

International Portfolio Investment: Theory, Evidence, and Institutional Framework

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Abstract

At first sight, the idea of investing internationally seems exciting and full of promise because of the many benefits of international portfolio investment. By investing in foreign securities, investors can participate in the growth of other countries, hedge their consumption basket against exchange rate risk, realize diversification effects and take advantage of market segmentation on a global scale. Even though these advantages might appear attractive, the risks of and constraints for international portfolio investment must not be overlooked. In an international context, financial investments are not only subject to currency risk and political risk, but there are many institutional constraints and barriers, significant among them a host of tax issues. These constraints, while being reduced by technology and policy, support the case for internationally segmented securities markets, with concomitant benefits for those who manage to overcome the barriers in an effective manner.

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Contents

1	Introduction and Overview.....	1
2	The International Dimensions of Portfolio Investment	5
2.1	Principles of International Portfolio Investment.....	5
2.2	International Portfolio Investment and U.S. Securities Markets	10
3	The Benefits from International Portfolio Investment	12
3.1	Participation in Growth of Foreign Markets.....	13
3.2	Hedging of Consumption Basket.....	16
3.3	International Portfolio Diversification.....	21
3.3.1	Benefits from International Portfolio Diversification	21
3.3.2	Empirical Evidence of International Portfolio Diversification.....	23
3.4	Market Segmentation	31
3.4.1	Benefits from Market Segmentation.....	31
3.4.2	Empirical Evidence of Market Segmentation.....	33
4	Unique Risks of and Institutional Constraints for International Portfolio Investment	37
4.1	Unique Risks of International Portfolio Investment	37
4.1.1	Currency Risk	37
4.1.2	Country Risk.....	41
4.2	Institutional Constraints for International Portfolio Investment.....	43
4.2.1	Taxation.....	44
4.2.2	Foreign Exchange Controls	47
4.2.3	Capital Market Regulations	49
4.2.4	Transaction Costs.....	50
4.2.5	Familiarity with Foreign Markets	52
5	Channels for International Portfolio Investment	53
5.1	Direct Foreign Portfolio Investment.....	54
5.1.1	Purchase of Foreign Securities in Foreign Markets.....	54

5.1.2	Purchase of Foreign Securities in the Domestic Market.....	56
5.2	Indirect Foreign Portfolio Investment.....	60
5.2.1	Equity-linked Eurobonds.....	60
5.2.2	Purchase of Shares of Multinational Companies.....	61
5.2.3	International Mutual Funds.....	70
6	Summary and Conclusion.....	73
	References.....	75
	Notes on Contributors/Acknowledgements.....	118

1 Introduction and Overview

In recent years, economic activity has been characterized by a dramatic increase in the international dimensions of business operations. National economies in all parts of the world have become more closely linked by way of a growing volume of cross-border transactions, not only in terms of goods and services but even more so with respect to financial claims of all kinds. Reduced regulatory barriers between countries, lower cost of communications as well as travel and transportation have resulted in a higher degree of market integration. With respect to real goods and services, this trend towards globalization is clearly reflected in the worldwide growth of exports and imports as a proportion of GDP of individual countries. Consequently, consumption patterns have been internationalized as well, both directly as well as indirectly.

Alongside the increase in international trade one can easily observe the globalization of financial activity. Indeed, the growth of cross-border, or "international," flows of financial assets has outpaced the expansion of trade in goods and services. These developments are underpinned by advances in communication and transportation technology. They make geographic distances less significant, extend both the scope of information as well as the speed with which it is available, thus leading to faster and more efficient global financial operations. By the same token, and not unrelated to the technologically driven developments just mentioned, policy-induced capital market liberalization, such as the abolition of capital and exchange controls in most countries, permits an ever growing volume of international financial flows.

As a consequence, investment opportunities are no longer restricted to domestic markets, but financial capital can now seek opportunities abroad with relative ease. Indeed, international competition for funds has caused an explosive growth in international flows of equities as well as fixed-income and

monetary instruments. Emerging markets, in particular, as they have become more and more accessible, have begun to offer seemingly attractive investment alternatives to investors around the globe.

International capital flows are further driven by a divergence in population trends between developed and developing countries. Mature, industrialized countries today are characterized by aging populations with significant needs for private capital accumulation. The underlying demand for savings vehicles is further reinforced by the necessary shift from pay-as-you-go pension schemes towards capital market-based arrangements. By the same token, developing countries with their relatively young populations require persistent and high levels of investment in order to create jobs and raise standards of living in line with the aspirations of their impatient populations. All this provides significant incentives for the growth of international markets for all kinds of financial claims in general and securities in particular.

While the environment has undoubtedly become more conducive to international portfolio investment (IPI), the potential benefits for savers/investors have lost none of their attractions. There are the less-than-perfect correlations between national economies, the possibility of hedging an increasingly international consumption basket, and the participation in exceptional growth opportunities abroad, which can now be taken advantage of through IPI. However, there is considerable controversy among investment professionals, both in academia as well as in the financial services industry, on the issue to what extent these intuitively perceived benefits of international portfolio investment are sufficiently significant. When the circumstances of the real world are taken into account, additional risks, costs and other constraints to IPI at best limit the potential advantages, at worst negate the benefits.

Indeed, the empirical experience of the decade of the 1990s has cast doubt on the wisdom of IPI, at least from a U.S. investor's perspective. U.S. markets seemingly *outperformed* crisis-ridden emerg-

ing markets as well as those of Japan and even Europe on a longer-term basis. Statistically, there is some evidence that correlations among markets have been increasing and worse, there is sustained and strong evidence that co-movement among markets increased dramatically during periods of volatile price changes, prompting investors to ask "where is (international) diversification when I need it?" As a result, both academics as well as investment strategists have begun to focus on alternative models of diversification, based on sectors and industries. Indeed, recent empirical evidence seems to support the growing importance of global industry factors associated with the disparate behavior of technology stocks and their remarkable co-movement across markets, arguing strongly for diversification across global industries rather than countries.¹

Nevertheless, when everything is said and done, the arguments for international investment remain quite powerful: opportunities for real economic growth will differ among countries; different jurisdictions will follow different paths with respect to their social, economic, and political development. Indeed, a strong argument can be made that the emergence of large currency areas coalescing around the dollar, the euro and the yen, with inward focused policy imperatives, will make for considerable divergence of economic and financial market performance in the future. Last but not least, the decade of the 1990s was characterized by some very special features; conclusions based on empirical observations from that time frame will not necessarily be indicative of the future.

¹ Fuerbringer (2001), Brooks/Catão (2000).

To this end, this paper presents a comprehensive assessment of the theoretical and empirical aspects of the IPI phenomenon.² After a brief review of the conceptual foundations of international portfolio investment, we will take a look at the various institutions and institutional arrangements in securities markets that facilitate or hinder IPI. More specifically, the potential benefits from IPI, i.e. benefits from international portfolio diversification, market segmentation, hedging the consumption basket and participation in growth of foreign markets, are discussed and assessed in detail. Although these advantages seem to be straightforward, there exist pitfalls that are easily overlooked at first sight.

Furthermore, there is not only additional upside potential, but there are also some extra risks involved in IPI. Such unique risks arise especially from unfavorable changes in exchange and interest rates as well as regulatory developments. Even though it might on balance look attractive to the investor to purchase some foreign securities for his portfolio, this might not easily be feasible due to institutional constraints imposed on IPI. Obstacles like taxation (withholding tax, taxation of foreign income and multiple taxation), exchange controls, capital market regulations and, last but not least, transactions cost can represent valid reasons why the scope and thus the potential of IPI might be limited. Nevertheless, tax treaties, the rise of discount brokerage and other developments like the internet are apt to mitigate these constraints.

² Following the usual approach, only financial claims are considered in this paper; diversification alternatives taking into account real assets and personal earnings are left out of the discussion. Further, we consider explicitly only traditional forms of international portfolio investment, i.e. equities and fixed income securities of varying maturities. Receivables, payables, insurance claims and others are included in the data and analysis only by implication (for a comprehensive review of all financial claims, see any work on Balance of Payments analysis).

Finally, we will take a look at the different ways that exist for the investor to implement IPI. Basically, foreign securities can be purchased directly -- either in the foreign or in the domestic market -- or they can be bought indirectly via international mutual funds. Furthermore, it will be shown that the suggestion that the purchase of shares of multinational companies provides the same diversification effect as IPI is empirically not verifiable.

2 The International Dimensions of Portfolio Investment

2.1 Principles of International Portfolio Investment

Individuals must allocate their income among current consumption, productive investment, and financial investment. Simplifying these choices by assuming that consumption and productive investment decisions have already been made and thereby omitting potential feedback effects leaves the portfolio decision narrowly defined: how to allocate the remaining wealth to financial and/or real assets so as to maximize the most desirable return, i.e. consumption in the future. Despite this simplification, there is still a bewildering array of forms in which wealth can be held, ranging from non-liquid holdings of real estate, through gold coins and commodity futures, all the way to stocks, bonds, savings accounts, money market securities, and cash equivalents. Investment theory, then, comprises the principles that help investors to rationally allocate their wealth between the different investment alternatives.

In the context of IPI, which involves investment not only in domestic, but also in foreign securities, the established investment concepts of portfolio theory and capital market theory must be modified and extended to take into account the international dimension. Whereas the basic principles also mostly apply on an international scale, additional considerations become necessary. An important issue that arises if portfolios are composed of securities from different countries is the choice of a numeraire for measur-

ing risk and expected return. As a matter of tradition and/or due to regulation, local currency is used in most cases to calculate these security characteristics, which means that return and variance values for foreign securities need to be adjusted for currency gains or losses.³ It has to be noted, however, that foreign goods and services represent a significant proportion of the consumption basket in many countries. Therefore, if purchasing power were to be maintained, the maximization of local currency returns may not be optimal in this regard.⁴

The Capital Asset Pricing Model (CAPM) has been developed with respect to major capital markets in the world. It is well accepted and widely used by professional portfolio managers to analyze the pricing of securities in national financial markets. However, since the scope of securities under consideration is enlarged to incorporate equities of all markets around the globe, and since the cost of obtaining information and restrictions are generally eliminated, it may be argued that capital markets have become increasingly "integrated", and securities' prices might actually be determined by internationally integrated, as opposed to segmented, financial markets.⁵ With integrated capital markets, optimal diversification is realized by forming a global market portfolio, and the riskiness of all securities in the world is measured according to their contribution to the risk of this portfolio.

³ Shapiro (1996), p. 471.

⁴ Odier/Solnik (1993), p. 64.

⁵ On the concept of market segmentation and integration see Section 3.4.

The transfer of the CAPM logic to a global perspective leads to the International Capital Asset Pricing Model (ICAPM),⁶ which can be formally stated as

$$E[R_i] = R_F + \mathbf{b}_i^w RP^w + \sum_{k=1}^K \mathbf{g}_{ik} RP_k, \quad (1)$$

where RP^w and RP_k are the risk premia on the world market portfolio and the relevant currencies, respectively, and R_F is the risk-free interest rate. It rests on the assumption that investors make investment decisions based on risk and return in their home currency. Clearly, in an international context, the market portfolio is not the only source of risk any more, but exchange rate risk has to be accounted for. As a result, investors take a position composed of the domestic risk-free asset and the common world market portfolio while hedging some of the currency risk.⁷

Although this approach seems to be straightforward, there are subtle problems inherent in the ICAPM, because of the likelihood that many of the assumptions underlying the national market CAPM become very tenuous in an international context. Particularly, as there are many barriers and obstacles to IPI, mean-variance efficiency of all securities cannot be assumed automatically. There is no common real riskfree rate of interest, because of real exchange risk caused by deviations from purchasing power parity (PPP). By the same token, it is difficult to determine a global market portfolio. For national capital markets the use of value-weighted portfolios as benchmarks is quite defensible, but this might not be true in an international context, where (a) financial markets are still segmented to some degree, (b) investors

⁶ Solnik (2000), pp. 165-167, Levi (1996), pp. 446-454, Giddy (1993), pp. 426-428, Adler/Dumas (1983), Sercu (1980), Solnik (1974c).

⁷ See Section 4.1.1 regarding a discussion on the issue of currency risk hedging.

have different risk preferences and (c) expected risk and return change over time. Indeed, the choice of an international benchmark is a controversial issue since there is some evidence, that a global portfolio constructed according to the market capitalization of the individual markets is not mean-variance efficient.⁸

Over time, more sophisticated models have been developed to accommodate special factors of the international context or to improve the realism of the model in general. To illustrate, some approaches account for the fact that the assumption of homogeneity of investor preferences is unlikely to prevail across countries. Furthermore, the scope of securities can be extended to incorporate not only stocks, but also bonds. Moreover, asset pricing in the presence of segmented capital markets has revealed a more complex form of the risk premium which is a function of the type of market imperfection, the characteristics of investors' utility functions and their relative wealth.⁹

Whereas the traditional CAPM is based on constant values for the parameters of equities (expected return and variance), there exists increasing evidence to support the hypothesis that these characteristics are time-dependent. Therefore, conditional models have been used to model time-variant measures, i.e. expected return and variance are not assumed to be constant over time. This is because of the assumption that historical information and possibly expectations about interest rates, equity prices etc. are available to the investor, which means in technical terms that e.g. the estimated conditional variance for time $t+1$ depends on the information set available at time t . The simplest of these models are autore-

⁸ Solnik (2000), p. 136, Giddy (1993), pp. 431-438, Odier/Solnik (1993), Solnik/Noetzlin (1982).

⁹ Errunza/Losq (1989), Hietla (1989), Eun/Janakiramanan (1986), Errunza/Losq (1985), Stulz (1981a), Stapleton/Subrahmanyam (1977), Subrahmanyam (1975), Black (1974).

gressive conditional heteroscedasticity (ARCH) models, in which the conditional variance is calculated as a weighted average of past squared forecasting errors. In generalized ARCH (or GARCH) models, the conditional variance depends on past error terms as well as on historic conditional variances.¹⁰

Overall, empirical evidence for an international CAPM is mixed, although there seems to be increasing support for this concept.¹¹ Approaches taken include conditional and unconditional models and the use of latent (or lagged) instrumental variables and Generalized GARCH-M methods. Testing the ICAPM is difficult as (a) there is limited long-term historical data available on international capital markets, (b) an international benchmark portfolio is hard to specify, and (c) it is a challenge to capture the time-variation of the securities' characteristics. In general, conditional ICAPM tests seem to have more explanatory power compared to unconditional models. Empirical studies find, for example, that a CAPM which accounts for foreign-exchange risk premia has more explanatory power with regard to the structure of worldwide rates of return than a model without currency risk factors.¹² Interestingly, not only is financial market information such as interest rates, stock prices, etc. apparently relevant, but so are factors external to financial markets e.g. leading indicators of business cycles.¹³

¹⁰ Solnik (2000).

¹¹ De Santis/Gérard (1998), De Santis/Gérard (1997), Bekaert/Harvey (1995), Dumas/Solnik (1995), Dumas (1994), Bansal/Hsieh/Viswanathan (1993), Engel (1993), Glassman/Riddick (1993), Thomas/Wickens (1993), Chan/Karolyi/Stulz (1992), Harvey (1991), Wheatley (1988), Adler/Dumas (1983).

¹² Koedijk/Kool/Schotman/van Dijk (2000), DeSantis/Gérard (1998), Dumas/Solnik (1995).

¹³ Dumas (1994).

With respect to major capital markets, empirical evidence seems to support the concept of an international asset pricing model and market integration.¹⁴ While emerging markets are characterized by segmentation in early periods, these markets exhibit an increasing degree of integration to the global market as well.¹⁵ Since the degree of market segmentation is constantly changing over time through a dynamic integration process, there exist conceptual problems for all approaches that are based on static assumptions of completely segmented or partially integrated markets.¹⁶

2.2 International Portfolio Investment and U.S. Securities Markets

U.S. securities markets are the largest in the world and they also have the best reputation from a "technical" point of view: they are generally well regulated, and are characterized by breadth, depth, and resilience. Interestingly, U.S. investors still hold only a small amount of foreign securities, in contrast to foreign holdings of U.S. securities which are about twice as large. This home bias in portfolio investment is well documented, but cannot easily be explained.¹⁷

Data on the U.S. holdings of foreign securities are provided in Table 1. In 1999, investors residing in the United States held \$2,583.4 billion in foreign securities, an increase of \$530.5 billion compared to 1998. Foreign bond holdings declined from \$576.7 billion to \$556.7 billion, representing roughly 22%

¹⁴ De Santis/Gérard (1997).

