The Small Country Effect

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INTRODUCTION: A SIMPLE BUT REWARDING TECHNIQUE: EQUAL WEIGHTING[*]

A simple technique that has been used by many successful investors who are aware of the difficulty of realistic returns estimates–especially for individual securities–is the equal weighting of each security in a portfolio.[1] A comparison of the annual price change of all companies included in the S&P 500 Index demonstrates the superiority of equal weighting over market capitalization weighting. Over the 34 years through the end of 1991, an investor who bought the same dollar amount in each stock included in the S&P 500 Index[2] achieved almost three times the capital gains of an index investor who acted on the assumption of modern portfolio theory that a market capitalization-weighted portfolio offers the best risk-adjusted return. The annual

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results of both the equally- and market capitalization-weighted S&P Index are shown in Table 20.1.

Table 20.1   S&P 425/500 Index Risk and Return Analysis (1958-1991)

Year	Annual Price Return S&P 425/500 Index Capitalization Weighted (CW) %	Annual Price Return S&P 425/500 Index Equally Weighted (EW) %	Return Difference (EW-CW) %	S&P 425/500 Index CW Cumulative Price Return (12/57 = 100)	S&P 425/500 Index EW Cumulative Price Return (12/57 = 100)
				100	100
1958	37.6	44.8	7.2	138	145
1959	9.4	16.2	6.8	151	168
1960	-4.7	1.0	5.7	143	170
1961	23.1	26.9	3.8	177	216
1962	-12.8	-14.5	-1.7	154	184
1963	9.5	20.5	11.0	169	222
1964	24.0	15.5	-8.5	209	257
1965	9.9	25.5	15.6	230	322
1966	-13.5	-10.7	2.8	199	288
1967	23.3	41.9	18.6	245	408
1968	7.5	21.7	14.2	263	497
1969	-10.2	-16.7	-6.5	237	414
1970	-0.6	-2.5	-1.9	235	403
1971	11.7	14.6	2.9	263	462
1972	15.6	12.4	-3.2	304	520
1973	-17.4	-18.2	-0.8	251	425
1974	-29.7	-25.0	4.7	176	319
1975	31.6	47.9	16.3	232	471
1976	19.2	28.1	8.9	277	604
1977	-11.5	-6.0	5.5	245	568
1978	1.1	2.5	1.4	247	582
1979	12.3	22.1	9.8	278	710
1980	25.8	25.2	-0.6	350	890
1981	-9.7	-0.9	8.8	316	882
1982	14.8	23.8	9.0	362	1091
1983	17.3	23.7	6.4	425	1350
1984	1.4	-1.2	-2.6	431	1334
1985	26.3	26.1	-0.2	544	1682
1986	14.6	12.2	-2.4	624	1887
1987	2.0	0.8	-1.2	636	1902
1988	12.4	13.9	1.5	715	2167
1989	27.3	21.6	-5.7	911	2635
1990	-6.6	-14.1	-7.5	851	2263
1991	26.3	32.4	6.1	1074	2996

Note: 1958-1971 S&P 425 Index, 1972-1992 S&P 500 Index
Source: Tweedy, Browne (1992)

SOME THOUGHTS ON RISK AND RETURN OF THE S&P 500 INDEX

A superficial review of the thirty-four-year test results may suggest that even though an equally-weighted portfolio of S&P stocks returned 3.65% more in capital gains on average per year than a capitalization-weighted index, this was possible only at the cost of an increase in volatility[3] and therefore may not be all that desirable, even though the return/volatility trade-off

was positive. However, a more thorough analysis of risk and return shows that it is only the volatility north of the zero-return line that increases with the equally-weighted portfolio (see Table 20.2). The higher average gain in winning years, the higher expectation of gain, the smaller average loss in losing years, the larger highest annual return, and the higher lowest annual return indicate:

1. A significant enough shift in the return distribution to the right to render the standard deviation unusable as a risk measure[4], and

2. Positive skewness of the return distribution of the equally weighted S&P index. In a non-symmetrical distribution, volatility measures, such as the standard deviation or the variance of return, are not suitable.

   Therefore, the Sharpe ratio is not accurate and should not be applied. Since many investors do apply volatility measures, regardless of the shape of the return distribution, they should be aware that the standard deviation of returns is misleading as a risk measure in direct proportion to the skewness of the return distribution. This means that in the case of negative skewness, the Sharpe ratio shows a lower than actual risk, whereas in cases where the return distribution is positively skewed, the Sharpe ratio indicates more risk than there actually is.[5]

Table 20.2   S&P 425/500 Index Risk and Return Analysis (1958-1991)

Risk & Return Measures	S&P 425/500 Index CW	S&P 425/500 Index EW	Value Added
Compound Annual Return (%)	7.23	10.52	3.29
Average Annual Price Return (%)	8.45	12.10	3.65
Standard Deviation (%)	15.80	18.47	2.67
Probability of Gain (%)	70.60	70.60	0.00
Average Gain in Winning Years (%)	16.83	21.72	4.89
Expectation of Gain (%)	11.88	15.33	3.45
Probability of Loss (%)	29.40	29.40	0.00
Average Loss in Losing Years (%)	11.67	10.98	-0.69
Expectation of Loss (%)	3.43	3.23	-0.20
Highest Annual Return (%)	37.60	47.90	10.30
Lowest Annual Return (%)	-29.70	-25.00	4.70
Probability of Highest Annual Performance (%)	38.20	61.80	23.60
Number of Years	34	34	NA
Number of Winning Years	24	24	0
Number of Losing Years	10	10	0
Number of Years with Highest Return	13	21	8
Risk-Adjusted Return (Keppler - Ratio)			
— Return per Unit of Expectation of Loss	2.46	3.75	1.29
Volatility-Adjusted Return (Sharpe - Ratio)			
— Return per Unit of Standard Deviation	0.53	0.66	0.13

