International Portfolio Diversification

A Review

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I. Introduction

The effects of diversification on portfolio efficiency have been examined extensively over the past three decades since the seminal work of Markowitz.(1) Diversification among different securities whose returns are not perfectly correlated achieves a reduction in the risk of investment. However, there is a limitation in reducing the total risk of a domestic portfolio. A portion of the total risk still remains as systematic risk, which cannot be diversified away by domestic diversification. When diversification is extended across national boundaries, however, a substantial portion of the risk that is systematic within each country can be averaged out. The reason for this additional diversification is that returns on market portfolios of various countries display considerable independence. Empirically, Joy, Panton, Reilly and Martin(2) and Ibbotson, Carr and Robinson(3) find that the U.S. stock market index exhibits low correlations with those of other countries. These low correlations exist because business cycles are not synchronized perfectly and governments have different abilities to deal with economic instability.

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(1) H.M. Markowitz, "Portfolio Selection," *Journal of Finance*, (March 1952), p.77~91.

(2) M. Joy, D. Panton, F. Reilly and S. Martin, "Co-Movements of International Equity Markets," *The Financial Review*, (1976), p.1~10.

(3) R.G. Ibbotson, R.C. Carr and R.W. Robinson, "International Equity and Bond Returns," *Financial Analysts Journal*, (July/August 1982), p.62~84.

Thus, international diversification may allow an investor to reduce more risk, thereby to realize better investment performance than domestic diversification can do.

The purpose of this paper is to examine both positive effects of international diversification on the performance of portfolio investment. The next section provides a brief review of the literature on theoretical aspects of international diversification. Section III presents a review of the empirical evidence on further risk reduction possibilities through international diverification. Some impediments to international diversification and additional risks involved in international diversification are discussd in Section IV. The summary and conclusions are found in Section V.

II. Benefits from International Diversification

(A) An Ex Ante Approach

Although there has not been a conclusive study on international capital market structure, most earlier studies are based on the segmented international capital market structure approach. This approach treats different national capital markets as separated units that are not closely related to one another. In such a market, most investors usually limit investment to a domestic subset of the whole space of international asset claims. In contrast, when the whole opportunity set of investments is available to every investor, capital markets are integrated internationally. To see the consequence of international diversification, assume that some barriers to international diversification that have existed among nationally segmented markets are eliminated. In this context, Cohn and Pringle[4] argue that first, the systematic risk of each security in domestic return-risk space will decline as the domestic market portfolio is augmented with less correlated foreign securites. Second, for two classes of utility functions, logarithmic and exponential, the slope of the Capital Market Line (CML) also declines. To those investors with either of such utility functions,[5] the above two effects tend to reduce the required rate of return and thus increase the price of an individual security. The reduction in the

(4) R.H. Cohn and J.J. Pringle, "Imperfections in International Financial Markets: Implications for Risk Premia and the Cost of Capital to Firms," *Journal of Finance*, (September 1973), p.59~66.

(5) The logarithmic utility function displays the desirable properties of decreasing absolute risk aversion and constant relative risk aversion, while the exponential utility function displays constant absolute risk aversion and constant relative risk aversion.

systematic risk results from the fact that in the new perfectly integrated market, the correlation of returns on each single risky asset with returns on the newly augmented market portfolio is likely to be lower than that with returns on the old market portfolio due to the addition of less-correlated foreign securities to the old market portfolio. This downward adjustment in ex ante risk-premia causes a corresponding upward adjustment in the prices of risky assets and thus results in windfall gains to current holders of risky assets.

In order to examine the second effect, all investors are assumed to have the logarithmic or the exponential utililty function. For these investors, the expected rate of return on a risky asset can be expressed as:

