Is International Diversification Still Profitable After the Crash?

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Did the stock market crash hit foreign stocks as hard as it did U.S. stocks? Would it have helped investors in the United States to have diversified abroad before the crash? And since the crash, have internationally diversified portfolios outperformed the U.S. stock market? These questions have been featured prominently in the financial press since October 1987, and investors rightly have questioned whether the worldwide downturn in share prices has cast doubt on the conventional wisdom that all investors should hold some securities outside their home country virtually all of the time. In short, was international diversification a concept that was oversold, or was it really beneficial? And how well has international diversification worked since October, 1987?

Using monthly return data for all world stock markets that are tracked by Morgan Stanley International, we will look at what happened in these markets versus the U.S. markets from January 1987 to the end of March 1988. We also look at how well internationally diversified portfolios performed during selected periods. To highlight the contrast, we compare the performance of a World portfolio, a Japanese portfolio, and a U.S. portfolio for selected time periods, including;

---- Jan.1, 1987 -- Sept. 30, 1987;

----- Jan. 1, 1987 -- Dec. 31, 1987;

----- Oct. 1, 1987 -- Oct. 30, 1987

----- Nov. 1, 1987 -- March 31, 1988.

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To compare performance correctly, it is not sufficient to compare rates of return, without also taking risk into account. This is easy to see in a single - country example: it would not be correct to compare the yield on U.S. Treasury bonds to the yield on junk bonds, without making an adjustment for risk. In comparing returns of internationally diversified portfolios with U.S. portfolios, the accepted way of adjusting for risk is to compute whether the value of one portfolio fluctuated more than the value of the other. The portfolio whose market value fluctuates less is less risky.

Usually the less risky portfolio earns a lower return. The market value of a portfolio of U.S. Treasury bills, for example, will fluctuate very little compared to a portfolio of long-term U.S. corporate bonds. In the long run the portfolio of corporate bonds will earn a higher yield than the portfolio of Treasury bills; but if the holder has to sell on short notice, when the corporate bond market is weak, it will be clear that long-term corporate bonds are riskier than Treasury bills. The higher yield compensates for the greater risk.

It can happen, however, that the less risky portfolio yields a higher return. For several years internationally diversified stock and bond portfolios have yielded higher holding period rates of return for the same risk. For the time period January 1984 to March 1988 the World Stock portfolio returned 180 percent with a Beta of 1.00. During the same time period, the S+P 500 yielded 80 percent, with a Beta of 1.00. How can this be the case?

First, international diversification reduces risk, by reducing the fluctuation in the value of the portfolio. To see why, consider that not all economies are in the same cycle of recession and recovery, so the rise and fall of corporate profits in different countries is not synchronized. If a portfolio contains stocks from several countries, it is probable that several of the countries will be enjoying prosperity, while others will be in periods of retrenchment. This means the portfolio will have a few winners to offset poor performers. The portfolio will have bad periods, but these are likely to be fewer and shorter than if the portfolio only had stocks from a single company.

Another reason why international diversification reduces risk is that currencies rise and fall in value. A portfolio that is tied to a single currency will experience fluctuations associated with the value of the currency itself, instead of the value of the companies represented in the portfolio. In contrast, a portfolio that is denominated in several currencies will usually not be buffeted by fluctuations in the value of any one currency. Since February 1985, the U.S. dollar index has declined 30 percent versus the major foreign currencies.

Why would an internationally diversified portfolio yield more than a U.S.-only portfolio? First, capital is not equally scarce in all countries. In countries where it is relatively scarce it commands a higher return. Second, not all countries

have open capital markets, that permit outsiders to buy. If a capital market is closed, outsiders are not able to bid up prices to levels that reflect internationally competitive rates of return. The trend in the Eighties has been toward opening capital markets that previously were inacessible, and streamlining trading procedures, so that foreign stock and bond markets have moved up in response to the influx of buying from abroad.

Besides these reasons for higher returns, foreign markets may offer opportunities for stock or bond selection. If markets are efficient, all securities should be on the efficient frontier -- that is, they should be fairly priced vis-a-vis each other. There should be no overvalued or undervalued securities. In that case, investors should achieve diversification via index funds. Since the return on equity required for risk compensation and the growth of individual firms is independent among countries, price changes should be independent and the covariance between returns for securities in different countries should be much lower than the covariance of returns for securities within a country. One study has shown, however, that mispricing occurs in foreign markets more frequently than it does in the U. S., so stock selection (in the cited study) makes it possible to double or triple the returns of a passive index approach for the same level of risk. The evidence reported here is based strictly on country and world indexes, not on individual stocks or bonds, and so it implicitly assumes that all securities markets are efficient.