Note: 1958-1971 S&P 425 Index, 1972-1992 S&P 500 Index

The results in Table 20.2 suggest that the equally-weighted portfolio of S&P stocks dominates the market capitalization-weighted S&P portfolio. Why did we choose equal weighting? Equal weighting, which gives the same weight to small cap and large cap issues, can serve as a proxy for small capitalization investing. This technique allows investors to reap a large part of the performance advantages of small capitalization investing without having to have any knowledge of the specifics, such as the size or the expected rates of return of the investments. Nevertheless, the investor has to make sure that there is sufficient liquidity to buy the individual securities without moving the price and that the bid-ask price is not prohibitive. Details of the application of equal weighting to country selection for global equity portfolios are given at the end of this chapter.

EQUAL WEIGHTING OF NATIONAL EQUITY MARKETS

When we analyzed national equity returns, we found that the same principles that were found with individual U.S. stocks can be applied to national equity markets: An equally-weighted world index has a higher expected rate of return than a market capitalization-weighted world index. Our analysis was based on the returns of the 18 markets included in the Morgan Stanley Capital International (MSCI) World Index:[6]

- Australia	- Germany	- Singapore/Malaysia
- Austria	- Hong Kong	- Spain
- Belgium	- Italy	- Sweden
- Canada	- Japan	- Switzerland
- Denmark	- The Netherlands	- United Kingdom
- France	- Norway	- United States

During the 20-year period ending in December 1989, the total return in local currencies (including reinvested gross dividends) was 15.51% for the equally-weighted world index and 12.14% for the market capitalization-weighted MSCI World Index. The same relationship holds for a U.S. dollar investor: Over the same 20-year test period, the total annual compound return of the equally-weighted world index was 16.69%, beating by 3.43% the market capitalization-weighted MSCI World Index, which returned 13.26% per year in U.S. dollar terms.

When we first realized this relationship, we believed that it could be due only to the fact that smaller markets tend to have higher returns than larger markets. A more detailed analysis of the major markets was required to prove our ideas. At that time we also believed that, if we were right, the benefits of what we dubbed *The Small Country Effect* should even exceed those of equal weighting, since it was obvious that equal weighting can only partially exploit the small-(market) size effect.

A WELCOME COINCIDENCE

It was a welcome coincidence that we received a call in mid-1992 from the editors of this book, asking us for a contribution. That to us provided the impetus to the more detailed study on market size and returns in the global equities arena that is described below.

On the assumption that the odds of beating global stock markets indices can be turned to the investors' favor by concentrating global equity investments in markets with below-average capitalization, we tested a number of buy-and-sell strategies over the 16 ½ year period ending in June 1992[7], constructing hypothetical portfolios made up of MSCI country indices.

SMALL COUNTRY INVESTING: DATA AND METHODOLOGY

Three portfolios were constructed, each consisting of six national markets according to the size of their market capitalization:

1. Large Size Markets Portfolio (Portfolio 1),
2. Medium Size Markets Portfolio (Portfolio 2),
3. Small Size Markets Portfolio (Portfolio 3),

The hypothetical portfolios were constructed with equal initial investments in each market, regrouped according to their market capitalization, and rebalanced to equal investments in each national market at the end of each quarter. The quarterly total returns for the various portfolios were calculated as the arithmetic average of the quarterly total returns of the national MSCI indices included in each portfolio. Total returns were calculated with gross dividends reinvested, as published by Morgan Stanley Capital International Perspective.

Table 20.3   The Small Country Effect in Local Currencies
              December 31, 1975 – June 30, 1992

Risk & Return Characteristics *	MSCI World Index CW	MSCI World Index EW	Large Size Markets	Medium Size Markets	Small Size Markets
Compound Annual Return (%)	12.67	15.79	11.90	15.76	19.19
Average Quarterly Return (%)	3.31	4.02	3.11	4.13	4.82
Highest Quarterly Return (%)	17.16	18.42	16.76	22.47	22.90
Lowest Quarterly Return (%)	-23.80	-28.35	-25.41	-32.66	-26.96
Probability of Gain (%)	72.73	78.79	74.24	72.73	74.24
Average Gain in Winning Quarters (%)	6.62	6.65	6.05	7.98	8.30
Expectation of Quarterly Gain (%)	4.81	5.24	4.49	5.80	6.16
Standard Deviation of Quarterly Returns (%)	7.41	7.35	6.94	8.74	8.07
Probability of Quarterly Loss (%)	27.27	21.21	25.76	27.27	25.76
Average Loss in Losing Quarters (%)	5.50	5.76	5.37	6.13	5.20
Expectation of Quarterly Loss (%)	1.50	1.22	1.38	1.67	1.34
Longest Losing Streak (# of Quarters)	4	4	4	6	6
Largest Drawdown from Previous High (%)	29.19	28.35	25.41	32.66	26.96
Risk Adjusted Return (Keppler Ratio)					
— Return per Unit of Expectation of Loss	2.21	3.29	2.24	2.47	3.60
Volatility-Adjusted Return (Sharpe Ratio)					
— Return per Unit of Standard Deviation	0.45	0.55	0.45	0.47	0.60
Number of Periods (Quarters)	66	66	66	66	66
Number of Losing Quarters	18	14	17	18	17
Number of Winning Quarters	48	52	49	48	49
% of Quarters Outperforming MSCI CW	0	61	42	64	62
% of Quarters Outperforming MSCI EW	39	0	33	58	61