$$E(R_i) = R_f + \frac{\sigma_w}{\bar{w}} \rho_{iw} \cdot \sigma_i \qquad (1)$$

Where $E(R_i)$ is the expected rate of return on the ith security

R_f is the risk-free rate of return

σ_w is the standard deviation of w, end-of-period wealth for all investors

$\bar{w}$ is the aggregated expected end-of-period wealth for all investors

σ_i is the standard deviation of the rate of return on ith security

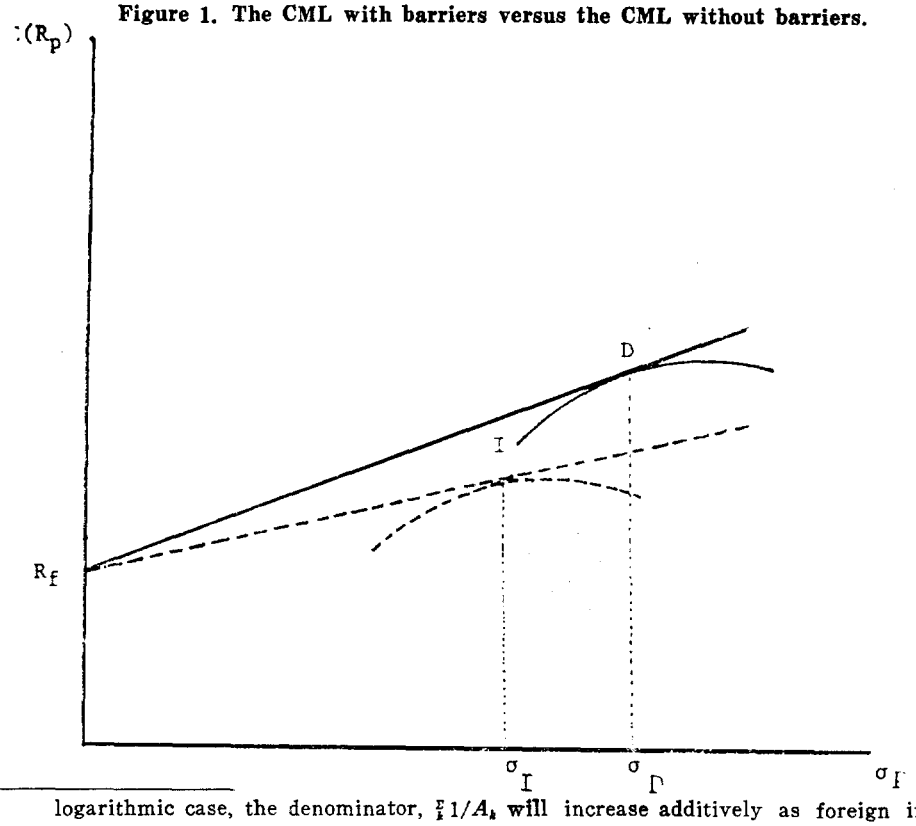
ρ_{iw} is the coefficient of correlation between the total end-of-period dollar return on the ith security and $\bar{w}$.

In this context, $\sigma_w/\bar{w}$ is equivalent to $[E(R_m)-R_f]/\sigma_m$ in the Capital Asset Pricing Model (CAMP), where R_m and σ_m are the rate of return on the market portfolio, and the standard deviation of R_m respectively. Since $[E(R_m)-R_f]/\sigma_m$ represents the slope of the CML, $\sigma_w/\bar{w}$ can also be regarded as the slope of the CML. After restrictions have been lifted, $\bar{w}$, the denominator of $\sigma_w/\bar{w}$ will increase additively as the investment oppor tunity set is expanded to include new foreign securities. On the other hand, the numerator, σ_w, will grow less than additively due to less than perfect correlations among returns on securities in different countries. Hence the new internationally determined $\sigma_w/\bar{w}$ will be lower than the old domestically established ratio. Consequently, for any country, the slope of the CML will decline. For investors with the exponential utility function, a similar result can be derived.(6)

(6) For an investor with the exponential utility function, the slope of the CML is given by $\sigma_w/\sum_k(1/A_k)$ where A_k is investor k's Pratt-Arrow risk aversion coefficient. Like the

From an ex ante viewpoint, the above two effects can be explained graphically in mean-standard deviation space. The curved line in Figure 1 represents the efficient set of portfolios. When lending and borrowing are allowed at the risk-free rate and short sales are permitted, the tangent line to the curved line will dominate all other opportunities. This line is called as the "Capital Market Line" and is a linear relationship between the rate of return and the total risk of a portfolio. For a typical country, the total risk of the newly created international market portfolio, σ_I is less than that of the old domestic portfolio, σ_D. Thus, under the assumption of an unchanged risk-free rate, R_f, the slope of the demestic CML declines to the dotted line in Figure 1. For most countries, the new market portfolio, I, lies below the old domestic market portfolio, D.

Figure 1. The CML with barriers versus the CML without barriers.



logarithmic case, the denominator, $\sum_k 1/A_k$ will increase additively as foreign investors join while the numerator, σ_M, will grow less than additively. Note that the coefficients of absolute risk aversion are assumed to be the same across countries. For the derivation of equation (1) and the slope of the CML with the exponential utility function, see Cohn and Pringle, p.61~84 and R.H. Litzenberger and A.P. Budd, "A Note on Geometric Mean Portfolio Selection and the Market Prices of Equities," *Journal of Financial and Quantitative Analysis*, (December 1971), p.1277~1282.