¹⁵ Bekaert/Harvey (1995).

¹⁶ Harvey (1995).

¹⁷ Glassman/Riddick (1996), Tesar/Werner (1995), Cooper/Kaplanis (1994), French/Poterba (1991).

of foreign securities holdings in 1999. Net purchases were more than offset by price depreciation and exchange rate depreciation.

[Table 1]

U.S. holdings of foreign stocks (Table 2), conversely, increased by \$550.5 billion to \$2,026.6 billion. Even if Canadian issues are not regarded simply as part of the U.S. market, U.S. international portfolio diversification has been quite modest. Nevertheless, there are many indicators that institutional investors show more interest in international securities -- such as the number of mutual funds investing in foreign securities and the increase in the number of foreign securities listed on U.S. exchanges.

[Table 2]

As is shown in Table 2, U.S. investors substantially enlarged their holdings of foreign stocks in several markets around the world. In figures, holdings of European stocks increased by \$207.3 billion (21.6%), holdings of Japanese stocks went up by \$127.8 (87.6%), holdings of Canadian stocks increased by \$38.7 (62.4%), and holdings of stocks from Latin America grew by \$35.1 billion (65.0%).

Foreign portfolio investors, as of the end of 1999, held \$3,170.0 billion in U.S. securities (Table 3). This is up 15.6% (or \$427.9 billion) from the 1998 level of \$2,742.1 billion. Foreign investors found that the attractiveness of the United States as an investment opportunity had increased. Of the \$3,170.0 billion, 20.8%, or \$660.7 billion, was in the form of U.S. Government debt. Approximately 45.6%, or \$1,445.6 billion, consisted of stocks and 33.6%, or \$1,063.7 billion, consisted of corporate and other bonds. Foreign holdings of U.S. Treasury Securities decreased by \$69.0 billion, while holdings of other U.S. securities by non-U.S. residents went up (24.7% or \$496.9 billion). This was the result of strong foreign purchases of U.S. securities and considerable stock-price appreciation which were, however,

partially offset by price drops in the bond markets. Foreign holdings of U.S. stocks increased (from \$1,110.3 billion to \$1,445.6 billion) due to strong corporate earnings and economic growth.

[Table 3]

3 The Benefits from International Portfolio Investment

There are several potential benefits that make it attractive for investors to internationalize their portfolios. These perceived advantages are the driving force and motivation to engage in IPI and will, therefore, be dealt with first, i.e. before looking at the risks and constraints. Specifically, the attractions of IPI are based on (a) the participation in the growth of other (foreign) markets, (b) hedging of the investor's consumption basket, (c) diversification effects and, possibly, (d) abnormal returns due to market segmentation. All else being equal, an investor will benefit from having a greater proportion of wealth invested in foreign securities (1) the higher their expected return, (2) the lower the variation of their returns, (3) the lower the correlation of returns of foreign securities with the investor's home market, and possibly, (4) the greater the share of imported goods and services in her consumption.

While there appears overall significant empirical evidence in support of benefits from international portfolio diversification, the interpretation of the empirical results is generally plagued by a set of crucial assumptions. In particular, it has to be considered to what extent risk aversion among investors in various countries is different, to what degree results based on past correlations are informative about the future, whether country indices reflect securities that are actually accessible to foreign investors, and what the effect of inflation (real interest rate differences) on the results would be.

3.1 Participation in Growth of Foreign Markets

High economic growth usually goes hand in hand with high growth in the country's capital market and thus attracts investors from abroad. IPI allows investors to participate in the faster growth of other countries via the purchase of securities in foreign capital markets. This condition applies particularly to the so-called "emerging markets" of Europe, Latin America, Asia, the Mideast and Africa. Countries are classified as emerging if they have low or medium income according to World Bank statistics, but enjoy rapid rates of economic growth. Typical examples are Mexico or Turkey as well as newly industrialized countries such as Korea or Taiwan.

Driven by the general economic expansion, the financial markets in these countries have exhibited tremendous growth. This means that the security holdings of investors attained values several times worth the original investment after just a few years. However, investors seeking high growth should not limit their analysis to the fascinating and breath-taking developments in emerging market, but also take a close look at some of the well-developed, industrialized countries like Japan, Denmark or the Netherlands. These countries can provide interesting investment opportunities as well, because they do not only show above average growth, but are also politically more stable.¹⁸

Table 4 provides an overview of stock markets of high growth developing as well as developed countries and some of their characteristics. Most obvious, emerging markets are small in terms of market capitalization and number of stocks in the respective IFC index compared to markets in developed countries such as the United States, Japan or the United Kingdom. The data demonstrates further that

¹⁸ Barry/Peavy/Rodriguez (1998).

favorable economic development in a country as measured by the real growth rate is frequently associated with high average stock returns. Unfortunately, emerging markets do not only offer high returns, but the risks associated with investments in these countries are frequently higher than in established markets as well.

One indicator of this riskiness are standard deviations based on historical data. Since the markets are still relatively small, they bear the risk of extreme price movements and liquidity risk, i.e. it might not always be possible to close a position when desired without encountering significant adverse price effects. Consequently, standard deviations are not a sufficient measure of risk because the return distributions are not symmetric (skewness) and large movements are more likely than for a normal distribution (excess kurtosis).¹⁹

[Table 4]

Moreover, there is political risk which can be observed in many manifestations such as instability of the political system and government, threat of exchange controls, abolishment of non-resident convertibility and free remittance of funds-all the way to risk of nationalization of businesses and loss of property rights. Taking these aspects into consideration, rapidly growing developed (as opposed to undeveloped) countries come into focus as the prevailing political stability and a safe regulatory environment in these countries translates into lower risk of the investment. On the other hand, absolute risk itself is normally not what matters but contribution to overall portfolio risk, i.e. the correlation between an individual security's return and total portfolio return. As will be discussed later on (Section 3.3), emerg-

¹⁹ Bekaert/Erb/Harvey/Viskanta (1998).

ing markets can be very interesting from this perspective, as they often reduce total portfolio risk due to low correlation with mature markets.

Nevertheless, two caveats have to be addressed in the context of investment in stocks from high growth countries. Firstly, it could be argued that some of the growth has been already discounted and thus included in the prices of foreign securities. In this case, there would be no or only little advantage to the investor buying these stocks now. Indeed, it is hard to believe that in developed countries like Japan the growth of the economy and the financial market would not be anticipated and reflected in securities' prices. On the other hand, global financial markets are not yet fully integrated and still lack market efficiency due to market imperfections such as taxes, investment restrictions, foreign exchange regulations, etc. Consequently, capital asset pricing models that are built on these assumptions may not price the securities in different markets "correctly."

Therefore, it might be necessary to distinguish between more and less developed high growth countries. For developed countries, information about economic activity including forecasts for future development should be readily available, and political risk is low. Thus, it seems to be within reason to assume that a large part of the growth is expected and thus reflected in securities' prices. However, actual growth might still be higher than anticipated growth due to the dynamics and complexity of the development, resulting in extraordinary returns compared to markets with less uncertainty about their development. The whole story runs somewhat differently for less developed countries, though. The assessment of emerging markets is an area where information is harder to acquire, and more difficult to analyze and evaluate correctly. Thus, the realization of higher returns due to superior knowledge seems

to be still possible. This is in line with the results of empirical studies which show that returns in emerging markets are more likely to be influenced by local information than in mature markets.²⁰

A second issue that comes up, assuming that an investment in high growth country stocks can be an attractive opportunity as some of them might not be correctly priced, is the concern that foreign investors may not be able to fully participate in the growth potential since they are expropriated by local, dominant managers/shareholders. In many emerging markets, foreign investors not only lack protection from a local, dominant manager/shareholder, but they tend to lose out in conflicts with the local power structure. As a result, foreign investors cannot stop the company from reducing their fair share of the company's success by means of dividend policy, management compensation, transactions with companies owned by controlling shareholders, or other corporate decisions favoring the family and political interests of the dominant local shareholders. Corporate governance tends to be a major issue for portfolio investors in emerging markets.

3.2 Hedging of Consumption Basket

Since the (international) investor is at the same time a consumer of real goods and services, the return of his (financial) investment must be related to his consumption pattern. This is a source of considerable difficulty that bedevils formal models of international portfolio investment. The temptation is to simplify and to assume that goods are homogeneous (essentially one good). This implies that goods are perfect substitutes domestically as well as internationally. If one assumes, realistically, that goods are not perfect

²⁰ Harvey (1995).

substitutes, then deviations from (a) Purchasing Power Parity (PPP), and (b) the Law of One Price (LOP) are possible.

Future consumption can be curtailed by unexpected inflation, which can be caused by exchange rate changes and/or shocks of domestic as well as international demand (monetary policies) and supply (crop failure). Consequently, the type of risk that consumer-investors may face is directly related to their consumption pattern and investment position. The nature of the risk is also affected by the structure of markets for financial assets and real goods and services, for example, whether or not PPP holds. Given that the typical investor can be assumed to consume at least some foreign goods, she may derive benefits from international portfolio investment in that she can hedge her internationalized consumption basket against foreign exchange risk through the investment in foreign assets.

Consumer-investors who consume purely domestic goods and have no international portfolio investment are exposed to unexpected change in domestic inflation, but not to foreign inflation risk or foreign exchange rate risk. In case consumer-investors have made an international portfolio investment, but consume purely domestic goods, they face both domestic inflation and exchange risk, because the investors' wealth is now affected by unexpected changes in the exchange rate. However, this exchange risk is directly translated into inflation risk when PPP holds.

If consumer-investors consume some imported goods (something that will be true for many investors today) but have no foreign securities in their portfolio, they face domestic inflation, foreign inflation, and exchange risk. However, if PPP holds exactly over the investment horizon, then the combination of foreign inflation and exchange rate changes will always be equal to the domestic inflation rate. Thus, con-

sumer-investors only face the domestic inflation risk. In these examples, whenever PPP holds, exchange risk is not a barrier to international portfolio investment.

Finally, in case consumer-investors have some foreign assets in their portfolios and also consume foreign goods, they face domestic inflation, foreign inflation, and exchange risk, because the consumption pattern includes some imported goods. The exchange risk, however, can be hedged through appropriate foreign investment. Therefore, exchange risk on the consumption side could serve as an incentive for international portfolio investment. Again, when PPP holds, the exchange risk is the same as the inflation risk and, thus, there is no incentive for international portfolio investment. Nevertheless, if consumer-investors consume some imported goods and have (proportionately matching) international portfolio investments, they are able to hedge the exchange risk. Therefore, regardless of whether PPP holds, they may be able to avoid exchange risk.

The four cases of the above analysis regarding how and when international portfolio investment is useful for hedging purposes can be presented more formally. The following notation is used:

- R, R^* fixed nominal interest rate in the United States and abroad (*),
- \tilde{P}, \tilde{P}^* inflation rates for the coming period in the United States and abroad (*) (expected inflation); \sim denotes random variable,
- \tilde{e} exchange rate change; $\tilde{e} > 0$ represents appreciation of the foreign currency,
- a proportion of domestic goods consumed,
- b proportion of domestic assets.

Thus, $\tilde{P}(i) = a\tilde{P} + (1-a)(\tilde{P}^* + \tilde{e})$ denotes the appropriate inflation rate for an individual i who consumes $a\%$ of domestic goods and $(1-a)\%$ of foreign goods; and $\tilde{R}(i) = bR + (1-b)(R^* + \tilde{e})$ is the return on the portfolio of investor i where b represents the proportion of domestic assets in the portfolio.

The real return on investor i 's portfolio, $\tilde{r}(i)$, can be written as follows:

$$\begin{aligned}\tilde{r}(i) &= \tilde{R}(i) - \tilde{P}(i) \\ &= [bR + (1-b)(R^* + \tilde{\epsilon})] - [a\tilde{P} + (1-a)(\tilde{P}^* + \tilde{\epsilon})]\end{aligned}\quad (2)$$

(1) No foreign goods are consumed and no foreign asset is held ($a = b = 1$).

The real rate of return is then

$$\tilde{r}(i) = R - \tilde{P}, \quad (3)$$

and the consumer-investor faces domestic inflation risk.

(2) No consumption of foreign goods, but foreign assets are held ($a = 1, b \neq 1$).

The real rate of return is then

$$\tilde{r}(i) = b(R - \tilde{P}) + (1-b)(R^* - \tilde{P}^* + \tilde{\epsilon}). \quad (4)$$

However, when PPP holds $\tilde{\epsilon} = \tilde{P} - \tilde{P}^*$, the real return could be written as follows:

$$\tilde{r}(i) = b(R - \tilde{P}) + (1-b)(R^* - \tilde{P}^*). \quad (5)$$

This shows that exchange rate changes have no effect on the real rate of return.²¹

(3) Foreign goods are consumed, but no foreign asset is held ($a \neq 1, b = 1$).

The real return on the portfolio is then

$$\tilde{r}(i) = a(R - \tilde{P}) + (1-a)(R - \tilde{P}^* - \tilde{\epsilon}), \quad (6)$$

and the consumer-investor faces all three types of risks.

²¹ To see this more clearly, note that $\tilde{\epsilon}$ can be written as $\tilde{\epsilon} = \tilde{P} - \tilde{P}^* + \tilde{\epsilon}$ in general (i.e. without PPP to hold). Thus,

$$\tilde{r}(i) = b(R - \tilde{P}) + (1-b)(R^* - \tilde{P}^* + \tilde{\epsilon}).$$

However, when PPP holds, $\tilde{\epsilon} = \tilde{P} - \tilde{P}^*$ and therefore the real return could be written as:

$$\tilde{r}(i) = R - \tilde{P}, \quad (7)$$

and the consumer-investor thus faces only the domestic inflation risk.

(4) Consumption of foreign goods with investment in foreign assets ($a = b \neq 1$).

The real rate of return is then

$$r(i) = b(R - \tilde{P}) + (1-b)(R^* - \tilde{P}^*). \quad (8)$$

Note that in case (4) it does not matter whether PPP holds or not. Exchange risk disappears unless a discrepancy exists between the composition of foreign goods in the consumption basket and the proportion of foreign securities in the portfolio. When PPP does not hold (see case (3)), hedging exchange risk is an incentive for international portfolio investment given that the consumption basket of the individual investor has become more internationalized as well, although over the long run deviations from PPP tend to even out.

In a world where economies are internationally integrated, there are not many "domestic" goods. Domestic goods, in this context, refer to non-traded or nontradable goods and services whose prices are not influenced in a systematic way by real changes in prices of foreign goods. Furthermore, in this illustration it is assumed that the proportion of expenditures on various goods would not be altered by relative price changes which, of course, removes a number of bothersome complications. Although these complications do not detract from the conclusions on essential benefits and risks of international portfolio investment, they do affect the precise composition of the hedge portfolios.

Another conclusion regarding the effects of unexpected exchange rate changes on international portfolio investment emerges from this analysis: these changes represent both a risk as well as an incen-

tive, depending on the situation of the consumer-investor. In this context, it is interesting to speculate as to possible reasons for the phenomenon that U.S. investors have historically shown little interest in foreign currency assets. Possibly the size of the U.S. economy and the availability of good domestic substitutes for almost all foreign goods have forced foreign exporters to price their goods on a U.S. basis. Thus, U.S. consumer-investors have been in a position to use very few "foreign" goods, as even the dollar prices of imported goods behaved like those of domestic goods. As the U.S. economy becomes less dominant relative to the rest of the world, changes may be in the offing.

In addition to hedging the individual consumption basket against exchange rate risk, international portfolio investment can be beneficial to the consumer-investor by reducing "domestic output risk." Through the purchase of securities which are ultimately claims on other countries' output, consumption can in principle be smoothed when output is not highly correlated across countries because of different shocks. Empirical evidence, however, suggests the presence of a "consumption home bias" as consumption growth rates show lower degrees of correlations than growth rates of output.²²

3.3 International Portfolio Diversification

3.3.1 Benefits from International Portfolio Diversification

It has been shown, that the crucial factor determining portfolio risk for a given level of return is the correlation between the returns of the securities that make up that portfolio. *Ceteris paribus*, low as opposed to high correlation between securities means lower portfolio risk (portfolio diversification). Risk-averse

²² Lewis (1998).

investors will always prefer less risk to more. Therefore, they will try to make use of the effect of diversification and select securities with low correlation. Since perfect negative correlation between different securities is rare, the lowest correlations possible will be chosen.