(*) Total Returns with Gross Dividends Reinvested, Rebalanced Quarterly
CW: Market Capitalization-Weighted
EW: Equally-Weighted   Source: Keppler Asset Management Inc., New York

RESULTS: GENERIC, RATHER THAN TIME-SPECIFIC

Following are the most important findings of the analyses in local currencies detailed in Table 20.3

1. In terms of their total annual compounded returns, *Portfolios 1, 2,* and *3* finished in the expected order: *Portfolio 3*–investing in the smallest markets in terms of their market capitalization–resulted in the highest total return (19.19%), 3.4 percentage points above the total return for the equally-weighted benchmark index and 6.52% above the conventional benchmark, the market capitalization-weighted MSCI World Index, while *Portfolio 1*– investing in the largest national markets–resulted in the lowest total return (11.9%). The results are shown graphically in Figure 20.1.

   In terms of total cumulative returns, during the 16 1/2 years period ending in June 1992, an investment of 100 local currency units in *Portfolios 1, 2,* and *3* grew to 640, 1,118, and 1,811, respectively, while the same investments in the equally- and market capitalization-weighted world indices grew to 1,123 and 716 local currency units (see Figure 20.2).

Figure 20.1   Compound Annual Returns (%) in Local Currencies
December 31, 1975 – June 30, 1992

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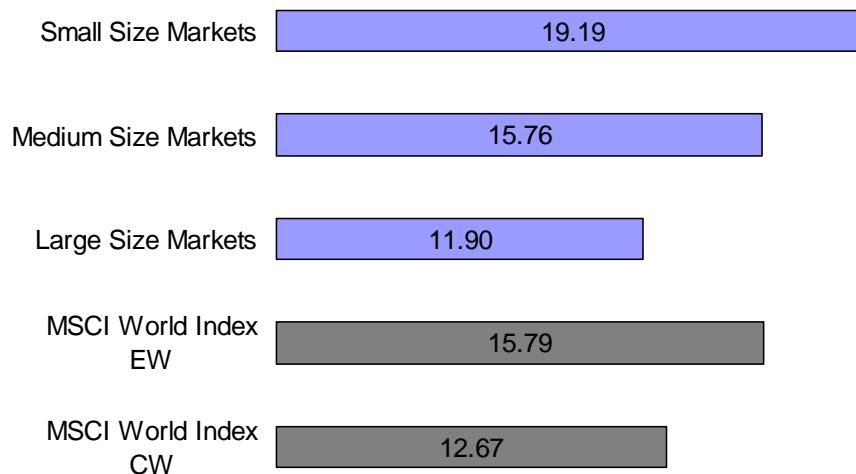
2. The average quarterly returns achieved with *Portfolios 1, 2,* and *3* were also negatively correlated with their size rankings: Returning 4.82%, *Portfolio 3* again beat the two other size portfolios and the two benchmark indices. The equally-weighted benchmark index again occupied a middle position between the returns of *Size Portfolios 1* and *3* with a return of 4.02%, while *Portfolio 1* resulted in the lowest return: 3.11%. The latter also underperformed the market capitalization-weighted benchmark, which returned 3.31% per quarter.

3. The risk-adjusted return, i.e., the return per unit of expectation of loss, was highest for *Portfolio 3* (3.6) and lowest for *Portfolio 1* (2.24) among the three size portfolios, which means that *Portfolio 3* beat *Portfolio 1* by a factor of 1.6 on a risk-adjusted basis. The equally-weighted world index came in second (3.29), while the presumably most efficient global equity portfolio, the market capitalization-weighted MSCI World Index, turned in the lowest risk-adjusted return (2.21) and was even beaten by *Portfolio 1* (2.24), the

portfolio consisting of the six largest markets. Figure 20.3 shows the risk-return relationship of the three size portfolios, the market capitalization- and the equally-weighted world indices.

Our results suggest that investors are not getting paid for accepting a higher risk. To the contrary, the most risk-averse investors, i.e., those who invest in the smallest-size markets or in equally-weighted portfolios, reap the highest returns: Based on an analysis of *Portfolios 1* and *3,* the risk-return relationship is negative.[8]