In the perfectly integrated capital market, a common risk-free rate is determined after arbitrage processes. We will examine the effects of lifting restrictions on some exogeneous variables that determine the risk-free rate. In time-state preference theory, the concept of a risk-free rate is associated with the value of a unit riskless claim on future income. A risk-free asset claim is defined as a particular security composed of elementary time-state claims. The price of this security, Φ_f, which has $\mathbf{C}_f=(1,1,1,\cdots)$ must be $\Phi_f=\Phi_{1a}+\Phi_{1b}+\Phi_{1c}+\cdots$since it guarantees certain future consumption units. Here Φ_{1a}, Φ_{1b}, $_{1c}\cdots$are the prices of elementary time-state claims that pay $1 only when state, $a,b,c,\ldots$occurs, respectively. So, a risk-free rate can be written as:

$$\Phi_f=\frac{1}{1+R_f}=\frac{1}{1+R_{1a}}+\frac{1}{1+R_{1b}}+\frac{1}{1+R_{1c}}\cdots=\Phi_{1a}+\Phi_{1b}+\Phi_{1c}+\cdots$$

where, R_{1a}, R_{1b}, $R_{1c}\cdots$are time-state discount rates that reduce time-state claims to present certain consumption. Under the assumption of state and time independent utility functions, the prices of elementary time-state claims are given by;

$$\Phi_{1i}=\frac{\pi_i v_{1i}'}{v_0'(1+\zeta)} \quad \text{for } i=a,b,c\cdots \tag{2}$$

where π_i is the probability of occurence of state i, v_{1i}' is the derivative of the cardinal utility function of consumption endowments when state i occurs, v_0' is that of present consumption endowments and ζ is a constant discount rate for future utiity. So,the risk-free rate depends lon changes in present and future consumption endowments that distribute among individuals over times and states. Furthermore, the risk-free rate relies on changes in the elementary utility functions v_{1i} v_{0i} and the probability beliefs, π_i. In this context, the effects of lifting restrictions on these variables are examined. As mentioned earlier, since the expected rate of return on any security will decline, investors are expected to be wealthier than before. If investors sell securitise and put the proceeds into risk-free asset, their future consumption endowments will increase for any state. Since investors are assumed to have either of the constant relative risk averson utility functions, there will be no change in the marginal elementary utility functions. Thus, investors will have the same preferences toward poorly-endowed states and well-endowed states as they did before restrictions were lifted. Also, the lifting of restrictions is not expected to have a significant impact on the subjective probability of the occurrence of any state. In conclusion, the overall effects on the risk-free rate come through increased

future consumption endowments. Hirshleifer[7] notes that a proportionate combined increase in future consumption endowment would reduce the prices of future elementary time-state claims and consequently lead to increase in the risk-free rate. The increase in the risk-free rate decreases the slope of the CML further and thus aggravates the effects of reducing expected rates of return.

This argument, however, is based on the assumption that the coefficient of correlation between a foreign market portfolio and the domestic market portfolio, ρ_{fd}, is less than one. Subrahmannyam[8] points out that without such an assumption there are two effects of international diversification. One is a change in wealth due to changes in macro-parameters of the risk-return pricing relationship. The other is an enlargement of the investment opportunity set. These two effects will determine changes in the welfare of an investor. According to Subrahmanyam's model, it is possible that the investor's wealth declines together with a reduction in the slope of the CML. Therefore, without knowing the utility functions of investors in different countries and the variance-covarince structure of returns in the integrated capital market, changes in the welfare of investors are indeterminate. However, for quadratic, exponential and logarithmic utility functions and for the case of a two market merger, 「Subrahmanyam shows that the integrated capital market is pareto optimal-the welfare of investors in each country will improve while none will suffer losses.」 In the worst case of perfectly positive correlation, investors will be no better off since the effects of losses in wealth nullify the effects of an enlarged opportunity set.

