## SEASONALITY

Seasonal Price Return Patterns of Global Equities
A 32-Year History

1970 - 2001

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#### Seasonality

#### The Seasonal Price Behavior of Global Equity Markets

This study documents the seasonal price behavior of global equity markets during the 32-year period from 1970 through 2001. Our calculations are based on the monthly price returns of the 18 developed national equity markets included in the Morgan Stanley Capital International (MSCI) database during this period<sup>1</sup> as well as on the monthly price returns of the market capitalization-weighted MSCI World Index and an equally weighted World Index made up of the 18 markets in question. Five national equity markets which were added later to the MSCI database are not included in our study.<sup>2</sup> We also show the results of Keppler Asset Management's "Top Value Strategy" of investing in a combination of undervalued markets based on their fundamental valuation and of two leveraged strategies, one with 50 percent leverage, and one with 100 percent leverage.

As measured by the MSCI World Index, the developed equity markets had an average annual price return of 8.16 percent (6.91 percent compounded) in local currencies during the 32-year period ending in December 2001. Interestingly, a higher average annual price return, i.e. 8.36 percent (7.68 percent compounded), was achieved during the favorable months of January, February, March and April as well as November and December (the "good months"), while the average annual price return during the other six months of each year – May through October (the "bad months") – was only -0.37 percent (-0.72 percent compounded). Buy-and-hold investors would have seen their capital grow from 100 to 848 in local currencies, while investors who held the MSCI World Index only during the six "good months" of each year would have seen their capital grow from 100 to 1,067 local currency units over the same 32-year period, not counting transaction costs and taxes. By comparison, unfortunate market timers who were invested in global equities only during the "bad months" would have seen their capital shrink from 100 to 79 over the 32-year period from 1970 to 2001. This relationship does not change materially if returns are calculated in US dollars<sup>3</sup>.

There is a season for everything. The old phrase "Sell in May and go away" indicates that come spring time in the Northern hemisphere, it is time to take some profits in the stock market and prepare for some sort of setback. Mark Twain may have been the first person to comment on the seasonal price behavior of equities around 1897, when he observed in Pudd'nhead Wilson that October "... is one of the most peculiarly dangerous months to speculate in stocks in. The others are July, January, September, April, November, May, March, June, December, August and February." Apparently he knew more about stocks than is commonly thought.

The table on page 7 lists the average annual price returns of the 18 national equity markets which were included in the MSCI World Index from its inception at the end of 1969 through the end of 2001 as well as the average annual price returns achieved during the "good months" and the "bad months". The same information is shown for the MSCI World Index and an equally weighted world index.

Since some companies pay annual dividends during the "bad months", some comments on dividends are appropriate. As an example, this may explain the entire average monthly decline of the MSCI Germany Index of 1.2 percent in May, when the bulk of annual dividends are deducted from stock prices. Our findings are based on price returns only, which do not include any dividends. However, when stocks go ex-dividend, all things being equal, stock prices tend to decline by the amount of the dividend. Also, dividend yields were much higher in the past compared to current levels. The average annual dividend yield of the MSCI World Index during its 32-year history was 3.20 percent. For the equally weighted world index it was 3.61 percent. Therefore one can assume that a total return analysis would show that the total returns during the "bad months" would be enhanced by more than half of the dividend yield, while the total returns of the "good months" would be proportionately lower. However, even assuming that all annual dividend payments were to occur during the "bad months" (which is a very generous assumption against the case we are making here) and adjusting our results accordingly, i.e. adding the entire 3.20 percent average annual dividend yield (3.61 percent for the equally weighted world index) to the 37 basis-point average annual loss of the MSCI World Index (9 basis point average annual price return for

the equally weighted world index), the average annual price return of 8.36 percent in local currencies (10.68 percent for the equally weighted world index) achieved during the "good months" would still dwarf the 2.83 percent total return (3.70 percent for the equally weighted world index) recorded for the bad periods, which now includes all dividends.

Our numbers do not include any interest earned during the time an investor was out of the market. The average 3-month T-Bill rate was 6.5 percent during the 32-year study period. We assume that the benefit of earning interest would be equal for the "good" and the "bad months".

Even more important than the above average returns seems to be the risk reduction benefit of being invested only during the "good months". With very few exceptions (Canada, Hong Kong and the US), all risk measures shown were lower during the "good months" in each country than during the total period. And even the exceptions show equal and not more risk during the "good months". On average, as shown for the equally weighted world index in the table on page 47, the expectation of loss (= probability of a loss multiplied by the average loss in losing periods) was 1.29 percent during the "good months" versus 3.24 percent for the entire period – a 60.2 percent risk reduction. Similarly, the standard deviation of annual returns was 12.17 percent during the "good months" versus 18.45 percent for the entire period – a reduction of the annual price volatility of 34 percent. As a consequence, risk- and volatility-adjusted returns were significantly higher during the "good months".

These are the facts. The most important questions are now:

- 1. What were the reasons for this seasonal price behavior?
- 2. Is there reason to believe that they may persist in the future? And as a consequence, are the results generic rather than time-specific?

Unfortunately, there seem to be no clear-cut answers to these questions. There exists, however, a variety of hypotheses about the seasonal price phenomenon of stocks. In the past, different seasonality patterns have been studied, each different in their definitions of the "good" and "bad" periods for investing. Below are hypotheses that seem most relevant to our findings on seasonality.

#### **Tax-Selling**

"It should be obvious that tax considerations play an important role in the securities market," claims Ben Branch of the University of Massachusetts. Professor Branch and his colleagues contend that investors faced with capital gains taxation at the end of the year will sell under-performing positions to reduce their taxes. This is especially pertinent to the months surrounding the turn-of-the-year (the January Effect) but seems to have relevance to the longer "good-month"/"bad-month" periods as well. Investors are more likely to be conscious of the tax ramifications of their investing towards the end of the tax year. This is shown to be more statistically significant for investment in small companies. Marc Reinganum of the University of Southern California highlights this increased significance. He states, "Small firms experience large returns in January and exceptionally large returns during the first few trading days of January."

#### **Window Dressing**

Institutional Investors are pressured to alter their portfolios for the purpose of year-end reporting. In essence, managers are changing their portfolios to make them seem more attractive in print. Weak positions are sold and left in cash until the proceeds are reinvested. Selling at the end of the year drives the market down and sets up investors to reinvest that money over the beginning of the New Year, which results in higher prices.<sup>8</sup>

#### Coasting

Some institutional investors admittedly change their strategies after the first few months of the year. This is especially true after a high-performing first few months. These managers make their money early and then sell-out to more conservative

positions and "coast" for the rest of the year to avoid the possibility of losing an already healthy return. This strategy is considered selfish on the part of the money manager. He is compensated relative to the return of the assets under his management and is not willing to risk his performance bonus by forfeiting his early winnings.<sup>9</sup>

#### **New Year's Resolution**

At the end of each year, many individuals set out to invest a certain portion of their income throughout the following year. These plans may be well intentioned, but as the year progresses the chances of lowering or even stopping contributions altogether become greater. Unexpected events, such as sickness, unemployment, vacation, marriage, large purchases, etc. can divert funds earmarked for investment later in the year.

#### **Tax Planning**

Certain tax-friendly investments have a maximum yearly contribution. If this threshold is met early in the year, further investment in these accounts is impossible under the current tax laws. Other investors have perhaps put off contributions till the very end and make them in November/December to benefit from the tax reward.

#### **General Financial Planning**

Year-end broker and bank statements are usually studied with greater care than monthly statements. As a consequence, strategic asset allocation decisions are more likely to be made at the end or at the beginning of the year than during the summer months. Since bonuses and profit-sharing retirement contributions are usually granted at the end of the year or during the first few months of the new year, new investments are made at that time. That "liquidity push" leads to above-average stock price appreciation during the "good months". Many investors are only able or willing to invest in the first few months of the year because summer and year-end expenses are higher than those in the beginning of the year. Summer vacations, children's activities, the Holidays are all possible diversions from investment.

#### **Summary and Conclusion**

Our study on the seasonal price behavior of global equity markets during the 32-year period from 1970 through 2001 shows that investors could achieve superior returns at lower risk during the "good months" of November through April if they were able to move in and out of the markets without transaction costs and tax consequences. We believe that the seasonal price patterns described in this study may be generic rather than time specific as long as the majority of the reasons mentioned above apply. We believe that significant changes (human behavior, tax codes, the way employees get compensated etc.) would be required to make the seasonal price patterns disappear. While the transaction costs of market-timing strategies may prevent most investors from benefiting from these seasonal patterns, it might be useful to consider them for tax-free retirement accounts and/or when timing new investments and executing disinvestment decisions whose timing is somewhat flexible.

Michael Keppler, New York, July 31, 2002

<sup>&</sup>lt;sup>1</sup> Australia, Austria, Belgium, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, the Netherlands, Norway, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

<sup>&</sup>lt;sup>2</sup> The price return series for Finland and New Zealand start in December 1981, those for Ireland, Portugal, and Greece start in December 1987. 
<sup>3</sup> The average annual price return of the MSCI World Index in US dollars was 8.77 percent. While 8.58 percent were obtained during the "good months", the average annual price return during the "bad months" was 0.08 percent. Compounded the returns were 7.47 percent, 7.78 percent and -0.29 percent, respectively.

Actual payment dates usually lag the ex-dividend dates, but for the purpose of our study only the ex-dividend dates are important.