Figure 20.2   Cumulative Performance in Local Currencies with Gross Dividends Reinvested (December 31, 1975 – June 30, 1992)
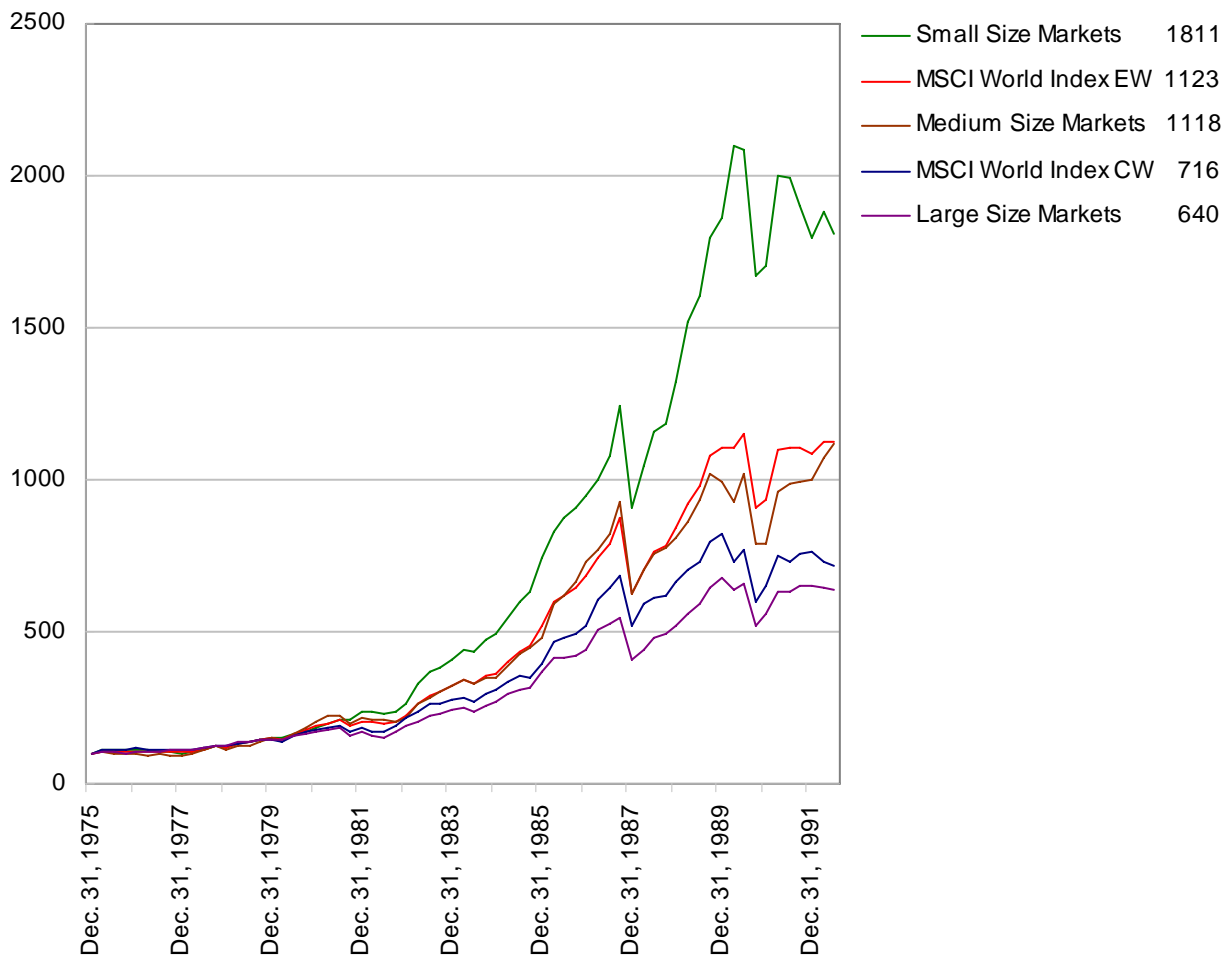
A frequency distribution of the return differences between the quarterly returns of the *Small Size Markets Portfolio* and the quarterly returns of the market capitalization-weighted MSCI World Index shows the extent of the positive skewness of the excess returns of the *Small Size Markets Portfolio* in relation to the market capitalization-weighted MSCI World Index: Not only are there sixteen additional observations on the

positive side of the return distribution, but the average returns of each interval (the numbers shown on top of each distribution pillar), which indicate the magnitude of the return differences, are all in favor of the *Small Size Markets Portfolio* (see Figure 20.4).

4. The volatility-adjusted return, i.e., return per unit of standard deviation of quarterly returns, was highest for *Portfolio 3* (0.6), and lowest for *Portfolio 1* (0.45). Thus, *Portfolio 3* beat *Portfolio 1* by a factor of 1.3. The volatility-return relationship for the three size portfolios, the market capitalization- and the equally-weighted world indices, is shown in Figure 20.5 (see also endnote 5).

5. While the other performance measures shown in Table 20.3 do not always point to the *Small Size Portfolio* as being the most attractive one, most demonstrate the dominating position of *Portfolio 3* over *Portfolio 1*. The alternative risk measures demonstrate the irrelevance of the standard deviation as a risk measure for nonsymmetrical return distributions: While the standard deviation of quarterly returns for the *Small Size Markets Portfolio* is 8.07%, 8.9% higher than the corresponding 7.41% standard deviation of the quarterly market capitalization-weighted world index returns, the expectation of quarterly loss for the *Small Size Markets Portfolio* is more than 13% lower (1.3%) that the expectation of quarterly loss for the market-capitalization weighted world index (1.5%). Again, this demonstrates how questionable volatility measures may become if the return distributions are positively skewed.

Figure 20.3   Risk-Adjusted Returns in Local Currencies
                    December 31, 1975 – June 30, 1992

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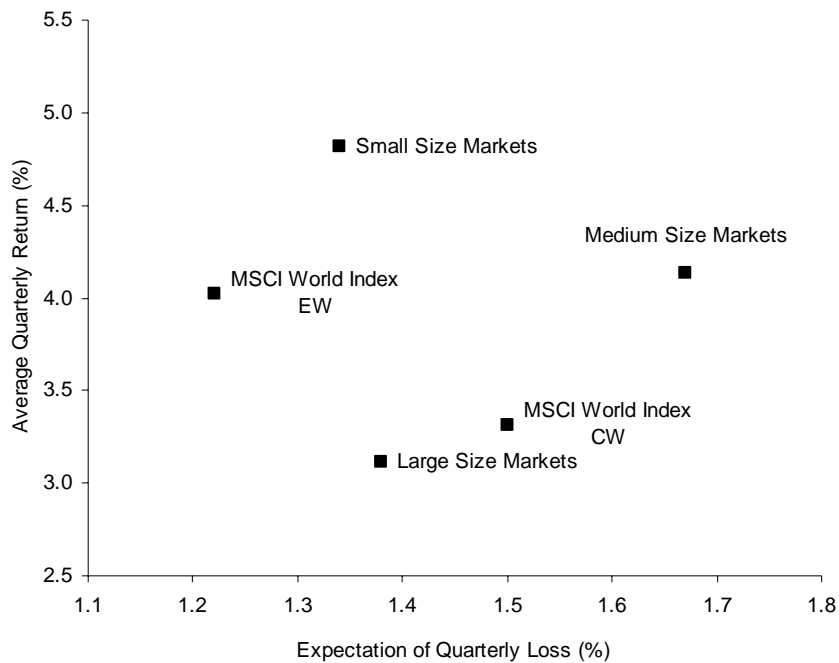
6. The *Small Capitalization Portfolio* beat the equally-weighted world index in forty-one out of sixty-six quarters of the test period, i.e., 62% of the time, while the *Large Cap Portfolio* underperformed the equally-weighted world benchmark in forty-four quarters, i.e., 67% of the time.