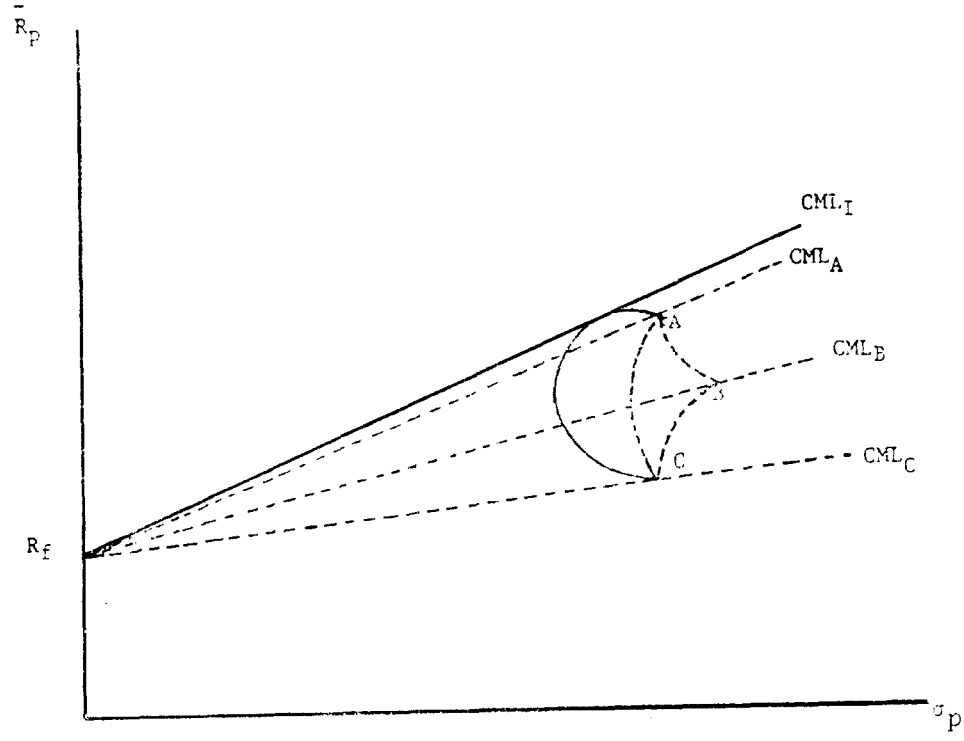
(B) An Ex Post Approach

From an ex post viewpoint, international diversification shifts the ex post efficient frontier upwardly and to the left. Thus, investors holding a world market portfolio together with the risk-free asset can achieve either the same average realized return with less standard deviation of return or a higher average realized return with the same standard deviation of return than would be attained from the domestic CML. Figure 2 shows that the new ex post CML_I dominates the domestic CMLs of countries A, B, and C.

(7) J. Hirshleifer, *Investment, Interest and Capital* (New Jersey: Prentice-Hall, 1970).
(8) M.G. Subramanyam, "On the Optimality of International Capital Market Integration," *Journal of Financial Economics*, (March 1975), p.3~28.

However, the magnitude of gains from international diversification depends on the degree of segmentation in international capital markets. In the context of the perfectly integrated market, the expected rate of return on a riskies securities is related to its risk, where the risk is determined by its sensitivity to a world market portfolio. Therefore, investors holding only domestic securities would be subjecting themselves to higher risk without corresponding return simply because they are bearing diversifiable risk. Thus, international diversification provides a pure diversification service to domestic-oriented investors. On the other hand, in the context of perfectly segmented markets in which the expected rate of return on a riskyasset is determined to its own domestic market, investors can eliminate part of the risk inherent in the domestic market without sacrificng return, assuming returns on oreign securities are the same as those on domestic securities. In addition to the pure diversification benefits, international diversification would eliminate a portion of domestic systematic risk. In conclusion, there appears to be benefits from international diversification whether markets are fully integrated or perfectly segmented, and the gains are greater if markets are fully segmented.

Figure 2. The EX post international CML versus the domestic CMLs



III. Empirical Studies on Benefits from International Portfolio Investments

From the viewpoint of the segmented market pricing approach, Grubel[9] forms hypothetical international portfolios using returns on 11 national stock market indices and shows the outperformance of these portfolios over a domestic portfolio. Levy and Sarnat[10] employ historical return data from 28 national stock market indices to derive efficient frontiers from different groups of the national indices in an attempt to show the ex post benefits from international diversification; the efficient frontier with all the national indices dominates any other efficient frontiers.

A direct way to analyze the benefits from international deversification is to compare the risk of portfolios of different size or holding period selected from an international group of stocks with the risk of equivalent portfolios selected from a domestic group of stocks. Solnik[11] examines risk reduction possibilities through international diversification considering the number of securities in a portfolio. He finds that regardless of the number of securities in a portolio, diversification across countries produces a less risky portfolio than domestic diversification. For example, the risk of an internationally diversified portfolio (with 20 stocks) is 11.7% of the risk on a typical stock while the risk of a domestically diversified portfolio (with 20 stocks) is 27% of the risk of the typical stock. Grubel and Fadner[12] hypothesize that correlation between returns is an increasing function of the length of time over which stocks are held. They compare average correlation coefficients among domestic securities with those of the combinations of domestic and foreign securities for different holding periods. Their findings show that the absolute level of correlations between domestic and foreign securities is smaller than the level of those among domestic securities for different holding periods.

