Homestake Mining	26.5%	68.1%	1,796	Manor Care	29.2%	18.9%	3,084
HON Industries	57.3%	29.2%	1,947	Mark IV Industries	-24.5%	25.3%	2,129
Honeywell	-2.6%	10.3%	10,401	Marshall & Ilsley Corporation	1.6%	30.7%	6,308
Hormel Foods	-27.1%	7.1%	2,647	Masco	32.9%	70.0%	9,977
Host Marriott	-1.6%	61.2%	8,767	MascoTech	53.9%	73.6%	1,574
Houghton Mifflin	69.5%	72.7%	1,703	Mattel	77.2%	58.3%	11,781
Hubbell	48.9%	21.7%	3,476	Maxxam	-42.3%	-57.6%	3,042
Huntington Bancshares Inc.	47.9%	39.3%	6,903	May Department Stores	-10.8%	-22.3%	16,380
IBM	13.3%	1.6%	115,521	Maytag	11.4%	21.3%	4,584
IBP	56.4%	79.8%	2,757	McCormick & Co.	46.6%	47.8%	2,517
ICN Pharmaceuticals	-11.6%	-21.3%	2,764	McDonald's	2.2%	37.7%	41,763
IKON Office Solutions	-4.8%	-41.9%	6,992	McGraw-Hill Companies	-41.5%	-62.1%	8,373
Illinois Tool Works	56.8%	-37.6%	16,455	MCI	-28.5%	6.6%	37,828
Immunex Corporation	-39.4%	5.5%	2,141	McKesson	-13.7%	15.8%	6,269
Ingersoll-Rand	-21.9%	-44.8%	11,000	Mead Corp	-29.1%	10.0%	4,355
Inland Steel Industries	-50.9%	22.3%	2,096	Media General	12.3%	-3.2%	2,130
Intel	54.2%	61.0%	111,446	Meditrust Companies	90.9%	97.5%	5,070
International Flavors & Fragrances	-6.2%	54.2%	5,653	Medtronic	79.0%	50.9%	24,775
International Game Techn.	39.8%	62.0%	3,424	Mellon Bank Corporation	48.2%	-48.7%	15,386
International Paper	-53.3%	-45.8%	25,728	Mercantile Bancorporation	43.7%	18.8%	8,026
Interpublic Group	71.8%	54.9%	7,937	Mercantile Bankshares Corp	76.5%	51.6%	2,812
Iomega	53.6%	56.8%	3,281	Mercantile Stores	-10.2%	60.8%	2,590
J.C. Penney	32.5%	62.8%	26,137	Merck	29.4%	52.1%	130,530
				Meredith Corp	64.6%	62.2%	1,946

Exhibit 1 (continued)

Michaels Stores	18.4%	36.0%	1,428	Phillips Petroleum	45.4%	40.9%	18,530
Micron Technology	34.1%	90.9%	5,616	Pier 1 Imports	34.7%	21.9%	1,970
Microsoft	90.7%	83.9%	152,416	Pioneer Hi-Bred	49.1%	51.9%	7,168
Millipore	-23.9%	52.1%	1,972	Pioneer Natural Resources	58.4%	68.1%	5,078
Mirage Resorts	-7.9%	-14.4%	4,232	Pitney Bowes	59.5%	7.5%	12,622
Mitchell Energy & Dev	-7.8%	-25.6%	1,915	Pittway	29.6%	18.0%	1,703
Mobil	3.0%	-30.5%	68,106	PNC Bank Corp.	3.3%	39.8%	17,106
Molex	-55.3%	-30.2%	4,905	Pogo Producing	-0.6%	-17.1%	1,422
Monsanto	-0.6%	39.3%	28,388	Polaroid	-49.4%	-37.9%	2,868
Motorola	26.6%	17.0%	38,725	Policy Management Systems	55.9%	44.2%	1,358
Murphy Oil	41.4%	72.2%	2,969	Potlatch	-1.0%	12.2%	1,887
Mylan Laboratories	-38.6%	4.1%	2,574	PPG Industries	2.6%	19.9%	12,201