This is the point where foreign securities come into play. Investors who compose their portfolio only of domestic securities restrict themselves to a smaller number of securities to choose from. Since they exclude the large set of foreign stocks, bonds and other securities, they limit the power of diversification a priori and forgo the possibility of further reducing portfolio risk by picking some foreign stocks that exhibit very low correlation with the domestic portfolio.

Indeed, there is reason to expect the correlation of returns between foreign securities and domestic securities to be lower than that between only domestic securities. In the latter case, all returns will be partially affected by purely national events, such as real interest rates rising due to a particular government's anti-inflation policy. Within any single country, a strong tendency usually exists for economic phenomena to move more or less in unison, giving rise to periods of relatively high or low economic activity. The reason for this is that the same political authority is responsible for the formulation of economic policies in a particular country. For example, the monetary, fiscal, trade, tax, and industrial policies are all the same for the entire country, but may vary considerably across countries. Thus, regional economic shocks induce large, country-specific variation of returns.

A second explanation for international diversification consists of the industrial diversification argument which is based on the observation that the industrial composition of national markets varies across

countries, e.g. the Swiss market has a higher proportion of banks than other markets.²³ As industries are less than perfectly correlated, investing in different markets enables the investor to take advantage of diversification effects simply because of the composition of his portfolio with respect to different industries. Thus, at least some international diversification might stem from industrial diversification, which could also explain differences in volatility across markets as some industry sectors tend to be more volatile *ceteris paribus* than others. As a matter of fact, the monetary policies of Western industrialized countries, if not always other economic policies, have become aligned to an unprecedented degree during the last two decades. For most European countries, this has even been tightly implemented with the introduction of the euro and the establishment of the European Central Bank. As a result, the power of diversification across national stock markets will be diminished, in contrast to diversification benefits stemming from spreading investment across asset classes (stocks, bonds, etc.) and industries.²⁴

3.3.2 Empirical Evidence of International Portfolio Diversification

Two methods have generally been used to demonstrate the effects of international portfolio diversification. The first method attempts to prove the potential benefits of international portfolio diversification relying on the low correlation that exists among national equity markets. The second method uses the regression of returns of individual stocks or national market indices against a world market index.²⁵ The interpretation, then, is that the variation of the stock's (index's) return which is not explained by the world

²³ Roll (1992).

²⁴ Fuerbringer (2001), Brooks/Catão (2000).

²⁵ Solnik (1974).

market index is diversifiable in the context of a world market portfolio. Generally, at least 40 percent of the variation is left unexplained; this seems to suggest that considerable opportunity for risk reduction exists.

The main limitations of these empirical studies are (a) that they do not take into account the unique costs and risks of international portfolio investment which are likely to offset a large portion of the benefits represented by their models;²⁶ and (b) the difficulties of choosing the appropriate index or indices for the regression analysis. Obviously, the diversifiable risk of a security could change considerably if different indices were used.²⁷ Finally, an accurate assessment of the net benefits of international portfolio diversification requires information on the pricing and extent of foreign goods in consumption, as well as the degree of risk aversion of investors.²⁸

Abstracting from these issues, a large number of studies have identified diversification gains that have been available to (American) investors. The earliest studies used periods during which markets were greatly segmented by exchange and capital controls, and foreign industrialized economies showed high rates of real growth in the immediate postwar period.²⁹ However, with the increase of economic

²⁶ Logue/Rogalski (1980), Logue/Rogalski (1979). When there is some access of foreign investors to the relevant markets, prices may reflect these costs and risks, see Errunza/Rosenberg (1982).

²⁷ For the methodological problems arising in performance measurement of actual portfolios see Roll (1978). For a readable account of the controversy in a general context see Wallace (1980).

²⁸ Krugman/Obstfeld (2000), Krugman (1981).

²⁹ See especially the early studies by Levy/Sarnat (1970) and Grubel (1968). For a discussion of benefits from international portfolio investment in less developed and developing countries see Errunza (1983) and Lessard (1973).

interdependence among industrialized countries and the relaxation of barriers to capital and goods movements, the potential benefits of international portfolio diversification may not be as significant as indicated in the early studies.³⁰ As the economies of different countries are tied closer and closer together, securities markets tend to move in the same direction, thus increasing the correlation between domestic and foreign securities and reducing potential benefits from diversification.

Looking at international stock markets, correlations across countries are generally positive but low, with little difference in results when returns are hedged against currency risk.³¹ Apparently, the stock markets of countries that are geographically close to each other exhibit a stronger linkage than others. To illustrate, Germany, the Netherlands, Switzerland, France and likewise Hong Kong and Singapore show a higher degree of interdependence due to their economic dependencies. As a matter of fact, the higher a country's economic and political independence is, the less correlation exists between its stock-market movements and the ups and downs of other markets, as domestic factors seem to be dominating the influence of global factors.

³⁰ Harvey/Viskanta (1995) find that U.S. stock market movements were usually mirrored by similar changes in foreign markets. There is also ample statistical evidence that shows less than perfect correlation of actual rates of return between countries, although it is an open question just how stable these statistics are (Maldonado/Saunders (1981)). See also Odier/Solnik (1993), Lang/Niendorf (1992), Grubel (1986), Eun/Resnick (1984), Joy et al. (1976), Solnik (1974) on this issue. Lang/Niendorf (1992) argue that developed equity markets do not move in tandem, but that the risk reducing effect is declining.

³¹ Solnik (2000), pp. 112-114, Odier/Solnik (1993). In line with low correlations, there is only weak evidence of volatility spillovers between stock markets (Lau/Diltz (1994), Lin/Engle/Ito (1994), Hamao/Masulis/Ng (1990)).

[Figure 1]

If stocks in a portfolio are selected on a random basis, risk is reduced much quicker and to a higher degree as the number of stocks in the portfolio increases if not only U.S. stocks, but also foreign stocks are considered. This observation which demonstrates the power of international diversification is illustrated in Figure 1. As a consequence, there is a desirable effect on the investors' opportunity set as represented by the efficient frontiers in risk/return space. Figure 2 shows how the investment in international stocks leads to new investment opportunities that exhibit higher return and possibly lower risk than a portfolio composed of U.S. stocks only.

[Figure 2]

For bonds, a similar picture as for stocks can be observed when the set of securities is further enlarged and foreign bonds are considered in addition to domestic fixed income securities (Figure 3).³² Correlations between bond market returns are low and sometimes even negative, and they are still less in the case of currency hedging. In addition, foreign bond markets and national stock markets exhibit very weak correlations as well. The low co-movement between bond markets can be explained by the fact that long-term rates across countries as well as long-term yields and currencies do not fully move in tandem. As national monetary policies are only linked to some extent to that of other countries, diversification with regard to monetary and economic policies is possible.

[Figure 3]

³² Solnik (2000), pp. 113-116.

Empirical evidence suggests that low correlations between economies due to different political and economic developments clearly dominate industrial diversification effects. Specifically, the influence of industrial structure on the correlation of country index returns is examined by decomposing stock returns into industry and country components. The results show that very little of low correlation between national markets is due to industry diversification. On the contrary, almost all of the international diversification effects can be explained by country-specific components of return variations.³³

Still, with growing linkages between stock markets the power of diversification resulting from investing in different stock markets is reduced, and the attention of investment professionals is shifting to lowering the risk of equity portfolios by considering other asset classes (e.g. bonds) that are less correlated with the U.S. stock market and by taking advantage of the low correlations between industry sectors on a global scale. Indeed, recent empirical evidence seems to support the growing importance of the global industry factor associated with the disparate behavior of technology stocks and their remarkable co-movement across markets, suggesting to diversify more across global industries than across countries.³⁴ In order to accommodate this development, Dow Jones has recently introduced 18 global sec-

³³ Griffin/Stulz (2001), Rouwenhorst (1999), Griffin/Karolyi (1998), Beckers/Connor/Curds (1996), Heston/Rouwenhorst (1995), Heston/Rouwenhorst (1994), Drummen/Zimmermann (1992), Solnik/de Freitas (1988). Interestingly, country effects in stock returns continue to dominate industry effects for the countries of the European Monetary Union (Rouwenhorst (1999)). These findings are in sharp contrast with earlier studies that show evidence in favor of the industrial diversification argument (Roll (1992), Grinold/Rudd/Stefek (1989)).

³⁴ Brooks/Catão (2000).

tor-based blue-chip indices (Dow Jones Sector Titans Indices) composed of the 30 largest companies worldwide within one industry.³⁵

The bottom line is that there appears to be a strong argument for diversifying across financial instruments, industries, *and* countries. The resulting effect on the efficient frontier is illustrated in Figure 2. Combinations of international stocks and bonds clearly dominate international stock or bond portfolios as well as domestic stock/bond combinations. Making international securities part of an investment strategy affects both risk and return (measured in local currency). For any country, the risk of the world index is lower than the volatility of the national market due to the lower than perfect correlation and the consequent diversification effect for unsystematic risk. However, the expected return of a portfolio is simply the weighted average of the expected returns of its components. As a consequence, the world index return is higher than the return on the national index for some markets, and lower for others. Nevertheless, the feasible, efficient risk/return combinations are improving for all of them.³⁶

Emerging markets were characterized earlier (Section 3.1) by the generally higher variance of returns. Crucial in the context of portfolios, however, is the contribution of a security to total portfolio risk. This is why emerging market securities represent an interesting portfolio component, because their correlation with developed markets is comparatively low. Therefore, securities from developing markets have considerable power of diversification in spite of their high absolute volatility, which makes them -- in

³⁵ Fuerbringer (2001).

³⁶ Solnik (1994a), Chollerton/Pieraerts/Solnik (1986), Barnett/Rosenberg (1983).

combination with their high growth potential -- desirable ingredients of an international portfolio.³⁷ Table 5 presents some data showing these properties: whereas developed markets such as the United States of America move very closely with the world index (0.83), emerging stock markets are overall much less linked to the stock markets of the developed countries (average correlation of 0.38).

[Table 5]

From a practical perspective, several caveats are in order. The analysis of correlation between capital markets is usually based on stock-market indices. This approach, however, does not take into account the fact that the benchmarks used may not be composed of securities that are accessible to investors. To illustrate, the International Finance Corporation (IFC) distinguishes between IFC Global Indices (IFCG) and IFC Investable Indices (IFCI). IFCG are the broadest in terms of constituents and do not take into consideration foreign investment restrictions. IFICI, on the other hand, are adjusted for foreign investment restrictions and require a minimum availability of securities in the markets.³⁸

³⁷ Bekaert/Urias (1999), Odier/Solnik/Zucchinetti (1995). According to results by Bekaert/Harvey (1998), the correlations of emerging markets with developed markets increase as they become more integrated, but they still provide a net diversification benefit.

³⁸ Indeed, MSCI, the larger one of the index providers, has been engaged during 2000/2001 in a major revision of its indices to take into account not only governmental restrictions but limits on the availability of shares due to holdings of dominant investors, cross-holdings and similar phenomena that restrict investors' access to shares.

Moreover, one faces the problem that the covariance matrix among international stock markets is notoriously unstable.³⁹ Unfortunately for international investors, correlation between markets seems to be higher in situations where global factors -- as opposed to domestic ones -- are predominant as they affect all financial markets. In particular, market correlations are found to increase in periods of high stock-market volatility.⁴⁰ With global trading, extended trading hours and improved communications, the issues of short-term spillover effects and financial contagion have attracted considerable attention.⁴¹ As a consequence, diversification effects are hard to estimate in advance and will be lower in situations when they are most needed. Nevertheless, correlations between international markets are still sufficiently low in order to offer attractive diversification benefits.⁴²

Still, the uncertainty about the exact correlation between securities of different markets lowers the attractiveness of international portfolio investment as the degree of non-market (i.e. diversifiable) risk the investor has actually to take on might not be in line with his optimal portfolio choice according to his preferences towards risk. Thus, depending on the actual covariance between the securities chosen it is possible that he does not realize his optimal portfolio choice. However, the emergence of international

³⁹ The stability of international correlations is tested in Solnik/Boucrelle/Le Fur (1996), Longin/Solnik (1995), Erb/Harvey/Viskanta (1994a), Solnik (1994a), Kaplanis (1988) and Jorion (1985).

⁴⁰ Butler/Joaquin (2000), Sesit (2000), Kroner/Ng (1998), Ramchad/Susmel (1998), Karolyi/Stulz (1996), Longin/Solnik (1995), King/Sentana/Wadhwani (1994), Bertero/Mayer (1990), King/Wadhwani (1990).

⁴¹ Bae/Karolyi/Stulz (2000), Niarchos/Tse/Wu/Young (1999), Ramchad/Susmel (1998), Lau/Diltz (1994), Lin/Engle/Ito (1994), Susmel/Engle (1994), Theodossiou/Lee (1993), Hamao/Masulis/Ng (1990).

⁴² Butler/Joaquin (2000), Solnik (2000), p. 127.

index funds (e.g., the Vanguard International Equity Index Fund) and index shares (such as *iShares*) mitigates this problem to a certain extent. But even international index-matching mutual funds alleviate the problem only in a superficial manner, because the difficulty then remains to construct the appropriate world market index. Due to phenomena such as market segmentation, an issue discussed in the following section, a value-weighted international market portfolio might not lie on an international investor's efficient frontier and may therefore not be part of the optimal portfolio mix.⁴³

3.4 Market Segmentation

3.4.1 Benefits from Market Segmentation

The general benefits of portfolio diversification are by now well recognized, and carry over, in principle, to internationally diversified portfolios. However, troubling questions remain regarding the extent of potential benefits of such international diversification for investors.⁴⁴ If the world consists of national securities markets that are assumed to be completely integrated, and where securities can be found whose returns do not show a high, positive correlation with the home market portfolio, investors stand to reap benefits from international portfolio diversification. Increased expected return or decreased variance (risk) become possible. These advantages are referred to as "pure diversification" benefits, stemming from the reduction of risk unrelated to changes in the whole market, i.e. unsystematic risk, which must be distinguished from opportunities associated with segmented markets.

⁴³ Solnik/Noetzelin (1982).

⁴⁴ Actually, the benefit of diversification net of higher transactions cost, political risk, etc. is the relevant objective.

In the context of international portfolio investment, segmentation of securities markets is not an unrealistic assumption. Market segmentation is caused by barriers that are difficult for investors to overcome, such as legal restrictions on international investment, taxes etc. (see Section 4.2). Segmentation leads to different risk-return tradeoffs and/or different benchmarks (market portfolios) for measuring the riskiness of securities in different capital markets. This phenomenon is further fostered by the natural bias of investors' portfolios towards their home market due to differences in the consumption patterns that limit their demand for foreign securities.

When markets are segmented, the dominant (or optimal) portfolio (that is, the portfolio with minimum variance for a given expected return) may not include all international securities and, therefore, international portfolio investment should be made only on a selective basis.⁴⁵ At the same time, investors may receive benefits that have nothing to do with diversification of unsystematic risk.

In order to clarify this important point one may recall that in perfect capital markets all securities are expected to fall on the Security Market Line (SML). In order to focus on any "special" benefits that may be received from international portfolio investment in segmented capital markets, it is useful to simply assume for a moment the existence of a foreign asset that provides no diversification benefit, i.e. that has perfect positive correlation with the domestic market portfolio. One could then measure the degree of riskiness of this asset, using the domestic market portfolio and the position of this asset in relation to the relevant security market line, as depicted in Figure 4.

[Figure 4]

⁴⁵ Stulz (1981).

In case (a) the foreign asset lies above the line, which implies that the foreign asset has a rate of return higher than a similar domestic security and, therefore, that it would be optimal to hold a long position in this security. In case (b) the foreign asset lies below the line and only a short position in this security would provide the investor with extra benefits. In general, there are two reasons why a foreign security may be found above (below) the domestically observed SML: (1) the foreign asset is priced by the standards of investors who are more (less) averse to risk, (2) the rate of return of the foreign security moves more (less) closely with the foreign market portfolio rather than the domestic market portfolio.