(9) H.G. Grubel, "Internationally Diversified Portfolios: Welfare Gains and Capital Flows," *American Economic Review*, (December 1968), p.1299~1314.

(10) H. Levy and M. Sarnet, "International Diversification of Investment Portfolios," *American Economic Review*, (September 1970), p.668~675.

(11) B. Solnik, "Why Not Diversify Internationally," *Financial Analysts Journal*, (July/August 1974), p.48~54.

(12) H.G. Grubel and K. Fadner, "The Interdependence of International Equity Markets," *Journal of Finance*, (March 1971), p.89~94.

Instead of employing stock market indices, Lessard[13] performs a factor analysis to find principal components of four South American countries' stocks (Columbia, Chile, Argentina and Brazil). Correlations among those countries are calculated based on principal components that serve as proxies for returns on the national market portfolios. Even though several significantly positive correlations are found in three different time periods, no systematic pattern of positive correlations is found over different time periods. Furthermore, by applying the varimax rotation technique to the covariance matrix of returns on all securities of the four countries, Lessard obtains eight factors wihich are independent of one another. Then he selects the factor with the largest explanatory power in accounting for the variance of returns on stocks for each country. This factor serves as another proxy for returns on the market portfolio. There is no significant difference in the explanatory power between principal components that may be correlated with one another and selected factors which are designed to be independent of one another. These findings indicate that the market factors of the four countries are significantly independent of one another. Ripley[14] finds that more than half of the stock market index in each of 14 countries is not explained by four common factors that are obtained from the pooled covariance matrix of all national market indices. This finding also implies that a substantial portion of the movement of the market index is unique to each country. Robichek, Cohnand Pringle[15] include bond market indices and reach the same conclusion that there has been a substantial degree of independence among various national equity and bond markets. Finally, Lessard[16] employs a factor analysis to calculate the principal component of the covariance matrix of 16 developed countries' market indices. The principal component serves as a proxy for a world market index. He hypothesizes that the advantages of international diversification depend on the relative contribution of a world factor and a domestic factor to the variance of security returns in a specific country. Since Lessard finds a strong domestic factor but an insignificant world common factor in explaining the

(13) D.R. Lessard, "International Portfolio Diversification: A Multivariate Analysis for a Group of Latin American Countries," *Journal of Finance*, (June 1973), p.619~633.

(14) D. Ripley, "Systematic Elements in the Linkage of National Stock Market Indices," *Review of Economics and Statistics*, (August 1973), p.356~361.

(15) A.A. Robichek, R.A. Cohn and J.J. Pringle, "Returns on Alternative Investment Media and Implications for Portfolio Construction," *Journal of Business*, (July, 1972), p.427~443.

(16) D.R. Lessard, "World, National and Industry Factors in Equity Returns," *Journal of Finance*, (May 1974), p.379~391.

variance of returns on national portfolios, he can argue that there are potential benefits from international diversification.

To determine gains from international diversification, the tests discussed previously use ex post international portfolios which represent efficient combinations of risk and return with a given knowledge of the performance of individual stocks. In a strict sense, those studies are not tests for gains from international diversification. Lessard[17] points out that the performance of international portfolios selected on an ex post basis would at least equal that of domestic portfolios but it cannot be repeated by investors without perfect foresight. McDonald[18] also warns that the ex post dominance of international porfolios must be interpreted with caution because the ex post performance of international portfolios is the best performance ever possible.

Lessard[19] performs an ex ante test by comparing the performance of equal weighted portfolios of 30 stocks from each of the four South American countries with that of mean-variance efficient combinations of these native portfolies. In this study, the expectations for ex ante selection are derived from the outcomes from 1958 to 1963 while the performance of the portfolios is measured over the time period of 1963 to 1968. His findings show that the performance of the ex ante efficient international portfolio dominates all the native country portfolios except for Brazil's portfolio in terms of mean and standard deviation of returns.

Even though all the empirical studies support potential benefits from international diversification, these studies are subject to some criticisms. First, Agmon[20] argues that an appropriate measure for benefits from international diversification should consider the marginal contribution of foreign assets to a reduction in the total risk of one's domestic portfolio. Second, since these studies do not include additional risks and costs uniquely incurred in international diversification, the benefits may be overestimated. These problems can be avoided by evaluating the performance of international mutual funds.