Nabors	82.4%	66.1%	3,472	Precision Castparts	-49.3%	-30.8%	1,773
NACCO	4.9%	29.8%	1,714	Premark International	15.2%	53.1%	2,015
Nalco Chemical	56.4%	40.2%	3,074	Prime Hospitality	-9.0%	-3.4%	1,470
National City Corporation	72.8%	-2.4%	13,880	Procter & Gamble	44.2%	-4.1%	113,125
National Commerce Bancorp	73.0%	38.6%	1,722	Proffitt's Inc	6.1%	-15.6%	2,682
National Semiconductor	7.0%	27.7%	4,196	Provident Financial Group Inc	80.6%	52.1%	2,053
National Service Industries	46.0%	39.6%	2,077	Pulitzer Publishing	53.8%	38.0%	1,656
NationsBank Corporation	57.6%	33.1%	43,310	Quaker Oats	-74.2%	-43.6%	8,867
Navistar International	-9.8%	-15.1%	2,507	Quantum	-60.7%	-40.8%	3,282
Neiman Marcus	-36.6%	14.5%	1,854	R.R. Donnelley & Sons	34.5%	42.7%	6,783
New York Times	23.2%	41.6%	7,426	Ralston Purina	-16.8%	36.5%	12,166
Newell	62.4%	22.6%	8,276	Raychem	-15.6%	58.3%	4,025
Newmont Mining	-27.5%	-7.0%	6,263	Raytheon	73.8%	73.5%	29,850
Nike	-45.4%	-22.4%	12,323	Reebok International	-7.9%	-15.5%	2,549
NL Industries	-6.4%	40.7%	1,622	Republic New York Corp	24.3%	24.7%	6,207
Noble Affiliates	3.1%	47.5%	2,707	Reynolds and Reynolds	-9.5%	5.5%	1,750
Noble Drilling	68.5%	75.5%	4,164	Reynolds Metals	-70.4%	10.7%	6,449
Nordstrom	57.9%	68.9%	4,803	Rite Aid	-66.0%	-53.5%	11,259
Norfolk Southern	-10.8%	10.5%	19,571	Robert Half International	94.1%	69.3%	3,732
Northern Trust Corporation	77.4%	56.3%	7,768	Rockwell International	58.0%	29.0%	9,018
Northrop	76.1%	10.0%	12,376	Rohm & Haas	0.9%	-7.2%	6,886
Norwest Corporation	71.1%	-12.8%	29,397	Rollins Truck Leasing	16.7%	-18.1%	1,426
Novell	10.4%	34.7%	1,885	Ross Stores	79.0%	90.3%	2,115
Nucor	-43.9%	29.7%	4,776	Rowan Companies	43.3%	47.9%	2,816
Occidental Petroleum	-46.4%	-27.5%	18,755	RPM Inc	-63.9%	-54.0%	2,336
Old Kent Financial Corp.	43.1%	44.7%	3,676	Rubbermaid	-2.8%	-8.0%	4,135
Olin	36.4%	29.6%	2,697	Russell	25.7%	-20.1%	1,401
Olsten	-17.9%	60.1%	1,902	Ryder System	3.0%	8.2%	6,043
Omnicare	38.0%	-18.5%	2,951	Safeguard Scientifics	26.2%	-12.4%	1,325
Omnicom	84.4%	53.7%	7,913	Safety-Kleen	29.1%	44.9%	2,001
Oracle	-17.0%	-0.2%	22,305	Sara Lee	44.8%	12.9%	30,707
Overseas Shipholding	29.6%	38.1%	1,895	SBC Communications	77.7%	88.5%	86,395
Owens Corning	-10.2%	-6.9%	5,731	Schering-Plough	62.9%	16.9%	46,113
PACCAR	9.4%	10.6%	3,936	Schlumberger	62.4%	37.0%	41,263
Pacific Century Financial Corp.	-12.2%	17.7%	1,972	SCI Systems	-60.4%	-34.1%	3,083