Since it is usually costly and risky to overcome barriers to international portfolio investment, it must be noted that the net realized return may not be sufficient to justify the holding (or borrowing) of foreign securities, even if the special benefits of segmented markets are further enhanced by diversification benefits that arise when these assets are less than perfectly correlated with the domestic portfolio.⁴⁶

Assuming a degree of segmentation among national securities markets, insights can be gained into the investment flows involving marketable securities between countries. Because investors in different countries seek to construct optimal portfolios, and because that action may require purchases of securities in foreign countries, portfolio theory explains the simultaneous occurrence of investments into and out of a given country.

3.4.2 Empirical Evidence of Market Segmentation

Given the opportunities that could arise due to market segmentation, the question remains how one might identify segmented capital markets. From a purely conceptual point of view the conditions for having

⁴⁶ Stulz (1981), p. 927.

segmented markets can be put forth clearly: when capital markets are segmented, expected returns on risky securities are determined by the systematic risk of each security in the context of an appropriate national portfolio, while in an integrated world capital market expected returns on risky securities are determined by the systematic risk of each security in the context of a world market portfolio. However, due to serious measurement problems, researchers have found it depressingly difficult to devise tests that adequately identify segmented markets.⁴⁷

Take, for example, the observation that returns from assets in two countries are strongly correlated. Does this imply that the capital markets involved are integrated? Or does it imply the existence of segmented markets, with the correlations merely reflecting external shocks or other economic factors that affect *both* economies? Thus, while zero correlation would clearly suggest the existence of segmented markets, strong correlations do not guarantee that an integrated market for securities exists (since they could be caused by international shocks or other common underlying factors having an impact on basically segmented markets), nor do they warrant the conclusion that rising or falling correlations are indicative of a changing degree of integration.⁴⁸

One study that revisits the market segmentation issue deals with two groups of equities: (1) U.S. and foreign equities traded worldwide (international) and (2) U.S. equities not traded worldwide (domestic).⁴⁹ The study theorizes a common linear pricing relationship across both groups of equities, imply-

⁴⁷ Solnik (1977).

⁴⁸ Kohlhagen (1983), Kenen (1976).

⁴⁹ Bodurtha (1989).

ing the existence of an integrated market. The data used for the study spans the period from 1970 to 1985 and includes American Depository Receipts (ADRs – see Section 5.1.2) for foreign company stocks trading on NYSE and AMEX as well as domestic stocks trading on foreign exchanges in the form of international depository receipts (IDRs). The results do not permit a rejection of the integrated market hypothesis.

However, this finding could be due to a bias in the sample selected towards securities traded in non-segmented markets. Nevertheless, the study finds that the premium associated with foreign market risk is quite large, offsetting the diversification benefits that should be gained from international diversification, in theory. Furthermore, the Sharpe measures (return/risk) of 19 U.S. international mutual funds are examined. It is found that the majority of these Sharpe measures exceed the U.S. benchmark of the S&P500 index. The measures do not, however, exceed the world market benchmark (the MSCI World Index).

Another study rejects the hypothesis that international investors' portfolios are generated by a historically based mean-variance model and perfect market integration.⁵⁰ The study bases its argument on the Roll critique.⁵¹ Traditional models (mean-variance asset pricing models) assume homogeneous investor expectations about future asset returns, making it possible to calculate aggregate asset demand. However, the study points out that international investors use different price indices and thus arrive at

⁵⁰ Glassman/Riddick (1996), Glassman/Riddick (1994).

⁵¹ The Roll critique suggests that one must know the entire supply (total market wealth) in order to test the mean-variance model. While an index can be used to approximate total market wealth, it is not possible to determine whether the index used lies on the mean-variance efficient frontier.

varying estimates of real returns. Therefore, it is not possible to keep the homogeneous expectations constraint on an international mean-variance asset pricing model.

Some evidence presented in the above study suggests that short-term Eurocurrency markets are integrated and that the money markets of the industrialized countries are somewhat segmented. As for the longer-term markets, their growth in recent years might be taken as evidence of increasing integration, although little other support for this contention can be adduced. Pending more evidence, a pragmatic position would be to recognize that markets in reality lie somewhere between the two extremes of perfect segmentation and complete integration, with the degree of segmentation/integration changing slowly over time.⁵²

[Table 6]

In spite of the well-documented benefits of international portfolio investment, which would call for a considerable degree of international investment on the basis of diversification benefits alone (Table 6), actual investment behavior is dramatically different, both with respect to institutions as well as individuals.⁵³ Empirical studies show that the actual portfolio composition of investors is strongly shifted towards securities in their home market (home bias). To illustrate, 93.8% of the funds of U.S. investors are invested in U.S. equities, even though the U.S. stock market accounts for a much smaller fraction of world

⁵² See Bekaert/Harvey/Lumsdaine (1998) regarding liberalization measures of emerging markets.

⁵³ When interpreting the data in Table 6, it has to taken into account that these recommendations are based on correlation data from earlier time periods. More recently, in response to increased correlations between national stock markets during the recent past, investment strategists of major institutions in the United States have reduced the fraction of shares to be allocated to foreign markets (Fuerbringer (2001)).

equity markets. This characteristic of investor behavior observed in many countries remains an empirical puzzle in financial economics.⁵⁴ Interestingly, recent empirical evidence documents that the preference for investing close to home even applies to portfolios of domestic stocks, i.e. in large countries investors preferably invest in stocks of companies that are locally headquartered.⁵⁵ Other factors must come into play.

4 Unique Risks of and Institutional Constraints for International Portfolio Investment

4.1 Unique Risks of International Portfolio Investment

Unfortunately, there are not only benefits from IPI that simply wait to be taken advantage of, but there are also some unique risks and constraints that arise when extending the scope of securities held to an international scale. These are easily overlooked, but nevertheless have to be included in the analysis when comprehensively assessing the IPI phenomenon, since they might influence the investment decision or its implementation considerably.

4.1.1 Currency Risk

In what follows, the unique aspects of risk due to international diversification of investment portfolios will be analyzed in more detail. The major point is that improved portfolio performance as a result of international portfolio investment must be shown after allowing for these risk and cost components. For con-

⁵⁴ Glassman/Riddick (1996), Tesar/Werner (1995), Cooper/Kaplanis (1994), French/Poterba (1991).

⁵⁵ Coval/Moskowitz (1999).

venience as well as analytical clarity, the unique international risk can be divided into two components: exchange risk (broadly defined) and political (or country) risk. For example, if an investor considers U.S. dollar-denominated and euro-denominated Eurobonds listed on the Singapore Exchange, one class of risks is attached to the currency of denomination, dollar or euro, and another is connected with the political jurisdiction within which the securities are issued or traded.

As foreign assets are denominated, or at least expressed, in foreign currency terms, a portfolio of foreign securities is usually exposed to unexpected changes in the exchange rates of the respective currencies (exchange rate risk or currency risk). These changes can be a source of *additional* risk to the investor, but by the same token can *reduce* risk for the investor. The net effect depends, first of all, on how volatility is measured, in particular whether it is measured in "real" terms against some index of consumption goods, or in nominal terms, expressed in units of a base currency. In any case, the effect *ultimately* depends on the specifics of the portfolio composition, the volatility of the exchange rates, most importantly on the correlation of returns of the securities and exchange rates, and finally on the correlation between the currencies involved. If total risk of a foreign security is decomposed into the components currency risk and volatility in local-currency value, exchange risk contributes significantly to the total volatility of a security.⁵⁶ Nevertheless, total risk is less than the sum of market and currency risk.

For equities, currency risk represents typically between 10 and 15 percent of total risk when measured in nominal terms, and the relative contribution is generally even higher for bonds. However, currency risk can be diversified away by investing in securities denominated in many different currencies,

⁵⁶ Odier/Solnik (1993).

preferably with offsetting correlations. Indeed, currency risk itself can be decomposed into the volatility of the currency and the correlation or covariance of exchange rates with local-currency returns.⁵⁷ Interestingly, exchange rates and stock markets have shown a tendency to move in the same direction for *major* currencies over *shorter* time periods, implying that currency reinforces the effect of stock-market movements measured in foreign currency. Nevertheless, results of empirical studies show that foreign exchange risk is more than compensated for by diversification benefits, i.e. overall portfolio risk can be reduced.⁵⁸

In addition to diversification, exchange risk can of course be reduced by means of "hedging," i.e. establishing short or long positions via the use of currency futures and forwards, which represent essentially long or short positions of fixed income instruments, typically with maturities of less than one year. It is not surprising therefore that such strategies continue to be heatedly debated by academics and practitioners alike.⁵⁹ In particular, there is no clear guidance with regard to the optimal hedge ratio in an IPI framework. Contrary to some authors who point out the performance improvement due to "complete" hedges, other researchers find indications that currency hedges are apt to reduce total portfolio risk in the short run, but actually increase the return variance in the long run if the portfolio is fully hedged.⁶⁰

⁵⁷ Eun/Resnick (1988).

⁵⁸ Odier/Solnik (1993).

⁵⁹ Glen/Jorion (1993).

⁶⁰ Froot (1993), Black (1989).

Basically, the issue boils down to the nature of the correlation between returns of securities and currencies in the short and the long run. With respect to large industrialized countries with reputations for monetary discipline, currency values and returns on securities, especially equities, tend to exhibit *positive* correlation. In contrast, in countries where monetary policy seems to have an inflationary bias, returns on equities and external currency values tend to be *negatively* correlated. To make things even more complex, countries do not stay immutably in one category or the other over longer periods of time. It is not surprising, therefore, that prescriptions as to the proper "hedge ratio" as well as the empirical findings are found in all ranges.

Apart from the extreme position of complete hedging⁶¹ or no hedging,⁶² there are many different opinions as to the best way of calculating the hedge ratio. The proposition of a universal hedge ratio⁶³ that would be the same for all investors in the world appears appealing at first sight, but relies on too restrictive assumptions to be of practical use.⁶⁴ More applicable in this sense are approaches that derive

⁶¹ Pérolde/Schulman (1988).

⁶² Kritzman (1993), Puntam (1990), Rosenberg (1990).

⁶³ Black (1990), Black (1989). See also Gastineau (1995), Adler/Jorion (1992), Adler/Prasad (1992) on this issue.

⁶⁴ Jorion (1994), Solnik (1993), Adler/Prasad (1992), Adler/Solnik (1990). It is assumed e.g. that all markets are liquid, there exist no barriers to international investment, all investors have the same view on stocks and currencies as well as identical risk aversion, and that they all want to hold the same internationally diversified portfolio. Moreover, while a historical estimate of 0.7 for the aggregate universal hedge ratio is provided, the individual hedge ratios are very complex and cannot easily be derived from market data.

the optimal hedge ratio by minimizing the portfolio variance (minimum- variance hedge)⁶⁵ or maximize the portfolio's risk adjusted return (mean-variance hedge).⁶⁶ As a matter of fact, the state of knowledge reflects the diversity of practice in the community of professional investors.

4.1.2 Country Risk

The fact that a security is issued or traded in a different and sovereign political jurisdiction than that of the consumer-investor gives rise to what is referred to as country risk or political risk. Country risk in general can be categorized into transfer risks (restrictions on capital flows), operational risks (constraints on management and corporate activity) and ownership-control risks (government policies with regard to ownership/managerial control).⁶⁷ It embraces the possibility of exchange controls, expropriation of assets, changes in tax policy (like withholding taxes being imposed after the investment is undertaken) or other changes in the business environment of the country. In effect, country risk are local government policies that lower the actual (after tax) return on the foreign investment or make the repatriation of dividends, interest, and principal more difficult. Malaysia's actions in 1997/98 represent a textbook example why country risk is still a concern to foreign portfolio investors.

⁶⁵ Etzioni (1992), Filatov/Rappaport (1992), Celebuski/Hill/Kilgannon (1990), Beninga/Eldor/Zilcha (1984), Hill/Schneeweis (1982).

⁶⁶ Gardner/Stone (1995), Glen/Jorion (1993), Kritzman (1993), Jorion (1989).

⁶⁷ Erb/Havey/Viskanta (1998), Cosset/Suret (1995), p. 302. Diamonte/Liew/Stevens (1996) and Erb/Harvey/Viskanta (1996b) show a systematic relationship between measures of country risk and expected stock returns.

Political risk also includes default risk due to government actions and the general uncertainty regarding political and economic developments in the foreign country. In order to deal with these issues, the investor needs to assess the country's prospects for economic growth, its political developments, and its balance of payments trends. Interestingly, political risk is not unique to developing countries.⁶⁸

In addition to assessing the degree of government intervention in business, the ability of the labor force and the extent of a country's natural resources, the investor needs to appraise the structure, size, and liquidity of its securities markets. Information and data from published financial accounting statements of foreign firms may be limited; moreover, the information available may be difficult to interpret due to incomplete or different reporting practices.⁶⁹ This information barrier is another aspect of country risk. Indeed, it is part of the larger issue of corporate governance and the treatment of foreign (minority) investors, mentioned earlier. At this point it is worth noting that in many countries foreign investors are under a cloud of suspicion which often stems from a history of colonial domination.

Perception of country risk is, therefore, a reason for the unwillingness of many international investors to hold a portion of their securities in some of the less developed countries and those that face political turmoil, despite evidence that investments in these countries could contribute to improving the risk-return combination of a portfolio. By the same token, this fact is consistent with the observation of disproportionately large (relative to the share of GNP) holdings of U.S. securities in the portfolios of many non-U.S. mutual funds. Empirical evidence supports the idea that stock markets are perceived differently

⁶⁸ Cosset/Suret (1995), p. 305. Information about political risk such as financial transfer risk ratings can be obtained, e.g., from Political Risk Services (PRS).

⁶⁹ Bhushan/Lessard (1992), Kester (1986), Rutherford (1985), Choi/Hino/Min/Nam/Ujiie/Stonehill (1983).

in terms of political risk.⁷⁰ However, the data also show that diversification among politically risky countries improves the risk-return characteristics of portfolios. Even greater benefits result from combining securities from countries with high and low political risk due to generally low correlation between these groups.

4.2 Institutional Constraints for International Portfolio Investment

Institutional constraints are typically government-imposed, and include taxes, foreign exchange controls, and capital market controls, as well as factors such as weak or nonexistent laws protecting the rights of minority stockholders, the lack of regulation to prevent insider trading, or simply inadequate rules on timely and proper disclosure of material facts and information to security holders. Their effect on international portfolio investment appears to be sufficiently important that the theoretical benefits may prove difficult to obtain in practice. This is, of course, the very reason why segmented markets present opportunities for those able to overcome the barriers.

However, when delineating institutional constraints on international portfolio investment, it must be recognized that these barriers are somewhat ambiguous. Depending on one's viewpoint, institutional constraints can turn out to be incentives: what is a constraint in one market (high transaction costs, for example), turns into an incentive for another market. Or, while strict regulation of security issues may be designed for the protection of investors, if administered by an inept bureaucracy it can prove to be a constraint for both issuers and investors.

⁷⁰ Cosset/Suret (1995).

4.2.1 Taxation

When it comes to international portfolio investment, taxes are both an obstacle as well as an incentive to cross-border activities. Not surprisingly, the issues are complex -- in large part because rules regarding taxation are made by individual governments, and there are many of these, all having very complex motivations that reach far beyond simply revenue generation. In the present context, it is not details but a framework or "pattern" of tax considerations affecting IPI that is of foremost interest.

It is obvious then, since tax laws are national, that it is individual countries that determine the tax rates paid on various returns from portfolio investment, such as dividends, interest and capital gains. All these rules differ considerably from country to country. Countries also differ in terms of institutional arrangements for investing in securities, but in all countries there are institutional investors which may be tax exempt (e.g. pension funds) or have the opportunity for extensive tax deferral (insurance companies). However, countries do not tax returns from all securities in the same way. Income from some securities tends to be exempt in part or totally from income taxes. Interest paid on securities issued by state and municipal entities in the United States, for example, is exempt from Federal income taxes. A number of countries, e.g. Japan, provide exemptions on interest income up to a specified amount, but only on interest received from certain domestic securities. Almost all countries tax their resident taxpayers on returns from portfolio investment, whether the underlying securities have been issued and are held abroad or at home. This is known as the worldwide income concept.

There is a significant number of countries, however, who tax returns from foreign securities held abroad *only* when repatriated. The United Kingdom and a number of former dependencies, for example Singapore, belong to this category. Obviously, such rules promote a pattern of IPI where financial

wealth is kept "offshore," preferably in jurisdictions that treat foreign investors kindly. Such jurisdictions are frequently referred to as "tax havens."