<sup>&</sup>lt;sup>5</sup> Branch, Ben, A Tax Loss Trading Rule, *The Journal of Business*, Vol. 50, Issue 2, 198

<sup>&</sup>lt;sup>6</sup> See also Brown Philip, Donald Keim, Allan W. Kleidon and Terry A. Marsh, Stock Return Seasonalities and the Tax-Loss Selling Hypothesis, *Journal of Financial Economics*, 1983.

<sup>&</sup>lt;sup>7</sup>Reinganum, Marc. The Anomalous Stock Market Behavior of Small Firms in January, Journal of Financial Economics, 1983, 103.

<sup>&</sup>lt;sup>8</sup> See Haugen, Robert A. and Josef Lakonishok, *The Incredible January Effect*, 1988, 66 – 102.

<sup>&</sup>lt;sup>9</sup> See Ibid. 96 – 102.

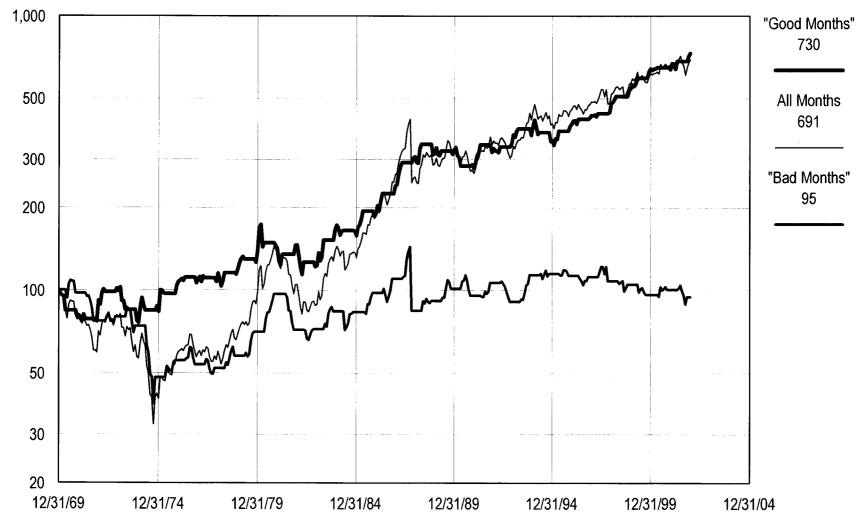
## Average Annual Price Returns (%) Based on MSCI Indices in Local Currencies 1969 - 2001

	"Good	All	"Bad
	Months"	Months	Months"
Australia	7.38	8.71	0.99
Austria	9.00	6.91	-2.06
Belgium	11.30	9.42	-2.10
Canada	7.92	8.62	0.70
Denmark	6.83	13.89	5.13
France	13.43	11.95	-1.72
Germany	9.32	8.87	-1.10
Hong Kong	14.24	23.05	6.64
Italy	14.52	12.28	-2.25
Japan	10.18	9.29	-1.67
Netherlands	11.25	9.91	-1.43
Norway	11.11	14.49	1.69
Singapore	14.65	15.08	0.03
Spain	11.34	9.77	-1.77
Sweden	16.03	17.33	0.51
Switzerland	8.16	9.23	0.52
United Kingdom	12.97	12.42	-0.72
USA	7.54	9.03	1.19
MSCI World Index	8.36	8.16	-0.37
World Index (equally weighted)	10.68	11.14	0.09
Top Value Strategy	14.42	15.77	0.73

<sup>&</sup>quot;Good Months": January through April and November, December

Australia

Price Returns in Local Currency Based on the MSCI Australia Index



"Good Months": January through April and November, December All Months: January through December

"Bad Months": May through October

Risk & Return Characteristics

Based on the Price Returns of the MSCI Australia Index in Local Currency

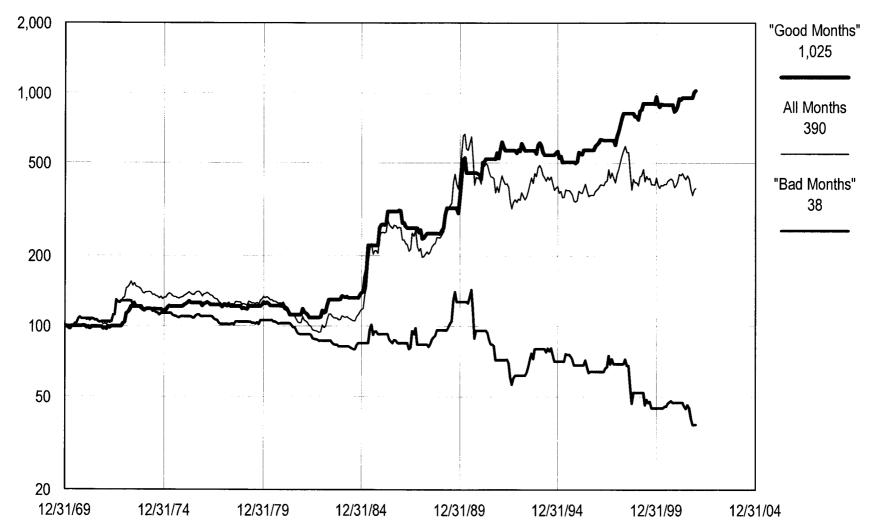
December 1969 - December 2001

	"Good	All	"Bad
	Months"	Months	Months"
Number of Years	32	32	32
Average Annual Return (%)	7.38	8.71	0.99
Compound Annual Return (%)	6.41	6.23	-0.17
Number of Winning Years	25	20	15
Highest Annual Return (%)	40.28	63.00	37.23
Probability of Gain (%)	78.13	62.50	46.88
Average Gain in Winning Years (%)	13.12	22.58	13.15
Expectation of Annual Gain (%)	10.25	14.11	6.16
Number of Losing Years	7	12	17
Lowest Annual Return (%)	-23.22	-28.82	-34.87
Probability of Loss (%)	21.88	37.50	53.13
Average Loss in Losing Years (%)	13.15	14.40	9.73
Expectation of Annual Loss (%)	2.88	5.40	5.17
Longest Losing Streak (# Years)	1	2	5
Largest Drawdown from Previous High (%)	23.80	59.65	51.74
Standard Deviation of Annual Returns (%)	14.15	23.43	15.04
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	2.56	1.61	0.19
Volatility Adjusted Return (Sharpe Ratio):			:
- Return per Unit of Standard Deviation	0.52	0.37	0.07

<sup>&</sup>quot;Good Months": January through April and November, December

Austria

Price Returns in Local Currency Based on the MSCI Austria Index



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Austria Index in Local Currency

December 1969 - December 2001

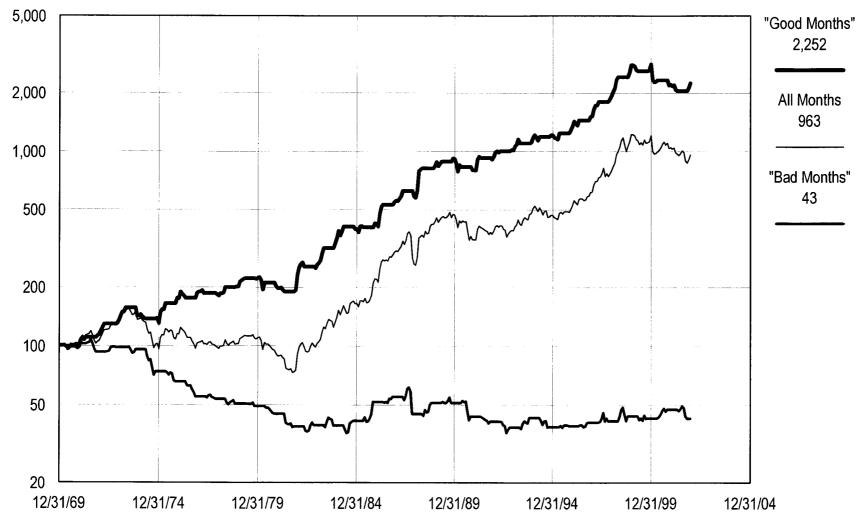
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	9.00	6.91	-2.06
Compound Annual Return (%)	7.54	4.34	-2.98
Number of Winning Years	21	16	12
Highest Annual Return (%)	95.16	112.85	32.03
Probability of Gain (%)	65.63	50.00	37.50
Average Gain in Winning Years (%)	16.70	22.33	11.41
Expectation of Annual Gain (%)	10.96	11.17	4.28
Number of Losing Years	11	16	20
Lowest Annual Return (%)	-17.11	-18.27	-25.18
Probability of Loss (%)	34.38	50.00	62.50
Average Loss in Losing Years (%)	5.72	8.51	10.14
Expectation of Annual Loss (%)	1.96	4.25	6.33
Longest Losing Streak (# Years)	3	3	4
Largest Drawdown from Previous High (%)	20.18	27.67	70.32
Standard Deviation of Annual Returns (%)	19.85	27.47	13.66
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	4.58	1.63	-0.32
Volatility Adjusted Return (Sharpe Ratio):			
- Return per Unit of Standard Deviation	0.45	0.25	-0.15

<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December "Bad Months": May through October

Belgium

Price Returns in Local Currency Based on the MSCI Belgium Index



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Belgium Index in Local Currency