Pall Corp	-33.7%	9.7%	2,809	Scientific-Atlanta	-55.0%	-21.8%	1,388
Parker-Hannifin	14.1%	-20.8%	5,731	Seagate Technology	-53.8%	-49.8%	4,166
Pennzoil	54.4%	75.6%	5,805	Sealed Air	83.0%	56.6%	2,736
Pentair	39.2%	25.1%	1,876	Sears Roebuck	-1.8%	42.8%	40,621
Pep Boys	16.6%	63.8%	2,302	Sensormatic Electronics	-6.5%	-9.3%	1,785
PepsiCo	-54.9%	-41.2%	59,251	Service Corporation Int.	-88.1%	-17.0%	15,888
Perkin-Elmer	18.9%	-11.2%	3,625	ServiceMaster	80.4%	64.3%	6,882
Pfizer	70.0%	-6.7%	99,055	Shared Medical Systems	37.4%	17.4%	1,784
Pharmacia & Upjohn	54.5%	57.7%	19,622	Shaw Industries	-22.1%	-11.4%	2,599
PharMerica	-48.7%	21.5%	1,366	Sherwin-Williams	-5.6%	-18.6%	6,287
Phelps Dodge	-59.9%	-36.7%	5,030	Sigma Aldrich	31.9%	42.1%	3,971
Philip Morris	22.8%	29.8%	125,557	Silicon Graphics	2.1%	26.9%	2,978

Exhibit 1 (continued)

Smith International	70.6%	6.8%	3,104	TRW	29.5%	64.9%	8,107
Smithfield Foods	47.3%	66.4%	1,695	Tyson Foods	-14.7%	-62.6%	5,993
Snap-On Tools	49.9%	68.8%	3,027	U.S. Bancorp	51.7%	-30.0%	27,609
SNET	35.9%	21.0%	4,745	UAL Corp	4.4%	-31.9%	17,911
Sonoco Products	-30.5%	-16.5%	4,159	Unifi	-25.0%	-10.4%	2,777
Southdown	39.5%	26.9%	1,631	Union Camp	-48.9%	-34.0%	5,316
Southwest Airlines	34.0%	68.2%	7,373	Union Carbide	-34.7%	27.3%	8,667
Spiegel	27.4%	14.7%	1,800	Union Pacific	-7.4%	8.2%	27,672
Springs Industries	43.8%	87.6%	1,331	Union Planters Corporation	81.6%	56.0%	5,542
Sprint	18.3%	26.2%	30,665	Union Texas Petroleum	-35.8%	-27.0%	2,498
St. Jude Medical	-1.1%	56.6%	2,781	Unisys Worldwide	-18.8%	29.4%	7,001
Stanley Works	-43.4%	-57.2%	4,890	United Healthcare	6.6%	65.9%	9,777
State Street Corporation	80.3%	77.2%	9,359	United States Filter	-41.5%	-30.8%	3,774
Sterling Software	-70.0%	-60.5%	1,497	United States Surgical	42.6%	54.1%	2,668
Stone Container	-52.0%	-27.8%	5,954	United Stationers	-27.5%	-21.8%	1,370
Storage Technology	27.7%	49.2%	3,340	United Technologies	21.7%	32.9%	21,590
Stryker	-29.3%	-0.9%	3,561	Universal Corp	-8.0%	33.8%	2,432
Summit Bancorp	67.5%	-1.8%	9,337	Universal Foods	-6.8%	27.1%	1,364
Sun Company	-43.6%	-33.0%	5,201	Universal Health Services	86.8%	75.4%	2,049
Sun Microsystems	58.2%	44.0%	15,099	Unocal	30.8%	36.0%	13,283
Sundstrand	24.1%	44.9%	3,470	US West	-13.8%	-37.1%	27,700
SunGard Data Systems	71.8%	6.1%	2,903	USAir	60.0%	39.9%	12,289
SunTrust Banks, Inc.	54.3%	26.3%	14,982	USG Corp	6.5%	31.5%	3,470