Since such tax havens benefit from the financial industry that caters to investors from abroad, they often make themselves more attractive by adopting law confidentiality provisions, generally referred to as "secrecy laws," protecting the identity of (foreign) investors from the prying eyes of foreign governments, creditors, relatives and others. It is not surprising, therefore, that tax havens are also used by investors from countries that do *not* exempt returns from foreign portfolio investment. Such investors simply forget to declare such returns.

Issues are becoming more complex when investors use tax havens not only to shield wealth from the tax and foreign exchange control laws of their home countries. People can also hide financial assets that stem from activities such as theft, robbery, extortion, kidnapping and increasingly proceeds from dealings in prohibited drugs or revenues from large-scale political corruption. In this respect, the term "money laundering" is being used, often involving financial transfers via tax havens, which usually takes the form of transactions that are virtually akin to international portfolio investment.

Developed countries with high tax rates, operating through common organizations, such as the OECD and FATF, have begun aggressive initiatives to minimize the use of tax haven jurisdictions, but the process is not without controversy. While there is little opposition to curtailing financial transactions resulting from criminal activities, a number of (quite reputable) tax haven countries have serious reservations about assisting other countries in enforcing their foreign exchange control laws or confiscatory tax regimes.

The beginning of the new millennium has witnessed major changes being initiated worldwide in this regard. First among these, the member countries of the European Union have agreed to introduce a system of reporting foreign investment returns to home countries to be implemented later this decade. Secondly, the United States has unilaterally implemented a system of "qualifying foreign financial intermediaries," which effectively makes foreign banks responsible to collect taxes on securities holdings of people who are potentially U.S. taxpayers, assuming they want to continue to do business in U.S. financial markets. Finally, under the auspices of the OECD, a general attack on "unfair competition and practices" by tax havens has been initiated, identifying and ultimately sanctioning jurisdictions that do not cooperate with the information request from OECD member countries.

Apart from differences in national tax regimes, barriers to IPI are primarily created by "withholding taxes" that most countries in the world (except tax havens) level on investors residing in other countries, on dividends, interest and royalties paid by their resident borrowers. These withholding taxes are imposed in *lieu* of income taxes since the country of the payer has no direct way to assess foreign residents on such income. Theoretically such withholding taxes should be creditable against taxes paid by the investor in his own country -- provided they are subject to tax there and provided further that they decide to declare such income at home. Given the fact that such tax credits are limited and always fraught with delays and administrative costs, the specter of double taxation is ever present. It is at this point where so called "double taxation agreements" or "tax treaties" among countries play a crucial role for IPI as they reduce or even eliminate withholding tax rates on a bilateral basis. However, such tax treaties increasingly contain reporting provisions and clauses instituting "administrative cooperation" procedures among the tax authorities involved, which make such treaties as much an obstacle as an incentive to IPI.

The point of all this is that the legal and illegal use of tax haven jurisdictions has led to significant flows of IPI, creating an incentive for such activities by both private and institutional investors, offsetting barriers that otherwise exist. As often, the net effect is difficult to verify empirically; still when everything is said and done, taxes and the uncertainties as well as the associated transactions costs represent one obstacle to IPI.

4.2.2 Foreign Exchange Controls

While the effect of taxation as an obstacle to international portfolio investment is only incidental to its primary purpose, which is to raise revenue, exchange controls are specifically intended to restrain capital flows. Balance of payment reasons or the effort to reserve financial capital for domestic uses lead to these controls. They are accomplished by prohibiting the conversion of domestic funds for foreign monies for the purpose of acquiring securities abroad.

Purchases of securities are usually the first category of international financial transactions to be subjected to, and the last to be freed from, foreign exchange controls. While countries are quite ready to restrict undesired capital inflows and outflows, they prove reluctant to remove controls when the underlying problem has ceased to exist, or even when economic trends have reversed themselves. The classic example is provided by Japan where, during the early seventies, exchange controls prevented Japanese investors from purchasing foreign securities. At the same time, new measures were taken to prevent a further increase in Japanese liabilities through foreign purchases of Japanese securities. At times, countries have resorted to more drastic measures by requiring residents to sell off all or part of their foreign holdings and exchange the foreign currency proceeds for domestic funds.

The effects of capital flow constraints on asset pricing and portfolio selection have been analyzed in a study on the Swedish capital market (where both capital inflow and outflow constraints were in existence during the period studied).⁷¹ Inflow constraints limit the fraction of a domestic firm's equity that may be held by foreign investors. With a binding inflow constraint, one would expect two different prices for domestic assets. Because of the diversification benefit offered by holding foreign securities, there should be a premium on those shares available to foreign investors. In the Swedish market, firms are constrained to foreign ownership of 20% of a company's voting rights and 40% of a company's equity, giving rise to two classes of stocks -- a "domestic" class and a "foreign" class. On the other hand, outflow constraints ("switch currency constraints") limit the amount of capital a domestic investor may spend on foreign assets. Under these conditions, one would expect that, since domestic investors must pay a premium for foreign assets, they will try and substitute those assets with cheap domestic near-substitutes. Thus, foreign asset premiums imply a home bias in portfolio selection.

The study shows, that of 111 firms on the Stockholm Exchange with a "domestic" and a "foreign" share class, none exhibits differential prices for its "domestic" versus its "foreign" shares. Although the study is able to provide conclusive information on the home bias created by capital flow constraints, it is unable to show any clear effects on asset pricing due to such constraints. This may be due to the fact that inflow and outflow constraints have opposing effects on domestic share prices. While inflow constraints create a premium on "foreign" share prices, outflow constraints and the home bias will create a premium on "domestic" share prices. Thus, it remains unclear which of the price effects dominates.

⁷¹ Bergstrom/Rydqvist/Sellin (1993).

4.2.3 Capital Market Regulations

Regulations of primary and secondary security markets typically aim at protecting the buyer of financial securities and try to ensure that transactions are carried out on a fair and competitive basis. These functions are usually accomplished through an examining and regulating body, such as the Securities and Exchange Commission (SEC) in the United States, long regarded as exemplary in guarding investor interests, or the "Comitee des Bourses et Valeurs" in France.⁷² Supervision and control of practices and information disclosure by a relatively impartial body is important for maintaining investors' confidence in a market; it is crucial for foreign investors who will have even less direct knowledge of potential abuses, and whose ability to judge the conditions affecting returns on securities may be very limited.

Most commonly, capital market controls manifest themselves in form of restrictions on the issuance of securities in national capital markets by foreign entities, thereby making foreign securities unavailable to domestic investors. Moreover, some countries put limits on the amount of investment local investors can do abroad or constrain the extent of foreign ownership in national companies. While few industrialized countries nowadays prohibit the acquisition of foreign securities by private investors, institutional investors face a quite different situation. Indeed, there is almost no country where financial institutions, insurance companies, pension funds, and similar fiduciaries are not subject to rules and regulations that make it difficult for them to invest in foreign securities.

⁷² It is interesting to note that in both the United States and the United Kingdom investor interests are safeguarded by stringent disclosure requirements; the authorities do not attempt to second-guess the information. In Continental Europe and Japan, the authorities attempt to protect investors by setting minimum standards of financial criteria for the issuer.

In the United States, for example, different state regulations severely constrain the proportion of insurance company portfolios invested in foreign securities. In some states, institutions, such as pension funds for public employees including teachers, cannot invest in foreign securities at all. Similarly, state banking regulations specify severe limits for commercial banks, and trustees of even private pension funds have been plagued by the uncertainties of legal interpretation of the "prudent man's rule," effectively limiting the acquisition of foreign securities. In most other countries, there are similar or even more binding restrictions.⁷³

4.2.4 Transaction Costs

Transaction costs associated with the purchase of securities in foreign markets tend to be substantially higher compared to buying securities in the domestic market. Clearly, this fact serves as an obstacle to IPI. Trading in foreign markets causes extra costs for financial intermediaries, because access to the market can be expensive. The same is true for information about prices, market movements, companies and industries, technical equipment and everything else that is necessary to actively participate in trading. Moreover, there are administrative overheads, costs for the data transfer between the domestic bank and its foreign counterpart (be it a bank representative or a local partner institution. Therefore, financial institutions try to pass these costs on to their customers, i.e. the investor. Simply time differences can be a costly headache, due to the fact that someone has to do transactions at times outside normal business hours.

⁷³ OECD (1993), OECD (1980).

However, transactions costs faced by international investors can be mitigated by the characteristic of "liquidity," providing depth, breadth, and resilience of certain capital markets, thus reducing this constraint and -- as a consequence -- inducing international portfolio investment to these countries. Issuers from the investors' countries will then have a powerful incentive to list their securities on the exchange(s) of such markets.

The development of efficient institutions, the range of expertise and experience available, the volume of transactions and breadth of securities traded, and the readiness with which the market can absorb large, sudden sales or purchases of securities at relatively stable prices all vary substantially from country to country. The U.S. and British markets have a reputation for being superior in these respects, and have attracted a large amount of international portfolio investment as a result. These markets can offer and absorb a wide variety of securities, both with regard to type (bonds, convertibles, preferred shares, ordinary shares, money market instruments, etc.) and with regard to issuer (public authorities, banks, nonbank financial institutions, private companies, foreign and international institutions, etc.).

They offer depth, being able to supply and absorb substantial quantities of different securities at close to the current price, whereas in Continental Europe and Asia one often hears complaints about the "thinness" of the securities markets leading to random volatility of prices. Therefore, all other factors being equal, investors are attracted to markets where transactions are conducted efficiently and at a low cost to borrower and lender, buyer and seller. Historically, New York has provided foreign investors with one of the most efficient securities markets in the world. A comparison of cost estimates for trading in the shares of the national stock-market index shows that trading in U.S. stocks is in most cases still less expensive than trading in non-U.S. securities (Table 7).

[Table 7]

4.2.5 Familiarity with Foreign Markets

Finally, investing abroad requires some knowledge about and familiarity with foreign markets. Cultural differences come in many manifestations and flavors such as the way business is conducted, trading procedures, time zones, reporting customs, etc. In order to get a full understanding of the performance of a foreign company and its economic context, a much higher effort has to be made on the investor's side. He might face high cost of information, and the available information might not be of the same type as at home due to deviations in accounting standards and methods (e.g. with regard to depreciation, provisions, pensions), which make their interpretation more difficult.

However, multinational corporations increasingly publish their financial information in English in addition to their local language and adjust the style, presentation and frequency of their disclosure, e.g., of earnings estimates, to U.S. standards. Moreover, major financial intermediaries provide information about foreign markets and companies to investors as international investment gains importance; the same is true for data services that extend their coverage to foreign corporations.⁷⁴

Sometimes, existing or perceived cultural differences represent more of a psychological barrier than a barrier of a real nature. As the benefits from international investment/diversification are known, it might be worthwhile to invest a reasonable amount of time studying foreign markets in order to overcome barriers and take advantage of the gains possible. Indeed, the perception of foreign market risk might be higher than it actually is. To illustrate, just looking at volatility foreign markets might appear very

⁷⁴ Solnik (2000).

risky at first sight. Nevertheless, this might not be true when assessing them in a portfolio context as foreign stocks might eliminate some more diversifiable risk and only add little to total portfolio (market) risk.

5 Channels for International Portfolio Investment

Investors who wish to benefit from the ownership of foreign securities can implement their portfolio strategy in a number of ways, each of which has its peculiar advantages and drawbacks. The most direct way for an investor to acquire foreign securities is to place an order with a securities firm in his home country which would then acquire the securities in the market of the foreign issuer, usually with the aid of a securities broker operating in the foreign country. Furthermore, the investor can establish an investment account with a financial institution in a country other than his residence, and purchase securities either in that country or in the countries of issue.

Because of cost, complex delivery procedures, and the difficulty of securing adequate information about individual securities, the investor might be inclined to buy foreign securities issued or traded in the market of the country in which he resides instead. In this case, he only needs to pay the transaction costs of local brokerage and has the advantage of the protection of local laws and regulations. A preferable alternative to all but large investors consists of indirect investment via mutual funds specializing in foreign securities.

5.1 Direct Foreign Portfolio Investment

5.1.1 Purchase of Foreign Securities in Foreign Markets

The most direct way to implement international portfolio investment is the purchase of foreign securities directly in the respective local (foreign) market of the issuer. While restrictions on outward IPI have been eliminated by many countries, theoretically foreign investors could place orders through banks or securities brokers -- either in the domestic or foreign country -- when they wish to purchase foreign securities. This is true for both outstanding securities and new issues. When the securities have to be purchased in a secondary market, it is usually in the domestic market of the issuing entity, i.e. the borrower.

At this point a number of problems arise. On a technical level, there are difficulties with the delivery of the certificates. Also, there is the expense of making timely payment in foreign funds. Finally, investors may find it difficult to secure good information on the situation of the issuer, conversion and purchase offers, and rights issues, and to collect interest and dividends. Many of these technical problems stem from a lack of international integration of securities markets. Because of a combination of extensive regulation to protect the investing public from fraud, conflict of interest, or gross incompetence, or the resistance of entrenched local institutions to competition, especially from abroad, organized securities markets have been less open to securities firms operating on a multinational basis than, say, markets for commercial banking services.

Since the end of the 1990s, there have been many initiatives to reorganize exchanges across borders through mergers and strategic alliances, but progress has been slow because of entrenched interests and nationalistic feelings. The same is true for clearing systems although the publicity in this area is considerably less noisy. All this adds to the cost of international investment.

From a practical perspective, the purchase of foreign securities can be accomplished by opening an investment account with a brokerage firm abroad. The broker will buy the foreign securities on behalf of the investor and in turn charge commissions for the handling of orders and the management of the account. Such "nonresident accounts" are similar to offshore funds in that they are maintained in a foreign country, outside the control of the country of residence of the investor. These individual investment accounts have been used for decades, particularly by citizens of Western Europe and many less developed countries, who have learned through bitter experience that property rights are precarious and always subject to shifting political fortunes. Furthermore, a situation allowing free, unhindered international transactions in securities is a temporary occurrence at best.

Nonresident accounts have enjoyed long success, especially among the wealthy and upper middle classes. When countries begin to restrict international transactions in general and international portfolio transactions in particular, they usually restrain the activities of their own residents rather than those of foreigners, especially when the foreigners' transactions are not with the local citizens but with other non-residents.

National authorities are primarily interested in determining their internal economic affairs, even against market forces. However, transactions of foreign investors with other nonresidents do not adversely affect the internal economic conditions of the country concerned. On the contrary, the local financial community gains income, employment, and prestige, and may afford the country a potential source of capital inflows. To interfere with the actions of nonresident investors would offer no more than a one-time advantage at best, and would exact an ongoing cost in foregoing opportunities for what tends to be a lucrative business.

Switzerland continues to be a preferred locale for nonresident investment accounts. Other financial centers where nonresident investors hold accounts are London (preferred by residents of former Commonwealth countries), Luxembourg, New York (preferred by Latin American investors), Singapore, and Hong Kong.⁷⁵

Trading and owning of foreign securities presents, however, several difficulties and problems to investors. Among these are myriad settlement procedures, a high rate of trade failures, unreliable interest and dividend payments, restrictions on foreign investment, foreign withholding taxes, capital controls, differences in accounting rules and reporting requirements and poor information flow.⁷⁶ In order to avoid or overcome these complications, investors might consider the purchase of foreign securities in the domestic market.

5.1.2 Purchase of Foreign Securities in the Domestic Market

In some countries, the possibility exists to purchase foreign securities in the domestic market of the investor. This represents in many respects a convenient alternative to purchasing foreign securities abroad. Foreign securities are available to the investor domestically as well, if the issuing corporation sells its securities not only in the market of the country where it is incorporated, but also in other markets. Such transactions are often accompanied by a listing of the securities usually on one of the exchanges of the country where the securities are placed. Normally, a minimum number of securities must be distributed among local investors as a requirement for listing, or alternatively the listing is a prerequisite for the suc-

⁷⁵ Bartram/Dufey (1997).

⁷⁶ Callaghan/Kleinman/Sahu (1996).

cessful placement of a substantial issue. Since the latter part of the 1980s, world financial markets have witnessed a considerable volume of so-called "Global"-equity issues, often in connection with the privatization of state-owned enterprises. Local listing fees as well as different disclosure requirements can make multiple listings quite expensive for corporations. Nevertheless, the access to local investors may make this effort worthwhile.