McDonald[21] examines eight French mutual funds from April, 1964 to November,

(17) Lessard, "International Portfolio Diversification," p.619~633.
(18) J.G. McDonald, "French Mutual Fund Performance: Evaluation of Internationally-Diversified Portfolios," *Journal of Finance*, (December 1973), p.1161~1180.
(19) Lessard, "International Portfolio Diversification," p.619~633.
(20) T. Agmon, "The Relations Among Equity Markets: A Study of Share Price Co-movements in the United States, United Kingdon, Germany and Japan," *Journal of Finance*, (September 1972), p.839~855.
(21) McDonald, p.1161~1180.

1969 and finds that the international mutual funds appear to yield superior risk-adjusted returns. The ranking of the funds by performance roughly parallels the degree of international diversification. Unforunately, however, McDonald also shows that the top ranking international-oriented mutual fund also makes the top ranking in selecting undervalued French stocks. Thus, it is still uncertain whether the best mutual fund benefited from international diversification or from its selection of undervalued French stocks. Guy[22] examines the effect of foreign investment on the performance of a sample of 50 British investment trusts from 1960 to 1970 and finds that the level of international diversification has insignificantly positive impacts on the performance of the trusts: "there was no evidence to conclude that the international trusts significantly outperformed the domestic ones" (p. 20). However, Guy does not conclude that international diversification cannot be beneficial. Instead, he attributes the insignificant benefits to possible suboptimality in diversification of the trusts from 1960 to 1970.[23] "It remains to be seen whether an optimally diversified trust would have shown superior performance" (p. 20).

Based on the above empirical evidence, international diversification appears to provide risk reduction benefits before accounting for additional costs and risks. However, theoretical puzzles regarding the benefits from international deiversification advocated by the above studies are indicated by Adler and Dumas.[24] They argue that in segmented capital markets it is very difficult to measure the risk reduction benefits realized by investors in different nations because those investors who have different purchasing power units may differ in the concept of an efficient portfolio. Since the efficient portfolio is a benchmark for measuring diversiable risk, such different concepts of the efficient portfolio may result in different risk reduction benefits from international diversification. Conclusively, either the availability or the degree of the risk reduction benefits depends upon whether a risky asset is priced integratedly or segmentally; no further risk reduction beyond that realized by purely domestic diversification is expected under an integrated pricing mechanism while a substantial amount of additional risk reduction

(22) J.R.F. Guy, "The Effect of International Diversification on the Historical Performance of British Mutual Funds," Unpublished working paper No. 36, University of California, Berkeley, (1975).

(23) For most funds in his sample, the percentage of the portfolio invested in the U.K. market is more than 50% during 1968~1970.

(24) M. Adler and B. Dumas, "International Portfolio Choice and Corporation Finance: A Synthesis," *Journal of Finance*, (June 1983), p. 925~984.

is expected under a segmented pricing mechanism. Even under the segmented pricing mechanism, however, it is not easy to measure the extent to which risk reduction can be realized by investors in different nations until one can use an international pricing mechanism (e.g., International CAMPs) which can be applied to all investors. Furthermore, even for U.S. investors, it remains inconclusive whether the potential gains are still realized after allowing for additional costs and restrictions. In fact, due to some official restrictions and the underdeveloped states of foreign capital market, U.S. investors do not have ready access to foress to foreign capital markets. The following section will survey major restrictions and additional costs.

IV. Barriers to International Portfolio Investment

Since the second world war, there has been a rapid expansion of international capital movement in the form of foreign direct investment. However, many barriers to international portfolio investment as well as additional risks tend to prevent investors from diversifying across countries. In this section, several ways of purchasing foreign securities are surveyed and major barriers to international portfolio investment are discussed.

(A) Means of Foreign Security Investment

Although the principal market for individual foreign securities is generally in their home countries, a small number of foreign firms has listed their securities on the New York Stock Exchange (NYSE) or the American Stock Exchange (AMEX).[25] A number of foreign securities that are not listed is traded over-the-counter.[26] Investment in these shares is mostly carried out by purchasing an American Depository Receipt(ADR). This is a certificate of ownership issued by a U.S. bank on its own initiative, which represents the underlying foreign shares the bank holds in custody. U.S. investors can buy American shares that are security certificates issued in the U.S. by a distri buting agent operating on behalf of a foreign issuer. Also, several open-end and closed-end investment funds are available that invest primarily in foreign securities.[27] Inves-

(25) For example, British Petroleum and Sony Corporation trade on the NYSE while Dunlop, Matsushida Electric, Unilever and Royal Dutch Petroleum trade on the AMEX.

(26) For example, Toyota Motors trades over the counter.