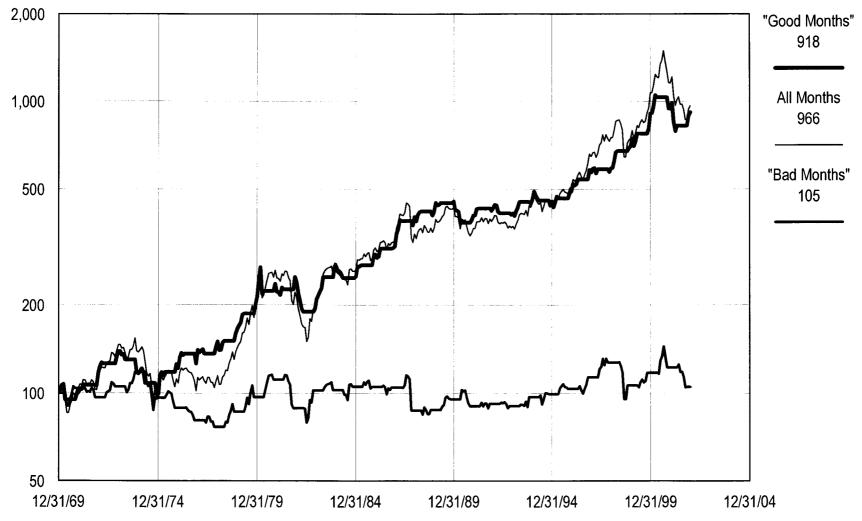
December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	11.30	9.42	-2.10
Compound Annual Return (%)	10.22	7.33	-2.62
Number of Winning Years	26	22	13
Highest Annual Return (%)	46.77	67.16	25.11
Probability of Gain (%)	81.25	68.75	40.63
Average Gain in Winning Years (%)	16.19	19.88	7.40
Expectation of Annual Gain (%)	13.15	13.66	3.01
Number of Losing Years	6	10	19
Lowest Annual Return (%)	-21.56	-29.48	-22.87
Probability of Loss (%)	18.75	31.25	59.38
Average Loss in Losing Years (%)	9.90	13.59	8.61
Expectation of Annual Loss (%)	1.86	4.25	5.11
Longest Losing Streak (# Years)	1	3	9
Largest Drawdown from Previous High (%)	21.56	34.84	62.53
Standard Deviation of Annual Returns (%)	15.54	21.67	10.09
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	6.09	2.22	-0.41
Volatility Adjusted Return (Sharpe Ratio):	:		
- Return per Unit of Standard Deviation	0.73	0.43	-0.21

<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December "Bad Months": May through October

Canada
Price Returns in Local Currency Based on the MSCI Canada Index



<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December "Bad Months": May through October

Risk & Return Characteristics

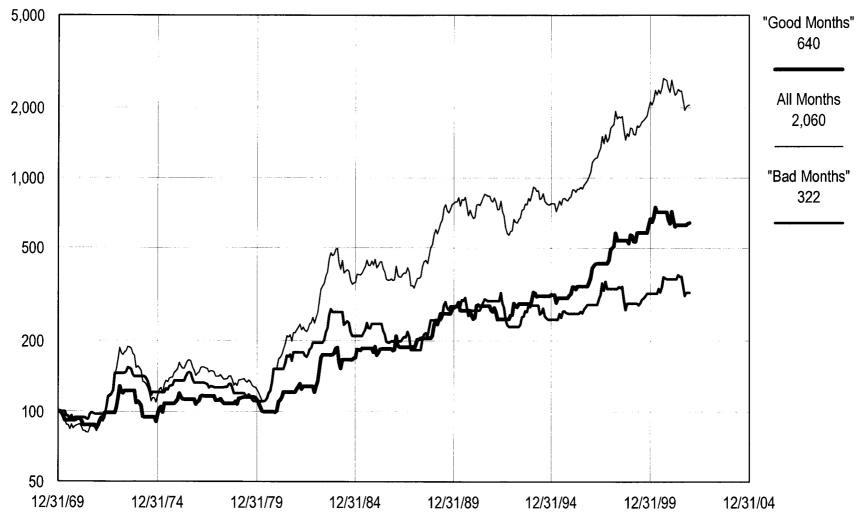
Based on the Price Returns of the MSCI Canada Index in Local Currency

December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	7.92	8.62	0.70
Compound Annual Return (%)	7.17	7.34	0.16
Number of Winning Years	24	24	19
Highest Annual Return (%)	29.65	44.68	15.24
Probability of Gain (%)	75.00	75.00	59.38
Average Gain in Winning Years (%)	13.44	15.39	7.65
Expectation of Annual Gain (%)	10.08	11.55	4.54
Number of Losing Years	8	8	13
Lowest Annual Return (%)	-16.01	-30.66	-20.31
Probability of Loss (%)	25.00	25.00	40.63
Average Loss in Losing Years (%)	8.65	11.69	9.47
Expectation of Annual Loss (%)	2.16	2.92	3.85
Longest Losing Streak (# Years)	2	2	4
Largest Drawdown from Previous High (%)	28.51	34.57	35.38
Standard Deviation of Annual Returns (%)	12.55	16.46	10.16
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	3.66	2.95	0.18
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.63	0.52	0.07
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<sup>&</sup>quot;Good Months": January through April and November, December

Denmark
Price Returns in Local Currency Based on the MSCI Denmark Index



"Good Months": January through April and November, December

Risk & Return Characteristics

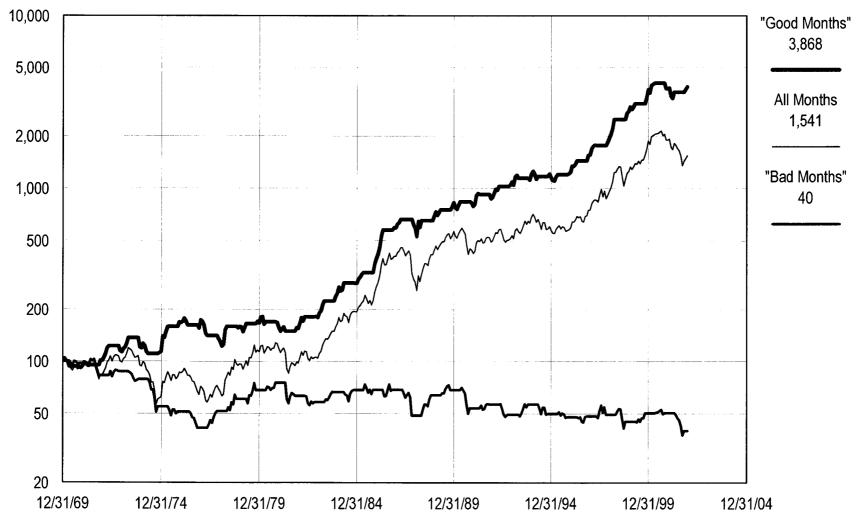
Based on the Price Returns of the MSCI Denmark Index in Local Currency

December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	6.83	13.89	5.13
Compound Annual Return (%)	5.97	9.92	3.72
Number of Winning Years	20	17	17
Highest Annual Return (%)	44.64	95.80	49.37
Probability of Gain (%)	62.50	53.13	53.13
Average Gain in Winning Years (%)	14.64	36.64	18.68
Expectation of Annual Gain (%)	9.15	19.47	9.92
Number of Losing Years	12	15	15
Lowest Annual Return (%)	-11.67	-27.88	-22.53
Probability of Loss (%)	37.50	46.88	46.88
Average Loss in Losing Years (%)	6.17	11.90	10.22
Expectation of Annual Loss (%)	2.31	5.58	4.79
Longest Losing Streak (# Years)	2	4	4
Largest Drawdown from Previous High (%)	14.72	31.68	31.13
Standard Deviation of Annual Returns (%)	13.94	31.88	17.56
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	2.95	2.49	1.07
Volatility Adjusted Return (Sharpe Ratio):			
- Return per Unit of Standard Deviation	0.49	0.44	0.29

<sup>&</sup>quot;Good Months": January through April and November, December

France
Price Returns in Local Currency Based on the MSCI France Index



"Good Months": January through April and November, December

Risk & Return Characteristics

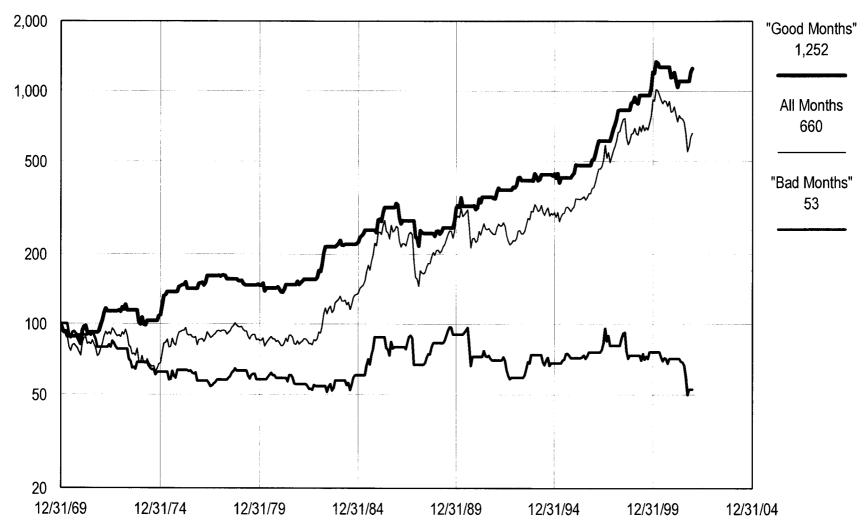
Based on the Price Returns of the MSCI France Index in Local Currency