Super Valu Stores	43.7%	69.4%	4,450	UST Inc	-30.6%	-2.6%	7,007
Symbol Technologies	39.4%	71.8%	1,574	Valero Energy	-28.7%	-21.0%	2,434
Sysco	39.9%	56.1%	8,509	Valhi	8.0%	41.0%	2,429
Tandy	10.8%	50.7%	5,081	Valley National Bancorp	45.3%	12.3%	1,665
TCA Cable TV	43.7%	47.8%	1,584	Valspar	18.1%	-10.7%	1,517
Tech Data	12.3%	83.5%	2,308	Varco International	68.4%	70.0%	1,422
Tektronix	32.8%	14.9%	2,232	Varian Associates	9.8%	48.9%	1,655
Tele-Communications	-3.0%	62.3%	32,483	Venator	46.8%	15.7%	5,220
Teleflex	62.9%	40.3%	1,888	VF Corp	64.3%	74.0%	6,485
Telephone & Data Systems	-15.1%	-57.4%	5,345	Viacom	-29.0%	-44.1%	27,816
Tellabs	88.4%	79.6%	9,263	Vishay Intertechnology	42.1%	84.6%	2,049
Temple-Inland	-8.7%	-61.7%	4,298	Vulcan Materials	39.7%	21.4%	3,544
TENET Healthcare	-25.0%	-34.9%	16,567	W.R. Grace	7.1%	-8.0%	8,031
Tenneco	13.8%	47.1%	10,267	W.W. Grainger	18.1%	-4.7%	4,978
Teradyne	51.5%	68.0%	2,660	Wal-Mart Stores	69.8%	71.1%	103,568
Terra Industries	-11.1%	54.5%	1,776	Walgreen	81.3%	51.0%	15,754
Texaco	-6.9%	60.1%	39,549	Wallace Computer Services	46.1%	63.4%	1,773
Texas Instruments	2.4%	6.7%	17,800	Walt Disney	-57.8%	-34.8%	79,576
Textron	-3.1%	-6.8%	11,513	Wang Labs	-8.8%	5.6%	1,338
The Gap	69.6%	87.9%	16,307	Warner-Lambert	11.1%	-28.6%	36,564
Thermo Electron	45.3%	62.2%	9,083	Washington Post	65.3%	86.2%	5,289
Thomas & Betts	19.5%	2.7%	3,236	Waste Management	7.2%	12.7%	22,550
Tidewater	25.2%	31.2%	3,441	Wells Fargo & Company	-19.3%	-37.1%	29,244
Tiffany & Co	38.7%	38.8%	1,610	Wendy's International	24.9%	47.4%	3,429
Time Warner	-50.8%	-9.1%	53,032	Western Digital	-36.6%	-51.4%	1,478
Times Mirror	27.9%	65.2%	7,619	Westvaco	-52.6%	-37.7%	4,505
Timken	8.5%	0.6%	2,675	Weyerhaeuser	-23.7%	10.3%	13,633
TJX Companies	28.0%	-1.5%	6,916	Whirlpool	5.8%	38.1%	7,248
Tootsie Roll	66.8%	70.8%	1,401	Whitman	22.6%	16.9%	3,829
Tosco	-40.5%	-50.9%	8,706	Willamette Industries	-19.8%	-31.6%	5,649
Total System Services	24.0%	9.3%	3,316	Williams-Sonoma	42.6%	80.0%	1,387
Toys "R" Us	56.1%	59.4%	11,343	Winn-Dixie Stores	-27.0%	-18.8%	8,127
TRIARC	-4.5%	7.6%	1,513	Witco Corp	-16.5%	13.0%	3,382
Tribune	56.4%	33.9%	9,698	WM Wrigley	42.5%	-0.2%	9,190
Trinity Industries	-4.9%	22.8%	2,162	WorldCom	-78.1%	-28.5%	35,062
True North Communications	-16.9%	17.5%	1,627	Worthington Industries	-28.1%	32.9%	2,022

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