Figure 20.4   The Small Country Effect
Frequency Distribution of Return Differences in Percent between Small Size Markets Portfolio and the Cap Weighted MSCI World Index in Local Currencies

(-5, -10] — average -10.97
- -10.97 Mar 87

(-10, -5] — average -6.35
- -8.09 Sep 91
- -7.09 Jun 77
- -6.81 Dec 90
- -6.08 Dec 91
- -5.97 Jun 90
- -5.27 Dec 76
- -5.14 Mar 86

(-5, 0] — average -1.88
- -4.13 Dec 78
- -3.97 Sep 82
- -3.75 Dec 82
- -3.57 Dec 77
- -3.28 Sep 80
- -3.16 Dec 87
- -2.19 Jun 82
- -1.83 Jun 80
- -1.57 Sep 76
- -1.15 Jun 92
- -1.09 Jun 78
- -0.79 Dec 89
- -0.52 Dec 84
- -0.38 Dec 86
- -0.20 Sep 77
- -0.18 Sep 79
- -0.10 Mar 76

(0, 5] — average 2.68
- 4.96 Mar 82
- 4.92 Dec 79
- 4.84 Dec 81
- 4.49 Dec 85
- 4.40 Jun 81
- 3.96 Sep 78
- 3.93 Mar 79
- 3.78 Dec 88
- 3.75 Jun 85
- 3.67 Mar 77
- 3.26 Sep 89
- 2.76 Jun 83
- 2.74 Mar 91
- 2.73 Mar 88
- 2.72 Dec 83
- 2.65 Sep 83
- 2.41 Jun 76
- 2.35 Jun 86
- 2.30 Jun 89
- 2.19 Sep 90
- 2.15 Mar 81
- 1.77 Mar 85
- 1.69 Jun 91
- 1.64 Dec 80
- 1.63 Jun 84
- 1.28 Jun 87
- 0.93 Sep 84
- 0.27 Sep 86
- 0.15 Mar 80
- 0.03 Sep 88

(5, 10] — average 7.39
- 9.50 Sep 81
- 9.19 Mar 92
- 8.83 Sep 87
- 6.49 Sep 85
- 6.41 Jun 88
- 6.34 Mar 84
- 6.26 Jun 79
- 6.10 Mar 78

(10, 15] — average 11.59
- 12.96 Mar 83
- 10.23 Mar 89

(15, 20]

(20, 25] — average 24.08
- 24.08 Mar 90

Note: The numbers indicate the amount of the deviation from the MSCI World Index return during each quarter in percent; negative numbers indicate underperformance, and positive numbers indicate superior performance. The averages of each interval, which are shown on top of each pillar, indicate the magnitude of the skewness of the return differences, while the pillars indicate the frequency.

7. T-test of mean return differences show that small cap *Portfolio 3* outperformed the equally-weighted world index and the market capitalization-weighted MSCI World Index at significance levels 0.015 and 0.013, respectively. We also tested whether *Portfolio 3* outperformed the market capitalization-weighted MSCI World Index by at least 0.5% per quarter and found that a 0.5% or higher performance advantage per quarter is significant at level 0.067. The t-tests show that the differences between *Portfolio 3* returns and both

market capitalization-weighted MSCI World Index and the equally-weighted world index returns are statistically significant.

8. The stability of our basic findings is further demonstrated by the fact that subperiod results of the three 4-year periods, and one 4 1/2 year period are all in sequence and consistent with the results of the full 16 1/2-year test: Among the three size portfolios, the *Small Size Markets Portfolio* had the highest returns for each subperiod, followed by the *Medium Size Markets Portfolio,* while the *Large Size Markets Portfolio* returns came in lowest for each subperiod. Also, the equally-weighted world index outperformed the market capitalization-weighted world index during each subperiod. See Table 20.4 for subperiod results.

9. The average holding periods were nineteen, twelve, and twenty-two quarters for *Portfolios 1, 2,* and *3,* respectively. The annual average turnover rate of the *Small Size Markets Portfolio* is therefore estimated at 18% without the quarterly rebalancing. Including quarterly rebalancing, we estimate the annual turnover rate at 31% of the portfolio.

While the value of the U.S. dollar against most foreign currencies fluctuated widely during the test period, the risk and return characteristics of the strategies tested follow similar patterns when measured in U.S. dollar terms. The U.S. dollar results, detailed in Table 20.5, suggest that, over the long term, currency considerations may be less important tan many international investors are inclined to believe.