December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	13.43	11.95	-1.72
Compound Annual Return (%)	12.10	8.92	-2.84
Number of Winning Years	24	21	17
Highest Annual Return (%)	49.63	58.36	30.87
Probability of Gain (%)	75.00	65.63	53.13
Average Gain in Winning Years (%)	20.08	27.03	9.54
Expectation of Annual Gain (%)	15.06	17.74	5.07
Number of Losing Years	8	11	15
Lowest Annual Return (%)	-25.22	-33.59	-30.54
Probability of Loss (%)	25.00	34.38	46.88
Average Loss in Losing Years (%)	6.53	16.84	14.47
Expectation of Annual Loss (%)	1.63	5.79	6.78
Longest Losing Streak (# Years)	2	2	4
Largest Drawdown from Previous High (%)	25.22	37.75	60.16
Standard Deviation of Annual Returns (%)	17.45	25.64	14.69
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	8.23	2.06	-0.25
Volatility Adjusted Return (Sharpe Ratio):			
- Return per Unit of Standard Deviation	0.77	0.47	-0.12

<sup>&</sup>quot;Good Months": January through April and November, December

Germany
Price Returns in Local Currency Based on the MSCI Germany Index



"Good Months": January through April and November, December

# Risk & Return Characteristics Based on the Price Returns of the MSCI Germany Index in Local Currency December 1969 - December 2001

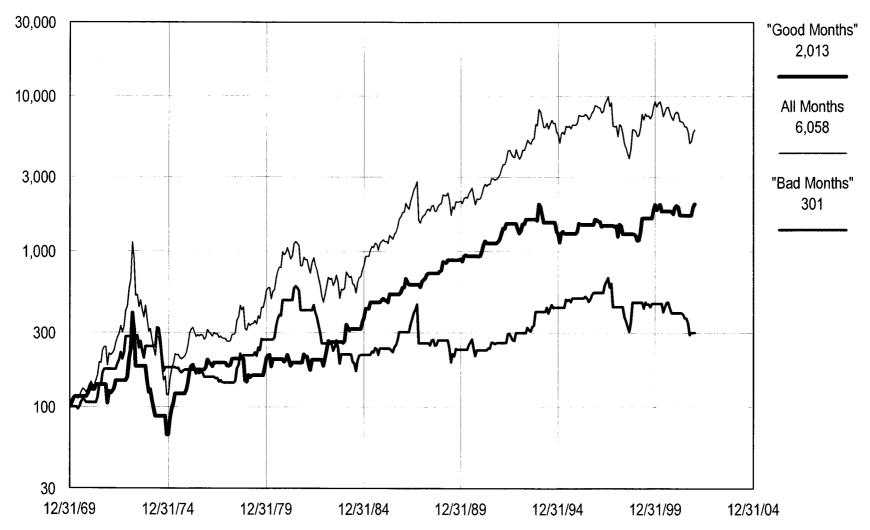
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	9.32	8.87	-1.10
Compound Annual Return (%)	8.22	6.07	-1.98
Number of Winning Years	23	19	14
Highest Annual Return (%)	34.94	80.90	45.43
Probability of Gain (%)	71.88	59.38	43.75
Average Gain in Winning Years (%)	16.31	24.28	10.58
Expectation of Annual Gain (%)	11.73	14.42	4.63
Number of Losing Years	9	13	18
Lowest Annual Return (%)	-28.43	-39.75	-25.92
Probability of Loss (%)	28.13	40.63	56.25
Average Loss in Losing Years (%)	8.57	13.64	10.18
Expectation of Annual Loss (%)	2.41	5.54	5.73
Longest Losing Streak (# Years)	3	3	5
Largest Drawdown from Previous High (%)	28.43	39.75	47.30
Standard Deviation of Annual Returns (%)	15.18	25.01	13.76
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	3.87	1.60	-0.19
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.61	0.35	-0.08

<sup>&</sup>quot;Good Months": January through April and November, December

Hong Kong

## **Price Returns in Local Currency Based on the MSCI Hong Kong Index**

December 1969 - December 2001



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Hong Kong Index in Local Currency

December 1969 - December 2001

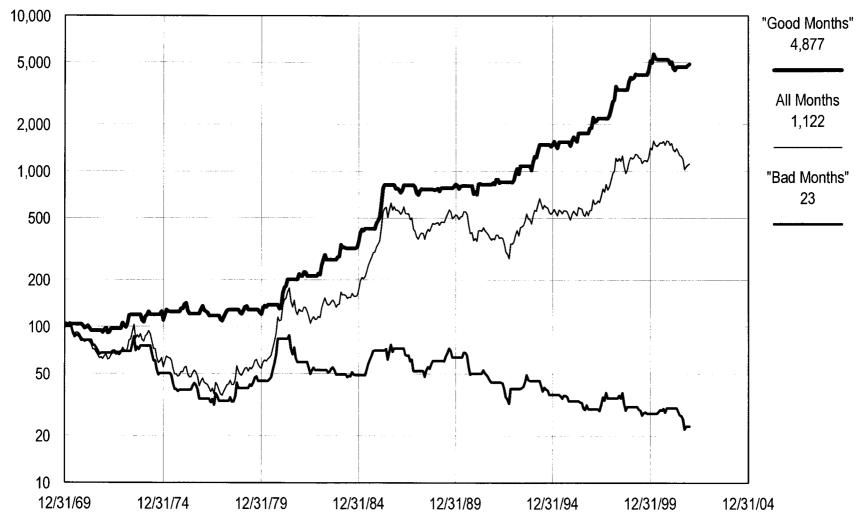
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	14.24	23.05	6.64
Compound Annual Return (%)	9.84	13.68	3.50
Number of Winning Years	21	21	16
Highest Annual Return (%)	115.54	158.81	78.96
Probability of Gain (%)	65.63	65.63	50.00
Average Gain in Winning Years (%)	30.43	48.60	26.88
Expectation of Annual Gain (%)	19.97	31.89	13.44
Number of Losing Years	11	11	16
Lowest Annual Return (%)	-46.49	-60.72	-38.93
Probability of Loss (%)	34.38	34.38	50.00
Average Loss in Losing Years (%)	16.66	25.72	13.61
Expectation of Annual Loss (%)	5.73	8.84	6.80
Longest Losing Streak (# Years)	2	2	5
Largest Drawdown from Previous High (%)	67.05	79.10	55.45
Standard Deviation of Annual Returns (%)	31.92	48.00	27.11
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	2.49	2.61	0.98
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.45	0.48	0.24

<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December

<sup>&</sup>quot;Bad Months": May through October

**Italy**Price Returns in Local Currency Based on the MSCI Italy Index



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Italy Index in Local Currency

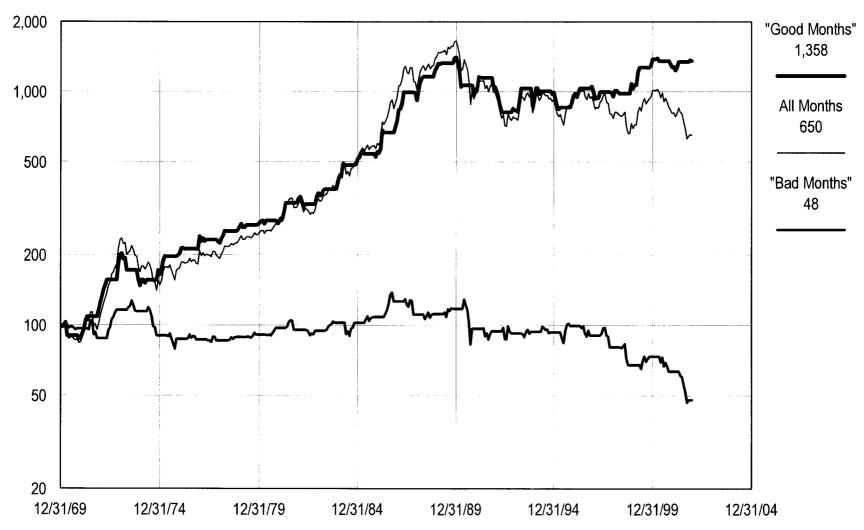
December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	14.52	12.28	-2.25
Compound Annual Return (%)	12.92	7.85	-4.49
Number of Winning Years	24	19	12
Highest Annual Return (%)	61.05	104.21	85.58
Probability of Gain (%)	75.00	59.38	37.50
Average Gain in Winning Years (%)	21.29	31.83	19.61
Expectation of Annual Gain (%)	15.97	18.90	7.35
Number of Losing Years	8	13	20
Lowest Annual Return (%)	-19.64	-33.03	-33.05
Probability of Loss (%)	25.00	40.63	62.50
Average Loss in Losing Years (%)	5.80	16.30	15.37
Expectation of Annual Loss (%)	1.45	6.62	9.61
Longest Losing Streak (# Years)	2	4	4
Largest Drawdown from Previous High (%)	19.64	63.70	77.00
Standard Deviation of Annual Returns (%)	19.85	33.38	22.89
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	10.01	1.85	-0.23
Volatility Adjusted Return (Sharpe Ratio):			
- Return per Unit of Standard Deviation	0.73	0.37	-0.10

<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December "Bad Months": May through October

Japan
Price Returns in Local Currency Based on the MSCI Japan Index



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Japan Index in Local Currency