Past Research

Since 1968 a number of studies have examined the effect of international diversification empirically and attempted to anwser questions regarding the real benefits of such diversification. Herbert Grubel, in one of the first such studies, showed the benefits of international diversification by analyzing monthly rates of return for 11 major countries during the period 1959-1966. His results clearly showed that diversification among the assets from the 11 countries permitted investors to attain higher rates of return or lower variance than would be attained with a portfolio of only U.S. stocks. During this period Japan had the highest rate of return, but also one of the largest standard deviations. This index also had a very low correlation with the U.S. index (.1149), indicating that securities from Japan would be a good addition to a portfolio composed of U.S. securities. In 1971 Grubel and Fadner studied the benefits of international diversification further. Their results indicated that diversification between countries was much more effective, and that the correlations were influenced by the proportion of import and export trade between countries. The more two countries traded the higher the correlation between their securities and the less effective the diversification.

A second method of looking at the effect of international diversification on portfolio risk is to examine the location of the efficient frontier when such diversification takes place in comparison to its location when only domestic diversification takes place. Early research in this area was conducted by Haim Levy and Marshall Sarnat in 1970. These authors examined annual rates of return, converted to U.S. dollars, for national stock market indices of 28 countries for the period 1951-1967. They found a wide range of returns and standard deviations for alternative countries, and when they derived efficient frontiers from different groups of countries they found the best frontier was derived with all 28 countries included.

Donald Lessard examined rates of return for four Latin American countries during the period 1958 to 1968. The countries were Colombia, Chile, Argentina, and Brazil. An analysis of returns indicated that stocks within a country with an undeveloped capital market have a large common component - they are highly correlated. In contrast, the market component for each country was generally independent of the market component for other countries, which implies large gains from international diversification. Note that this implies that investors in any one of these countries would benefit from diversifying among all four countries, though they are all in a single geographical region. The benefits of diversification would be even greater for a U.S. investor diversifying across these four countries, because the correlation between rates of return in the U.S. rates of return in any of these developing countries would be very low.

These studies on international diversification were conducted using data from a time period when exchange rates were fixed. In today's world of floating rates, the environment for international investing has changed, so the cited statistical evidence in favor of international diversification may no longer be applicable. However, if exchange rate changes are random and independent of each other, and if the investor has invested in securities from several countries, then the incremental risk added by exchange rate volatility will have been diversified away; and the gains from international diversification will be as large as they were in the earlier period. Alternatively, if the correlation coefficients of returns of national stock market indices are stationary, then they can be estimated and used in diversifying internationally. Philippatos, Christofi, and Christofi argued in 1983 that, for investment horizons of two or more years, these intercountry correlation coefficients are stationary - even when comparing periods of different exchange rate regimes. Thus the advent of floating exchange rates alters the results of previous studies, but does not change the conclusion: regardless of the exchange rate regime, it appears that investors can benefit from international diversification.

A Morgan Guaranty Trust Company study contains data for some major countries during the period 1969-1978, which spans the time when fixed exchange rates were allowed to float. The results

show that the rates of return from foreign securities were often higher than those from U.S. portfolios. At the same time, the standard deviation of the U.S. portfolio was consistently lowest. Because of the relatively low correlations, the impact of diversification on a world portfolio is quite positive. The world index provided not only a higher rate of return but also a lower level of risk. Table 1 illustrates these results.

It is interesting to view the differences in rates of return and standard deviations of returns for the U.S. and World indices before and after the advent of floating exchange rates. The risk of the U.S. index increased by more than that of the World index, but the return of the World index declined. To compare these indices fairly, the coefficient of variation must by calculated for each index before and after floating rates became the rule. Table 2 shows the Morgan Guaranty data along with the addition of the appropriate coefficient of variation.

Table 1

Rates of Return, Standard Deviations, and Correlation Coefficients for Foreign Countries and the S&P 500: 1969-1978

Country	Rates of Return	Standard Deviation of Rates of Return	Correlation Coefficient with U.S.
France	2.5	24.8	.37
Germany	11.8	19.1	.30
Japan	18.1	25.0	.28
Switzerland	11.1	22.5	.45
United Kingdom	0.7	32.0	.44
United States	2.1	16.9	--

Table 2

Differential Return and Risk From Domestic Versus World Portfolios

	1969-1973	1974-1978
Rates of Return		
U.S. Index	3.34	3.56
World Index	6.40	5.14
Standard Deviation of Return		
U.S. Index	13.90	17.60
World Index	13.40	14.90
Coefficient of Variation		
U.S. Index	4.16	4.94
World Index	2.09	2.91

The coefficients of variation show that the risk increased for both the U.S. and the World indices after floating rates were instituted by the U.S. government. However, the World portfolio was still less risky per unit of return than the U.S. index.