Figure 20.5   Volatility-Adjusted Returns in Local Currencies
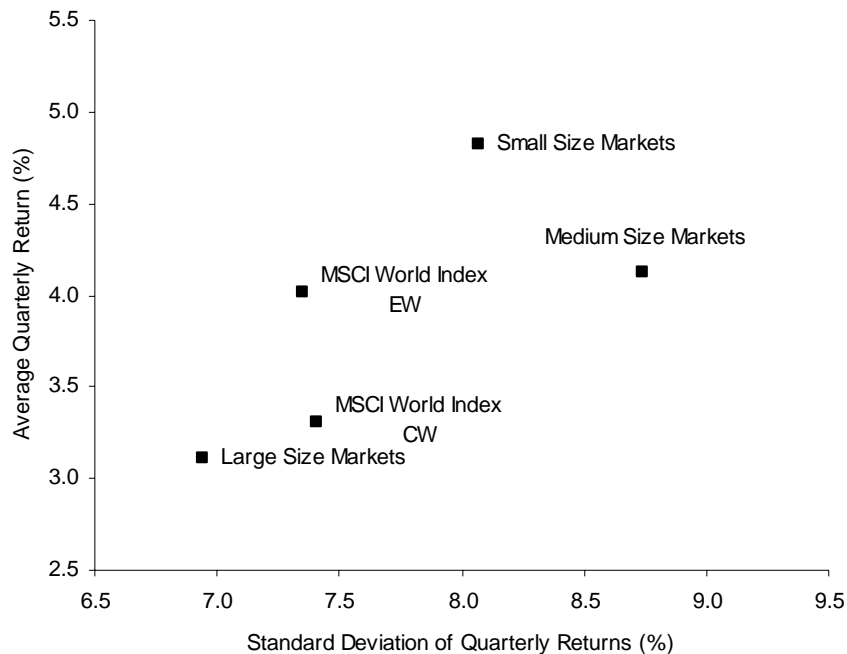   December 31, 1975 – June 30, 1992

Table 20.4   The Small Country Effect
             Subperiod Results in Local Currencies – Compound Annual Returns in Percent

Subperiods	MSCI World Index CW	MSCI World Index EW	Large Size Markets	Medium Size Markets	Small Size Markets
Dec 31, 1975 - Dec 31, 1979	9.43	10.55	9.42	10.49	11.26
Dec 31, 1979 - Dec 31, 1983	17.58	21.09	14.15	21.30	27.47
Dec 31, 1983 - Dec 31, 1987	17.45	18.21	13.87	18.13	22.27
Dec 31, 1987 - Jun 30, 1992	7.30	13.82	10.44	13.67	16.68

Following are the most important findings of the analyses in U.S. dollars:

1. Compound annual and average quarterly returns are based in the expected order for the three size portfolios and the equally- and market capitalization-weighted world indices: Small is beautiful, and if you know nothing, weigh your portfolios equally!

2. Both, the longest losing streak and the largest drawdown were least damaging for the *Small Size Portfolio.*

Table 20.5   The Small Country Effect in U.S. Dollars
             December 31, 1975 – June 30, 1992

Risk & Return Characteristics *	MSCI World Index CW	MSCI World Index EW	Large Size Markets	Medium Size Markets	Small Size Markets
Compound Annual Return (%)	14.19	16.58	13.98	15.44	19.73
Average Quarterly Return (%)	3.68	4.22	3.62	4.07	4.95
Highest Quarterly Return (%)	22.65	22.64	24.98	31.19	27.57
Lowest Quarterly Return (%)	-18.13	-20.24	-17.45	-25.56	-17.70
Probability of Gain (%)	74.24	77.27	72.73	71.21	72.73
Average Gain in Winning Quarters (%)	7.10	7.27	7.16	8.46	8.74
Expectation of Quarterly Gain (%)	5.27	5.62	5.21	6.02	6.35
Standard Deviation of Quarterly Returns (%)	7.86	7.87	7.75	9.16	8.44
Probability of Quarterly Loss (%)	25.76	22.73	27.27	28.79	27.27
Average Loss in Losing Quarters (%)	6.17	6.18	5.81	6.77	5.15
Expectation of Quarterly Loss (%)	1.59	1.40	1.59	1.95	1.40
Longest Losing Streak (# of Quarters)	5	5	5	6	3
Largest Drawdown from Previous High (%)	24.00	20.24	23.18	25.56	17.70
Risk Adjusted Return (Keppler Ratio)					
— Return per Unit of Expectation of Loss	2.31	3.00	2.28	2.09	3.52
Volatility-Adjusted Return (Sharpe Ratio)					
— Return per Unit of Standard Deviation	0.47	0.54	0.47	0.44	0.59
Number of Periods (Quarters)	66	66	66	66	66
Number of Losing Quarters	17	15	18	19	18
Number of Winning Quarters	49	51	48	47	48
% of Quarters Outperforming MSCI CW	0	52	47	55	56
% of Quarters Outperforming MSCI EW	48	0	38	50	53

(*) Total Returns with Gross Dividends Reinvested, Rebalanced Quarterly
CW: Market Capitalization-Weighted
EW: Equally-Weighted   Source: Keppler Asset Management Inc., New York

3. While the standard deviation of quarterly returns was high for the *Small Size Portfolio,* the lowest 1.4% expectation of a quarterly loss was shared with the equally-weighted world index. The latter risk measure was higher for all other portfolios shown.

4. Both, risk- and volatility-adjusted returns–as defined in the local currency analysis– were most favorable for the *Small Size Markets Portfolio.*

5. T-tests of mean return differences show that the small cap *Portfolio 3* outperformed the equally-weighted world index and the market capitalization-weighted MSCI World Index at significance levels 0.031 and 0.044 respectively. The t-tests show that the differences between *Portfolio 3* returns and both the market capitalization-weighted MSCI World Index and the equally-weighted benchmark index returns are statistically significant.

6. Subperiod results again strongly support the overall results of the study: The *Small Size Markets Portfolio* had the highest returns of the three size portfolios for each subperiod, while the *Medium Size Markets Portfolio* occupied the middle positions, and the *Large Size Markets Portfolio* returns came in lowest during each subperiod. Subperiod results in U.S. dollars are shown in Table 20.6.