December 1969 - December 2001

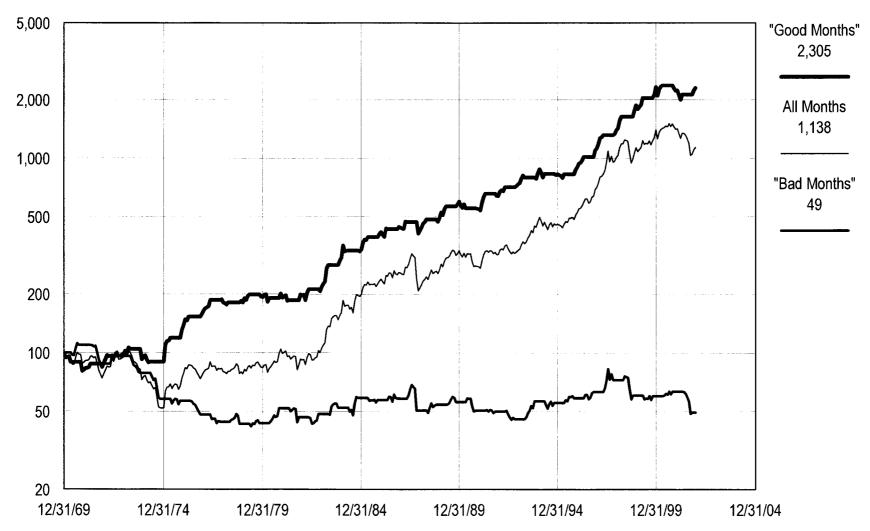
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	10.18	9.29	-1.67
Compound Annual Return (%)	8.49	6.03	-2.27
Number of Winning Years	24	20	13
Highest Annual Return (%)	59.74	111.55	32.43
Probability of Gain (%)	75.00	62.50	40.63
Average Gain in Winning Years (%)	18.07	24.59	7.65
Expectation of Annual Gain (%)	13.56	15.37	3.11
Number of Losing Years	8	12	19
Lowest Annual Return (%)	-26.86	-39.94	-24.35
Probability of Loss (%)	25.00	37.50	59.38
Average Loss in Losing Years (%)	13.49	16.20	8.04
Expectation of Annual Loss (%)	3.37	6.07	4.77
Longest Losing Streak (# Years)	1	3	5
Largest Drawdown from Previous High (%)	40.69	60.71	62.24
Standard Deviation of Annual Returns (%)	19.23	28.25	11.00
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	3.02	1.53	-0.35
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.53	0.33	-0.15

<sup>&</sup>quot;Good Months": January through April and November, December

### **Netherlands**

### **Price Returns in Local Currency Based on the MSCI Netherlands Index**

December 1969 - December 2001



"Good Months": January through April and November, December

Risk & Return Characteristics

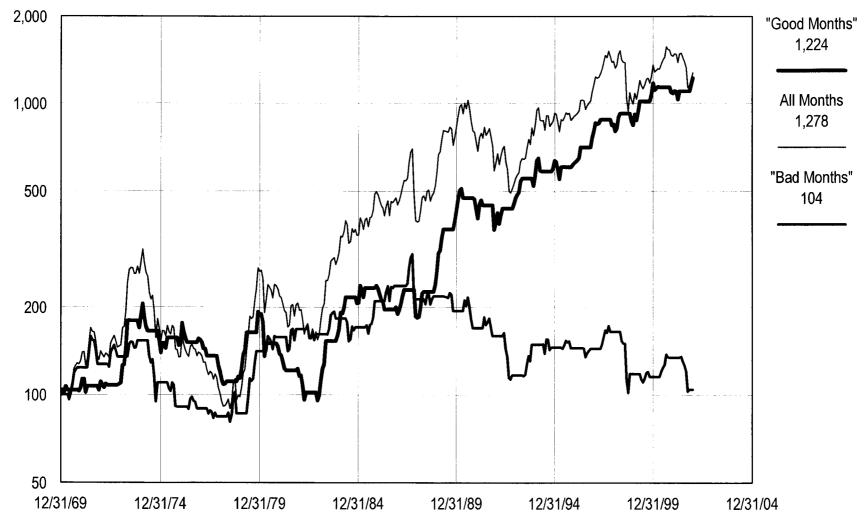
Based on the Price Returns of the MSCI Netherlands Index in Local Currency

December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	11.25	9.91	-1.43
Compound Annual Return (%)	10.30	7.90	-2.18
Number of Winning Years	24	22	15
Highest Annual Return (%)	53.72	52.13	23.54
Probability of Gain (%)	75.00	68.75	46.88
Average Gain in Winning Years (%)	16.89	20.81	8.80
Expectation of Annual Gain (%)	12.66	14.31	4.12
Number of Losing Years	8	10	17
Lowest Annual Return (%)	-18.46	-30.86	-26.38
Probability of Loss (%)	25.00	31.25	53.13
Average Loss in Losing Years (%)	5.67	14.07	10.46
Expectation of Annual Loss (%)	1.42	4.40	5.56
Longest Losing Streak (# Years)	2	2	6
Largest Drawdown from Previous High (%)	18.46	47.93	60.55
Standard Deviation of Annual Returns (%)	14.77	20.88	11.98
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	7.93	2.25	-0.26
Volatility Adjusted Return (Sharpe Ratio):		!	
- Return per Unit of Standard Deviation	0.76	0.47	-0.12

<sup>&</sup>quot;Good Months": January through April and November, December

Norway
Price Returns in Local Currency Based on the MSCI Norway Index



"Good Months": January through April and November, December

All Months: January through December

"Bad Months": May through October

Risk & Return Characteristics

Based on the Price Returns of the MSCI Norway Index in Local Currency

December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	11.11	14.49	1.69
Compound Annual Return (%)	8.14	8.29	0.13
Number of Winning Years	19	17	15
Highest Annual Return (%)	70.63	169.42	63.65
Probability of Gain (%)	59.38	53.13	46.88
Average Gain in Winning Years (%)	26.72	41.16	16.03
Expectation of Annual Gain (%)	15.87	21.86	7.51
Number of Losing Years	13	15	17
Lowest Annual Return (%)	-26.29	-46.59	-28.37
Probability of Loss (%)	40.63	46.88	53.13
Average Loss in Losing Years (%)	11.70	15.73	10.96
Expectation of Annual Loss (%)	4.75	7.37	5.82
Longest Losing Streak (# Years)	3	3	4
Largest Drawdown from Previous High (%)	47.00	65.80	55.92
Standard Deviation of Annual Returns (%)	26.81	42.19	18.28
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	2.34	1.96	0.29
Volatility Adjusted Return (Sharpe Ratio):			
- Return per Unit of Standard Deviation	0.41	0.34	0.09

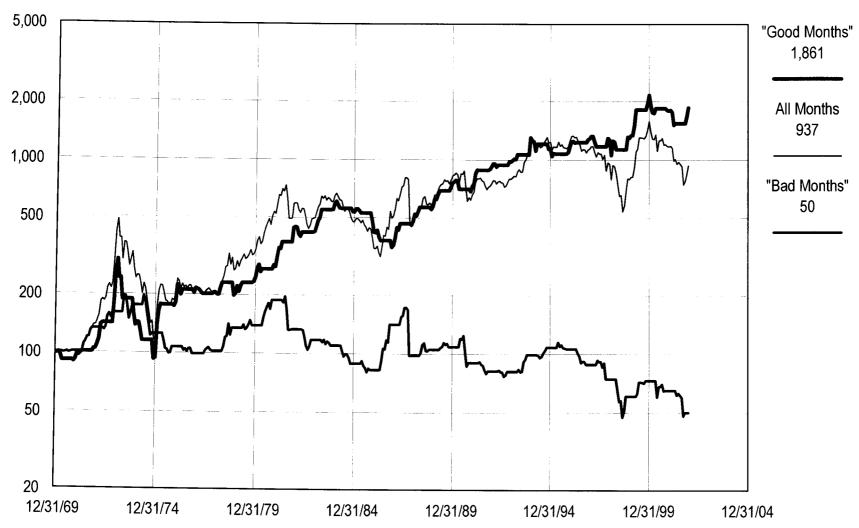
<sup>&</sup>quot;Good Months": January through April and November, December All Months: January through December

<sup>&</sup>quot;Bad Months": May through October

**Singapore** 

## **Price Returns in Local Currency Based on the MSCI Singapore Index**

December 1969 - December 2001



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Singapore Index in Local Currency

December 1969 - December 2001

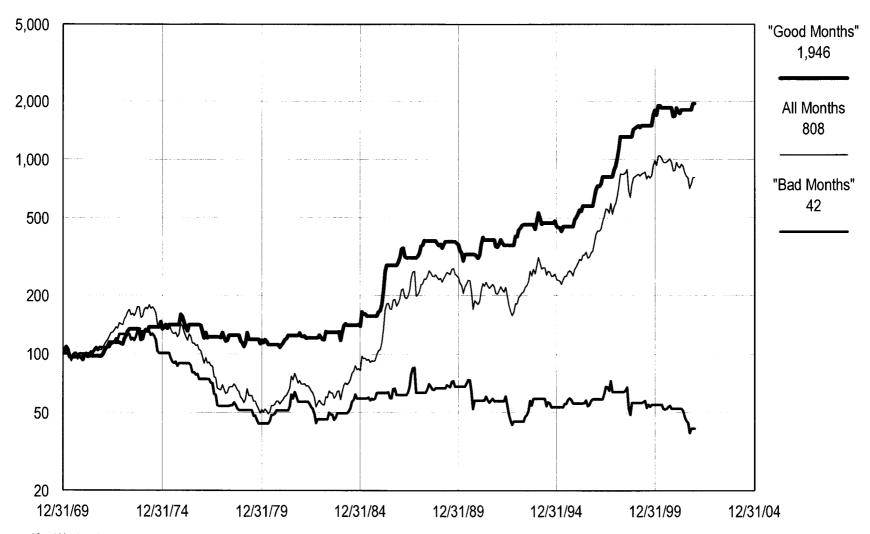
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	14.65	15.08	0.03
Compound Annual Return (%)	9.57	7.24	-2.12
Number of Winning Years	19	17	14
Highest Annual Return (%)	151.67	204.18	70.85
Probability of Gain (%)	59.38	53.13	43.75
Average Gain in Winning Years (%)	34.07	45.69	19.16
Expectation of Annual Gain (%)	20.23	24.27	8.38
Number of Losing Years	13	15	18
Lowest Annual Return (%)	-47.48	-51.27	-30.64
Probability of Loss (%)	40.63	46.88	56.25
Average Loss in Losing Years (%)	13.74	19.61	14.85
Expectation of Annual Loss (%)	5.58	9.19	8.35
Longest Losing Streak (# Years)	3	3	5
Largest Drawdown from Previous High (%)	64.32	72.10	73.18
Standard Deviation of Annual Returns (%)	37.37	47.89	21.80
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	2.62	1.64	0.00
Volatility Adjusted Return (Sharpe Ratio):			
- Return per Unit of Standard Deviation	0.39	0.31	0.00