(27) For example, for mutual funds, there are Canadian Fund, International Investors, Scudder International Investments and Templeton Growth. There are also several close-end investment funds such as ASA Limited, Japan Fund and U.S. & Foreign Securities. Source: Investment Companies (New York: Wiesenberger Services. Inc., 1982).

tment in ADRs require some expertise and additional considerations. For example, accounting procedures vary from country to country and the role of the foreign government in its economy may be different from that in the U.S. economy. Furthermore, many financial ratios may have different implications when applied to a foreign firm and the capital structure of a foreign firm my have a different industry standard.[28] Other problems are the lack of liquidity and higher transaction costs. A problem associated with investment through investment firms is that their portfolios may not be well diversified.[29] From an investor's point of view, one of these funds cannot provide sufficient diversification and still must be viewed as essentially a one-security input to his portfolio. Finally, a U.S. investor can purchase securities listed on a foreign stock exchange directly. However, a number of potential problems is involved in the direct acquisition of foreign securities.

(B) Major Problems in Direct Purchase

1. Restrictions on Domestic Security Transactions by Foreign Investors

These restrictions may not allow foreign investors to have access to the domestic capital market. In order to protect the ownership of domestic firms and monetary policy, many countries do not open their capital markets to foreign investors without some restrictions. These restrictions may involve long-term or short-term securities, listed or unlisted.[30] For example, in Ecuador, the acquiring of shares in a national firm by foreign investors is not allowed. The Swedish securities markets are virtually closed to foreign investors. The right of foreigners to own shares of Finnish companies is restricted to 20% of the capital, unless permission to own a higher percentage is given by the Ministry of Trade and Industry. In Mexico, shares of some companies (Mexican Airline, Mexicana and the industrial holding companies such as ALFA, DESC and VISA) are not available to foreign investors. Furthermore, purchasing shares in

(28) For more details, see E.M. Barrett, L.N. Price and J.A. Gehrke, "Japan, Some Background for Security Analysis," *Financial Analysts Journal*, (January/February 1974), p.33~34 and R. Shohet, "Investing in Foreign Securities *Finalysts Journal*, (September/October 1974), p.55~72.

(29) For example, ASA Limited invests exclusively in South African gold mining securities, while Japan Fund invests in Japanese securities.

(30) For more details, see L.J. Kemp, *A Guilde to World Money and Capital Markets* (London: McGraw Hill Book (U.K.) Co., 1981) and *Investment and Taxation* (London: Touche Ross International, 1978).

companies whose foreign shareholding is at or near the legal limit (49%) may be difficult for foreigners. In Japan, until February 1979, there had been limits (25%) on the total amout of securities that may be purchased by foreign investors. Such limits are still applied to shares of specially designated companies of strategic industries. The consent of the Bank of Norway is required for capital transfer to Norway by a foreigner for portfolio investment purposes. In New Zealand and Venezuela, no foreign investor may acquire shares in existing companies without the approval of the Reserve bank and the Office of Foreign Investment, respectively. In Germany, money market instrument and fixed-interest securities with a remaining maturity of less than two years are not normally permitted to be sold to foreigners while common stocks are not available to foreigners in Kuwait. Strong controls by foreign governments are common when these governments consider their own makets to be under pressure. For example, in 1973, Germany imposed a ban on the purchase of domestic securities by foreign investors, which has now been entirely lifted. A similar ban was imposed by the National Bank of Switzerland between February 1978 and January 1979. Restrictions on the purchase of securities by foreign investors, have been alleviated and are expected to disappear in the future. For example, Korea, once prohibited the purchase of securities by foreigners is creating mutual funds (e.g., Korea Fund) composed of common stocks of Korean companies solely for foreign investors.

2. Regulations on the Remittance of the Proceeds from Foreign Investment and on the Exchange of Currencies

Some countries require reinvestment of all proceeds from the sale of domestic securities by foreign investors in the domestic market. There are limits on the amount of an exchange of currency for international portfolio investment or provisions that require disadvantageous exchange rate for the purpose of foreign porfolio investment. For example, United Kingdom residents were not usually allowed to purchase currency at official exchange rates for investing in foreign securities. Instead, they were required to use "investment sterling" which originated mainly from the sale of foreign currency-securities owned by U.K. residents. Investment sterling was available only at a considerable premium over normal "resident sterling." However, in October 1979, such exchange controls were completely abolished. In Belgium and Luxembourg, there still exist two-tier foreign exchange systems in which financial transactions such as the purchase or sale of securities must take place via the Financial Francs market.