Table 20.6　　The Small Country Effect Subperiod Results in U.S. Dollars
　　　　　　　Compound Annual Returns in Percent

Subperiods	MSCI World Index CW	MSCI World Index EW	Large Size Markets	Medium Size Markets	Small Size Markets
Dec 31, 1975 - Dec 31, 1979	11.73	14.56	13.77	13.55	15.79
Dec 31, 1979 - Dec 31, 1983	14.09	9.46	8.63	9.06	10.07
Dec 31, 1983 - Dec 31, 1987	25.75	28.52	23.30	26.43	35.46
Dec 31, 1987 - Jun 30, 1992	6.94	14.82	11.11	13.67	19.12

CONSIDERATIONS FOR THE PRACTICAL APPLICATION OF THESE STRATEGIES

All of the results shown here implicitly assume a frictionless market, i.e., no transaction costs for the initial investment and for rebalancing. Of somewhat lesser importance, we assume no taxes on capital gains, nor on dividends–we use gross dividends for U.S.-based investors.[9] Reasonable estimates of transaction costs have to include not only the fees and commissions, but also the market impact due to the size of the portfolio. For example, we may not have a problem giving Norway an equal weight in a six-country portfolio when we invest $1 million. However, for a $1 billion portfolio, we would face huge transaction costs.

In Table 20.7, we show an approximation of transaction costs (the average of buys and sells) in each market. These are based on moderate-size trades relative to the available liquidity in each market. As noted, costs increase progressively both above and below certain efficient threshold levels, which vary from market to market depending on size and liquidity. Assuming

market capitalization weighting of countries, the implementation of a global index strategy with a $200 to 400 million portfolio would result in minimal transaction costs.

Table 20.7 - Estimated Transaction Costs	%	Table 20.8 – Minimum Size Trade* for Market Impact	Million $
Australia	1.00	Australia	16.9
Austria	1.25	Austria	2.8
Belgium	1.75	Belgium	3.7
Canada	0.50	Canada	16.5
Denmark	1.10	Denmark	13.6
France	0.60	France	45.2
Germany	0.40	Germany	86.4
Hong Kong	0.75	Hong Kong	24.5
Italy	0.80	Italy	21.0
Japan	0.75	Japan	139.8
Netherlands	0.55	Netherlands	38.5
Norway	1.30	Norway	2.2
Singapore	1.00	Singapore	4.8
Spain	1.50	Spain	14.9
Sweden	1.25	Sweden	7.1
Switzerland	0.70	Switzerland	64.8
U.K.	0.70	U.K.	263.6
U.S.A.	0.40	U.S.A.	900.0
		* Assuming an index strategy	
Source: State Street Global Advisors.		Source: Morgan Stanley	

If one were to equally weight countries, the ideal size becomes less clear. A $40 million equally-weighted global index fund would be reasonable for Belgium, but would not leave a sufficient amount for purchases in the U.S. or Japan to be efficient. A manager could not get a good sample of names and simultaneously keep transaction cost reasonable in the larger markets.

Most of the problems from a practical point of view arise with the smaller markets. In Table 20.8, we have shown thresholds for each market where significant market impact is currently likely to be felt if a manager attempted to complete and index trade in one day. As one would expect, the impact starts earliest with the smallest markets. Norway presents the tightest bottleneck: market impact would begin to pose a problem if one tried to invest only $2.2 million on a given day.

The extent of market impact on the performance of portfolios investing in small markets largely depends on portfolio turnover. In the *Small Size Markets Portfolio,* Austria, Denmark, and Norway were held throughout the entire test period. Belgium was held through most of the period, while Singapore, Sweden, Spain, Hong Kong, and Italy were also held at various times. Investments in all markets with the exception of Hong Kong and Italy were likely to involve transaction costs of 1% or more. Most of the illiquid markets, e.g., Austria, Belgium, Denmark, and Norway were bought only once–they were never sold. The only country that went out of the portfolio more than once was Hong Kong, the most liquid of all markets held. Thus, even for large portfolios the additional transaction costs that would have been incurred as a result of market impact and/or implementation shortfall should not have been materially changed the results shown. The fact that the strategy does not depend on instant portfolio rebalancing when the market capitalization of national markets changes further contributes to its stability. Even if it

took a whole quarter to move into a market, the incremental value added by the strategy would be about the same as with instant portfolio rebalancing.

There are ways to further reduce transaction costs. Holding futures provides market exposure while increasing liquidity significantly. In addition, there are often tax benefits relating to the implied dividends one could capture via futures. Currently, futures on major market indices are available for fifteen of the eighteen markets included in our study. Only Italy, Norway, and Singapore/Malaysia do not yet offer futures. Unfortunately, most of the futures on the indices of the small markets were only recently introduced and therefore liquidity may still be a problem. However, this should improve over time.

In addition to futures, other investment vehicles that do not trade on exchanges can ease implementation. With the market for swaps now developed, brokers often provide reasonable quotes even for some of the smallest markets.[10] This provides exposure, and depending on the terms, it may also provide liquidity. Finally, several index funds providers, such as State Street Global Advisors, offer country index funds, which frequently provide opportunities to move in or out of a market without any transaction costs due to participants moving in opposite directions.