<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December "Bad Months": May through October

Spain
Price Returns in Local Currency Based on the MSCI Spain Index

December 1969 - December 2001



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Spain Index in Local Currency

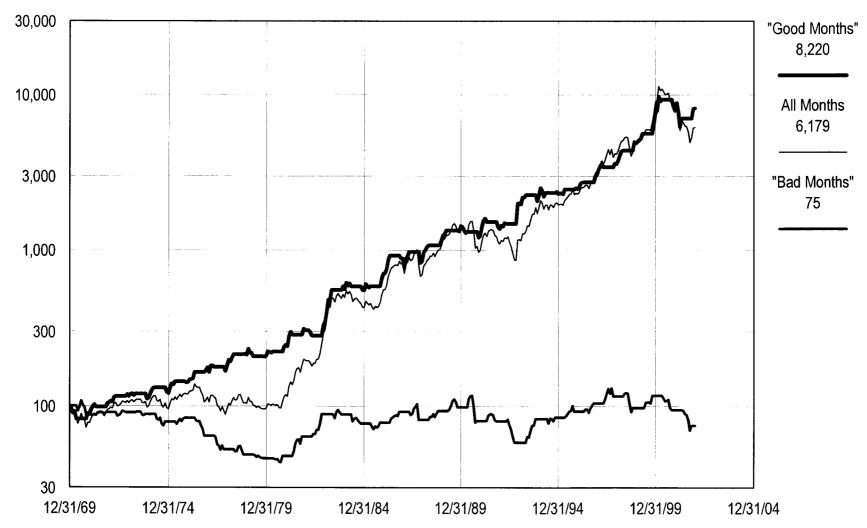
December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	11.34	9.77	-1.77
Compound Annual Return (%)	9.72	6.75	-2.71
Number of Winning Years	22	20	16
Highest Annual Return (%)	87.19	82.60	30.81
Probability of Gain (%)	68.75	62.50	50.00
Average Gain in Winning Years (%)	19.84	25.54	9.28
Expectation of Annual Gain (%)	13.64	15.96	4.64
Number of Losing Years	10	12	16
Lowest Annual Return (%)	-16.32	-30.53	-27.27
Probability of Loss (%)	31.25	37.50	50.00
Average Loss in Losing Years (%)	7.35	16.52	12.81
Expectation of Annual Loss (%)	2.30	6.19	6.41
Longest Losing Streak (# Years)	3	4	6
Largest Drawdown from Previous High (%)	28.49	66.59	68.08
Standard Deviation of Annual Returns (%)	20.49	26.33	13.55
Risk-Adjusted Return (Keppler Ratio):	1		
- Return per Unit of Expectation of Loss	4.94	1.58	-0.28
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.55	0.37	-0.13

<sup>&</sup>quot;Good Months": January through April and November, December

Sweden
Price Returns in Local Currency Based on the MSCI Sweden Index

December 1969 - December 2001



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Sweden Index in Local Currency

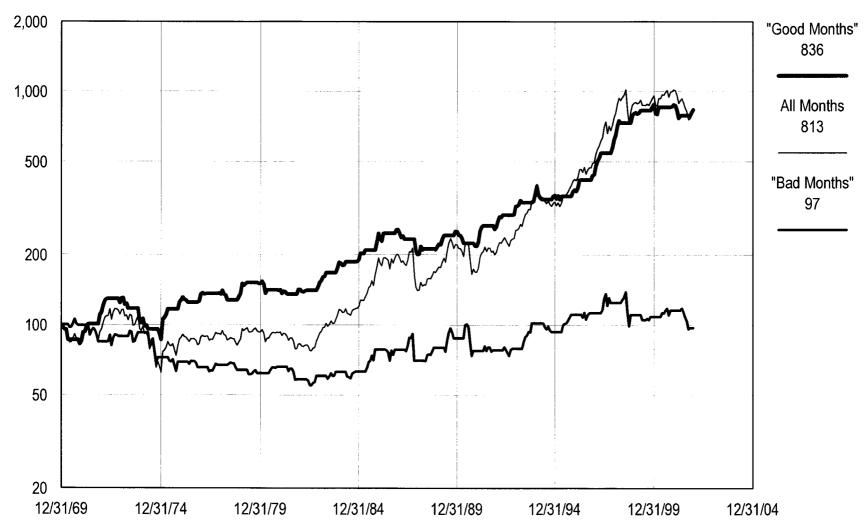
December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	16.03	17.33	0.51
Compound Annual Return (%)	14.77	13.75	-0.89
Number of Winning Years	26	21	15
Highest Annual Return (%)	62.05	87.35	42.02
Probability of Gain (%)	81.25	65.63	46.88
Average Gain in Winning Years (%)	21.01	33.54	14.78
Expectation of Annual Gain (%)	17.07	22.01	6.93
Number of Losing Years	6	11	17
Lowest Annual Return (%)	-13.58	-29.43	-27.12
Probability of Loss (%)	18.75	34.38	53.13
Average Loss in Losing Years (%)	5.54	13.61	12.08
Expectation of Annual Loss (%)	1.04	4.68	6.42
Longest Losing Streak (# Years)	1	2	4
Largest Drawdown from Previous High (%)	13.58	31.13	53.81
Standard Deviation of Annual Returns (%)	17.52	29.38	17.15
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	15.44	3.70	0.08
Volatility Adjusted Return (Sharpe Ratio):	:		
- Return per Unit of Standard Deviation	0.92	0.59	0.03

<sup>&</sup>quot;Good Months": January through April and November, December

Switzerland
Price Returns in Local Currency Based on the MSCI Switzerland Index

December 1969 - December 2001



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI Switzerland Index in Local Currency

December 1969 - December 2001

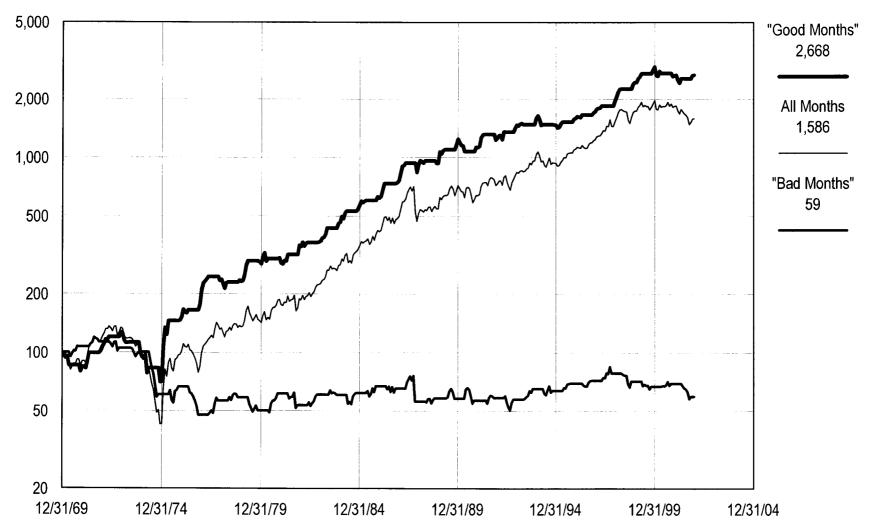
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	8.16	9.23	0.52
Compound Annual Return (%)	6.86	6.77	-0.09
Number of Winning Years	23	22	17
Highest Annual Return (%)	47.97	61.59	28.78
Probability of Gain (%)	71.88	68.75	53.13
Average Gain in Winning Years (%)	15.69	20.99	8.40
Expectation of Annual Gain (%)	11.28	14.43	4.46
Number of Losing Years	9	10	15
Lowest Annual Return (%)	-21.78	-33.89	-21.81
Probability of Loss (%)	28.13	31.25	46.88
Average Loss in Losing Years (%)	11.08	16.64	8.41
Expectation of Annual Loss (%)	3.12	5.20	3.94
Longest Losing Streak (# Years)	2	2	3
Largest Drawdown from Previous High (%)	33.69	46.20	41.64
Standard Deviation of Annual Returns (%)	16.82	23.01	11.14
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	2.62	1.77	0.13
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.49	0.40	0.05