All national and international securities markets must deal with the need to organize the physical handling and delivery of traded securities efficiently. In national markets, the trend seems to be moving toward central depositories of one form or another; in some markets, the physical handling and shipping of securities has been virtually eliminated. Instead, a computerized accounting system keeps track of transfers, while the securities themselves are safely tucked away at the central depository, usually run by the securities brokers' association.

While the basic idea is simple and appealing, it is difficult to implement in some markets, since thorny issues regarding the nature of collateral and the fragmented structure of the securities industry arise. Interestingly, some Continental European countries, whose securities markets do not fare well in comparison with those of the United States, the United Kingdom, or even Canada by most criteria, have transfer systems based on central depositories which seem to be far ahead of those found in these otherwise superior markets.

The problems surrounding the physical transfer of securities multiply when extended to international transactions. Complications range from such mundane matters as the length of mailing time and the unreliability of mail in international transit, to arcane points of contradictory or nonexistent provisions in the securities and commercial laws of the different jurisdictions.

In response to these problems, a system of depository receipts (DRs) has been created in most markets where transactions in foreign securities play a significant role. A DR represents a "receipt" issued by a domestic institution for a foreign security which is held in trust in its name abroad. The basic function of the depository company, typically a bank or trust company, is to safeguard the original securities and issue negotiable instruments better suited to the general needs and the specific legal requirements of the investor.

In a market where, by law or by practice, registration of securities is required, the depository company (usually a bank or similar financial institution) will appoint either its own subsidiary or an external correspondent to act as the registered nominee, and will issue DRs in bearer form. Of course, this transformation can work the other way as well, with the foreign trustee holding the original bearers' securities and the depository company recording the names of the holders of the DRs, making them, in effect, registered securities.

Thus, the basic service that the depository company performs is to "transform" the securities of the original market into negotiable instruments appropriate to the legal environment of the investor's market. In addition, it performs a number of related services. Usually, the depository company will take care of dividend collections and the resulting foreign exchange problems. Further, it will handle rights issues for the investor and make sure that he receives the proceeds. Frequently, the depository company will assist the investor in claiming the withholding tax credits or exemptions. Lastly, the depository company will see to it that the investor receives materials mailed by the corporation that issued the original securities, including proxies, annual reports, and other news, such as the exercise of call provisions, stock splits, and tender offers.

Apart from the bank which issues the DRs, and its related depository institution abroad, large internationally active broker-dealers play an important role in this process: (1) they perform arbitrage by purchasing (selling) the underlying securities abroad, depositing them in (withdrawing them from) the issuing bank's foreign depository in return for the issuance (cancellation) of DRs, whenever there is a sufficient difference between the price of the DRs *vis-à-vis* that of the underlying shares; and (2) the broker-dealers also make a market in the DRs which -- together with their arbitrage activity -- assures a degree of liquidity.

Depository receipt programs exist in several countries, such as the United States, the Netherlands and the United Kingdom. American depository receipts (ADRs) have to be "sponsored" in order to qualify for listing on the New York or the American Stock Exchange. Sponsored -- as opposed to unsponsored -- ADRs are supported by the foreign company whose shares back these ADRs in that the company takes an active role in the creation and maintenance of their ADR program. To illustrate, it pays for the bank's services when a foreign bank requests a depository bank to create ADRs.

Sponsored ADRs are registered with the SEC, and issuers must comply with disclosure requirements similar to U.S. companies which can be quite a costly burden if accounting practices are very different at home, as used to be the case for German or Swiss corporations, for example. This is opposed to unsponsored ADRs, which are issued independently, but generally with the agreement of the foreign company. As they are not registered with the SEC, unsponsored ADRs can only be traded over-the-counter, disclosure of company information is reduced, financial statements might not always be translated into English and accounting data will not conform to U.S. GAAP. Moreover, fees are often not covered by the firm, but passed on to the investor.

DRs are denominated in the local currency of the respective country, thus ADRs show U.S. dollar prices. However, as ADR prices are derived by multiplying the domestic stock price by the exchange rate and adjusting for the appropriate ADR multiple, their value is nevertheless subject to exchange risk as with any ordinary stock directly traded in a foreign market. Since ADRs help to eliminate or mitigate problems of international investing such as differences in time zone and language, local market customs, currency exchange, regulation and taxes, they make investing abroad easier and less costly for investors. A potential disadvantage might just consist in lower liquidity of these instruments compared to the actual shares.⁷⁷ By mid 2000, over 1,900 ADR programs from 78 countries existed, and some 370 foreign companies were listed on each NYSE and NASDAQ by end-1999.⁷⁸ In 1998, DaimlerChrysler was the first company to overcome regulatory constraints to use a global registered share (GRS) facility, where the same share is traded on several exchanges (e.g. on NYSE and the Frankfurt Stock Exchange), thus eliminating the more cumbersome conversion process of ADRs.⁷⁹

5.2 Indirect Foreign Portfolio Investment

5.2.1 Equity-linked Eurobonds

As it appears difficult and/or costly to invest internationally by purchasing foreign securities directly because of burdensome procedures, lack of information, differences in accounting standards, low liquidity

⁷⁷ On ADRs see Kim/Suh (2000), Foerster/Karolyi (1999), Foerster/Karolyi (1998), Karolyi (1998a), Karolyi (1998b). See Bekaert/Urias (1999) with regard to ADRs of emerging market companies and the resulting diversification benefits.

⁷⁸ Karmin (2000), Solnik (2000), p. 220.

⁷⁹ Karolyi (1999).

and limited choice of domestically available foreign shares, indirect foreign portfolio investment represents a viable alternative strategy. One way proposed for this approach is through the acquisition of securities whose value is closely linked to foreign shares such as equity-linked eurobonds. These are basically eurobonds with warrants and convertible eurobonds. They represent hybrid financial instruments that consist of a straight debt component and a call option on the foreign stock. In the case of warrants, these options can and often are separated from the debt instrument and traded individually. With convertible eurobonds, the two components of the instrument are unchangeably tied to each other.

Due to the equity component of eurobonds with warrants and convertible eurobonds, the value of these instruments is not only dependent on the movement of interest rates (as straight debt), but also changes with the developments of the underlying equity. Also, for some equity markets that are largely closed to outside investors, warrants or embedded equity options can offer a way to circumvent existing restrictions and open access to these markets through the back door, or avoid settlement problems in underdeveloped markets. Warrants, once separated from the bond, tend to return to their home market and serve as equity options -- especially if these instruments are restricted or prohibited. From this perspective, equity-linked eurobonds can be useful instruments in the context of international portfolio investment. Moreover, they represent a means to some institutional investors whose equity investments are restricted to still participate in equity markets.

5.2.2 Purchase of Shares of Multinational Companies

Without barriers to international trade in securities, investors would have easy access to shares of foreign firms. Thus, they could accomplish "homemade" international portfolio diversification themselves, and the acquisition of foreign securities (or companies) by domestic firms would not provide benefits that inves-

tors could not obtain for themselves. Foreign assets and securities would be priced on the same grounds as domestic assets.

However, because barriers to foreign investment exist, segmented capital markets could be a source of important advantages to multinational companies (MNCs). In particular, unlike expansion through domestic acquisitions, in many cases foreign acquisitions can add to the value of an MNC. This is because a foreign asset may be acquired at the market value priced in the *segmented* foreign market. The same asset, when made available to domestic investors, could be valued higher because (a) foreign investors are, on average, more risk averse than domestic investors; and/or (b) the foreign asset is perceived to be less risky (i.e., it has a smaller beta) when evaluated in the context of the domestic (home) capital market.

Thus, some of the foreign assets that are priced fairly (have a net present value equal to zero) in the context of the *foreign* capital market may command a positive net present value in the context of the *domestic* capital market and, as a result, may add to the wealth of the shareholders of the acquiring firm. It must be noted that this source of advantage has nothing to do with diversification effects *per se*; it simply involves benefits from arbitrage in markets for risk, i.e. market segmentation. As a rule, companies engaged in international business and foreign operations (MNCs) have better access to foreign firms and securities than domestic investors. This suggests that such companies provide their (domestic) shareholders with the benefits of (indirect) international portfolio diversification.⁸⁰

⁸⁰ Errunza/Senbet (1984), Mellors (1973).

This view can easily lead to simplistic conclusions. However, if domestic investors already hold well-diversified portfolios (the domestic market portfolio), then an MNC provides diversification benefits if and only if new foreign investments expand the accessible investment opportunity set of domestic investors. This diversification benefit can be represented as an increase in the slope of the CML_D (Figure 5). For example, the risk-return trade-off for domestic investors is represented by the line CML_D , connecting M_D to R_F , which is the capital market line when foreign assets and securities are not available.

[Figure 5]

However, by adding new assets whose returns are less than perfectly correlated with the rate of return of the market portfolio, the slope of CML_D could be increased. To the extent that these new assets are abroad and become accessible through the operations of MNCs, investors obtain diversification benefits which may be represented by the steeper sloped CML_I . The point here is that any *new* real or financial asset, domestic or foreign, would provide a diversification benefit, as long as its return is less than perfectly correlated with the return of the domestic market portfolio (since borrowing is feasible, the expected rate of return is irrelevant).

The size of any single foreign project undertaken by an MNC is insignificant relative to the size of the MNC's domestic market. Thus, it is unlikely that an MNC could affect the risk-return trade-off (the slope of the CML) of the domestic capital market in a significant way. In other words, at the *margin* an MNC cannot provide sizable diversification benefits to investors.⁸¹ It is conceivable, though, that MNCs

⁸¹ The theoretical point is that no *single* firm should be able to change the investment opportunity set in a reasonably competitive capital market (Merton/Subrahmanyam (1974)).

as a group have, over the years, expanded the investment opportunity set for domestic investors and have thereby provided certain benefits, even though no single MNC could make a marginal contribution for which it is compensated by investors.⁸² Of course, the same benefit is provided by any group of companies that creates new assets whose returns are not perfectly positively correlated with the rate of return of the domestic market portfolio.

It was pointed out earlier that foreign portfolio investment could be used as a hedge against exchange risk (due to consumption of foreign goods). One may argue that MNC stocks could be used in a hedge portfolio instead of direct portfolio investment, and in this respect MNC shares could provide benefits to domestic investors. Clearly, this is an empirical question; it remains to be seen whether the rates of return on MNC stocks have a significant correlation with prices of consumption goods that are affected by unexpected exchange rate changes.

Empirical evidence on the effect of the benefits from indirect international diversification by firms on stock values has been somewhat mixed.⁸³ There have been a number of attempts to test the proposition that domestic investors do actually recognize MNCs for their foreign activities by assigning higher values to their shares. Focusing on the *degree* of involvement of U.S. companies in international activi-

⁸² A similar argument is usually made in connection with the optimal debt-equity ratio: there is an optimal debt-equity ratio for all corporations *in toto*, while there is no optimal debt-equity ratio for any single company. When only *one* domestic corporation is able to make foreign investments, then this company will benefit from international diversification. For a model based on this strong assumption see Adler/Dumas (1975).

⁸³ Errunza/Hogan/Hung (1999), Lombard/Roulet/Solnik (1999), Rowland/Tesar (1998), Dada/Williams (1993), Jacquilat/Solnik (1978), Senschack/Beedles (1980).

ties, it has been suggested that if stock prices of a company are (relatively) highly correlated with an index representing the world market portfolio, and if this correlation increases along with the extent of foreign activities of the firm, one could infer that investors do recognize the corporation's international diversification.⁸⁴ However, correlation can be affected not only by the degree of international involvement of a company but also by events originating domestically or abroad that affect the world index. Thus correlation results do not allow strong inference as to cause and effect. Furthermore, this method allows no conclusion as to whether investors reward or penalize companies for their international activities.⁸⁵

This point has been addressed by several researchers who hypothesized that MNCs are rewarded for their international activities with higher stock prices. One simple approach would be to test the hypothesis that the rates of return realized by shareholders of MNCs differ from those realized by the shareholders of purely domestic firms (uni-national corporations; "UNCs"). Interestingly, empirical evidence on the relative performance of a portfolio consisting of MNCs compared to a portfolio of UNCs shows that the monthly rates of return on the two portfolios are not significantly different.⁸⁶ However, these types of studies fail to explicitly consider risk associated with the realized returns to the shareholders.

⁸⁴ Agmon/Lessard (1977).

⁸⁵ Adler (1981).

⁸⁶ Fatemi (1984).

An alternative approach, which explicitly adjusts for risk involves the use of the CAPM to find out whether shares of MNCs are priced at a (positive or negative) premium. The basic problem with this method is that in a (domestic) capital market which is reasonably efficient, such information on international involvement is already reflected in stock prices, and shares of MNCs are priced in such a manner that they fall exactly on the security market line. Thus, the stock provides a risk-adjusted abnormal return only at the time of the arrival of new information about international investment. Given the reasonable efficiency of the U.S. capital market, it is perhaps not surprising that this approach has failed to detect any difference in abnormal returns between the shares of MNCs and UNCs.⁸⁷

However, there is also evidence based on the same approach, but using data over a longer period of time, that the risk-adjusted abnormal returns on the MNC portfolio are lower than those on the UNC portfolio.⁸⁸ It is interesting to note that this contradicting result is due to significantly lower average residuals of those MNCs in two industries among thirteen industry classifications, which are the rubber,

⁸⁷ Brewer (1981).

⁸⁸ Fatemi (1984).

plastics, and chemical industry, and "conglomerates." Once these two groups are excluded from the sample, the average excess returns turn out to be identical across the two portfolios.⁸⁹

One should note, however, that the existence of identical average excess returns does not lead to the conclusion that corporate international diversification has no effect on shareholder wealth. To assess the effect, as mentioned above, one needs to examine the behavior of returns around the period of initial diversification or, more precisely, around the period of the arrival of new information regarding foreign expansion. Though the results suffer from small sample size, it is found that abnormal returns rise by some 18 percent during the 14 months preceding the initial foreign diversification.⁹⁰

Others have suggested that relatively high price-earnings ratios of MNCs indicate that investors are willing to pay a premium for their shares. A relatively high price-earnings ratio is usually regarded as an indicator that the company is expected to grow at a relatively high rate, its stock price -- reflecting the expectations of the market -- being relatively high with respect to its current earnings. Therefore, one could argue that MNCs are "high growth" companies and investors do recognize that feature. However,

⁸⁹ These results are explained in terms of the oligopoly theory of multinational firms. Multinationals, as oligopolists, erect and preserve effective barriers to entry; however, once the barriers to entry erode, MNCs will be at a cost disadvantage relative to local firms, and this may in turn affect their overall performance (Fatemi (1984)). In fact, included in the MNC group of the "rubber, plastics, and chemical" industry are firms such as Firestone, Goodyear, and Uniroyal which, because of lack of product differentiation and ease of entry, have faced severe price competition in the European market and have closed down their European operations.

⁹⁰ Fatemi (1984). It is argued that this reflects the market's assessment of the net effect of (possible) higher profits, lower degree of riskiness, and the cost disadvantages involved in becoming a multinational. However, the magnitude of this abnormal gain is quite small relative to that associated with other events (e.g., mergers, splits, etc.).

the rate of growth of a company's earnings is basically a function of its operating strategy and its competitive advantage in the markets for real goods and services, and this aspect is only very indirectly related to foreign investment.

Another approach has been to assess the "internalization" effect of foreign direct investment (FDI).⁹¹ It hypothesizes that investors price the increase in value that occurs when FDI internalizes markets for certain intangible assets. The value investors place on firm multinationality can be examined by regressing proxies for diversification advantages, technological advantage enjoyed abroad (R&D), consumer goodwill, and firm leverage effects on Tobin's q as a measure of firm value. Regression analysis reveals a positive relationship between multinationality and firm value as a result of a cross-product of consumer goodwill and diversification advantages. This finding is consistent with the view that multinationals' stock prices will not necessarily be bid up solely because of the indirect international portfolio diversification benefits. In the absence of R&D or consumer goodwill or related intangibles, multinationality is not shown to have any particular benefits.