IMPLICATIONS FOR ACTIVE MANAGERS

If traditional (non-quantitative) portfolio managers were going to bias their portfolios toward the smaller markets, this might present a more difficult problem, especially for larger portfolios. Of all the markets involved, the only market where managers were materially concerned about liquidity was Austria.[11] However, this would probably change if they were to take sizable positions in several of the smaller markets. As presented in Table 20.9, the median manager's maximum position shows the current *Small Size Portfolio* ranges from 5 to 10%. This number would probably be even lower for a global portfolio, as this survey was geared towards portfolios that did not include the United States. Since the U.S. represents about 40% of the MSCI World Index, the range may actually drop by 40% to 3% to 6%. Equal weighting would call for about a 17% weighting per country. Obviously, this goes far beyond what most managers would normally do.

Traditional manager's decision to limit the smaller markets is reasonable, however, given the normal turnover of most managers. The discussion above regarding transaction costs assumes index-weighted holdings within countries. This mitigates much of the potential transaction costs, as it is essentially a buy-and-hold strategy within markets. In addition, each security's weight in a given country results from the company's market value, which usually is a good proxy for liquidity. To a large extent the typical active manager holds equal weights of about one hundred securities. Thus, if a manager were to give large weights to the smaller markets, the market impact and/or implementation shortfall could become huge when trading in some of the smaller companies.

This liquidity burden would shrink if countries were equally weighted without concentrating investments in all of the smallest markets (since it is unlikely that an active manager would find only small markets attractive).

We have recently implemented the results of our research in or *Global Advantage Fund*, where we equally weight the most attractive markets and select the best securities in those markets. This will show in real time the practicality and advantage of equally weighting markets.

EMERGING MARKETS

Interestingly, the one area where equal weighting of countries (or some variation of it) has caught on is within the emerging markets. Particularly with some of the more quantitative managers, equal weighting of emerging markets has great appeal. Although we do not include the statistics here, it is true that, also with emerging markets, equal weighting of countries has provided superior returns to capitalization weights. Finally, were we to extend our universe to include both developed and emerging markets, equal weighting of markets would yield even higher excess returns.

Over most periods, the smallest markets have tended to do better than larger ones.

Table 20.9   Median Manager Maximum Weight in Percent

Australia	10.0
Austria	5.0
Belgium	7.0
Canada	10.0
Denmark	5.0
France	20.0
Germany	25.0
Hong Kong	10.0
Italy	12.4
Japan	60.0
Netherlands	13.2
Norway	5.0
Singapore	10.0
Spain	10.0
Sweden	8.0
Switzerland	13.7
U.K.	35.0
U.S.A.	N.A.

Source: Ennis, Knupp & Associates

CONCLUSION

This study suggests that market size has significant predictive power with respect to the relative performance of broadly diversified global equity investments. Global investors with a three- to five-year investment horizon can achieve excess risk-adjusted returns by concentrating investments in a combination of smaller national equity markets. The size of national equity markets is thus a useful selection criterion for enhancing the returns and reducing the risk–if not necessarily the volatility–of global equity portfolios.

ENDNOTES

[1] State Street Global Advisors has employed primarily equal weighting of securities in each country in its international *High Value* portfolios since March 1984. Their performance rank at or near the top of comparable measurement universes for most countries on a return basis, and equally important, ranks among the lowest risk portfolios in these universes. The slight small capitalization exposure which is generated through the concept of equal weighting has undoubtedly contributed positively to the performance.

[2] Tweedy, Browne Inc.: Interview in *Outstanding Investor Digest,* New York, 1992, Vol. VII, No. 9 & 10, p. 17. Prior to 1972 the S&P 425 was used.

[3] The standard deviation of the annual returns was 15.8% for the capitalization-weighted portfolio and 18.47% for the equally-weighted portfolio.

[4] R.S. Clarkson, "The measurement of Investment Risk", presented to the Faculty of Actuaries in the United Kingdom, February 20, 1989. Clarkson shows in a theoretical example of two investments A and B with symmetrical distributions, where every "reasonable" investor would prefer A to B regardless of the fact that investment A has four times the variance of investment B: "Suppose, for example, that we have two shares A and B, where the returns to a particular future date depend on certain scenarios, X_1, X_2,…X_n. For each scenario X_i, the return on share A (which is always positive) is twice the return on share B. Since the return on share A is always greater than the return on share B, any reasonable investor will regard share A as 'less risky' than share B regardless of the respective variances of return."

[5] Even though the volatility concept on risk may be inaccurate and misleading due to the positive skewness of the returns of the equally weighted S&P Index, we show the results to allow interested readers to analyze the returns according to modern portfolio theory. Yet we do not represent that the application of the volatility concept to risk measurement is justified under the given circumstances.

[6] Finland and New Zealand were not included since they did not enter the MSCI World Index until 1988.

[7] The size of the national markets included in the MSCI World Index as a percentage of the MSCI World Index is published in the monthly editions of Morgan Stanley Capital International (MSCI) Perspective, New York. Our research starts at the end of 1975, since data on market size prior to that date was not available to us.

[8] For other negative risk-return relationships see Robert A. Haugen, "The Link Between Growth/Value and Risk/Return," presented at the 6th Annual Asset Allocation Congress, sponsored by the Institute for International Research on February 25, 1992, in Palm Beach, Florida, and Michael A. Keppler, "Further Evidence on the Predictability of International Equity Returns." *Journal of Portfolio Management,* Fall 1991.

[9] Since dividend yield and withholding taxes for the various size portfolios are similar, the return differences for the various strategies are not significantly affected by withholding rates.

[10] Swaps are agreements typically offered by brokers to pay and equity market return to an investor in return for the LIBOR rate or some other debt market rate. Thus, the investor "swaps" a return he or she is earning on a fixed-income investment for an equity return without having to invest directly in a large number of equities.

[11] Ennis, Knupp & Associates: 1992 Survey of Non-U.S. Stock market Suitability, Chicago 1992.