<sup>&</sup>quot;Good Months": January through April and November, December

### **United Kingdom**

### Price Returns in Local Currency Based on the MSCI United Kingdom Index

December 1969 - December 2001



"Good Months": January through April and November, December

All Months: January through December

"Bad Months": May through October

Risk & Return Characteristics

Based on the Price Returns of the MSCI United Kingdom Index in Local Currency

December 1969 - December 2001

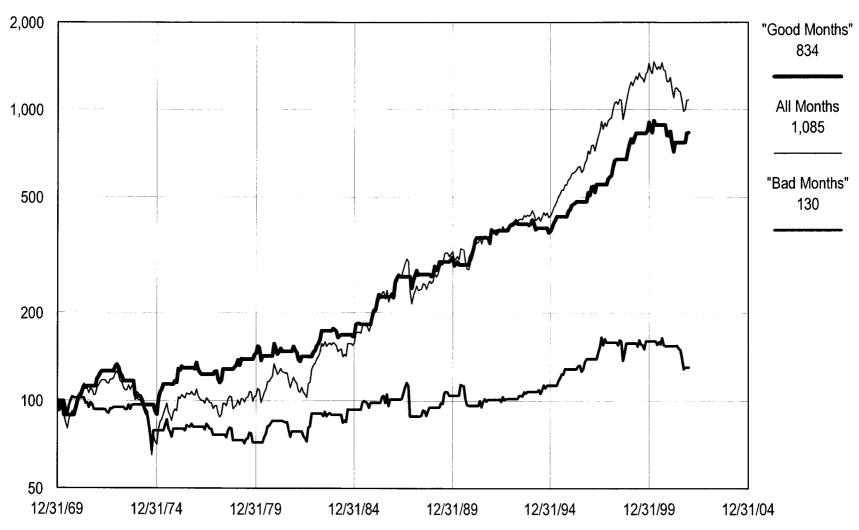
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	12.97	12.42	-0.72
Compound Annual Return (%)	10.81	9.02	-1.61
Number of Winning Years	25	24	16
Highest Annual Return (%)	115.87	136.16	22.37
Probability of Gain (%)	78.13	75.00	50.00
Average Gain in Winning Years (%)	20.41	22.26	8.57
Expectation of Annual Gain (%)	15.94	16.69	4.29
Number of Losing Years	7	8	16
Lowest Annual Return (%)	-25.27	-54.83	-39.55
Probability of Loss (%)	21.88	25.00	50.00
Average Loss in Losing Years (%)	13.59	17.09	10.02
Expectation of Annual Loss (%)	2.97	4.27	5.01
Longest Losing Streak (# Years)	2	2	3
Largest Drawdown from Previous High (%)	43.76	67.57	57.94
Standard Deviation of Annual Returns (%)	24.04	28.98	12.53
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	4.36	2.91	-0.14
Volatility Adjusted Return (Sharpe Ratio):	_		
- Return per Unit of Standard Deviation	0.54	0.43	-0.06

<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December

USA
Price Returns in Local Currency Based on the MSCI USA Index

December 1969 - December 2001



"Good Months": January through April and November, December

# Risk & Return Characteristics Based on the Price Returns of the MSCI USA Index in Local Currency December 1969 - December 2001

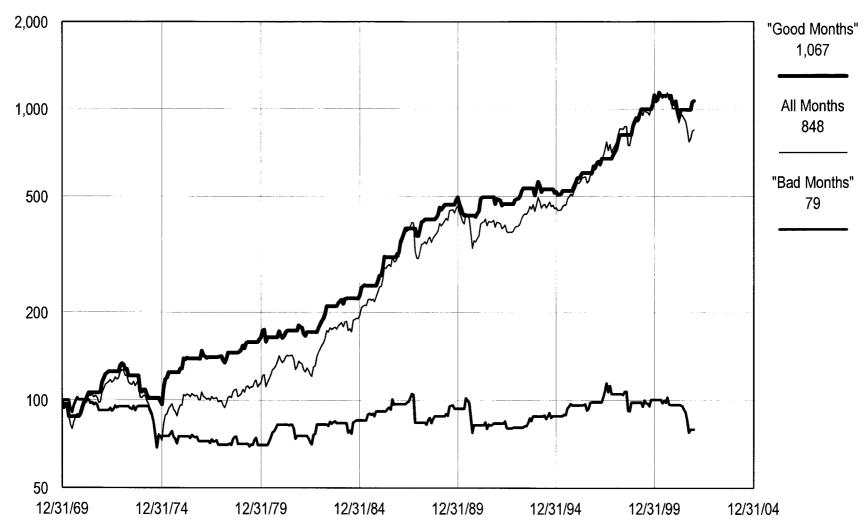
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	7.54	9.03	1.19
Compound Annual Return (%)	6.85	7.73	0.82
Number of Winning Years	24	24	20
Highest Annual Return (%)	29.63	34.74	18.85
Probability of Gain (%)	75.00	75.00	62.50
Average Gain in Winning Years (%)	12.69	16.39	6.32
Expectation of Annual Gain (%)	9.52	12.30	3.95
Number of Losing Years	8	8	12
Lowest Annual Return (%)	-20.35	-30.86	-18.43
Probability of Loss (%)	25.00	25.00	37.50
Average Loss in Losing Years (%)	7.91	13.04	7.36
Expectation of Annual Loss (%)	1.98	3.26	2.76
Longest Losing Streak (# Years)	2	2	3
Largest Drawdown from Previous High (%)	32.49	43.82	29.63
Standard Deviation of Annual Returns (%)	11.95	16.30	8.49
Risk-Adjusted Return (Keppler Ratio):			
- Return per Unit of Expectation of Loss	3.81	2.77	0.43
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.63	0.55	0 14
- Keturn per Unit of Standard Deviation	0.63	0.55	0.14

<sup>&</sup>quot;Good Months": January through April and November, December

#### **MSCI** World Index

#### **Price Returns in Local Currencies Based on the MSCI World Index**

December 1969 - December 2001



"Good Months": January through April and November, December

Risk & Return Characteristics

Based on the Price Returns of the MSCI World Index in Local Currencies

December 1969 - December 2001

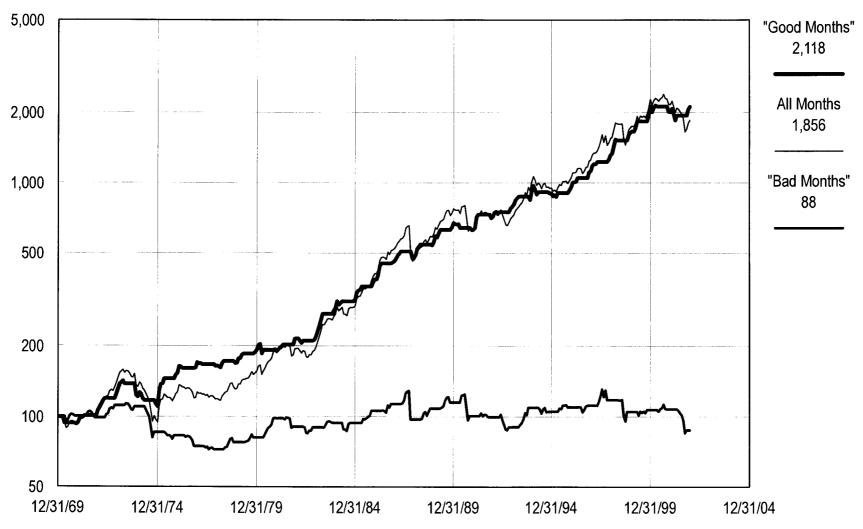
	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	8.36	8.16	-0.37
Compound Annual Return (%)	7.68	6.91	-0.72
Number of Winning Years	24	21	19
Highest Annual Return (%)	32.61	32.30	17.49
Probability of Gain (%)	75.00	65.63	59.38
Average Gain in Winning Years (%)	13.73	18.15	4.76
Expectation of Annual Gain (%)	10.30	11.91	2.83
Number of Losing Years	8	11	13
Lowest Annual Return (%)	-20.12	-28.65	-21.20
Probability of Loss (%)	25.00	34.38	40.63
Average Loss in Losing Years (%)	7.75	10.91	7.87
Expectation of Annual Loss (%)	1.94	3.75	3.20
Longest Losing Streak (# Years)	2	2	4
Largest Drawdown from Previous High (%)	27.67	42.82	30.06
Standard Deviation of Annual Returns (%)	11.94	15.76	8.11
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	4.31	2.18	-0.12
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.70	0.52	-0.05

<sup>&</sup>quot;Good Months": January through April and November, December

### **Equally Weighted World Index**

#### **Based on the MSCI Price Indices in Local Currencies**

December 1969 - December 2001



"Good Months": January through April and November, December

# Risk & Return Characteristics Equally Weighted World Index Based on the MSCI Price Indices in Local Currencies (1970-2001)

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	10.68	11.14	0.09
Compound Annual Return (%)	10.01	9.56	-0.41
Number of Winning Years	24	23	16
Highest Annual Return (%)	38.52	41.35	21.19
Probability of Gain (%)	75.00	71.88	50.00
Average Gain in Winning Years (%)	15.95	20.02	7.70
Expectation of Annual Gain (%)	11.97	14.39	3.85
Number of Losing Years	8	9	16
Lowest Annual Return (%)	-9.03	-29.26	-22.23
Probability of Loss (%)	25.00	28.13	50.00
Average Loss in Losing Years (%)	5.15	11.54	7.51
Expectation of Annual Loss (%)	1.29	3.24	3.76
Longest Losing Streak (# Years)	2	2	5
Largest Drawdown from Previous High (%)	15.98	35.38	35.14
Standard Deviation of Annual Returns (%)	12.17	18.45	9.97
Risk-Adjusted Return (Keppler Ratio):			:
- Return per Unit of Expectation of Loss	8.28	3.43	0.02
Volatility Adjusted Return (Sharpe Ratio):			i i
- Return per Unit of Standard Deviation	0.88	0.60	0.01