Finally, there have been attempts to assess the degree of a risk-reduction effect of using MNC shares. The empirical results show that the monthly betas of the MNC portfolio are significantly lower and more stable than those of the UNC portfolio, indicating that corporate international diversification lowers the level of systematic risk. It was also found that the degree of international involvement is higher the lower the beta.⁹² Using variance as a measure of risk, a portfolio of U.S. MNCs has about 90 per-

⁹¹ Morck/Yeung (1991).

⁹² Fatemi (1984).

cent of the standard deviation of a portfolio of U.S. UNCs, while internationally diversified portfolios have only about 30 percent to 50 percent of the latter.⁹³ Similarly, the evidence shows that MNCs do not provide diversification effects to a portfolio of domestic stocks, while foreign stocks do for most countries.⁹⁴ This evidence suggests that the international diversification opportunities have not yet been fully exploited by MNCs; consequently a portfolio of MNC stocks is a poor substitute to investors for an efficiently diversified international portfolio.⁹⁵

In testing whether MNCs *as a group* have provided some diversification benefits, one can analyze possible changes in the slope of the CML when foreign investments of MNCs are somewhat excluded from domestic portfolios. If the new slope is lower, then it may be inferred that over the years MNCs as a group have expanded the investment opportunity set of domestic investors. However, given the data problems when correcting samples for factors other than international involvement, index problems (choosing the proper standard against which to measure risk and return), and the joint nature of the tests (simultaneously testing both the hypothesis *and* the underlying model), the empirical evidence remains unreliable, and the debate on this issue is likely to remain unresolved.

⁹³ Jacquillat/Solnik (1978). Senschack/Beedles (1980), find that total risk of a portfolio of MNCs is not lower than that of a portfolio of (U.S.) stocks with primarily domestic operations.

⁹⁴ Rowland/Tesar (1998).

⁹⁵ Dada/Williams (1993), Senschack/Beedles (1980), Jacquillat/Solnik (1978).

5.2.3 International Mutual Funds

The easiest and most effective way to implement IPI -- especially for the individual investor -- is to invest in "international" mutual funds. Investing in mutual funds solves the problem of the individual investor to obtain information about foreign companies/securities, gain market access and deal with all the problems associated with foreign securities trading. Instead, the fund management company takes care of these issues for all investors of the fund with the benefit of economies of scale due to pooled resources. In return, investors are in most cases charged e.g. through up-front fees for the service of the fund and also the management of the portfolio. These costs to the investor are generally less for funds that replicate a local or international index because they have a simple investment strategy that does not require costly and time-intensive research.

Indeed, in the U.S. market there exist so many vehicles that it is very easy to diversify internationally simply using the opportunities available in the domestic market. There are funds that specialize by commodity, industry, investment class, country and region. There are also a number of more general (international) funds available which invest in a broad base of international securities. Many domestic funds have an international component in the sense that they contain foreign securities (Nokia, Sony, DaimlerChrysler). In addition, there are funds that focus on foreign securities exclusively, and finally some global funds exist that buy foreign as well as domestic stocks. Recent empirical evidence indicates that U.S. investors can effectively mimic foreign market returns with domestically traded securities (including shares of MNCs, closed-end country funds, and ADRs). In fact, the availability of claims on

foreign assets makes it possible to achieve most of the diversification effect with domestically traded securities.⁹⁶

The fund industry has undergone dramatic growth, and as a result funds come in a bewildering variety. The investor has to carefully distinguish between the various categories. The first distinction refers to the registration and supervisory regime of the fund: onshore versus offshore. Offshore funds, which are typically incorporated in a tax haven, provide investors with little if any protection beyond the reputation of the sponsoring firm. However, they usually offer anonymity and allow investment managers a great deal of latitude to pursue investment success. This is one of the reasons why almost all hedge funds are incorporated as offshore funds.

Another important dimension of mutual funds is whether they are *open-end* or *closed-end*. The former in contrast to the latter do not limit the number of shares of the funds, i.e. new investors can always enter the fund and are not constrained by the availability of shares in a secondary market. As a consequence, the capital invested in the fund varies considerably over time. Closed-end funds are typically used with respect to markets that are not very liquid. The closed-end structure isolates the fund manager from the problem of having to buy or sell shares in response to new fund purchases or redemptions. However, this structure leads almost invariably to deviations from net asset values (NAV), i.e. premia or discounts, a phenomenon that has given rise to a substantial literature.⁹⁷

⁹⁶ Errunza/Hogan/Hung (1999).

⁹⁷ See e.g. Gemmill/Thomas (2000), Chay/Trzcinka (1999), Bodurtha/Kim/Lee (1995), Diwan/Errunza/Senbet (1994), Lee/Shleifer/Thaler (1991), Brauer (1988).

Whereas the relationship between premium/market price and NAV often appears to be of a random nature, the existence of a (positive) premium seems to be rational for those funds specializing in countries which impose significant foreign investor constraints, such as an illiquid market, substantial information gathering costs or other restrictions on market access. If funds provide a means to investors to circumvent these obstacles, they can be expected to trade at a premium.⁹⁸ Another puzzling phenomenon of closed-end country funds traded in the United States consists in their slow reaction to changes in the fundamental value and their strong correlation with the U.S. stock market.⁹⁹ Empirical evidence suggests behavioral finance concepts such as investor sentiment (noise trader risk) as potential explanations for these phenomena in addition to more traditional, rational arguments based on mis-measurement of reported NAVs due to agency costs, tax liabilities, or illiquidity of assets.¹⁰⁰

Funds are also categorized by the way they are being sold, i.e. with or without an explicit sales charge (load). Such loads are typically in the vicinity of 5 percent. While the market share of no-load funds in the United States has progressed considerably over the years, it has peaked at about 25-35% market share. Indeed, most recently, load funds seem to have retained some of the market share, which is at first sight surprising. The phenomenon is less puzzling when one looks at the bewildering array of mutual funds that have appeared in the U.S. markets. Investors seem to require assistance and appear to be willing to pay for help. This appears to hold true particularly for international funds.

⁹⁸ Eun/Janakiraman/Senbet (1995), Bonser-Neal/Brauer/Neal/Wheatley (1990).

⁹⁹ Klibanoff/Lamont/Wizman (1998), Bodurtha/Kim/Lee (1995).

¹⁰⁰ Gemmill/Thomas (2000), Lee/Shleifer/Thaler (1991).

Interestingly, at the same time, there are apparently a sufficient number of investors who, convinced by the efficient market theory, are looking for low cost vehicles to diversify their portfolios internationally. In response, the securities industry has created a whole range of low-cost index funds with an international focus. Unfortunately, the illiquid state of emerging markets has prevented the creation of index funds for most of these countries. A relatively recent, further development along these lines is the emergence of exchange-traded index funds, led by Barclays' *iShares*. These are index funds based on Morgan Stanley's MSCI country and regional indices that are traded on the American Exchange where they can be bought and sold just like other shares. However, here too the availability of *iShares* representing emerging markets is limited. Emerging markets appear to lend themselves particularly to the creation of *managed* funds, as the inefficiencies in these markets seem to provide opportunities for skilled and well-informed managers to achieve excess returns. At the same time, the liquidity constraints of these markets call for *closed-end* fund structures that relieve fund managers from the costly problems of providing liquidity for redemptions and new purchases.

Finally, the creation of "representative" indices is no small feat in many of the emerging markets where major firms are still dominated by founding family shareholders, or where there are significant crossholdings among firms and financial institutions as well as by governments or their entities. These issues create considerable challenges for determining the weighting of various shares in the index, accounting for significant performance differences in index-linked investments.

6 Summary and Conclusion

At first sight, the idea of investing internationally seems exciting and promising because of the many benefits of international portfolio investment. By investing in foreign securities, investors can participate in

the growth of other countries, hedge their consumption basket against exchange rate risk, realize diversification effects and take advantage of market segmentation on a global scale. Even though these advantages might appear attractive, the risks of and constraints for international portfolio investment must not be overlooked. In an international context, financial investments are not only subject to exchange risk and political risk, but there are many institutional constraints and barriers, significant among them a complexity of tax issues. These constraints, while being reduced by technology and policy, support the case for internationally segmented securities markets, with concomitant benefits for those who manage to overcome the barriers in an effective manner.

In this regard, the different channels available to acquire foreign securities come into focus. The most obvious way to invest internationally consists in the purchase of foreign securities directly -- either abroad as a foreign direct share via a domestic or foreign broker, or at home in case shares or DRs of foreign companies are traded in the domestic market. Although investing in foreign securities is becoming easier every day as more and more investment banks offer nonresident investment accounts to their clients and the number of companies that are listed at several exchanges in the world is increasing, there are still significant barriers and complexities to this strategy such as transactions costs and lack of information.

In the face of these obstacles to the acquisition of foreign securities, it might be most sensible for the private investor to consider investing in international mutual funds, preferably those that are linked to a world capital market index -- with the problem still remaining as to what appropriate index/benchmark would be. Thus, a maximum of diversification can be exploited at low transactions cost and management fees. Finally, some "fine-tuning" will be necessary to account for the consumption pattern of the investor by shifting the portfolio towards the national index.

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Table 1: U.S. Holdings of Foreign Securities

(year-end 1998 and 1999, in billions of dollar)

	1998	1999
Total Holdings of Securities	2,052.9	2,583.4
Bonds	576.7	556.7
Corporate Stocks	1,476.2	2,026.6

Source: Scholl (2000).

Table 2: U.S. Holdings of Foreign Stocks

(year-end 1998 and 1999, in billions of dollars)

	1998	1999
Total Holdings of Stocks	1,476.2	2,026.6
Western Europe	960.5	1,167.8
United Kingdom	295.6	374.8
Finland	45.6	160.2
France	130.4	183.2
Germany	104.4	117.6
Ireland	19.5	18.2
Italy	59.1	53.5
Netherlands	115.4	141.9
Spain	37.7	35.7
Sweden	43.7	74.8
Switzerland	73.6	64.3
Canada	62.0	100.7
Japan	145.9	273.7
Latin America	54.0	89.1
Argentina	8.9	11.3
Brazil	17.4	28.9
Mexico	27.8	30.2
Other Western Hemisphere	77.8	129.0
Bermuda	37.2	45.9
Netherlands Antilles	24.8	26.7
Other Countries	176.0	266.3
Australia	34.3	39.2
Hong Kong	27.0	38.7
Singapore	10.3	16.3

Source: Scholl (2000).

Table 3: Foreign Holdings of U.S. Securities

(year-end 1998 and 1999, in billions dollars)

	1998	1999
Total Holdings	2,742.1	3,170.0
U.S. Treasury Securities	729.7	660.7
U.S. Securities other than U.S. Treasury Securities	2,012.4	2,509.3
Corporate and other Bonds	902.2	1,063.7
Corporate Stocks	1,110.3	1,445.6

Source: Scholl (2000).

Table 4: Risk and Return of Emerging Stock Markets

	Annual Return in % in USD (1986-1996)	Real Growth Rate in % (1990-1996)	Market Capitalization in billion USD (end-1998)	Number of Listed Domestic Companies (1998)	Total Risk (Std. Dev.) (1986-1996)	
					USD (%)	in LC (%)
Emerging Markets						
Argentina	33.2	3.9	45.3		87.2	155.5
Brazil	13.3	2.0	160.9	527	62.3	93.8
Chile	32.9	6.4	51.9	277	27.7	26.8
China		11.0	231.3	853		
Colombia	31.0	3.0			31.7	32.1
Greece	17.7	1.3	80.0	244	42.3	41.9
Hungary		-0.6				
India	6.0	3.8	105.2	5,860	33.3	35.6
Indonesia	6.6	5.9		287	28.7	28.4
Jordan	4.8	4.0			15.6	15.8
Korea	5.2	6.2	114.6	748	28.4	27.2
Malaysia	17.1	6.1	98.6	736	25.2	25.6
Mexico	24.7	-0.3	91.7		46.0	43.5
Nigeria	17.6	1.2			53.9	47.4
Pakistan	10.4	1.1		773	26.6	26.6
Peru		4.8		257		
Philippines	22.6	1.0	35.3	221	33.9	33.9
Poland		3.3				
Portugal	15.7	1.5	63.0		40.7	40.3
Russia		-9.2		237		
South Africa		-0.2	170.3	668		
Sri Lanka		3.4		233		
Thailand	20.3	6.7	34.9	418	32.7	32.8
Turkey	19.4	1.7	33.6	277	68.0	66.4
Venezuela	19.2	-0.3			46.5	43.2
Zimbabwe	23.2	-1.1			28.7	27.6
Developed Countries[†]						
Japan	13.9	1.2	2,495.8	2,416	23.1	18.7
U.K.	15.1	1.5	2,374.3	2,399	24.5	22.0
United States	13.4	1.2	13,451.4	8,450	15.3	15.3

Source: Solnik (2000), International Finance Corporation (1999). [†]: values for Annual Return and Total Risk based on period 1/1971-12/1998

Table 5: Correlation between Stock Markets, 1986-1996

Country	Correlation with World	Country	Correlation with World
United States	0.83	Mexico	0.36
Argentina	0.02	Nigeria	0.06
Brazil	0.11	Pakistan	0.03
Chile	0.12	Philippines	0.32
Colombia	0.05	Portugal	0.39
Greece	0.21	Taiwan	0.25
India	-0.10	Thailand	0.39
Indonesia	0.16	Turkey	0.06
Jordan	0.18	Venezuela	-0.06
Korea	0.27	Zimbabwe	0.06
Malaysia	0.53		

Source: Solnik (2000).

Table 6: Optimal Portfolio Allocations of Investors

The table shows the percentage of funds that investors with different home country should allocate to local and international equities and fixed-income securities, respectively, according to past correlations.

Home Country of Investor	Base Currency	Equities		Fixed Income	
		Local	International	Local	International
Netherlands	NLG	15	85	80	20
Germany	DEM	10	90	80	20
France	FRF	15	85	70	30
Belgium	BEF	15	85	80	20
Switzerland	CHF	35	65	80	20
Great Britain	GBP	25	75	55	45
United States	USD	50	50	85	15

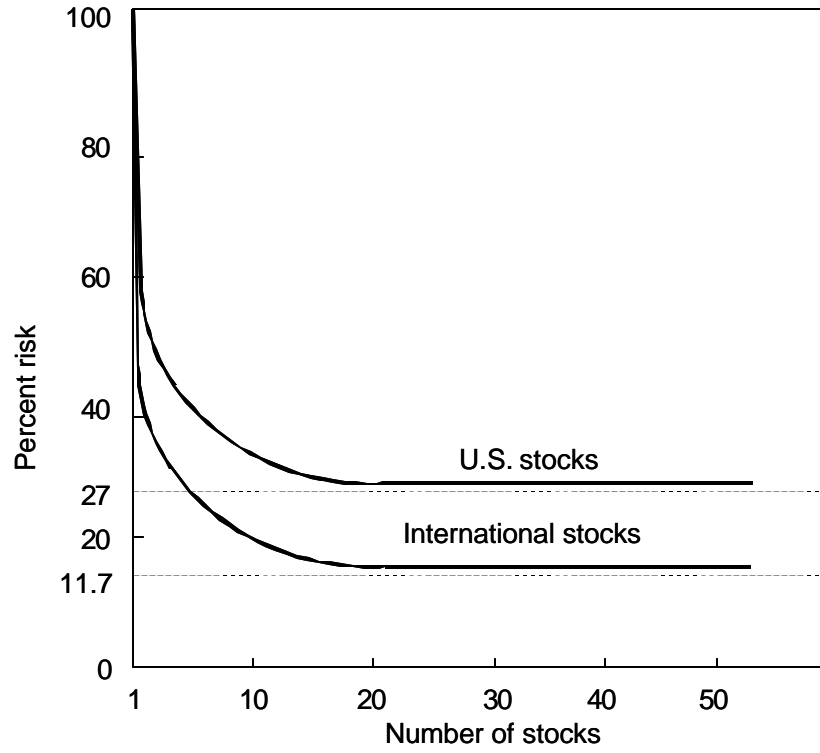
Source: Robeco Group (1997).