3. Tax Disadvantages

There is extra taxation on foreign portfolio investment, such as the interest Equalization Tax of the U.S. which charged up to 18.75% of additional tax on the purchase of foreign securities. Other important tax disadvantages are the withholding taxes on dividends and interest income. For example, in Switzerland, the withholding tax is levied at 35% on all distributions by Swiss resident firms including dividends. This tax is charged to all recipients, indivicuals as well as corporations.[31]

4. Foreign Exchange Risks

The final proceeds from foreign portfolio investment are affected by the foreign exchange rates prevailing when the proceeds are converted back to domestic currency. Therefore, in addition to the risk of foreign securities, investors should face foreign exchange risks. However, exchange rate fluctuations are not necessarily bad for an investor. If exchange rate fluctuations are independent of one another, they can be diversified away and have negligible impact on the risk of the portfolio. Furthermore, many hedging strategies against foreign exchange risks are available in future and forward exchange markets and money markets. However, as noted by Elton and Gruber,[32] variabilities in exchange rates introduce an unfavorable element into international diversification as long as one currency tends to fluctuate uniformly compared to all other currencies. To U.S. investors, when the dollar deteriorates relative to all foreign currencies, this unfavorable fluctuation in exchange rates creates additional risks.

Several studies find some evidence that, foreign exchange risks, although they tend to reduce the benefits, are not strong enough to negate the proposition of risk reduction benefits from international diversification. Solnik[33] finds that the risk of an international portfolio unprotected against foreign exchange risks is larger than that of a hedged one. However, the standard deviation of returns on the unprotected international portfolio is still much smaller than that of returns on a comparable domestic portfolio. Grucel and Fadner[34] find that the observed changes in exchange rates are small compared with changes in equity values. Consequently, the standard deviation of returns

(31) For more information regarding withholding taxes of different countries, see *Business Study*, 2nd ed. (Touche Ross & Co., 1978) and R. Shohet, "Investing in Foreign Securities," p.71.

(32) E.J. Elton and M.J. Gruber, *Modern Portfolio Theory and Investment Analysis* (New York: John Wiley & Sons, 1981), p.164.

(33) Solnik, p.48~54.

from international portfolios with and without foreign exchange adjustment are statistically not different. In the above studies, exchange risks do not have a major negative impact on the risk reduction benefits. However, the switch from the fixed exchange rate system to the floating exchange rate system in 1973 has increased the instability of exchange rate substantially, which may produce foreign exchange risks strong enough to reverse these results.

In addition to the above mentioned disadvantages, unfamiliarity with foreign capital markets and different accounting procedures may cause additional information costs. Furthermore, foreign investments usually are exposed to a variety of political risks. In the extreme, the holding of foreign securities may be expropriated.

V. Summary and Concluding Remarks

This paper reviews some theoretical and empirical evidence on the possibility of risk reduction benefits from international diversification. However, a survey of major barriers to international diversification together with a past historical record of the U.S. international capital flows[35] reveals that in reality, it is still difficult for U.S. investors to diversify portfolios internationally. Furthermore, additional risks and costs inherent in international diversification may be significant enough to offset the benefits. Thus, it is still unclear whether internatioal portfolios can outperform domestic portfolios practically. As more countries open their capital markets to foreign investors and more efficient means of international diversification emerge, international portfolics are expected to appeal to U.S. investors. Ironically, however, integration of national capital markets decreases the risk reduction benefits from international diversification. In the perfectly integrated capital market, no additional benefits are expected from international diversification beyond those from domestic diversification.

(34) Grubel and Fadner, p.89~94.

(35) During the last two decades, U.S. investment in foreign securities has been outnumbered by foreign investment in U.S. securities while U.S. foreign direct investment has far exceeded foreign direct investment in the U.S. However, in 1978 U.S. foreign portfolio investment (53.4 billion dollars) came close to the amount of foreign investment in U.S. securities (55.4 billion dollars). In 1981 the holding of U.S. securities (93.8 billion dollars) . foreigners exceeded the holdings of foreign securities by U.S. residents (62.9 billion dollars). Source: Department of Commerce. U.S. Survey of Current Business, Vol. 59, No. 8 (August 1979), p.56 and other volumes.

Therefore, the proposition may deserve attention, which states that purchasing securities issued by U.S.-based multinational corporations can be an alternative way of international diversification. Unfortunately, validity of this argument is being discussed and controversial.[36]

(36) For more details and empirical evidence on this proposition, see H.C. Diversification Service by a Multinational Corporation to Its Shareholders," Unpublished Ph. D. dissertation. Louisiana State University, (1983).