In 1985 Cheol Eun and Bruce Resnick examined international portfolio diversification in the context of floating exchange rates using data for fifteen currencies from the period 1973-1982. They determined the composition of the optimal international portfolio of each national investor and estimated the potential gains for each such investor. They found that national stock markets display rather disparate risk and return characteristics regardless of the currency used. The risk and return composition of a stock market can be drastically altered by the currency it is valued in. The standard deviations as well as betas of national stock markets almost always increase when they are measured in any currency other than their own. Further, for the five major currencies examined, currency fluctuations exerted a negative influence on the performance results of national stock markets for investors domiciled outside the country which housed the stock market in question. Finally the potential gains from international diversification appear to be substantial for most national investors with the exception of the Dutch and the Swedish investors. It should be noted that U.S. investors were able to earn some of the highest gains from diversification. In conclusion the study showed that while flexible exchange rates diminished the advantage of international diversification, the potential gains are still substantial over investing only domestically.

Computation Procedure

For each portfolio and time period, we compute average returns for the holding period. That is, we assume the investor bought the portfolio on the starting date, and held it to the ending date. All dividends and interest payments made in each country are reinvested in that country's index.

To measure risk, for each time period we compute correlation matrices for the indexes. These show what the correlation was between each index. For example, the correlation between the Japan stock market and the U.S. stock market is computed; so is the correlation between the World and the U.S. stock market; and so is the correlation between the Japan stock market and the World stock market. These correlations show how closely the various markets tracked each other during each period. If two markets follow each other precisely, the correlation between them is 1.00, and there would be no advantage to investing in both of them; they would be perfect substitutes. Correlations less than 1.00 indicate there would have been some advantage in diversifying internationally, from the standpoint of risk reduction.

Results

For the first three quarters of 1987, international diversification paid off handsomely. Table 3 illustrates that the World portfolio outperformed the U.S. portfolio during this period.

Table 3

Portfolio Performance
Holding Period Rates of Return

Time Period	U.S.	WORLD	JAPAN
1/1 - 9/30/87	34.35%	38.23%	46.97%
1/1 - 12/31/87	3.72%	16.59%	43.44%
10/1 - 10/30/87	-21.12%	-17.18%	-7.45%
11/1 - 3/31/88	2.87%	13.77%	28.49%

For the time period around the crash, international diversification also paid off. The World portfolio declined 17.2 percent while the U.S. portfolio declined 21.2 percent. The Japanese portfolio declined 7.5 percent.

For the period following the crash, Nov. 1, 1987 -- March 31, 1988, international diversification also paid off as the World portfolio yielded a 13.77 percent holding period return while the U.S. portfolio yielded only a 2.87 percent holding period return. The Japanese market did even better than the World portfolio by yielding a 28.49 percent return.

The correlation coefficients also show that international diversification was consistently advantageous, including the months surrounding October 1987.

Table 4

Correlation Coefficients
Moving Averages (%)

Time Period	U.S./World	U.S./Japan	World/Japan
Jan 84-Dec 86	77	17	69
Feb 84-Jan 87	81	27	73
Mar 84-Feb 87	80	25	72
Apr 84-Mar 87	80	27	74
May 84-Apr 87	77	22	74
Jun 84-May 87	75	13	69
Jul 84-Jun 87	73	9	69
Aug 84-Jul 87	72	4	66
Sep 84-Aug 87	69	2	67
Oct 84-Sep 87	70	5	68
Nov 84-Oct 87	84	22	67
Dec 84-Nov 87	84	21	65
Jan 85-Dec 87	84	20	65
Feb 85-Jan 88	84	23	67
Mar 85-Feb 88	84	23	67
Apr 85-Mar 88	83	22	67

Note that correlation coefficients were falling during the first three quarters of 1987. This shows that the fluctuations of the different markets were not tracking each other in terms of direction or magnitude during that time period. Then, in October 1987, the correlation coefficients rose. This rise happened because all the markets declined, though to different degrees. Then, in the months following October 1987, the correlations start to fall, as the individual markets resumed their prior pattern of unrelated fluctuations.

Summary and Conclusions

The October 1987 stock market crash affected stock markets around the world, so international diversification did not provide complete protection. It provided, even during the weeks surrounding the crash, what it has provided in prior periods since 1960 or earlier: higher returns and less fluctuation in market value of portfolios, as compared to the U.S.-only portfolio.

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