Table 7: Trading Cost Comparison for Equity Trades, 1999

Country	Average Price of a stock traded (USD)	Average Commission (basis points)	Average Fees (basis points)	Market Impact (basis points)	Total (basis points)
Argentina	4.72	36.28	2.92	31.63	70.83
Australia	4.06	30.26	14.08	6.70	51.04
Austria	66.68	24.76	0.01	20.79	45.56
Belgium	78.10	15.21	2.58	9.75	27.54
Brazil	0.40	27.42	2.48	28.66	58.56
Canada	21.23	18.64	0.00	17.79	36.43
Chile	17.12	36.21	6.96	71.10	114.27
Colombia	2.42	75.42	0.74	35.09	111.25
Czech Republic	16.60	37.91	11.62	23.38	72.91
Denmark	71.03	25.36	0.81	15.13	41.30
Finland	39.18	23.77	0.97	17.60	42.34
France	91.98	21.72	1.98	4.49	28.19
Germany	66.21	21.73	1.21	4.32	27.26
Greece	33.66	43.10	12.23	19.04	74.37
Hong Kong	2.50	30.35	12.59	10.23	53.17
Hungary	15.53	53.85	12.69	37.23	103.77
India	12.47	12.22	0.00	32.18	44.40
Indonesia	0.45	61.90	12.06	9.74	83.70
Ireland	9.90	21.72	40.92	11.89	74.53
Italy	5.25	22.64	1.24	16.64	40.52
Japan – buys	15.05	15.34	0.04	9.89	25.27
Japan – sells	19.48	16.36	4.67	2.48	23.51
Korea	28.79	41.25	13.44	18.66	73.36
Luxembourg	36.92	15.64	0.58	74.20	90.42
Malaysia	1.47	63.35	9.26	18.32	90.93
Mexico	2.13	31.23	1.31	33.40	65.94
Netherlands	41.38	20.62	1.52	5.56	27.70
New Zealand	2.44	30.83	0.02	8.19	39.04
Norway	11.32	24.02	1.41	4.59	30.02
Peru	2.35	40.82	16.40	71.83	129.05
Philippines	0.71	66.60	31.11	15.52	113.23
Portugal	34.95	24.93	5.01	14.59	44.53
Singapore	3.71	50.28	2.37	21.32	73.97
South Africa	5.50	27.89	11.94	48.63	88.46
Spain	22.29	24.85	1.18	13.32	39.35
Sweden	19.70	22.72	0.49	6.09	29.30
Switzerland	507.84	21.08	4.38	16.07	41.53
Taiwan	1.71	22.44	20.20	17.03	59.67
Thailand	2.40	64.75	3.25	19.37	87.37
Turkey	0.02	31.92	2.46	10.88	45.26
U.K. – buys	8.53	18.06	47.20	3.15	68.41
U.K. – sells	8.46	16.76	0.58	7.38	24.72
United States - NYSE	39.12	14.17	0.47	10.51	25.15
United States - OTC	35.44	2.64	0.27	29.03	31.94
Venezuela	0.35	50.33	9.36	42.97	102.66
Average	31.37	31.10	7.27	21.03	59.39

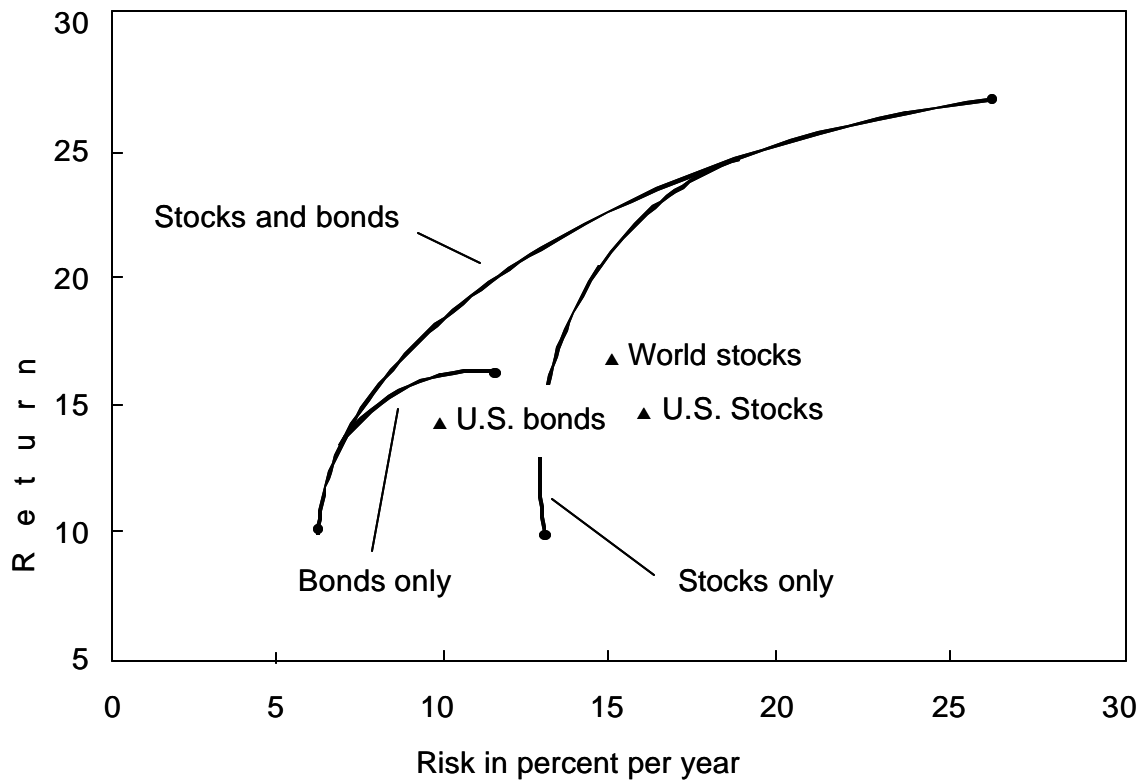
Source: Elkins/McSherry (2000)

Figure 1: National versus International Diversification



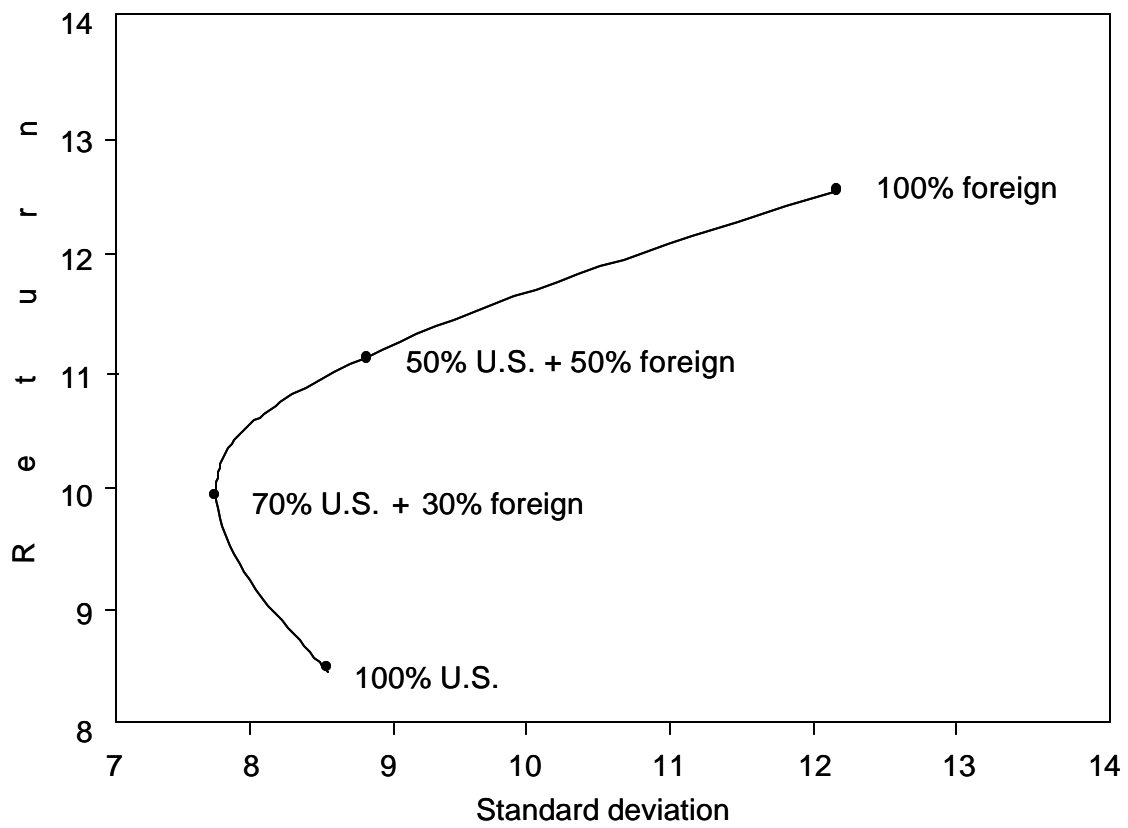
Source: Solnik (2000).

Figure 2: Efficient Frontier for International Stocks and Bonds (USD, 1980-1990)



Source: Odier/Solnik (1993).

Figure 3: Risk/Return Trade-off of an Internationally Diversified Bond Portfolio



Source: Solnik (2000).

Figure 4: Foreign Assets and Segmented Capital Markets

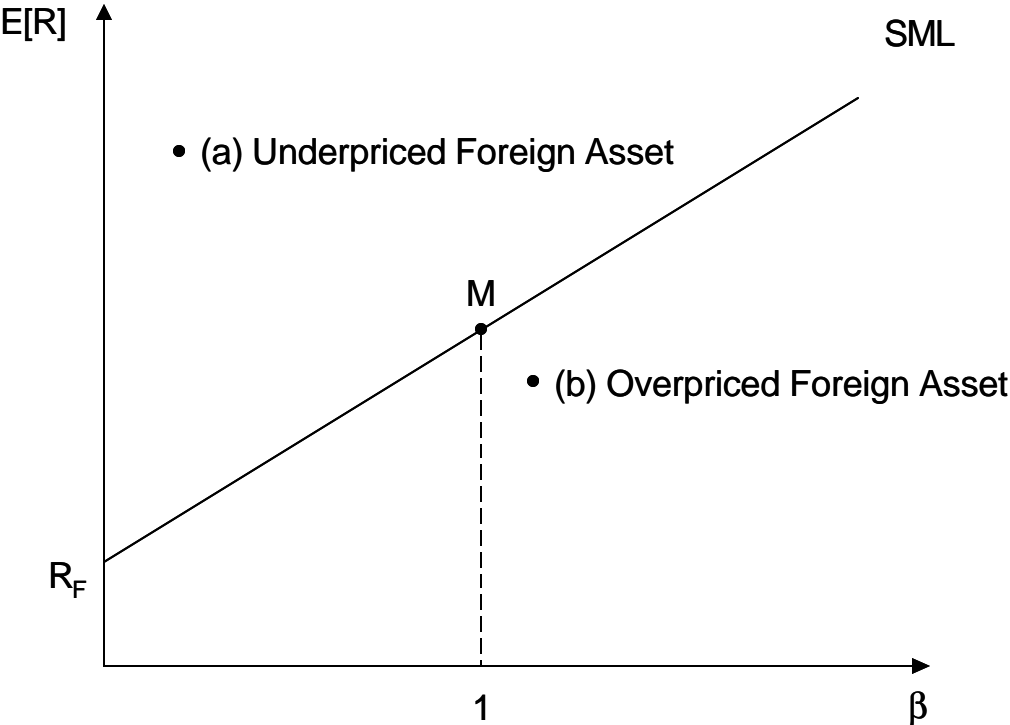
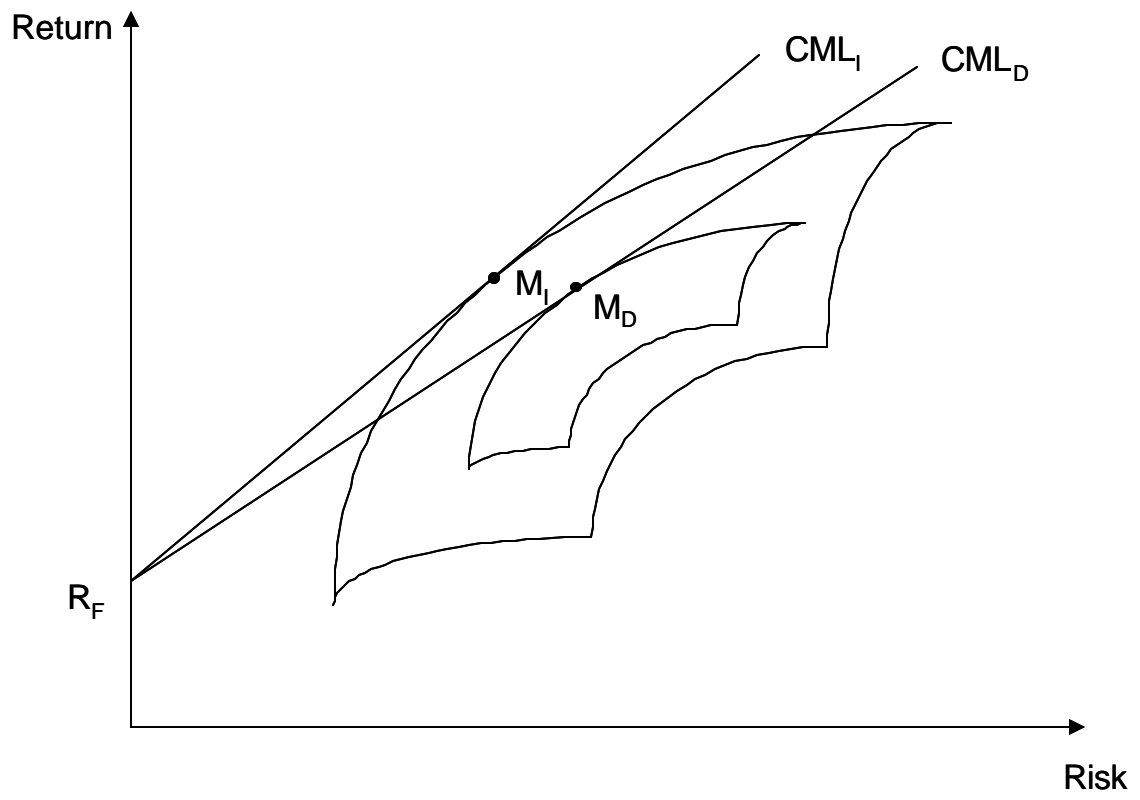


Figure 5: International Diversification Benefits from MNCs



Notes on Contributors/Acknowledgements

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Subsequently, he spent four years at WHU Koblenz (Vallendar, Germany) and partially at the University of Michigan Business School for his doctoral studies. His dissertation on corporate risk management comprises an empirical investigation of the impact of foreign exchange rate, interest rate, and commodity price risk on the value of nonfinancial corporations. Gunter Dufey, Professor of International Business and Finance at the University of Michigan and Professor of International Corporate Finance at WHU Koblenz, chaired his dissertation committee.

After obtaining the *Doctor rerum politicarum* (Ph.D. Finance equivalent) at the end of 1998, he was invited by René M. Stulz, Everett D. Reese Chair of Banking and Monetary Economics, to spend 12 months as a Visiting Scholar at the Charles A. Dice Center for Research of Financial Economics at the Fisher College of Business/Ohio State University (Columbus, OH). This postdoctoral year was supported by the German National Merit Foundation, the German Academic Exchange Service, the German Federal Department of Commerce and Technology, and the Charles A. Dice Center for Research in Financial Economics.

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Paris; he completed a study on offshore banking centers for the same organization in Spring 1995. In 1985 he co-authored a study for the U.S. Congress (OTA) on the international competitiveness of U.S. financial institutions. He has lectured in the Far East and in Europe under the auspices of the U.S. Department of State. In early 1992 he spent several months as a Visiting Scholar with the Ministry of Finance (FAIR) in Tokyo, Japan.

Throughout his career, Dr. Dufey has been in close touch with the practical aspects of his field. He has been employed with companies both in Europe and the United States and currently serves as a consultant to a number of international companies. Specifically, during the summer of 1972, Dr. Dufey worked full time with the Treasury Department of the Dow Chemical Company; as part of a sabbatical leave of absence, he joined the Finance Department of Clark Equipment Company in 1974/75. He has been an Associate Member of the Detroit Chapter of the Financial Executives Institute since 1973. Since February 1996, he has served on the Board of Directors of Lease Auto Receivables, Inc., a subsidiary of GMAC. In 1994 he was appointed as a Trustee of Guinness-Flight Funds Ltd. He also serves as an Advisor to the Board of Fuji Logitech Ltd., Tokyo, Japan.

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