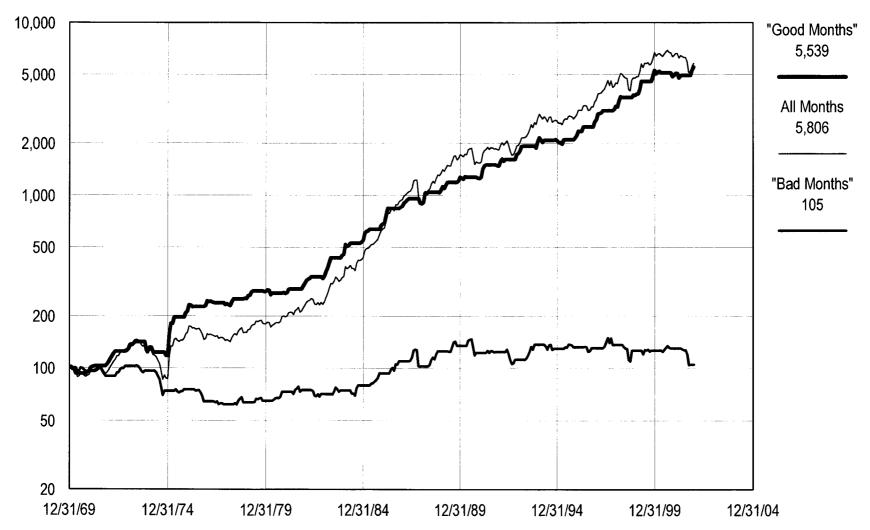
<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December "Bad Months": May through October

#### **KAM Top Value Strategy**

#### Price Returns in Local Currencies Based on KAM Top Value Strategy

December 1969 - December 2001



"Good Months": January through April and November, December

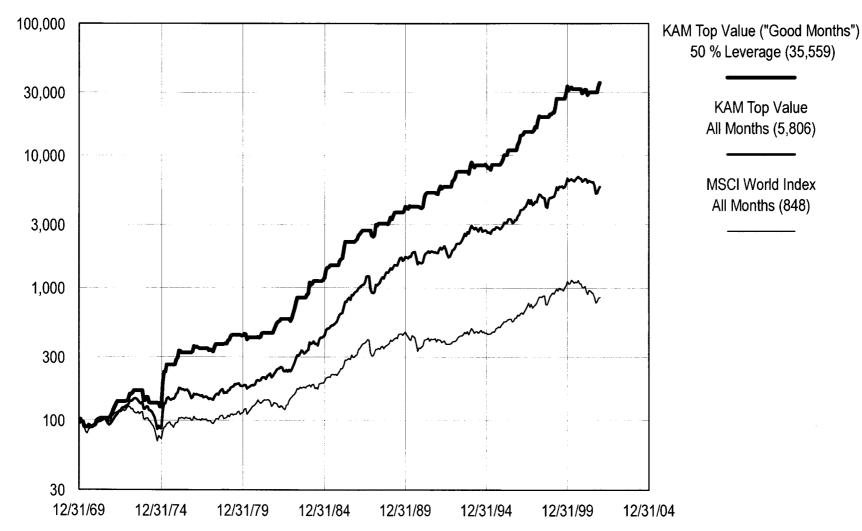
# Risk & Return Characteristics Based on the Price Returns of KAM Top Value Strategy in Local Currencies December 1969 - December 2001

	"Good Months"	All Months	"Bad Months"
Number of Years	32	32	32
Average Annual Return (%)	14.42	15.77	0.73
Compound Annual Return (%)	13.37	13.53	0.15
Number of Winning Years	25	22	18
Highest Annual Return (%)	80.79	84.21	22.37
Probability of Gain (%)	78.13	68.75	56.25
Average Gain in Winning Years (%)	19.57	26.84	8.09
Expectation of Annual Gain (%)	15.29	18.45	4.55
Number of Losing Years	7	10	14
Lowest Annual Return (%)	-6.84	-28.43	-23.17
Probability of Loss (%)	21.88	31.25	43.75
Average Loss in Losing Years (%)	3.98	8.59	8.75
Expectation of Annual Loss (%)	0.87	2.68	3.83
Longest Losing Streak (# Years)	2	2	2
Largest Drawdown from Previous High (%)	8.24	33.83	39.61
Standard Deviation of Annual Returns (%)	16.52	23.28	10.77
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	16.56	5.88	0.19
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.87	0.68	0.07

<sup>&</sup>quot;Good Months": January through April and November, December

## KAM Top Value Strategy 50 % Leverage Price Returns in Local Currencies Based on KAM Top Value Strategy

December 1969 - December 2001



"Good Months": January through April and November, December

# Risk & Return Characteristics KAM Top Value Strategy December 1969 - December 2001

	KAM Top Value "Good Months" 50 % Leverage	KAM Top Value All Months	MSCI World Index All Months
Number of Years	32	32	32
Average Annual Return (%)	22.59	15.77	8.16
Compound Annual Return (%)	20.15	13.53	6.91
Number of Winning Years	25	22	21
Highest Annual Return (%)	134.09	84.21	32.30
Probability of Gain (%)	78.13	68.75	65.63
Average Gain in Winning Years (%)	30.63	26.84	18.15
Expectation of Annual Gain (%)	23.93	18.45	11.91
Number of Losing Years	7	10	11
Lowest Annual Return (%)	-10.32	-28.43	-28.65
Probability of Loss (%)	21.88	31.25	34.38
Average Loss in Losing Years (%)	6.11	8.59	10.91
Expectation of Annual Loss (%)	1.34	2.68	3.75
Longest Losing Streak (# Years)	2	2	2
Largest Drawdown from Previous High (%)	12.89	33.83	42.82
Standard Deviation of Annual Returns (%)	26.91	23.28	15.76
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	16.90	5.88	2.18
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.84	0.68	0.52

<sup>&</sup>quot;Good Months": January through April and November, December

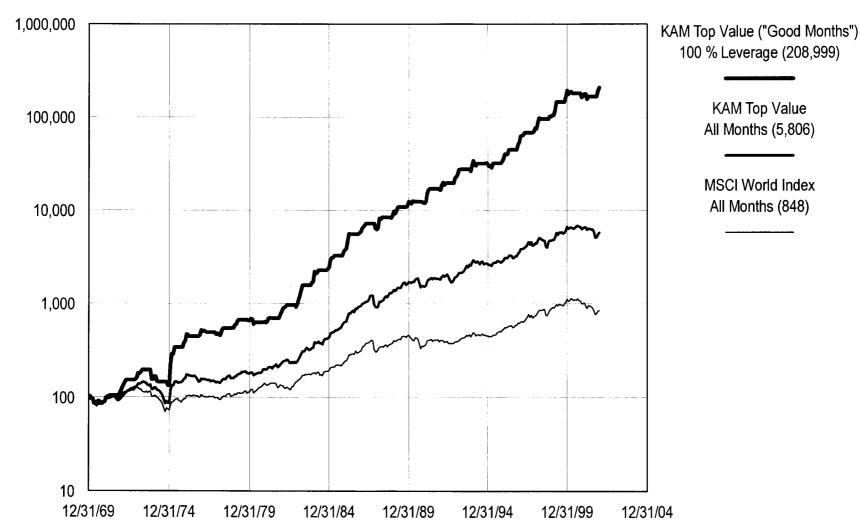
All Months: January through December

<sup>&</sup>quot;Bad Months": May through October

### KAM Top Value Strategy 100 % Leverage

#### Price Returns in Local Currencies Based on KAM Top Value Strategy

December 1969 - December 2001



"Good Months": January through April and November, December

#### Risk & Return Characteristics KAM Top Value Strategy December 1969 - December 2001

	KAM Top Value "Good Months" 100 % Leverage	KAM Top Value All Months	MSCI World Index
Number of Years	32	32	32
Average Annual Return (%)	31.48	15.77	8.16
Compound Annual Return (%)	26.99	13.53	6.91
Number of Winning Years	25	22	21
Highest Annual Return (%)	197.44	84.21	32.30
Probability of Gain (%)	78.13	68.75	65.63
Average Gain in Winning Years (%)	42.63	26.84	18.15
Expectation of Annual Gain (%)	33.31	18.45	11.91
Number of Losing Years	7	10	11
Lowest Annual Return (%)	-13.83	-28.43	-28.65
Probability of Loss (%)	21.88	31.25	34.38
Average Loss in Losing Years (%)	8.34	8.59	10.91
Expectation of Annual Loss (%)	1.82	2.68	3.75
Longest Losing Streak (# Years)	2	2	2
Largest Drawdown from Previous High (%)	17.87	33.83	42.82
Standard Deviation of Annual Returns (%)	38.97	23.28	15.76
Risk-Adjusted Return (Keppler Ratio): - Return per Unit of Expectation of Loss	17.25	5.88	2.18
Volatility Adjusted Return (Sharpe Ratio): - Return per Unit of Standard Deviation	0.81	0.68	0.52

<sup>&</sup>quot;Good Months": January through April and November, December

All Months: January through December

<sup>&</sup>quot;Bad Months": May through October